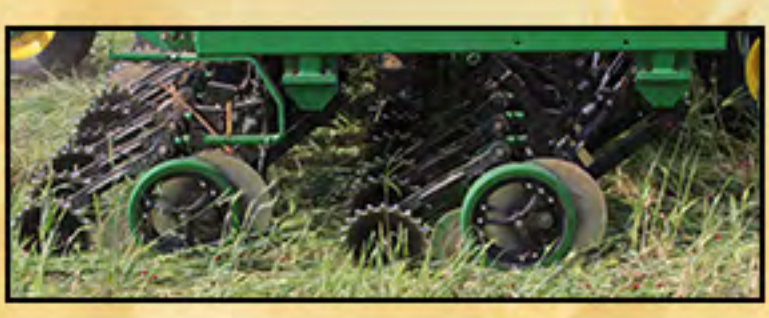


20th YEAR

2026 PRODUCT GUIDE

NEEDHAM

Ag Technologies, LLC.

NO-TILL INNOVATOR AWARDS

NeedhamAg.com

(270) 785-0999

@NeedhamAg

@NeedhamAgTech

@Needham Ag Technologies, LLC

Welcome to the Needham Ag Technologies 20th Product Guide. This milestone gives us an opportunity to reflect on the past and thank our 15,000+ customers around the world for their business.

20 years ago in 2006, Holly and Phil Needham started Needham Ag Technologies with the 50 x 64' building shown to the right. We have since grown to 5 buildings with a total area of over 45,000 square feet. Within these buildings we have offices, storage for parts and whole goods, assembly sections and areas to rebuild drills and air-seeders.

We conduct replicated and field scale research every year on corn, soybean and wheat, plus cover crops to protect our precious soils. This allows us to better understand different cropping systems and establishment practices, especially using no-till.

We also farm on a small scale, plus we custom plant about 2000 acres of soybean, wheat and cover crops each year. This allows us to test and compare our products with many competitive options (and OEM) to gain valuable experience, plus durability test new products before we release them to local farmers for greater scale field testing.

We often have rebuilt 10', 15' and 20' drills, plus air-seeders for sale. Most of these drills and air-seeders have all the wearing parts replaced with high quality Needham Ag parts, so they perform better than new, for a fraction of new price. Please call Benjamin Needham on (270) 785 0999 for prices and availability.

The 20th Anniversary Of Needham Ag Technologies

February 2026 marks the 20th anniversary of Needham Ag Technologies and looking back if we would have expected the growth we have had, it would have been a lot cheaper and easier (logistically) to build one large building, compared to an evolution of progressively larger ones! In the 20 years since we have started, we have sold parts to over 40 different countries including Australia, New Zealand, Canada, England, Germany, Holland, France, Russia, Romania, Argentina, Austria, Brazil, Mexico, Sweden, Finland, Denmark, Ireland, South Africa, Kenya and Ukraine.

Farming is one of the oldest industries, after all everyone wants to eat. Farmers are the most resilient and innovative, but the recent increases in seed, fertilizer, chemicals, equipment and interest charges, together with eroding commodity prices is reducing their equity. Profit margins are so tight (assuming growers can show a profit) that there is no room for error and everything has to be done right. So you have to start with the stands capable of the highest yields.

We at Needham Ag Technologies have the research, experience and products to help get your seeding and equipment into tip-top shape to help get the best stands and yield potential right from the start. If you are a wheat producer, our new 222 page glossy color soft red winter wheat guide (see page 96) will also help you increase bushels and profits. We also have a new video within our Needham Ag channel on YouTube called "The Components Of Record Breaking Wheat Yields" which discusses what some of the producers are doing in England to raise 200 bu/ac (or higher) wheat yields. There are now over 150 videos within our YouTube channel, most of which discuss wheat management, residue distribution, planter, drill and air-seeder set up, in addition to videos on our Lipa mowers.

Thank you for your business and we look forward to serving you again in the future. Please contact us if we can help.

Phil Needham

Needham Ag Technologies, LLC.

John Deere Air-Seeder and Box Drill Modifications

This green section includes our replacement parts, to maximize the performance and extend the service intervals of John Deere drills and air-seeders. These parts include disc blades, gauge wheels and firming wheels, in addition to seed boots, Bonilla seed tabs and most of the pivots and depth adjust components. We also offer air-seeder hose and rubber seed tubes. See pages 5-58.

Case-IH 500/500T/550/550T and New Holland 2080/2085/2180/2185 Air-Seeder Modifications

This red section outlines our products for the Case-IH & New Holland single disc seeders, including two different closing wheel options to help growers close the seed slot in different conditions. We also offer disc blades, spring spacers, narrow gauge wheels and screens for the hoppers on the Case-IH 500T/550T and New Holland 2085/2185. See the products available for these air seeders on pages 59-66.

Planter Attachments

This blue section comprehensively covers most of the solutions to help growers manage residue at planting time with Martin floating row cleaners. We also have single disc fertilizer openers, plus different closing systems to close the seed slot consistently across a wide range of soil moisture, tillage and cover crop systems. We also offer the drag chains to smooth the row and help achieve uniform emergence. See the most common Martin products we offer on pages 67-76.

Stream Bars For Liquid Nitrogen Applications

Stream bars are the preferred method of delivering liquid N evenly and accurately to cereals, 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. See the information and stream bar research on pages 77-82.

LIPA Mowers

Lipa has over 45 years of manufacturing experience in conjunction with the Willibald company in Germany. They have sold over 28,000 mowers and mulchers for mini excavators, large excavators, skid steers and tractors around the world, from their factory in Italy. Needham Ag is the North American distributor for all these products, so visit pages 83-94 for more information.

Wheat Management Publications

Pages 95-97 provide information on our new soft red winter wheat guide, in addition to our current hard red winter wheat and hard red spring wheat production guides. These glossy and professionally published guides are written to help growers increase their wheat yields and profits.

Determining Which Openers Are On The John Deere Single Disc Drill Or Air-Seeder.

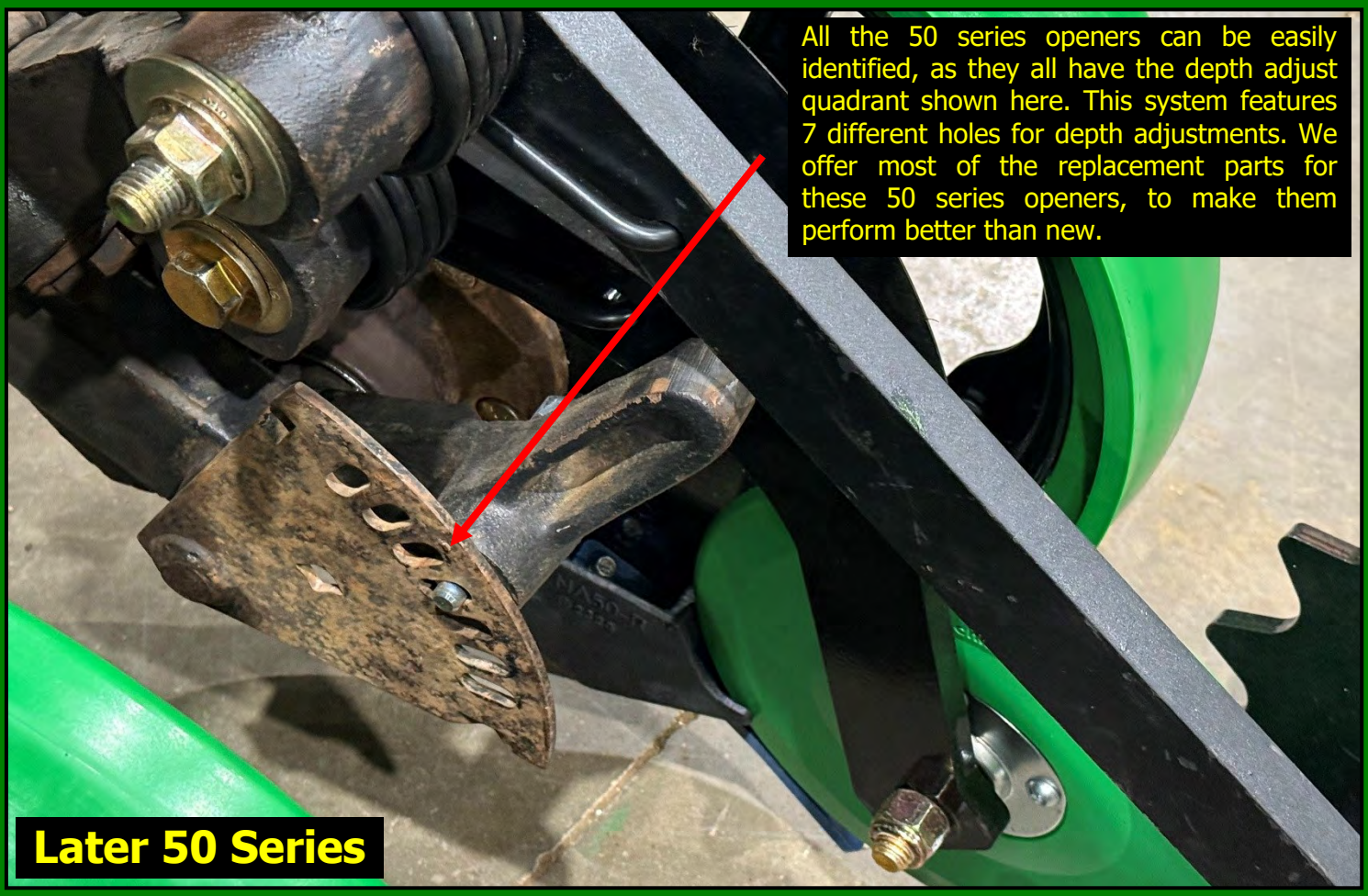
When purchasing parts for a John Deere single disc drill or air-seeder, it is important to understand which openers it has, so you can order the correct parts.

If you bought the drill or air-seeder new, then you know which openers it has, but it can get confusing because the later end of the 1890/1895 air-seeders (around later 2018 and 2019) had ProSeries openers, before switching to the N500 and N500C series air-seeders (which all have ProSeries openers). The 1590 prior to around 2019 has the 90 series openers, but newer drills are all ProSeries openers.

We also talk to growers who buy used openers for a project, such as a fertilizer placement toolbar, so they do not know the origin of the openers, these two pages are included to help identify which openers you have so you can order the correct parts.

1. John Deere 50 Series Openers.

The 50 series openers were first sold in 1988 within the early 750 drill, starting at serial number 00001. The early 750 drills (between serial number 00001 and 03834 all had a welded pin on the closing wheel arm and firming wheel arm, but the main opener housing did not have any internal bushings for them. Therefore when the closing and firming wheel arm pins and housings wore, there was no easy fix to remove the excessive play. By comparison, serial number 003835 and later 750 drills and all 1850 air seeders were upgraded to a main opener housing which featured a larger diameter closing and firming wheel pivot bore, to allow the installation of replaceable outer bushings. The firming wheel arm on the later 750 and 1850 drills all had a welded pin which was not replaceable. Page 24 features our later 50 series firming wheel arm upgrade kit. This is a good option because it features a new arm, replaceable pin, flange bolt, flange nut, seals and greaseless poly bushings.



All the 50 series openers can be easily identified, as they all have the depth adjust quadrant shown here. This system features 7 different holes for depth adjustments. We offer most of the replacement parts for these 50 series openers, to make them perform better than new.

Later 50 Series

2. John Deere 60 Series Openers.

In 1998, John Deere upgraded openers on both the box drills and air-seeders to the 60 series and they sold them as a 1560 box drill and a 1860 air-seeder through 2002. The 60 series openers had a number of improvements including a better disc hub bearing and a faster/easier way to adjust the depth, using a cover and a depth adjust handle as shown right. The only drawback with the 60 series opener was the 2 piece seed boot, which often resulted in misplaced seeds and too many seeds on top of the ground. Most 60 series drill or air-seeder owners have now upgraded to the 90 series (one piece) seed boots which place seeds much better.

3. John Deere 90 Series Openers.

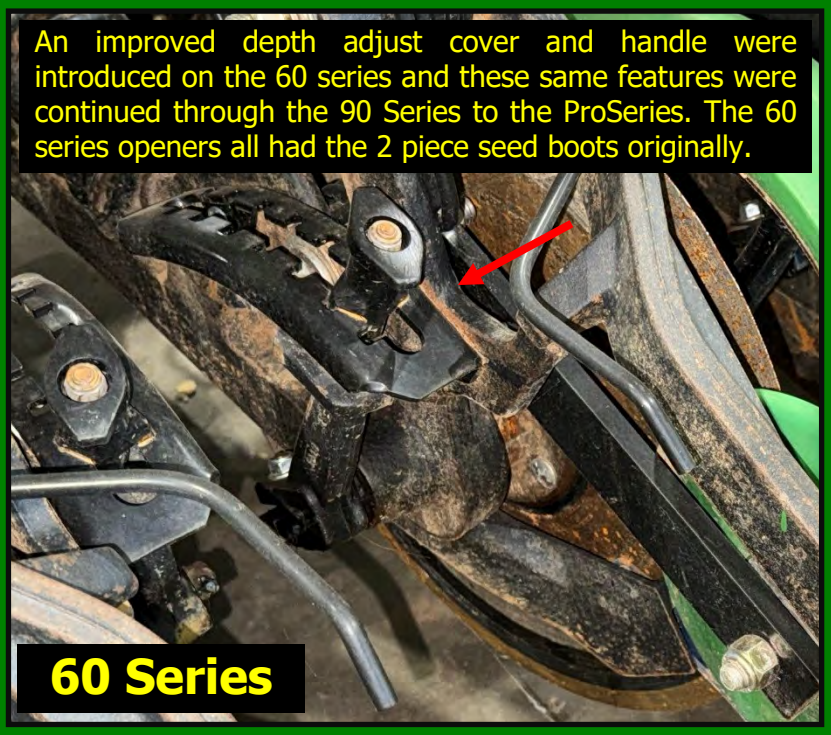
The 90 series opener was released in 2002 and they were sold on the 1590 box drills and 1890/1895/1990 air-seeders until 2018. The 90 series featured an improved once piece seed boot which placed seeds similarly to the 50 series, but the opener arm retained most of the same features as the 60 series opener.

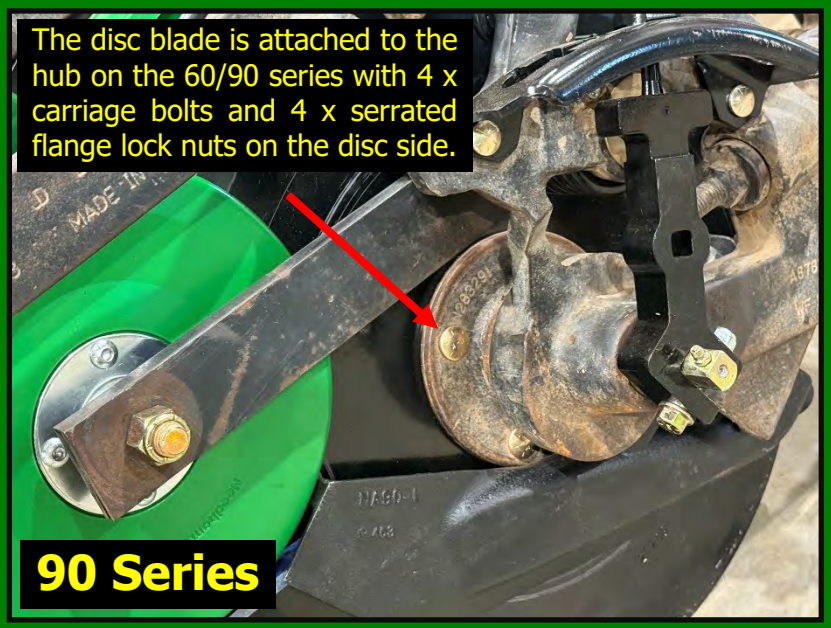
4. ProSeries Openers.

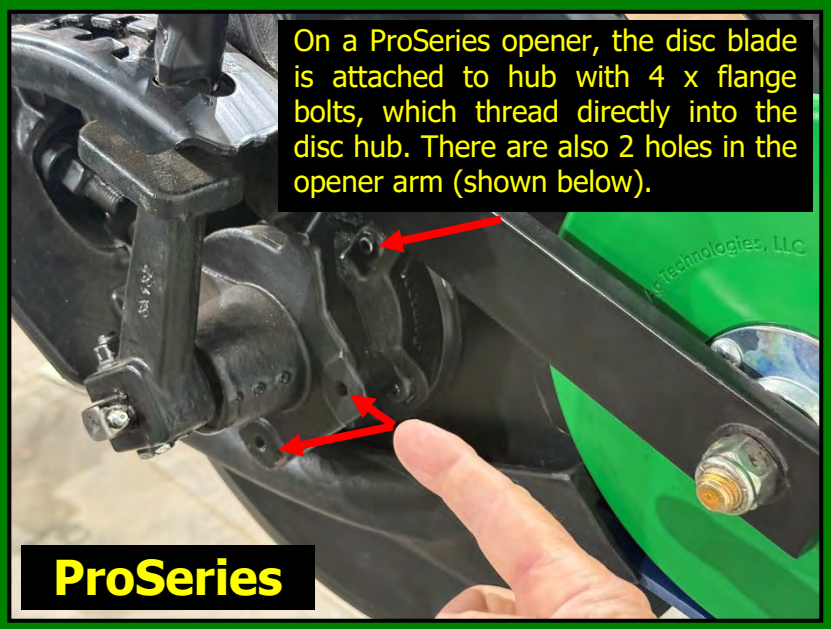
The ProSeries opener was released in 2018 and they were sold on the later 1890/1895 air-seeders and then all the N500/N500C air-seeders. The box drill is still currently sold as a 1590 - with ProSeries openers.

The ProSeries opener retained most of the same basic components as the 90 series, but it does have some changes. The easiest way to determine if it's a ProSeries opener is by looking at the main opener arm casting and the disc hub. The ProSeries casting has 2 holes (see image below right) and the disc is attached to the hub using 4 x bolts which thread into threaded holes in the hub. The 90 series by comparison does not have the tapped holes in the hub and the discs are mounted to the hub with 4 carriage bolts which have flange lock nuts on the disc side.

The main two changes on the ProSeries opener, compared to the 90 series are the addition of a improved firming wheel (which closely resembles our V8 firming wheel). The ProSeries also features a narrower seed boot, held in place with a wing pin (not a bolt), but wing pins have been found to wear very fast.







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 56 for more information.

Stainless Steel Seed Tubes

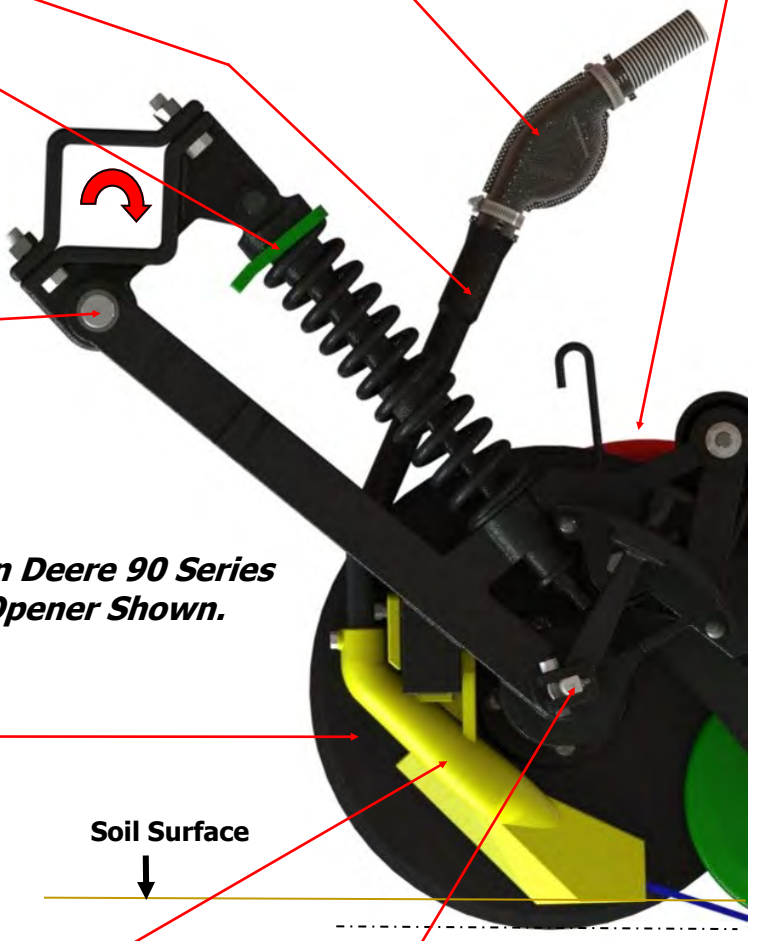
Over time the factory steel seed tubes corrode, especially when fertilizer is applied with the drill/air-seeder. We now offer stainless steel seed tubes for all John Deere 50, 60, 90 and ProSeries box drills, and 60 & 90 series air-seeders. See pages 43-46.

Stainless Steel Seed Brake

Seed bounce and seeds being blown out of the seed slot are both common problems with many air-seeders, especially :- 1. When planting lighter seeds (such as canola, or cover crops with small seeds). 2. When placing fertilizer in-row with the seed. 3. When using wider seeding equipment. See pages 49-51 for more information on how to reduce, or eliminate these problems.

YouTube

For more information on rebuilding a John Deere drill or air-seeder, please search for "Needham Ag Rebuilding John Deere Opener" at youtube.com or scan the QR code to the right.



John Deere 90 Series Opener Shown.

Extended Wear 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 the total side to side play exceeds about 3/8" (measured at the back of the disc) the pins and bushings should be replaced. We have hardened pins and bushings available, see pages 33-34 for more information.

Extended Wear 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 offer the Extended Wear Forges De Niaux 200 disc blades, with a core hardness which last around 20% longer than OEM disc blades. We also offer the Needham Ag NA-18A discs which last slightly longer than OEM discs, but at a lower price point. See pages 19-22 for more information.

Soil Surface

Extended Wear 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 seed boot bushings which eliminate most of the up/down travel. For more information on seed boots and seed boot bushings, please see pages 25-29.

Extended Wear Axle, Spindle, Spindle Nut, Depth Arm, Cover And Handle

As acres accumulate on drills and air-seeders (especially when working in dry/hard soils without sufficient ballast), the factory gauge wheel arm jaw can wear around axle. Within the same field conditions, the handle often rattles within the cover, which wears out the pegs and slots. We now have all these extended wear parts available and they are all better/thicker materials for longer life, plus they all interchange with 60/90 Series. See pages 39-41 for more information.

Extended Wear Gauge Wheel Tires and Gauge Wheel Assemblies

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 depth adjust components. 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 when seeding directly into corn stalks. This is because they maintain depth more consistently by avoiding more residue compared to a wide gauge wheel. See pages 17-18 for information.

Greaseless Closing And Firming Wheel Arm Bushings

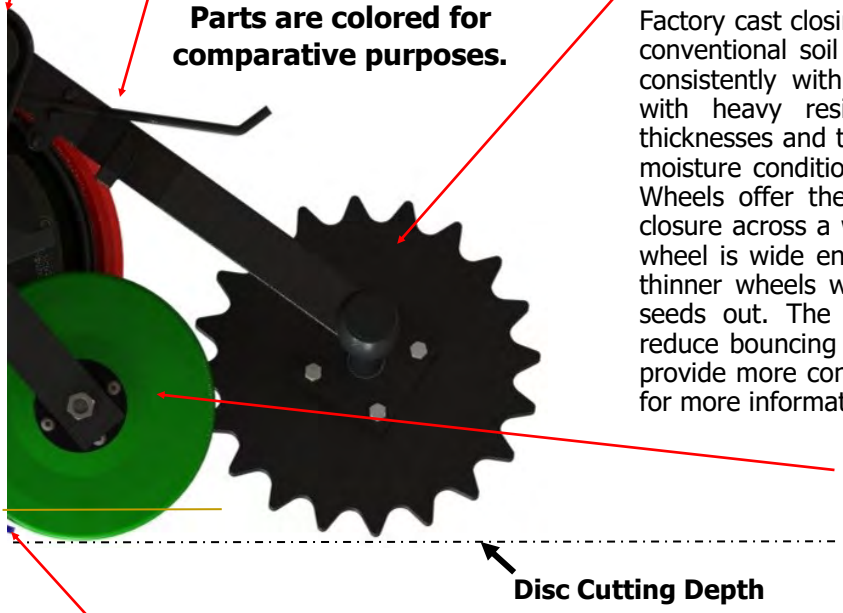
To make sure the closing wheel runs at a consistent position alongside the seed slot (which maximizes closing action), it is essential that the closing wheel arm bushings are tight. We suggest replacing the closing wheel arm pins and bushings once the closing wheel has 1" of total side to side play, 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 31-32.

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 the coiled loop. This wear over time causes them to reduce tension and eventually break. We have firming and closing wheel arm springs available and they feature increased side tension to help keep the spring within the pegs. For more information visit page 35.

Parts are colored for comparative purposes.



20 Point Crumbler 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 20 Point Crumbler Wheels offer 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 13-14 for more information on our closing wheel options.

V8 Firming Wheel With Long Life Urethane Tire

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 moisture (assuming moisture is available), to help obtain uniform germination and emergence. We have seen many examples where a V8 firming wheel was added to a drill or air-seeder, alongside original factory wheels. The V8 wheel was pressing all the way to the bottom, while the factory wheels were too wide to press seeds all the way to the base of the seed slot, please see pages 11-12 for more information.

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.

Needham Ag Bonilla Seed Tabs

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 7^0 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.
- Also available for John Deere ProSeries (see page 57 for more information on these narrower tabs).

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.

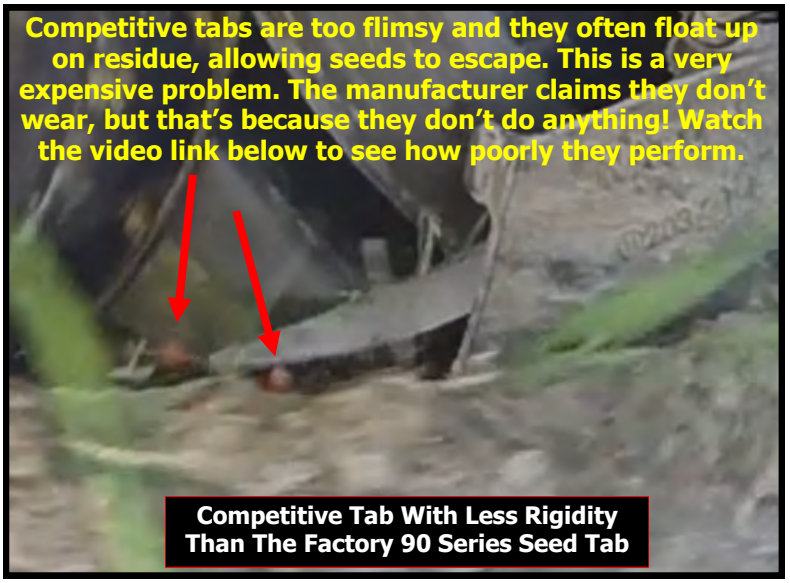
What a farmer has to say about our Bonilla Seed Tabs

"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.

Factory 90 Series Seed Tab With Low Rigidity



Competitive Tab With Less Rigidity Than The Factory 90 Series Seed Tab

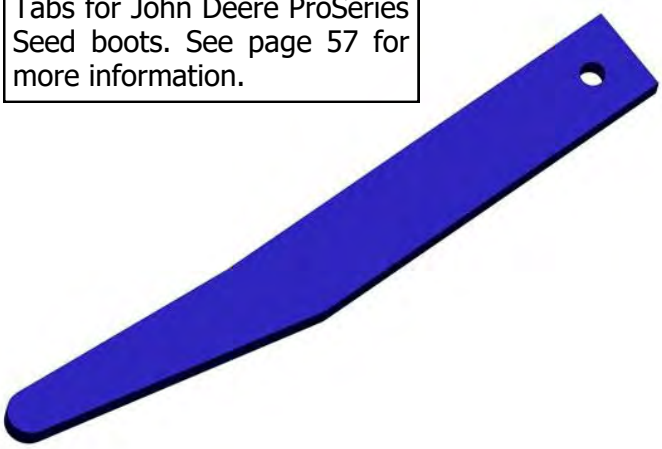
Bonilla Seed Tabs With Enough Rigidity To Hold Seeds Down In Residue.

All these images are screen captured from our "Needham Ag Bonilla Seed Tab" Video on YouTube. All the seed tabs were compared on the same drill at the same speed and seeding depth.

Visit YouTube or Scan the QR code below to see how the Bonilla Seed Tabs can retain more seeds in the seed slot. This can help you increase the number of plants established, or reduce your seeding rates.

Made In The USA

We now have Bonilla Seed Tabs for John Deere ProSeries Seed boots. See page 57 for more information.

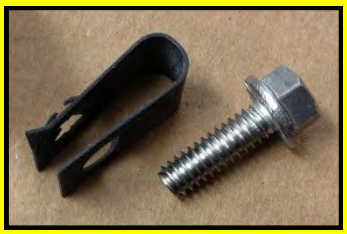


Bonilla Seed Tabs For 50 and 90 Series Box Drills and Air-Seeders.

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

$5.00 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).

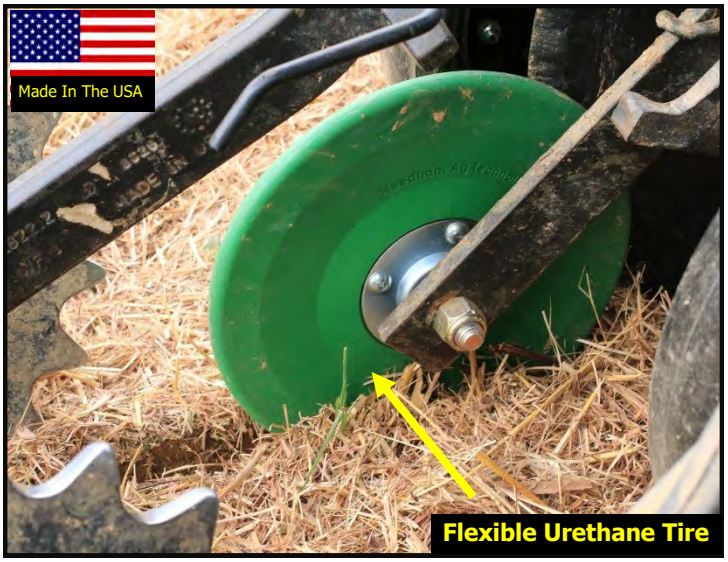


Stainless Steel Bolt $0.50
U Shaped Clip $1.50

Needham Ag V8 Firming Wheel, With Long Life Flexible Urethane Tire, For John Deere 50, 60 and 90 Series, Plus ProSeries.

Key Benefits:

- The popular and proven Needham Ag V8 Firming Wheel features a flexible green urethane tire, which significantly extends the service life beyond rubber tires. This urethane tire offers more flexibility (compared to rubber) 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.



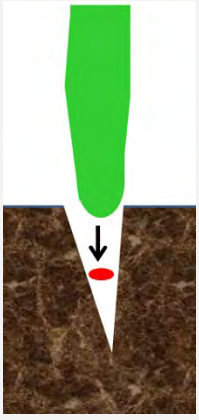
Flexible 10" urethane tire allows the wheel to remain down at the bottom of the seed slot, even when making slight turns (illustrated left) or when working on side slopes.

The Needham Ag V8 Firming Wheel comes standard with a special low profile head 5/8" bolt, to stop the bolt rubbing on the gauge wheel tire.

The PEER® SeedXTreme Long Life Bearing Is Standard In All V8 Firming Wheels Purchased Directly From Needham Ag.

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

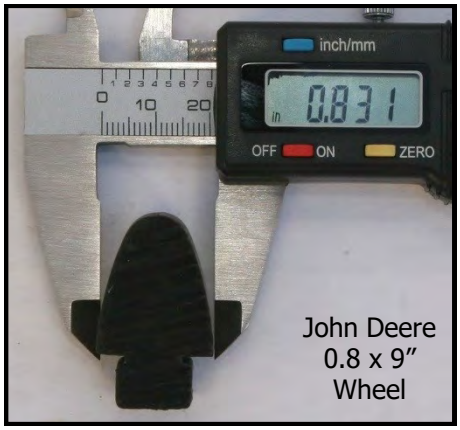
The Needham Ag V8 firming wheel profile was initially developed using concrete molds of the seed slot. We determined that its width and profile were both required to best collect seeds and press them down into the bottom of the seed slot (as illustrated right).



The principle of collecting seeds and pressing them down into moisture (assuming moisture is available) is very important, because seed to soil contact can be the difference between getting good, even emergence and a poor stand. The design of the new John Deere ProSeries firming wheel looks almost exactly like our V8 firming wheel, apart from the fact they are only using a rubber tire, not a long life urethane tire.

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

John Deere 1 x 10" Wheel



John Deere 0.8 x 9" Wheel

Needham Ag 0.6 x 10" Wheel

John Deere 1 x 10" firming wheels.

These were fitted to most John Deere drills and air-seeders until 2006, but this 1" wide wheel with rubber tire was simply too wide to fit down into the seed slot, especially within most no-till conditions. This is because the seed slot often measures between 5/8 and 3/4" in width (see image right). This firming wheel often compacted both sides of the seed slot at the soil surface, making closing the seed slot more of a challenge (especially in moist soils).

John Deere 0.8 x 9" firming wheels.

These have been fitted to all John Deere drills and air-seeders from 2006 until John Deere released their new ProSeries opener in summer 2018. While the 0.8 x 9" firming wheel design was definitely an improvement over the former 1 x 10" wheel, it was still too wide for most no-till soil conditions and it didn't offer any flexibility to shed mud or follow the seed slot. The V shaped design would sometimes lift pieces of the sidewalls (see image above right) within moist no-till soils, making closing the seed slot an even bigger challenge.

Needham Ag V8 Firming Wheels

The V8 Firming Wheels were introduced in 2008, with a flexible rubber tire which closely matched the shape of the seed slot. This was because we used concrete molds to determine the tire profile. This V8 Firming Wheel with rubber tire appears to have been copied by John Deere within their new ProSeries opener, and it also features a 1x10" rubber tire and 5203 gauge wheel bearing. By the time John Deere released their ProSeries opener and new firming wheel in 2018, we were releasing our next generation of V8 Firming wheel with longer life, flexible urethane tire and long-life Peer SeedXTreme bearing (shown right).

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.


John Deere 1 x 10" Firming Wheel


V8 Wheel - With Flexible Urethane Tire

Contains the high quality

PEER SEEDXTREME

5203 Bearing

See our V8 Wheel video on YouTube. Type "Needham Ag V8 Firming Wheel With Urethane Tire" or click the QR label below.

YouTube

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)
$49.00 + shipping. *4 lb ea.*

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 many times longer than cast wheels 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 180 degrees 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.

$159.00 per row + shipping. *20 lb ea.*

Martin 20 Point Crumber Wheels for **Early 750** (before serial number 003834) and Case-IH SDX Air-Seeders

$149.00 per row + shipping. *19.5 lb ea.*

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 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 many times longer than cast wheels 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 180 degrees 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 moist clay soils) we recommend the Martin 13" spiked closing wheel (shown on the following page).

"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, or 90 Series** 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. Please contact us regarding purchasing 20 Point Wheels for ProSeries.

$99.00 per row + shipping. *18.5 lb ea*

Martin 13" Spiked Closing Wheels For John Deere Drills and Air-Seeders

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 18-24" (as wrapping can occur). If you plan to seed into such conditions, consider the Martin Razor wheel, shown on page 70.

Martin 13" Spiked Closing Wheels for all John Deere 50, 60, 90 Series drills/air-seeders. Kit includes all mounting hardware to couple wheel to the original arm.

50 Series $175.00 per row + shipping.
90 Series $115.00 per row + shipping.

15 lb ea.

A Martin 13" spiked closing wheel is shown below, seeding into moist clay soil conditions following CRP. These are some of the most difficult conditions to close the seed slot within and the 13" spiked wheels were closing the seed slot most of the time.

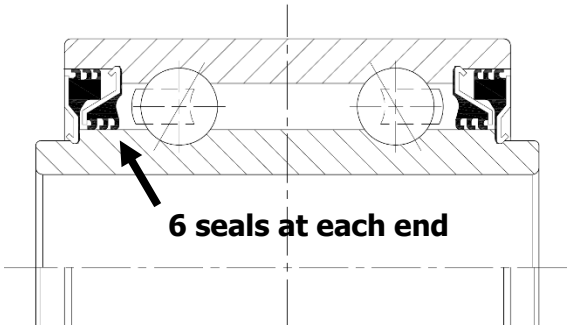
For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com

PEER® SEEDXTREME 5203 Bearings

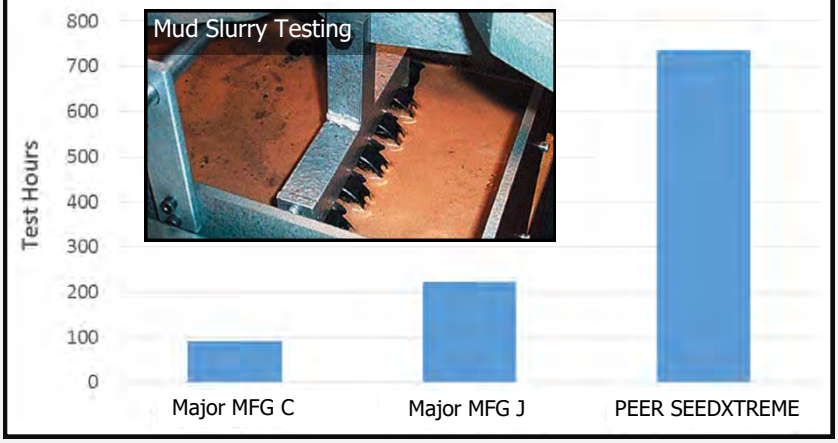
Proven through years of research, development and rigorous testing in both lab and field, the advanced sealing technology within SEEDXTREME bearings significantly extends service life, especially in dusty conditions.

Key Benefits

- The PEER® SEEDXTREME 5203 bearing is a direct replacement for standard 5203 bearings to significantly extend their life.
- Most bearings fail as a result of dust contamination. To help extend bearing life, the PEER® SEEDXTREME 5203 bearing features 6 overlapping seals at each end to help keep contaminants like dust out of the bearing. By comparison, most competitive bearings only have 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)



Mud Slurry Test Hours



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.

PEER® SEEDXTREME 5203 Bearings

$19.00 + shipping.

0.5 lb ea.

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 3" gauge wheels for drills (Important: they won't fit the Mud-Smith 3" wheels for corn planters). They also fit the Carlisle narrow gauge wheels on the Bourgault 3710/3720 single disc drill, but not the ones with Otico narrow gauge wheels.
- 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 offer a 4 year free tire replacement warranty against significant tears, holes or cracks within the OD of the tire, for a period of 4 years after date of purchase.

Our 3 x 16" Narrow Gauge Wheel Tires fit most 3" narrow gauge wheel assemblies, including the John Deere ones shown above, in addition to the John Deere 3" spoked narrow gauge wheel centers.

YouTube

See our urethane narrow gauge wheel tire video on YouTube. Type "Needham Ag Urethane Narrow Gauge Wheels" or scan the QR Code below left.

3" Urethane Gauge Wheel Tires

$75.00 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 four 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).

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.

YouTube

Watch us durability testing the spoked narrow gauge wheel assemblies 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.

$195.00 per row + shipping. *16 lb ea.*

Niaux 200 Extended Wear 18" Disc Blades For All John Deere Drills and Air-Seeders.

Warranty
3 years from purchase date against breakage (excluding abuse).

Key Benefits

10 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 at least 10% greater than the closest competitors on the market. The result is a disc blade called Niaux 200, which provides improved life, coupled to excellent cutting edge retention. A sharp disc 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 generations of manufacturing, using high quality materials, automated processes and sound quality control.

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

Long term field research shows the Niaux 200 disc blades retain around 20-22% more diameter (on average), compared to John Deere OEM disc blades. Independent research is shown on the following page.

YouTube

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.

"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.

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

$50.00 each + shipping *13.0 lb ea.*

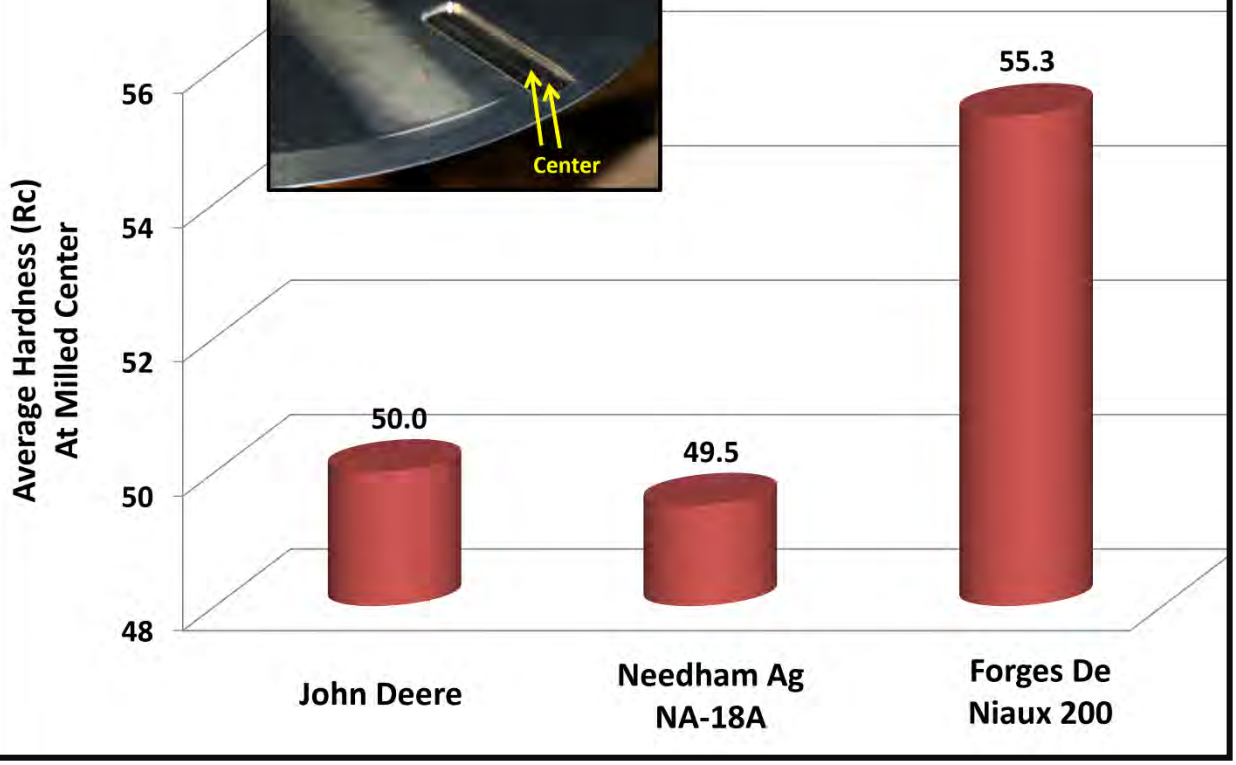
We tested the Forges De Niaux 200 disc blades across rocks with full down-pressure at 8 mph to test their durability. Some of our testing footage is contained in our YouTube video called "**Needham Ag Testing The Forges De Niaux 200 Disc Blades**"

You Can also scan the QR Code below.

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

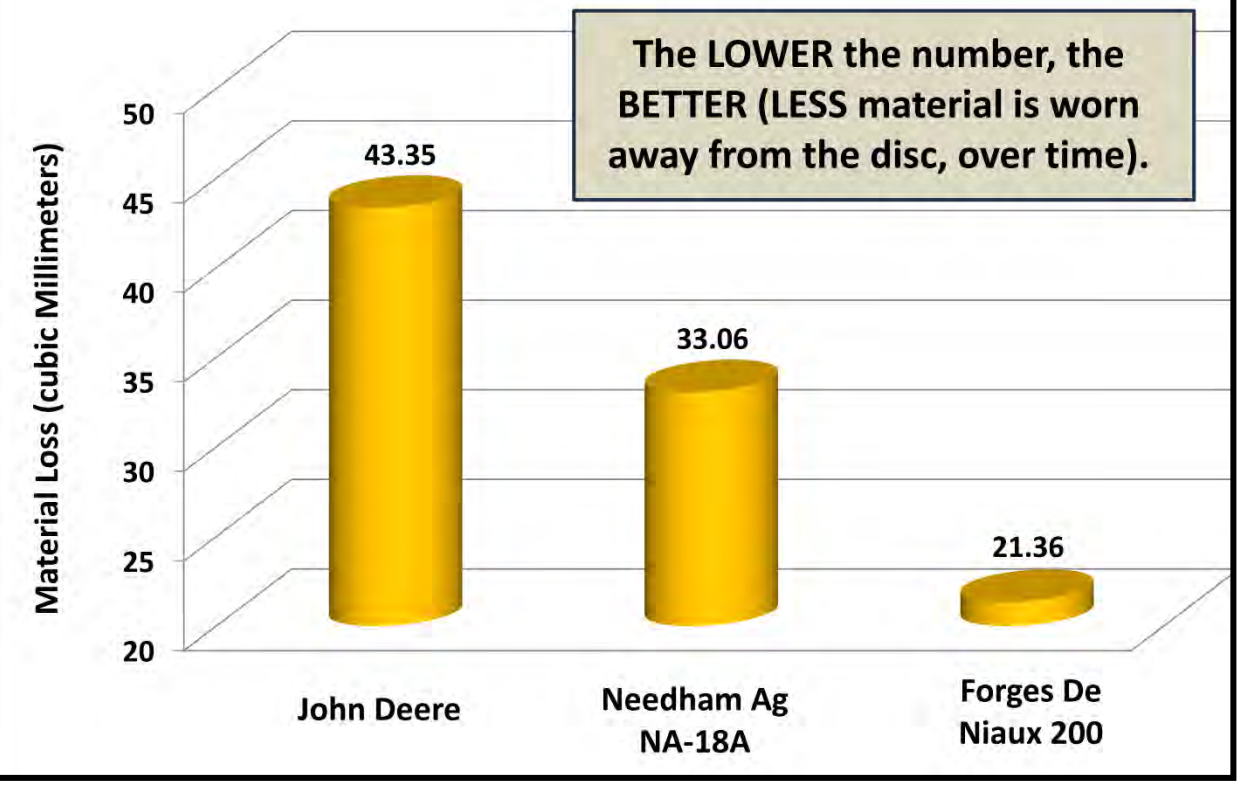
Hardness Values: Three Brands of 18" Flat Disc Blades Compared

Source: BUD Labs (New York). Tested June 2023. Scale: Rockwell C Scale, using Wilson 5JR BB 1537 Hardness Tester.



Abrasion Test: Three Brands of 18" Flat Disc Blades Compared

Source: BUD Labs (New York). Tested June 2023. Scale: Volume loss (cubic millimeters), using ASTM-G174 Abrasion Test.



Needham Ag NA-18A 18 1/4" Disc Blades For All John Deere Drills and Air-Seeders.

Warranty.

Lifetime warranty against manufacturing defects.

Key Benefits

Needham Ag NA-18A 18 1/4" discs offer similar hardness as the John Deere OEM disc blades, but higher quality materials provide around 24% greater wear resistance (see bar charts on the previous page). This translates into around a 5-10% greater life within the field (compared to the factory John Deere disc blades), plus the extra 1/4" diameter increases the life slightly, relative to the John Deere OEM discs being 18" in diameter.

The NA-18A discs will cut heavy, tough residue as well as any other disc, especially when the drill/air-seeder is properly ballasted and has the down pressure correctly adjusted.

The NA-18A discs provide better life and an equal (or better cutting edge) to the John Deere OEM discs, but at a significantly lower price point.

5mm (0.197") Thick, 18 1/4" Disc Blade With Sharp Cutting Edge

Needham Ag NA-18A Disc Blades for All John Deere 50, 60, 90 and ProSeries drills and air-seeders.

$35.00 each + shipping *13.0 lb ea.*

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

Effectively Cutting Soil & Residue With The Best Disc Blades.

The highest yield potential available for any crop occurs the day you plant it, so being able to cut through soil and residue to place the seed to a consistent depth (preferably into moisture) is critical for high yields.

We regularly talk to growers about disc blades on their John Deere drills and air-seeders, and its surprisingly common for them to tell us their discs measure 16″ or 16.5″ in diameter. Anything less than 17″ (or around 1 inch less than the original disc diameter) causes the bevel to disappear rapidly and the disc to become dull, as illustrated in image 1 (right). Once discs lose their sharp cutting edges, their residue and soil cutting performance (especially in no-till conditions) deteriorates very fast. In addition to poor soil and residue cutting, once the disc diameter drops below 17″, the wear on the bottom of the seed boot increases very fast, and it is much cheaper (and easier) replacing discs, compared to replacing seed boots.

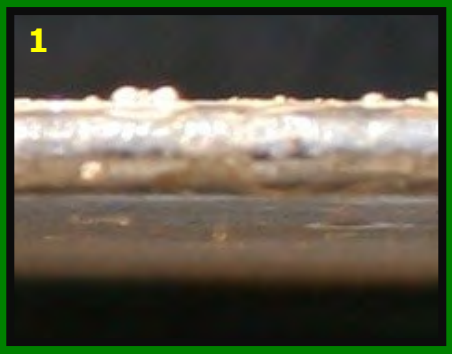


Image 2 (above right) illustrates a hair-pinning problem when planting into heavy wheat residue. In this example, the disc wasn't able to cut through the residue, to place seeds consistently into the soil. Obviously leaving as much residue standing, then spreading it as uniformly as possible during harvest are both critical, but the next important step is making sure you have a sharp disc, as shown in image 3 (above). Then make sure you have adequate down-pressure and frame ballast to ensure the discs penetrate the soil consistently, to help ensure all seeds are placed to the correct depth.

Image 4 (above right) shows a Wilson hardness tester measuring the hardness of a disc. If you plan to seed a lot of acres each year (especially in no-till conditions) then a disc blade with greater hardness allows the disc to retain its diameter and sharp cutting edge much longer, as illustrated by image 5 (right). Forges De Niaux offer these higher standards (compared to all the other discs we have tested). For example, the Forges De Niaux discs last around 20-22% longer than the John Deere factory disc blades and Ingersoll disc blades. If you are seeding on a smaller scale and looking for good quality disc blades at a lower price, then you will find the Needham NA-18A disc blades a good option, as they last around 5-10% longer than OEM.

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

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

$40.00 + 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, which is shown on the following page).

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.

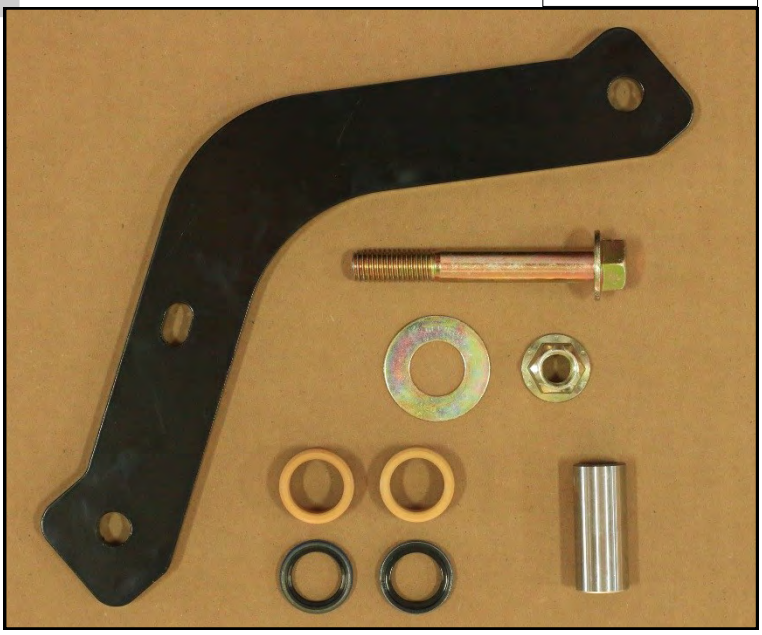
Needham Ag Firming Wheel Arm For John Deere 60, 90 Series and ProSeries.

$30.00 + Shipping *4.00 lb ea.*

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

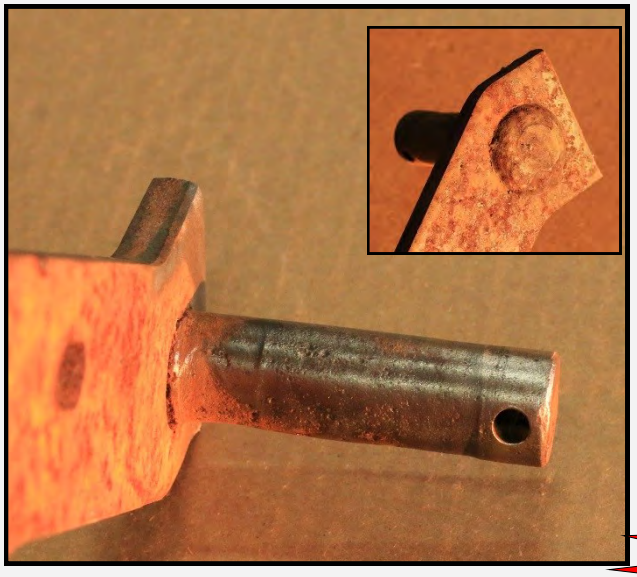
Needham Ag 50 Series Firming Wheel Arm Upgrade For John Deere 750 Drills (after serial number 3834) and all 1850 Air-Seeders.

See our John Deere 50 Series Firming Wheel Arm video on YouTube. Type "Needham Ag John Deere 50 Series Firming Wheel Arm" or scan the QR code to the right.



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

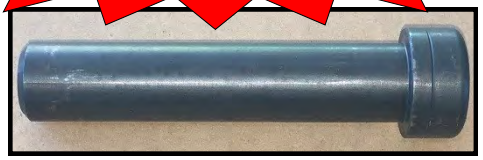
We have a 50 series arm upgrade kit, which includes a replaceable firming wheel arm pin and replaceable bushing (just like on the 60/90 series firming wheel arms) and this kit comes with all the hardware to install the kit on one row.

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

$60.00 per row + Shipping

One install tool is provided FREE* with all orders of 24 rows (or more) of our firming wheel arm upgrade kits. See page 32 for more information on this tool.

*** Kits must be purchased directly from Needham Ag**



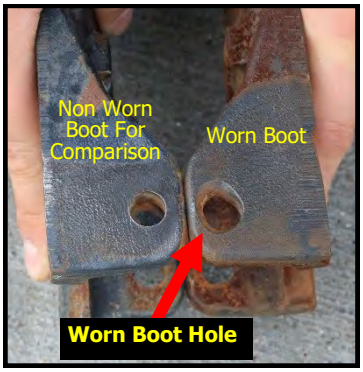
50 Series Firming Wheel Arm Upgrade - Individual Parts Price Breakout

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

50 Series Firming Wheel Arm	$32.00 each
Firming Wheel Arm Pin (1" OD x 2.80"	$18.00 each
1" ID Poly Bushing (replaces JD part number N219547)	$7.50 each
1" ID Triple Lip Seal (replaces JD part number A85727)	$4.00 each
5/8" Grade 8 Flange Lock Nut (replaces JD part number A169024)	$2.00 each
5/8" x 4 1/4" Grade 8, Flange Bolt, With Oversized Flange Head	$8.50 each
1" ID Grade 8 Washer (0.10" Wide, Replaces JD Part Number A92849)	$2.00 each

Prices listed above do not include shipping.

Needham Ag Seed Boot Bushings For John Deere 50, 60 and 90 Series

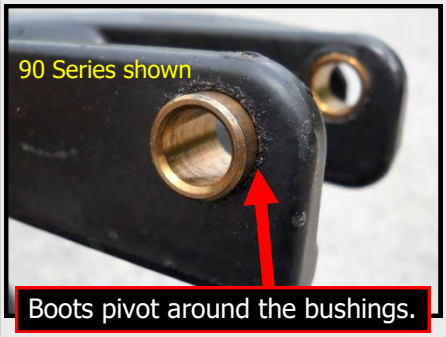


The Problem

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).

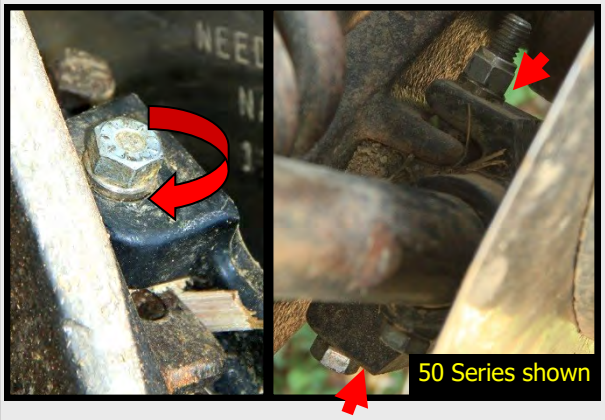
Excess up/down seed boot play is often the primary cause of seeds on top of the ground and poor stands. There are three sources of play and these include: 1) Worn holes in the seed boot. 2) Worn holes in the arm and 3) worn bolts. Our bushing kit addresses all three of these wear points, unlike competitive kits on the market that just fix the worn holes within the opener arm.

YouTube For more information on how the Needham Ag Bushings work, search for "Needham Ag Installing Seed Boot Bushings" at youtube.com or scan the QR Code (right).



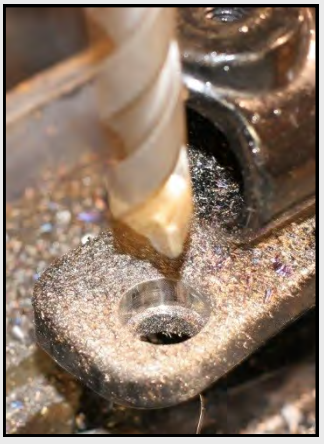
Made In The USA

Seed Boot Bushings are pulled tight against the arm with our grade 9 bolt, so the boot pivots now around the bushings.



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 said "he is not used to these kind of stands behind an air-seeder" .

Danny Wipf. Lake Andes, South Dakota.

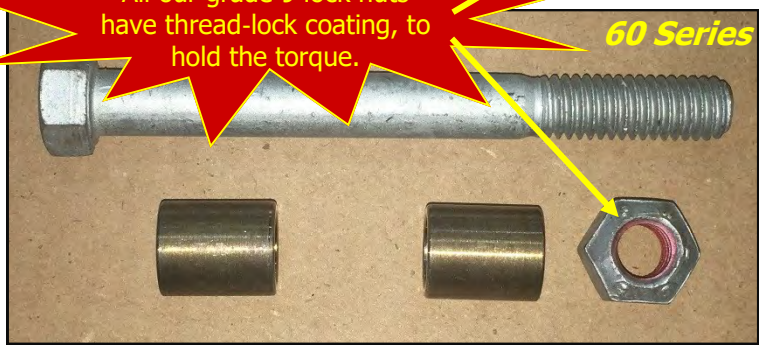
For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com

Seed Boot Bushing Kits for all John Deere 50 series drills. Comes with 2 x hardened stainless steel bushings, a 3/8" grade 9 bolt and a 3/8" grade 9 lock nut.

$17.00 per row + shipping

0.3 lb ea.

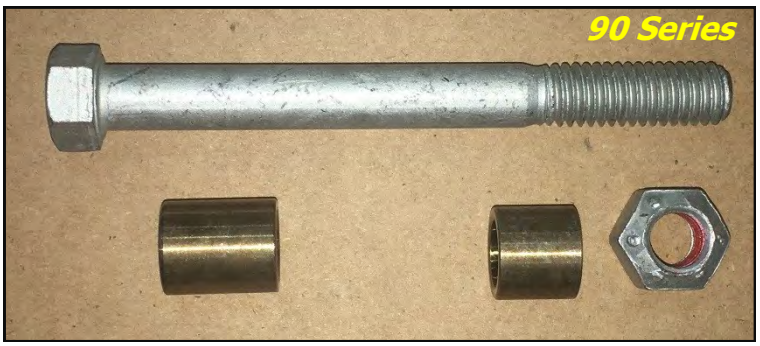
All our grade 9 lock nuts have thread-lock coating, to hold the torque.



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

$17.00 per row + shipping

0.3 lb ea.



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

$17.00 per row + shipping

0.3 lb ea.

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 *0.4 lb ea.*

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 *0.4 lb ea.*

Extended Wear Needham Ag Seed Boots For John Deere 60 and 90 Series, Plus ProSeries

Our seed boots clamp to the existing opener arms using stainless steel bushings, which eliminate the up/down play.
No drilling required !

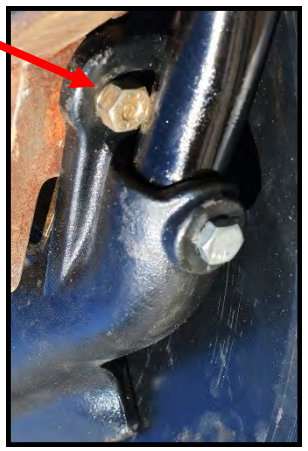
The Problem

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.

NA90L - replaces John Deere part number N284045 or N284025
NA90R - replaces John Deere part number N284044 or N284024

The Solution

Following at least 5 years of testing and development, our extended wear 90 series seed boots now incorporate our 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 !



The Needham Ag extended wear seed boots are specially modified to accommodate seed boot bushings (illustrated above).

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.

For more information on our seed boots, search YouTube for "Needham Ag Seed Boots" or scan the QR Code (below).

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

$99.00 per row + shipping *8.0 lb ea.*

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

$17.00 each + shipping *0.3 lb ea.*

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

All 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.

Extended Wear Needham Ag Seed Boots For John Deere 50 Series

Our seed boots clamp to the existing opener arms using our stainless steel bushings, which eliminate the up/down play.
No drilling required !

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.

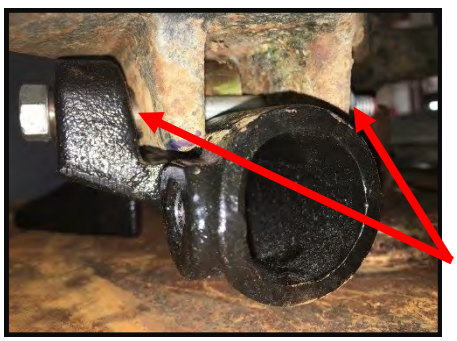
The Solution

Following at least 5 years of testing and development, our extended wear 50 series seed boots incorporate patented seed boot bushings (detailed on pages 25-27). 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.

NA 50 R - Replaces John Deere part number AN280316 (extended wear R with carbide tiles) or N280446 (standard wear R).

NA 50 L - Replaces John Deere part number AN280317 (extended wear L with carbide tiles) or N280447 (standard wear L).

The Needham Ag extended wear seed boots are specially modified to accommodate the stainless steel seed boot bushings (illustrated below). These bushings eliminate most of the up/down play associated with older 50 series drills and air-seeders and no drilling is required with our kit.



Seed Boot Bushings Pull Tight Against The Arm And The Boot Pivots On The Bushings.

For more information on our seed boots, search YouTube for "Needham Ag Seed Boots" or scan the QR Code (below).

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

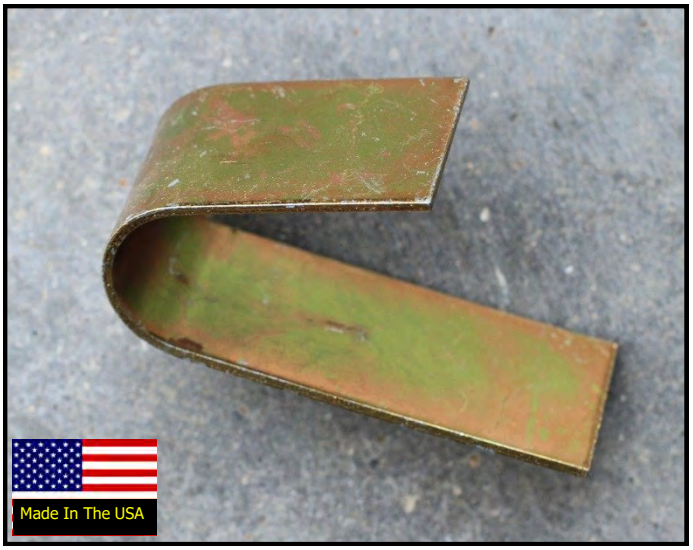
$80.00 per row + shipping *6.5 lb ea.*

Seed Boot Bushings, plus 3/8" Grade 9 nuts/bolts are required with our Seed Boots (see page 26).

$17.00 each + shipping *0.3 lb ea.*

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.

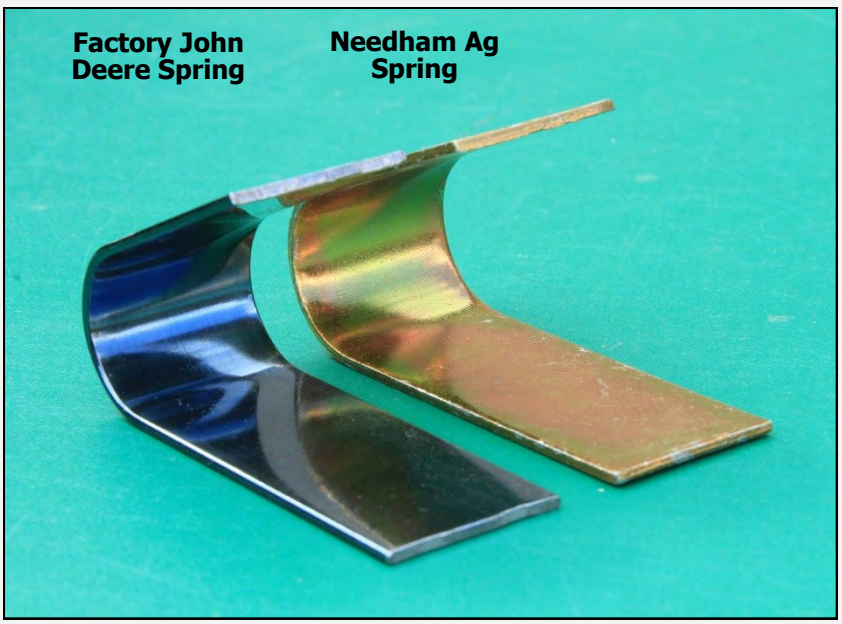


The Problem.

- 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.

- Replaces John Deere part number N284055.
- 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 quickly 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 *0.1 lb ea.*

Needham Ag Closing And Firming Wheel Arm Bushing Kits For John Deere Drills and Air-Seeders.

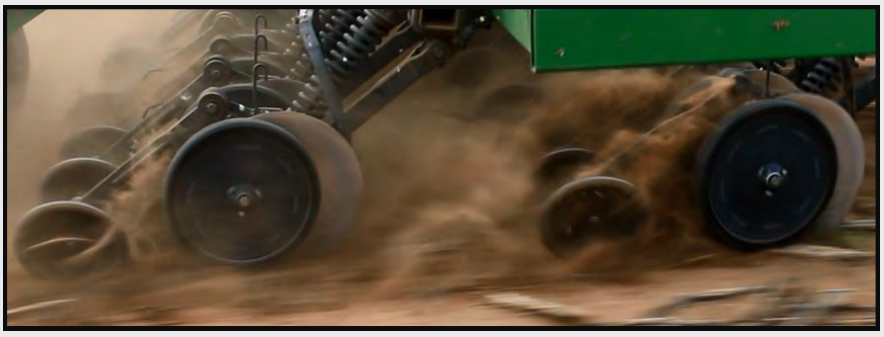
See our Closing and Firming Wheel Arm bushing video on YouTube. Type "Needham Ag Closing And Firming Wheel Arm Bushings" or scan the QR code to the right.

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 also precision ground for maximum smoothness and minimum friction.
- Our yellow poly bushings have been available commercially for 5+ seasons now, plus at least 2 years of field testing. These bushing kits have been purposefully installed 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 steel and powdered metal bushings and they don't rust in place.
- We supply 2 x seals per row to help keep dust and moisture out of the closing and firming wheel pivots.
- We supply a 1" ID grade 8 washer to help remove the side to side play created by the firming and closing wheel arms rubbing against the top housings, this is most important on higher use drills and air-seeders.
- We supply a new grade 8 - 5/8" smooth flange lock nut, as many existing lock nuts don't have sufficient torque to hold the assembly tight after the existing ones have been installed and removed.

The Problem.

Factory and aftermarket steel closing wheel arm and firming wheel arm pins and bushings are designed to be greased regularly to reduce wear. However in dry, dusty conditions (such as the examples illustrated below left), 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. Once dust mixes with the grease, these pivots often lock up.



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 version 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 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. John Deere now offers greaseless poly bushings in their ProSeries openers !

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 Hardened 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)
1 x 1.2" Wide, Black Spacer

Closing Wheel Arm Bushing Kit
$37.00 per row + Shipping
0.70 lb ea.

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 Hardened 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)
1 x 0.3" Wide, Black Spacer

Firming Wheel Arm Bushing Kit
$37.00 per row + Shipping
0.55 lb ea.

Closing and Firming Wheel Arm - Individual Parts Prices (not including shipping).

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

Hardened closing Wheel Arm Pin (1" OD x 3.37" - replaces JD part # N280648)	$16.00 each
Hardened firming Wheel Arm Pin (1" OD x 2.38" - replaces JD part # N284086)	$16.00 each
1" ID Poly Bushing (replaces JD part # N219547)	$7.50 each
1" ID Triple Lip Seal (replaces JD part # A85727)	$4.00 each
5/8" Grade 8 Flange Lock Nut (replaces JD part # A169024)	$2.00 each
1" ID Grade 8 Hardened Washer (0.13" or 0.06", replaces JD part # A92849/A110615).....	$2.00 each
Grade 8 bolt for closing or firming wheel arm (5/8" x 5" Bolt for CWA, or 4" for FWA).....	$3.00 each
1.2" Wide Black Spacer For Closing Wheel Arm Bushing Kit	$3.00 each
0.3" Wide Black Spacer For Firming Wheel Arm Bushing Kit	$2.00 each

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

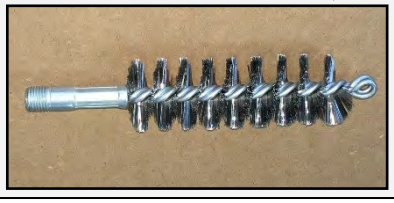
We offer this tool to help remove the old bushings, and install the new poly bushings, and seals. It comes standard with a tapered socket in the head of the install tool for use with a 1/2" tip within an air-hammer.

Hardened Closing and Firming Wheel Arm Bushing Kit Installation Tool
$85.00 + Shipping
1.35 lb ea.

One install tool is provided FREE* with all orders of 24 rows (or more) firming, or closing wheel arm bushing kits.
*** Kits must be purchased directly from Needham Ag.**

Stainless Steel Brush

This 1 1/2" diameter brush is designed to help clean out the firming & closing wheel housings, once any excess material is removed with the install tool (above). Fits a 1/2" drill chuck.



Stainless Steel 1.5" Brush
$20.00 + Shipping
0.25 lb ea.

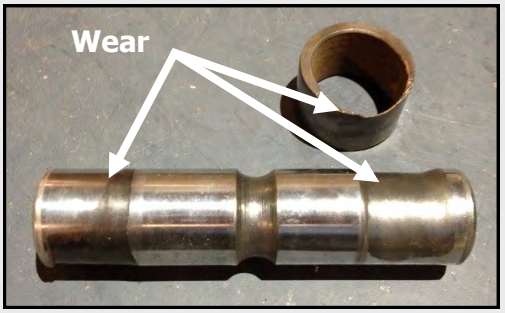
Needham Ag Extended Wear Main Opener Arm Pins and Outer Bushings For John Deere Drills and Air-Seeders.

See our Main Opener Arm Pin and Outer Bushings video on YouTube. Type "Needham Ag Main Opener Arm Pin and Bushings" or click the QR code to the right.

Key Benefits

- Available for John Deere 50, 60, 90 and ProSeries openers.
- Our main opener arm pins and bushings were field tested for over three years on drills and air-seeders which planted large number of acres per row before we released them in 2018. We have found these kits significantly exceed the life of 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 after market 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.

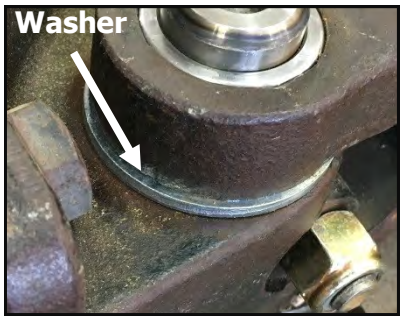


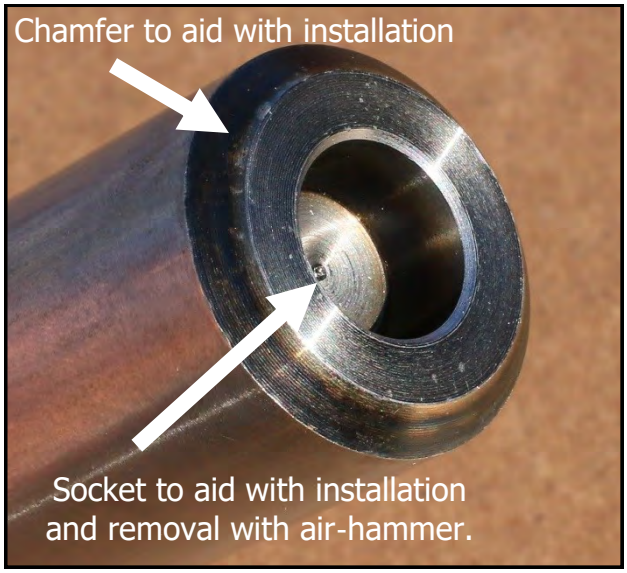
We suggest wiggling some of the openers side to side, paying particular attention to openers on the ends or within wheel tracks which generally wear the fastest. When measured at the rear of the disc blade, we suggest replacing the pins and bushings when the total side to side play reaches 1/2" (1/4"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

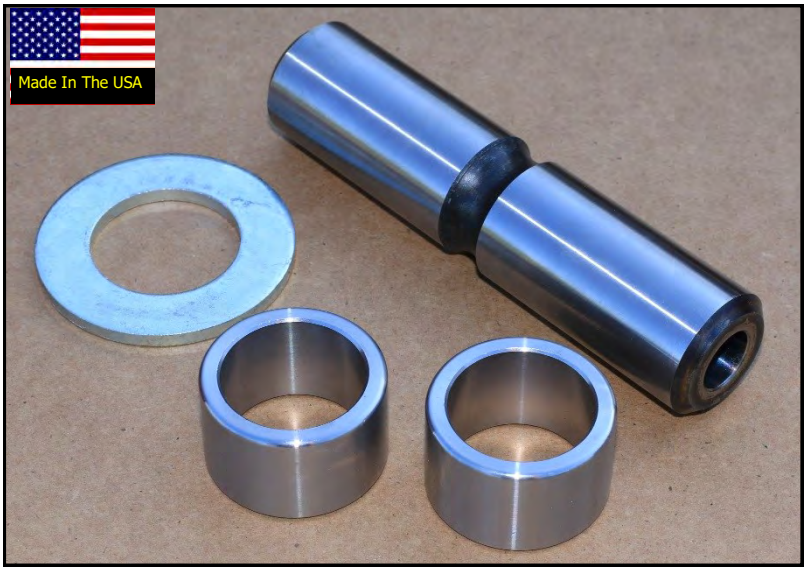
In most examples, the main opener arm pin and outer bushings will wear similar to what is illustrated in the image above right, so just turning the pins often doesn't fix the play in a satisfactory manner. These very worn OEM pins and bushings produced about 1" of total side to side play (1/2" in either 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.







Extended Wear Main Opener Arm Pivot Repair Kit For 50, 60, 90 and ProSeries.
(Includes everything needed for one row as shown in the image above right)

$54.00 per row + Shipping

2.45 lb ea

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 # N282536)	$38.00 each
Main Opener Arm Bushings (1.25" ID x 1.63" OD - replaces JD part #N283636).....	$9.00 each
Grade 8 Hardened Thrust Washer (1.3" ID x 2.5" OD x 0.16", replaces JD part # N216568).....	$6.00 each

Hardened Installation Tool

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

Hardened Main Opener Arm Bushing Removal and Installation Tool.

$99.00 + Shipping

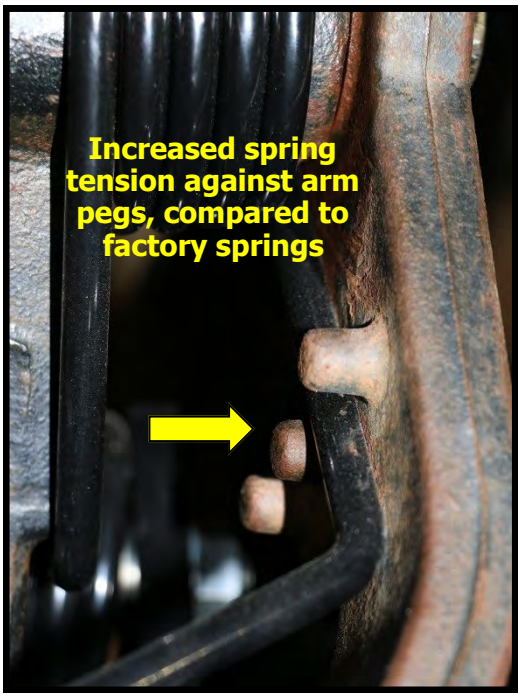
2.5 lb ea.

One install tool is provided FREE* with all orders of 24 rows (or more) main opener arm pivot repair kits.

*** Kits must be purchased directly from Needham Ag**

Needham Ag Closing and Firming Wheel Arm Springs For John Deere Drills and Air-Seeders.

Made In The USA



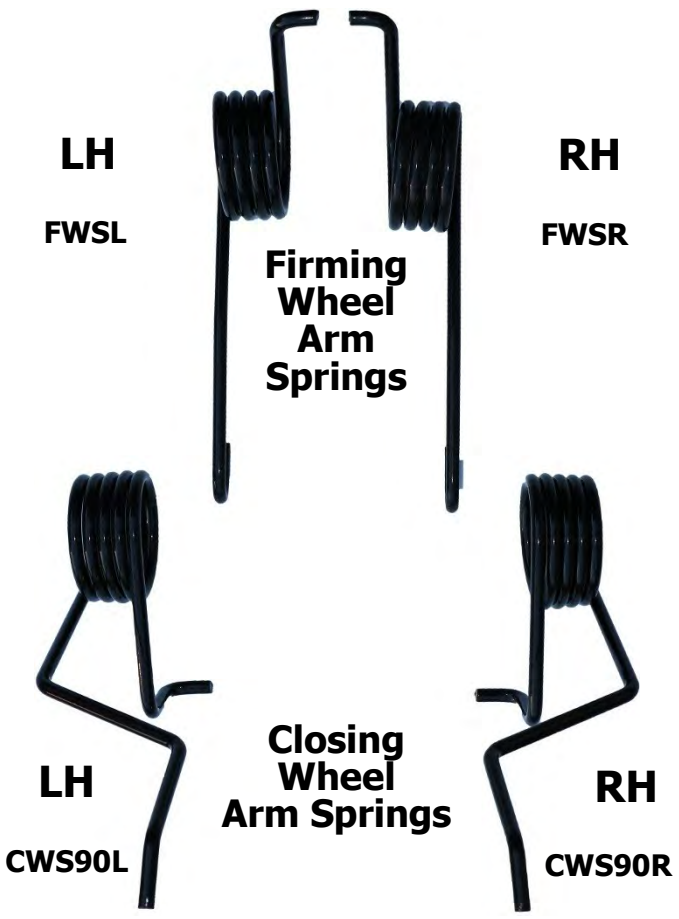
Key Benefits

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



50 Series

On the 50 series, the same springs are used on the firming and closing wheel arms.

LH **FWSL** **RH** **FWSR**

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 **$14.00 each plus shipping**

FW 1.3 CW 1.6 lb ea.

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).

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

$50.00 each + shipping *1.1 lb ea.*

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

This kit contains 2 x disc hub bearings (cup and race). These hub repair kits replace John Deere part number AA44267. These are either PEER or NTN branded bearings (depending on availability).

The kit also contains two 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.

$35.00 each + shipping *0.75 lb ea.*

Hub Seals For John Deere 50, 60, 90 and ProSeries Openers

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

- 1 Required per row on 60 & 90 series
- Replaces John Deere Part # AN281241
- 3.67" OD
- 2.83" ID
- 0.31" Wide
- Be sure to change the large triple-lip seals and large wear rings at the same time (see next page) when changing disc hub bearings, as most times the wear rings are pitted up or damaged.

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

$8.00 each + shipping

0.10 lb ea

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

- 2 Required per row on 50, 60, 90 and ProSeries
- Replaces John Deere Part # B13294
- 2.36" OD
- 1.50" ID
- 0.27" Wide
- Be sure to change the small triple-lip seals and small wear rings at the same time (see next page) when changing disc hub bearings, as most times the wear rings are pitted up or damaged.

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

$5.00 each + shipping

0.05 lb ea

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, 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

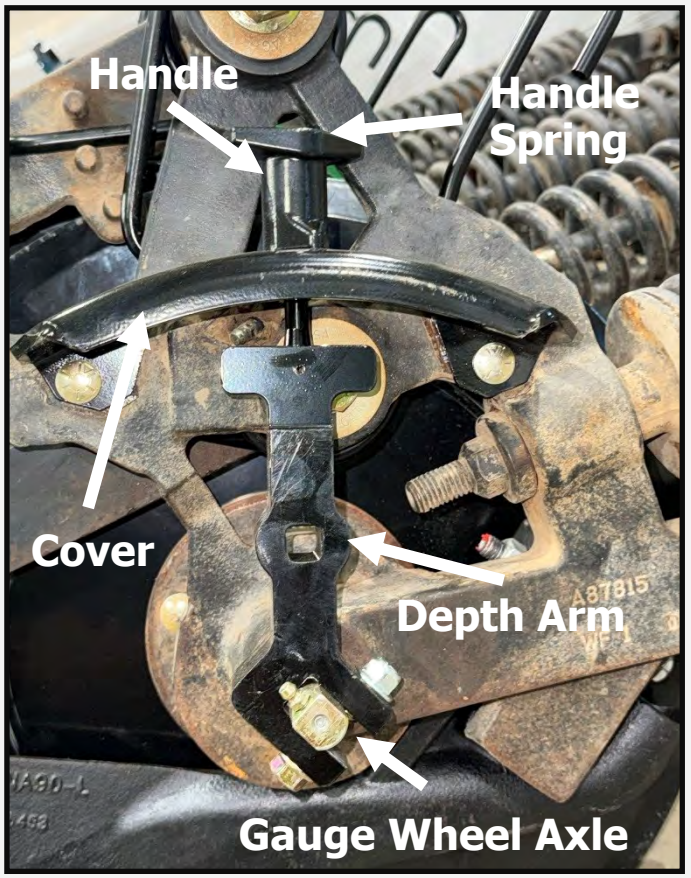
$3.00 each + shipping *0.05 lb ea*

Needham Ag Depth Adjustment Parts For John Deere 60, 90 and ProSeries Drills and Air-Seeders.

For more information on the Needham Ag depth adjustment parts, go to YouTube.com and search for "Needham Ag Depth Adjust Arm" or scan the QR Code right.

The Problem

We regularly hear from growers who plant large areas with John Deere drills or air-seeders each year, and they tell us their gauge wheel axles have seized up and can't be adjusted, or that their depth arm, cover and handle have all worn badly.



While wear in these areas will obviously occur over time, especially on drills or air-seeders which don't have adequate ballast or down-pressure (growers need to be aware that the lack of down pressure on the gauge wheels often contributes to constant rattling of the depth adjust parts, which rapidly increases wear).

Once wear in the depth adjust parts begins, it quickly accelerates as the rattling becomes more aggressive. This wear in the depth adjust parts will cause variation in seeding depth and emergence problems, so be sure to spend plenty of time checking ground contact (margin) on the gauge wheels to be sure they are sufficiently pressed against the soil surface. This means stopping within different soils and residue conditions within the field with the openers pressurized down, and trying to spin the gauge wheels. Be sure to check those behind the tractor tires (or tow between cart tires) as these are usually lower and more likely to result in a lack of down pressure. Firm pressure should be applied to turn the gauge wheels against the soil, if the gauge wheels turn easily, then more down pressure and/or ballast is required.

The Solutions

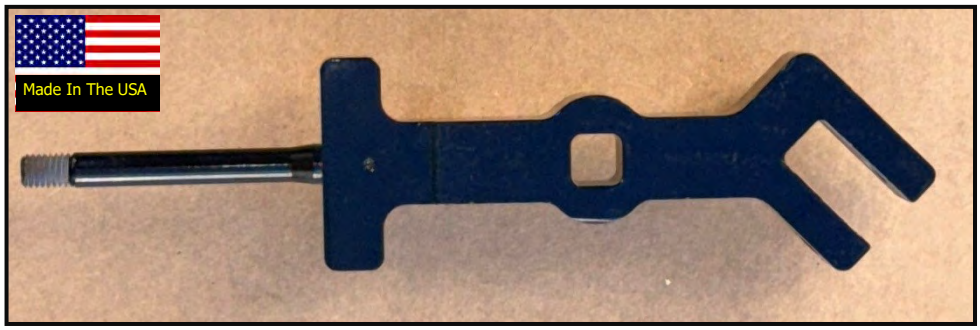
Needham Ag Extended Wear Depth Adjust Cover

- **Interchanges with the John Deere handle and depth adjust arm.**
- Same hole layout and number of adjustment slots as the John Deere OEM cover.
- 25% thicker material than OEM cover, plus it is manufactured from a heavier grade material, so the combination leads to a 50% longer life compared to OEM covers.
- Replaces John Deere part number N283120, which fits all 60, 90 and ProSeries John Deere openers.

Needham Ag Extended Wear Depth Adjust Cover For 60/90 and ProSeries

$20.00 + Shipping *1.0 lb ea.*

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



Our steel depth arms won't wear like cast OEM depth arms!

Needham Ag Extended Wear Depth Arm

- **Interchanges with John Deere OEM gauge wheel axle, depth adjust cover and handle.**
- Our Depth Arm can be used on the RH and LH side, 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, In fact we have not seen any wear in the jaw (like the OEM arms) since we released them in 2018 (following extensive field testing).
- Our depth arms now feature a 1/2" square hole in the center of the arm to aid adjustments, using a 1/2" ratchet or breaker bar.

Needham Ag Extended Wear Depth Arm

$85.00 + Shipping

2.3 lb ea.

Grade 8 Flange Nut & Grade 8 Flange Bolt (For Depth Arm)

$2.00 per row + Shipping

0.1 lb ea.

Needham Ag Extended Wear Depth Adjust Handle

- **Interchanges with the John Deere cover and depth adjust arm.**
- Heavier duty design than OEM, for easier depth adjusting and longer life.
- Replaces John Deere part number NN282710, which fits all 60, 90 and ProSeries John Deere openers.

Needham Ag Extended Wear Depth Adjust Handle

$20.00 + Shipping

0.5 lb ea.

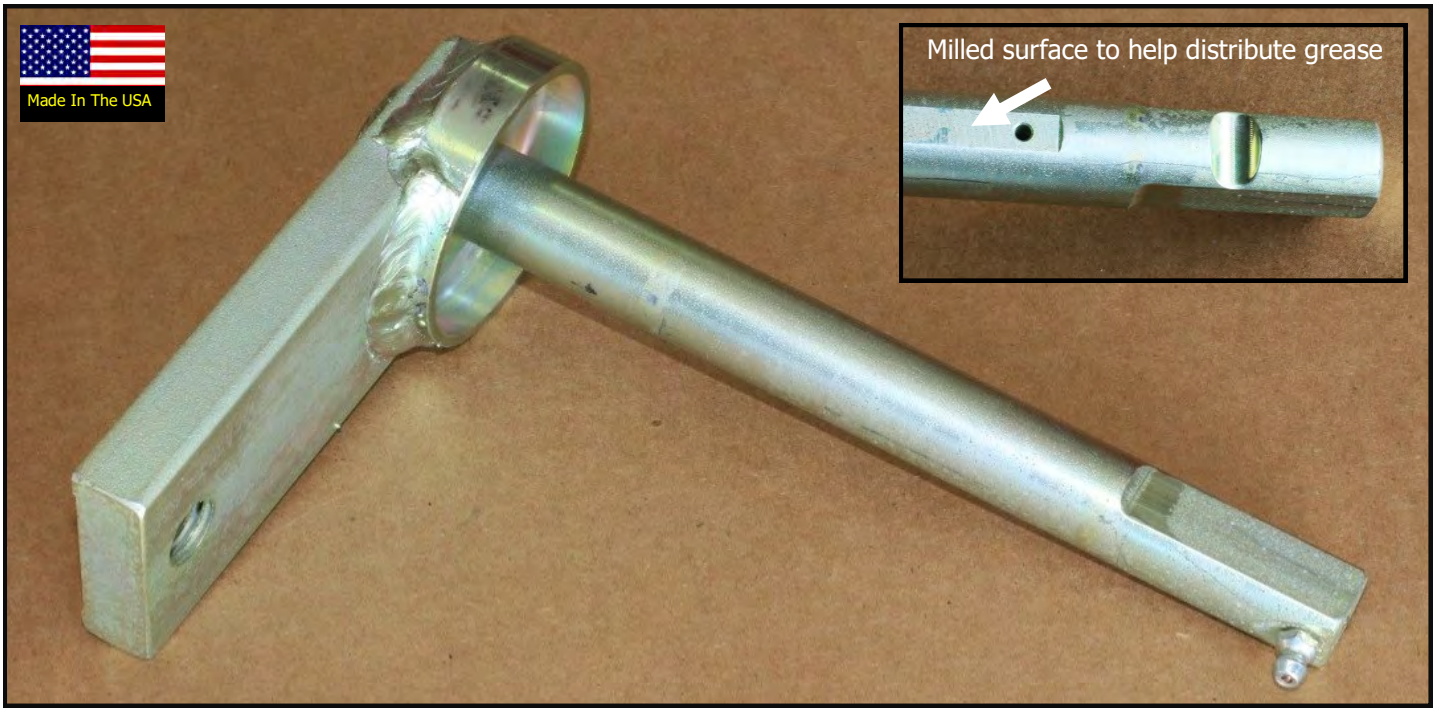
Needham Ag Stainless Steel Spring For Depth Adjust Handle.

- **Interchanges with the John Deere depth adjust handle and depth arm.**
- Replaces John Deere part number M82163, with a stainless steel spring for longer life.
- Fits 60, 60 and ProSeries.

Needham Ag Stainless Steel Spring For Depth Adjust Handle.

$2.00 + Shipping

0.1 lb ea.



Needham Ag Extended Wear Gauge Wheel Axle

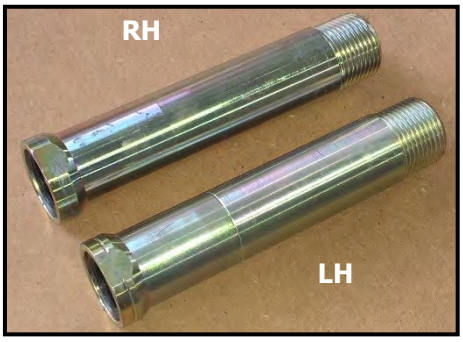
- **Interchanges with the John Deere depth arm.**
- Heavy duty assembly replaces John Deere part numbers N282117, AA92485 and AA73951, which fit all 60, 90 series John Deere openers prior to serial # 790100 (not ProSeries).
- Dust cap is welded all around, rather than spot welded around parts of the 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 (see inset image above) to help with distribution of grease.
- 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 Ag
Extended Wear Gauge
Wheel Axle

$60.00 + Shipping

3.0 lb ea.

Needham Ag Extended Wear Spindle With Triple Lip Seal



- **Interchanges with the John Deere Depth Adjust Axle and Depth Adjust Arm.**
- Heavy duty assembly replaces John Deere part numbers AN282118 (RH) and AN282119 (LH) on John Deere 60, 90 series openers (not ProSeries).
- Each spindle comes complete with high quality triple lip seal to help keep dust out of the assembly over time (much better than the OEM O-ring).
- Yellow zinc coated to minimize corrosion over time.

Needham Ag Extended Wear RH and LH
Spindle With Triple-Lip Seal

$40.00 + Shipping *0.9 lb ea.*

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

Needham Ag Extended Wear Spindle Nuts

- Our spindle nut is manufactured from high grade steel. They are coated with yellow zinc to help prevent corrosion. Remember RH spindle nuts install on RIGHT HAND openers and vice-versa. Be sure to add a new triple lip seal to the spindle nut (shown on the bottom of page 37).
- Our RH spindle nut replaces John Deere part number AN282118 and our LH spindle nut replaces John Deere part number AN282119
- These spindle nuts DO NOT fit ProSeries openers, but they do work on all 60 and 90 series openers fitted to box drills and air-seeders, up to serial number 780100.

Spindle nuts require a 1 11/16" socket to add and remove (as shown above). These nuts need to be torqued to around 180 ft-lb and we recommend adding loc-tite on the threads.

Needham Ag Extended Wear RH and LH Spindle Nuts

$13.00 Each + Shipping

Needham Ag Seed Cup

We now have replacement seed cups for the John Deere box drills as specified below.

- These cups replace John Deere part number AN280009 and are made from high quality plastic with added UV protection. Please note, these are the cup assembly only, **and DO NOT include the steel meter, steel insert, washers or roll pin.** Only the seed cup with bottom door and arm, exactly as shown in the picture to the right.
- These cups are perfect for replacing cracked or broken seed cups on John Deere box drills and they are cheaper than OEM list prices.

Our cups fit these box drills. Including 750, 1560, 1590, 1520, 1530, 450, 455, and BD1108.

NOTE: THEY DO NOT FIT John Deere 8200, 8300, 9300 or 9400 (these drills use a different seed cup).

Needham Ag Seed Cup
NA 280009

$45.00 Each + Shipping

1 lb ea.

Needham Ag Stainless Steel Seed Tubes For John Deere 750* Box Drill.

The Problem

OEM steel seed tubes rust, especially when older box drills are left outside in the elements.

The Solution

We now offer stainless steel seed tubes for 50, 90 and ProSeries drills (in addition to 60 series drills when the boots are upgraded to our Needham Ag 90 series seed boots).

John Deere Drill Model Number	Drill Width (Feet)	Spacing (inches)	NA219133 Front Rank Replaces JD Part # N219133	NA218632 Rear Center Replaces JD Part # N218632	NA218633 Rear Rank (not center) Replaces JD Part # N218633	Total
750*	10	7.5	8	1	7	16
750*		10	6	1	5	12
750*	15	7.5	12	1	11	24
750*		10	9	1	8	18
750*	20	7.5	16	2	14	32
750*		10	12	2	10	24

* These seed tubes may not fit the very early 750's prior to serial number 000250, unless the boots have been upgraded to the newer, currently available ones.

John Deere 750 Stainless Steel Seed Tubes

NA218632	Rear Center Only	**$27.00**	*1.0 lb ea.*
NA218633	All Rear Rank (Apart From Rear Center)	**$27.00**	*1.0 lb ea.*
NA219133	All Front Rank	**$27.00**	*1.0 lb ea.*

All Prices Are Plus Shipping

Needham Ag Stainless Steel Seed Tubes For John Deere 1590 Box Drills (Plus 1560 if boots are upgraded to 90 series).

John Deere Drill Model Number	Drill Width (Feet)	Spacing (inches)	NA283738 RH Front Replaces JD	NA283739 LH Front Replaces JD Part # N283739	NA283740 Rear Rank Replaces JD Part # N283740	Total
1560* & 1590	10	7.5	4	4	8	16
1560* & 1590		10	3	3	6	12
1560* & 1590	15	7.5	6	6	12	24
1560* & 1590		10	4/5	4/5	9	18
1560* & 1590	20	7.5	8	8	16	32
1560* & 1590		10	6	6	12	24

John Deere 1560* and 1590 Stainless Steel Seed Tubes (*1560 only possible when the seed boots are upgraded to 90 series).

NA283738 Right Front **$27.00** *1.0 lb ea.*

NA283739 Left Front **$27.00** *1.0 lb ea.*

NA283740 All Rear Rank **$27.00** *1.0 lb ea.*

All Prices Are Plus Shipping

Grade 8 Seed Tube Mounting Bolts.

For All 50, 60, 90 and ProSeries Seed Boots

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 (common on OEM openers, especially when using fertilizer). 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 Bolts For 50, 60, 90 and ProSeries Seed Boots

$1.00 each + shipping. *0.05 lb ea.*

Needham Ag Stainless Steel Seed Tubes For 60, 90 and ProSeries Air-Seeders.

The Problem

OEM steel seed tubes rust, especially when the air-seeder is used with corrosive fertilizers like urea or potash. This corrosion is worst when air-seeders are stored outside for extended periods, as moisture tends to accelerate the corrosion of the steel tubes.

The OEM steel seed tubes often rust solid inside the seed boots, again its most common within air-seeders that apply fertilizer. When they seize inside the top of the seed boots, the only way to remove them is to heat the top of the boot, which often weakens them (as they are heat treated).

Many growers get aggravated trying to remove the 1" ID seed hose from the inside of the hose-barb of the John Deere seed tubes, especially in the field when an opener plugs with seed. Most times the only way to get the hose out of the steel tube is to heat it, or cut the hose off flush with the top, and cut the tube into pieces within the flared hose-barb, and both methods damage or shorten the hose, leading to replacement.

The Solution

After numerous requests, we are proud to offer stainless steel seed tubes for John Deere 1860, 1890, 1990 and 1895 air-seeders, in addition to the new N500 ProSeries introduced in 2018.

These new seed tubes are made in the USA from high quality stainless steel, which will eliminate the rust/corrosion issues associated with steel seed tubes, which will extend their life significantly. We also simplified the connection between the new stainless steel seed tube and the 1" ID seed hose which feeds it, by using a 5" piece of heavy duty 1 1/4" ID hose and two hose clamps (see image on previous page). So in the event of a seed boot plugging, it will be much faster and easier to remove the seed hose to clean them out. These seed tubes will not fit the John Deere 1850 (angles and lengths are different).

Model Number	Drill Width (Feet)	Spacing (inches)	NA72825 Straight Replaces JD Part # A72825	NA81406 RH Angled Replaces JD Part # A81406	NA81407 LH Angled Replaces JD Part # A81407	Total
1860* / 1890 / 1990	30	7.5	32	8	8	48
1860* / 1890 / 1990		10	23	7	6	36
1860* / 1890 / 1990	36	7.5	42	8	8	58
1860* / 1890 / 1990		10	31	6	7	44
1860* / 1890 / 1990	40	7.5	49	7	8	64
1860* / 1890 / 1990		10	36	6	6	48
1860* / 1890 / 1990	42.5	7.5	54	6	8	68
1860* / 1890 / 1990		10	37	7	6	50

* Assumes the 60 series seed boots are upgraded to the 90 series.

Made In The USA

NA72825 Straight Stainless Steel Seed Tube **$32.00** *1.5 lb ea.*

NA81406 RH Angled Stainless Steel Seed Tube **$36.00** *1.5 lb ea.*

NA81407 LH Angled Stainless Steel Seed Tube **$36.00** *1.5 lb ea.*

All Prices include the outer connection hose and two hose clamps.

All prices are the price each, plus shipping

Grade 8 Seed Tube Mounting Bolts.

For All 50, 60, 90 and ProSeries Seed Boots

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 (common on OEM openers, especially when using fertilizer). 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 Bolts For 50, 60, 90 and ProSeries Seed Boots

$1.00 each + shipping. *0.05 lb ea.*

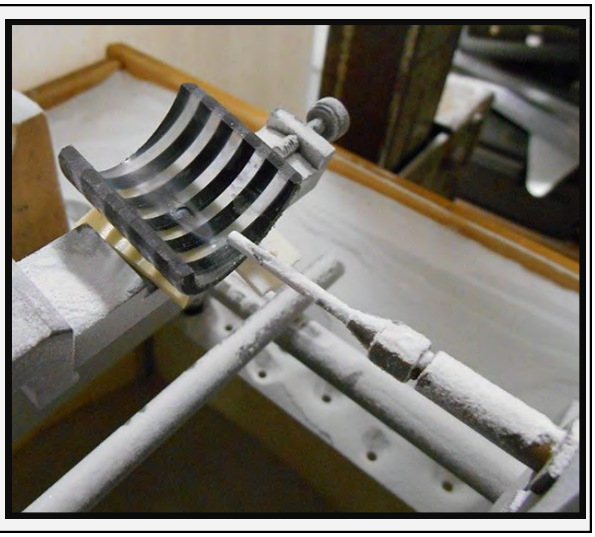
Needham Ag 1" ID and 2.5" ID Air-Seeder Hose

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 100' rolls.

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.



Designation: G 76 – 05

Standard Test Method for
Conducting Erosion Tests by Solid Particle Impingement
Using Gas Jets[1]

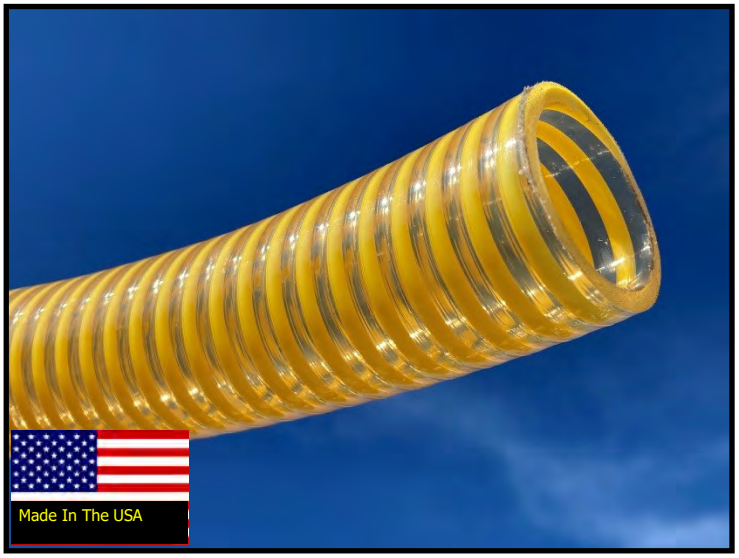
100 foot roll of 1" ID urethane blend hose	**$220.00**	*20 lb ea.*
100 foot roll of 2.5" ID urethane blend hose	**$550.00**	*80 lb ea.*

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

Needham Ag 1 1/4” ID Air-Seeder Hose.

Our 1 1/4" ID clear/yellow hose is made from high quality PVC/Urethane blend and comes in 100 foot rolls.

Fits air seeders and CCS planters, see description below.



Features

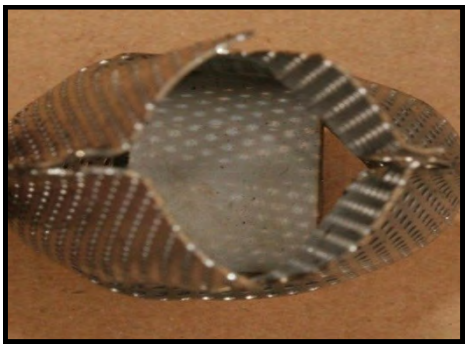
- Lasts at least 32% longer than John Deere PVC hose (see lab testing on previous page).
- Smooth ID with low coefficient of friction to help with smooth transfer of seed and/or fertilizer, which often helps reduce fan speeds.
- Greater UV protection than OEM hose, for long life even when left outside in the sun.
- Fits the following John Deere air-seeders and planters, plus others with 1 1/4” ID hose.

  - **1990CCS** only from the hopper to the Y diverter on a two rank model (1 1/4” hose, is needed from hopper to the Y diverter and 1” hose, shown on previous page) is required from Y diverter to seed boot. 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.

100 foot roll of 1 1/4” ID Urethane blend hose **$305.00**

33 lb ea.

Needham Ag 1 1/4" Seed Brakes With Baffle



Made from stainless steel for durability and corrosion resistance

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 rape, radish and vetch).
- Seed Brakes are designed for air-seeders, to help 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 (click the QR code below, or visit needhamag.com and select the seed brake section for additional statistical information).

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.


Seeds now fall to the ground by gravity (rather than at high speed - which frequently results in seeds being blown out of the seed slot).

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 with baffles 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.

$30.00 each + shipping.
(Two Heavy Duty Hose Clamps Supplied With Each Seed Brake)

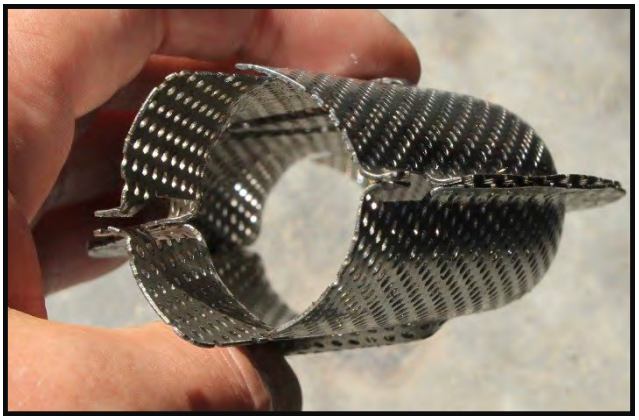
0.35 lb ea.

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

Needham Ag 1 1/4" Seed Brakes - Without Baffles (For High Rates Of Large Seeds)

Key Benefits:

- We have some customers that wish to plant large seed crops, 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 row 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 1 1/4" 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:

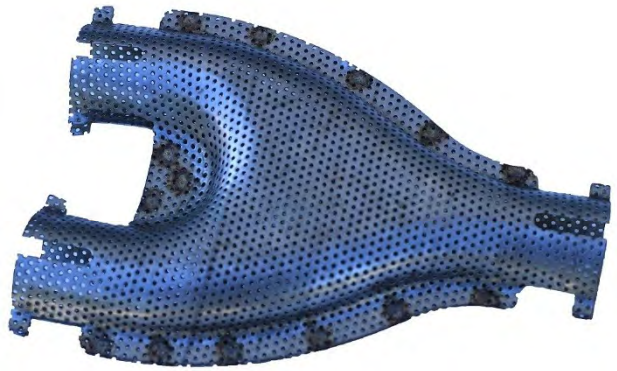
$28.00 each + shipping.

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

Needham Ag 1 1/4" Stainless Steel Y Brakes

Key Benefits.

- Needham Ag Y Brakes are designed to merge two 1 1/4" hoses into a single 1 1/4" hose. They also used within tramline kits, 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.

$55.00 each + shipping. *0.55 lb ea.*

Needham Ag 1" Seed Brakes With Baffle

1" Seed brakes with baffle
For air-seeders with 1" OD hoses.

$30.00 each + shipping.

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

Needham Ag 1 1/2 " Seed Brakes With Baffle

1 1/2" Seed brakes with baffle
For air-seeders and strip-till rigs with 1 1/2" OD hoses.

$45.00 each + shipping.

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

Needham Ag 2" Seed Brakes With Baffle

2" Seed brakes with baffle
For strip-till rigs with 2" OD hoses.

$50.00 each + shipping.

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

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.

Made In The USA

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 Ag Seed Tubes For Box Drills

For more information on how these seed tubes work better than others on the market. Search for "Needham Ag Seed Tubes" at youtube.com or scan the QR code below.

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.

Radish seeds hanging in a factory seed tube angled at only 30 degrees from vertical.

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.

Cross-section of a stretched seed tube, showing the folds.

Three sizes available to fit most drills, see the following page for dimensions.

I installed your seed tubes on my John Deere 750 and they really made a difference to my seed distribution. Duane Weaver, Southern Illinois.

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

Please compare your current seed tube length (shortest and longest) with the lengths below, to make sure they fit.

Tube Part Number: NA-S

Dimensions: **8-20" Operating Range, with 1 1/4" ID Coupler at both ends**

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).

Seed Tube NA-S $11.00, plus shipping *0.3 lb ea.*

Tube Part Number: NA-M

Dimensions: **12-24" Operating Range, with 1 1/4" ID Coupler at both ends**

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

Seed Tube NA-M $12.00, plus shipping *0.5 lb ea.*

Tube Part Number: NA-L

Dimensions: **15-26" Operating Range, with 1 1/4" ID Coupler at both ends**

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.

John Deere Double Disc Drills - Including 455

Note - **Will NOT work with the John Deere Single Disc Drill Fertilizer Box. These hoses currently don't fit Haybuster drills.**

Seed Tube NA-L $13.00, plus shipping *0.75 lb ea.*

Needham Ag Solid Black PVC Seed Tubes For Box Drills

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 the previous 2 pages) is recommended for the no-till John Deere box drills, such as 750, 1560 and 1590.

Needham Ag Solid Black PVC Seed Tube

$12.00 + Shipping

0.5 lb ea.

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.

Rubber Retainer

$3.00 + Shipping

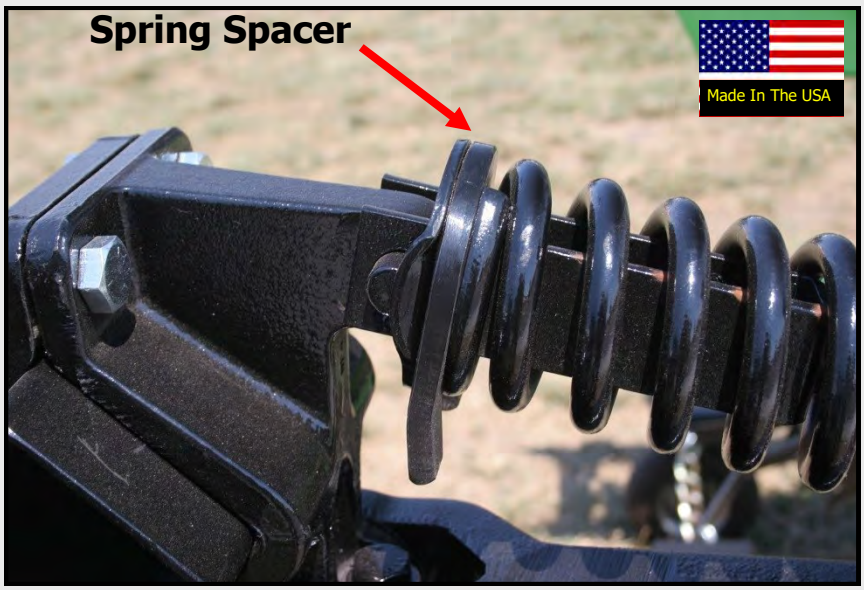
0.1 lb ea.

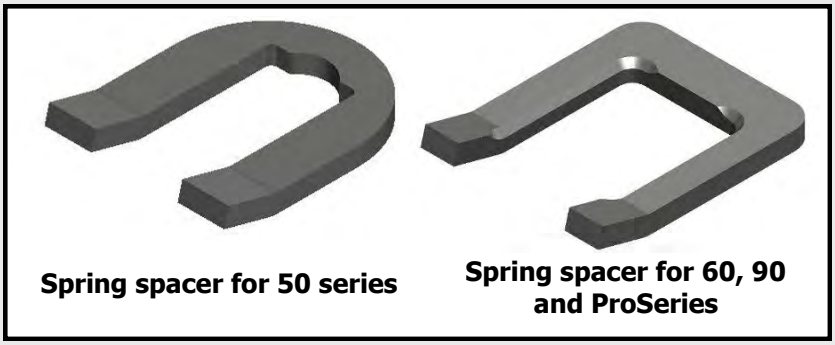
For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com

Needham Ag Spring Spacers For John Deere Drills And Air-Seeders

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.





Spring spacer for 50 series

Spring spacer for 60, 90 and ProSeries

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 Bonilla Seed Tabs For John Deere ProSeries Seed Boots.

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.

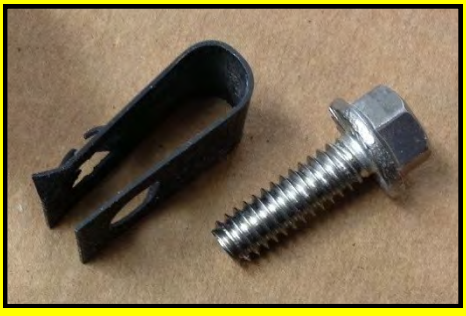
Bonilla Seed Tab For John Deere ProSeries Seed Boot

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

$5.00 each + shipping. *0.05 lb ea.*

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 $0.50
U Shaped Clip $1.50

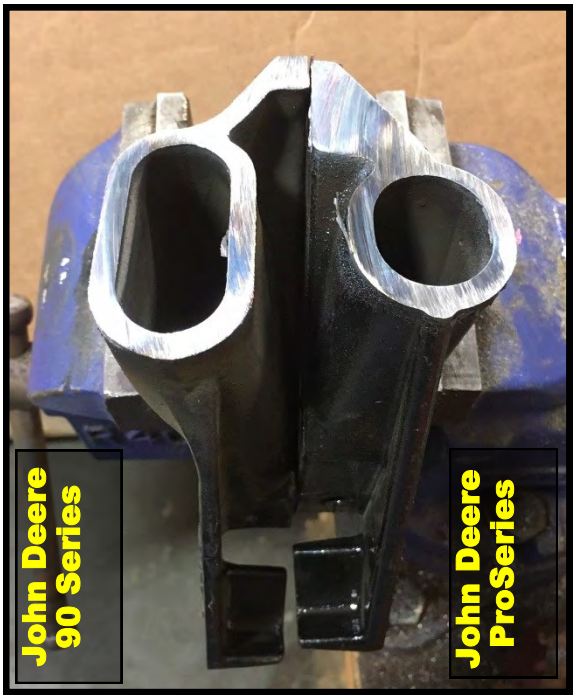


Narrow ProSeries Seed Boots Can Plug When Planting Large Seeds

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.

YouTube

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 27) 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.

Important Elements of The Case-IH & New Holland Single Disc Opener

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

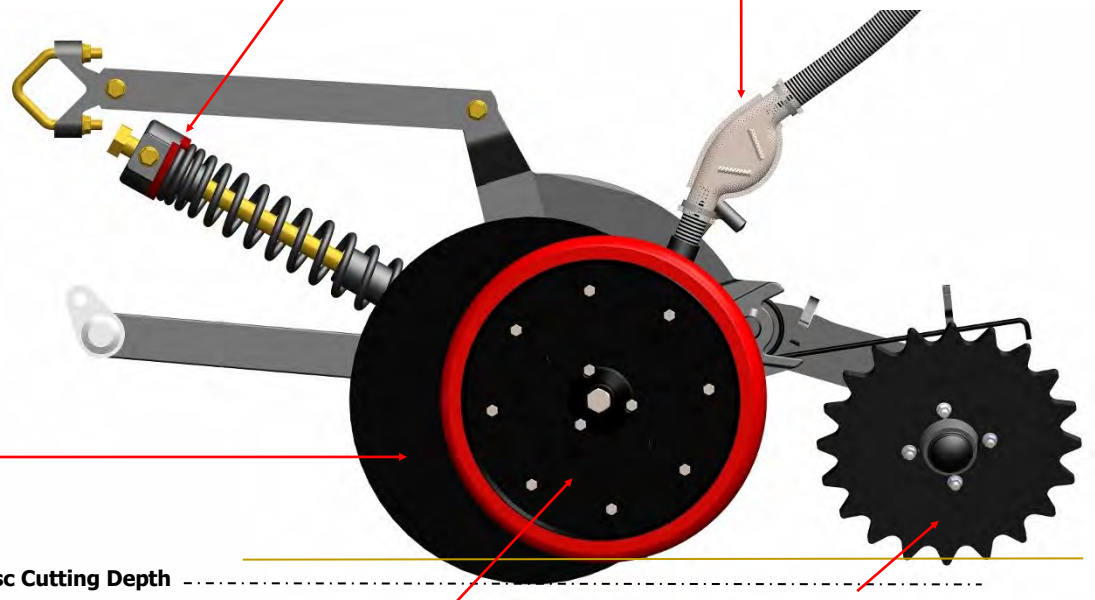
The SDX 30 and 40 (the Case-IH single disc seeder which was replaced by the Case-IH 500) had an excellent feature which allowed the down pressure to be adjusted on a row by row basis. This was particularly beneficial behind tractor and/or tow between air-cart wheel tracks, as these wheel tracks were 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 65.

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 page 64.



Disc Blade

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

For best results, especially in no-till, 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 63 for more information on our Forges De Niaux disc blades, which last significantly longer and remain sharper longer, compared to the OEM disc blades.

Spoked 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 the 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 page 18.

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. The Angle Changer discussed on the following page IS REQUIRED on the Case 500/500T and the New Hoilland 2080/2085. This is because the closing wheels run too straight on those openers, to be effective closing the slot in many soils types and soil moisture levels. The newer 550/550T and 2180/2185 openers have their own built in angle adjust, so our angle changers are not required. See pages 61-62.

Improving The For Case-IH 500/500T/550/550T & New Holland 2080/2085/2180/2185 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.

Factory 4 x 12 closing wheels on a Case-IH 500, with maximum closing wheel down-pressure. These wheels do a poor job closing, especially in moist no-till conditions.

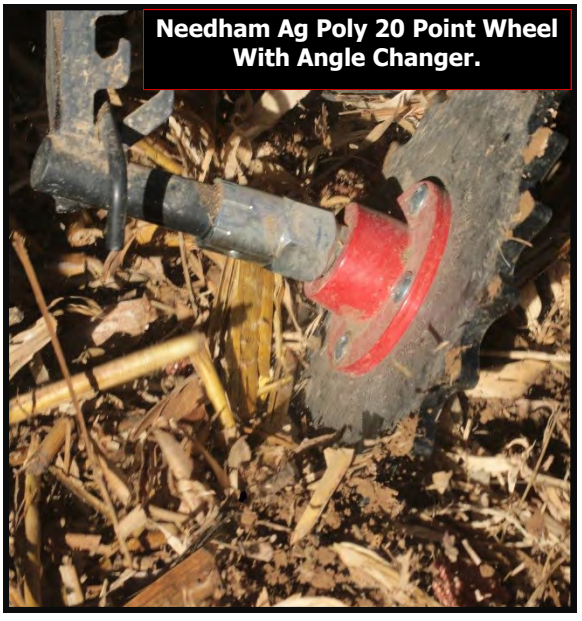
Part of the reason the factory 4 x 12 closing wheels often perform so poorly within these conditions is their excessive width, they simply need to be much narrower. The factory 500/500T/2080/2085 closing wheels also run too straight (compared to the direction of travel). So as a result of the factory 4 x 12 wheels being too wide and running too straight, they require excessive amounts of closing wheel arm down-pressure, to try and close the seed slot. This often over-packs moist soils, and often results in slower emergence and reduced numbers of plants per acre emerging. The maximum closing wheel arm down-pressure setting is around 80-90 pounds, this is excessive as it takes away from the discs cutting potential, especially in hard soils or heavy residue. 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.

Needham Ag 2 x 13 Closing Wheels with Angle-Changers, Compared to a factory 4 x 12 rubber closing wheel.

The 2 x 13 closing wheels are best suited for drier no-till soils, or medium moisture no-till conditions. If you plan on seeding into moist soils more of the time, we recommend the poly 20 Point wheels (illustrated right).

Lastly, new Case-IH 550/550T and New Holland 2180/2185 air-seeders can be ordered without closing wheels or gauge wheels, this lets you choose the best closing wheels for your conditions.

Needham Ag Poly 20 Point Wheel With Angle Changer.

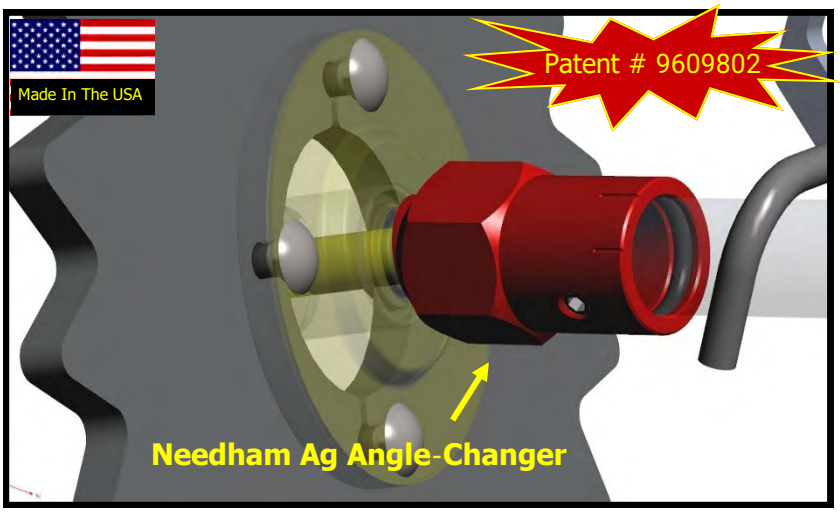


Needham Ag Closing Systems For Case-IH 500/500T/550/550T & New Holland 2080/2085/2180/2185

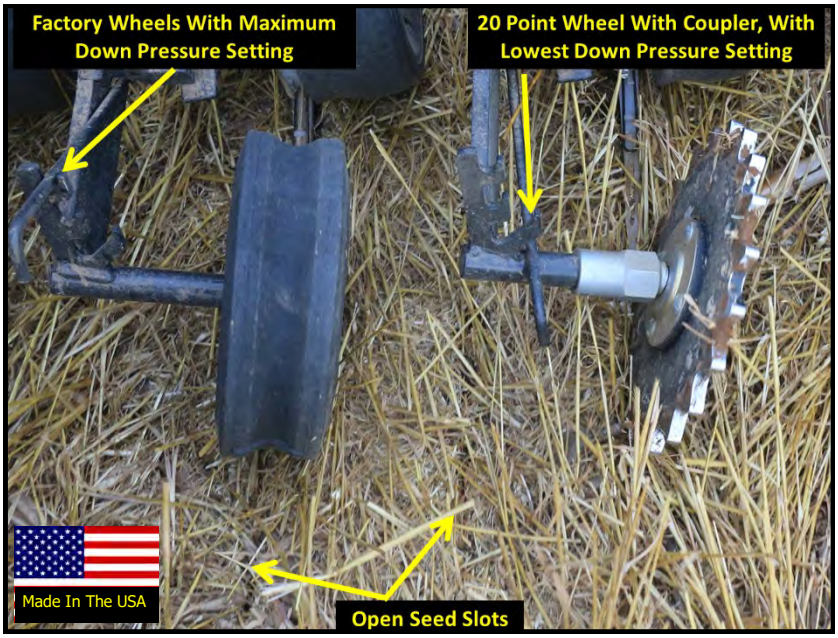
For more information on our Case-IH 500/550 and New Holland 2080/2085 & 2180/2185 modifications. Search for "Needham Ag Closing System For Case-IH" at youtube.com or scan the QR code below.

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.

Its 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).

Angle Changer (One per row required on Case 500/500T or NH 2080/2085), with the 2 x 13 Wheel & Poly 20 Point Crumbler Wheel)

$80.00 each + shipping *1.4 lb ea.*

Needham Ag 2 x 13 Wheel

$90.00 each + shipping *8.8lb ea.*

Poly 20 Point Crumbler Wheel With Hub

$125.00 each + shipping *7 lb ea.*

Lighter Duty Spring (right and left available)

$15.00 each + shipping *0.8 lb ea.*

18" Forges De Niaux Disc Blades For Case-IH 500/500T & 550/550T & New Holland 2080/2085/2180/2185

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 & 550/550T and the New Holland 2080/2085 & 2180/2185 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 19-22 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.

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.

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 & 550/550T or New Holland 2080/2085/2180/2185 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.

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"**

YouTube

18" Forges De Niaux Disc blades for Case-IH 500/500T & 550/550T and New Holland 2080/2085/2180/2185

$50.00 each + shipping *13 lb ea.*

Needham Ag Seed Brakes With Baffles For Case-IH 500/500T & 550/550T & New Holland 2080/2085/2180/2185

Key Benefits:

- Without a seed firming wheel to help slow down and press seeds down into the seed slot, many growers observe too many seeds are blown out of the seed slot when seeding with a Case IH 500/500T (and the new 550/550T) and New Holland 2080/2085. Seed brakes help eliminate this problem by slowing the seeds with the internal baffle and allowing most of the air to evacuate through the seed brake housing, rather than out the plastic seed tube. Without seed brakes, the air flow tends to carry seeds out of the seed slot (especially when running higher fan speeds).
- Our Seed Brake incorporates a 1 mm thick stainless steel housing for excellent durability.
- The Seed Brakes features 2 mm holes which allow our Seed Brakes to be used with small seeds such as rape, canola and radish (and most cover crops).
- Growers claim they have reduced seeding rates when they added seed brakes. This is because more seeds were placed within the seed slot and not blown out (and left on the soil surface to perish).
- Seed Brakes are built to accommodate the standard 1 $^{1}/_{4}$" outside diameter seed hoses, common to Case-IH and New Holland air-seeders.
- Seed Brakes feature an internal, downward angled baffle. This baffle helps reduce seed velocity and seed bunching. Research shows they improve in-row seed spacing by over 2.0 standard deviation points (click the QR code below for the statistical information which compares seed spacing with and without seed brakes on a John Deere air-seeder).

Click the QR Code (left) to see our research, which illustrates how seed brakes can improve seed spacing on air-seeders.

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 plastic 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 49-51, and if you need new air-seeder hose, please see page 47.

1 1/4" Seed Brake With Baffle For Case-IH 500/500T/550/550T and New Holland 2080/2085/2180/2185 with hose clamps.

$30.00 each + shipping *1.2 lb ea.*

Needham Ag Spring Spacers For Case-IH 500/500T/550/550T & New Holland 2080/2085/2180/2185

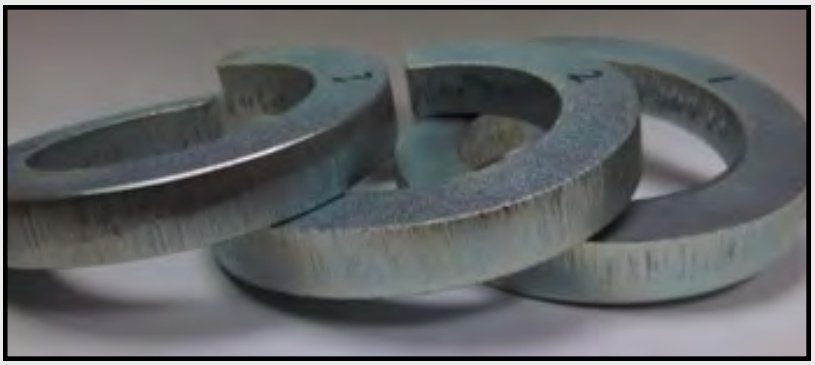
The Problem

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 Case-IH 500/500T & 550/550T and New Holland 2080/2085/2180/2185 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.

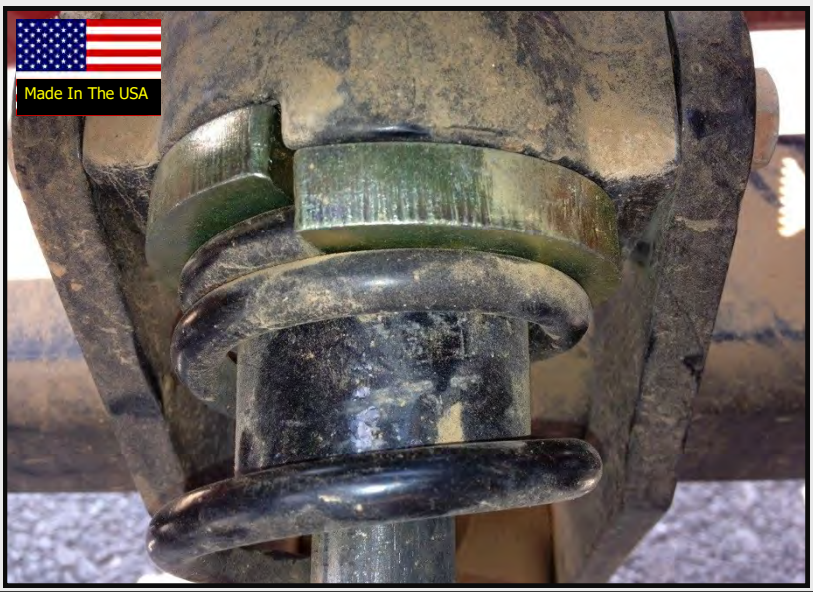
The Solution

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 Plus 550/550T & New Holland 2080/2085/2180/2185

$25.00 each plus shipping *0.75 lb ea.*

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

Needham Ag Hopper Screens For Case-IH 500T/550T & New Holland 2085/2185

We offer 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

$550.00 each + shipping

Since the introduction of the new Case-IH 550T and New Holland 2185, we have had requests for the hopper screens. We now have them in stock and ready to ship for these air-seeders with a hopper on top.

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 550T and New Holland 2185

$550.00 each + shipping

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 setting up row cleaners on a planter, please see pages 69-70.

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.

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 73).

2) A pair of Martin 13" wheels (illustrated above and on page 73)

3) A pair of Needham Ag Poly 20 point wheels (see pages 71-72).

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 74.

Martin UMO-150 Fertilizer Openers

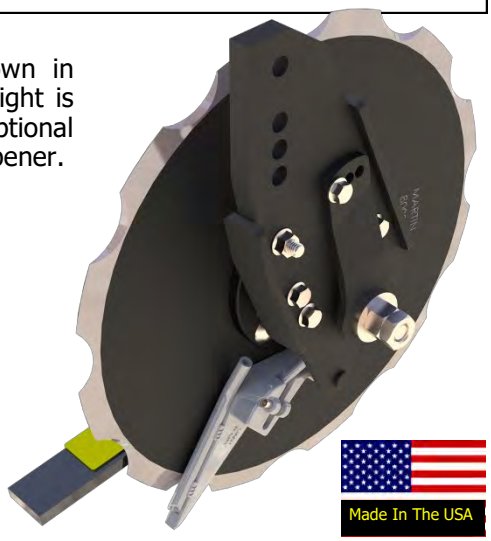
For more information on Martin planter attachments, search for "Needham Ag Martin" at youtube.com

Key Benefits:

- Compact enough to fit within the WA-1360 row floating row cleaner.
- The Martin UMO-150 is mounted close to the double-disc openers to ensure consistent separation to help eliminate 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 $^{3}/_{4}$" above seed depth, at seed depth and $^{3}/_{4}$" below seed depth.
- 15" diameter heavy duty 5 mm thick disc blade.
- Double tapered bearing hub.
- Fits most planters without a no-till coulter.

The UMO-150 shown in the image to the right is fitted with the optional 15" notched disc opener.

Made In The USA



Made In The USA

The Martin UMO-150 fertilizer opener places fertilizer cleanly below the soil surface in a band to maximize uptake and minimize volatility losses.

The Martin UMO-150 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-150 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-150 fertilizer openers place fertilizer cleanly alongside the seed without splashing the product on the planter (left double-disc opener removed for photo).

Martin UMO-150 Fertilizer Opener

Available For All Kinze Planters, 7000-1700 series John Deere, Plus White 6000 and 8000 series.

$552.00 per row + shipping.

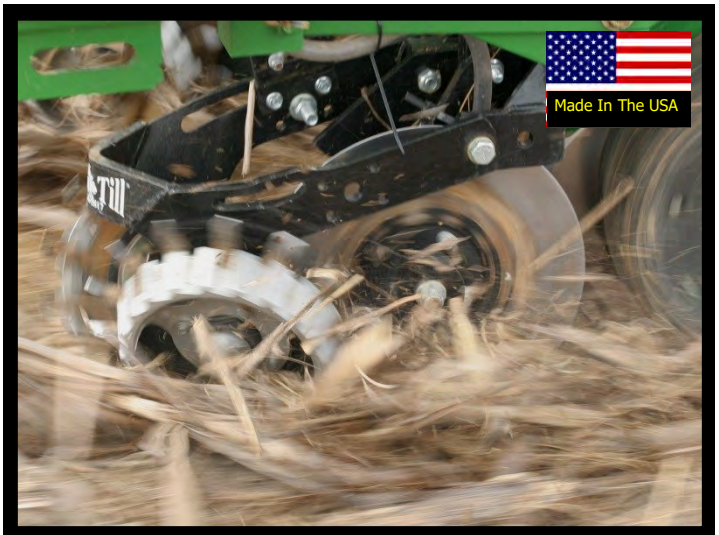
Mounting brackets to fit within row cleaners, or for stand-alone fertilizer opener (no row cleaner) are required. Please contact us with your planter type, so we can get you a quote on a mounting bracket and fertilizer opener for your planter. **Mounting brackets range from $52.00 to $130.00.**

Martin WA 1360 Floating Row Cleaners

For more information on Martin planter attachments, search for "Needham Ag Martin" at youtube.com

Key Benefits:

- Floating row cleaners follow the contours of the soil surface, clearing residue consistently to provide a cleaned strip.
- Cleaned strips warm more uniformly, helping emergence uniformity.
- Farm Journal research has found that floating row cleaners significantly increase corn yields, when compared to fixed design row cleaners.
- Aluminum side treader wheels control the tooth engagement of the row cleaner wheels to help prevent trenching.
- Mounting brackets available for most planter brands and configurations.
- Can be raised up when going from no-till to conventional seedbeds.



Martin WA 1360 row cleaners with UMO fertilizer opener, planting into standing corn stalks.

A well designed row cleaner should move most of the residue, but not soil (as pictured above).

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 row cleaners working in 200 bu/ac corn residue. Notice how they clear a narrow path for the UMO fertilizer opener.

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

For Kinze, and 7000-1700 series John Deere **$726.00 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?

Row Cleaner Options For Heavy Residue

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) requires 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.

One Pair Of Wheel Weights For Floating Row Cleaners (complete with longer mounting bolts)

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

$50.00 per row + shipping.

Made In The USA

Optional Martin Smart-Clean system allows pneumatic adjustment from the cab. Contact us for more information.

2) Martin Razor Wheels.

Martin Razor Wheels help cut through tough crop residue and cover crops with ease without wrapping.

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, 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

$79.00 per wheel + shipping.

Needham Ag Poly 20 Point Wheels For John Deere, Kinze and MF/White Planters

All the Needham Ag Poly 20 Point Wheels come with a heavy duty assembled hub with the long-life Peer SeedXTreme bearing.

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.

The Needham Ag Poly 20 Point Wheels being used on a Kinze 3000 series planter in pea and crimson clover cover crop. Minimal down pressure was required to close the seed slot and maximum performance comes when the closing wheel arm is level to slightly higher at the rear.

The Needham Ag Poly 20 Point Wheels being used on a John Deere DB 60. This field was corn after corn and the field had been vertical tilled. Minimal down pressure was needed to close the seed slot within these conditions.

Closing the seed slot in dense cover crops can be a challenge, but the Needham Poly 20 Point Wheels were able to do this successfully and ensure seed to soil contact at seed depth.

Here the same DB60 as shown above, is operating in a field which was vertical tilled the previous fall, with no spring tillage. Minimal down pressure was needed to close the seed slot within these conditions.

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

15 lb 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.

15 lb per pair

$220.00 + shipping per pair

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

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:
$340.00 + shipping.

Martin 15" spiked closing wheel (single) for bolt on style hubs on John Deere, Kinze, and MF/White:
$180.00 + shipping.

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 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.

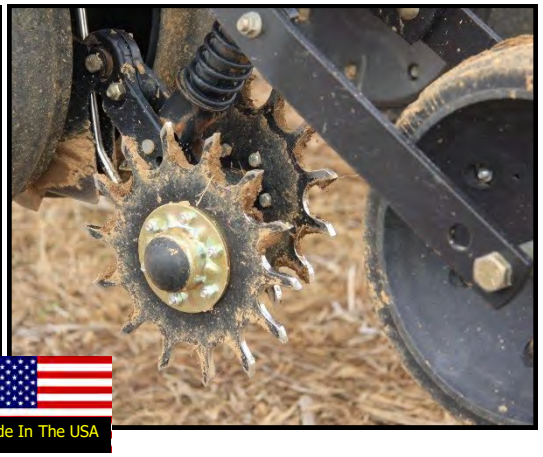
Martin Twisted Link Drag Chain Assembly for John Deere or Kinze

$58.00 each + shipping.

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 SCW-899 Closing System For 800/900/1200/1250 Case-IH Planters



Made In The USA

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 double disc openers with trailing RID gauge wheels, SCW-899 closing wheels and the trailing rear rubber tire works as well (or better) than any planter opener we have evaluated, especially in no-till conditions.
- The closing wheels come assembled, complete with hubs and bearings ready to bolt on.
- Available for Case-IH 800, 900, 1200 and 1250 planters.

The pair of SCW899 guarantee a closed seed trench in most conditions, and the following factory rubber 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.

The pair of SCW899 closing wheels come with all the hardware needed to bolt the wheels to the planter.

Pair (one row) of SCW899 closing wheels for Case-IH planter **$190.00 + shipping.**

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

Martin SCW-95ZC Closing System For Case-IH 2000 Series Planters

Made In The USA

Key Benefits:

- A pair of 9.5" cupped razor wheels replace the factory pair of closing wheel discs and close the seed slot better than the factory closing system across a wide range of different soil types and soil moisture conditions, including moist no-till conditions (as shown below), and tall cover tall crops.
- The cupped razor wheels have sharpened teeth to help close the seed slot with less down pressure.
- The swept back teeth help eliminate wrapping, even in tall cover crops.
- The SCW-95ZC wheels are shipped as a pair (one right and one left) and come assembled, complete with hubs, installed bearing and mounting hardware.
- Available for all Case-IH 2000 series.

Pair (one row) of SCW-95ZC closing wheels for Case-IH planter **$190.00 + shipping.**

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

Taking Wheat Yields To The Next Level

***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.

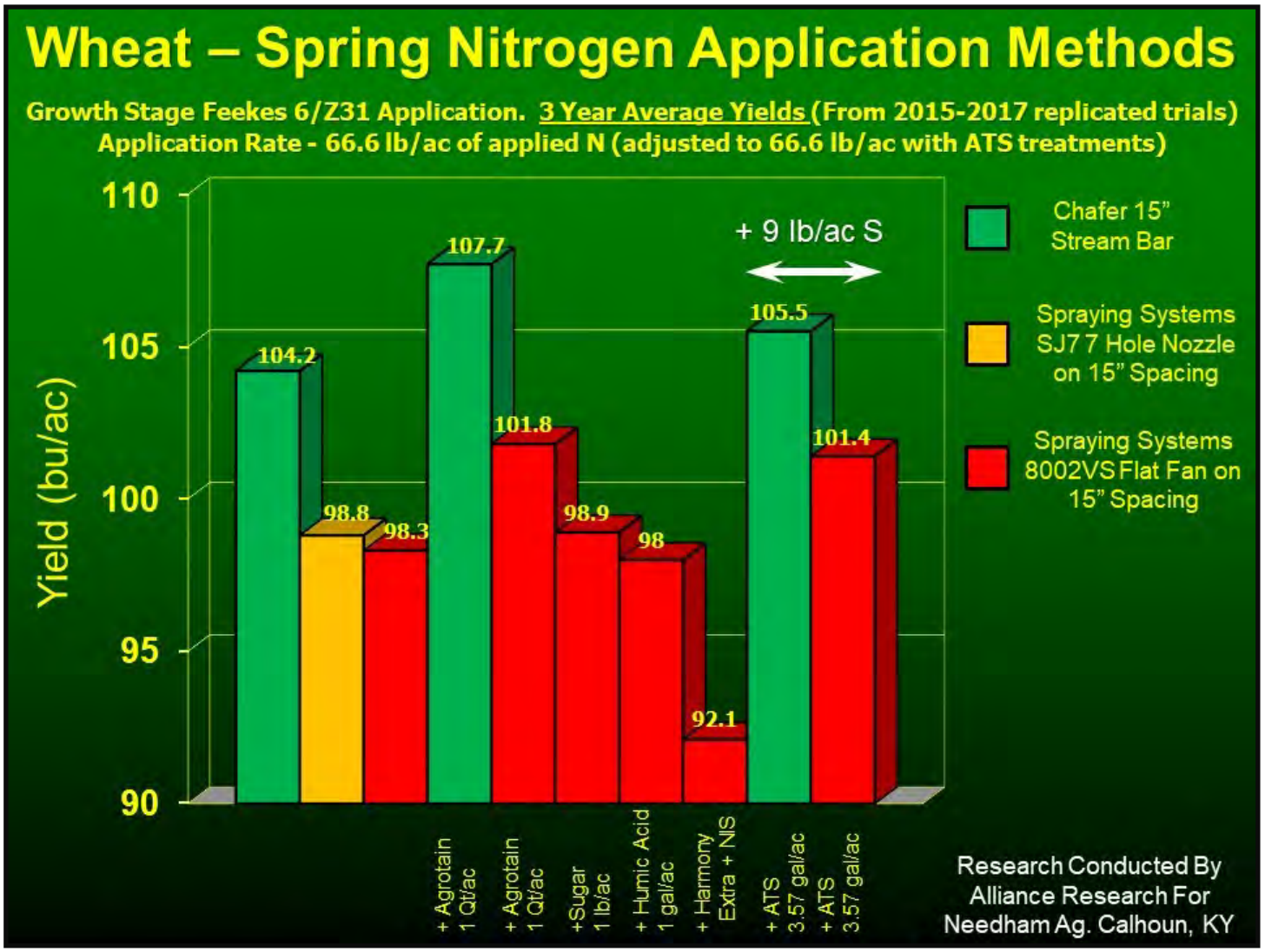
Streaks, standability problems and lower yields often result from spinning disc spreaders, especially when using light and dusty products like urea.

Phil and Ben Needham take stand counts in a wheat field 14 days after seeding.

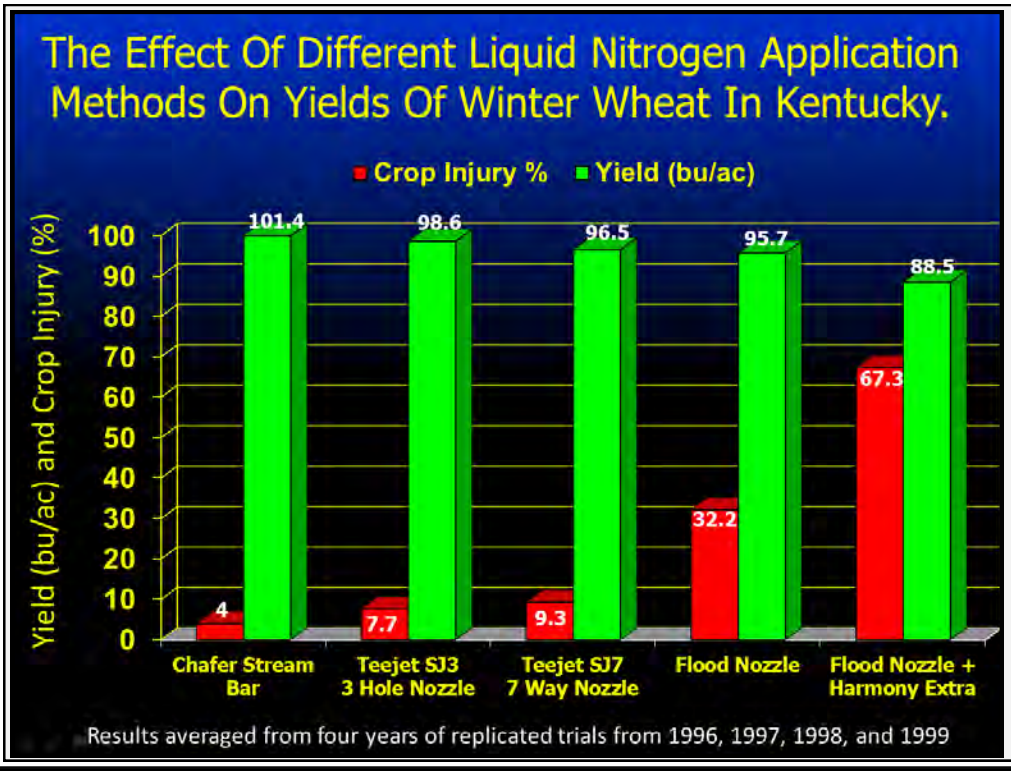
Uniform and consistent seeding depth are both important for good emergence and high yields, so stand counts are a good way of determining how well the drill performed in these departments.

Every year we conduct replicated trials to evaluate new crop management concepts before taking them to field scale trials.

Taking field wheat yields beyond 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 average of three years of replicated research, showing the yield differences from different application methods with the second spring application of liquid N in KY.



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 in the spring, this is a practice that we strongly discourage.

Liquid Nitrogen Application To Wheat

7 hole fertilizer caps raised higher above the crop when working on rolling ground, often result in streaks.

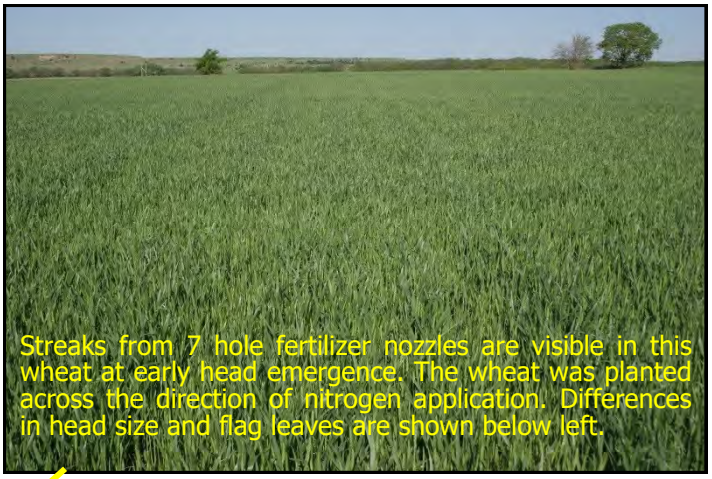
3, 5 or 7 Hole Fertilizer Nozzles.

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 flan 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.

3 hole fertilizer caps can streak a field, especially when operated at higher forward speeds. These nozzles were operated around the recommended height above the crop and still streaked the field.

Streaks and crop injury from 7 hole nozzles when liquid nitrogen was applied at an angle to the wheat rows.



Streaks from 7 hole fertilizer nozzles are visible in this wheat at early head emergence. The wheat was planted across the direction of nitrogen application. Differences in head size and flag leaves are shown below left.

Streaks from the 7 hole fertilizer nozzles shown in the above image were still visible from the combine.

Uniform Application Of Liquid Nitrogen With Stream Bars

"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 almost zero burn on my wheat, barley and cereal rye, even in the corners". Jim Arnaud, Monett, MO.

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.

YouTube

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.

Needham Ag Boom Skis

Needham Boom Skis
$495 Per Pair + shipping

Visit our online store for more information or enter "Needham Boom Ski" into YouTube to see them in action !

Our 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 directly for more information.

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 orfices, 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.

Stream bars being used to apply liquid nitrogen to wheat shortly before the flag leaf emerged. Wheat requires 30-40% of the N after the flag leaf appears, so late season N availability is critical for high yields, especially in a wet spring.

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 the 3/5/7 hole nozzles are.

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

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

Stream Bars for 20" Nozzle Spacing
$18.00 each + shipping
(includes adapter, washer and one metering orfice)

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.

0.2 lb ea.

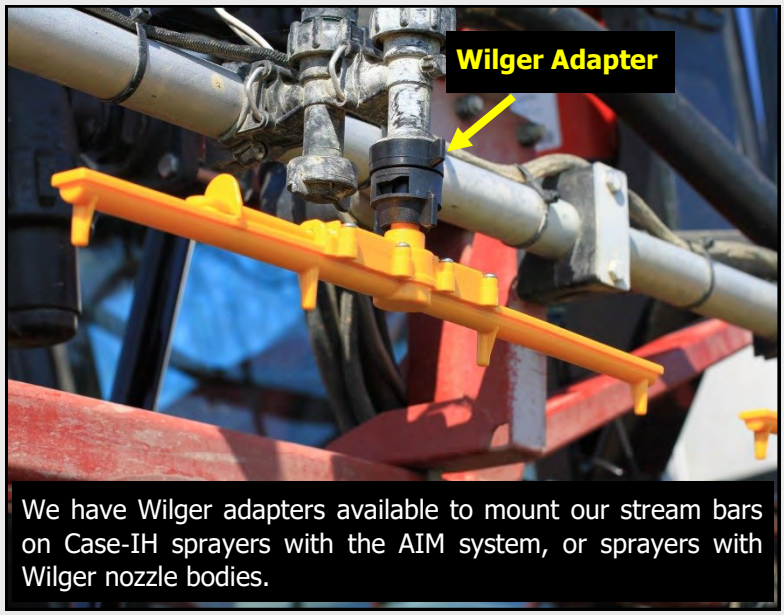
For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com

Multi-Rate Stream Bars

Key Benefits:

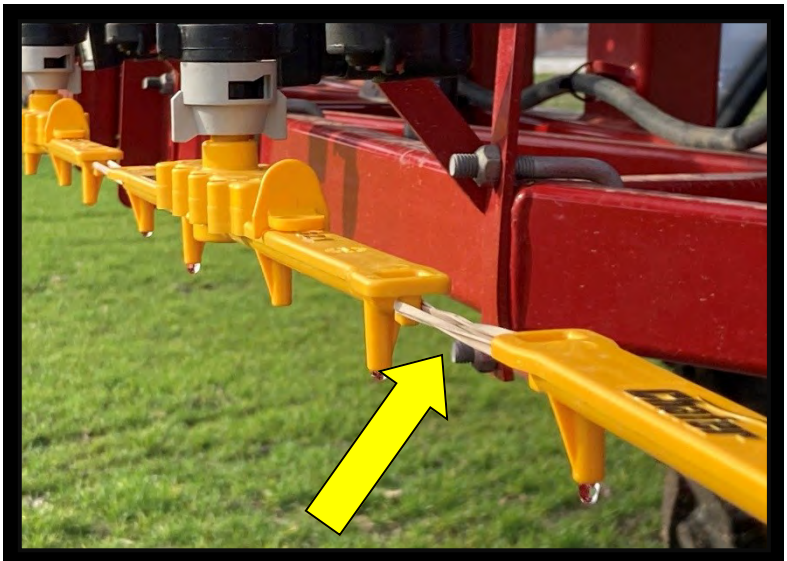
- Highly Accurate.
- Minimal impact of boom height or wind speed.
- Multi-Rate Stream Bars have a sliding orifice which allows operators to quickly change output without removing or disassembling the stream bar.
- No metering orfices need to be purchased, saving money and risk of losing them.
- Allows 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.

The sliding rate adjuster on the Multi-Rate Stream Bar. Six different positions allow the rate to be changed from around 8 - 66 gallons per acre (assumes a 10 mph forward speed and 20" bar).



We have Wilger adapters available to mount our stream bars on Case-IH sprayers with the AIM system, or sprayers with Wilger nozzle bodies.

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



All the Multi-Rate Stream Bars now feature hooks on both ends and using rubber bands helps keeps the bars straight.

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
$25.00 each + shipping *0.2 lb ea.*

Multi-Rate Stream bars for 20" Nozzle Spacing
$25.00 each + shipping *0.25 lb ea.*

Wilger to Teejet Adapters
$3.00 each + shipping *0.1 lb ea.*

LIPA
Mowers

In early 2018 we decided to purchase a flail mower for our mini excavator, to mow around our lake and other areas too steep or too unsafe to mow with a tractor or zero turn mower.

We searched the internet and narrowed down the options, and finally settled on LIPA TLBE-100 flail mower. This selection was based mainly on build quality, features and price, but more importantly the company's 45 year history manufacturing mowers (over 28,000 sold worldwide) in conjunction with the Willibald company in Germany. We imported our mower directly from their factory in Italy (as there were no dealers in North America).

We were very happy with the performance of the LIPA TLBE-100 regarding design, performance, safety features, reliability and product support, and in 2019 LIPA approached Needham Ag to represent their products across North America.

We were looking to diversify our product portfolio and spread our workload, especially through the summer months when our parts business tends to be slower, so we visited the LIPA factory in November 2019. Our tour included seeing the latest manufacturing technologies, including CNC laser cutting tables, robot welders, electronic rotor balancing equipment in addition to their paint booths. We also toured their parts warehouse and looked at some of the mowers already built and awaiting shipment. Later that day we met with the family which owned the LIPA company and their salespeople, and we agreed to become the distributor for LIPA products across North America.

We have now sold hundreds of the LIPA mowers and mulchers over the past 4 years. They have been sold within most U.S. states, including Hawaii and Alaska. We have had excellent feedback on their design and build quality, in addition to reliability and performance.

To support these mowers, we also carry a good supply of most moving/wearing parts, including flails/hammers, belts, hydraulic motors, and hydraulic fittings/hoses.

IMPORTANT: Operator protection is required with all flail mowers and forestry mulchers to protect from flying debris (ideally an enclosed cab with an approved forestry package).


Flail mower rotors at the electronic balancing station


Robot welders provide the highest standard welds

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

About Lipa

With over 45 years of flail mower and forestry mulcher manufacturing experience in partnership with the Willibald company in Germany, LIPA manufactures high quality mowers and mulchers in their factory in Italy. LIPA products are well designed and manufactured using the latest technologies, which include laser cutting, robot welders and electronic balancers. All LIPA products use high quality materials which stand the test of time, in fact some customers have used the same LIPA mowers for over 20 years, only replacing flail hammers and belts occasionally. LIPA has now sold over 28,000 mowers and mulchers worldwide!

At Needham Ag, we currently have a good inventory of Lipa flail mowers and mounting brackets to fit most mini excavators (ideally over 3500 lb), all the way up to larger mini excavators (which weigh up to around 20,000 lb). We also currently have a good supply of flail mowers for most skid steer loaders and tractors from around 30 hp, to around 125hp. Please see the following pages for more information on these products.

We also offer flail mulchers and fixed tooth forestry mulchers for mini excavators greater than around 12,000 lb, all the way up to around a 60,000 lb excavator. We also offer large forestry mulchers for the largest skid-steer loaders on the market. Please visit our online store, or contact us directly for more information, as we have only listed the most common products within this product guide.

What our customers say:

I was a little skeptical about a 21" cut width flail mower for my mini excavator but not for long! To find a flail mower for a mini-x weighing 6000lbs or less is tough. Most businesses want to sell one much heavier than the machine will handle. The LIPA TBLE-50 is a PERFECT fit! The build quality and the safety features are exceptional. The mower runs quiet and does everything I want. The options offered make the mower second to none I found. I'm very confident it will last a long time with care.

I cant say enough about the buying process. I was left with every question I had answered as well as questions answered I didn't know enough to ask. It was shipped fast and the follow up was appreciated.

Needham Ag is great company to buy from.

Stan in Washington State.

Gotta say, this Lipa TLBE-100 mower is awesome. Wish I could have bought one 10 years ago. It's been a bit of a learning curve, but I'm getting pretty good with it. The oscillating carriage is especially nice on my uneven ground. I've got about 40 hours on it so far, and zero problems.

I've recommended this mower to a couple guys who do mowing for a living. They're using a rotary style now, but can't use it in a lot of places because it throws debris so far from the mower. The Lipa seems to direct most of the material straight down from the machine and would work better for them.

You'll definitely be on the top of my list when I need any more equipment.

Jason in Kentucky.

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

Please click the QR code to the left, or enter "Needham Lipa TLBE-D 60" into YouTube to see a video of the Lipa TLBE-D 60 mower in action!

TLBE-D

Flail Mowers For 3500-4000 lb Mini Excavators

No Case Drain Required

The Lipa TLBE-D 60 flail mower is designed for 3500-4000 lb mini excavators, ideally with hydraulically adjustable undercarriage (extended for safety and stability) especially when mowing perpendicular to the tracks.

The TLBE-D 60 is designed for mini excavators with 7-10 gallons per minute of auxiliary flow. Compatible mini excavators include the Deere 17G/17P, Kubota U17, Cat 301.7, Takeuchi TB216, JCB 18Z-1/19C-1 and Bobcat E20. We have most pin style and quick couplers in stock, but please contact us with your machine type and coupler style to check availability and price.

The TLBE-D 60 features a heavy duty Casappa hydraulic motor and a direct drive to reduce weight. The motor is covered with a heavy duty stainless steel end shield for protection, as shown in the image below left.

The TLBE-D 60 can mow and mulch grass, brush or small trees from 1-2" in diameter with at least 8 gallons per minute of auxiliary flow. These mowers are suitable for mowing areas too steep or too unsafe to mow with a tractor or skid-steer, such as around ponds or steep banks. The adjustable rear roller sets the mowing height above the ground and helps keep the flails out of soil and rocks to extend their life.

Hydraulic hoses with steel hose wrap are not included, but are available as an option.

Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb) *	Rotor Speed (RPM)	Required Oil Flow (gal/min)	Ideal Oil Pressure (PSI)	Number Tri-Flails Sets	Price $
TLBE-D 60	34	25	370	2300	8 - 10	2500	7	4990

* Approximate weight, with typical mounting bracket and optional hydraulic hoses.

Standard Equipment

- Excavator coupler is included to fit most mini excavator couplers. However, some will require a specialist mount (which will incur an additional charge), so please contact us directly. Mounting pins are not included, but are available as an option.
- Electronically balanced, heavy duty 4 1/4" diameter rotor, with 7 sets of scrolled tri-flails as shown above.
- Heavy duty adjustable steel roller, with 3 vertical settings, and adjustable mud scraper as shown above.
- Heavy duty lateral skids as shown above.
- Chains across the front and rubber flaps front and back as shown above, to help control flying debris.
- Stationary mulching teeth within the inside of the mower housing, as shown above.

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

Visit our new Lipa Facebook group at Lipa Mowers And Mulchers

Please click the QR code to the left, or enter "Needham Lipa TLBE" into YouTube to see a video of the Lipa TLBE mower in action!

TLBE

Flail Mowers For 4000 - 12,000 lb Mini Excavators

TLBE-90 with Deere wedge-lock coupler on a 35G. Optional hydraulic hoses and oscillating carriage shown

The Lipa TLBE range of flail mowers are the perfect choice for mini excavators. They can mow and mulch grass, brush or small trees up to around 2" inch in diameter, but larger materials are possible with slow and careful operation (especially in soft woods). They are ideal for areas too steep or too unsafe to mow with a tractor or skid-steer, such as around ponds or steep banks.

The Lipa TLBE flail mower range is designed for mini excavators which ideally weigh between 4000 and 12,000 lb and have sufficient oil flow. They feature heavy duty construction, with front safety chains, plus a front and rear rubber flap to help control flying debris.

All TLBE flail mowers come standard with an adjustable rear roller which sets the mowing height above the ground. This extends flail life by helping keep the flails out of soil/rocks.

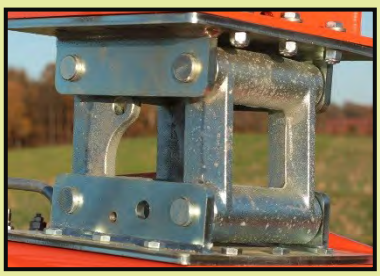
Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb) *	Rotor Speed (RPM)	Required Oil Flow (gal/min)	Ideal Oil Pressure (PSI)	Number Of Flails	Number Of Drive Belts	Price $
TLBE-50	26	21	440	2300	7 - 10	3000	6	2	4990
TLBE-70	34	29	490	2300	10 - 13	3000	7	2	5590
TLBE-90	41	37	560	2300	12 - 15	3000	9	2	5990
TLBE-100	43	41	590	2300	15 - 18	3000	10	3	6590
TLBE-120	53	49	700	2300	18 - 22	3000	12	3	6990

* Approximate weight, with typical mounting bracket and optional hydraulic hoses.

Standard Equipment

- Excavator coupler to connect to most mini excavators, but some will require a specialist mount (which will incur an additional charge). Mounting pins are not included in the prices above.
- Electronically balanced, heavy duty 4 1/4" diameter rotor, with scrolled flails.
- Heavy duty adjustable steel roller, with adjustable mud scraper.
- Heavy duty lateral skids.
- Chains across the front and rubber flaps front and back to help control flying debris.
- Mulching teeth within housing.

Options



TLBE Oscillating Saddle

The oscillating saddle is a heavy duty parallel linkage that allows the mower to follow the ground better, on the rear roller. It's purchased by around 80% of customers and it's recommended if you plan to mow a lot of undulating ground. It adds around 88 lb to the mower, so its only recommended for larger mini excavators with sufficient counterweight.

890

TLBE Flow Regulator

The flow regulator is required for mini excavators which have higher auxiliary flow than what the mower is designed for (and they don't have the ability to reduce the auxiliary flow on the excavator). The flow regulator allows precise auxiliary flow adjustment, to set the rotor speed to around 2300 rpm, to optimize its operation.

660

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

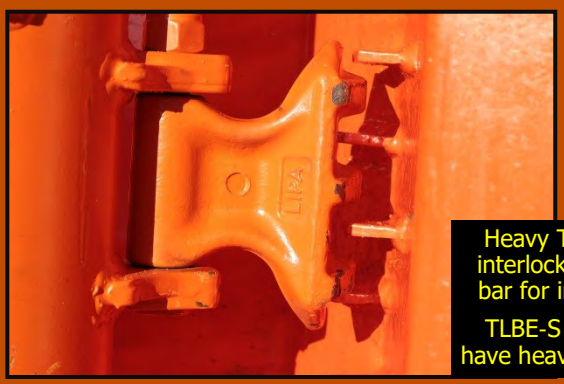
Please click the QR code to the left, or enter "Needham Lipa TLBE-S" into YouTube to see a video of the Lipa TLBE-S mower in action!

TLBE-S

Heavy Duty Flail Mower
For 10,000 - 20,000 lb Mini Excavators

The TLBE-S heavy duty flail mower is perfect for mowing and shredding grass, brush and small trees up to around 3" in diameter (but larger diameters are possible with slow and careful operation, especially with soft wood). These mowers are designed to work in areas too steep or too unsafe to mow with tractors or skid-steer loaders. The TLBE-S range is designed for larger mini excavators which weigh between around 10,000 and 20,000 lb and those which have sufficient oil flow (see auxiliary oil flow requirements in chart below).

Optional hydraulic hoses are available from Needham Ag



Heavy Tri-Tooth flails with interlocking stationary knife bar for increased mulching.

TLBE-S 100 & TLBE-S 120 have heavy duty flail supports.

Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb) *	Rotor Speed (RPM)	Required Oil Flow (gal/min)	Ideal Oil Pressure (PSI)	Number Of Flails	Number Of Drive Belts	Price $
TLBE-S 90	41	37	760	2300	17-23	3000-3500	7	3	7290
TLBE-S 100	45	41	820	2300	20-26	3000-3500	7	3	7690
TLBE-S 120	53	49	880	2300	22-28	3000-3500	8	3	8090

* Approximate weight, with typical mounting bracket and optional hydraulic hoses.

Standard Equipment

- Excavator hookup linkage for most mini excavators, but some will require a specialist mount (which will incur an additional charge). Mounting pins are not included in the prices above.
- High torque group 3 hydraulic gear motor, with anti-cavitation block.
- Electronically balanced, heavy duty 5.5" Diameter rotor with tri-toothed flails.
- Heavy duty, adjustable rear steel roller with adjustable scraper.
- Heavy duty lateral skids.
- Chains across the front and rubber flaps front and back to help control flying debris.
- Mulching teeth on the inside of mower housing to help with mulching of material (see video).

Options

TLBE-S Oscillating Saddle

The oscillating saddle is a heavy duty parallel linkage which allows the mower to follow the ground much better on the rear roller. Its purchased by around 80% of customers and recommended if you plan to mow a lot of undulating ground. It adds around 120 lb to the mower, so its only recommended for larger mini excavators with sufficient counter weight/stability.

1190

TLBE-S Flow Regulator

The flow regulator is required for mini excavators which have higher auxiliary flow than what the mower is designed for (and they don't have the ability to reduce the auxiliary flow on the excavator). The flow regulator allows precise auxiliary flow adjustment, to set the rotor speed to around 2300 rpm, to optimize its operation.

790

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

Visit our new Lipa Facebook group at Lipa Mowers And Mulchers

Please click the QR code to the left, or enter "Needham Lipa TLBE-SF" into YouTube to see a video of the Lipa TLBE-SF flail mulcher in action!

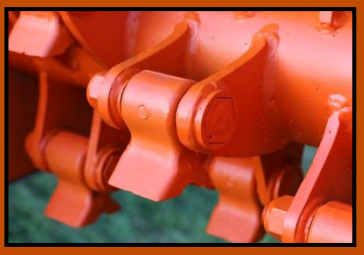
TLBE-SF

Flail Mulchers For 10,000 - 16,000 lb Mini Excavators

The Lipa TLBE-SF series of flail mulchers are designed to bridge the gap between the TLBE-S flail mowers and the TLE-FS mulchers, both from a cost and performance perspective. They feature swinging hammers, which are reversible, in addition to heavy safety chains across the front and rear, to help control flying debris. Heavy duty skid plates are present on both ends to help control cut height. This mower is designed to mulch up to around 4-5" materials, but it can process larger trees with slow and careful operation (see video link above).

The TLBE-SF series flail mulchers also feature a manual adjust front door, which in the raised position allows you to cut the top off small trees from the side, then mulch them to the ground. With the door lowered, the chains almost eliminate the material thrown (which is very important when operating around homes or roads).

Optional hydraulic hoses are available from Needham Ag



Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb) *	Rotor Speed (RPM)	Required Oil Flow (gal/min)	Ideal Oil Pressure (PSI)	Number Of Flails	Number Of Drive Belts	Price $
TLBE-SF 70	37	27	760	2300	17-23	3500	11	3	8990
TLBE-SF 90	46	35	800	2300	20-24	3500	15	3	9490
TLBE-SF 110	53	43	840	2300	20-24	3500	18	3	9990

* Approximate weight, with typical mounting bracket and optional hydraulic hoses.

Standard Equipment

- Excavator hookup linkage for most mini excavators, but some will require a specialist mount (which will incur an additional charge). Mounting pins are not included in the prices above.
- Electronically balanced, heavy duty 6 1/2" diameter rotor, with scrolled reversible hammers.
- Heavy duty lateral skids.
- Chains across the front and rear, to help control flying debris.
- Stationary mulching teeth within the front and rear housing.
- Manual adjust front door, hydraulic is available (see right).

Options

Hydraulically Adjustable Front Door.

The standard option on the TLBE-SF flail mulcher is a manual adjust front door. This model has a linkage (with a pin) to secure the door position.

If you have a mini excavator with a 2nd pair of auxiliary lines, then you can order the TLBE-SF mower with a hydraulic cylinder. This option allows you to raise and lower the front door, like you would the thumb. This allows you to cut the top out of trees, then lower the front door to control flying debris. Note: Hydraulic hoses are not included, but are they are available for an additional cost.

290

Please click the QR code to the left to see a YouTube Video of the Lipa TLE-FS forestry heads in action!

TLE-FS

Forestry Head For Ideally 12,000-20,000 lb Mini Excavators

Case Drain Is Required

TLE-FS 90 Shown With Optional Hydraulic Hoses

The High-Inertia TLE-FS forestry heads are specifically designed to mount on large mini excavators, which ideally weigh 12,000-20,000 lb, plus have sufficient auxiliary oil flow (see oil requirements in the chart below).

The TLE-FS is perfect for trimming back limbs and clearing/mulching brush and trees. The TLE-FS series will mulch around 4-6" diameter hard wood, and 8-10", soft wood (but larger trees can be mulched with slow and careful operation).

The TLE-FS features a hydraulically adjustable front shield to help with shredding denser brush (when raised) and minimizing the throw of material (when lowered) which is important from a safety perspective. Watch the YouTube video above for more information.

To operate the front shield, the excavator either requires a second auxiliary circuit, or the optional solenoid block (see options in chart below).

Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb)*	Rotor Speed (RPM)	Required Oil Flow (gal/min)	Ideal Oil Pressure (PSI)	# Of Fixed Blades	Number Of Drive Belts	Price $
TLE-FS 70	39	28	990	2200	20-25	3200-3600	30	3	15,590
TLE-FS 90	45	34	1220	2200	20-25	3200-3600	36	3	16,790

* Approximate weight, with typical mounting bracket and optional hydraulic hoses.

Standard Equipment

- Excavator Coupler (not including pins).
- Heavy Duty Parker Piston Motor (displacement sized according to excavator AUX flow rate).
- Internal Counter-Frame Made Of Highly Wear Resistant Steel (Hardox).
- Electronically Balanced, Heavy Duty 13.4" Diameter Rotor With Fixed Tooth Hammers.
- Lateral Skids With Wear Resistant Steel
- Heavy Front And Rear Safety Chains To Help Control Flying Debris.
- High Quality Paint.

Options

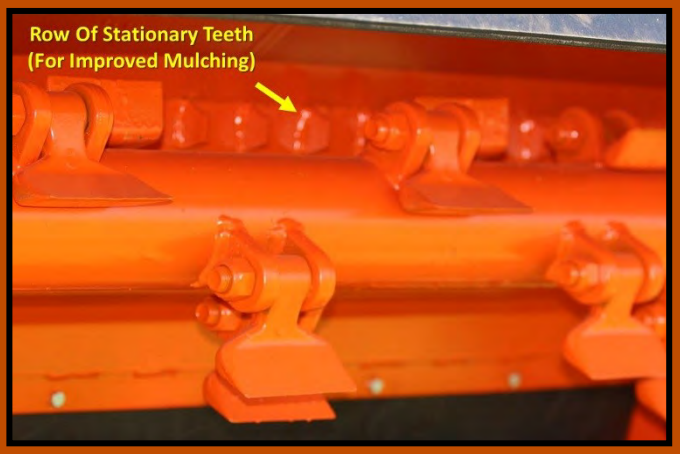
1 x Pair Of Pins To mount mulcher to excavator.	190
Hydraulically Adjustable Front Door. The standard option is a manual adjust front door, but if you have a mini excavator with a 2nd set of auxiliary lines, then you can order the TLE-FS mulchers with a hydraulic cylinder on the front door. This allows you to raise and lower it like you would the thumb, to be able to cut the top out of trees, then lower the front door to control flying debris.	290

TLB-F

Flail Mower For Smaller Skid Steer Loader

The TLB-F shredder is perfect for mowing and mulching grass, brush and small trees up to around 2" in diameter (but larger materials can be processed with slow and careful operation). Flail mowers are considered a safer option than rotary cutters as they don't throw material everywhere. The TLB-F models are designed for around 4000 to 8000 lb skid steer loaders which have sufficient auxiliary oil flow (see chart below for required oil flow per minute).

Optional hydraulic hoses are available from Needham Ag



Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb)	Rotor Speed (RPM)	Required Oil Flow (gal/min)	Ideal Oil Pressure (PSI)	# Of Flails	# Of Drive Belts	Price $
TLB-F 140	61	57	685	2300	16-20	2800-3500	14	3	5990
TLB-F 160	69	65	750	2300	18-22	2900-3500	16	3	6590

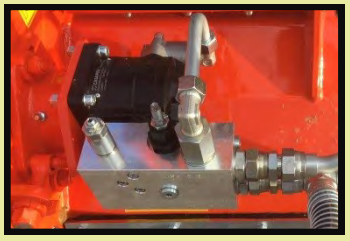
Standard Equipment

- Standard Skid Steer Adapter Plate.
- Electronically Balanced, Heavy Duty Rotor With Flails.
- Heavy Duty, Adjustable Rear Steel Roller, With Scraper To Keep Roller Clean When Mowing In Damp Conditions.
- Lateral Skids (Replaceable).
- Rubber Flaps Front And Rear, Plus Front Chains To Help Control Flying Debris.
- Stationary Knives For Improved Mulching.
- High Quality Paint

Options

Flow Regulator (Shown Below)

The flow regulator is required for skid steer loaders with more auxiliary flow than the mower is designed for (and for machines which don't have the ability to regulate auxiliary flow from the cab). The flow regulator helps set the rotor speed to 2300 rpm, to optimize its operation.



790

Please click the QR code to the left, or enter "Needham Lipa TLF into YouTube to see a video of the Lipa TLF mower in action!

TLF

Heavy Duty Flail Mower For Larger Skid Steer Loader

The TLF series is a heavy duty flail mower designed to mow and mulch grass, brush and small trees up to around 3" in diameter. They are a preferred design compared to rotary cutters, as they tend not to throw dangerous projectiles, plus they mulch material much finer. The TLF mowers are designed for larger skid steer loaders, weighing 6000 - 10,000 lb, with ideally 60-90 hp and 18-26 GPM of auxiliary flow (see chart below for specific requirements). Skid-steer loaders with higher flow (more than the flail mower requires), will need flow controlled on the machine. The TLF mowers feature a heavy duty Parker piston motor and heavy duty tri-tooth flails.

Optional hydraulic hoses are available from Needham Ag

Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb)	Rotor Speed (RPM)	Required Oil Flow (gal/min)	Oil Pressure (PSI)	# Of Flails	# Of Drive Belts	Price $
TLF 180	77	72	1390	2200	22-28	3200-4000	12	4	13,890
TLF 200	83	79	1500	2200	22-28	3200-4000	13	4	14,590

Standard Equipment

- Skid Steer Hookup Plate
- Heavy Duty Parker Piston Motor (Requires Case Drain).
- Electronically Balanced, Heavy Duty 6.3" Rotor With Tri-Tooth Flails, And Stationary Knives For Improved Mulching.
- Heavy Duty, Adjustable Steel Roller With Scraper and Heavy Duty Replaceable Side Skid Plates.
- Rubber Flaps Front And Back, Plus Front Chains, To Help Control Flying Debris.
- High Quality Paint

Options

Oscillating Saddle

The oscillating saddle is highly recommended if you plan to mow a lot of undulating surfaces. This is because the oscillating carriage allows the flail mower to follow the ground contours MUCH better. It weighs 200 lb.

2390

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

Visit our new Lipa Facebook group at Lipa Mowers And Mulchers

Please click the QR code to the left to see a YouTube Video of the Lipa TLA mower in action !

TLA

3pt Mounted Offset Flail Mower For 70 - 120 hp Tractors*

Ideal for Mowing Ditch Banks And Around Lakes, Plus Mower Can Also Follow The Tractor For Field Mowing.

The flail heads on the TLA series can all be quickly adjusted in and out with the hydraulics. They can also be hydraulically adjusted from vertical (to mow tree lines and hedges), all the way down to 60 degrees below horizontal (to mow ditch banks).

Both hydraulic cylinders have flow regulating valves (shown below, right), to adjust folding speeds (both directions). The mower can also be positioned behind the tractor, when mowing fields.

Heavy duty tri-tooth flails (shown above, left) interlock between the stationary knives, to provide excellent mulching (see image left).

Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb)	PTO Speed (RPM)	Required Tractor HP*	# Of Flails	# Of Drive Belts	Price $
TLA 160	69	63	1530	540	70-90	11	4	14,990
TLA 180	77	72	1590	540	80-100	12	4	15,990
TLA 200	84	79	1675	540	100-120	13	4	16,990

* Approximate engine HP, but heavier tractors will be required if mowing on steeper slopes (ideally with the wheels adjusted out, for maximum stability).

Standard Equipment

- Heavy Duty External Gearbox (With Free Wheel Feature), And Rotor Is Driven By 4 x Heavy Duty Belts.
- Front & Rear Rubber Flaps, Plus Front Safety Chains For Maximum Safety (To Limit Flying Debris).
- Electronically Balanced, Heavy Duty 5.5" x 3/8" Rotor Tube, With Heavy Duty Bearings, Heavy Duty Tri-Tooth Flails and Heavy Duty Flail Hangers (With Hex Sockets To Help Make Changing Flails Easier).
- Heavy Duty Adjustable Rear Steel Roller, With Adjustable Scraper (Helps Keep The Roller Clean When Mowing In Wet Conditions).
- Heavy Duty (Replaceable) Skids On Both Ends.
- Hydraulic Hoses And Flow Regulating Valves On Both Ends Of Each Hydraulic Cylinder (see image above), To Adjust The Speed Of All Flail Head Movements.
- Heavy Duty Three Point Linkage (With Pins).
- PTO Shaft (With Heavy Duty Shield)
- Drop-Off Stands.
- High Quality Paint.

If You Have A Tractor Larger Or Smaller Than The Recommended Ranges Listed Above, Please Contact Us Directly, As Lipa Also Makes Larger And Smaller Models (Not shown).

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

TLC

Heavy Duty Flail Mower
For 30 - 100 hp Tractors*

The TLS Flail Mower is perfect for mowing and shredding dense grass, brush and small trees up to around 3" in diameter.

The Lipa TLS flail mowers cut/mulch much finer than rotary cutters and provide a more even finish. This mower also features a heavy duty rear roller and has optional side skids (see section below).

TLS and TLC mowers come with heavy duty flails and heavy duty flail supports. The flail supports have hex sockets for the bolt heads.

Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb)	PTO Speed (RPM)	Required Tractor HP*	# Of Flails	# Of Drive Belts	Price $
TLC 140	61	57	990	540	30-50	10	3	5790
TLC 150	70	65	1030	540	40-60	10	3	6090
TLC 180	77	72	1170	540	50-70	12	4	6590
TLC 200	84	79	1270	540	60-80	13	4	6990
TLC 220	93	88	1320	540	70-100	15	4	7490

* The higher end of the horsepower range is recommended if cutting taller/thicker grass or denser brush.

Standard Equipment

- Three Point Linkage (With Pins), PTO Shaft (With Heavy Shield).
- Heavy Duty Gearbox (With Free Wheel Feature).
- Front Rubber Flap & Safety Chains To Help Control Flying Debris.
- Electronically Balanced, Heavy Duty Rotor, With Heavy Duty Tri-Tooth Flails and Heavy Duty Flail Hangers (see inset image above).
- Internal Steel Counter-Blades To Help With Mulching.
- Heavy Duty Adjustable Steel Roller, With Scraper.
- Opening Rear Shield To Let Heavy Material Discharge.
- High Quality Paint

Options

Lateral Skids

If the mower is to be used for long distances, especially on undulating ground, we recommend the lateral skis on both ends. This reduces the wear on ends of the mower frame (under most conditions the mower weight will be on the rear roller).

TLS

Heavy Duty Flail Mower (With Side-Shift Feature) For 30 - 100 hp Tractors*

The TLS Flail Mower is perfect for mowing and shredding dense grass, brush and small trees up to around 3" in diameter. They cut/mulch finer than rotary cutters and provide a more even finish. This mower also features a heavy duty rear roller and has optional side skids.

This TLS model has a hydraulic side shift feature which provides 16" of total side to side travel (8" either way of center). This side shift feature makes mowing around trees, fences or other objects much easier, especially within orchards or tree farms.

TLS mowers are also available with the steel mulching teeth for greater mulching.

Model	Overall Width (inches)	Cutting Width (inches)	Weight (lb)	PTO Speed (RPM)	Required Tractor HP*	# Of Flails	# Of Drive Belts	Price $
TLS 140	61	57	1120	540	30-50	10	3	6590
TLS 150	70	65	1210	540	40-60	10	3	6890
TLS 180	77	72	1330	540	50-70	12	4	7390
TLS 200	84	79	1380	540	60-80	13	4	7790
TLS 220	93	88	1440	540	70-100	15	4	8290

* The higher end of the horsepower range is recommended if cutting taller/thicker grass or denser brush with each mower size.

Standard Equipment

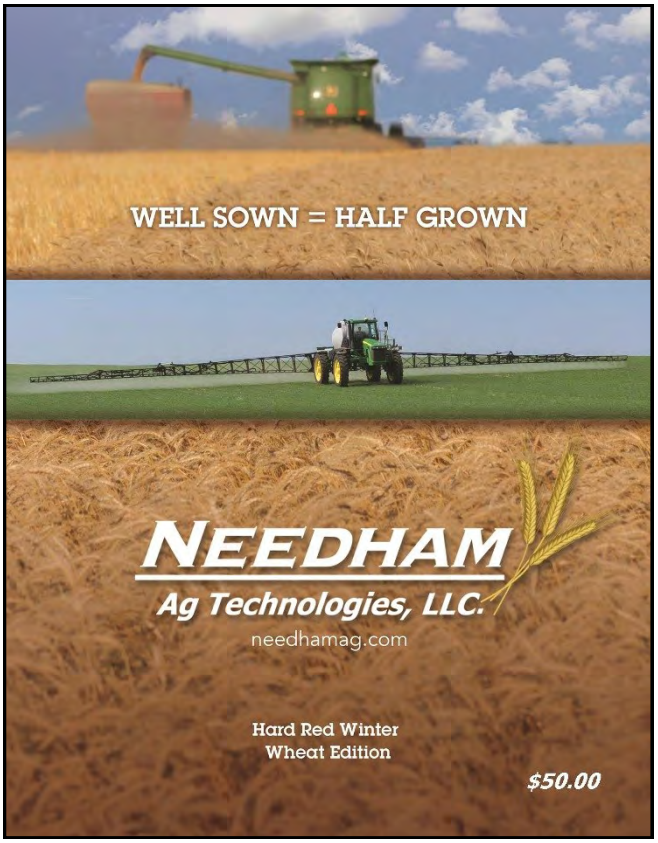
- Three Point Linkage (With Pins), PTO Shaft (With Heavy Shield).
- Heavy Duty Gearbox (With Free Wheel Feature).
- Front Rubber Flap & Safety Chains To Help Control Flying Debris.
- Electronically Balanced, Heavy Duty Rotor, With Heavy Duty Tri-Tooth Flails and Heavy Duty Flail Hangers (see inset image above).
- Internal Steel Counter-Blades To Help With Mulching.
- Heavy Duty Adjustable Steel Roller, With Scraper.
- Hydraulic Hoses (To Operate Side Shift Frame).
- High Quality Paint

Options

Lateral Skids

If the mower is to be used for long distances, especially on undulating ground, we recommend the lateral skis on both ends. This reduces the wear on ends of the mower frame (under most conditions the mower weight will be on the rear roller).

Hard Red Winter Wheat Management Guide.



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.

This Hard Red Winter Wheat Guide is written for the soils, rainfall and wheat management practices within TX, OK, KS, CO and NE.

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

Hard Red Winter Wheat Management Guide

$50.00 Plus Shipping

1.2 lb ea.

NEW Soft Red Winter Wheat Management Guide.

Boost Your Yields And Profit$

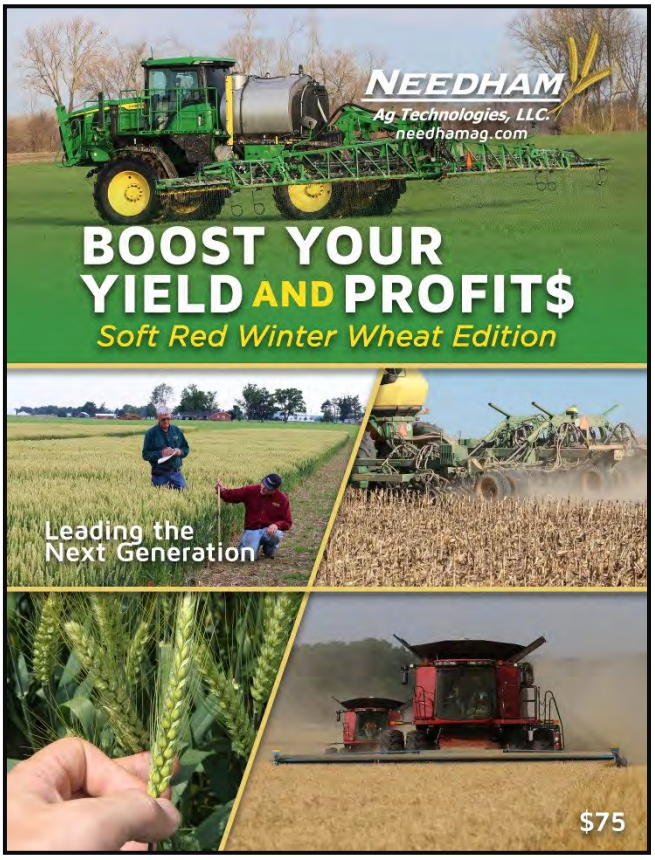
This professionally published soft red winter wheat (SRWW) guide **includes 222 pages,** which include 501 color photographs, tables and graphs.

This new soft red winter wheat guide is our most comprehensive publication to date and it walks a grower through the growing season with experience and research to help increase yields, grain quality and profits. It is written by Phil Needham, who has 37 years of wheat management experience in the U.S. alone, plus additional experience in wheat production before moving to the U.S. in 1989. The guide covers most of the soft red winter wheat management practices within the Eastern US and Eastern Canada.

The guide begins soil management, including drainage, soil biology and soil health. It then discusses the importance of residue management during harvest of the previous crop and the steps needed to spread residue evenly across the header width and help obtain uniform emergence of the wheat crop. Next is a section on equipment, including the selection and setup of sprayers and seeding equipment to create the system needed to raise high yields. Row spacing is discussed next, with a comprehensive research over many regions over many years which illustrate that the narrower the rows the higher the yields, especially in higher yielding regions.

Wheat varieties, seed quality, seeding rates and seed treatments are the next section, together with planting dates. Fall fertility is discussed next with subsections on soil testing, tissue testing and remote sensing. This section also provides recommendations on major and micro nutrients and lime to help increase yields while controlling costs.

Spring nitrogen and spring sulphur application systems, rates and timings are discussed. Lodging is the next topic, this is an important section to help keep a crop standing up to protect grain quality and maximize harvest efficiency. Next is the section on crop protection, including fungicides, fungicide timings, coverage and a thorough section on different wheat diseases. Lastly is an important second on grain quality, to help you market good grain at the highest price.



This Soft Red Winter Wheat Guide is written for the soils, rainfall and wheat management practices specific to the Eastern U.S. and Eastern Canada.

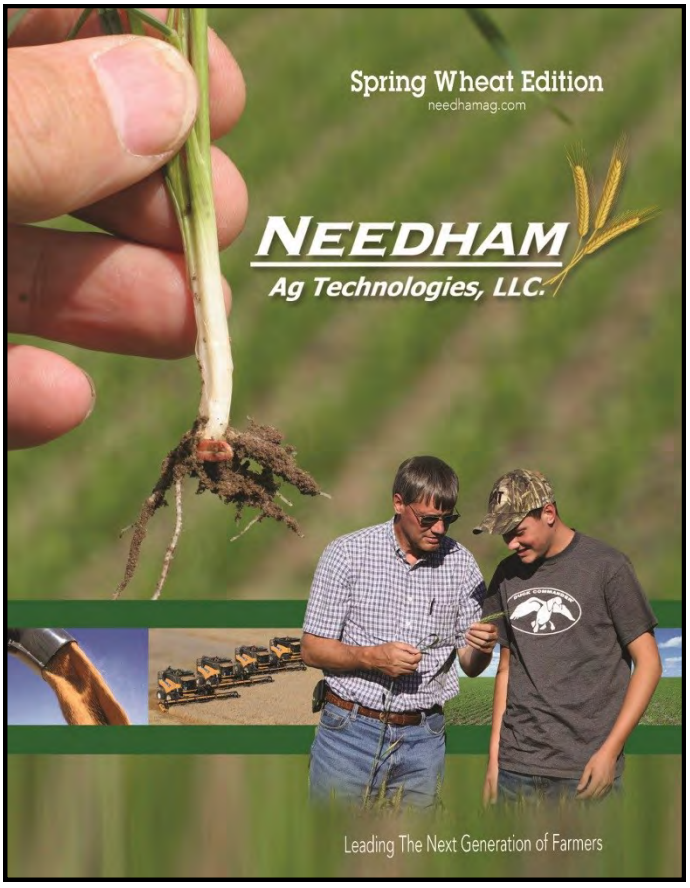
For more information on this guide, visit our website and online store at www.needhamag.com

Soft Red Winter Wheat Management Guide

$75.00 Plus Shipping

1.8 lb ea.

Hard Red Spring Wheat Management Guide.



This Hard Red Spring Wheat Guide is written for the soils, rainfall and wheat management practices within ND, SD, MT, MN, in addition to MB, SK, and AB.

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

Hard Red Spring Wheat Management Guide

$75.00 Plus Shipping

1.65 lb ea.

Spring Wheat Edition

Our Hard Red Spring Wheat management guide is the most comprehensive and 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 many important sections, which include managing residue with the combine at harvest. It also has a section which discusses most types of seeding equipment, in addition to different fertilizer placement strategies. The guide also discusses other important topics such as seed quality, seeding 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.

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