



PRECISION PLANTER

PPX

HORIZON

regeneration through innovation



Precision For Every Seed.

Modern farming demands a new generation of planters, capable of operating across diverse field scenarios including fully cultivated, min-till, strip-till, and no-till soils. The PPX rises to this challenge with unmatched versatility and performance. Whether dealing with high volumes of crop residue, hard no-till stubbles, or uneven strip-till seedbeds, the PPX excels in ensuring optimal seed placement and growth conditions.

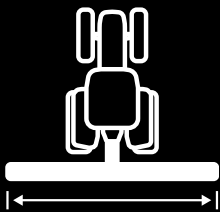
The Horizon PPX is not just a planter; it's a comprehensive solution for modern agriculture, designed to maximize yield and profitability. By reducing soil disturbance and optimizing seed placement, the PPX helps farmers achieve consistent, high-quality crops, season after season. Invest in the Horizon PPX and experience the future of planting technology.



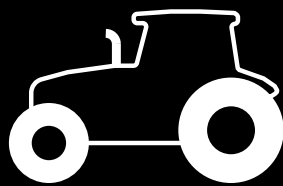


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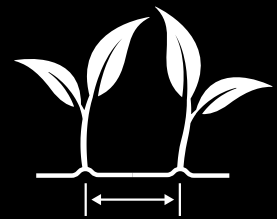
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3m-7.5m Working Widths



18hp Required Per Row



35cm+ Row Spacings

Why Choose the PPX?

Row Crop establishment is changing, with farmers now looking to reduce soil disturbance ahead of the planter operation. Therefore, a new generation of planter is required operate across a variety of field scenarios such as fully cultivated, min-till, strip-till and no-till soils.

When the planter places seed in the furrow, the yield potential for that plant is already being determined. At this stage, several factors such as emergence, compaction, singulation, spacing, and population will play a major factor in how that plant germinates, emerges and develops.

The PPX Planter has been designed to perfectly place seed into the optimal growing environment even in the most challenging environments. High volumes of crop residue, hard no-till stubbles or uneven and lumpy strip till seedbeds are just some of the challenges that the PPX can comfortably handle. The PPX won't only perform in these challenging scenarios, it will also capture live data and make automated adjustments to ensure the optimal growing environment is achieved for every seed.

PPX Frame Overview

Precise, versatile and durable.

CABLE MANAGEMENT TRAY

The PPX frame features a built in cable management tray for convenient and tidy wiring.

PRECISION PLANTING DELTAFORCE

Offers row-by-row automated downforce management

STABILIZER WHEELS

Optional.

FLEXIBLE ROW SPACINGS

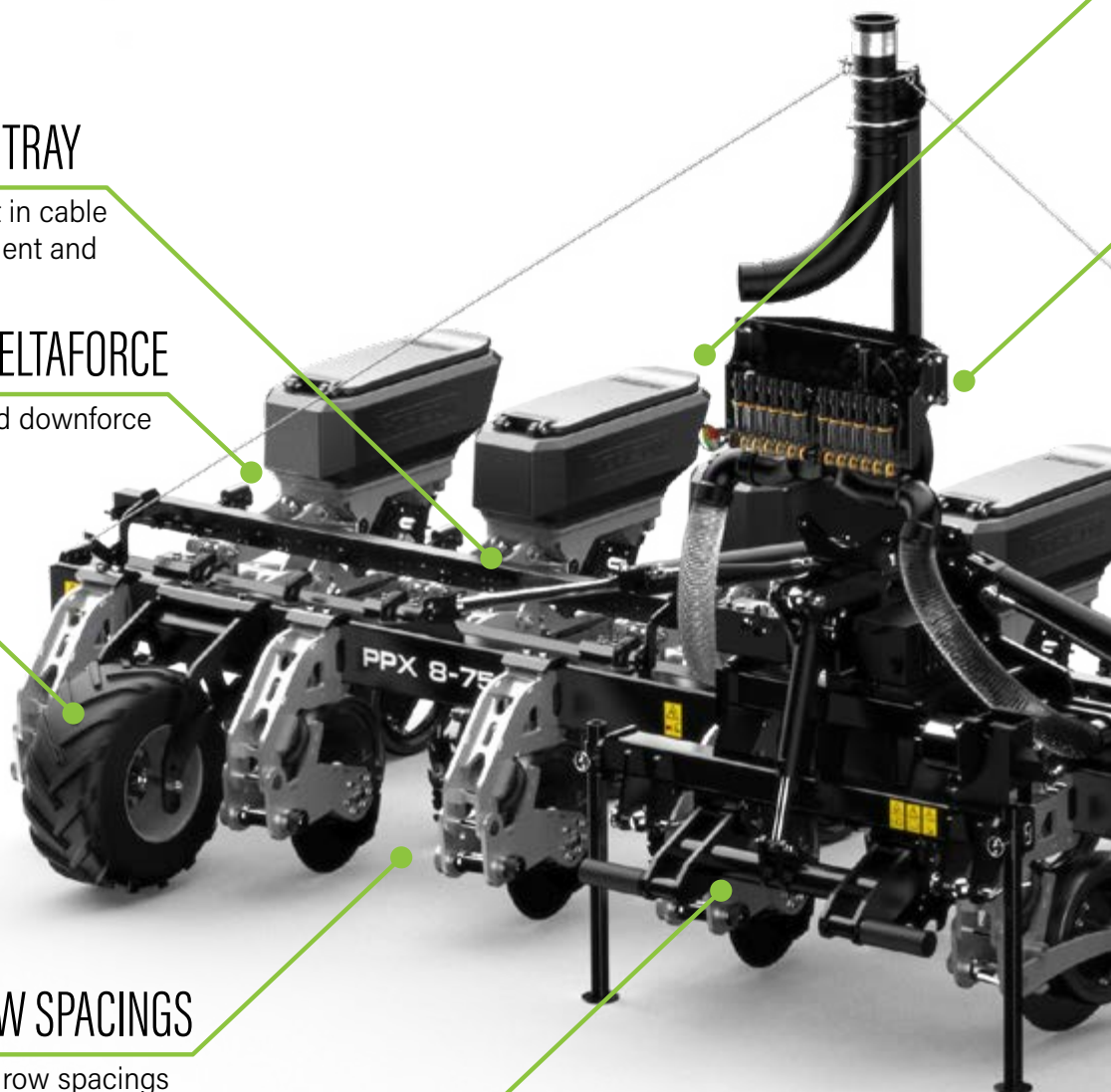
Wide range of row spacings offered, starting from 35cm.

HYDRAULIC WEIGHT TRANSFER KIT

See next page for more information.

FERTILISER OPENER DISC

Independent fertiliser opener with 5 depth settings and easy slide adjustment.



35CM SPACINGS POSSIBLE

The narrow PPX row unit allows a minimum row spacing of 35cm.

FERTILIZER OPTIONS

Fully integrated liquid or granular fertiliser kits are available.

INTEGRATED VACUUM SYSTEM

The PPX frame features a vacuum system built in, with configurable hose outlets.

FRAME OPTIONS

Folding or rigid mounted frames available up to 7.5m

MARKET LEADING ROW UNIT

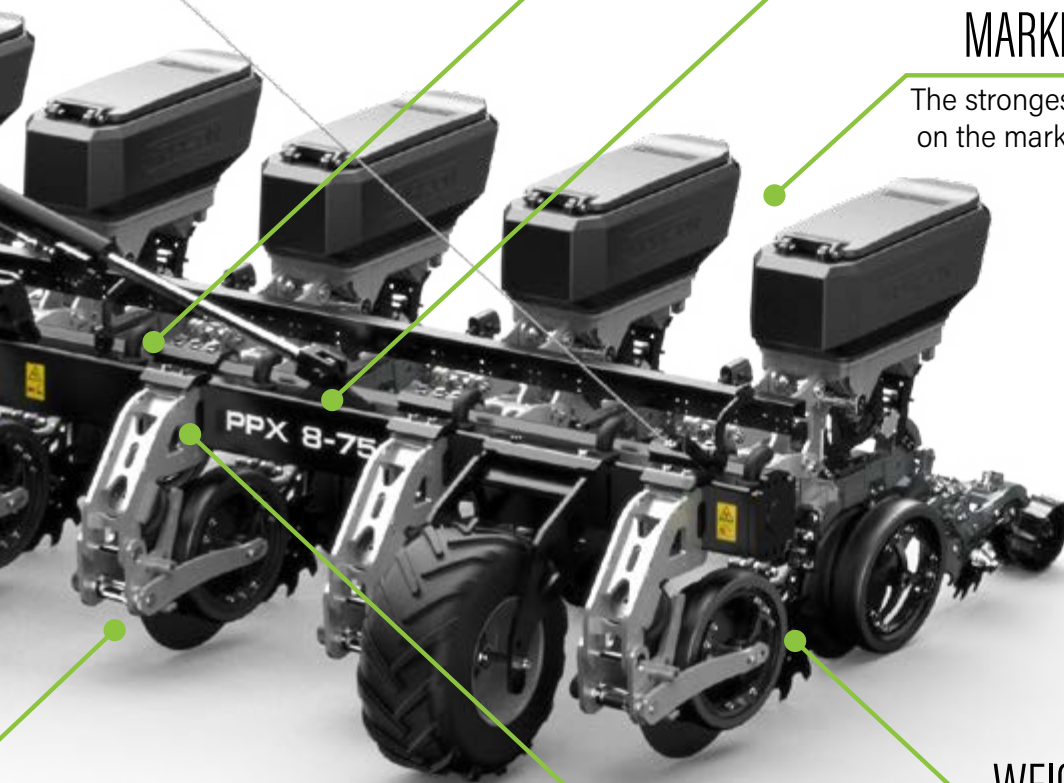
The strongest and most stable parallelogram on the market, whilst only being 13cm wide.

WEIGHT KITS

Optional.

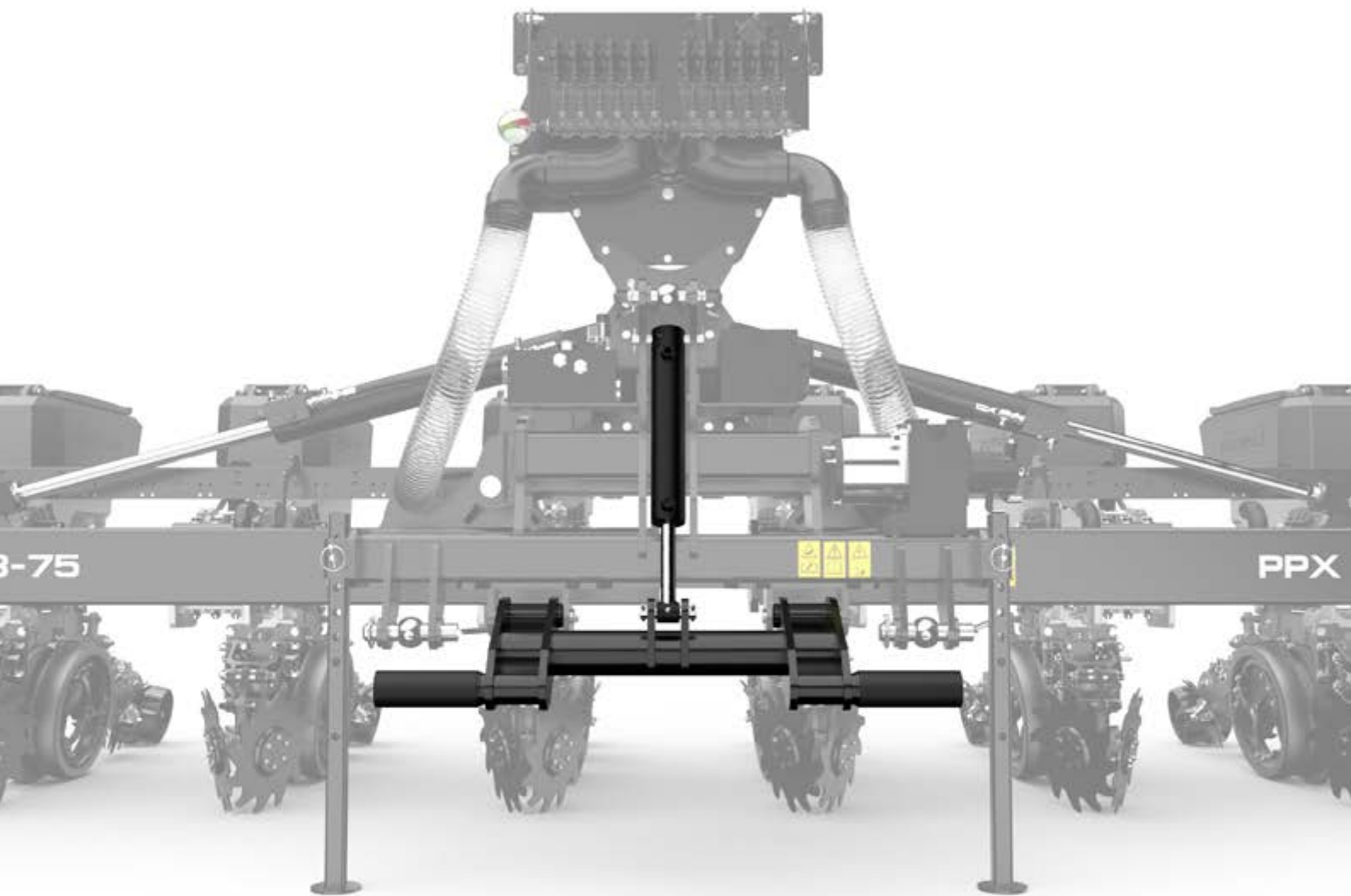
CLAMPING TOOLBAR FRAME

The PPX toolbar is designed to allow row units, stabiliser wheels and opener discs to clamp on and be adjusted easily.



Weight Transfer Kit

Dynamic weight control.

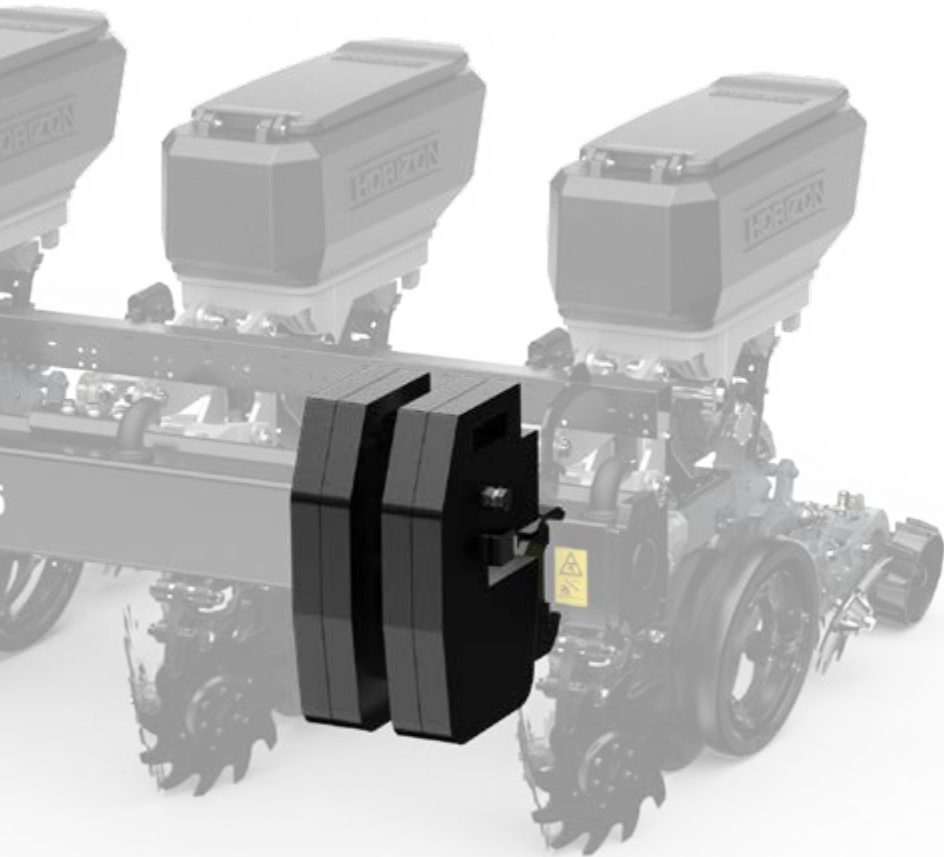


Increase downforce without weight blocks.

When working in strip-till and no-till conditions the planter may require additional weight to ensure optimum ground engagement. The PPX Weight Transfer Kit allows the operator to transfer any weight between 0-800kg from the tractor linkage directly to the PPX row units and mitigates the need to carry bulky wing weights.

Wing Weights and Stabiliser Wheels

Additional options for the PPX.



Optional wing weights.

Wing weights can easily be added to the PPX thanks to the clamping toolbar profile. When planting into hard, no-till conditions, additional wing weights may be required to complement the 800kg of downforce already being applied by our Hydraulic Weight Transfer Kit. When both the Weight Transfer Kit and Wing Weights are working in conjunction they will enable the Automated Deltaforce system to achieve its maximum downforce capacity of 300kg if required.



Optional stabiliser wheels.

The PPX can be configured with frame mounted stabiliser wheels to ensure consistent contour following on undulating fields. The wheels can be easily removed or adjusted, with a selection of positions for the wheel axle to accommodate for different tyre sizes. These wheels are designed to skim along the surface to minimise soil compaction.

Integrated Vacuum and Cable Management

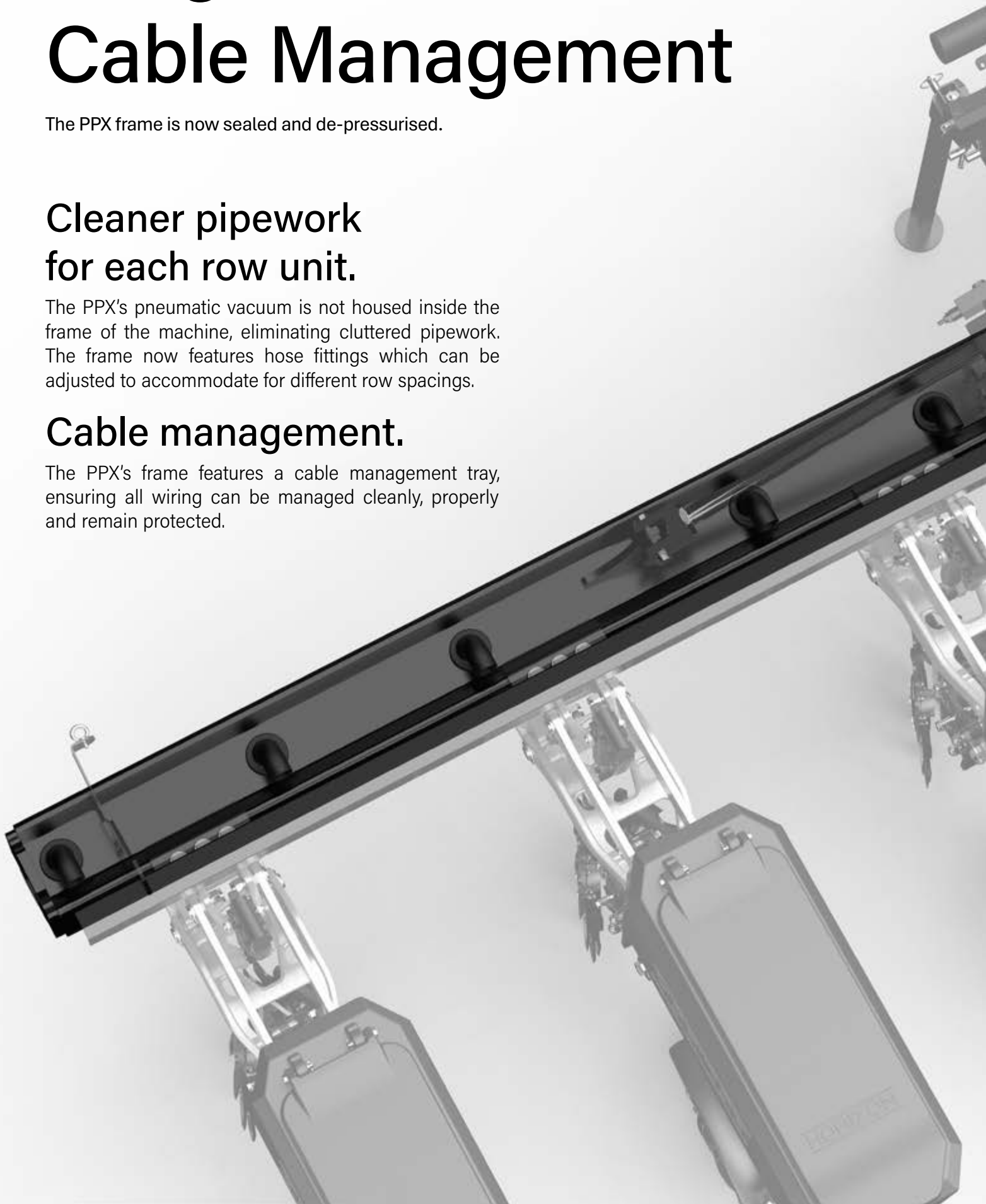
The PPX frame is now sealed and de-pressurised.

Cleaner pipework for each row unit.

The PPX's pneumatic vacuum is not housed inside the frame of the machine, eliminating cluttered pipework. The frame now features hose fittings which can be adjusted to accommodate for different row spacings.

Cable management.

The PPX's frame features a cable management tray, ensuring all wiring can be managed cleanly, properly and remain protected.

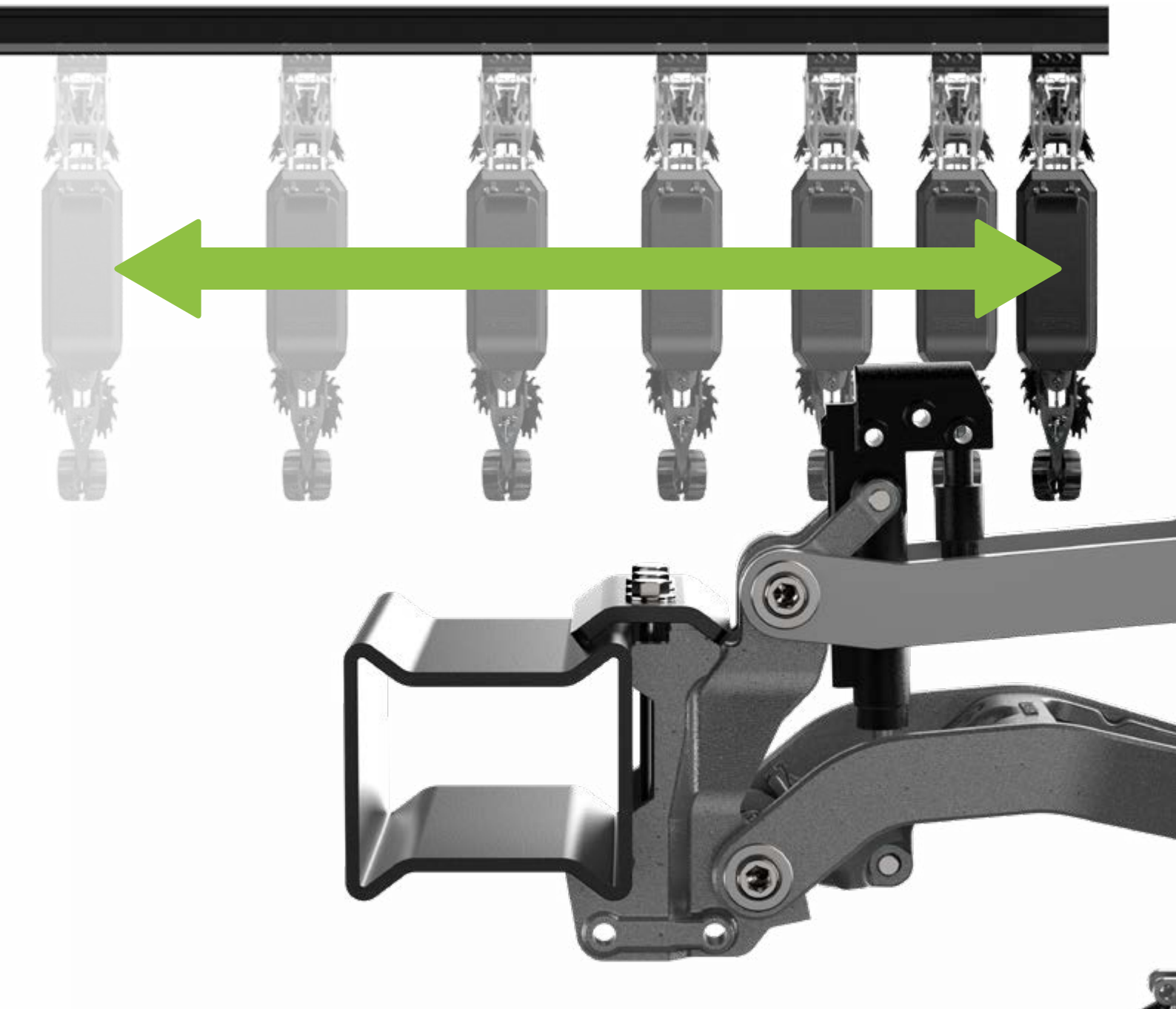


Flexible Row Spacings

Clamping toolbar profile.

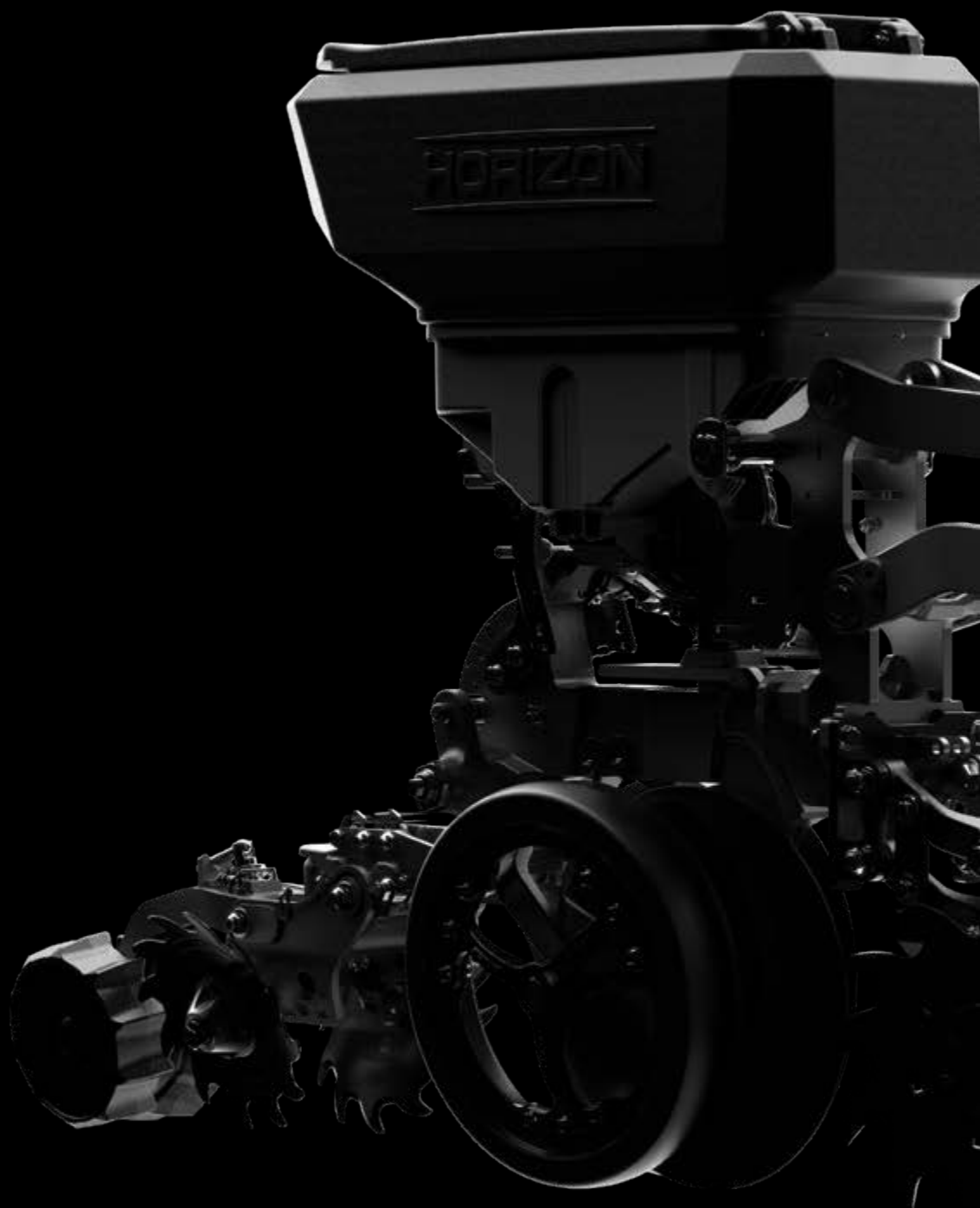
Configure your machine to any row spacing.

The PPX row unit features a clamping system that allows virtually any row spacing to be configured by the farmer. Combined with our row units extremely narrow design, this means that we can support any spacing all the way down to 35cm. This clamping system also offers strength, durability and stiffness, meaning the row units will always track straight even in the hardest conditions. The row unit is held onto the toolbar with three M16 bolts, which can be loosed to either allow the row unit to slide, or to be removed completely.



PPX Row Unit

The no-compromise planting system.





PPX Row Unit Overview

Accurate, adaptable and robust.

vSet®

Singulation metering system.

vDrive®

Electric drive system.

OPEN SPOKE GAUGE WHEELS

The diagram illustrates the PPX Row Unit, a precision farming implement. It features a large black hopper at the top with the 'HORIZON' brand name. Below the hopper is the vSet singulation metering system and the vDrive electric drive system. The unit is equipped with open spoke gauge wheels for soil monitoring. At the bottom, there is a liquid fertiliser placement system and a SmartFirmer seed firmer. The entire unit is mounted on a robust frame with large, treaded tires.

FurrowForce®

Adaptable two-stage closing system,
optional depending on region.

LIQUID FERTILISER PLACEMENT

SmartFirmer®

Seed firmer with a temperature, moisture
and residue sensor. Optional depending
on region.

62 LITRE HOPPER WITH SOFT CLOSING LID

DeltaForce®

Automated downforce control.

NARROW REINFORCED PARALLELOGRAM

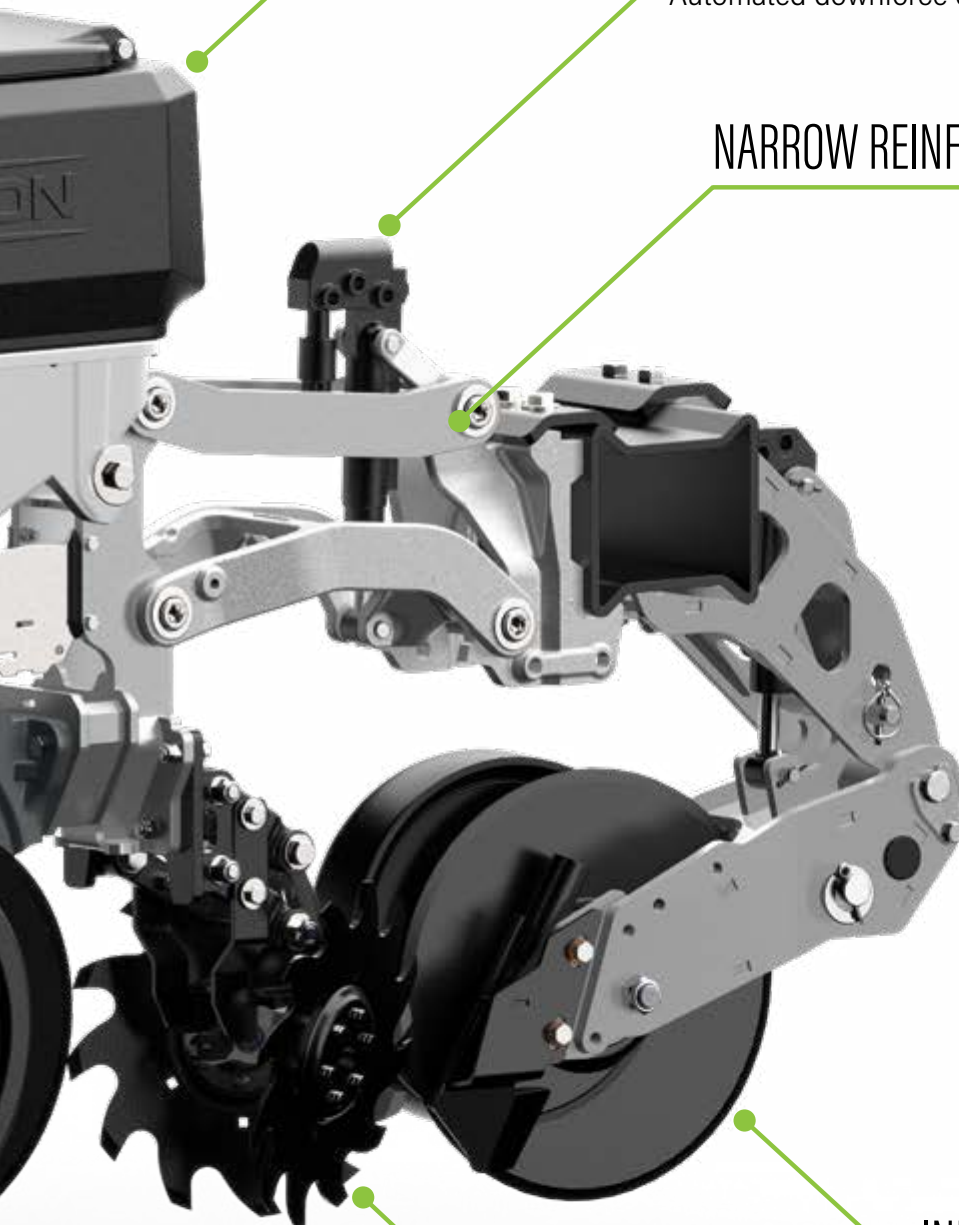
INDEPENDENT FERT OPENER

PNEUMATIC ROW CLEANER

With PP CleanSweep controls.

Keeton®

Seed firmer with liquid fertiliser application capability.



Row Cleaner

Consistent residue management.



Clear and manage residue.

Traditionally, row cleaners have been individually controlled through manual adjustment. This process is time consuming, especially in fields where conditions vary, and therefore provide a limited benefit to the farmer. Poor residue management due to ineffective row cleaners can lead to late emergence due to heat and moisture loss, seedling diseases and nutrients being lost as they are tied up by the residue.

Our pneumatically controlled row cleaners eliminate these issues, as the farmer can easily adjust all the row cleaners from the cabin while the machine is running. This means making adjustments for different areas of the field is easily done, and allows the row cleaners to operate much more effectively. In short, our pneumatically controlled row cleaners will save you time, save you from frustration and improve the chances for your crops.

Our row cleaners feature a double-disc design which runs on a parallelogram, ensuring efficient residue management and accurate height control. Our row cleaners run using CleanSweep pneumatic cylinders, which are controlled from the cab utilising the 20|20 screen. Our row cleaners are also ready for automation through CleanFurrow. When partnered with PP Smart Farmers, Clean Furrow measures the quantity of in-furrow residue and displays the information on the 20/20 screen, allowing the operator to adjust the row cleaners to ensure crop residue won't limit seed moisture uptake or transmit disease.

Row Cleaner

Consistent residue management.

Why choose a row cleaner?

No-till and strip-till crop establishment systems face both advantages and challenges when it comes to crop residue. When crop residue is left on the surface of the soil it acts as a natural soil armour and protects the soil. Soil armour offers significant benefits to soil erosion, moisture retention, temperature moderation, weed suppression, biological habitat, and nutrient recycling. However, whilst this residue benefits the soil it can also cause problems with crop establishment as the residue can get trapped in the slot with the seed. This is known as hair-pinning and leads to poor soil-to seed contact, inconsistent germination and increased disease pressure.

Our row cleaners mitigate the effects of hair-pinning. The row cleaners are pneumatically controlled from the cab and are mounted on their own independent parallel linkage, meaning they can easily and accurately be adjusted. The row cleaner disc itself is positioned extremely close to the opener disc, which minimises the chance of any debris falling back into the slot. The images below show a slot created through thick chopped straw, which thanks to our row cleaner is completely clear of any debris.



Standard Closing System

Adjustable closing system with a range of closing wheels.



Adjustable for ideal germination conditions.

Our standard closing system is adjustable and can be configured to meet the demands of local field conditions, ensuring perfect germination conditions. Our closing system promotes seed to soil contact and uniform emergence, eliminates side-wall compaction and is available with a range of wheels to suit a variety of soil types and seed needs.



25mm Rubber Wheel

The task of the closing wheel is to close the seed furrow and ensure perfect germination conditions. The closing wheel pressure can be adjusted.



50mm Rubber Wheel

These wider 50mm wheels are often used when planting very shallow, and is well suited to planting maize and sunflowers.



Cast Notched Wheel

Our cast notched wheel crumbles the soil and breaks the side-walls to ensure the furrow is closed, and is well suited to heavy soil conditions.

Narrow, Reinforced Parallelogram

Extra robust, extremely narrow.

Consistent Contour Following

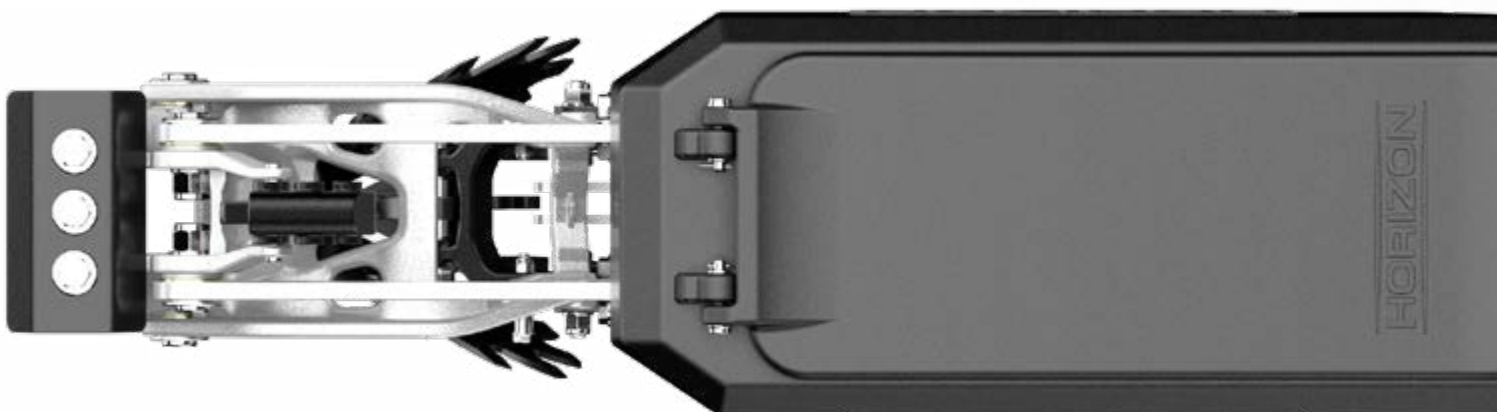
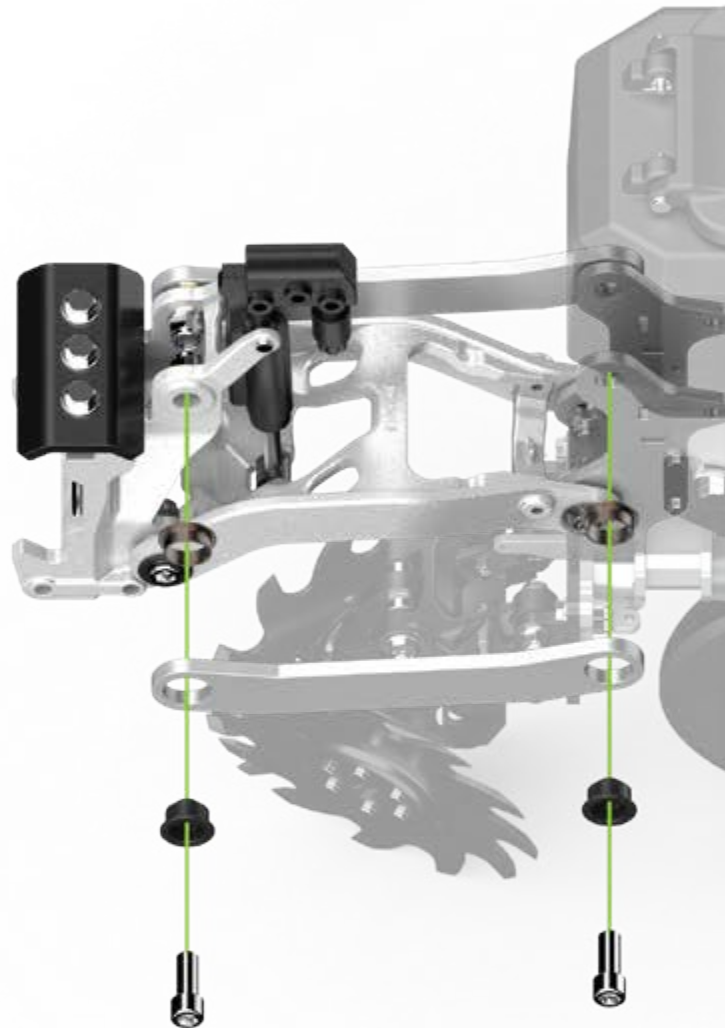
The PPX row unit features our own cast, reinforced parallelogram, capable of 33cm of travel. This parallelogram ensures consistent contour following for the row unit, guaranteeing even soil contact at every stage of the planting process.

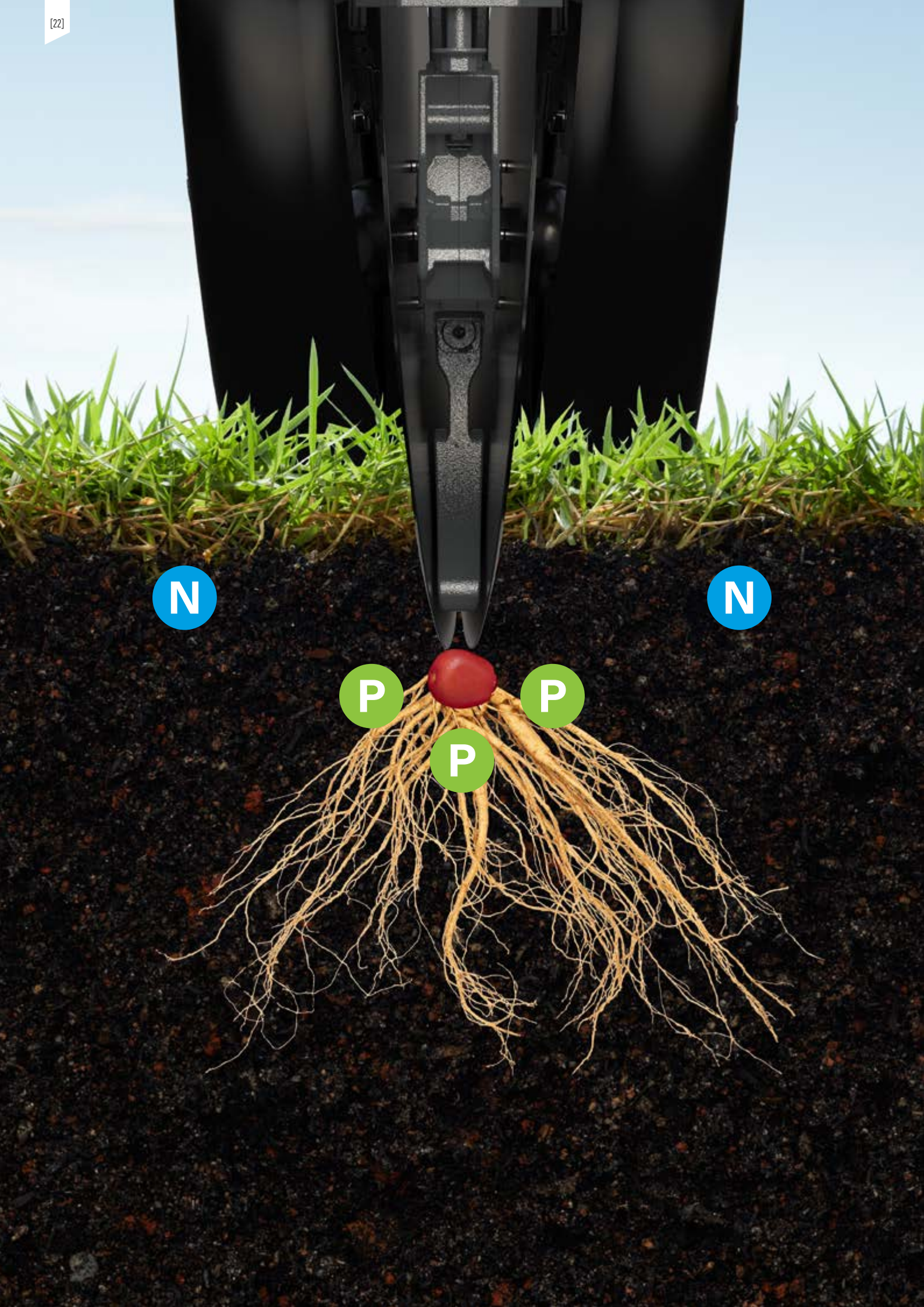
Reinforced and Durable Design

The parallelogram is extremely stiff, ensuring the row unit remains straight even in the toughest conditions. This is thanks to our parallelogram featuring hardened steel machined pivots which are roughly 4x stronger than more conventional bushings.

Narrow Form

Our PPX row unit parallelogram combines its strength and consistent contour following with an extremely narrow design, allowing the PPX to offer row spacings as small as 35cm.





Nutrient Options

Ensuring your plant has the best possible start in life

Nutrient Placement.

Accurately placing nutrients in the soil with the seed can dramatically improve emergence and vigour during the plants early growth stages. In comparison to broadcasting nutrients on the soil surface, placing nutrients in the soil during the planter pass will also reduce leaching and increase utilisation which will therefore unlock opportunities to reduce application rates.

The Horizon PPX offers farmers the ability to place either granular or liquid fertilisers in the seed furrow and also in bands to the side of the seed. Typically Horizon PPX customers will place a phosphate based starter fertiliser in the seed furrow and a nitrogen based fertiliser to the side of the seed, perhaps 5cm away.

Nutrient delivery - Liquid.



Dribble Bar

The dribble bar can be mounted on the closing system of the PPX row unit. The dribble bar applies nitrogen on the surface of the soil, where it can safely soak and travel towards the seed without any risk of seed burn.



Seed Firmers

Seed firmers such as the Keeton seed firmer can be used to apply phosphate or starter fertiliser directly into the slot with the seed. The seed firmer also ensures optimal seed-to-soil contact.

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Nutrient delivery - Granular.



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Fertiliser Opener

Our front fertiliser opener is ideal for delivering granular fertiliser directly into the soil. It achieves consistent off the row placement of fertiliser, ideal for nitrogen, and is mounted independently to the frame and can easily be adjusted.



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MG25 Delivery Tube

The MG25 features a vDrive Insecticide metering system, which can dose insecticide directly into the furrow through a stainless steel tube. The hopper is not pressurised, and the insecticide is propelled only by gravity.

Granular Hoppers and Delivery

Hoppers and delivery methods to suit your needs.



FT2200

Seamlessly deliver granular product to the PPX.

2200 litre granular front hopper.

The FT2200 utilizes a pressurized hopper, powerful fan, 2 metering systems and high capacity piping which enables it to handle large volumes of product. The metering system utilizes the same technology as the Horizon DSX which provides the operator with very accurate seeding, market leading functionality and the ability to quickly change from metering one product to two different products.



FT2200

Seamlessly deliver granular product to the PPX.

60/40 pressurized hopper.

The FT2200 front hopper features a dual hopper design, split 60/40. This allows storage of two different products, which can in turn be distributed separately thanks to the DSX metering system.

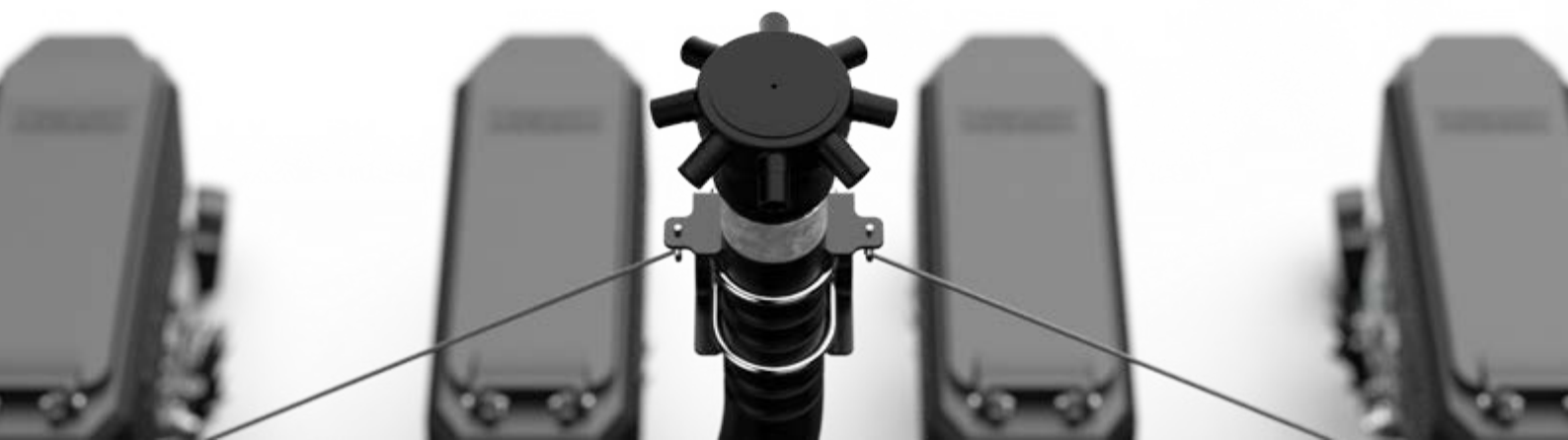


Metering system.

The FT2200 features two metering systems with interchangeable rollers, one for each tank. The metering systems are capable of an extremely wide range of application rates and types of products, as the rollers can be quickly changed in the field without any need for tools.

Distribution heads.

The products in each hopper can be directed into different air-streams, which can then be directed to one or two distribution heads. This allows the distribution of granular product to be directed to the front fert opener or the row unit, and even the distribution of alternating products.

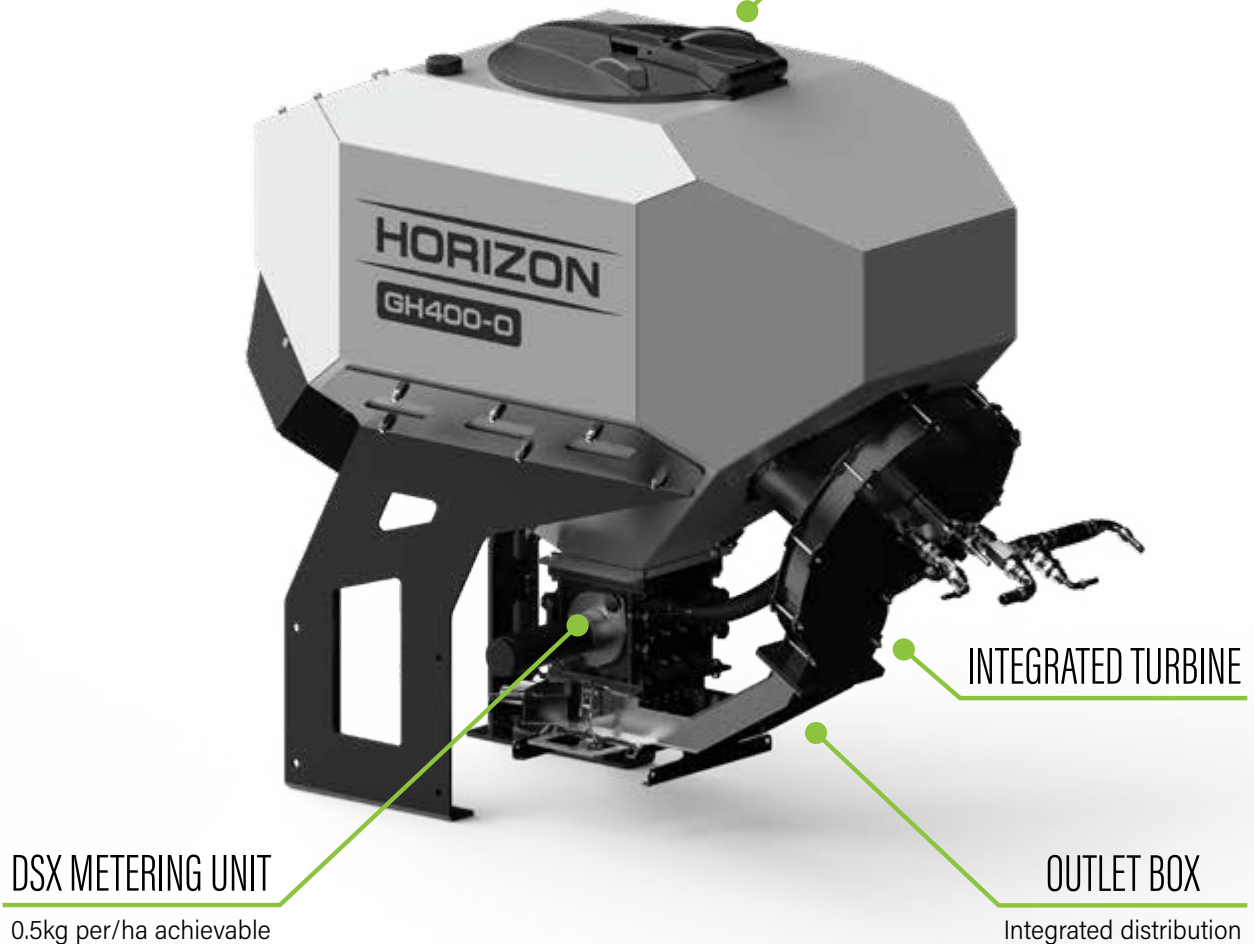


GH400

Ideal for microgranular fertilizer, slug pellets, Avadex or small seeds.

400L PRESSURISED HOPPER

Ideal for micro-granular fertiliser, slug pellets, Avadex and small seeds.



400 litre granular hopper.

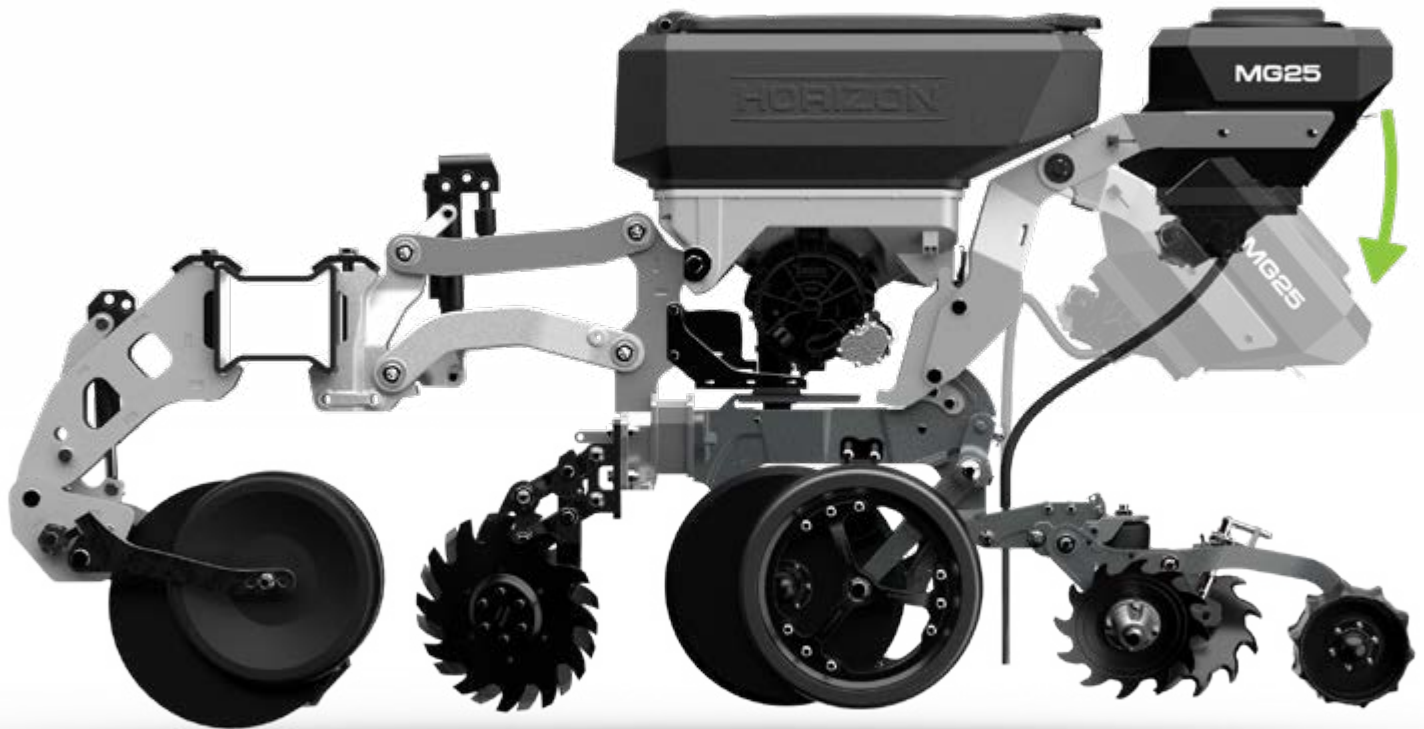
The GH400 is a compact, modular and highly configurable small hopper designed for a variety of applications and machines. Featuring the DSX metering system, the GH400 is pressurised and capable of distributing a variety of products.

The metering system is controlled by RDS Artemis ISOCAN Monitor or ISOBUS and features Touch Button Calibration. Designed for use with the PPX and SPX, the GH400-O is a standalone seeding hopper that features a turbine and integrated distribution box suitable for machines with 4-12 outlets.

- Highly modular design.
- 400l pressurized hopper.
- Configurable with a turbine, distribution heads or integrated 6 outlet distribution.
- Features the DSX metering system.
- 0.5kg per/ha achievable.
- Ideal for micro-granular fertilizer, slug pellets, Avadex or small seeds.
- Controlled through RDS Artemis ISOCAN Monitor or ISOBUS.
- Touch Button Calibration.

MG25

Additional mini-hopper for each row unit.



25 litre row unit hopper.

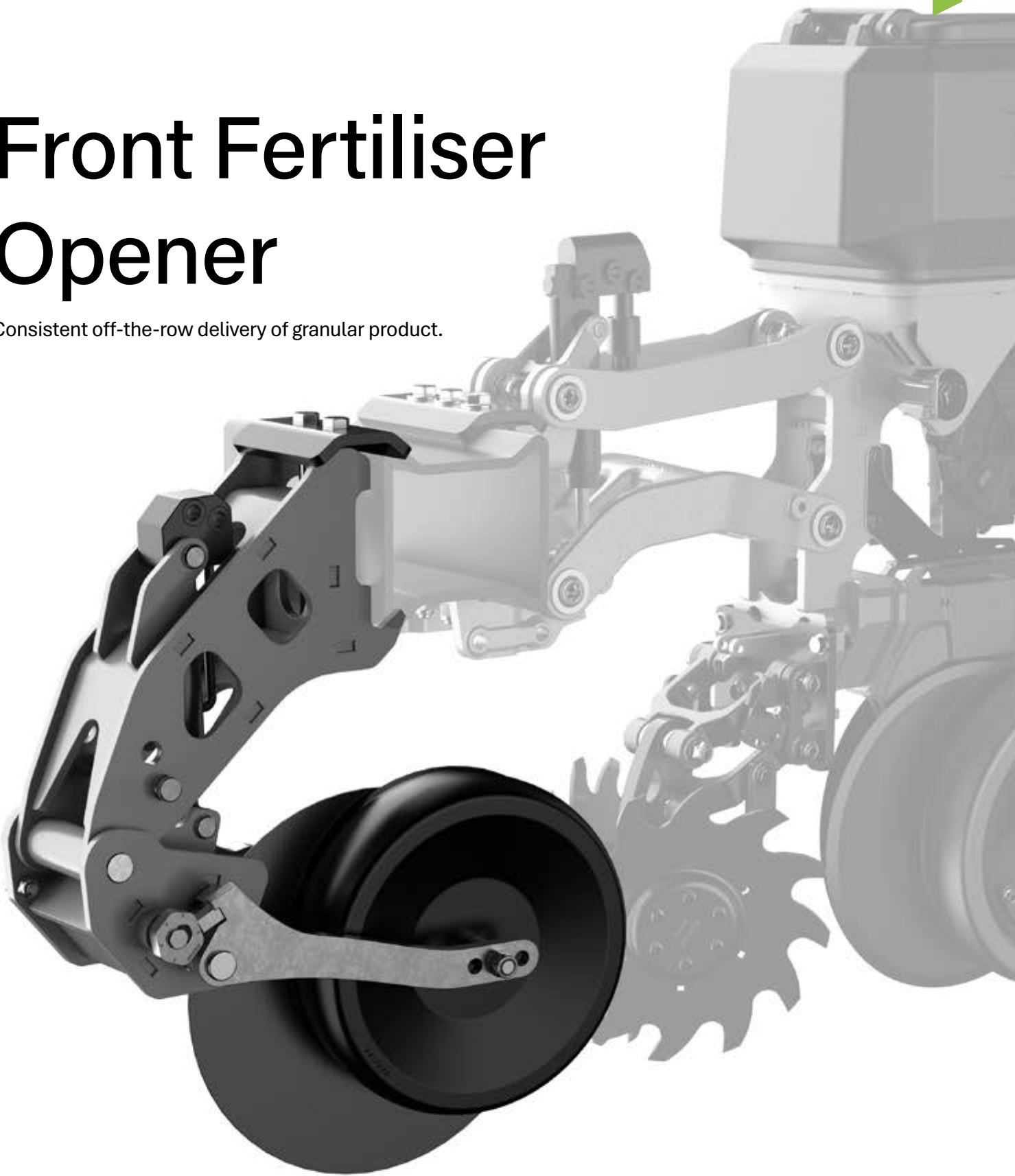
Our MG25 hopper is a 25 litre additional hopper for the PPX row unit, designed with micro-granular insecticide or microgranular fertiliser in mind. The hopper mounts on to the back of row unit and can apply micro-granular product directly into the seeding slot, totally separate of the main hopper and vDrive system.

The MG25 is driven by an independent Precision Planting vDrive insecticide motor, and controlled through the operators 20|20 screen. The MG25 features tool-less emptying, as the hopper can be tilted and drained through a sliding guillotine hatch. The hopper is not pressurised, and once metered the product falls through the seed tube from gravity.



Front Fertiliser Opener

Consistent off-the-row delivery of granular product.



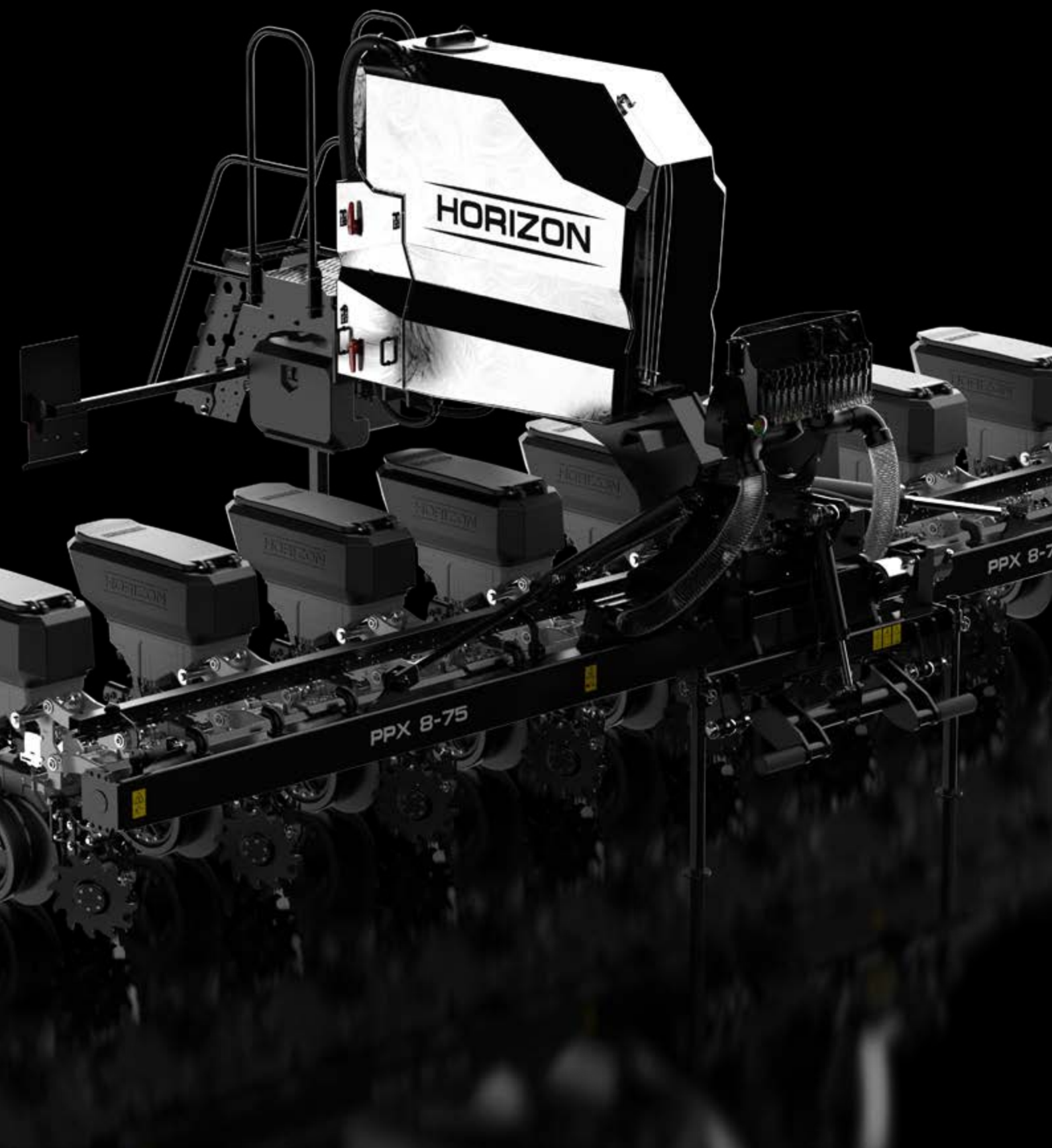
Deliver granular products directly into the soil.

The fertiliser opener is mounted directly onto the PPX toolbar which keeps it independent from the row unit. This stops any vibrations from the fertiliser opener transferring to the row unit and therefore ensures the row unit maintains a stable ride and delivers perfect seed placement. It also means the fertiliser opener can be easily positioned along the sliding toolbar into different positions for different applications.

The fertiliser opener can easily be adjusted to work from 10mm to 80mm deep.

Liquid Fertiliser Tanks

Bespoke systems for your machine



Liquid Fertiliser Tanks

Bespoke systems for your machine

Complete Liquid Fertiliser Solutions

We offer a range of liquid fertiliser options for the PPX, depending on the farmers nutrition requirements. Our tanks come complete with electric or hydraulic pumps, pipework, Wilger flow indicators and are controlled by the Precision Planting 20/20 Control system

Front Mounted Tanks

Our tractor mounted tanks are three point hitch mounted. Capacities available are from 750L to 2200L. All tanks are supplied with a full lighting pack including headlights, indicators and sidelights. All wiring and tractor harness is also included in the kit. A GPS speed sensor is used to eliminate complicating wiring when installing the tanks.



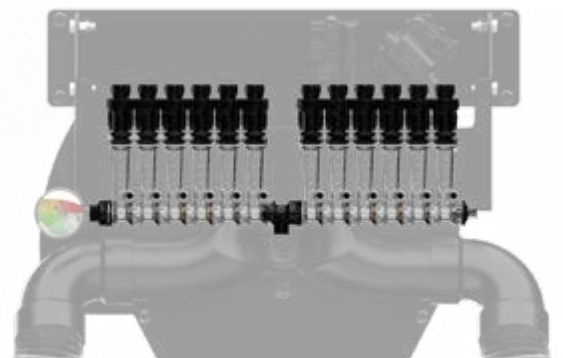
Rear Mounted Tanks

Horizon Agricultural Machinery also offer a liquid fertiliser tank designed to be mounted onto our PPX frame. This stainless steel tank has a capacity of 700L for liquid fertiliser, with an additional 400L capacity for water. The tank features complete pipework can be configured with either an electric or hydraulic pump as well as wilger flow indicators.



Wilger Flow Indicator

The wilger flow indicators let you identify any plugs or leaks so you can resolve them immediately, without any need for electronics or costly maintenance. These flow individual flow indicators are configured in a manifold, and therefore can be built to accommodate any amount of row units.







Precision Planting®



Who Are Precision Planting?

Precision Planting produce novel systems designed to enhance the performance of your agricultural machinery, with precision and maximising yields as their key focus. Their systems are suitable for a wide range of seasons, soil types and crops, and are designed to either be retrofit to an existing machine or supplied with a new machine.

Their systems provide the farmer with enhanced control over their planter, as well as automation and data to inform their decisions. This data is conveniently represented on an in-cab screen, as well as through a phone or laptop.



Precision Planting®

Please note - Precision Planting options may vary depending on region. Please get in touch with your local dealer to learn what is available in your area.



20|20®

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DeltaForce®

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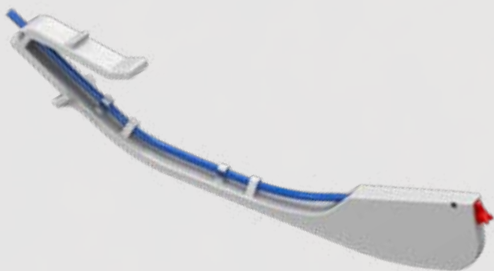
vSet®

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vDrive®

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Keeton®

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SmartFirmer®

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FurrowForce®

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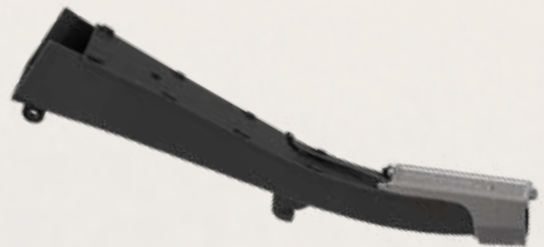
CleanSweep®

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BullsEye®

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WaveVision®

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EM FlowSense™

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EMHD®

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20|20[®]

Visualise data in the cab.



20|20[®]

Visualise data in the cab.



Data drives decisions.

High definition data enables high impact decisions. The 20|20 monitor provides the most advanced agronomic picture ever seen. Optimize planting, harvest, and application decisions with an intuitive interface that visualizes performance and field conditions in real time; seed by seed, plant by plant, drop by drop. Customize display configurations, add sensors, and discover things about your field you may never have known.

Control the data you collect and how you view it.

- **Population** - How much seed you're planting per acre with current seeding pace averaged across all rows.
- **Singulation** - What percentage of seeds are being properly singulated and planted one by one without missing a beat.
- **Ground Contact + Margin** - Confirmation that all rows have enough downforce but not too much to cause excess compaction.
- **Summary Information** - Once you're done planting you can find data for the total acres planted and total summaries of each product being monitored or controlled through the 20|20.

DeltaForce®

Automated downforce control.



DeltaForce®

Automated downforce control.

Take the guesswork out of downforce.

Running a single downforce setting across an entire field causes yield loss because the setting is rarely correct. DeltaForce is an automated row by row downforce control system that measures and adjusts downforce every time there is variability in your field, so your crops will thrive for optimal yields.

Row-by-row accuracy.

DeltaForce replaces the springs or airbags on a planter with hydraulic cylinders and load cells that measure how much weight is being carried on the row unit gauge wheels 200 times per second and keep it consistent. The operator sets a weight that should be carried on the gauge wheels, and DeltaForce does the rest.

Optimal furrow creation.

Your row unit needs the right amount of downforce. Not too heavy, not too light, just like the story of Goldilocks. With the power of automated downforce control, you'll gain consistent and optimal furrows for the best root development, which in turn offers ideal nutrient and water uptake for the seed.

Uniform seed placement and emergence.

DeltaForce cylinders maintain the same weight on the gauge wheels of every row, even across the variation of a field or from equipment. Getting the seed to the bottom of the trench ensures proper root development and consistent emergence, which in turn, increases yield.



vSet®

Effortless meter accuracy.



vSet®

Effortless meter accuracy.



Boost seeding accuracy.

Traditional seed meters need continual adjustment to plant accurately which leads to skips, doubles, and ultimately, lost yield. vSet seed meters singulate seeds accurately without any adjustments resulting in perfect seed placement throughout your field.



Perfect singulation.

The flat disk, combined with a singulator that is riding on the edge of the disk and knocks off extra seeds, means the singulation accuracy in corn and soybeans will be over 99%.



Easy upgrade path for swath control.

Pair vSet meters with vDrive electric drive to gain swath control and turn compensation.

vDrive®

Maintenance-free electric drive system.



vDrive®

Maintenance-free electric drive system.



Remove maintenance headaches.

Mechanical drive systems require costly and time-consuming maintenance. vDrive is a maintenance-free electric drive system that lets you breeze through planting without the headaches of a mechanical drive system.

Typical drive systems on a planter are made up of over 300 parts, and every one of those parts has to be functioning correctly. If any one of those parts are worn or functioning incorrectly, you have a problem that costs you yield. A better solution is to remove those 300 parts and eliminate the issues that come with them.

Simplify your system.

vDrive replaces all of those parts and drives the vSet meter on each row right at the meter, with no mechanical parts needed. vDrive also saves you seed by shutting off rows where you have already planted and makes sure that each row plants the correct population around a curve, something that a mechanical drive system can't do. Saving seed and planting the correct population around curves saves you money and gives you a yield increase, providing quick payback of the vDrive system.

Remove maintenance headaches, prevent breakdowns during planting season, and simplify your planter by adding vDrive.

Get insecticide right, too.

The vDrive insecticide meter takes all the great features of vDrive and does them for your insecticide too.

- Proper rate, regardless of speed
- Swath control
- Variable rate capabilities



Keeton®

Ensures seed to soil contact.



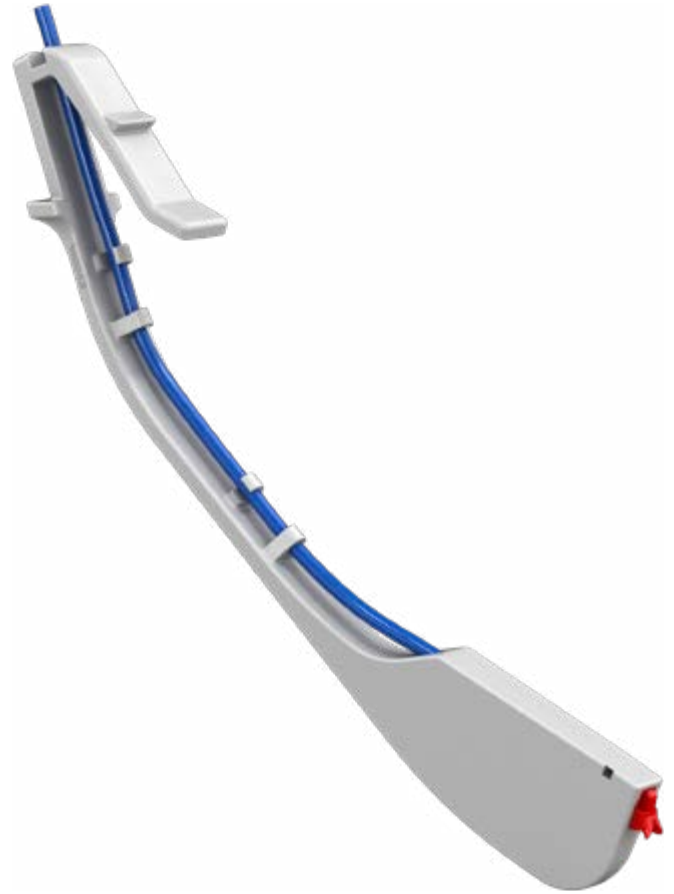
Keeton®

Ensures seed to soil contact.

A simple solution for seed firming.

When seeds don't make it to the bottom of the furrow, there is an air gap that causes a delay in emergence. The Keeton Seed Firmer gently presses every seed into the bottom of the trench to tuck it firmly in the soil, ready to take in the moisture and heat it needs. A simple attachment that adds yield to your planter.

The Keeton Seed Firmer can also act as a liquid application tool for insecticides, fungicides, and proper in-furrow fertilizers. Choose directly on the seed placement or a splitter to split the stream of liquid.



SmartFirmer®

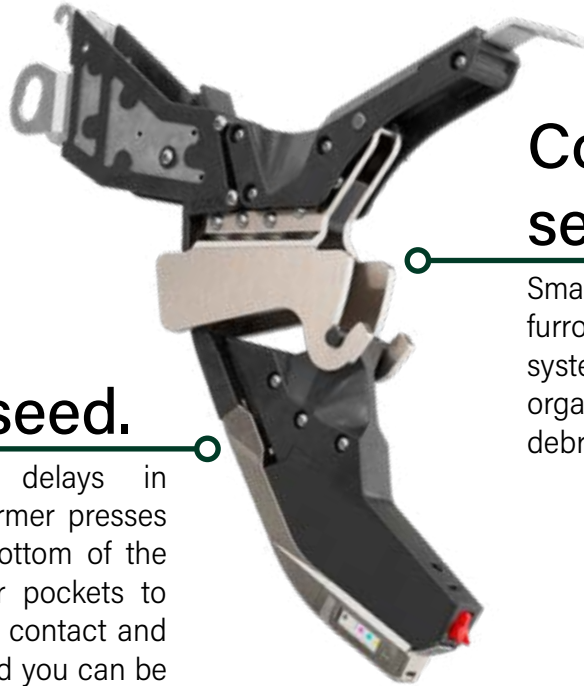
See inside the soil.



MUST BE BOUGHT THROUGH YOUR LOCAL PRECISION PLANTING DEALER

SmartFirmer®

See inside the soil.



Collect data from the seed trench.

SmartFirmer is a sensor that measures the furrow and sends feedback to the 20|20 system. View data from your soil, such as organic matter, seed available moisture, furrow debris, live CEC data and temperature.

Firm the seed.

Air gaps cause delays in emergence. SmartFirmer presses each seed to the bottom of the furrow, removing air pockets to improve seed-to-soil contact and give you a crop stand you can be proud of.

Furrow uniformity.

A consistent environment is essential for uniform seed germination and plant growth. SmartFirmer identifies any irregularities along the furrow, at every eighth of an inch, such as soil clods, air space, and dry soil falling from the surface, so that you can have the insight to correct row-unit performance and solve these yield-robbing problems.

What does SmartFirmer measure?

Soil Moisture Sensing - SmartFirmer measures moisture content in the furrow, allowing depth adjustments to be made to ensure seeds are planted into the optimal moisture content for uniform germination.

Soil Temperature Sensing - SmartFirmer measures the soil temperature in the furrow, enabling the operator to make the right decision about when to plant temperature sensitive seeds.

Furrow Uniformity Sensing - SmartFirmer identifies any irregularities along the furrow, such as soil clods and air space, giving operators an insight into the row unit's performance.

Residue Sensing - SmartFirmer measures the quantity of residue in the furrow and informs the operator if the row cleaners need adjustments, ensuring residue won't cause germination problems.

Organic Matter Sensing - SmartFirmer measures organic matter in the soil to give the operator a clear picture of nutrient availability to ensure the correct nutrition is applied.

FurrowForce®

Adaptable two-stage closing system.



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FurrowForce®

Adaptable two-stage closing system.



Fundamentally Different.

FurrowForce is a 2-stage closing system. In the first stage, notched wheels work to close the seed furrow from the bottom up, fracturing to eliminate air pockets, even in extreme no-till conditions where traditional closing systems struggle. In the second stage, stitch wheels carry weight on them to firm the soil. This consistent firming is especially beneficial behind spring tillage where the seed environment is at risk of drying out.

Different Wheels for Different Needs.



Curved Notch Wheel

The notched wheel is the best all-around wheel. The notched design creates ample fracturing and closing in most conditions.



Smooth Wheel

The smooth wheel is more effective in shallow-planted crops and sandy or loose soils.



Dimple Wheel

The dimple wheel is aggressive and excels in conditions like wet no-till clays and very heavy cover crop where extra fracturing of the sidewall is needed.

CleanSweep®

Easy row cleaner adjustments.



CleanSweep®

Easy row cleaner adjustments.

Make Adjustments From the Cab.

Setting row cleaners correctly is time-consuming and frustrating. CleanSweep allows you to make row cleaner adjustments from the cab, eliminating the frustration of getting row cleaners set, saving you time while planting. Correctly operating row cleaners can prevent late emergence from heat and moisture loss as well as seedling diseases, reduce hair-pinning and free nutrients that would otherwise be tied up by residue.

With an air cylinder on each row cleaner and control in the cab, you can get your row cleaner's pressure set correctly for any condition. No need to get out of the cab and get bloody knuckles, as the row cleaners can be controlled and adjusted in real time to suit a field's varying conditions. Apply down pressure to the row cleaners if needed, or lighten them up with lift pressure in mellow conditions. You'll eliminate frustration, save time, and see improved emergence consistency with CleanSweep.

How It Works.



The CleanSweep system consists of a compressor, in-cab controller and pneumatic cylinders. The in-cab controller can be adjusted by the operator, which in turn either releases air from the system or increases air through the compressor.

BullsEye®

Longer seed tube life, better spacing.



BullsEye®

Longer seed tube life, better spacing.

A seed tube meant to last.

Traditional seed tubes create erratic seed spacing due to premature wear and the location of any sensors. BullsEye seed tubes have tungsten carbide tips that make the seed tube last longer, and a recessed sensor eye to prevent inconsistent seed spacing. This simple solution eliminates the frustration of finding out your stand is not all that you expected when it emerges.

Prevent early seed tube wear and get long life with the tungsten-carbide tip on the BullsEye tube. This simple wear tip prevents disk openers from wearing a flap of plastic that slows down the seed as it exits, causing poor spacing.



Eliminate spacing issues.

Many seed tubes have a sensor that protrudes into the seed tube, which causes the seeds to hit the sensor and bounce, causing poor spacing. The BullsEye tube prevents this issue with a recessed sensor eye that eliminates sensor interference. See the difference in the path the seed takes in this time-lapse picture.

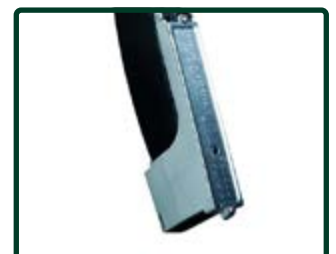
Extended wear life.

Prevent early seed tube wear and get long life with the tungsten-carbide tip on the BullsEye tube. This simple wear tip prevents disk openers from wearing a flap of plastic that slows down the seed as it exits, causing poor spacing.

Upgrade Sensors.

BullsEye has long life and great spacing, but still uses traditional light beam sensors that can give inaccurate population counts in dusty conditions. Consider WaveVision, a seed tube, and sensor that adds sensor technology that will not count dust, providing you with an accurate population no matter the conditions.

Learn more on the next page.



WaveVision®

See seeds, not dust



WaveVision®

See seeds, not dust.

Gain accuracy and keep data clean.

Traditional seed sensors count dust and seed, giving you inaccurate population counts and that uneasy feeling of not knowing if you can believe your planter monitor. WaveVision is a seed sensor that counts only seeds and not dust, giving you confidence that the population you see on your monitor is the population that you're planting.

See what you're really planting.

Dust won't get in the way of accurate data anymore. By using high-frequency radio waves, WaveVision measures mass instead of shape, so seed can't be confused with dust particles. You'll get the population you want. And you'll see more accurate information so you can have peace of mind — you're doing the right thing.

No optical sensor, no ricochet.

Too often, seeds hit the sensor on their way down the seed tube. When this happens, seeds ricochet down the tube causing the familiar skip/double pattern in the field. WaveVision reduces these errors by eliminating the optical sensor that causes the errors.

Avoid premature wear.

We've inserted tungsten carbide wear tips that prevent the double-disk opener from wearing through the tip of the seed tube. It's a simple solution to an annoying problem.



FlowSenseTM

Measure row-by-row fertilizer rates.



FlowSense™

Measure row-by-row fertilizer rates.

Watch Liquid Application Rates In Real-Time

Current fertilizer flow meters tell you if fertilizer is flowing, not the rate that is being applied on each row. FlowSense allows you to measure the rate of fertilizer you are applying on each row of your planter or sidedress bar, to make you aware of any row-to-row variability that is occurring so that you can be confident in your application rate.

With flow being displayed on the 20|20 in the cab, you will know the rate that each row is receiving. This allows operators to be able to fix issues as soon as they start to occur, and find issues before it's too late.

EM FlowSense has one path for one product and powers flow from .07-3.5 GPM. It is designed with no physical components in the liquid stream, so it works well with any grade of fertilizer—even thick products and products in suspension. A 50-mesh filter is recommended.



Pair FlowSense With EMHD For Control.

FlowSense monitors flow and EMHD controls the flow. When combined you can manage your fertilizer application from the cab. EMHD gives you the flexibility to use a wide variety of solutions and suspension products.

[Learn More About EMHD On Page 59](#)

Control + Monitoring All In One With vApplyHD.

vApplyHD is a control system that incorporates flow measurement, rate control, and swath control into one module that can be configured for section or row-by-row control. Choose vApplyHD for filtered starter fertilizer solutions.



EMHD[®]

Easily control liquid rates.



EMHD®

Easily control liquid rates.



What Can EMHD Do?

EMHD controls liquid application rates using an electromagnetic flow meter. This opens up your options for a wider range of liquid products. Use the liquid product you want with the accuracy you need with EMHD.

- **Row-by-Row Swath** - Gain swath control on a row-by-row basis to save product and money.
- **Liquid Prescriptions** - Utilize prescriptions to apply product at the rate you want, where you want it.
- **Turn Compensation** - The flow meter automatically adjusts the pressure on curves to keep the rate consistent.



Accurate Control.

The EMHD modules can be configured in either section control or row-by-row control. The result is your liquid fertilizer is applied at the correct rate whilst the 20|20 display provides an insight into the liquid application in real time for the operator inside the cab. A Gen 3 20|20 is required to control and monitor liquid application with EMHD.

What Makes EMHD Different than vApplyHD?

- EMHD only offers control, not monitoring. FlowSense must be paired with EMHD to monitor, whereas vApplyHD controls and monitors with one module.
- EMHD has a 50-mesh screen with an operating range of 0.03 - 13.2 lpm, whereas vApplyHD has an 80-mesh screen with an operating range of 0.19 - 11.36 lpm.
- For liquid control, EMHD pairs with our electromagnetic flow meter EM FlowSense whereas vApplyHD uses an internal turbine.



HORIZON

| regeneration through innovation |

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