CASE IH PLANTER PRODUCTIVITY GUIDE

for 2000 Series Early Riser® Planters with Pro 1200 Display

GENERAL INFORMATION

For years, successful growers have relied on Case IH to lead the way with the ultimate planters for their cropping operations. They have trusted their crop to the timeless design principles of the Early Riser Row Unit, while continuously implementing greater levels of precision and higher efficiency practices in their operations.

Case IH's 2000 series Early Riser Planter is designed with this progressive customer in mind, delivering a new level of efficiency to the agriculture industry. This is achieved through integrated industry-leading technologies, including many factory-fit Precision Planting components. These improvements allow growers to continue to reap the benefits of earlier emergence and higher net effective stands that they have achieved with Early Riser planters for years, all at the higher speeds needed to stay competitive in today's industry.

The planter row unit must consistently place the seed into direct contact with moist soil, at a uniform depth, with even in-row seed spacing. The 2000 series row unit maintains the agronomic design true to the Early Riser name, with a greater level of durability and ruggedness for higher planting speeds.

Equalizing gauge wheels are pulled, not pushed, by the row unit. Gauge wheels easily "walk" over residue and clods to minimize depth variation, and are more stable at faster ground speeds and adverse field conditions. Then, the Early Riser row unit uses offset double disk openers to slice a trench through heavy residue and hard soil. The low angle opener and specially-contoured gauge wheels produce a uniform trench, and retain moist soil next to the trench. A furrow forming point defines the seed trench and forms loose soil, creating the perfect seed delivery environment. Patented covering disks gently squeeze the trench closed, returning moist soil over the seed. Finally, a wide press wheel lightly firms soil on top of the furrow to eliminate air pockets, ensuring optimal seed-to-soil contact for quick germination.

This guide is intended to serve as a reference and not as a replacement for the Operations Manual. For more detailed information on safe operation of equipment and planter systems, please reference the appropriate machine Operations Manual and the Case IH software operations guide.

The **vSet® 2 Vacuum Seed Meter** was co-developed with Case IH and Precision Planting engineers specifically for the Early Riser planter. This meter, combined with vDrive® electric drive, ensures precise per-row seed metering with simplicity and less maintenance. The mini-hopper's or on-row hopper's single air-intake screen is easy to access and clean. In fact, the entire seed meter offers fast, easy and, yes, tool-free maintenance and adjustments – even when switching between crops.

CONTENTS

GENERAL INFORMATION

The unique chevron tread pattern scores the soil to encourage surface cracking for easier emergence in crust-prone soils. **The attention to seed placement accuracy delivered by the Early Riser is evidenced by proven emergence on average from one to three days faster than with other planter row units.**

The 2000 series Early Riser Planter combines the industry's most accurate planter technologies with an all-new rugged row unit and toolbar for early and uniform emergence. This next-generation technology, along with the ease of use you need to meet optimal planting windows, gives your crop the best opportunity to achieve its full yield potential.

Case IH offers a selection of planter designs to suit customer's transport needs, including fold configuration and transport width. The 2000 series Early Riser folds as narrow as 12 ft. 4 in. (12R30, 16R30) on 2150 models, and 15 ft. 4 in. (24R30, 32R30, 36R30) on 2160 models. Quick moves from field to field to help you spend more time planting and less time moving between fields when conditions are right. Once again, Early Riser planter advantages get your crop in the ground and growing faster than other planters. Total planter control controlled through the Pro1200 display provides row by row detail for both seed performance and row unit ride metrics. This high definition visualization does not require any additional unlocks as it is provided in the base software. Additionally the Pro 1200 provides the operator a premier level of connectivity using the FieldOps platform for 2 way file transfer, fleet & data management as well as productivity reporting.

Individual row shut off control (Advanced Section Control) is included in the base level software on the Pro 1200 display software version 4.00 and later.

SEED DELIVERY OPTIONS

As a factory installed option the **Precision Planting Wave Vision seed sensor** can be ordered. The mid-mount seed sensor (located above the shoe) is an advanced microwave seed sensor. This sensor works particularly well in conditions with high dust and wind where optical sensor performance can be impacted. (Note: Only corn & soybeans have been validated for use)

The **Seed Tube** option (left) is optimized for accuracy at faster planting speeds, using DICKEY-john® Hy Rate Plus 10 LED self-calibrating seed sensors for accuracy in a range of seed sizes and field conditions.

The **Advanced Seed Delivery™ (ASD™)** (above) option delivers the highest level of seed placement accuracy. This includes the Precision Planting SpeedTube, which uses a flighted belt to control the delivery of the seed from the meter to the furrow, eliminating the drop and tumble variability of traditional gravity drop tubes at speeds up to 10 mph.

PLANTER CONFIGURATIONS

Case IH Early Riser® 2000 Series Planters are available in multiple configurations to match any farming operation. The Pro 1200 planter software is compatible with the following models.

2110 Rigid Mounted

- 6R30/36/38/40
- 8R30/36/38/40
- 11R 15/6R 30 Split Row
- 15R 15/8R 30 Split Row

2120 Rigid Trailing

- 6R30
- 8R30
- 11R 15/6R 30 Split Row

2130 Stack-Fold

- 12R30
- 12R36
- 12R38
- 12R40
- 16R30
- 18R30

2140 Pivot-Transport

- 23R 15/12R 30 Split Row
- 24R20
- 24R22
- 24R 15/12R 30 Split Row
- 31R 15/16R 30 Split Row
- 32R 15/16R 30 Split Row

2150S Front-Fold

- 23R 15/12R 30 Split Row
- 24R20
- 24R 15/12R 30 Split Row
- 31R 15/16R 30 Split Row
- 32R 15/16R 30 Split Row

2150 Front-Fold

- 12R30
- 16R30
- 24R30

2160 Large Front-Fold

- 24R22
- 24R30
- 32R30
- 36R20
- 36R22
- 36R30
- 47R 15/24R 30 Split Row
- 48R 15/24R 30 Split Row
- 48R20
- 48R22

OPERATION

REMOVING THE PLANTER FROM STORAGE

1. Clean hydraulic hose couplers before connecting to the tractor.
2. Make sure tires are properly inflated before moving the planter.
3. Remove protective grease and clean exposed cylinder rods.
4. Carefully raise the planter, making sure settling during storage, or other closely-parked equipment does not result in interference when raising and moving the planter.
5. Verify vacuum hoses are securely connected.
6. Inspect the entire planter for signs of rodent or other damage. Check hydraulic hoses and wiring harnesses for proper routing, and tie strap as needed.
7. Lubricate all grease fittings. Do not over-grease fittings lubricated when the unit was put in storage.
8. Cover bulk fill hopper bottom with 50/50 graphite/talc mix.
9. Clean seed tubes/SpeedTubes and seed sensors.
10. Close air compressor drain.
11. Read the Operator's Manual for both the planter and display operation.
12. Reconnect, charge, and test the planter battery.

OPERATION

TRACTOR/PLANTER HOOKUP

Several important factors must be considered when matching the tractor to the planter. The Tractor/Planter Preparation section of the Operator's Manual lists specific requirements for your planter configuration. General factors are:

- Minimum tractor PTO horsepower
- Minimum tractor weight and ballast
- Minimal number of remote hydraulic valves
- PTO compatibility with planter hydraulic pump, if equipped
- Adequate 12 volt electrical system capacity
- 3-point hitch (if applicable), 2-point hitch (if applicable), or drawbar (if applicable) requirements
- Tractor tread width adjustable to row spacing

Some specific details that apply to general tractor/planter compatibility requirements include:

- Horsepower and Weight Requirements must be met to maintain control of the planter in the field and transport situations. This is especially important when operating on hilly or unstable soil when additional control is required.
- Low Back Pressure Case Drains on all 2000 series planters. Low pressure is defined as less than 25 PSI under full-flow conditions. Refer to your tractor Operator's Manual for correct low-pressure return connections for your tractor.
  - A hydraulic case drain port is required for all 2000 series planters. A warning tag on the case drain hose reminds the operator that incorrect connection of the case drain may damage the vacuum fan motor. Motor failures due to improper case drain connection are not covered by warranty.
- Hydraulic PTO pump (if equipped) supplies various planter hydraulic circuits. Refer to specific tractor installation instructions for PTO pump torque restraint kits.
- Tractor 3-point hitch adjustments should be set according to planter Operator Manual instructions. For example, sway adjustment will vary between hitch-mounted toolbar planters, and a drawn planter using the 3-point hitch quick coupler connection to the tractor.

- Electrical system requirements include the standard seven-pin connector socket for safety lighting, a nine-pin connector for planter power and communications, and system wiring.
- Tractor requirements vary widely depending upon the size of planter and type of hitch arrangement. Always refer to the Operator Manual for information pertaining specifically to your planter.

When hookup is complete, thoroughly inspect the routing of all hoses and electrical harnesses between the tractor and planter.

- Steer the tractor/planter combination through complete right and left turns, raise and lower the tractor or planter hitch while observing routing to assure no interference develops during operation and maneuvering.

Hydraulic Usage

Hydraulic oil consumption by planter subsystem. Maximum flow is listed in GPM however will be reduced based on factors including crop type and ground speed. Use this information to ensure a balanced hydraulic demand on tractors with dual hydraulic pumps and as a reference tool to determine if a PTO pump is required for optimal planter performance.

- Vacuum – 9 GPM
- Bulk Fill – 9 GPM
  - 12.5 GPM on 2160 models
- Hydraulic Down Force – 0.25 GPM per row
- Alternator – 9 GPM
- Compressor – 4 GPM
- Liquid Fertilizer – 3 GPM
- Sub Frame Down Force – 0.75 GPM
- Wing Down Force – 0.25 GPM
- Dry Fertilizer Drive – 3 GPM

Reminder that lifting the planter will require additional oil flow, but the need can be reduced by using the Auto shutoff feature for the BF fan and alternator. These numbers are provided as a guideline, please contact your dealer for further details on oil flow requirements.

OPERATION

LEVELING THE PLANTER

To achieve proper levelness of the planter the tractor hitch must be properly set at operating position for planting. Keep in mind, because the parallel links are curved, the distance from the ground to each parallel link bolt likely will not be the same. The line drawn on the image below depicts this difference. Each row unit has the capability of +/- 8 inches of travel and should be near the mid point when leveled.

1. **Measure**
   Distance between the ground and the front and rear of the toolbar should be equal.
   If not, follow step 2.

2. **Adjust**
   - Planter should be in level field area prepared for planting
   - The tool bar, hitch and wings of the planter should all be made level with the ground and checked for accuracy with a digital level, if possible.
   - When the planter is lowered to the operating position, the toolbar will be parallel to ground
     - *Drawbar Hitch units – adjust the clevis to the correct position to achieve desired height*
     - *2 Point/3 Point units – use tractor hitch controls to achieve and set desired height*
     - *If hitch adjustment is inadequate, carrying wheel height is adjusted by changing mounting location on support arms*

GENERAL PLANTING TIPS

Several important factors must be considered when planting.
General factors are:

- **Always be moving forward when lowering planter into planting position**
  - Lowering the planter to planting position while stationary may cause plugging at the seed shoe
- **Dig often** to check seed depth and seed spacing accuracy.
- **Frame remote operation varies by planter configuration.**
  - ***2140/2160*** – Operate with frame remote powered down (moving the frame remote to float may be required in rugged terrain or for marker ground following
  - ***2150/2150S*** – After powering the planter down move to the float position to allow markers (if equipped) to float
- **Check tractor hydraulic flow adjustments** for each planter function running direct from tractor after reaching operating temperature.

  NOTE: It is recommended that flow levels be set just above the required amount for each circuit to reduce the potential for overheating and power consumption.

OPERATION

PLANTING WITH AN ELECTRIC DRIVE PLANTER

Electric drive planters require different operating techniques than hydraulic drive planters. Follow these guidelines for consistent seed spacing and population across the field, especially at the start and end of each pass.

MAINTAIN CONSISTENT ENGINE RPM

- 1800-1900 RPM recommended (see tractor ops manual for details)
- To decelerate the tractor, always downshift to a lower gear to maintain engine RPM
- Avoid throttling down, which can cause unwanted seed gaps from vacuum fan pressure drop

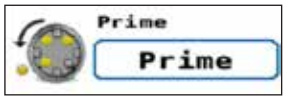
AVOID SUDDEN CHANGES IN SPEED

- Smooth acceleration and keeping speeds under 3 MPH when starting from a stop or when exiting previously planted areas will result in optimal overlap control (for scenarios not utilizing Jumpstart)
- When shifting gears while planting, shift one gear at a time
- Sudden speed changes may cause unwanted seed gaps

PLANTER SYSTEMS (START)

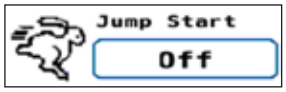
- Engage constant flow hydraulic remote valves, PTO (if equipped), and set engine rpm.
- Press and hold for 3 seconds to start all necessary subsystems-vacuum, bulk fill (if equipped), alternator, wing & sub-frame down force (if equipped), compressor, plus primes the seed meters and liquid system, if enabled, prior to selecting Planter Systems (Start).

PRIME CONTROL



- Loads seed meters to prepare for planting

JUMP START



- Allows product application drives to start early when accelerating from a complete stop
- Drives apply using a Jump Start speed until it is exceeded by actual ground speed

'STOP PLANT' FEATURE

- Operator raises the planter to pre-set height before slowing to a stopped position, disengaging product drives

PLANTER SYSTEMS (STOP)

- Turns off all planter systems initiated with Planter Systems (Start).
- Lower engine rpm, disengage constant flow hydraulic remote valves and PTO (if equipped).

SERVICE

TAKE FULL ADVANTAGE OF YOUR DEALER SERVICE INSPECTION CAPABILITIES

Have you, or did someone you know purchase a new planter in the last few years and continued to use it in much the same way as the planter it replaced? Many times operators do not fully realize and take advantage of modern features. As a result of not fully utilizing the planter's features, the owner may not be getting all the value from the money spent. Many of the items suggested in this booklet can be completed by the owner when preparing for the season or the operator when starting a new field. Other adjustments, service procedures, or repairs might be more effectively completed by your dealer's trained service technicians.

Ask your Case IH dealer about Customized Maintenance Inspections. It is a proactive way to be sure your planter will operate at its best possible performance when you need it. Customized Maintenance Inspections include a visual and functional inspection of your planter. They can be used as a pre-season or as a postseason tune-up.

Benefits include:

- Increased productivity
- Less downtime during the season
- Lower operating costs
- Improved fuel economy
- Documented maintenance
- Service by Case IH-trained technicians
- Service with Genuine Case IH lubricants, filters, and parts

The combined advantages of Customer Maintenance Inspection services should result in a lower cost of ownership and higher resale values.

SERVICE

CHECKLIST FOR YOUR 2000 SERIES EARLY RISER PLANTER

	OK	Replace/ Adjust
PRESS WHEEL		
1. Splits, cracks	☐	☐
2. Chevron bars/center rib	☐	☐
3. Bearing	☐	☐
4. Down pressure spring and cartridge condition	☐	☐
CLOSING DISC		
5. Diameter (min. 8 in.)	☐	☐
6. Bearing and cap condition	☐	☐
7. Spring and cartridge condition, or air cylinder condition (if equipped)	☐	☐
RESIDUE MANAGERS		
8. Air cylinder and rod boot condition (if equipped)	☐	☐
OPENER DISC SCRAPER		
9. Cleans openers properly (replace as needed)	☐	☐
OPENER DISCS		
10. Diameter (min 14.5 in.)	☐	☐
11. Clearance between openers (0 mm-3 mm) (3 shims behind lead opener, 4 shims behind trailing opener)	☐	☐
GAUGE WHEELS		
12. Rubber/rim condition	☐	☐
13. Clearance to disc (0 - 1/8 in. max.)	☐	☐
14. Wobble arm	☐	☐
15. Pivot arm pins	☐	☐
ROW UNIT PARALLEL LINKAGE		
16. Linkage poly bushings – replace before worn completely through	☐	☐
SEED SHOE		
17. Excessive wear at bottom and side of shoes	☐	☐
DEPTH CONTROL		
18. Row units zeroed (if parts were replaced)	☐	☐
SEED METERING SYSTEM		
19. Seed meter cover seal (wear points visible, deformation)	☐	☐
20. Seed disc, seed holes	☐	☐
21. Singulator	☐	☐
22. Ejector wheel	☐	☐
23. Brush condition	☐	☐
24. Seed tube condition	☐	☐
25. SpeedTube belt, feeder wheel, rumble strip condition	☐	☐
26. Vacuum lines (condition, obstructions)	☐	☐

	OK	Replace/ Adjust
PNEUMATIC SYSTEMS (IF EQUIPPED)		
27. Air compressor filter (clean or replace)	☐	☐
28. Air compressor oil level (inspect, annual replacement)	☐	☐
29. Air tank (drain, inspect)	☐	☐
30. Air lines (leaks, damage, etc.)	☐	☐
ON-ROW SEED HOPPER (IF EQUIPPED)		
31. Hopper condition	☐	☐
32. Hopper lid	☐	☐
BULK FILL OPTION (IF EQUIPPED)		
33. Tank lid seal	☐	☐
34. Inductor clean out and seal inspection	☐	☐
35. Hydraulic fan motor (oil leaks)	☐	☐
36. Air leaks – hoses, induction box	☐	☐
MARKER DISCS (IF EQUIPPED)		
37. Disc condition	☐	☐
38. Bearing condition	☐	☐
GRANULAR CHEMICAL (IF EQUIPPED)		
39. Discharge tube	☐	☐
LIQUID FERTILIZER (IF EQUIPPED)		
40. Tank, filter, flow meter, and all lines clean	☐	☐
41. Orifices installed and clean	☐	☐
42. Section valves and individual row shutoffs (if equipped) – clean and function	☐	☐
43. Coulter wear/damage (if equipped)	☐	☐
44. In-furrow nozzle condition, clean/not blocked (if equipped)	☐	☐
45. Calibrate	☐	☐
ELECTRICAL		
46. Wire harnesses/tie straps	☐	☐
47. Fuses	☐	☐
48. Seed tube & SpeedTube sensor (function/LED), clean	☐	☐
49. Hopper seed level sensor	☐	☐
50. Wheel speed sensor (if equipped) (approx. 0.1 in. air gap)	☐	☐
51. Monitor (operation, functionality)	☐	☐
52. Battery fully charged, battery holding charge	☐	☐
TRACKS (IF EQUIPPED)		
53. Track and idler roller condition	☐	☐
54. Idler roller oil level	☐	☐
55. Track alignment	☐	☐
OTHER/ATTACHMENTS (IF EQUIPPED)		
56. Frames	☐	☐
57. Welds	☐	☐
58. Tire pressure/inflation	☐	☐
59. Hydraulic hose routings	☐	☐
60. Hydraulic oil reservoir level (PTO pump only)	☐	☐

SERVICE

DAILY MAINTENANCE

Daily maintenance on Case IH planters is limited to a few simple lubrication and component checks.

Grease points

- Identify by reviewing the maintenance section of your planter Operator Manual
- Lubricate all frame pivots and driveshaft grease fittings (if equipped)

Air Compressor

- Drain air tank at least once daily
  - Auto Drain Kit available through your Case IH dealer – **PN: 51447993**
- Clean pneumatic air filter(s) daily, replacing as needed
- Check oil level, and add synthetic 15W-50 engine oil as needed

PTO Pump System (if equipped)

- Check fluid level in PTO pump reservoir, adding CASE IH HY-TRAN PREMIUM as needed
- Check fins on PTO pump fluid cooler for plugging, cleaning with shop air or low pressure wash as needed

VERIFYING PLANTER PERFORMANCE AND "AS REQUIRED" MAINTENANCE

Early Riser row unit maintenance is described in the Operator Manual as "as required" service functions. This means that units can be operated without need for specific maintenance checks as long as meter function is to standard, and seed placement and seed furrow opener performance is satisfactory.

Defining "as required" maintenance is quite simply to "get out and dig" behind the planter to check performance

- Recommended throughout the day on varying rows until a full planter inspection is completed at least once per day
- Maintain enough down pressure to prevent row unit bounce and potential poor seed placement
- This is especially important when starting each season; or when making planter changes or adjustments
- Turn off air pressure to closing systems (if equipped), lift closing disks with a strap, and lock press wheel in transport position to access closing system components.

Check depth on seed trench opening disks (**A & B**). Seed depth should be checked from the press wheel impression to the seed. Do not measure from the gauge wheel impressions, or the surface of the soil between the row unit gauge wheel tracks.

Check furrow forming point depth (**C**).

Check seed spacing and placement to confirm seed meter accuracy and setting (**D**).

Closing Disks OR V-press wheel – Confirm covering disk action and seed trench closure (**E**).

Verify press wheel (if equipped) function (**F**).

SERVICE

vSet 2® SEED METER REMOVAL & INSPECTION

Refer to Ops Manual for further instructions

1. Remove the seed hopper and meter
   - Disconnect wiring harness connector, vacuum hose and bulk fill seed hose coupler (if equipped)
     NOTE: When removing the seed hose coupler, care should be exercised so that the sealing O-ring does not become dislodged from the coupler.
   - Disconnect the seed hopper by unlatching the hopper (mini hopper and on-row hopper) from the row unit
   - Remove the seed hopper by tilting the hopper up (mini hopper and on-row hopper) and lifting out of row unit assembly
   - Remove seed meter assembly from the seed hopper by unlatching spring latch and lifting out of seed hopper
     - A pin style meter retention was used in production for 2021. A pin style Meter Retention Kit is available from your Case IH dealer – **PN: 90402170**

2. Disassemble the seed meter
   - Disconnect the two seed meter retention springs from the locking tabs on the meter housing to remove the seed meter cover
   - Remove clip from seed disc shaft, and remove the seed disc

3. Inspect and clean meter and hopper components:
   - Mini Hopper or On-Row Hopper (if equipped)
     - Remove mesh vent to clear debris
   - Meter
     - Vacuum seal – inspect for wear and deformation, which may require replacement
     - Meter housing – clear debris, clean with soap and water
     - Meter cover – clear debris, clean with soap and water
     - Seed ejector wheel – inspect for excessive wear and to check for binding
     - Air vents – clear of debris, clean with soap and water
   - Singulator
     - Clear debris from behind singulator
     - Should be seated fully into the tabs on the singulator mounting spring
     - Inspect lobes for wear. If flat spots have developed, replace the singulator
     - Check radial spring for detent. Ensure the ends of the radial spring are seated in the holes of the seed cover wall and that the radial spring is retained behind the two tabs on the seed cover wall.
   - Brushes (upper and lower)
     - Clear debris, and replace brushes if seed leakage occurs.
   - Seed disc
     - Primary indicator is reduction in planting performance. Performance issues can be caused by:
       - Seed holes are not round
       - Agitator pockets are severely worn
       - Drive teeth are worn or damaged
       - Disc has become warped

SERVICE

SEED TUBE & SPEEDTUBE™ MAINTENANCE

Refer to Ops Manual for further instructions

Seed Tube Inspection & Cleaning (if equipped)

- Remove seed hopper and meter from row unit, as formerly explained
- Use cleaning brush provided with your planter

OPTION 1 (most thorough clean) – Remove Seed Tube from housing by disconnecting connector and lifting. Clip cable ties, and wipe the seed sensor clean. Clean the inside of the seed tube thoroughly using a cleaning brush and a clean cloth. Rinse with clear water. Reinstall cable sensor with new cable ties. The seed tube must be completely dry prior to re-use.

OPTION 2 (quick clean) – With Seed Tube still in housing, run cleaning brush down seed tube or raise planter and run cleaning brush up from tube bottom.

SpeedTube™ Inspection & Cleaning (if equipped)

- Remove seed hopper and meter from row unit housing, as formerly explained
- Unplug the connector, remove SpeedTube™ from row unit mount, and unscrew optical sensor
- Open SpeedTube™ assembly by compressing the housing tab and rotating the side cover about the hinge as shown
- SpeedTube™ Inspections:
  - Feeder wheels: check for wear or damage
  - Soybean deflector (if applicable): check for wear or damage
  - Belt – check belt tension. If required, reset tension by loosening the idler pulley set screw to allow the spring to tension the belt, then re-tighten the set screw.
  - Rumble strip – check for wear or missing nubs
  - Sensor windows – clean, free of debris
  - Inspect pulleys, feeder wheels, belt, and belt track for dirt
  - Inspect lower seed exit path for wear
    - A stainless-steel wear strip was added in later Speed Tubes to improve wear life

SERVICE

2000 SERIES EARLY RISER ROW UNIT INSPECTION

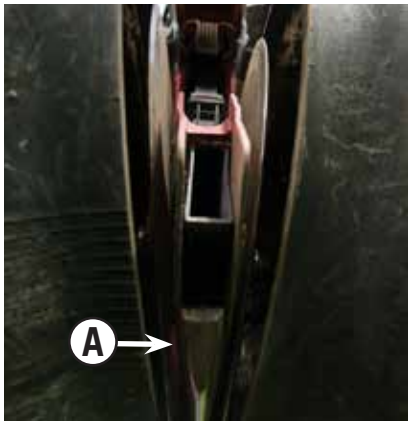
When servicing ground-engaging components, use care to avoid injury on parts worn sharp by contact with the soil.

- Refer to the Operator's Manual maintenance section for the proper procedures for replacing components.

A walking beam suspension between the two gauge wheels and the row unit opener frame allows one gauge wheel to pass over a rock or clod.

- From the factory, there are typically 3 shims behind leading opener disk, and 4 shims behind trailing opener disk. If opener plugging is experienced as opener disks wear, one shim may be removed from trailing opener disk.
    - Acceptable for disks to touch lightly at some points
- A furrow forming point **(A)** finishes the trench by shaping the soil at the bottom of the trench into a consistent flat bottom for optimum soil-to-seed contact and germination.
- Inspect seed shoe, and replace if it is worn through. Replace furrow forming point when seed shoe is replaced. Inspection gauge no longer needed for replacement of forming point.
- Opener disks should be replaced when they are worn to a 14-1/2 in. diameter.
- Inspect opener disk scrapers. Opener disk scrapers are not adjustable, and should be replaced when they are no longer able to keep disks clean in your soil and planting conditions. Internal scrapers are factory installed starting with Model Year 2025 production but can be retrofitted for sticky soil conditions where internal buildup is experienced.

DISK OPENER PART NUMBERS		
PART #	DESCRIPTION	FOR MODELS
92217955	Heavy Duty 15 in. x 4.5mm Leading/Trailing	2000 Series
51691765	15 in. x 4.5mm Leading/Trailing	2000 Series



SERVICE

BULK FILL HOPPER INSPECTION

Some simple checks should be performed on bulk hopper systems to assure proper operation.

- Lid seal condition and integrity
- If the lid gasket does not appear to contact the lid evenly, adjustment of the hinges and latches may be helpful in maintaining a more airtight seal
- Remove debris from the bulk fill fan screen
- Clean bulk fill inductor box by opening clean-out doors. Seed tank will drain unless the blockoff plate is installed. (see images below)
- Inspect inductor box seals for signs of air leaks
- Clean bulk fill bin level sensors for seed treatment and lubricant build up

Blockoff Plate Stored

Blockoff Plate in Use

SERVICE

INDUCTOR BOX CLEANOUT

Prior to planting season, maintenance needs to include an in-depth cleaning of the inductor box. Without proper air flow inside the inductor certain rows can be starved of seed.

Steps to properly clean the inductor are as follows:

- Remove the three nuts (only two shown in picture) that retain the Bulk Fill inlet hose flange for easy access
- Open the clean-out doors on the bottom of the inductor (use the seed flow shut off block-off plate if seed is present in the tanks)
- Remove the Seed Baffle and inspect for debris and damage
  - Ensure the proper seed flow baffle is installed
    - Small holes are for larger seed (i.e., corn & soybeans)
    - Larger holes are for smaller seed (i.e., sugar beets & milo)
    - Review Recommended Settings Chart for more details on Seed Baffles
- Using compressed air blow through the mesh screens inside of the inductor
  - From the clean-out doors upwards and from the air inlet access point
    - See pictures for details
- Vacuum out all debris and reassemble the inductor

SERVICE

LIQUID FERTILIZER (IF EQUIPPED)

The 2000 series liquid fertilizer system uses a variable flow rate centrifugal pump, inline filter, flowmeter (feedback), pressure sensor, agitation nozzle (in tank), up to 3 section control valves, applicator orifices, and nozzle body check valves to control the application rate.

The pump supplies sufficient flow (gpm, l/min) to supply the needs of the flowmeter and agitation circuit. Pump flow rate is controlled through the Pro 1200, based on the desired application rate input by the operator. These components require regular inspection and maintenance to assure accurate application rates throughout the entire planting season.

DAILY MAINTENANCE

- **Drain all liquid fertilizer from tanks.**
  Flush liquid fertilizer system with water after daily use. Do not allow water-diluted fertilizers to remain in the fertilizer system overnight or longer. Salts will separate from the dilution and clog the system.
- **Inspect all hoses for wear, twists, or cracks.**
  Repair or replace as necessary.
- **Inspect applicator orifice.**
  Flush or clean as required if flow is diminished.
- **Inspect oil level sight glass** (wet seal pumps only) and refill with Ace Pump Barrier Fluid PN: 90375315
- **Confirm pump pressure gauge is in the green.** If not check for leaks and add compressed air (wet seal pumps only).

Note: Do not run pump dry. Seal damage will occur.

SEASONAL MAINTENANCE

Prior to storing planter, prepare the Liquid Fertilizer system with the following:

1. Drain tanks and flush with water.
2. Disconnect supply hoses and check valve caps.
3. Clean orifices with water and allow to dry before storing.
4. Disconnect flowmeter assembly and clean with water. Reinstall flowmeter.
5. Flush the liquid fertilizer system with RV antifreeze (propylene glycol) if located in an area where freezing may occur.

Note: Leave applicator lines and check valves open to aid in evaporating moisture from system.

Agitation nozzle at tank bottom

Applicator orifice

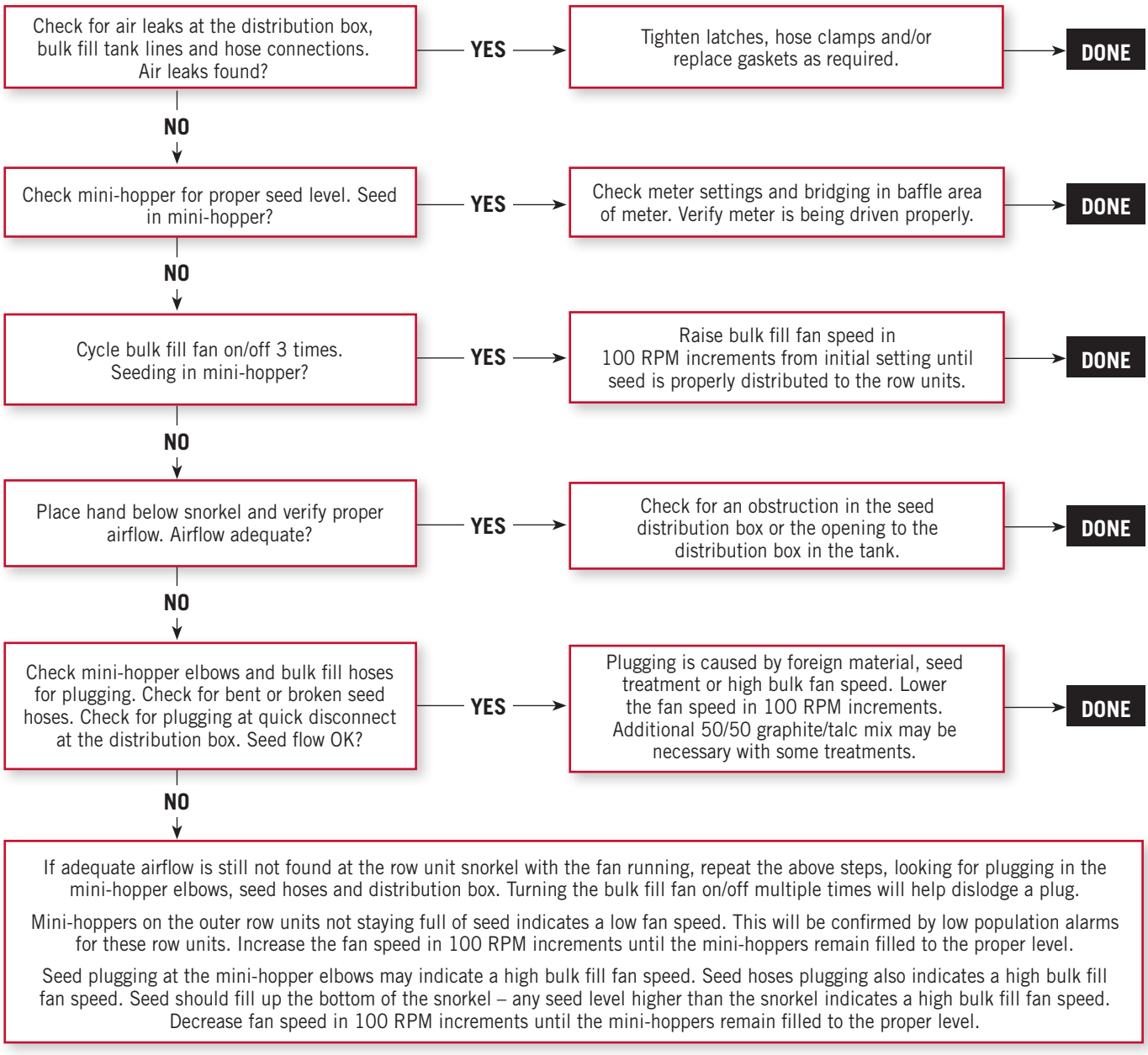
Barrier fluid sight glass and internal pump pressure gauge

ADJUSTMENTS

BULK FILL SYSTEM TROUBLESHOOTING DIAGRAM

Seed not flowing or low seed flow to the mini-hopper

1. Turn the bulk fan OFF and verify seed is in the problematic mini-hopper.
2. Verify fan is operating at recommended speed. See charts on pg. 24-27.
3. Check that the inductor box blockoff plate is not in place.
4. Verify the correct inductor box air baffle is inserted into the distribution box. Refer to the ' Recommended settings chart' in the Operator's Manual for details or refer to chart on pg. 24-27.



NOTE: *Additional seed flow lubricant may be necessary when using seed coated with treatments.*

ADJUSTMENTS

CASE IH 50/50 GRAPHITE/TALC MIX

Refer to the planter Operator's Manual for lubricant application rates for new planter hoppers and first fill.

- Talc may improve flow characteristics by bonding to the sticky coating.
- Excess talc can result in buildup on meter and seed contact components
- 50/50 ratio results in most uniform seed flow performance with minimal talc buildup.

Bayer CropScience Fluency Agent is also an acceptable seed flow lubricant that can be used in place of 50/50 graphite/talc.

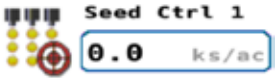
SEED LUBRICANT RATES	
SEED (BU.)	**50/50 GRAPHITE/TALC BLEND(CUPS)**
2	1/8
5	1/4
6	3/8
8	1/2
10	3/4
15	1
20	1-1/4
25	1-1/2
30	2
40	2-1/2
50	3
60	3-1/2

Note: 1 lb. of graphite/talc mixture = approx. 3 cups

PART #	DESCRIPTION
CNH99501FP	1-lb 100% Graphite Fine Particle Size
CNH99508FP	8-lb 100% Graphite Fine Particle Size
CNH99502FP	20-lb 100% Graphite Fine Particle Size
CNH99501CAFP	Canada – 1-lb 100% Graphite
CNH99505CAFP	Canada – 5-lb 100% Graphite
CNH99510	20-lb Talc Lubricant
CNH99510CA	Canada - 20-lb Talc Lubricant
CNH09021FP	1-lb 50% Talc 50% Graphite Fine Particle Size
CNH09028FP	8-lb 50% Talc 50% Graphite Fine Particle Size
CNH99512	20-lb 50/50 Talc/Graphite
CNH99512CA	Canada - 20-lb 50/50 Talc/Graphite
CNH09018FP	8-lb 80/20 Talc/Graphite
CNH99511	20-lb 80/20 Talc/Graphite
CNH99511CA	Canada - 20-lb 80/20 Talc/Graphite
MW164001FP	Dispensing Cap

ADJUSTMENTS

POPULATION ADJUSTMENTS

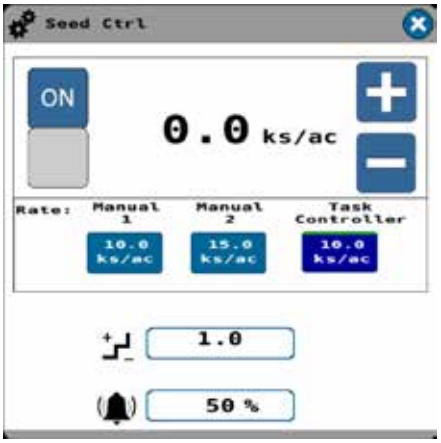


- Population adjustments can be made in the Planter Operations screen (Universal Terminal) by selecting the seed control window however if Task Controller is selected Seed Rate control will be controlled using the Seed Boom Control User Defined Window on the Pro 1200 run screens

Verify seed meter performance by taking the time to open the trench and check seed placement and spacing, counting the seed population over a specified row length.

- The table indicates the row length required to be opened to equal 1/1000th of an acre

Row Width	Row Length = 1/1000 ac.
15″	34′10″
20″	26′2″
22″	23′10″
30″	17′5″
36″	14′6″
38″	13′10″.
40″	13′1″



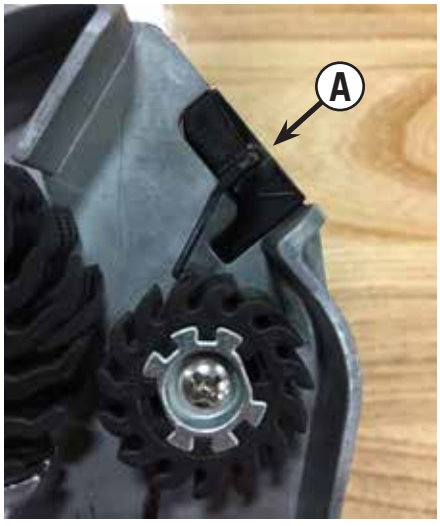
METER ADJUSTMENTS

- Adjust the baffle to the correct setting per the recommended settings chart on pg. 24-27 (corn and soybeans are both “2”).
- Move the seed meter baffle adjustment handle to control the depth of seed in the meter housing that is exposed to the seed disc.

SOYBEAN DEFLECTOR (SPEEDTUBE UNITS ONLY)*

- To switch to soybeans, installation of a Soybean Deflector **(A)** is required to prevent seeds jamming between feeder wheels.

* Soybean deflector not required with 56 cell soybean disc (see Recommended Settings Chart for more details)



ADJUSTMENTS

SEED POPULATION/SPACING CHART

SEED SPACING	SEED POPULATION						
	Seed/Acre 15 inch rows	Seed/Acre 20 inch rows	Seed/Acre 22 inch rows	Seed/Acre 30 inch rows	Seed/Acre 36 inch rows	Seed/Acre 38 inch rows	Seed/Acre 40 inch rows
0.25 in.	1,672,704	1,254,528	1,140,480	836,352	696,960	660,278	627,264
0.50 in.	836, 352	627,264	570,240	418,176	348,480	330,139	313,632
0.75 in.	557,568	418,176	380,160	278,784	232,320	220,093	209,088
1.00 in.	418,176	313,632	285,120	209,088	174,240	165,069	156,816
1.25 in.	334,540	250,906	228,096	167,270	139,392	132,056	125,453
1.50 in.	278,784	209,088	190,080	139,392	116,160	110,046	104,544
1.75 in.	238,958	179,218	162,926	119,479	99,566	94,325	89,609
2.00 in.	209,088	156,816	142,560	104,544	87,120	82,535	78,408
2.25 in.	185,856	139,392	126,720	92,928	77,440	73,364	69,696
2.50 in.	167,270	125,453	114,048	83,635	69,696	66,028	62,726
2.75 in.	152,064	114,048	103,680	76,032	63,360	60,025	57,024
3.00 in.	139,392	104,544	95,040	69,696	58,080	55,023	52,272
3.25 in.	128,670	96,502	87,729	64,335	53,612	50,791	48,251
3.50 in.	119,478	89,609	81,463	59,739	49,783	47,163	44,805
3.75 in.	111,514	83,635	76,032	55,757	46,464	44,019	41,818
4.00 in.	104,544	78,408	71,280	52,272	43,560	41,267	39,204
4.25 in.	98,394	73,796	67,087	49,197	40,998	38,840	36,898
4.50 in.	92,928	69,696	63,360	46,464	38,720	36,682	34,848
4.75 in.	88,038	66,028	60,025	44,019	36,682	34,751	33,014
5.00 in.	83,636	62,726	57,024	41,818	34,848	33,014	31,363
5.25 in.	79,652	59,739	54,309	39,826	33,189	31,442	29,870
5.50 in.	76,032	57,024	51,840	38,016	31,680	30,013	28,512
5.75 in.	72,726	54,545	49,586	36,363	30,303	28,708	27,272
6.00 in.	69,696	52,272	47,520	34,848	29,040	27,512	26,136
6.25 in.	66,908	50,181	45,619	33,454	27,878	26,411	25,091
6.50 in.	64,334	48,251	43,865	32,167	26,806	25,395	24,126
6.75 in.	61,952	46,464	42,240	30,976	25,813	24,455	23,232
7.00 in.	59,740	44,805	40,731	29,870	24,891	23,581	22,402
7.25 in.	57,680	43,260	39,327	28,840	24,033	22,768	21,630
7.50 in.	55,756	41,818	38,016	27,878	23,232	22,009	20,909
7.75 in.	53,958	40,469	36,790	26,979	22,483	21,299	20,234
8.00 in.	52,272	39,204	35,640	26,136	21,780	20,634	19,602
8.25 in.	50,688	38,016	34,560	25,344	21,120	20,008	19,008
8.50 in.	49,198	36,898	33,544	24,599	20,499	19,420	18,449
8.75 in.	47,792	35,844	32,585	23,896	19,913	18,865	17,922
9.00 in.	46,464	34,848	31,680	23,232	19,360	18,341	17,424
9.25 in.	45,208	33,906	30,824	22,604	18,837	17,845	16,953
9.50 in.	44,018	33,014	30,013	22,009	18,341	17,376	16,507
9.75 in.	42,890	32,167	29,243	21,445	17,871	16,930	16,084
10.00 in.	41,818	31,363	28,512	20,909	17,424	16,507	15,682
10.25 in.	40,798	30,598	27,817	20,399	16,999	16,104	15,299
10.50 in.	39,826	29,870	27,154	19,913	16,594	15,721	14,935
10.75 in.	38,900	29,175	26,523	19,450	16,208	15,355	14,588
11.00 in.	38,016	28,512	25,920	19,008	15,840	15,006	14,256
11.25 in.	37,172	27,878	25,344	18,586	15,488	14,673	13,939
11.50 in.	36,364	27,272	24,793	18,182	15,151	14,354	13,636
11.75 in.	35,590	26,692	24,266	17,795	14,829	14,048	13,346
12.00 in.	34,848	26,136	23,760	17,424	14,520	13,756	13,068
12.25 in.	34,136	25,603	23,275	17,068	14,224	13,475	12,801
12.50 in.	33,454	25,901	22,810	16,727	13,939	13,206	12,545
12.75 in.	32,798	24,599	22,362	16,399	13,666	12,947	12,299
13.00 in.	32,168	24,126	21,932	16,084	13,403	12,698	12,063
13.25 in.	31,560	23,670	21,518	15,780	13,150	12,458	11,835
13.50 in.	30,976	23,232	21,120	15,488	12,907	12,227	11,616
13.75 in.	30,412	22,810	20,736	15,206	12,672	12,005	11,405
14.00 in.	29,870	22,402	20,366	14,935	12,446	11,791	11,201
14.25 in.	29,346	22,009	20,008	14,673	12,227	11,584	11,005
14.50 in.	28,840	21,630	19,663	14,420	12,017	11,384	10,815
14.75 in.	28,350	21,263	19,330	14,175	11,813	11,191	10,632
15.00 in.	27,878	20,909	19,008	13,939	11,616	11,005	10,454

ADJUSTMENTS

SEED METER, VACUUM, AND BULK HOPPER RECOMMENDED SETTINGS

The vSet® 2 Seed Meter will accurately plant most seeds. This chart is a guideline to help optimize performance. It provides the range setting for seed sizes best suited for respective discs.

CROP		FIELD CORN		SWEET CORN				SOYBEAN	
Attribute		All		Small	Medium	Large	X-Large	All	
Seeds/lb		1,000-2,500	2,500-2,800 □	2,000-4,600				2,000-4,500	
Max planting rate (seed/sec)		32 ■ ■						135 ■ ■	120 ■ ■
Seed meter setting									
Crop Kit ‡ part number		47779568‡						47779569‡	51479757‡
Seed disc	Name	Corn	Specialty	Specialty	Specialty	Specialty	Specialty	Soybean	Soybean
	# of holes	27	27	27	27	27	27	80▼	56
	Hole size (in)	0.176	0.155	0.125	0.135	0.145	0.155	0.155	0.155
	Part number	73368257	73368283	73368280	73368281	73368282	73368283	73368263	51479743
Singulator	Name	Corn	Corn	Corn	Corn	Corn	Corn	Soybean	Soybean
	Part number	47779567	47779567	47779567	47779567	47779567	47779567	47852593	47852593
Ejector	Name	Corn	Specialty	Specialty	Specialty	Specialty	Specialty	Soybean	Soybean
	Part number	47779566	47780001	47780001	47780001	47780001	47780001	47779570	51478891
Additional components	Name							Soybean deflector ◆	
	Part number							47946742	
Baffle position		2	2	4	4	4	4	2	2
Vacuum setting (in-H20)◊◊		20 ■	20 ■	18-22	18-22	18-22	18-22	20 ◊	20 ◊
Bulk-fill settings (if equipped)									
Inductor box air baffle*		Large seed*		Large seed*				Large seed*	
2130 Mounted Stacker 12-row	Bulk fan speed	**3,500 RPM**		**3,700 RPM**				**3,200 RPM**	
	Baffle part number	84594223		84594223				84594223	
2130 Mounted Stacker 16- or 18-row	Bulk fan speed	**3,500 RPM**		Not validated for this configuration				**3,200 RPM**	
	Baffle part number	51533810						51533810	
2140 Pivot-Transport	Bulk fan speed	**3,600 RPM**		**3,700 RPM**				**3,600 RPM**	
	Baffle part number	51530439		51530439				51530439	
2150 12/16-row	Bulk fan speed	**3,500 RPM**		**3,700 RPM**				**3,300 RPM**	
	Baffle part number	8-port inductor boxes: 84594215 12-port inductor boxes: 84594223		8-port inductor boxes: 84594215 12-port inductor boxes: 84594223				8-port inductor boxes: 84594215 12-port inductor boxes: 84594223	
2150 24-row	Bulk fan speed	**3,200 RPM**		**3,700 RPM**				**3,300 RPM**	
	Baffle part number	84594223••		84594223••				84594223••	
2150S, 23- and 24-row	Bulk fan speed	**3,000 RPM**		**3,700 RPM**				**3,000 RPM**	
	Baffle part number	84594223		84594223				84594223	
2150S, 31- and 32-row	Bulk fan speed	**3,000 RPM**		**3,700 RPM**				**3,000 RPM**	
	Baffle part number	90411291		90411291				90411291	
2160 32-row, 36-row	Bulk fan speed	**3,000 RPM**		**3,000 RPM**				**3,000 RPM**	
	Baffle part number	51570223		51570223				51570223	
2160 24-, 47-, or 48-row	Bulk fan speed	**2,400 RPM**		Not validated for this configuration				**3,100 RPM**	
	Baffle part number	51570223						51570223	

‡ The dark shaded background indicates components that are included in the Crop Kits.
▼ Not supported for all 2150S configurations
* Large seed air baffles are factory installed in the inductor boxes of all 2100 series planters equipped with the bulk-fill option.
◊◊ If using the heavy duty air seal (part number 51479926), an additional **1 in H_2O – 5 in H_2O** vacuum pressure may be required.
■ ■ Planting rate calculation: Row spacing (in.) X Population (seeds/acre) X Speed (mph) / 356,400 = seeds/second
■ Up to 25 on-H_20 vacuum pressure may be required for best results with the **SpeedTube**™ option.
□ For seeds/lb greater than 2,500, the standard Corn disk may also work acceptably. Test the seed for a final selection.
•• For 2150 24-row planters with PINs prior to YKS085024, air baffle 84594223 should be used unless the planter has been updated with seed flow splitters.
◊ Up to 25 in-H2O vacuum pressure may be required for best results with the **SpeedTube**™ option.
◆ The soybean deflector is only required when running the 80-cell soybean disk with **SpeedTube**™ option. The deflector is installed on the **SpeedTube**™ housing.
◆◆ When using the SpeedTube option, the 56-cell soybean disk is recommended for optimal feedig unless the maximum planting rate of 120 seeds/second is exceeded, then the 80-cell soybean disk is recommended. For gravity drop seed tubes, either soybean disk (80 or 56 cell) is acceptable as long as the maximum planting rate is not exceeded.

SUNFLOWER						
Edible large	Edible small	#1	#2	#3	#4	Extra small
2,000-4,000		3,000-10,000				>10,000

COTTON		
Singulated	2-seed hilldrop	3-seed hilldrop
4,200-6,300		
35 ■■		

PUMPKIN	
Canning	Ornamental

47779568‡	47779568‡					
Corn	Corn	Specialty	Specialty	Specialty	Specialty	Specialty
27	27	27	27	27	27	27
0.176	0.176	0.155	0.135	0.115	0.115	0.100
73368257	73368257	73368283	73368281	73368279	73368279	73368278
Corn	Corn	Corn	Corn	Corn	Corn	Corn
47779567	47779567	47779567	47779567	47779567	47779567	47779567
Corn	Corn	Specialty	Specialty	Specialty	Specialty	Specialty
47779566	47779566	47780001	47780001	47780001	47780001	47780001
Large seed upper brush						
47902637						
4	4	4	4	3	2	2
12-13	11-12	11-12	11-12	7-8	6-7	6-12

73383183‡	47818855‡	51581119‡
Cotton	2-seed hilldrop	3-seed hilldrop
32	40	39
0.115	0.115	0.115
73383182	73368275	51554843
Corn	Soybean	Soybean
47779567	47852593	47852593
Sugar beet	2-seed hilldrop	3-seed hilldrop
47780005	47780002	47780003
	Up Restrict Brush	Up Restrict Brush
	47819349	47819349
1	1	1
20-22	10-30	10-30

Specialty	Specialty
27	27
0.125	0.125
73368280	73368280
Corn	Corn
47779567	47779567
Specialty	Specialty
47780001	47780001
3	3
11-12	12-14

Small seed	Large seed*	
2,800 RPM	**2,400 RPM**	
47397656	84594223	
Pending	Not validated for this configuration	
47397656	51533810	
2,800 RPM	**3,500 RPM**	
47397652	51530439	
3,200 RPM	**3,000 RPM**	
8-port inductor boxes: 47397652 12-port inductor boxes: 47397656	8-port inductor boxes: 84594215 12-port inductor boxes: 84594223	
3,200 RPM	**3,000 RPM**	
47397656	84594223••	
3,200 RPM	**3,000 RPM**	
47397656	84594223	
3,200 RPM	**3,000 RPM**	
47397656	90411291	
2,700 RPM	**2,700 RPM**	
47397660	51570223	
Not validated for this configuration	Not validated for this configuration	

‡ The dark shaded background indicates components that are included in the Crop Kits.
* Large seed air baffles are factory installed in the inductor boxes of all 2100 series planters equipped with the bulk-fill option.
■■ Planting rate calculation: Row spacing (in.) X Population (seeds/acre) X Speed (mph) / 356,400 = seeds/second
□□ To plant cotton with the **SpeedTube™** option you must replace the standard **SpeedTube™** feeder wheels with cotton feeder wheels.

ADJUSTMENTS

SEED METER, VACUUM, AND BULK HOPPER RECOMMENDED SETTINGS

Continued from previous page.

CROP		SUGAR BEETS / ONIONS ▲			EDIBLE BEANS •		
Attribute		<9.5/64"	>9.5-11.5/64"	>11.5/64"	Small	Medium	Large
Seeds/lb					>2,000	1,300-2,000	<1,300
Max planting rate (seed/sec)							
Seed meter setting							
Crop Kit‡ part number		47818859‡	47818862‡	47818862‡	47779569‡	73343542‡	47818851‡
Seed disc	Name	Small sugar beet	Large sugar beet	Large sugar beet	Soybean	Medium edible bean	Large edible bean
	# of holes	32	32	32	80	70	32
	Hole size (in)	0.062	0.086	0.086	0.155	0.170	0.210
	Part number	73368271	73368267	73368267	73368263	73379218	73368998
Singulator	Name	Corn	Corn	Corn	Soybean	Medium edible bean	Soybean
	Part number	47779567	47779567	47779567	47852593	73379219	47852593
Ejector	Name	Sugar beet	Sugar beet	Sugar beet	Soybean	Soybean	Large edible bean
	Part number	47780005	47780005	47780005	47779570	47779570	47780004
Additional components	Name					Large seed upper brush	Large seed upper brush
	Part number					47902637	47902637
Baffle position		1	1	1	2	3	4
Vacuum setting (in-H20) ◊◊		10-20	10-20	10-20	18-22	18-24	18-26
Bulk-fill settings (if equipped)							
Inductor box air baffle*		Small seed			Large seed*		
2130 Mounted Stacker 12-row	Bulk fan speed	**3,200 RPM**			Pending		
	Baffle part number	47397656			84594223		
2130 Mounted Stacker 16- or 18-row	Bulk fan speed	**3,200 RPM**			**4,300 RPM**		
	Baffle part number	47397656			51533810		
2140 Pivot-Transport	Bulk fan speed	**3,200 RPM**			**3,600 RPM**	**3,300 RPM**	**3,500 RPM**
	Baffle part number	47397652			51530439	51530439	51530439
2150 12/16-row	Bulk fan speed	**3,200 RPM**			Not validated for this configuration		
	Baffle part number	8-port inductor boxes: 47397652 12-port inductor boxes: 47397656					
2150 24-row	Bulk fan speed	**3,200 RPM**			Not validated for this configuration		
	Baffle part number	47397656					
2150S, 23- and 24-row	Bulk fan speed	**3,200 RPM**			Not validated for this configuration		
	Baffle part number	47397656					
2150S, 31- and 32-row	Bulk fan speed	**3,200 RPM**			Not validated for this configuration		
	Baffle part number	91708953					
2160 32-row, 36-row	Bulk fan speed	**2,500 RPM**			**3,100 RPM**	**2,400 RPM**	**3,000 RPM**
	Baffle part number	47397660			51570223	51570223	51570223
2160 24-, 47-, or 48-row	Bulk fan speed	Not validated for this configuration			**3,100 RPM**	**2,400 RPM**	**3,000 RPM**
	Baffle part number				51570223	51570223	51570223

‡ The dark shaded background indicates components that are included in the Crop Kits.

* Large seed air baffles are factory installed in the inductor boxes of all 2100 series planters equipped with the bulk-fill option.

◊◊ If using the heavy duty air seal (part number 51479926), an additional **1 in H_2O – 5 in H_2O** vacuum pressure may be required.

▲ If you experience very small seeds leaking out the bottom of the meter, consider adding 1-2 small (**0.010 in**) disk shims. Adding shims may increase **vDrive®** current draw and reduce stability, so only add shims as necessary. These shims should be removed when converting to other crops. Factory shimming on **vSet® 2** is recommended in most circumstances for least current draw, stability, and best seed spacing performance.

• If within 200 seed/lb of the seed size range, test both of the discs

▲▲ When planting large, long seeds, the **Hy Rate™** large seed tube may be required. The Large seed tube and **Hy Rate™** sensor must be purchased separately from Service Parts. The large seed tube can be used with any seed type; however, seed placement in the trench and displayed seed spacing performance, including displayed population, may be less accurate with smaller seeds.

PEANUTS		POPCORN			CANOLA ▲	SORGHUM / MILO ▲	WHEAT / CEREAL RYE ▲
Small/medium	Large	Small	Medium	Large	All	All	All
500-1,400	200-600		1,500-4,800		75,000-180,000	12,000-19,000	
50 ■ ■	50 ■ ■						300 ■ ■
47931266‡	48186702‡				47818864‡	47818862‡	48186717‡
Peanut	Large peanut	Specialty	Specialty	Specialty	Canola	Large sugar beet	Wheat
32	29	27	27	27	80	32	164
0.230	0.250	0.115	0.115	0.125	0.047	0.086	0.07
47902636	48186707	73368279	73368279	73368280	47902738	73368267	4816718
Soybean ★★	NONE	Corn	Corn	Corn	Corn	Corn	Soybean
47852593 ★★	NONE	47779567	47779567	47779567	47779567	47779567	47852593
Large edible bean	Large edible bean	Specialty	Specialty	Specialty	Canola	Sugar beet	Wheat
47780004	47780004	47780001	47780001	47780001	48186694	47780005	48186724
Large seed upper brush	Large seed upper brush				Wiper Kit		Up Restrict Brush
47902637	47902637				47819357		47819349
4 ★	REMOVE	2	2	2	1	1	1-2
20-30	15-30	20	20	20	16-26	10-16	6-16
Not validated for this configuration		Small seed			Canola	Small seed	Small seed
		3,500 RPM 47397656			Not validated for this configuration	**3,200 RPM** 47397656	Not validated for this configuration
		3,500 RPM 47397656			Not validated for this configuration	Pending 47397656	Not validated for this configuration
		3,500 RPM 47397652			**2,000 RPM ❖** 90422271	**3,200 RPM** 47397652	**3,400 RPM** 47397652
		3,700 RPM 8-port inductor boxes: 47397652 12-port inductor boxes: 47397656			Not validated for this configuration	**3,200 RPM** 8-port inductor boxes: 47397652 12-port inductor boxes: 47397656	Not validated for this configuration
		3,700 RPM 47397656			Not validated for this configuration	**3,200 RPM** 47397656	Not validated for this configuration
		3,700 RPM 47397656			**2,000 RPM ✲** 91710101	**3,200 RPM** 47397656	**3,400 RPM** 47397656
		3,700 RPM 91708953			**2,000 RPM ✲✲** 91710102	**3,200 RPM** 91708953	**3,400 RPM** 91708953
		3,000 RPM 47397660			**1,800 RPM ❖❖** 90419080	**2,800 RPM** 47397660	**3,100 RPM** 47397660
		Not validated for this configuration			**1,800 RPM ❖❖** 90419080	Not validated for this configuration	**3,100 RPM** 47397660

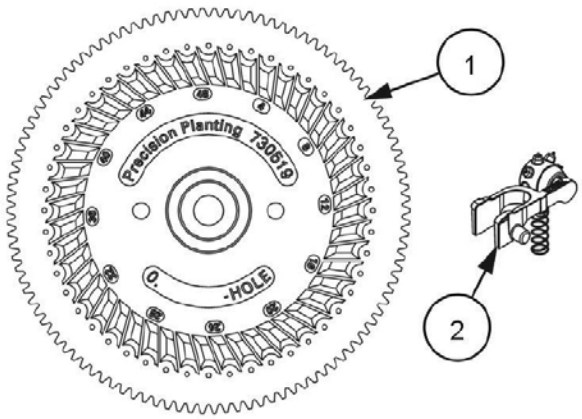
‡ The dark shaded background indicates components that are included in the Crop Kits.
* Large seed air baffles are factory installed in the inductor boxes of all 2100 series planters equipped with the bulk-fill option.
■ ■ Planting rate calculation: Row spacing (in.) X Population (seeds/acre) X Speed (mph) / 356,400 = seeds/second
★ For some seed sizes, it may be necessary to completely remove the baffle to prevent bridging.
★★ For optimal performance, you may need to remove the singulator when planting large long seeds.
▲ If you experience very small seeds leaking out the bottom of the meter, consider adding 1-2 small (**0.010 in**) disk shims. Adding shims may increase **vDrive®** current draw and reduce stability, so only add shims as necessary. These shims should be removed when converting to other crops. Factory shimming on **vSet® 2** is recommended in most circumstances for least current draw, stability, and best seed spacing performance.
▲ ▲ When planting large, long seeds, the **Hy Rate™** large seed tube may be required. The Large seed tube and **Hy Rate™** sensor must be purchased separately from Service Parts. The large seed tube can be used with any seed type; however, seed placement in the trench and displayed seed spacing performance, including displayed population, may be less accurate with smaller seeds.
❖ Requires the canola conversion kit for 8-port inductor boxes.
❖❖ Requires the canola conversion kit for 18-port inductor boxes.
✲ Requires the canola conversion kit for 12-port inductor boxes.
✲✲ Requires the canola conversion kit for 16-port inductor boxes.

ADJUSTMENTS

BLANK SEED DISK FOR SPECIALTY CROPS

A seed disk without holes is available from service parts for creating custom seed disks for specialty crops.

Item	Description	Part number
1	Blank seed disk	51636626
2	Blank seed disk ejector	51636627



NOTE: *The blank seed disks are available from service parts only. Order as many seed disks and ejectors (one of each per row) as required for your planter configuration.*

NOTE: *The corn singulator (part number 47779566) is recommended for use with the blank seed disk.*

CUSTOMIZATION

Up to 48 holes may be drilled at a custom size for crops not covered by other available seed disks, or for custom low-rate planting applications. The blank seed disk has 48 dimples on the seed side for assistance in locating the position for drilling holes. There are 48 corresponding vacuum pockets on the opposite side of the disk. Therefore, the possible number of equally spaced custom drilled holes is: 1, 2, 3, 4, 6, 8, 12, 16, 24 or 48.

CALCULATION

Use the formula and the chart below to determine the quantity of holes to drill in the blank seed disk. Ensure the seed meter spins in the “recommended target RPM” range as much as possible.
The meter RPM can be calculated as follows:

United States Customary System (USCS) calculation:
Seed Disk RPM = Row Width [inches] x Population [seeds/acre] x Speed [mph] ÷ Hole Count ÷ 5940

International System of Units (SI) calculation:
Seed Disk RPM = Row Width [centimeters] x Population [seeds/hectare] x Speed [kph] ÷ Hole Count ÷ 60,000

NOTE: *If required, refer to the “Seed Population/Spacing Chart” in the Operator’s Manual to determine the expected seed population for your application.*

Recommendation	RPM	Comments
Minimum recommended RPM	8.7 RPM	The recommended minimum RPM helps keep the electric drive within stable operating range.
Maximum recommended RPM	130 RPM	The recommended maximum RPM helps keep the electric drive below its upper speed limit.
Recommended Target RPM	12-60 RPM	The target recommended RPM is highly dependent on seed size, shape, weight, seed surface characteristics, etc. Therefore, it is recommended to verify meter performance before planting.

ADJUSTMENTS

BLANK SEED DISK FOR SPECIALTY CROPS

HOW TO SELECT A BLANK SEED DISK EXAMPLE

1. Collect information for the following planting conditions for your application:
   A. The lowest planting speed and the lowest population (1A).
   B. The average planting speed and the average population (1B).
   C. The highest planting speed and the highest population (1C).
2. Using one of the blank disk hole-count selections, calculate the seed disk RPM for the planting conditions (1A), (1B), (1C) to determine if the planting conditions remain within recommended seed disk RPM of 12 to 60 RPM.

NOTE: *Use the average conditions calculation to help determine the best option in cases where the low and/or high calculations yield results that are marginal or slightly outside the recommended range.*

Example 1:

NOTE: *The following is an example of the blank disk hole-count selection not producing an acceptable seed disk RPM within the recommended range. Given the results, a different blank disk hole-count selection would be required.*

A. Condition **(1A)** (low speed, low population):
Seed disk RPM = **30 in** x 10,000 seeds per **1 acre** x **3 mph** ÷ 24 holes ÷ 5940
Result: **6.3 RPM** (below recommended range)

B. Condition **(1B)** (average speed, average population):
Seed disk RPM = **30 in** x 14,000 seeds per **1 acre** x **4 mph** ÷ 24 holes ÷ 5940
Result: **11.8 RPM** (below recommended range)

C. Condition **(1C)** (high speed, high population):
Seed disk RPM = **30 in** x 16,000 seeds per **1 acre** x **5 mph** ÷ 24 holes ÷ 5940
Result: **16.8 RPM** (within recommended range)

Example 2:

NOTE: *The following is an example of the blank disk hole-count selection producing an acceptable seed disk RPM within the recommended range. Given the results, this would be an acceptable selection.*

A. Condition **(1A)** (low speed, low population):
Seed disk RPM = **30 in** x 10,000 seeds per **1 acre** x **3 mph** ÷ 12 holes ÷ 5940
Result: **12.6 RPM** (within recommended range)

B. Condition **(1B)** (average speed, average population):
Seed disk RPM = **30 in** x 14,000 seeds per **1 acre** x **4 mph** ÷ 12 holes ÷ 5940
Result: **23.6 RPM** (within recommended range)

C. Condition **(1C)** (high speed, high population):
Seed disk RPM = **30 in** x 16,000 seeds per **1 acre** x **5 mph** ÷ 12 holes ÷ 5940
Result: **33.6 RPM** (within recommended range)

ADJUSTMENTS

DEPTH CONTROL

The depth adjustment on the row unit has been adjusted to zero at the factory. With all row units properly zeroed, seeds are placed at a uniform depth across all rows.

Check the zero setting when any of the following occur:

- New parts are installed on the gauge wheel and adjustment system
- Gauge wheel and arms are moved from one row unit to another
- Row unit not planting at same depth as another when set at the same setting
- During preseason preparation
- Special Tool required to assist in adjusting row units to zero. Part Number: 47927274

ADJUSTMENTS

PLANTING DEPTH ADJUSTMENTS

Before adjusting the planting depth or starting to plant:

- With the planter raised, ensure wobble bracket at the front of each row unit can move freely. This allows each gauge wheel to operate independently over uneven soil conditions to maintain uniform planting depth.

Planting depth is determined by the gauge wheels on each side of the staggered double disk openers on each row unit. The planting depth can be adjusted from 0-3.75 inches. Planting depth is adjusted with the control handle on the rear of each row unit. All row unit depth control systems have been zeroed from the factory to allow for consistent depth across all rows when in consistent setting. Example: Row 1, E5 setting = Row 2, E5 setting.

The depth adjustment scales on either side of the control handle are marked with letters (A to H) and numbers (1 to 8). ***Note:*** *Always field verify depth after initial settings.*

To adjust planting depth:

1. **Raise the row unit** to remove weight from the gauge wheels
2. **To adjust by 0.25 inch increments:**
   - Depress the handle and move to the desired position, while maintaining bevel orientation
     Example: E5 is approximately 0.25 inches deeper than E4 (shown)

   To adjust by 0.125 inch increments:
   - Rotate the depth adjustment handle
   - Deeper: Rotate 180 degrees within same slot to point bevel forward (shown)
   - Shallower: Rotate 180 degrees within same slot to point bevel rearward
3. **Repeat for all row units.** If a row unit is not planting at the same depth as another when set at the same setting, contact your dealer for information regarding row unit zeroing.

Row Unit Depth Indicator			
Left Side Letter	**Right Side Number**	Bevel Facing Closing	Bevel Facing Toolbar
A	**1**	0 in (0 mm)	0.125 in. (3.2 mm)
B	**1**	0.25 in (6.4 mm)	0.375 in. (9.5 mm)
B	**2**	0.5 in (12.8 mm)	0.625 in. (15.9 mm)
C	**2**	0.75 in (19.1 mm)	0.875 in. (22.2 mm)
C	**3**	1.0 in (25.4 mm)	1.125 in. (28.6 mm)
D	**3**	1.25 in (31.8 mm)	1.375 in. (34.9 mm)
D	**4**	1.5 in (38.1 mm)	1.625 in. (41.3 mm)
E	**4**	1.75 in (44.5 mm)	1.875 in. (47.6 mm)
E	**5**	2.0 in (50.8 mm)	2.125 in. (54.0 mm)
F	**5**	2.25 in (57.2 mm)	2.375 in. (60.3 mm)
F	**6**	2.5 in (63.5 mm)	2.625 in. (66.7 mm)
G	**6**	2.75 in (69.9 mm)	2.875 in. (73.0 mm)
G	**7**	3.0 in (76.2 mm)	3.125 in. (79.4 mm)
H	**7**	3.25 in (82.6 mm)	3.375 in. (85.7 mm)
H	**8**	3.5 in (88.9 mm)	3.625 in. (92.1 mm)

Bevel pointing forward.

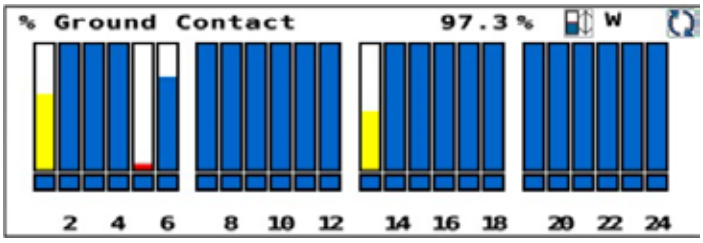
ADJUSTMENTS

DOWN PRESSURE ADJUSTMENT

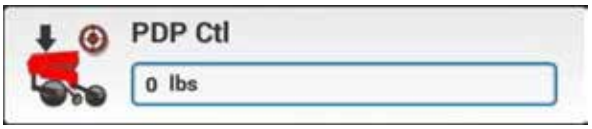
PNEUMATIC DOWN PRESSURE (PDP) ADJUSTMENT (IF EQUIPPED)

1) Press the "PDP Ctl" User Defined Window (UDW) or Universal Terminal "PDP Ctl" window
2) Set target down pressure through "PD Ctl" window (Valid Range in 0-181 Kg or 0-400 lbs)
3) "PDP Force" UDW will match setting entered in "PDP Ctl" window
4) While adjusting PDP Ctl monitor the gauge wheel Ground Contact % bar graph trying to achieve 100% ground contact throughout most of the pass across the field.

NOTE: *Excessive down force could yield a 100% Ground Contact all the time and negatively impact seed placement.*

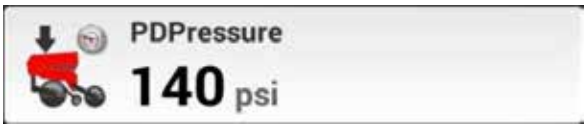


Available Pro 1200 User Defined Windows



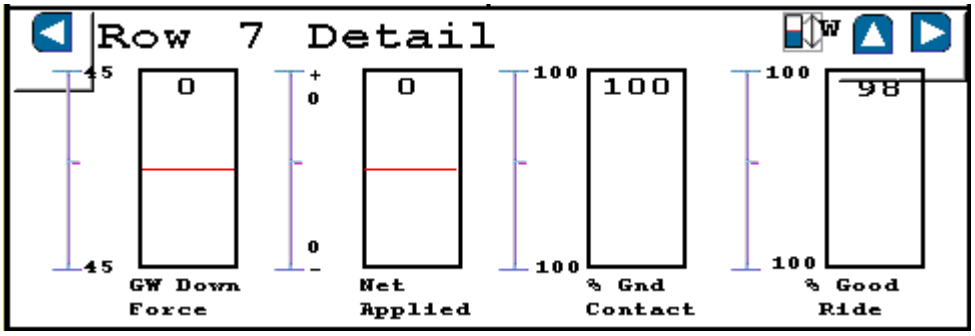
PDP Ctl – User defined down pressure setting in kg or lbs.

PDP Force – Feedback window will match the user entered down pressure setting.



PDP Pressure – Monitors down force system pressure in PSI.

To view all down force metrics for each row touch the bar graph and zoom in on individual sections and then select a specific row within that section. To see the detail view of other rows use the control icons. To exit select the up control icon.



ADJUSTMENTS

DOWN PRESSURE ADJUSTMENT (continued)

DELTAFORCE® HYDRAULIC DOWN PRESSURE ADJUSTMENT

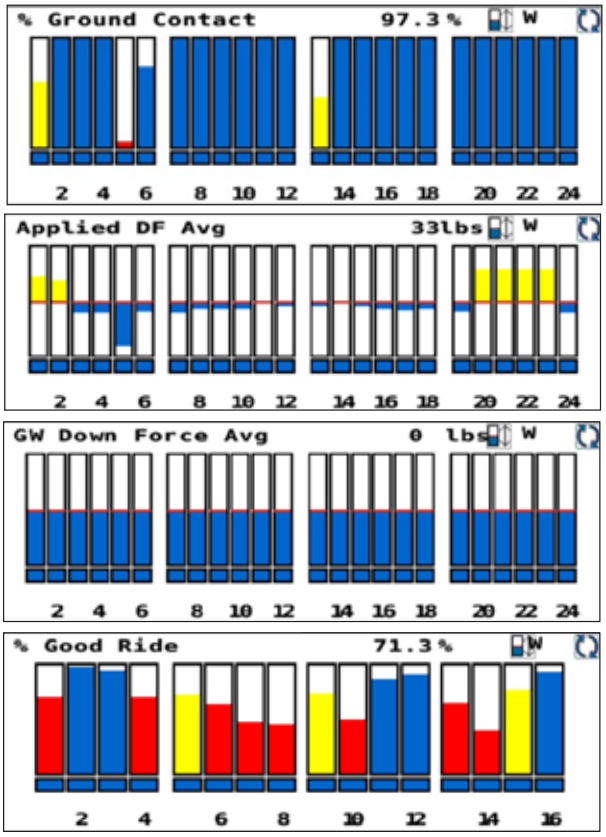
1) Use the "Dwn Frc Ctl" User Defined Window (UDW) or Universal Terminal (UT) Dwn Frc Ctl window to set the target force across the entire planter.

   - Automatically controls row unit lift and downforce to maintain selected target gauge wheel load. Range 0-195 lbs. (0-88 kg)

2) Choose target setting from the pre-set options or select Custom and enter a custom target setting.

SETTING	GAUGE WHEEL LOAD
Light	50 lb. (23 kg)
Standard	100 lb. (45 kg)
Heavy	150 lb. (68 kg)
Custom	0-195 lbs. (0-88 kg)

Use the **DF Summary** UDW or Universal Terminal window to scan through an All-Row Average, High row data and Low row data or use the **Down Force Bar Graph** UDW or Universal Terminal window to monitor row unit down metrics.



Available Pro 1200 User Defined Windows

DF Summary – Scrolls through All-Row Avg, High Row Data, Low Row Data. Scanned parameters are Gauge Wheel (GW) Force, Net Applied Force, Down Force (DF) Margin, % of Ground Contact.

Dwn Frc Ctl – Reports the value currently in effect. Select presets or Custom value.

Use the icon to view three different down force metrics.

Ground Contact Percentage – configurable bar graph visually alerts of row units losing ground contact %.

Net Applied Force – Red line indicates 0lb (0kg) applied force. Above implies applied downforce while below indicates applied down force.

Gauge Wheel (GW) Down Force – Red line indicates the target downforce configured in the "Dwn Frc Ctl" window.

Good Ride – defines the % of time the when the unit ride is smooth enough to not interfere with seed placement.

ADJUSTMENTS

WING DOWNFORCE (IF EQUIPPED)

1) Navigate to the ISO Universal Terminal (UT) and locate the **Wing Down Force Control (WD DF CTL)** window.
2) Touch the control window which will bring up the **Wing DF Ctrl** window where you can change your wing down force based off Ground Contact % from your outer wing row units and tool bar position (toolbar wings up=Increase Wing DF or Wings down=decrease Wing DF)
3) Initial starting points for **Wing DF Ctl** are included by depressing the **? Help** icon. Please note that the wing down force settings are based off of Applied Row Unit downforce readings and not based off of the user defined target settings.

   NOTE: *Planter Systems Start will activate* ***Wing DF Ctl*** *to the default system set point.*

Available Pro 1200 User Defined Windows

WD Force – Current applied wing down force in kg or lbs.

WDF Press – Current applied wing down force in PSI.

Step Size field changes the increment of each "+ or –" button push

Alarm Limit – Percentage above or below the target setting before an alarm is triggered

ADJUSTMENTS

BULK FILL HOPPER FILLING AND FAN ADJUSTMENT (IF EQUIPPED)

1) Navigate to the ISO Universal Terminal (UT) or the customized User Defined Window (UDW) and locate the **Bulk Fill** control window.

   NOTE: *Planter Systems Start will activate* ***Bulk Fan Ctlr*** *to the default system set point.*

2) Touch the control window which will bring up the **Bulk Fill** window where you can change the Bulk Fill fan speed from your current default speed.

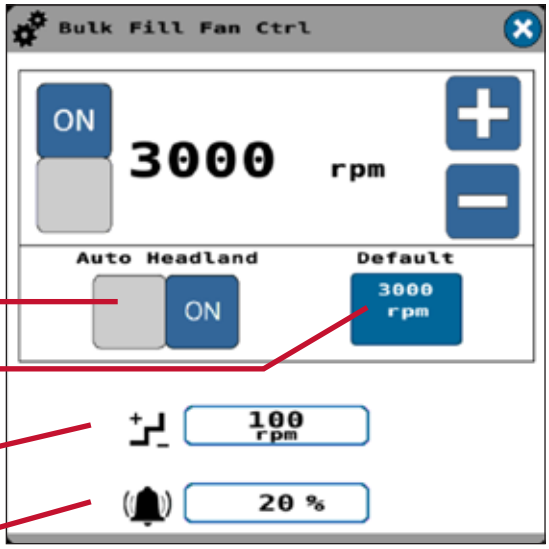
3) The **Bulk Fill Fan Ctr**l window in the UT also allows includes the following control options.

Bulk Fill **(A)** appears when Auto Headland mode is enabled. This feature conserves oil during lift cycles by shutting off the BF Fan when the frame raises above the Stop Plant height.

Available Pro 1200 User Defined Windows

Bulk Fan Ctlr – Use this window to change the current Bulk Fill fan speed.

Bulk Fill – Displays current Bulk Fill fan speed.



Default – Bulk Fill default setting is established in each work condition based on crop type. This field allows the operator to return to the default setting.

Step Size field changes the increment of each "+ or -" button push

Alarm Limit – Percentage above or below the target setting before am alarm is triggered

ADJUSTMENTS

VACUUM ADJUSTMENTS

Vacuum fans automatically regulate vacuum level to a target specified by the operator. Vacuum levels can be set to automatically compensate (Speed Adjusted Vacuum) for increased ground speeds above 6 MPH (9.65 kph) to maintain seed meter performance.

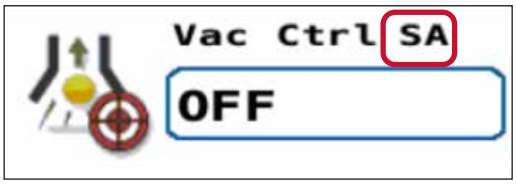
Note: *Planter Systems Start will activate Vaccum Ctl to the default system set point defined in the Work Condition*

1) Navigate to the planter Universal Terminal (UT) or the **Vac Ctrl** User Defined Window on a run screen.
2) Touch the control field which will bring up the **Vacuum Ctrl** window.
3) Default Vacuum settings can be found in the Recommended Crop Settings chart found in this guide.

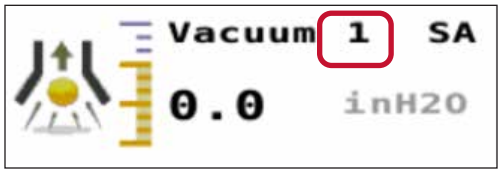
Available Pro 1200 User Defined Windows

Vac Ctrl – Use this window to change the current Vacuum setting.

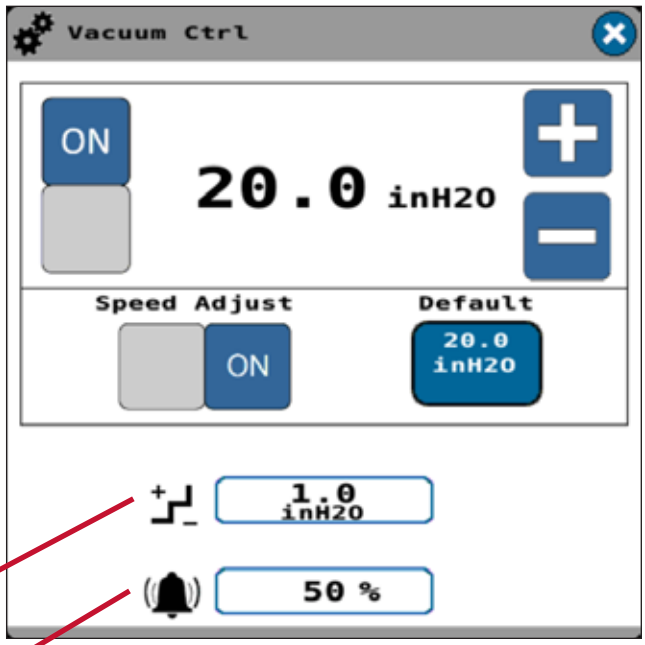
Vacuum – Displays the current vacuum setting.



SA = Indicates Speed Adjusted vacuum is enabled.



Vacuum 1 = The Vacuum read out will scroll through both the left (Vac 1), right (Vac 2) and vac average if equipped.



Step Size field changes the increment of each "+ or –" button push

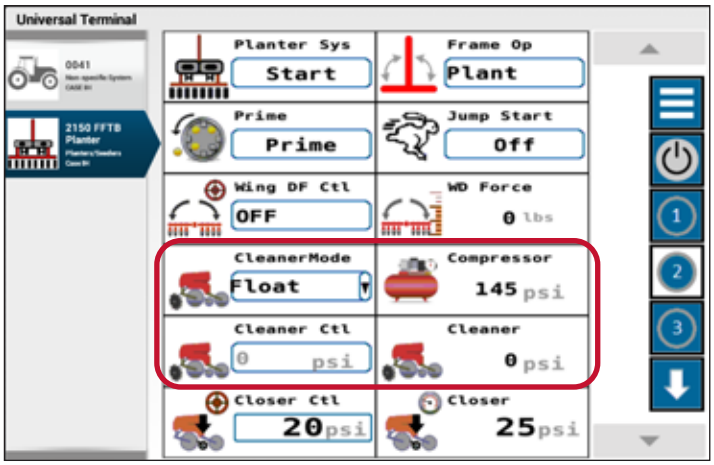
Alarm Limit – Percentage above or below the target setting before an alarm is triggered

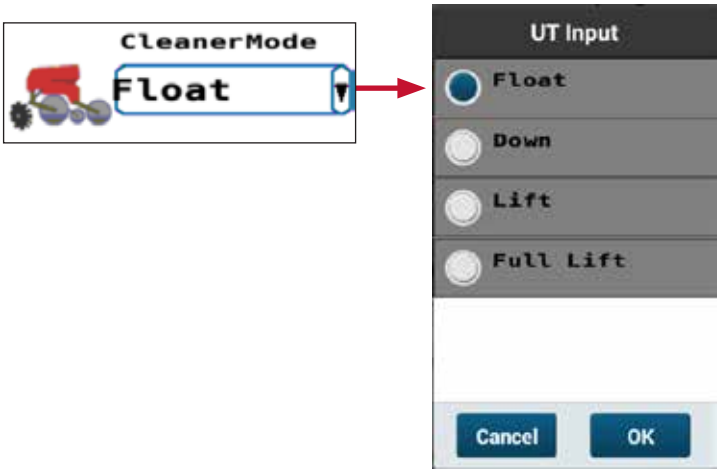
ADJUSTMENTS

ROW CLEANERS

- Residue Mangers should always be adjusted to move residue only and not engage with the soil.
  - Recommend adjusting the stop pin to set the downward travel limit of the floating residue manager.

1) Navigate to the Universal Terminal (UT) or the **Cleaner Mode** User Defined Window (UDW) to select from one of four modes of operation.
   - "Float" mode provides no active control to the residue managers
   - "Down" mode allows the operator to add pressure
   - "Lift" mode allows the operator to lift the residue manager in softer soils
   - "Full Lift" allows the operator to fully lift the residue managers
2) When Lift or Down operation modes are selected a pressure will need to be entered in the Cleaner Ctl field.





HINTS AND TIPS

Did you know that you can manually control the various air circuits on a 2000 Series Planter from outside the cab?

Each of the control valves has a manual detent (circled in blue) that will manually control the valve.

To build additional pressure in the tank with the tractor hydraulics engaged the operator can lift on the spool pin and the compressor will build PSI enabling users an easier path to finding minor air leaks.

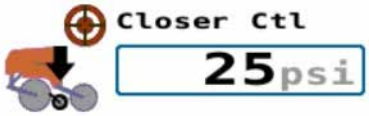
ADJUSTMENTS

PNEUMATIC CLOSING SYSTEM ADJUSTMENTS

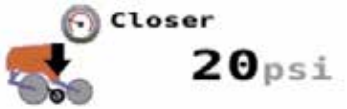
1) Navigate to the ISO Universal Terminal (UT) page 2 and select the **Closer Ctl** field and enter the desired closing pressure.
2) The **Closer** UDW readout will report the system pressure and will match the **Closer Ctl** setting input by the user unless there is an issue with air leaking or lack of compressor pressure.

MAX. FORCES AT 2 IN. DEPTH	75 PSI
2-Stage Closing Discs	150 lbs.
V-Press Wheel	135 lbs.

Available Pro 1200 User Defined Windows



Closer Ctrl – Used to set the target down PSI for the closer system. Range is **0-517 kPa (0-75 psi).**



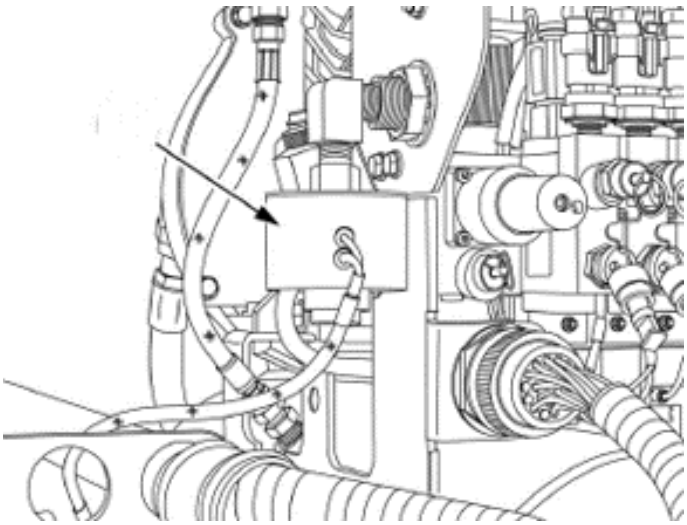
Closer – Reports the measured pressure from the closing system.

Compressor – Reports the system pressure for the hydraulically ran compressor. Range is **0-999 kPa (0-145psi).**

UPGRADE OPPORTUNITY:

Air Compressor Auto Drain Kit
Part Number: 51447993

This kit purges moisture out of the tank as the compressor cycles to minimize corrosion and premature failures of the pneumatic control valves.



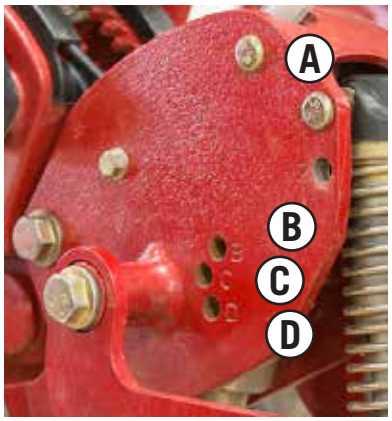
ADJUSTMENTS

CLOSING SYSTEM ADJUSTMENTS

TWO-STAGE CLOSING SYSTEM (IF EQUIPPED)

Closing Disk Adjustment

The closing disk down pressure can be adjusted as needed to operate in various soil conditions. Install the pin in one of the following locations as needed. Multiple positions are available for various soil types.



Positions shown at right:

A – Pneumatic cylinder (if equipped) for in-cab disk adjustment (all soil conditions)
B – Light spring downforce (if equipped)
C – Normal spring downforce (if equipped)
D – Heavy spring downforce (if equipped)

A travel stop pin prevents excessive closing disk depth. This prevents 'plowing' of closing disks in soft areas of the field and prevents damage to the air cylinder (if equipped).

- 2 adjustment positions
- Field test your soil conditions and planting depth

MAX. FORCES AT 2 IN. DEPTH	AIR	SPRING
2-Stage Closing Discs	150 lbs.	47 lbs

V-PRESS WHEEL CLOSING SYSTEM (IF EQUIPPED)

The V-Press Wheel Closing system can be equipped with manual (spring-loaded) or in-cab (pneumatic) down pressure.

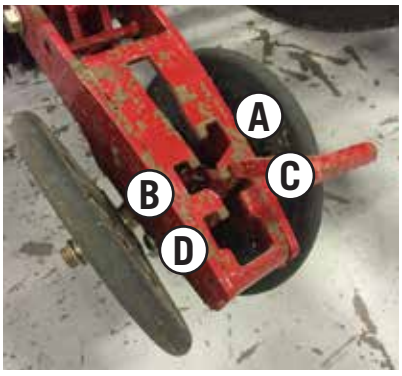
The v-closing wheels are staggered to improve residue flow. Closing wheel shims can be relocated to adjust wheel spacing for shallow planting depths if required.

In-Cab Pneumatic

- Use the "Closer Control" window to set the target down pressure. Use the keypad to enter the target down pressure (0-75 PSI).

Manual (Spring-Loaded)

- Four pressure settings (shown) range from lightest **(A)** to heaviest **(D)** pressure



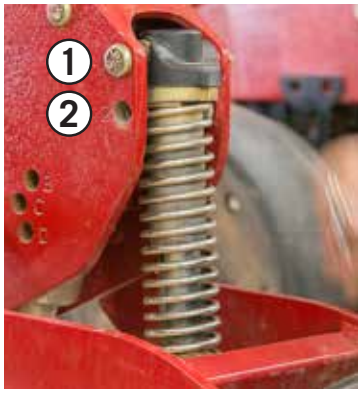
CONVERSION BETWEEN 2-STAGE AND V-PRESS WHEEL CLOSING SYSTEMS

Due to the modular row unit design, only 3 bolts need to be removed to convert between 2-Stage and V-Press Wheel Closing Systems. The gauge wheel needs to match the closing system.

MAX. FORCES AT 2 IN. DEPTH	AIR	SPRING
V-Press Wheel	135 lbs.	110 lbs.

ADJUSTMENTS

CLOSING SYSTEM ADJUSTMENTS (continued)



Press Wheel Adjustment

The press wheel spring can be adjusted to operate in various soil conditions by installing the upper spring pin in the proper position.

1 – Light press wheel force

2 – Heavy press wheel force

Additional Press Wheel Adjustments – Model Year 2021 & After

- The factory installed "silver" plated spring can be replaced with a "black" painted spring for conditions that require additional closing force.

DUAL POSITION PRESSWHEEL ARM FORCES (LBS)									
SPRING		BLACK 1200 SERIES (PART NUMBER: 1264391C1)				SILVER 2000 SERIES (PART NUMBER: 47638244)			
Spring Perch/ Casting Position		1		2		1		2	
Wheel Position		Inner	Outer	Inner	Outer	Inner	Outer	Inner	Outer
Displacement	0 inch	34.2	26.5	58.4	48.1	41.0	35.0	52.8	43.1
	1 inch	41.5	31.8	64.2	50.7	42.7	36.5	53.5	45.3
	2 inch	47.3	35.8	70.8	56.3	45.7	39.0	55.5	46.6
	3 inch	54.4	41.1	76.9	60.4	49.4	41.0	57.3	48.7

UPGRADE OPPORTUNITIES:

Increased Width Press Wheel Arm Kit
Wholegoods Kit: 92203476

This kit includes components to replace arms on four rows increasing total width by 1 inch.

Notched Closing Disk Kit
Wholegoods Kit: 92204151

This kit includes components to install notched closing disks on 4 rows (total of 8 blades & hardware).

ADJUSTMENTS

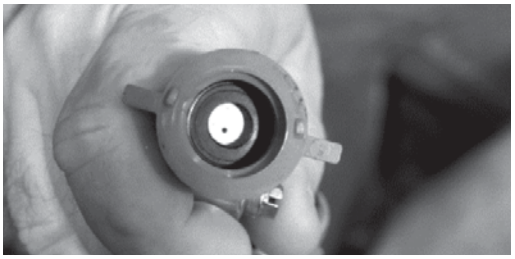
LIQUID FERTILIZER (IF EQUIPPED)

Prior to utilization of the liquid fertilizer system:

- Verify the flow meter has adequate range to support desired rate at target speed
- Ensure the proper Orifice is sized based on your target rate and desired speed. (Please reference your Planter Operator Manual for the sizing table)

  NOTE: Orifices are designed for single direction of flow. It is critical they are installed with stamped numbers facing the outlet (furrow) for proper function
- Calibrate the flowmeter and ensure the calibrated work condition is active

Liquid fertilizer rate adjustments can be made in the Planter Operation screen (Planter Universal Terminal) by selecting the **Liquid Ctrl** control window.
Default rates are defined in the Planter's Work Condition or the Pro 1200 Product Setup



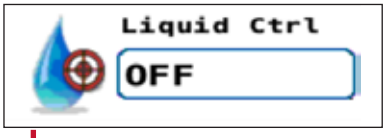
Common Orifice Part Numbers

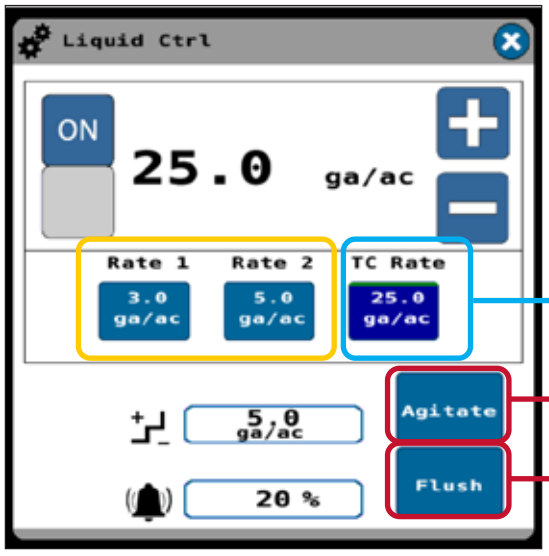
#29 86983914	#52 86983919
#35 86983916	#65 86983920
#40 86983918	#89 86983921

Contact your Case IH dealer for more orifice options

To enable the use of the **Liquid Boom Control UDW** and/or utilize Prescription rates. Select **TC Rate** within the **Liquid Ctrl** control window.

NOTE: Rate 1** and **Rate 2** inside the **Liquid Ctrl** control window will utilize the rates assigned within the Planter Work Condition. Use of these rates will override commands from the **Liquid Boom Control UDW





Liquid Boom Control – Control field sets the target rate using preset toggles or manual entry. Also displays current application rate.

Liquid – Displays current rate in gal per acre or hectare.

Liquid Flow – Displays current rate in Gallons per Minute.

Agitate – Used to provide liquid product agitation when the planter is raised and not applying liquid fertilizer.

Flush – Manually runs the liquid pump to perform clean out operations. All section control valves will fully open and product will be delivered until system is shut off.

ADJUSTMENTS

SEED RATE CONTROL

Prior to Field operation:

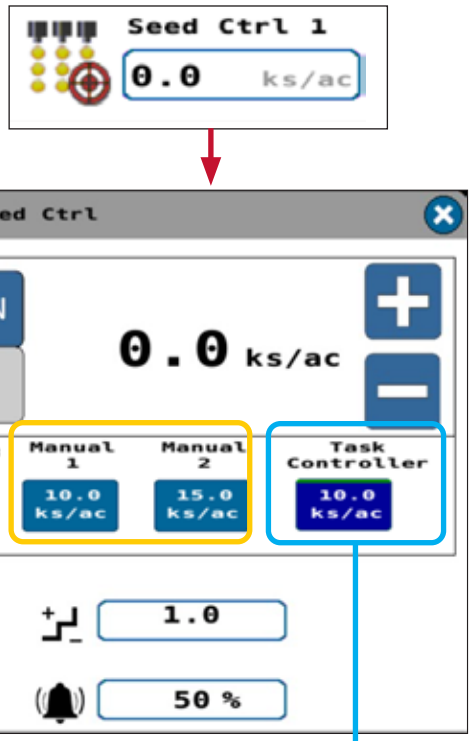
- Verify the proper crop kits have been installed for desired crop
- Ensure the active Planter Work Condition is defined with the correct cells per disc

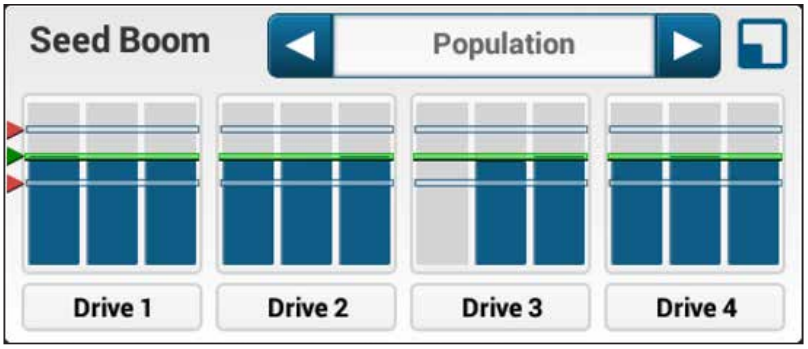
Seed rate adjustments can be made in the Planter Operation screen (Planter Universal Terminal) by selecting the **Seed Ctrl** control window. Default rates are defined in the Planter's Work Condition or the Pro 1200 Product Setup

To enable the use of the **Seed Boom Control UDW** and/or utilize Prescription rates. Select **Task Controller** within the **Seed Ctrl** control window.

NOTE: Rate 1 *and* ***Rate 2*** *inside the* ***Seed Ctrl*** *control window will utilize the rates assigned within the Planter Work Condition. Use of these rates will override commands from the* ***Seed Boom Control UDW***

NOTE: *Planter Systems Start will activate the Prime Function. Planter will prime to achieve the selected target rate*





Seed Boom Bar Graph – Will display all ASI metrics related to seed monitoring. Select a drive or row for further performance detail.

Seed Boom Rate Control – Utilizes the rates or prescription defined in the Pro 1200 Product Setup. UDW is active when Task Controller is selected.

Seed Boom Rate Scan – Will scan all rows, report planter average, and identify high row & low row.

HINTS AND TIPS

Always verify seed meter performance by taking the time to ground truth the planter. Digging to verify performance is a requirement for optimized planter operation. The chart to the right indicates distance needed to dig to verify population on 1/1000 of an acre.

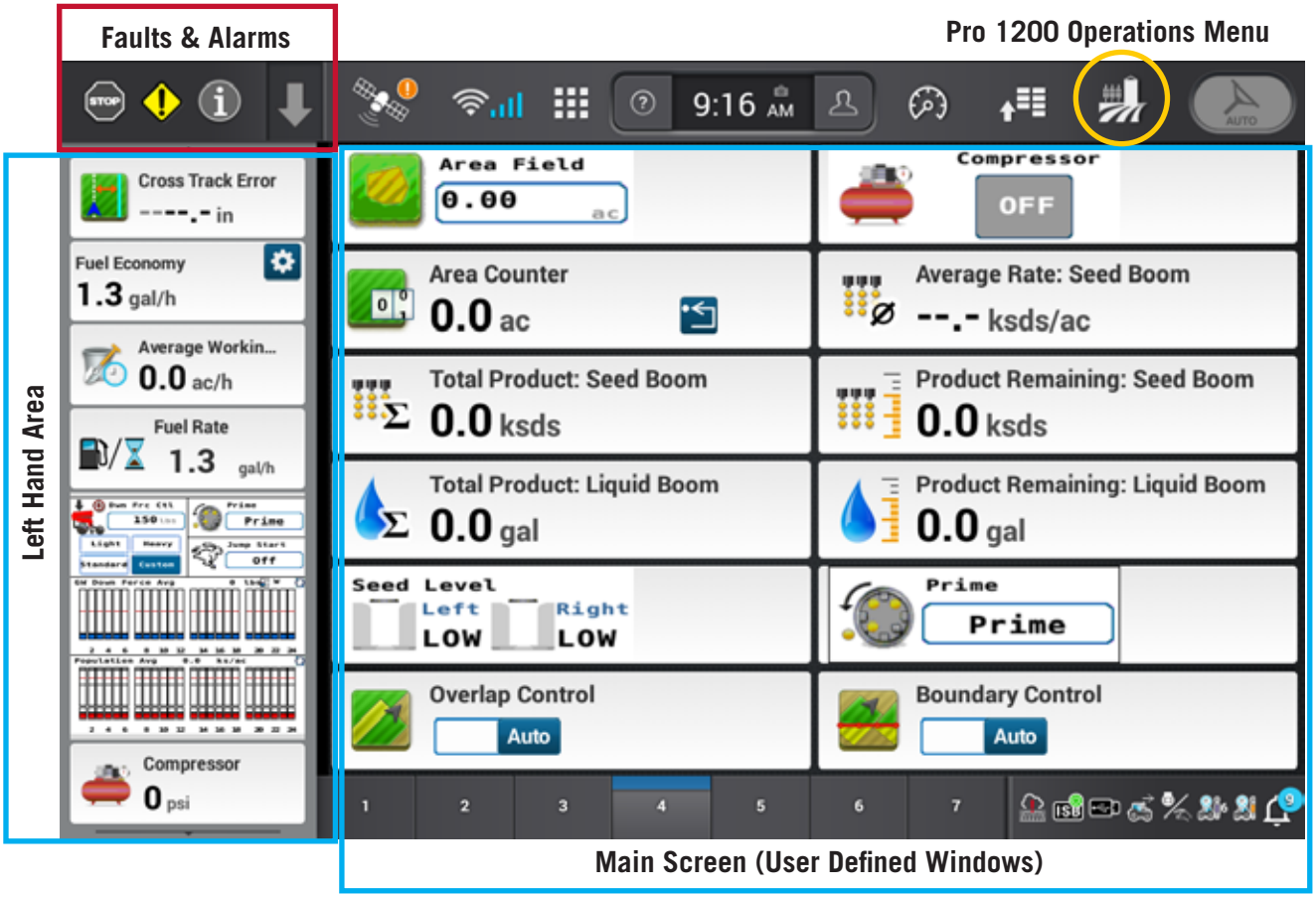
ROW WIDTH	ROW LENGTH = 1/1000 AC.
15″	34′10″
20″	26′2″
22″	23′10″
30″	17′5″
36″	14′6″
38″	13′10″
40″	13′1″

MONITORS AND DISPLAYS

PRO 1200 DISPLAY – INTRODUCTION

The Pro 1200 display from Case IH is an integral part of the operation of a 2000 Series Early Riser planter. It provides the operator an integrated display with high resolution visualization of as applied data and customizable viewing formats that can be tailored to individual operators.

GENERAL NAVIGATION



Press the **Faults & Alarms** area to access Fault and Alarm details

The **Menu** screen provides setup and diagnostics for your vehicle and implement. Including Work Condition required for planter control

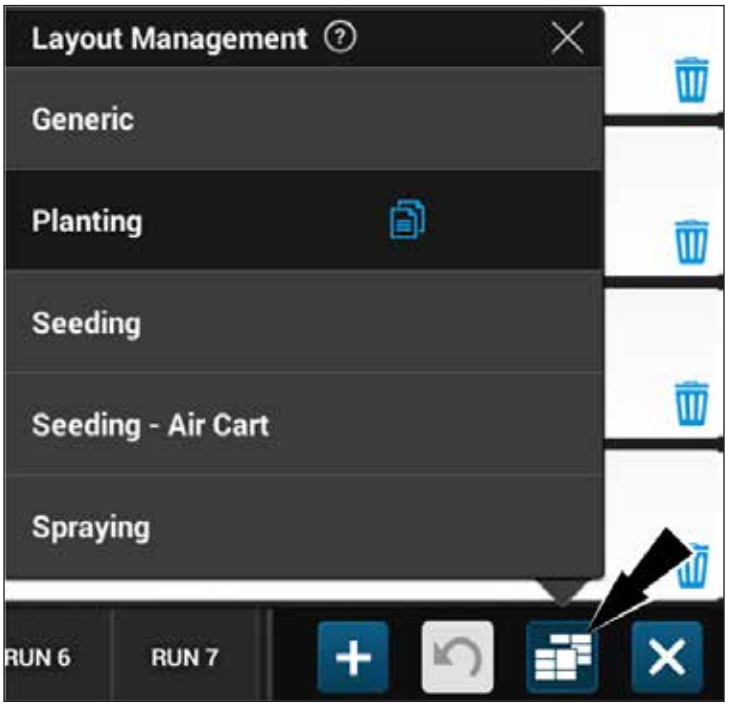
Work Status Indicator – Example shown indicates in work and logging data

Requirements for data logging

- Work Switch Source Set to "None"
- Planter below "start" plant height
- Valid Ground Speed source & above 0 mph
- Grower/Farm/Field & Product selected

RUN SCREEN LAYOUTS

To select a default layout, long-press a run screen tab at the bottom of the screen. A dialog box will appear asking if you wish to enter the layout editor. Select Yes. Next, select the "Layout Management" button in the lower right-hand corner to select a default layout, or to select a previously created layout, as shown later in this guide."



To confirm the layout select the X icon in the lower right hand corner to save and exit.

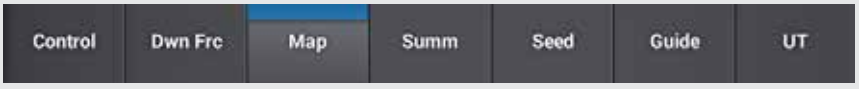
Operators can customize the default layouts if they choose. In order to change the User Defined Windows within the layouts follow these steps.

1) Long press a **Run Screen** button and select **Yes** to enter layout editing.
2) Select the UDW you wish to change and press the **"delete" (1)** icon
3) Select the **+** icon to locate the desired UDW from the list.
   A list of UDW's is located at the end of this guide.
4) To exit and save touch the **X** in the lower right-hand corner

HINTS AND TIPS

Run Screens can be named to describe the content in its layout.

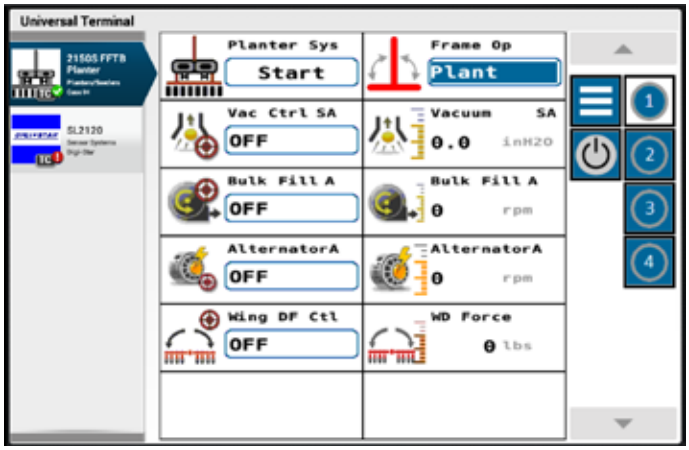
Press a **Run Screen** button > press the same **Run Screen** button again > **Page Title** window appears.

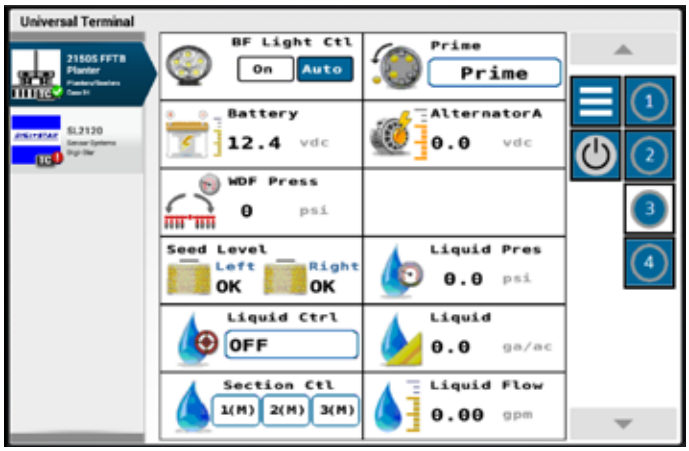


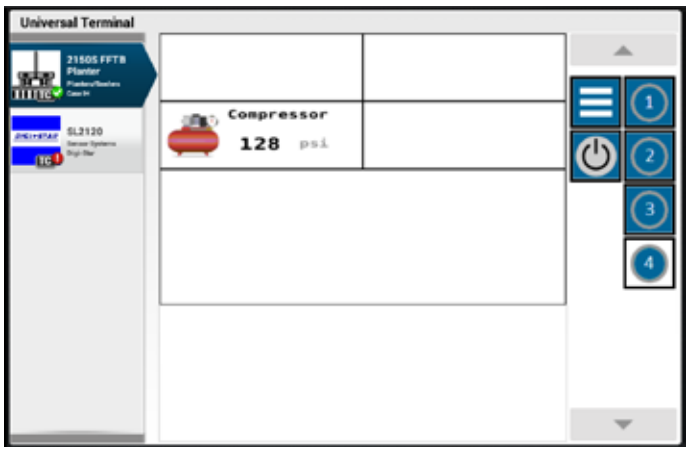
UNIVERSAL TERMINAL WITH PRECISION PLANTING 20/20 IN CO-CONTROL

Below are examples of a 2000 Series Planter Run Screens on an Pro 1200 when a Precision Planting 20/20 is installed.

These layouts are not customizable like they are on the Pro 1200 run screens. These are non-configurable per ISO standards and may vary slightly based on planter options, configuration and work condition selected.

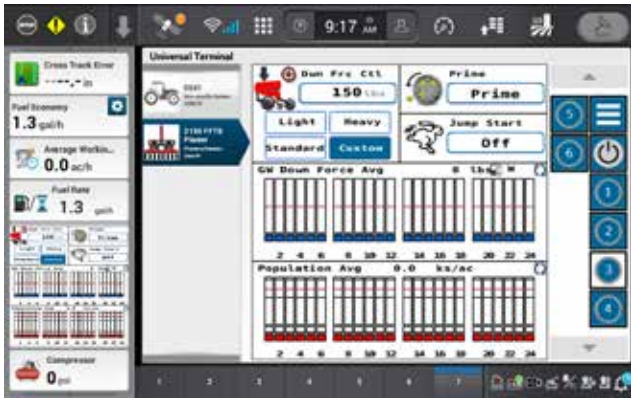






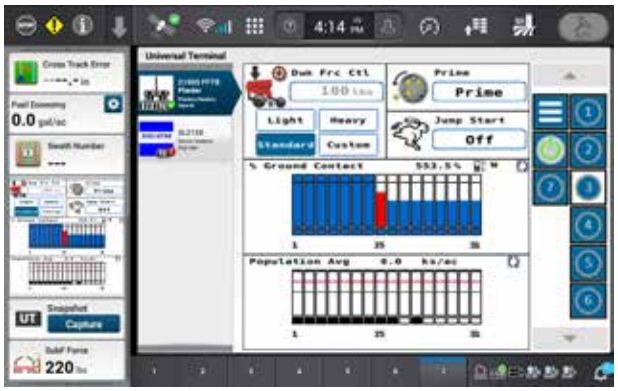
RUN SCREEN LAYOUTS & EXAMPLES

Run Screen Layouts and examples shown below. Available functions will vary based on planter options and model. Minimize number of run screen maps to optimize display performance. We suggest that no more than two maps are included in run screen layouts.



UNIVERSAL TERMINAL WINDOWS

These layouts are not customizable like they are on the Pro 1200 run screens. These are locked per ISO standards however there are two different layouts depending on if a Precision Planting 20/20 is in control of the seed & row unit down force. Both scenarios are shown below and may vary slightly based on planter configuration and work condition.



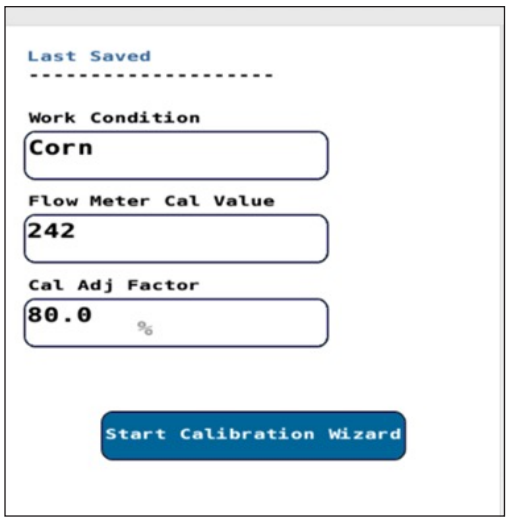
CALIBRATIONS

PRO 1200 DISPLAY – LIQUID CALIBRATION

Calibration of the Liquid Fertilizer System is critical for accurate application rates. Refer to your Software Operating Guide for additional details on the calibration process.

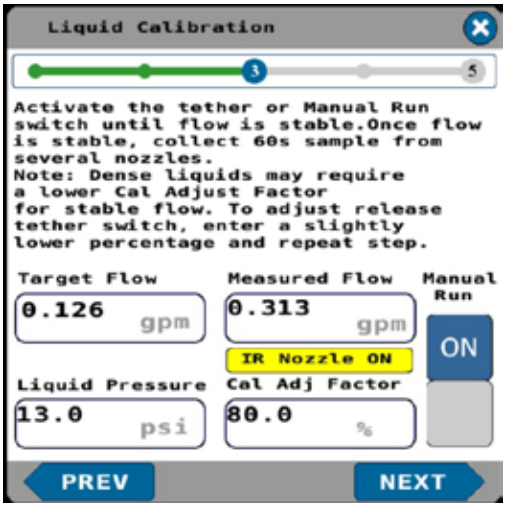
NOTE: *Calibrations are tied to Work Conditions, so it is suggested a Work Condition is created prior to Calibration.*

1. Select Liquid Calibration
2. Select Work Condition
3. Enter Meter Cal Value from meter tag (typically 242 for Std. Flow or 65 for High Flow)
4. Cal Adjust Factor must start at 80% for initial calibration
5. Start Wizard



Step 1 and 2 of the Calibration Wizard will continue to walk through the next steps of the Calibration process.

1. Enter the Calibration Rate (typical application rate)
2. Enter the Calibration Speed (typical planting speed)
3. Select NEXT
4. Ensure the alternator is running on next step in the Wizard.

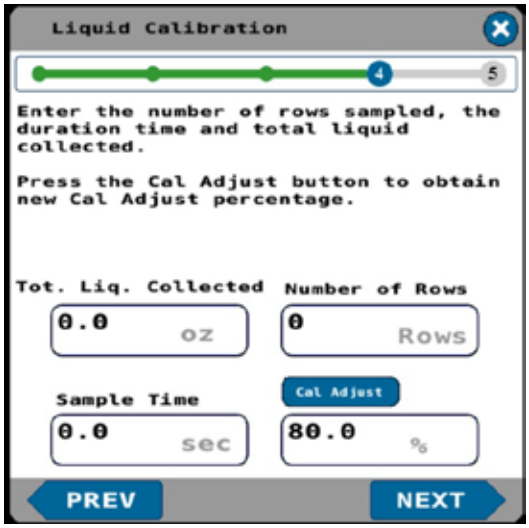


Step 3 of the Calibration Wizard will then have you catch product in measured containers for 1 minute. Once complete select **NEXT.**

1. Follow the on-screen instructions to use the tether switch or utilize the Manual Run switch to dispense product.
2. Step 3 ensures that the system is free of air and functioning properly and will then have you catch product in a measured container to confirm flowmeter accuracy.
3. Run enough product through the system to achieve steady Measured Flow.

CALIBRATIONS (CONTINUED)

PRO 1200 DISPLAY – LIQUID CALIBRATION (continued)



Step 4 of the Calibration Wizard will have you enter details of the catch process.

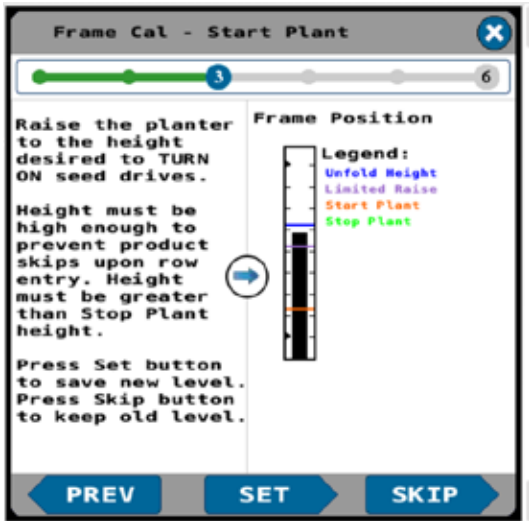
1. Measure total product collected (combined amount from all rows)
2. Enter Number of Rows product was collected from (minimum is 2 Rows)
3. Enter the duration of the sample
4. **Press Cal Adjust** to obtain the new Cal Adjust %
5. Select **NEXT**

Step 5 of the Calibration Wizard will provide a summary of:

- Affected work condition
- Calibration Date
- Calibration adjustment percentage

Select **DONE**

FRAME CALIBRATION



Frame calibration is critical for proper operation.

Calibrate each height position following the Wizard process. Using the frame control hydraulic remote to raise or lower the planter to the desired position and then pressing **SET.**

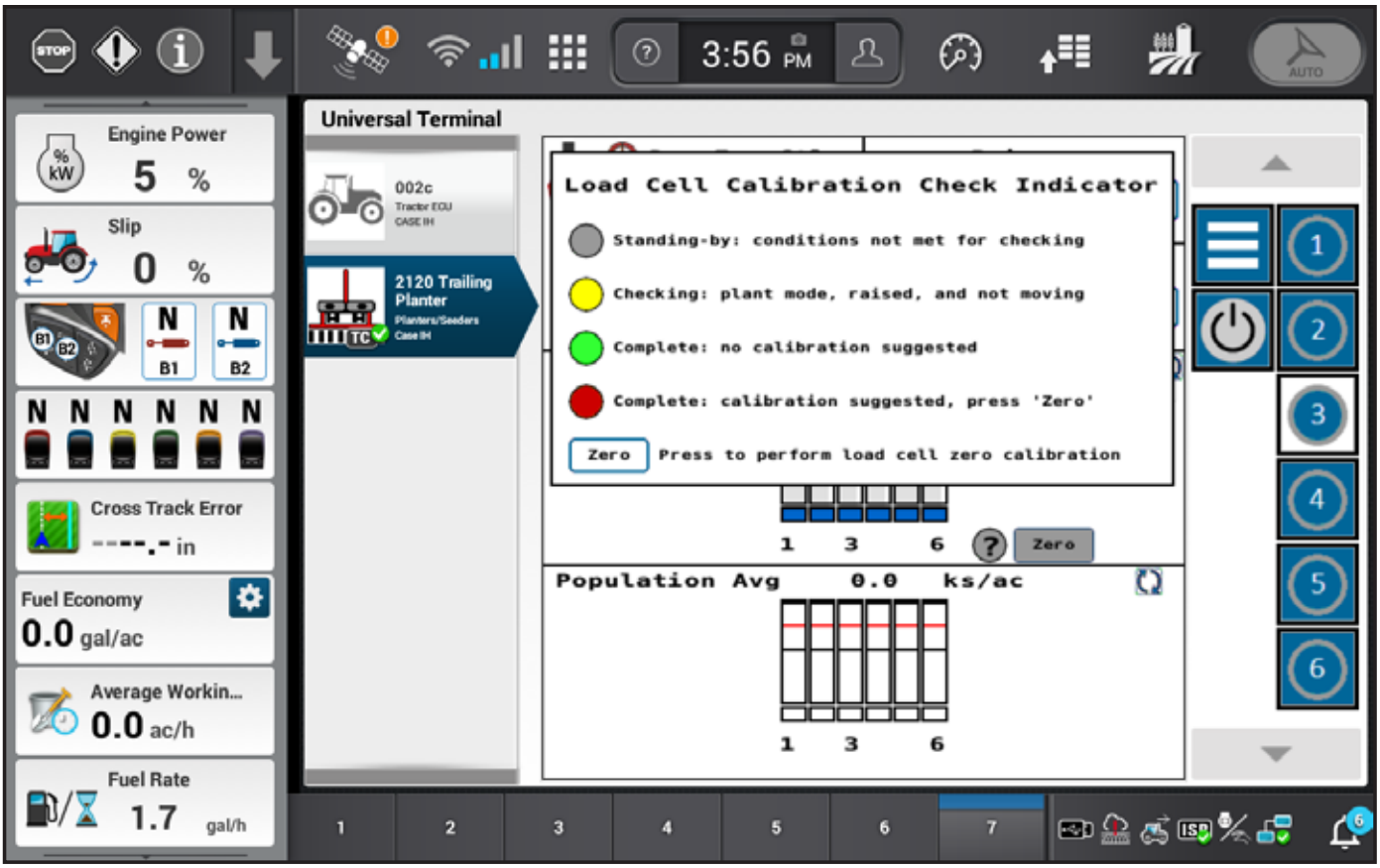
- Suggested Start Plant Height calibration – opener disks just contact the soil surface
- Suggested Stop Plant Height calibration should be:
  - Power frame fully down
  - Raise the toolbar a couple of inches and still maintain the row unit in the soil.

Note: In severe terrain, calibrate Stop Plaint Height higher to allow the planter to flex higher and not disable planting.

Note: On 2160 units, rows equipped with row unit lift must be raised prior to performing complete frame operation.

CALIBRATIONS

PRO 1200 DISPLAY – LOAD CELL CALIBRATION CHECK INDICATOR



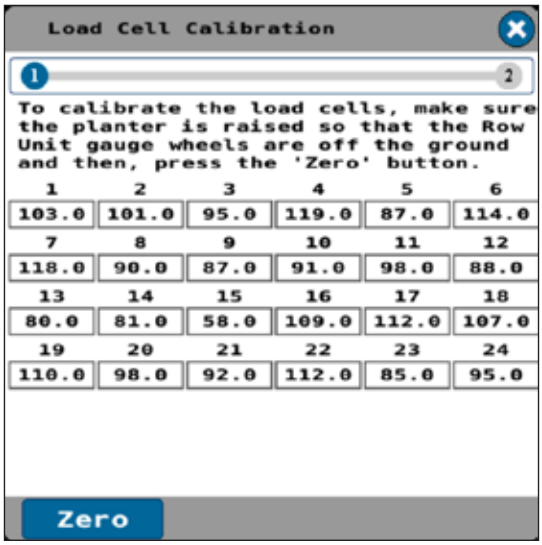
To confirm that "load cell drift" has not occurred, there is a status indicator located in the lower right-hand corner of the row unit down force metrics bar graph screen.

When conditions are met to check the load cells for excess drift the indicator will alert the operator to perform a Zero calibration by touching the Zero icon if needed.

The status indicator contains a help menu providing indicator color definitions. Touch the ? icon to open or close the help menu.

CALIBRATIONS

PRO 1200 DISPLAY – LOAD CELL CALIBRATION

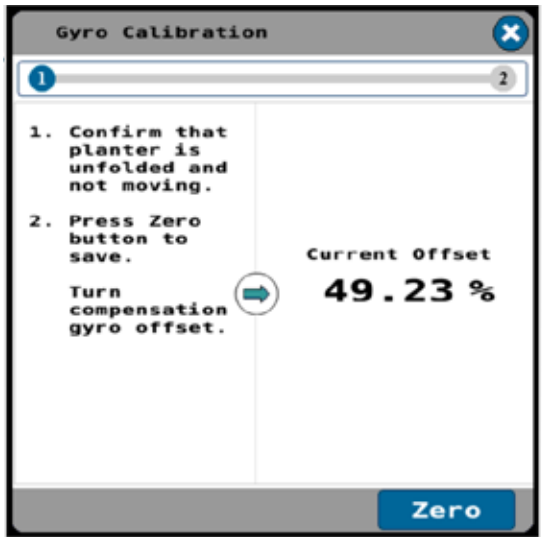


Load Cell Calibrations should be done on a regular basis as the load cell off sets can cause poor operation of the automated hydraulic down force system.

1. Raise the planter above the limited raise height to ensure no force is on the gauge wheels.
2. Press **Load Cell Cal**
3. Press **Zero** to remove off sets from all row units.

Note: Calibration not required if using the Load Cell Calibration Checker from Run Screen 3.

TURN COMPENSATION GYRO CALIBRATION

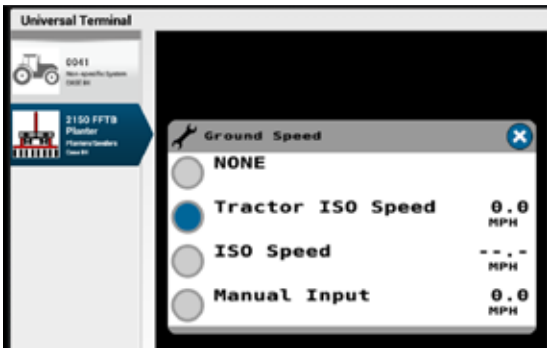


The Gyro Calibration is critical to the correct operation of the turn compensated rate control feature.

1. Confirm that the planter is unfolded and not moving.
2. Press **ZERO** button to save new gyro offset.
3. Press **DONE** when complete.

PRE-PLANTING SETUP

PRO 1200 DISPLAY – SPEED SELECTION

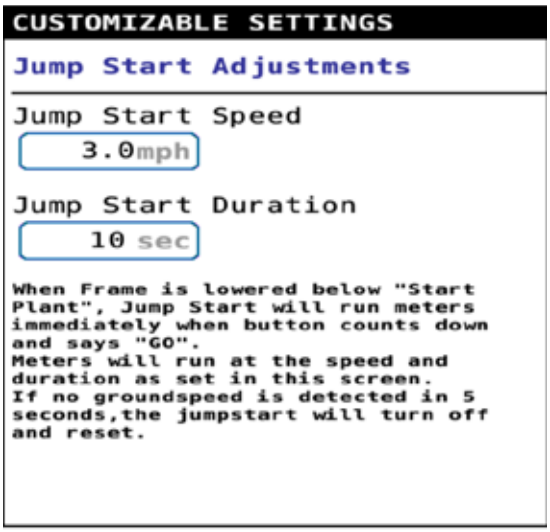


There are up to four speed selections available for the Pro 1200.

- Tractor ISO Speed (Recommended)
- VT ISO Speed
- Manual Input
- Planter Wheel Speed

Manual Input allows you to statically run the planter to ensure proper operation of planter systems such as seed drives and liquid systems.

JUMPSTART SETTINGS



The Jump Start feature allows the product drives to start applying product early. Use the Jump Start feature when the planter is starting from a dead stop – for example, after backing into a corner.

To activate lower the planter below the "Start Plant Height" and then press & hold the Jump Start window in the planter Universal Terminal or on the User Defined Window of the Pro 1200 display. . A countdown will begin allowing the operator time to prepare for movement. When the window displays "GO" begin moving forward as the meters will dispense seed at the user defined Jump Start Speed. Meters will continue to run regardless of previous coverage until the Jump Start speed is achieved or the Jump Start Duration has expired.

- **Jump Start Speed –** The speed that the meters and liquid will run while Jump Start is active
- **Jump Start Duration -** Time that the system will run if the Jump Start speed is not exceeded.

PRE-PLANTING SETUP (CONTINUED)

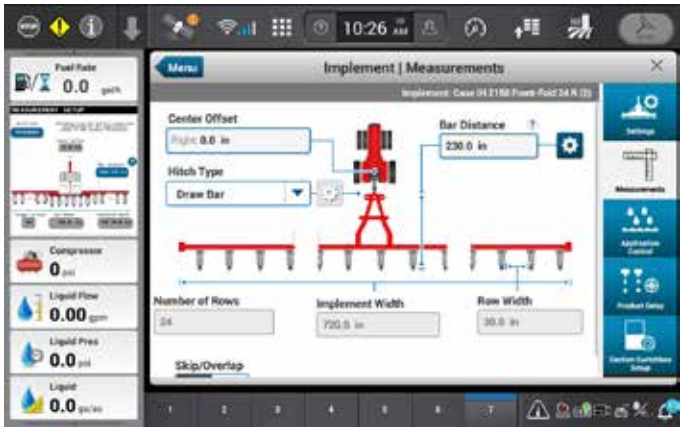
PRO 1200 DISPLAY – ALARM SETTINGS

For planters with a wet seal liquid fertilizer pump operators can disable the “dry pump” triggered by low system pressure using this setting.

Only disable this alarm when a wet seal pump is installed.

PRO 1200 DISPLAY – IMPLEMENT MEASUREMENTS/SETUP

The electronic controller on the planter communicates pre-defined model specific measurements including varying seed drop measurements for setback rows to the Pro 1200 when connected. These measurements will not need to be changed in most operating conditions but should be verified. To confirm in the Universal Terminal screen, follow the path above.



The left-hand area of the display is showing the measurements from the Universal Terminal screen. These are being broadcast to the Pro 1200 and are visible here:

MENU>IMPLEMENT>MEASUREMENTS screen

PRE-PLANTING SETUP (CONTINUED)

CROP FILTER

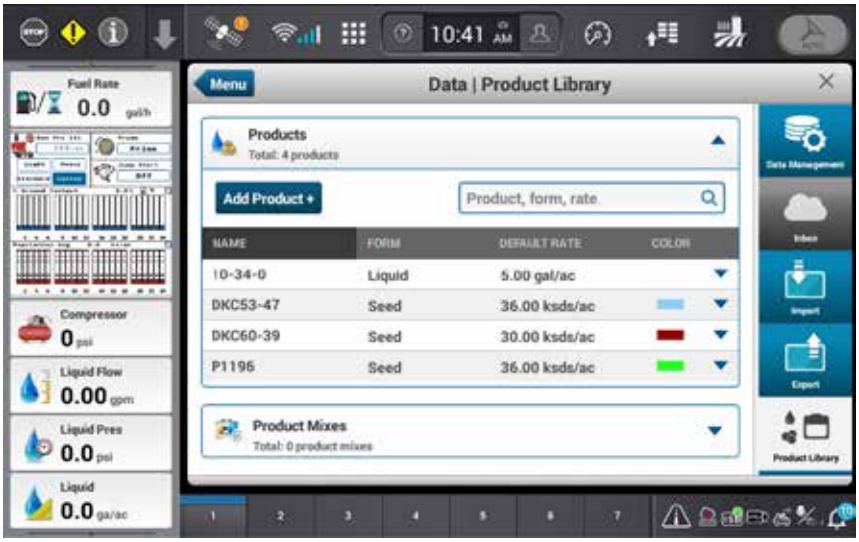
The Universal Terminal does not track product (seed or liquid) names or locations or as-applied data. That is all done within the Task Controller on the Pro 1200.

Prior to creating the Products that will be applied to minimize selections the operator can filter out Crop Types that will not be used.

MENU>DATA>CROP TYPE FILTER

PRE-PLANTING SETUP (CONTINUED)

CROP FILTER

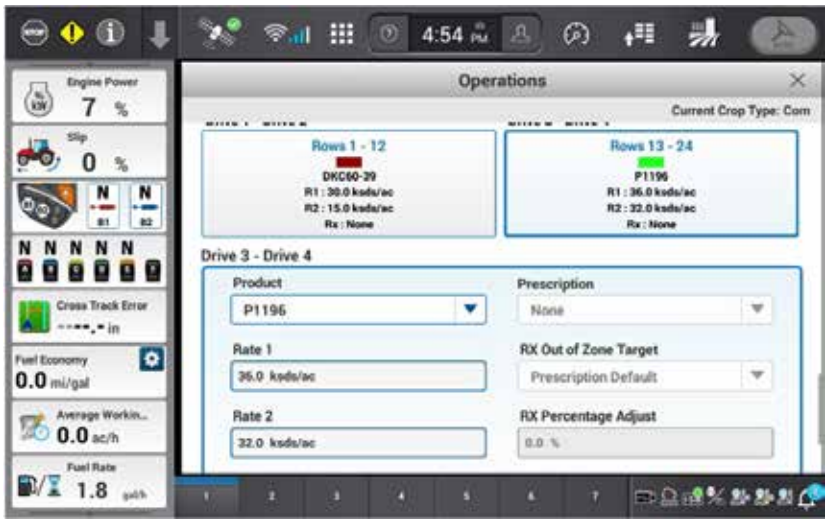


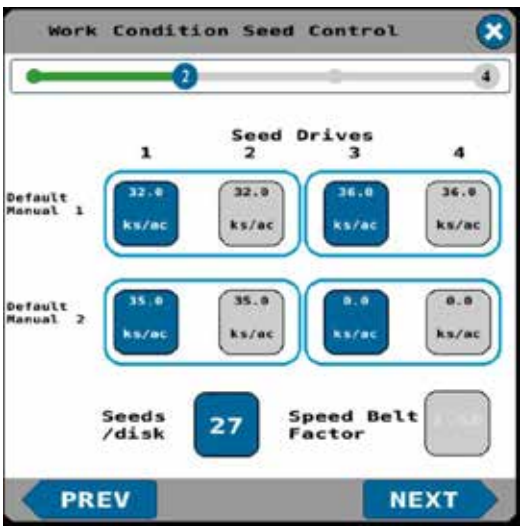
To track As-Applied information the operator must tell the planter what product is being applied. To save time during planting season the operator can create products pre-season here:

MENU>DATA>PRODUCT LIBRARY

Products can also be created on the FieldOps portal and can be found under the ***IMPORT*** tab.

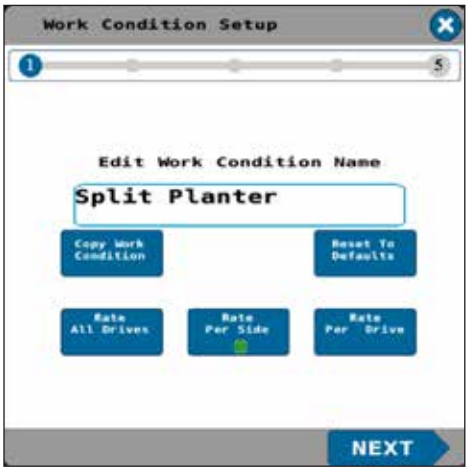
Split Planter





PRE-PLANTING SETUP (CONTINUED)

PRO 1200 WORK CONDITION SETUP – UNIVERSAL TERMINAL

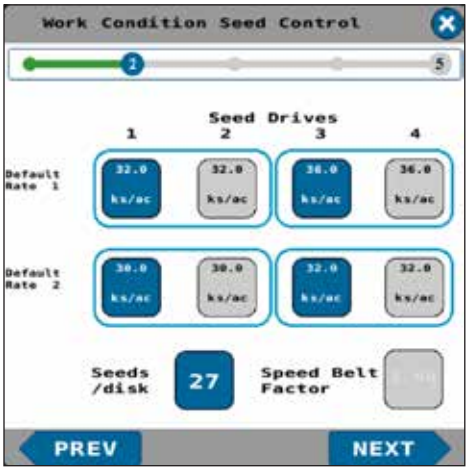


Pro 1200 planter software requires information to be created in two separate places under Operations Menu.

- Universal Terminal
- Pro 1200 Task Controller

We will cover the Universal Terminal portion first.

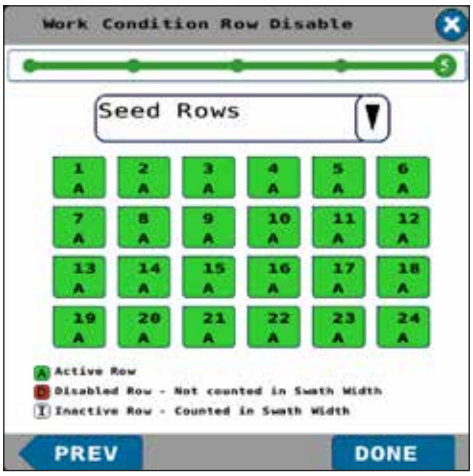
1. Navigate using the path listed above. (***MENU>>CALIBRATION>>WORK CONDITION SETUP***)
2. Select the ***WORK CONDITION*** field to edit the name describing the operation
3. Select how you want to control the seed sections
   - **a.** Rate All Drives-entire planter width
   - **b.** Rate Per Side-split varieties/rates-1/2 planter width
   - **c.** Rate Per Drive-splits the planter into four sections
4. Select ***NEXT***
5. Step 2 of the Work Condition Wizard will have you confirm:
   - **a.** Drive Configuration-Rate Per Side shown
   - **b.** Default Populations
   - **c.** Seed Disk-Number of holes
   - **d.** Speed Belt Factor-Only adjust if instructed by dealer
6. Select NEXT



7. Step 3 of the Work Condition will have you confirm Vacuum & Bulk Fill settings using the Recommended Settings Chart for each product.
8. Product Delay settings will typically be adjusted on the Task Controller side in the Pro 1200 using the Start Early or Stop Late distances.

PRE-PLANTING SETUP (CONTINUED)

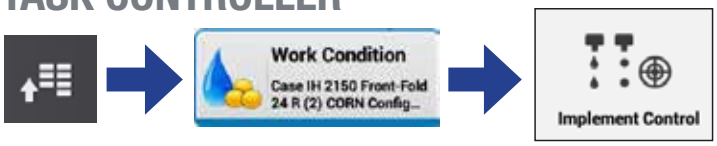
PRO 1200 WORK CONDITION SETUP – UNIVERSAL TERMINAL (continued)



9. Step 4 of the Work Condition Wizard will have you enter your Liquid default rates (if applicable) for the specific Work Condition.
10. Select ***NEXT***
11. Step 5 of the Work Condition Wizard will have you confirm active rows. In planting conditions where rows are not planting (i.e. Seed Corn) you will want to select Inactive Row so that it is counted in the Swath Width.

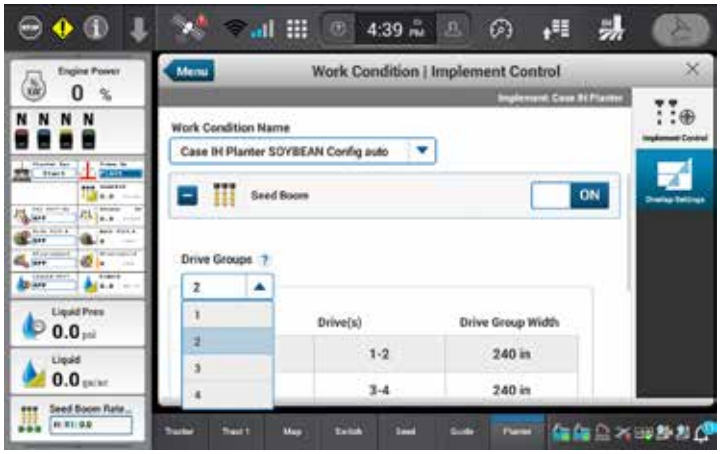
    Disabling a row also disables down force on that row.
12. Select ***DONE***

TASK CONTROLLER



Follow the path ***MENU>>WORK CONDITION card>>IMP. CONTROL*** to setup the Task Controller Work Condition used for mapping on the Pro 1200.

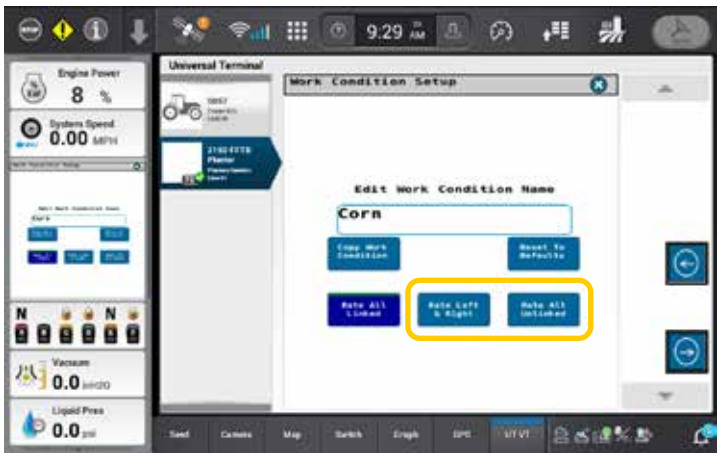
The Work Condition Name will be filled in from the data entered on the Universal Terminal.



Confirm Drive Groups
Select Drive Groups based on the number of varieties being applied.

For example:
Single Variety across planter working width Select Drive Groups 1

Two Varieties across planter working widthSelect Drive Groups 2



Multiple Drive Groups will only be available under the Implement Control area if configured as Rate Left & Right or Rate All Unlinked on the UT Work Condition setup screen.

PRE-PLANTING SETUP (CONTINUED)

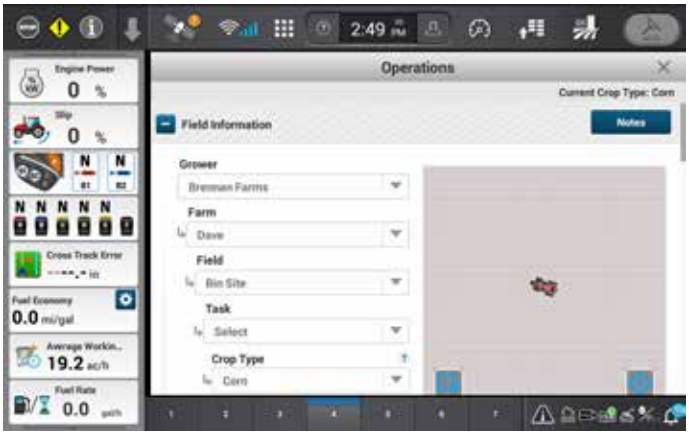
PRO 1200 WORK CONDITION SETUP – TASK CONTROLLER

Field Information

Vehicle and Implement Information

Guidance Management

Field Information



Under the Operations menu you need to confirm what product is being applied and in what location.

Field Information-Enter the Grower/Farm/Field/Task and Crop type.

If field boundaries have been created, you can check the Auto Field Enabled below the map to auto select the correct field.

Scroll down to the controller type selection.

Select the controller type to edit indicated by the blue dot.

Scroll down to the Product Assignment area in the Operations menu.

Use the Product drop-down field to select the established product to be applied for seed and liquid channels.

If you have more than one active drive you must select the blue drive group box and assign each product. The color swatch and product name indicate the variety name and color to be logged on the variety map.

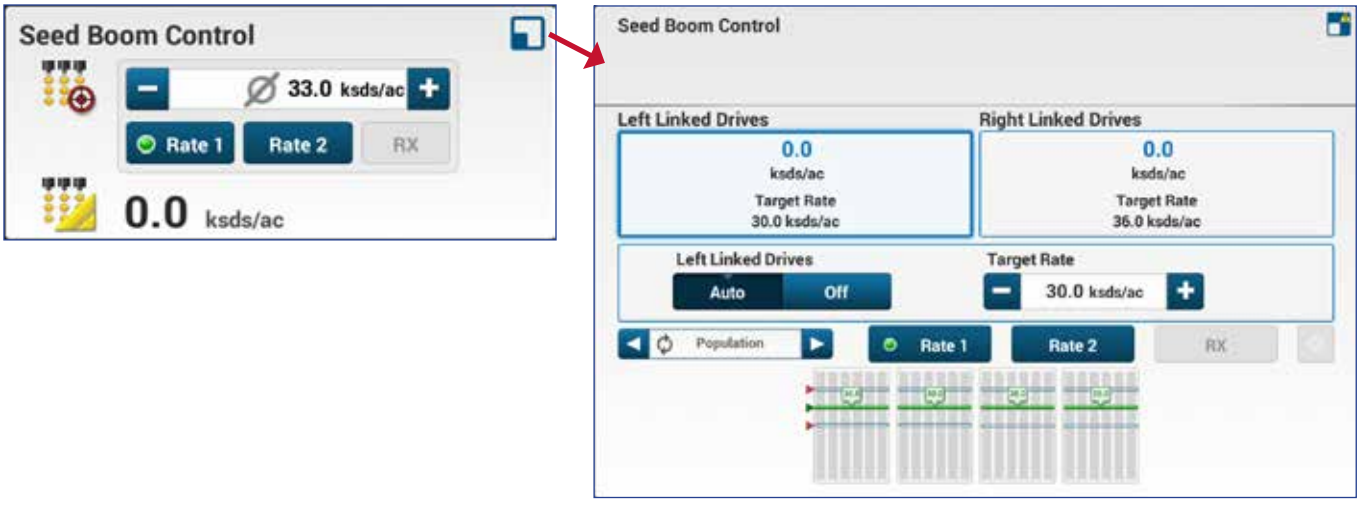
PRE-PLANTING SETUP (CONTINUED)

PRO 1200 WORK CONDITION SETUP – TASK CONTROLLER SEED CONTROL

On the Universal Terminal Seed Ctrl window ensure the TC Rate is selected to allow control of seed rate from the Task Controller and Pro 1200 User Defined Windows.

Using the Seed Boom Control UDW the rate control can be expanded. This is necessary when controlling separate groups of drives on the planter (split planter mapping)

Rate shown with Ø on the UDW indicates an average rate across the planter sections. Using the expansion button in the upper right corner confirm/change/unlink drives quickly from the UDW without having to change a Work Condition.

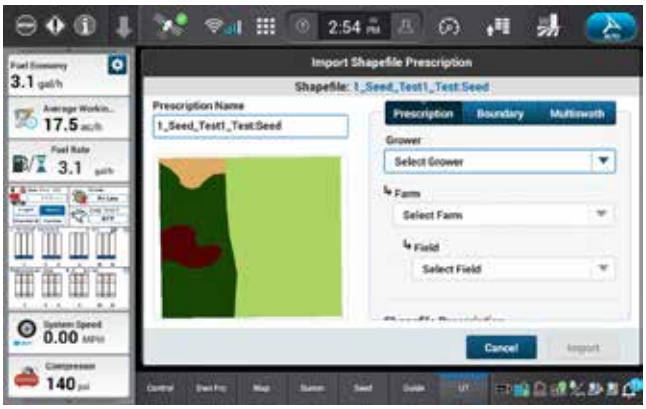


PRE-PLANTING SETUP (CONTINUED)

PRO 1200 PRESCRIPTION SETUP

This example uses a Shapefile import. You can also import prescriptions from FieldOps in a similar manner.

1. Create a folder on a USB transfer device titled SHAPEFILE and place all prescription files in that folder.
2. Insert USB in Pro1200 and navigate to ***MENU>DATA>IMPORT***



3. Define the data type by selecting Prescription once the file name is populated in the File Name field
4. Assign the Rx to the Grower/Farm/Field
5. Confirm Prescription Form (Seed or Liquid)
6. Confirm Rate (ksds or sds/acre)
7. Select IMPORT

Navigate back to the OPERATIONS menu.

Field Information
Vehicle and Implement Information
Guidance Management
Product Assignment

Product Assignment

Scroll down to the Product Assignment field and select the PRESCRIPTION field and ensure the Rx is loaded.

It is also recommended that an RX Out of Zone Target is entered to ensure seed or liquid is applied if boundaries do not match actual field area.

Prescriptions can be viewed as a 'background" layer on the map screens with in the Pro1200. To activate the background layer, navigate to the map screen and select the right arrow on the map layer selection pane.

Enable the background slider and select Rx.

The background layer will need to be enabled for each layer selected and visualized.

PRE-PLANTING SETUP (CONTINUED)

PRO 1200 OVERLAP/BOUNDARY CONTROL SETTINGS (SECTION AND ROW CONTROL)

All boundary and Overlap control settings can be adjusted and calculated using the product delay Wizard found using the path ***MENU>IMPLEMENT card>PRODUCT DELAY***

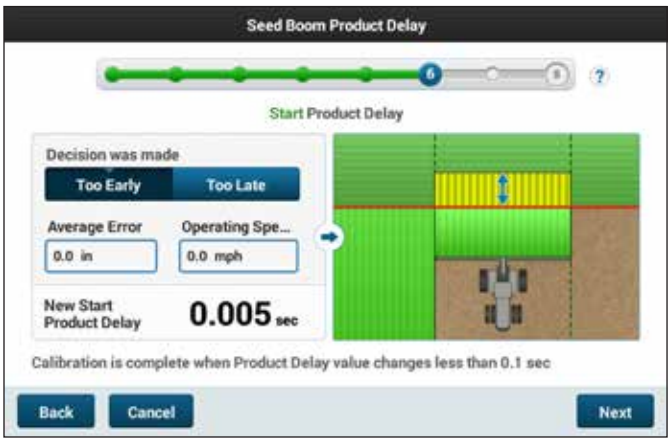
The list of available controllers with configurable product delays will be displayed.

Before making any adjustments confirm bar distance is correct in the Measurements tab on this page and in ***Universal Terminal>> MENU>> WRENCH>> MEASUREMENT SETUP***

For initial setup select the **CALIBRAT**E button at the top of the screen.

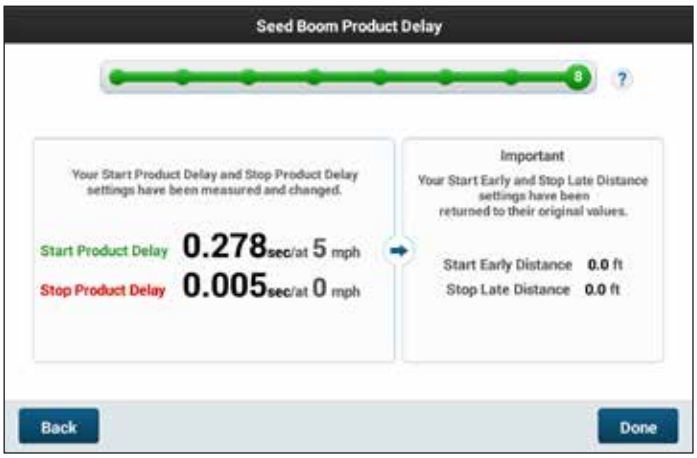
The Calibration Wizard will begin with a high level of detail regarding the process for each step.

1. Test Overlap Performance at a headland (keep consistent speed). Note that average speed
2. Measure the error (distance from where seed SHOULD have been and where seed ACTUALLY is.)
3. Select **NEXT**
4. Using the data gathered (speed & average error) determine if the error was Too Early or Too Late and enter average speed.
5. Select **NEXT** to accept the New Product Delay

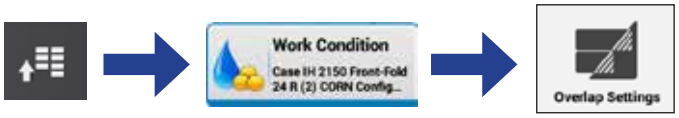


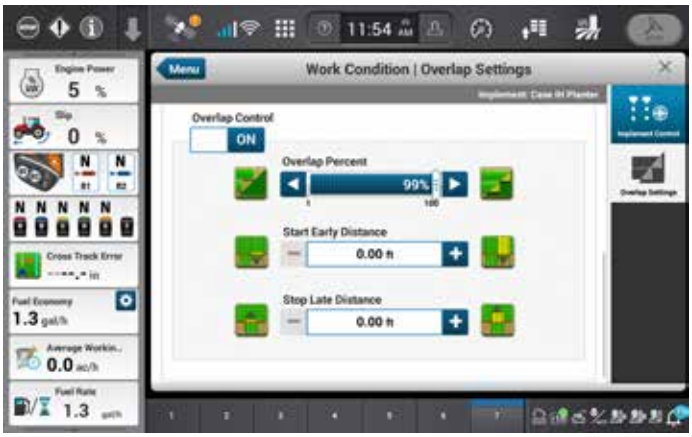
PRE-PLANTING SETUP (CONTINUED)

PRO 1200 OVERLAP/BOUNDARY CONTROL SETTINGS (SECTION AND ROW CONTROL) (continued)



6. Confirm that new Product Delays are correct by selecting DONE. This will reset any intentional gap or overlap (Start Early/Stop Late Distances) to zero.
7. Final product delay adjustment should result in a small gap (typically ½ row width distance) at the headland.





Small adjustments can be made if there is too wide of a gap at the headlands or an intentional overlap is desired.

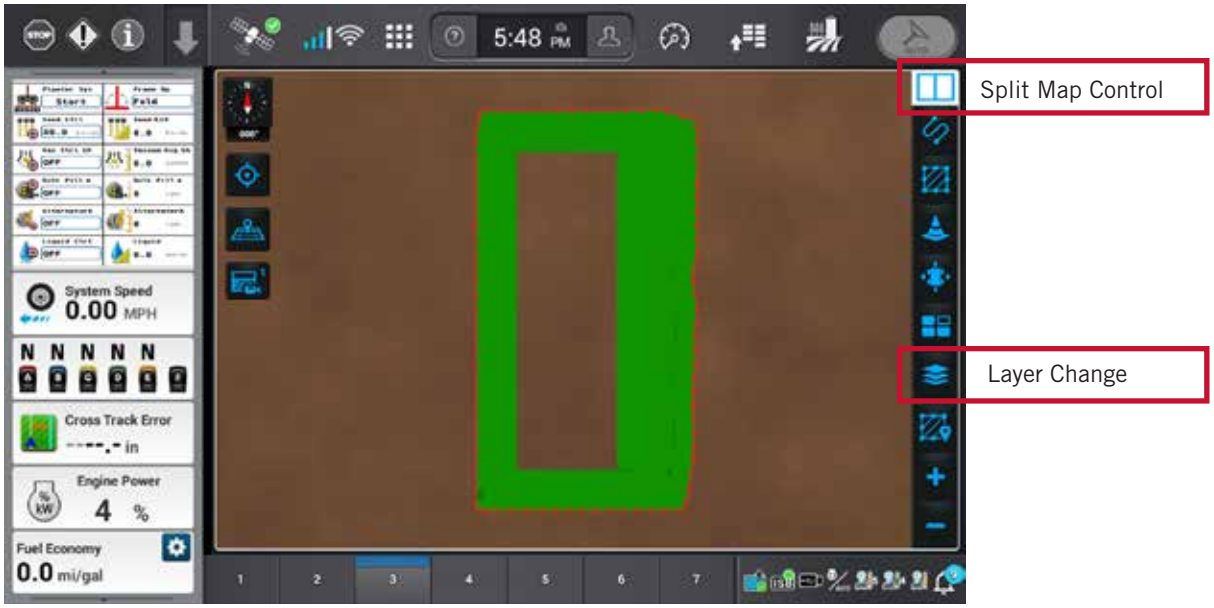
Start Early – A positive value will start the product applying earlier when leaving the covered area.

Stop Late – A positive value will stop the product applying later when entering the covered area.

PLANTING INFORMATION

PRO 1200 AS APPLIED DATA VISUALIZATION

The high definition data visualization can be customized to what the user needs to see in various formats.



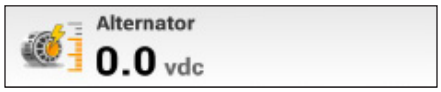
Select the Layer Change icon and the Layer Selection window will display. Up to 10 layers can be selected and can be toggled on/off. There are more than ten layers so the operator will need to choose which layers to view.

Seed Boom: Coverage
Seed Boom: Varieties
Seed Boom: Actual Seed Singulation (%)
Seed Boom: Actual Seed Multiples
Seed Boom: Actual Seed Skips
Seed Boom: Area Application Rate
Seed Boom: Spacing SRI
Seed Boom: Good Spacing
Seed Boom: Good Ride
Seed Boom: Total Down Force
Seed Boom: Ground Contact
Seed Boom: Actual Down Force

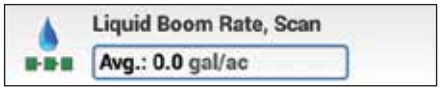
NOTE: It is recommend to choose the 10 layers before season. Adding a potential to the list of the 10 mid-season will only allow the Pro 1200 to view that layer from that point forward. The data from all potential layers will still be in the FieldOps Portal regardless of the 10 selected.

PLANTER USER DEFINED WINDOWS (UDW)

The following is a list of Planter UDW's available and their descriptions.



Alternator
Displays current planter alternator voltage "vdc".



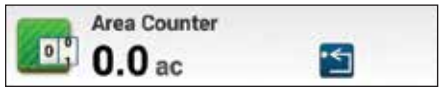
Average Rate
Liquid Boom shows the average rate of liquid application in L/ha or gal/ac.

Cleaner
Displays the current row cleaner system pressure in psi or kPa.

Alternator
Displays current planter alternator RPM.

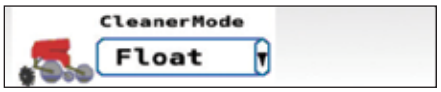
Average Rate: Seed Boom
Shows the average rate of seed application in ksds/ha or ksds/ac. Ø-Indicates Seed Section Rate Control is being control independently and possible at different rates

Cleaner Ctl
Use this UDW to control the pressure to the cleaners when the "cleaner mode" is set to "lift" or "down".

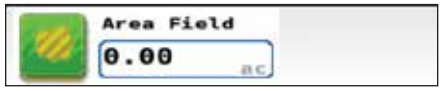


Area Counter
UDW provides running total for acres or hectares covered until reset by the user. Will not reset with a task change.

Battery
Displays current planter battery voltage.



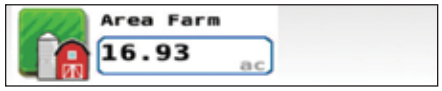
Cleaner Mode
Use this UDW to select the cleaner operating mode. "Float" "Lift" "Down" "Full Lift".



Area Field
UDW reports the accumulated acres or hectares planted for the current "Field" selected in the Operations menu.

BF Light Control
On = Lights are on when in "plant" mode
Auto = When frame position is "plant" mode and ground speed is less than 1.0 mph the lights will activate. Lights will always be off in other frame modes.

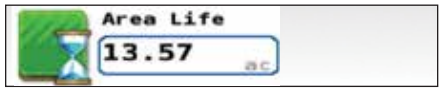
Closer
Displays current closer system pressure in psi or Kpa.



Area Farm
UDW reports the accumulated acres or hectares planted for the current "Farm" selected in the Operations menu.

Boundary Control
Disables automatic row by row boundary control.

Closer Ctl
Use this UDW to control closer pressure.

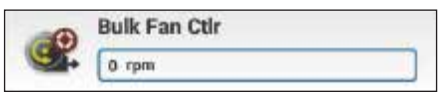


Area Life
UDW reports the accumulated acres or hectares planted for the life of the planter. Not resettable.

Bulk Fill
UDW reports the current Bulk Fill RPM.

Compressor
Allows operator to manually toggle the compressor on/off without running other subsystems on the planter. Requires hydraulic oil supply.

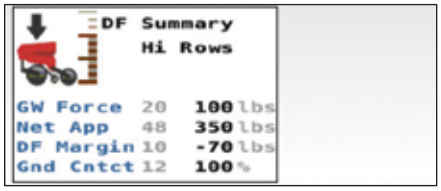
Area Season
UDW reports the accumulated acres or hectares planted for the season or since last reset.
Press to reset.



Bulk Fan Ctlr
UDW controls the target Bulk Fill fan speed.
Press and hold RPM field to enter setting.

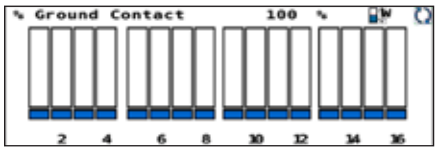
Compressor Pressure
Displays current compressor pressure in psi or kPa.

PLANTER USER DEFINED WINDOWS (UDW) (CONTINUED)



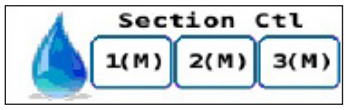
DF Summary

UDW displays down force amounts for "All-Rows", "High Row", "Low Row". Scanned parameters are GW Force, Net Applied Force, Down Margin, and % of Ground Contact.



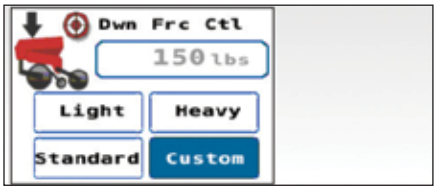
Down Force Bar Graph

Scroll between % Ground Contact, Net Applied, GW Force & % Good Ride. Can be used to zoom in on individual rows.



Drive Ctl

Liquid sections control
Blue (M) = On/Manual Section Ctrl
White (M) = Off/Manual Section Ctrl
Blue (A) = On/Automatic Section Ctrl



Dwn Frc Ctl

UDW sets the gauge wheel down force target for the hydraulic down force system.
Light = 22.7 kg (50 lb.); Standard = 45.4 kg (100 lb.); Heavy = 68.0 kg (150 lb.); Custom = Custom Value.

Jump Start

The Jump Start feature allows the product drives to start applying product early. Use the Jump Start feature when the planter is starting from a dead stop – for example, after backing into a corner.

Liquid

Displays current rate in gal/ha or gal/ac.

Liquid Boom Rate Control

Rates are defined in Work Condition. Press and hold to enable keyboard entry. Upper right hand corner includes expansion button to increase UDW size.

Liquid Flow

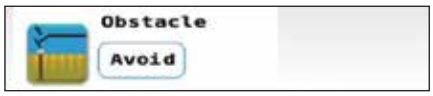
Displays current rate in Gallons per Minute.

Liquid Pres

Displays current system pressure.

Marker Ctrl

(A) automatic control
(M) manual control
Mode defined in Frame Ctrl area



Obstacle

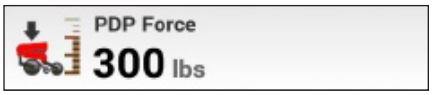
Avoid window controls marker operation when planting with out moving the planter frame.

Obstacle

Avoid window controls marker operation when planting with out moving the planter frame.

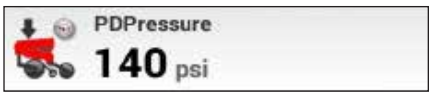
PDP Ctl

Controls the set point in lbs. for row unit pneumatic down force system.



PDP Force

Reports the system pneumatic down force in lbs. currently being applied.

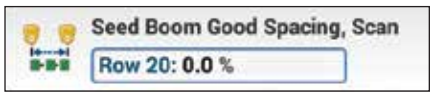


PDPressure

Reports the system pneumatic down force in psi or kPa.

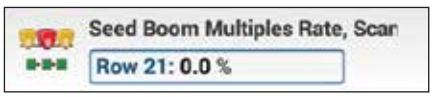
Section Switchbox:

Customizable manual switchbox.
Upper right hand corner includes expansion button to increase UDW size.



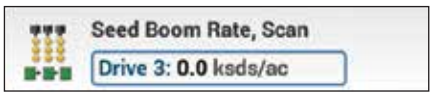
Seed Boom Good Spacing

UDW will scan all rows, planter average, high row, and low row.



Seed Boom Multiples Rate

UDW will scan all rows, planter average, high row, and low row.



Seed Boom Rate

Scans all rows as well as between planter Average/Low Row/High Row.

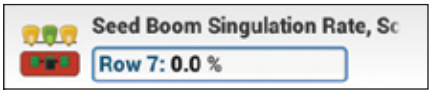
Seed Boom Rate Control

Rates are defined in Task Controller> Product Setup. Press & hold to enable keyboard entry. Upper right hand corner includes expansion button to increase UDW size.

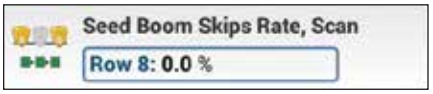
PLANTER USER DEFINED WINDOWS (UDW) (CONTINUED)

The following is a list of Planter UDW's available and their descriptions.

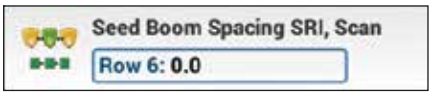
Seed Boom Seed Bar Graph
This 2 x 3 enhanced view bar graph will scan or lock onto the following seed metrics: Population/Skips/Multiples/Singulation/Seed Release Index/Good Spacing
Provides the ability to drill down to individual rows to watch all metrics simultaneously.



Seed Boom Singulation Rate
UDW will scan all rows, planter average, high row, and low row.



Seed Boom Skips Rate
UDW will scan Skips on all rows, planter average, high row, and low row.

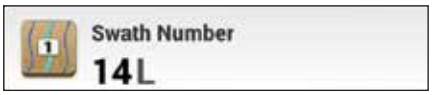


Seed Boom Spacing SRI
UDW will scan Seed Release Index on all rows, planter average, high row, and low row.

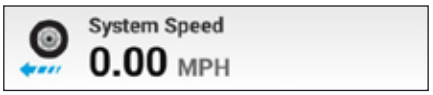
Seed Level
Displays either FULL or LOW.

SubF Force
Specific to 2150S models this UDW provides feedback on the amount of sub frame down force being applied. Range is between 1000lbs & 9000lbs depending on configuration.

SubF Press
Specific to 2150S models this UDW provides feedback on the amount of hydraulic pressure applied to the sub frame on the planter



Swath Number
Identifies current guidance swath number.



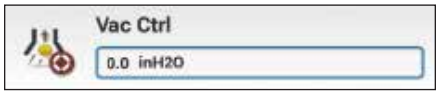
System Speed
Displays speed received from the speed source selected in the "Vehicle/Implement Configuration" screen.

Total Product: Liquid Boom
Displays amount of liquid product applied & saved to the current task and reset with new task.

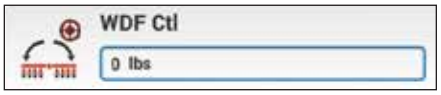
Total Product: Seed Boom
UDW displays total amount of seed applied and is reset when a new Task is created.

Universal Terminal
1x3 version of the UT. Displays what was last viewed in the UT. Provides quick access to the UT by using the expansion icon in upper right corner.

Vacuum
Displays current vacuum level.

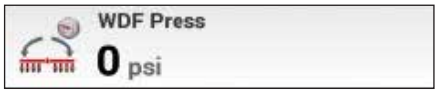


Vac Ctrl
Press and hold data entry field to enter target Vacuum setting.



WDF Ctl
Allows operator to adjust the Wing Down Force if equipped.

WD Force
Displays current Wing Downforce target in lbs.



WDF Press
Displays current Wing Downforce in psi or kPa.

NOTES

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