

Operator Manual

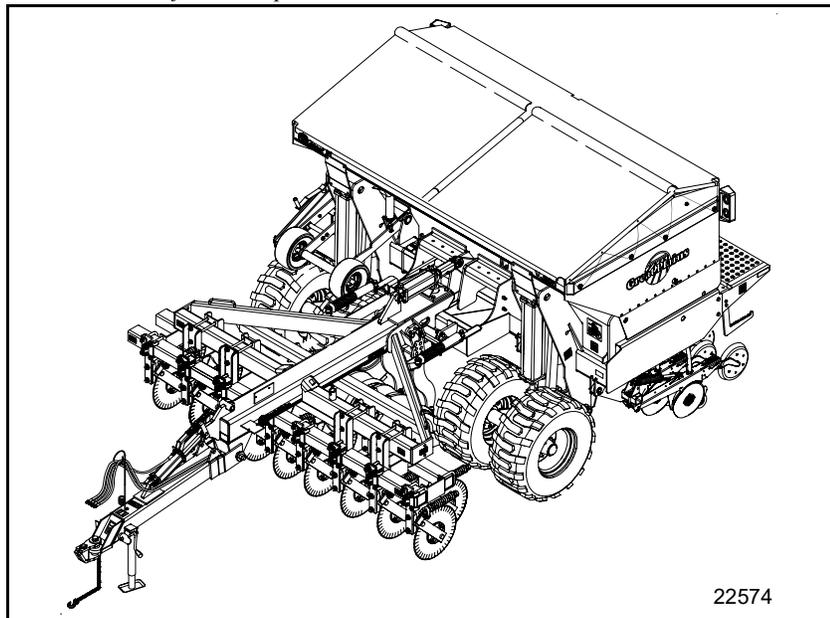
V300 and V300F

Verti-Drill

s/n: A1043L+



Read the operator's manual entirely. When you see this symbol, the subsequent instructions and warnings are serious - follow without exception. Your life and the lives of others depend on it!



Cover illustration may show optional equipment not supplied with standard unit.



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Important Safety Information

Look for Safety Symbol

The SAFETY ALERT SYMBOL indicates there is a potential hazard to personal safety involved and extra safety precaution must be taken. When you see this symbol, be alert and carefully read the message that follows it. In addition to design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.



Be Aware of Signal Words

Signal words designate a degree or level of hazard seriousness.

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components that, for functional purposes, cannot be guarded.



WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.



CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



Be Familiar with Safety Decals

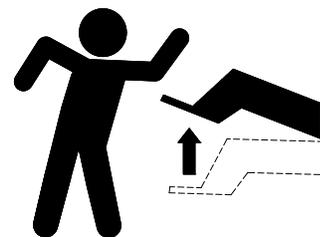
Read and understand "Safety Decals and Reflectors" on page 6, thoroughly.

Read all instructions noted on the decals.



Negative Tongue Weight

This drill can have positive and negative tongue weight, and it can change during planting. This poses a serious hazard during unhitching and it can work the hitch pin loose during transport. To avoid serious injury or death due to a rising hitch or road accident:



Always use the clevis hitch provided.

Always hitch before connecting hydraulics.

Always lower the openers and install the jackstand before unhitching.

Avoid High Pressure Fluids

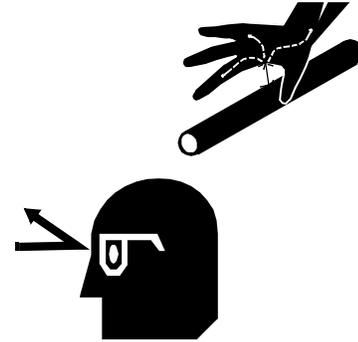
Escaping fluid under pressure can penetrate the skin, causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic lines.

Use a piece of paper or cardboard, NOT BODY PARTS, to check for suspected leaks.

Wear protective gloves and safety glasses or goggles when working with hydraulic systems.

If an accident occurs, seek immediate medical attention from a physician familiar with this type of injury.



Use A Safety Chain

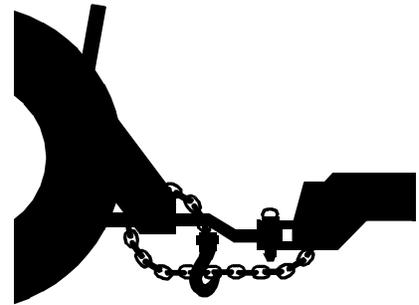
Use a safety chain to help control drawn machinery should it separate from tractor drawbar.

Use a chain with a strength rating equal to or greater than the gross weight of towed machinery.

Attach chain to tractor drawbar support or other specified anchor location. Allow only enough slack in chain to permit turning.

Replace chain if any links or end fittings are broken, stretched or damaged.

Do not use safety chain for towing.

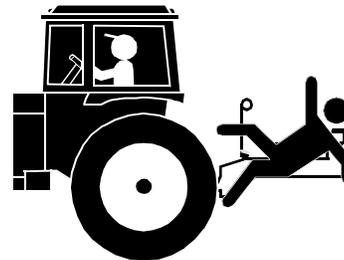


Keep Riders Off Machinery

Riders obstruct the operator's view. Riders could be struck by foreign objects or thrown from the machine.

Never allow children to operate equipment.

Keep all bystanders away from machine during operation.



Wear Protective Equipment

Wear protective clothing and equipment.

Wear clothing and equipment appropriate for the job. Avoid loose-fitting clothing.

Because prolonged exposure to loud noise can cause hearing impairment or hearing loss, wear suitable hearing protection such as earmuffs or earplugs.

Because operating equipment safely requires your full attention, avoid wearing entertainment headphones while operating machinery.



Handle Chemicals Properly

Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.

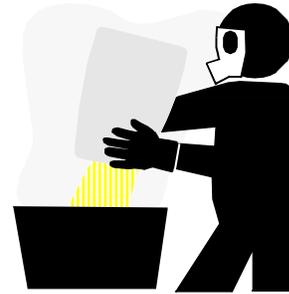
Read and follow chemical manufacturer's instructions.

Wear protective clothing.

Handle all chemicals with care.

Avoid inhaling smoke from any type of chemical fire.

Store or dispose of unused chemicals as specified by chemical manufacturer.

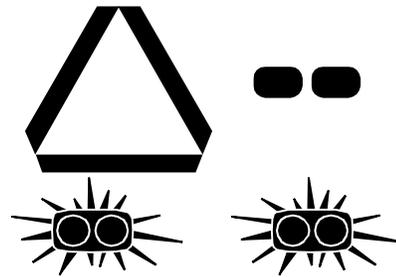


Use Safety Lights and Devices

Slow-moving tractors and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.

Use flashing warning lights and turn signals whenever driving on public roads.

Use lights and devices provided with implement.



Transport Machinery Safely

Maximum transport speed for implement is 32 kph (20 mph). Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

Do not exceed 32 kph. Never travel at a speed which does not allow adequate control of steering and stopping. Reduce speed if towed load is not equipped with brakes.

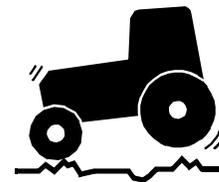
Comply with state and local laws.

Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of towing vehicle.

Carry reflectors or flags to mark drill in case of breakdown on the road.

Keep clear of overhead power lines and other obstructions when transporting.

Do not fold or unfold the drill while the tractor is moving.



Check for Overhead Lines

Markers contacting overhead electrical lines can introduce lethal voltage levels on drill and tractor frames. A person touching almost any metal part can complete the circuit to ground, resulting in serious injury or death. At very high voltages, electrocution can occur without direct contact.

Avoid overhead lines during drill operations with markers.

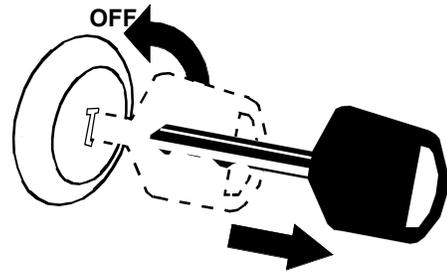


Shutdown and Storage

Lower drill, put tractor in park, turn off engine, and remove the key.

Secure drill using blocks and supports provided.

Detach and store drill in an area where children normally do not play.



Practice Safe Maintenance

Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.

Work in a clean, dry area.

Lower the drill, put tractor in park, turn off engine, and remove key before performing maintenance.

Make sure all moving parts have stopped and all system pressure is relieved.

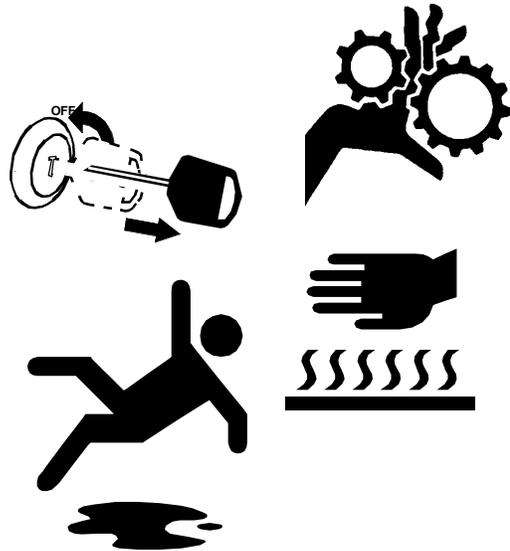
Allow drill to cool completely.

Disconnect battery ground cable (-) before servicing or adjusting electrical systems or before welding on drill.

Inspect all parts. Make sure parts are in good condition and installed properly.

Remove buildup of grease, oil or debris.

Remove all tools and unused parts from drill before operation.

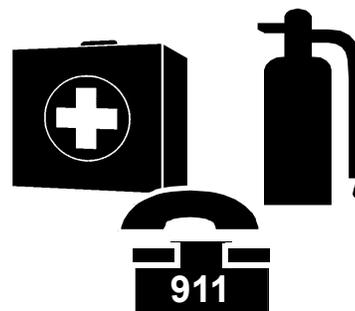


Prepare for Emergencies

Be prepared if a fire starts

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctor, ambulance, hospital and fire department near phone.



Tire Safety

Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

When inflating tires, use a clip-on chuck and extension hose long enough for you to stand to one side—not in front of or over tire assembly. Use a safety cage if available.

When removing and installing wheels, use wheel-handling equipment adequate for weight involved.



Safety At All Times

Thoroughly read and understand the instructions in this manual before operation. Read all instructions noted on the safety decals.

Be familiar with all drill functions.

Operate machinery from the driver's seat only.

Do not leave drill unattended with tractor engine running.

Do not dismount a moving tractor. Dismounting a moving tractor could cause serious injury or death.

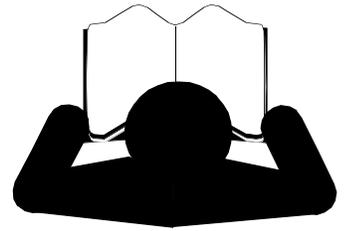
Do not stand between the tractor and drill during hitching.

Keep hands, feet and clothing away from power-driven parts.

Wear snug-fitting clothing to avoid entanglement with moving parts.

Watch out for wires, trees, etc., when folding and raising drill. Make sure all persons are clear of working area.

Do not turn tractor too tightly, causing drill to ride up on wheels. This could cause personal injury or equipment damage.



Safety Decals and Reflectors

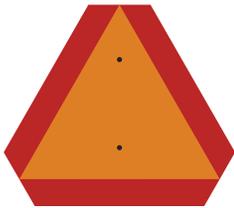
Your implement comes equipped with all safety decals and reflectors in place. They were designed to help you safely operate your implement.

Read and follow decal directions.

Keep all safety decals and reflectors clean and legible.

Replace all damaged or missing decals and reflectors. Order new decals and reflectors from your Great Plains dealer. Refer to this section for proper placement.

818-055C



Slow Moving Vehicle Placard

On back of seed box;
one total

838-266C



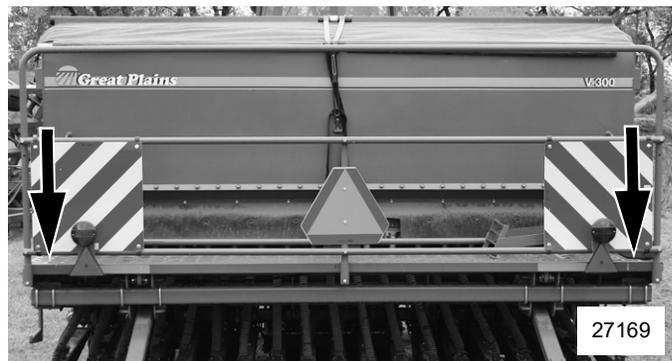
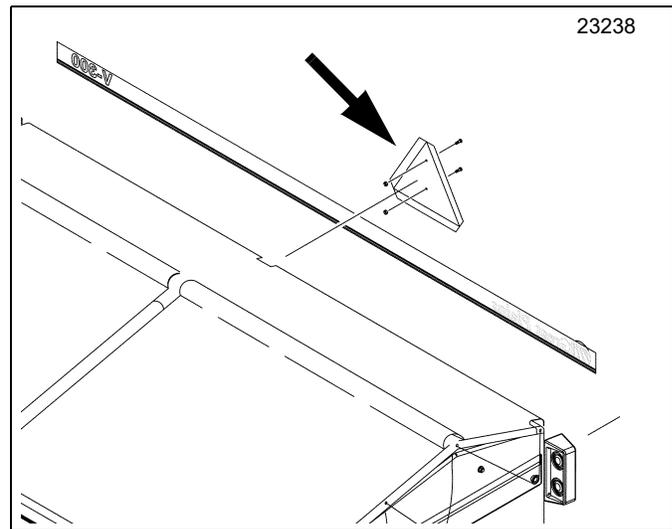
Red Reflectors

Rear face, outside ends of rear walkboard;
two total

When ordering new parts or components, also request corresponding safety decals.

To install new decals or adhesive reflectors:

1. Clean the area where the decal is to be placed.
2. Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.

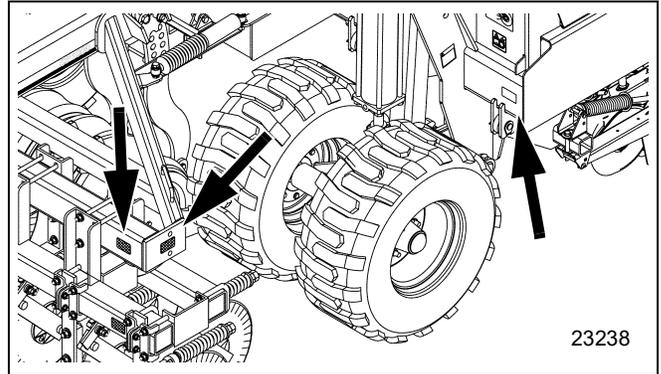


818-229C



Amber Reflectors, Half Size

Front face of hitch frame, outside ends,
Outside faces of hitch frame, both sides,
Outside faces of main frame, at front;
six total

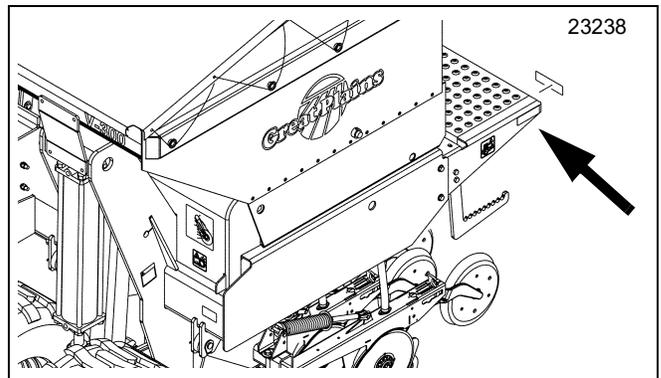


838-265C



Amber Reflectors, Full Size

Outside ends of aft walkboard;
two total

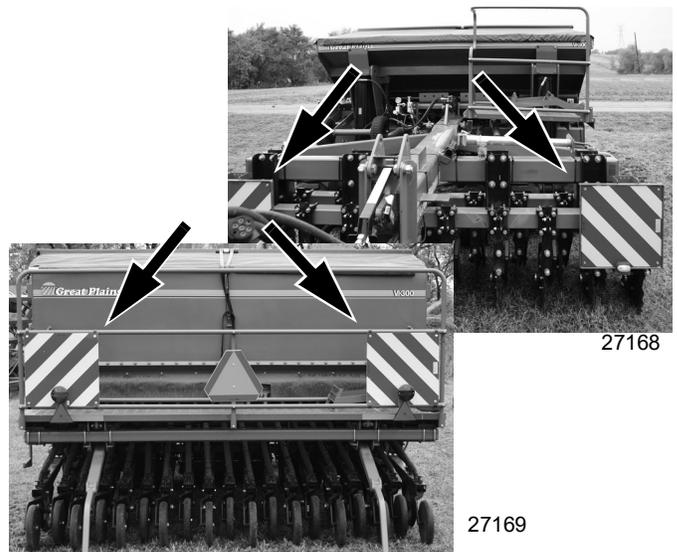


833-398C

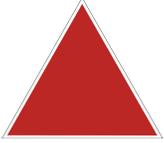


Fluorescent Panels

2 on rear face, outside ends of rear walkboard,
2 on front face, end ends of coulters toolbar;
4 total



833-399C



Red Triangle Reflectors

below rear lights;
2 total

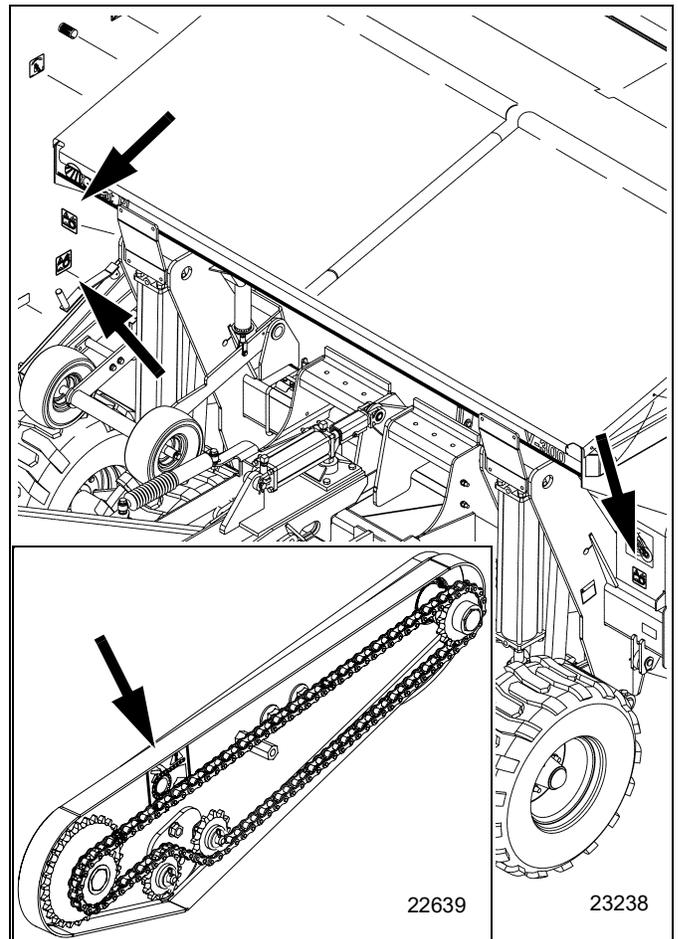


838-363C



Danger: Moving Chain

Front and side of each frame post,
inside contact drive housing; five total

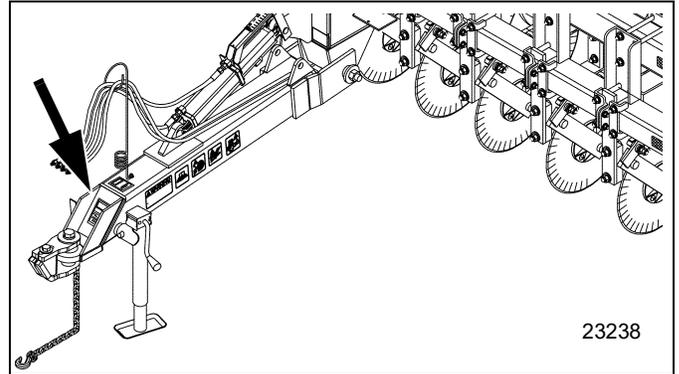


818-019C



Warning: Negative Tongue Weight

Front face of tongue at hitch;
one total

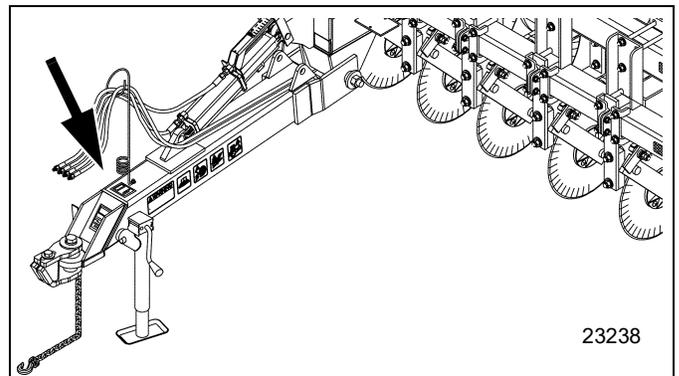


818-188C



Warning: Excessive Speed Hazard

Top of tongue near hitch;
one total

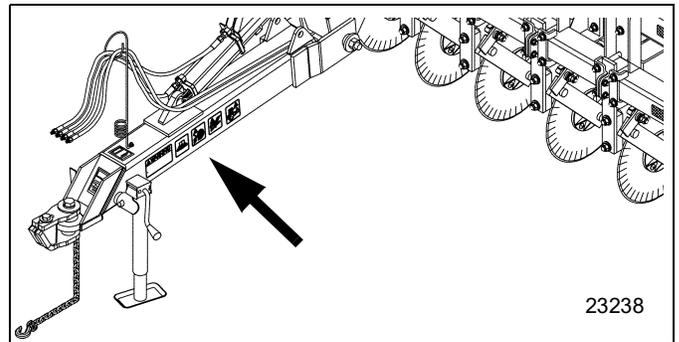


838-359C



Warning: High Pressure Fluids

Left side of tongue below hitch cylinder;
one total

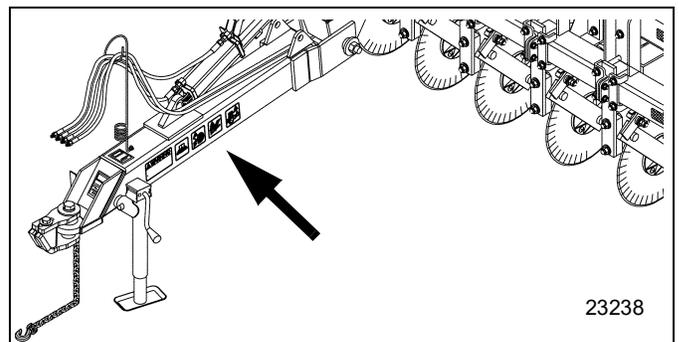


838-360C



Warning: Wear Eye Protection

Top of tongue;
one total

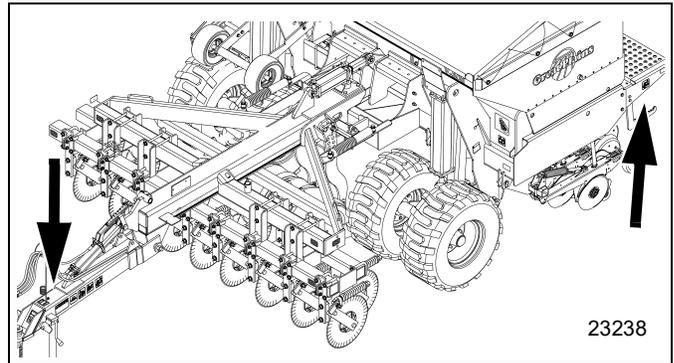


838-361C



Warning: Do Not Ride

Each end of aft walkboard,
top of tongue;
three total

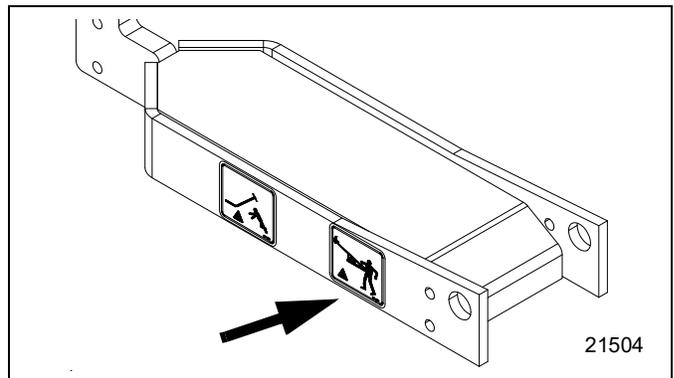


838-365C



Warning: Pinch/Shear

Each marker arm;
two total

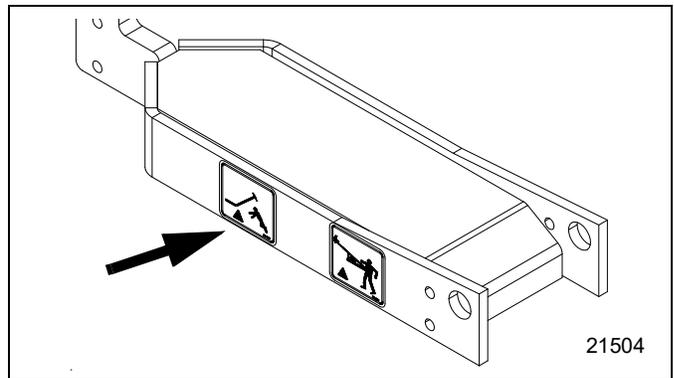


838-367C



Warning: Falling Marker

Each marker arm;
two total

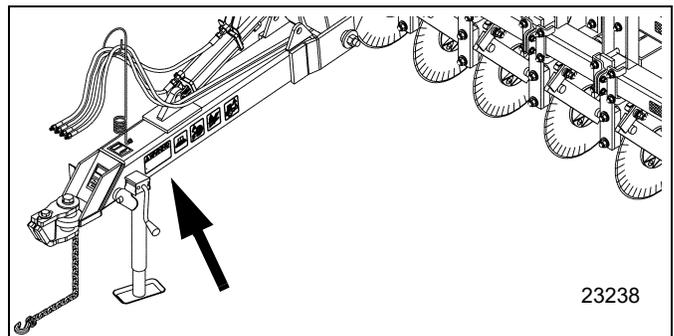


818-016C



Caution: Hitch

Left side of tongue at hitch;
one total

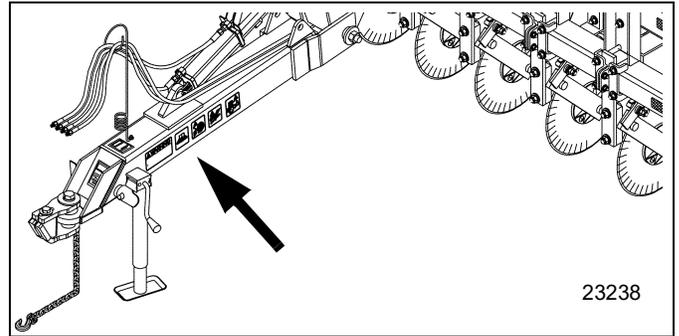


838-358C



Caution: Read Manual

Left side of tongue below hitch cylinder;
one total



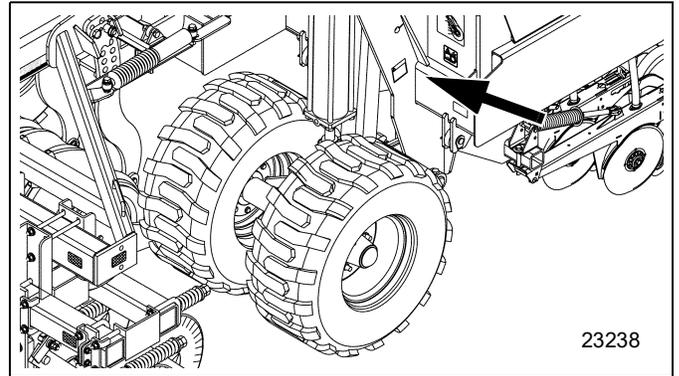
23238

838-362C



Caution: Tires Not A Step

Each frame post;
two total



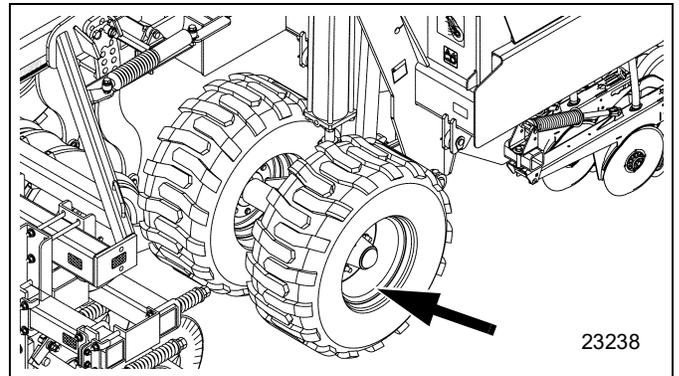
23238

838-426C



Caution: Tire Inflation and Torque

Each gauge wheel rim;
four total



23238



Introduction

Great Plains welcomes you to its growing family of new product owners. This implement has been designed with care and built by skilled workers using quality materials. Proper setup, maintenance and safe operating practices will help you get years of satisfactory use from the machine.

Description of Unit

The Verti-Drill is a pull-type seeding implement. The implement consists of a three-point drill mounted on a center-pivot hitch. The hitch and drill are integrally connected. No-till coulters are mounted on the hitch, to zone-till strips for seed furrows. Straight-arm openers on the drill prepare seedbeds and place the seed. The pivoting action of the hitch helps drill openers track the coulters. Contact-drive tires on the drill power seeding from hitch tires. A hydraulic cylinder controls coulters depth. Lift cylinders raise the drill for turns and transport.

The V300F model includes a separate meter system and delivery tubes for fertilizer, and an adjustable partition in the seed box.

Document Family

148-057M-A Operator Manual (this document)
 148-057B Seed Rate Charts
 148-057P Parts Manual

Models Covered

This manual applies to implement serial number A1043L and higher of models:

V300-1962 3 Meter Verti-Drill
 V300F-1962 3 Meter Verti-Drill with Fertilizer

Earlier model V300 drills are covered by Operator Manual 148-057M.

Intended Usage

Use this implement for seeding production-agriculture crops only. Do not modify implement for use with attachments other than those specified by Great Plains. Use implement in no-till or minimum tillage conditions.

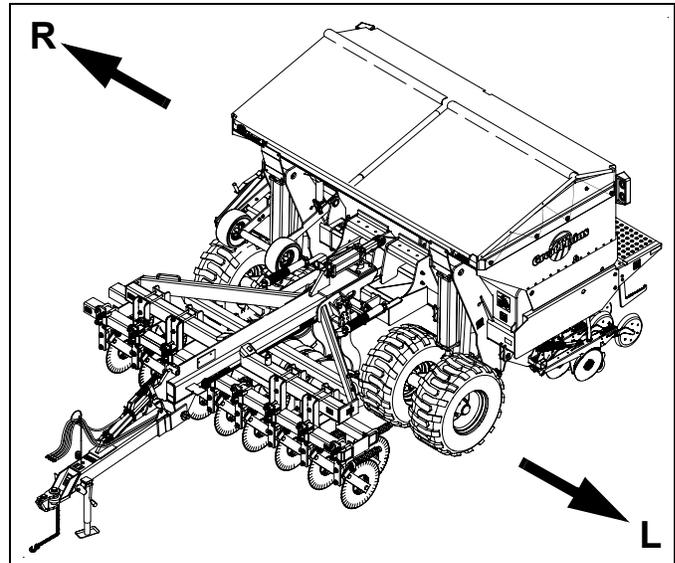


Figure 1
V300: Left/Right Notation

22574

Using This Manual

This manual familiarizes you with safety, assembly, operation, adjustments, troubleshooting and maintenance. Read this manual and follow the recommendations to help ensure safe and efficient operation.

The information in this manual is current at printing. Some parts may change to assure top performance.

Definitions

The following terms are used throughout this manual.

Right-hand and left-hand as used in this manual are determined by facing the direction the machine will travel while in use unless otherwise stated.

IMPORTANT !

Paragraphs in this format present a crucial point of information related to the current topic.

Read and follow the directions to:

- remain safe,
 - avoid serious damage to equipment and
 - ensure desired field results.
-

Note: Paragraphs in this format provide useful information related to the current topic.

Owner Assistance

If you need customer service or repair parts, contact a Great Plains dealer. They have trained personnel, repair parts and equipment specially designed for Great Plains products.

Refer to Figure 2

Your machine's parts were specially designed and should only be replaced with Great Plains parts. Always use the serial and model number when ordering parts from your Great Plains dealer. The serial-number plate is located on the top of the hitch frame.

Record your drill model and serial number here for quick reference:

Model Number: _____

Serial Number: _____

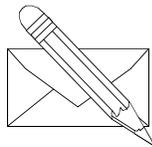
Your Great Plains dealer wants you to be satisfied with your new machine. If you do not understand any part of this manual or are not satisfied with the service received, please take the following actions.

1. Discuss the matter with your dealership service manager. Make sure they are aware of any problems so they can assist you.
2. If you are still unsatisfied, seek out the owner or general manager of the dealership.

For further assistance write to:

Product Support

Great Plains Mfg. Inc., Service Department
PO Box 5060
Salina, KS 67402-5060



gp_web_cs@greatplainsmfg.com

785-823-3276



Figure 2
Serial Number Plate

27170

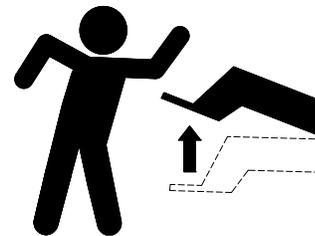
Setup

This section covers steps performed during or prior to first hitch, and on routine re-hitch.

First hitch may entail equipment installation, some assembly or even some re-wiring. Review the entire section prior to first hitch to ensure that all necessary components and tools are at hand.

Pre-Start Checklist

1. Read and understand “**Important Safety Information**” on page 1.
2. Check that all working parts are moving freely, bolts are tight, and cotter pins are spread.
3. Check that all grease fittings are in place and lubricated. Refer to “**Lubrication**” on page 105.
4. Check that all safety decals and reflectors are correctly located and legible. Replace if damaged. “**Safety Decals and Reflectors**” on page 6.
5. Inflate tires to pressure recommended and tighten wheel bolts as specified. See “**Appendix**” on page 115.



Negative Tongue Weight

WARNING

This drill can have positive and negative tongue weight, and the tongue weight can change significantly between hitching and unhitching, as materials and/or weights are added, applied or removed.

The changing tongue weight can also tend to work the hitch pin loose during transport and field operations. To avoid serious injury or death resulting from a suddenly elevating hitch or a traffic accident, always observe these rules:

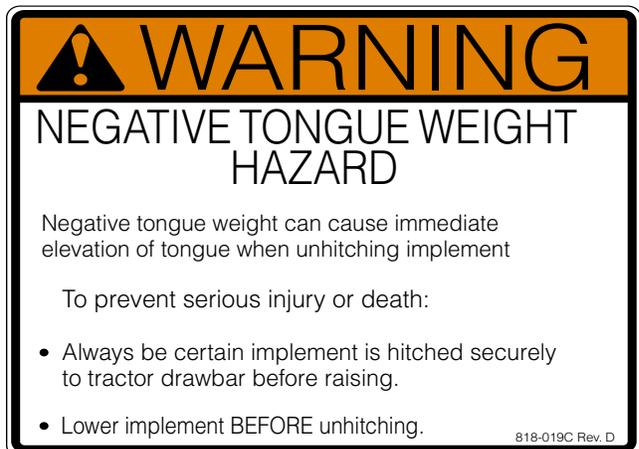
Always use the clevis hitch provided, securely fastened to the tractor drawbar with both bolts.

Always pin the hitch pin.

Always hitch before connecting hydraulics.

Always lower the openers before unhitching.

Always use the jackstand during unhitching.



Hitching Tractor to Implement

DANGER

You may be severely injured or killed by being crushed between the tractor and drill. Do not stand or place any part of your body between drill and moving tractor. Stop tractor engine and set park brake before installing pins.

IMPORTANT !

The standard model V300 and V300F require a tractor with "Closed Center" hydraulics. If the intended tractor has "Open Center" hydraulics, the drill requires a kit to convert it to open center operation. Have your Great Plains dealer contact the factory.

Refer to Figure 3

1. Place hitch weldment ① over ball swivel ② on hitch tongue ③. Hold hitch weldment in place by inserting spacer tube ④ through weldment clevis and ball swivel.
2. Back tractor up to hitch and align rear drawbar hole with spacer tube.

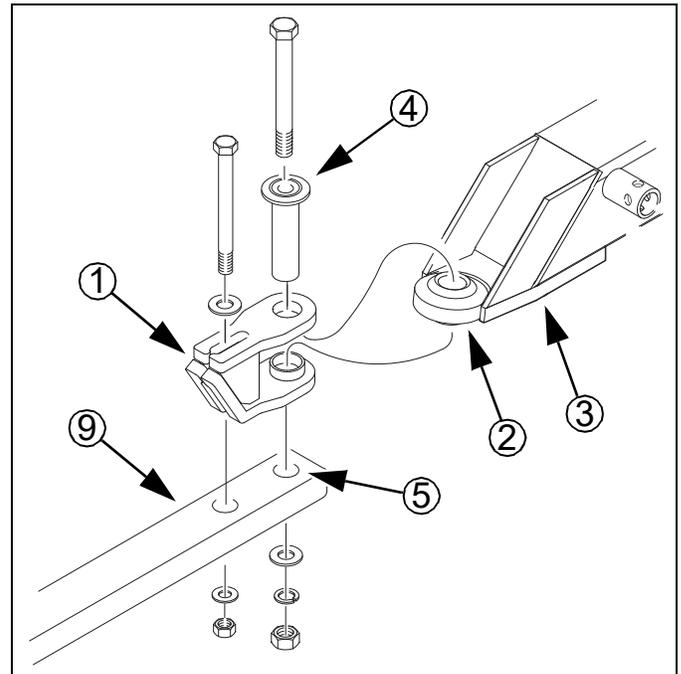


Figure 3
Hitch Components

17215

Refer to Figure 4

3. Bolt hitch weldment to tractor drawbar using the larger 1-8x10 bolt ①, large (1in) flat washer ④, lock washer ③, and nut ②.
4. Insert the smaller $\frac{3}{4}$ -10x9-inch bolt ⑤ through the $\frac{3}{4}$ in flat washer ⑥, then the slotted hole of the weldment, the forward (secondary) hole of tractor drawbar.
5. Secure with $\frac{3}{4}$ in lock washer ⑦ and nut ⑧.
6. Tighten both bolts to specified torque (see "Torque Values" on page 116).
7. Securely attach safety chain to tractor-drawbar frame.

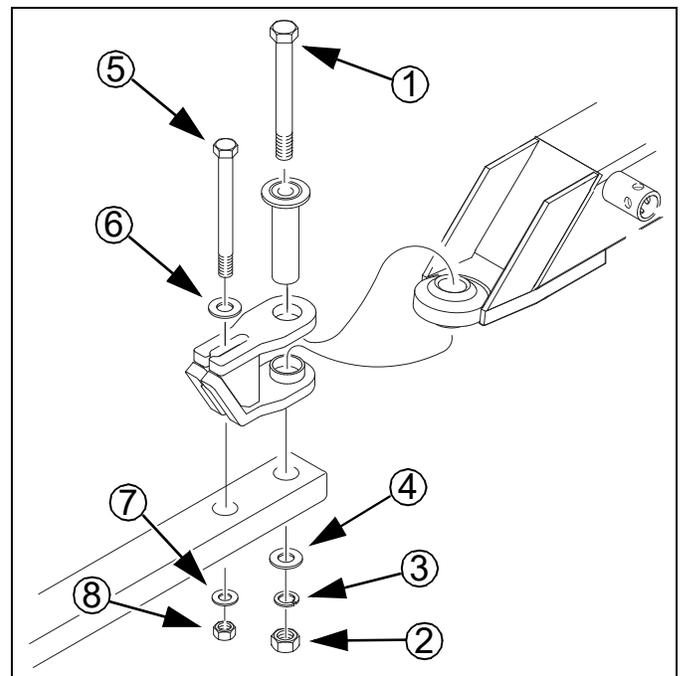


Figure 4
Securing Hitch

17215

Refer to Figure 5

8. Un-pin jack from side of hitch tongue. Pin in transport/storage location on left top hitch tool bar.
9. If the tractor drawbar height is adjustable, and the desired value is known, set it now. Otherwise, implement (and as necessary, tractor drawbar height) are adjusted when setting coulter depth (see page 71).



Figure 5
Jack in Transport Position

27277

Electrical Connections

The V300 & V300F lighting harness has a European-style 7-pin lighting connector as standard equipment. If your tractor has an ASAE connector, contact your dealer for a replacement connector.

The V300 & V300F include a digital seed monitor as standard equipment. Prior to first use, the display module must be installed in the tractor (see “**Monitor Installation**” on page 18).

Refer to Figure 6 and Figure 7

If the lighting connector is already compatible with the tractor, and the monitor console is installed on the tractor, make the following connections:

- lighting
- monitor

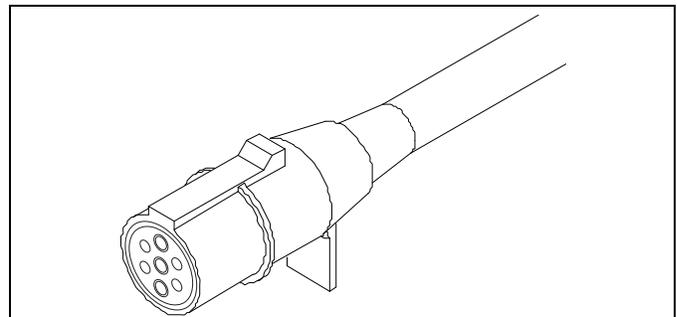


Figure 6
Lighting Connector

27172

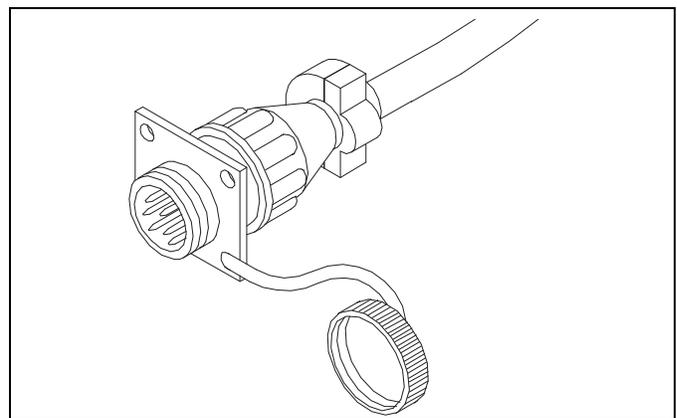


Figure 7
Monitor Connector

27173

Hydraulic Connections

WARNING

Escaping fluid under pressure can have sufficient force to penetrate the skin. Check all hydraulic lines and hoses before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, to check for suspected leaks. If injured, seek medical assistance from a doctor that is familiar with this kind of injury. Foreign fluids in the tissue must be surgically removed within a few hours or gangrene will result.

Only trained personnel should work on system hydraulics!

Great Plains hydraulic hoses are color coded to help you hook-up hoses to your tractor outlets. Hoses that go to the same remote valve are marked with the same color.

The drill consumes hydraulic power for two or three circuits.

Refer to Figure 8

To distinguish hoses on the same hydraulic circuit, refer to plastic hose label. The hose under an extended-cylinder symbol feeds a cylinder base end. The hose under a retracted-cylinder symbol feeds a cylinder rod end.

Make sure all tractor levers are in neutral or float, or tractor hydraulics are off, before making connections.

Note: If the tractor has only one circuit capable of providing continuous flow, connect the Lift/Lower drill circuit (Red) to that tractor circuit.

Note: If the tractor circuit can only be locked in continuous flow at one end of the lever travel, connect the drill's Lift/Lower Retract/"base end" to that side of the tractor circuit.

Hydraulic Charge and Bleed

The V300 and V300F is normally shipped with the hydraulic hoses disconnected. They are installed by your dealer, but the hydraulic system may not have been charged and bled.

If there is any question about the possibility of air in the hydraulic system, bleed all the systems per the instructions beginning on page 97.

If the system has not been charged, have 11.3 liters (3.5 gallons) of hydraulic oil available for refilling the tractor reservoir.

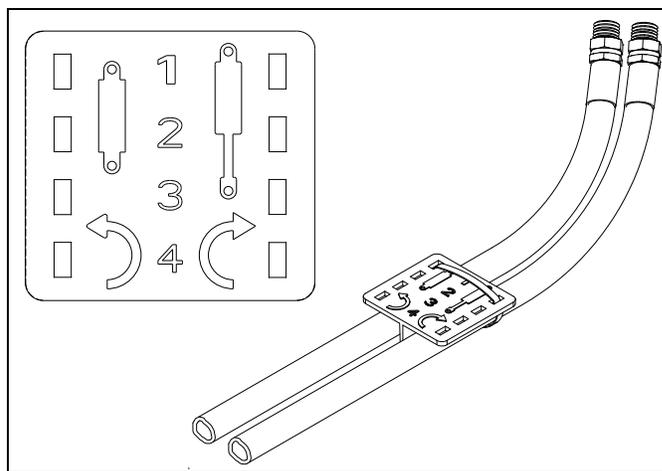


Figure 8
Plastic Hose Label

817-348c
17641

| Color | V300 Hydraulic Function |
|--------|--|
| Red | Transport Lift and Hydraulic Down-Pressure |
| Blue | Tongue Height Markers (see footnote*) |
| <none> | Markers* |

* Markers are optional. Standard markers are on a dedicated circuit. An optional selector valve is available, and shares the tongue circuit.

IMPORTANT !

The standard model V300 and V300F require a tractor with "Closed Center" hydraulics. If the intended tractor has "Open Center" hydraulics, the drill requires a kit to convert it to open center operation. Have your Great Plains dealer contact the factory.

Monitor Installation

Refer to Figure 9

Drill-mounted components of the seed monitor are pre-installed. The system includes tractor-mounted components (in dashed outline) that must be installed in the tractor prior to first use.

1. Mount the console ① where it will be visible to the tractor driver, and not interfere with safe operations. Make sure the location allows the harness ② to reach the hitch.

Remove the protective film from the monitor face after installation.

2. Connect the power leads ③ to tractor battery power. The wiring color code is:
 - + Brown
 - Blue
 The console includes its own power switch.
3. The power jack ④ is weather-proof, and may be mounted inside or outside of the tractor cab.
4. After hitching, connect the tractor monitor harness ② to the drill harness.

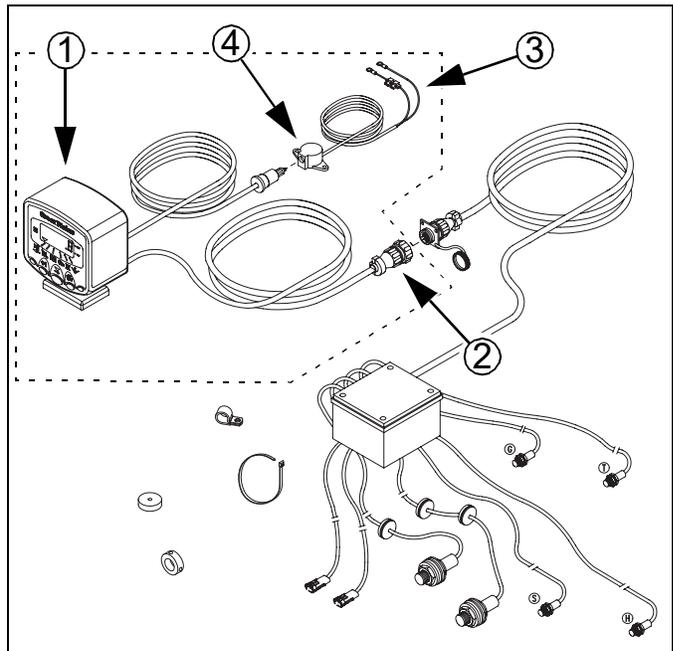


Figure 9
Seed Monitor System 22985

Monitor Setup

The seed monitor requires entry of data that rarely changes, and data that changes for each planting session. See “**Monitor Operation**” on page 43 for step-by-step data entry and programming instructions.

Most of the monitor setup can be done with the drill disconnected. The harness to the drill does need to be connected for speed Autocal.

| | |
|---------------------------------------|--|
| Units of measure: Metric or Imperial* | |
| Width: | 3.0m or 118.1in |
| S.S.F.†: | 3.235 (metric) or 127.4 (imperial) |
| Fertilizer Shaft Rate | 3.000 (factory default) on V300F 0.000 (alarm disabled) on V300 |
| Tramlining: | On or Off |

* Use Imperial for U.S. customary units.
 † Speed Sensor Factor is the relationship between sensor counts and implement forward speed. Auto-Cal is recommended for most accurate reporting.



Figure 10
Seed Monitor Console 22632

Install Other Options

Some options and accessories are not pre-installed prior to delivery. Install them prior to first use.

Leveling Drill

Before planting, check drill level, using the coulters depth, opener down-force and planting depth you expect to use. Perform this setup on level ground with conditions similar to the planting ground.

Several interrelated adjustments control depth and level. Check/set them in this order to most quickly “zero in” on the desired field results. This setup is representative of results mid-session. The drill weighs more with a full seed and fertilizer load, and less when near empty, so check results early and late in the planting.

Leveling Order Summary

Refer to Figure 11

1. Check tires, mounts and blades.
2. Add weight to drill. Disable seeding.
3. Set initial seeding depth.
4. Set initial lift cylinder stops and down-pressure.
5. Set initial hitch height.
6. Lower drill, pull forward in planting conditions. Check levels and depths.
7. Adjust hydraulic hitch to set coulters depth. Field check.
8. Adjust lift spacers to level hitch. Field check.
9. Adjust press wheels to set seeding depth. Field check.
10. Adjust hydraulic down-pressure for opener depth. Field check.
11. Review all settings starting at step 7.



Figure 11
Checking Level

27204

Check Tires, Blades & Mounts

Always inflate tires to factory specifications before making any of these adjustments.

Prior to first use, check coulters mounts to ensure that coulters are at the correct nominal height. Periodically re-check disk blades. As blades wear, the coulters will not cut as deep.

Refer to Figure 12

With the drill raised, the distance ① from the bottom of the tool bar to the bottom of the pivot casting is:
28.26mm (11.13in).

To adjust one or more coulters, see “**Coulter Adjustments**” on page 71.

Check that packer wheels ② are not hitting their bottom stop pins. See page 28 for adjustment.

Periodically check the opener disk blades. As blade wear, the furrow will not be as deep. Adjust the T-handle setting to maintain a constant seeding depth. See “**Opener Depth (Press Wheel Height)**” on page 94.

In addition, worn blades will not have correct contact. See “**Disk Blade Adjustments**” on page 92 for blade contact adjustments.



Figure 12
Coulter Height

27208

Disable Seeding & Weight Drill

Disable Seeding

To avoid unnecessary wear on the drive system during setup, disengage the main drive clutch (see See “**Main Box Drive Clutch**” on page 77), and on V300F, disengage the fertilizer clutch (page 86).

If using seed for test weight in the main seed box or fertilizer box, it is important to prevent it from being metered, (or leaking through the meters, which can happen even if the shafts do not turn). Set the main box seed rate handle to 0. On model V300F, also set the fertilizer rate adjuster to 0.

Adjust at Half Material Weight

To properly set depths and down-pressures, the drill needs to weigh approximately what it will weigh halfway through a planting session. This can be done with material in the seed/fertilizer boxes, or by using extra weights. However, if the planting is with the Small Seeds box, the weight is low enough that no simulation is necessary.

If you will not be using extra weights on the drill when planting, but have “suitcase” weights available, material weight can be simulated with weights on the weight brackets. Note that fully loading both brackets may still be significantly less than half a full material load.

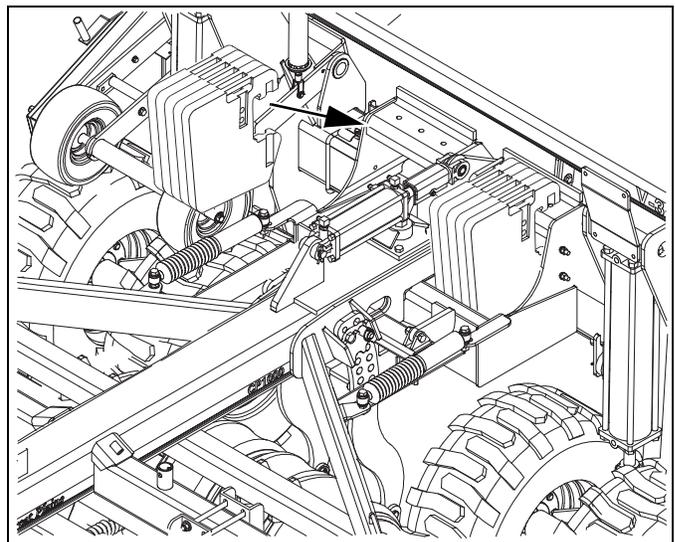


Figure 13
Adding Weights

27229

Initial Seeding Depth

Refer to Figure 14

If the drill has been used for planting, leave the row unit T-handles at their present settings.

If the drill has not been used before, initially set all T-handles to the middle holes in their range.

The T-handle on the row unit is the primary adjustment for seeding depth when:

- the coulters prepare the ground ahead of the furrow,
- the down-pressure is appropriate for conditions, and
- the row unit is running level,

The T-handle controls the relationship between opener blade and press wheel height. See page 94 for adjustments.

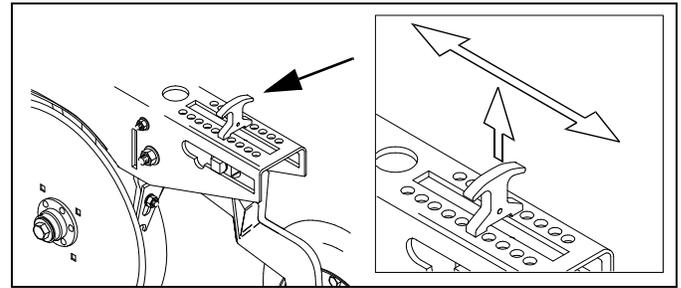


Figure 14
Initial T-Handle Setting

15659

Initial Lift Cylinder Spacers

Refer to Figure 15 and Figure 16

Raise the drill. If spacers (cylinder stop bushings) are already present on the lift cylinder rods, they were placed there during a previous leveling, and may be left as is.

If there are no spacers on the rods, make sure both sets of five sizes are available on the rod loops on top of the hitch wing rear tubes.

Raise the drill and install the 5.1cm (2in) spacers. These are spring-loaded half rings, and snap around the rod.

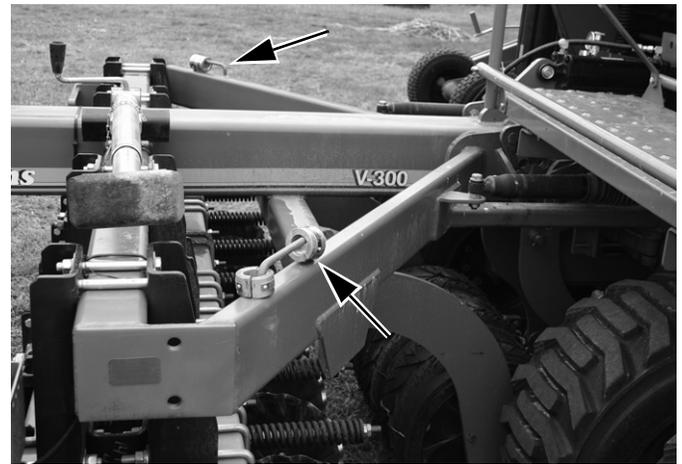


Figure 15
Cylinder Spacer Storage

27207



Figure 16
Cylinder Stop Bushing (Spacer)

22622

Initial Down-Pressure

If the down-pressure valve has been previously set for field operations, leave it as is.

If this is the first use of the drill, calibrate the bypass valve and set the initial pressure to 800 psi.

Set or Calibrate Bypass

Refer to “**Lift/Lower Operations**” on page 35 to know what to expect the drill to do as hydraulics are cycled.

Set Bypass for PC Closed

Tractors with Pressure Compensating Closed Center Hydraulics:

- Release locking disk ①. Close bypass valve ② for no oil flow by turning knob ③ on valve clockwise completely. Tighten locking disk ①. Always operate the drill with the bypass valve closed.

Set Bypass for LS Closed/PFC

Tractors with Load Sensing Closed Center or Pressure Flow Compensating Hydraulic Systems:

1. Release locking disk ①. Close bypass valve ② for no oil flow by turning knob ③ on valve clockwise completely. Tighten locking disk ①.
2. With tractor at half throttle, adjust flow-control valve *on tractor* so openers raise and lower at a reasonable speed. Keep tractor at one-half throttle for remaining steps.
3. Engage tractor hydraulics and lower openers. Lock hydraulic lever on tractor for continuous operation.
4. Release locking disk ④ on pressure control valve ⑤. Adjust pressure-control valve knob ⑥ for opener down pressure so gauge ⑦ is at 1800 psi.
5. Release locking disk ① on bypass valve ②. While watching gauge ⑦, slowly turn knob ③ on bypass valve ② counterclockwise. Adjust bypass valve ② just until needle on gauge ⑦ begins to move down from 1800 psi. Use locking disk ① to lock bypass valve at this setting. (See also note at right.)

Set Down Pressure

Adjust pressure-control valve ⑤ to desired opener down pressure per “**Hydraulic Down Pressure**” on page 36. Tighten locking disk ④.

While 1800 psi is a good starting point for setting the bypass valve, if you consistently operate the drill with low opener down pressure you can set the bypass valve below 1800 psi. If you consistently operate the drill with very high opener down pressure, you may need a bypass-valve setting above 1800 psi.

IMPORTANT !

The standard model V300 and V300F require a tractor with “Closed Center” hydraulics. If the intended tractor has “Open Center” hydraulics, the drill requires a kit to convert it to open center operation. Have your Great Plains dealer contact the factory.

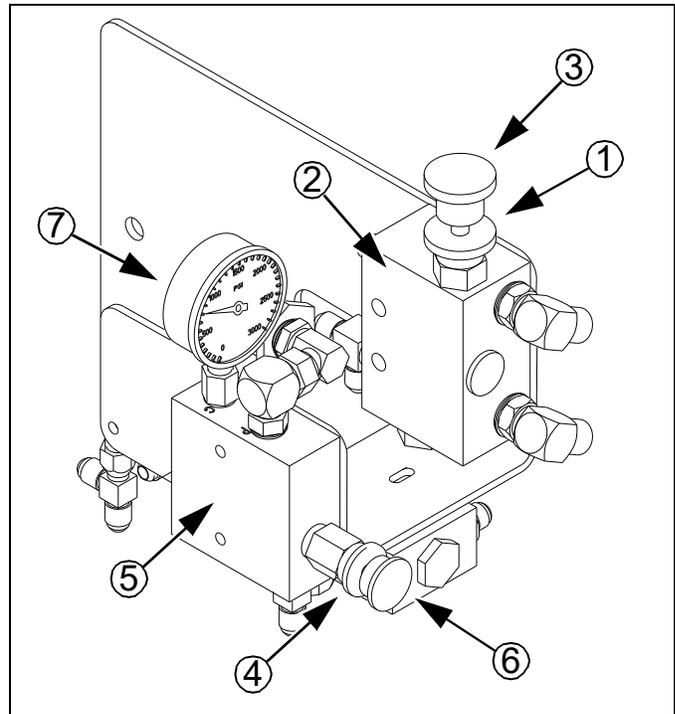


Figure 17
Initial Down-Pressure Setting

27231

IMPORTANT !

Failure to use the bypass valve on load-sensing tractors may cause major tractor damage.

Note: Faster opener raise/lower increases potential for oil over-heating, excess wear and tractor damage.

The higher the bypass pressure, the greater the potential for oil over-heating and tractor damage. At the same time, for proper opener operation the bypass valve must be set at least 300 psi above the opener down-pressure setting when the tractor is at one-half throttle. Therefore, you should set the bypass valve as low as possible while staying at least 300 psi above the opener down pressure setting.

Initial Hitch Height

Lowering for Leveling

Remove all transport locks (see page 31), and fully lower drill using the lift cylinders.

Initial Hitch Height

if you have a record of the hitch height scale reading from a recent planting session, set the height to that value.

Otherwise, adjust the hitch until the coulter blades just touch the ground, then lower it one half count on the hitch stroke gauge (roughly 5cm or 2in of vertical travel at the coulter blades).



Figure 18
Hitch Height Scale

27234

Lower Drill, Pull Forward and Check

It is not possible to accurately set depth and force by raising and lowering a stationary drill. It must be run in the ground, in soil conditions as similar as possible to those of the field to be planted.

Review lift and lower operations on page 35.

Pull forward at least the length of the tractor-plus-drill, so that you can see the effects of all tires, the coulters, openers and presswheels.

Refer to Figure 19

- Check that the hitch ① is level. The primary adjustment for this is lift cylinder spacers (once coulters are at desired depth).
- Check that the coulters are running at the desired depth ②, typically 13 to 25mm (0.5 to 1in) deeper than the opener disks ③. The primary adjustment for this is the hydraulic hitch.
- Check that the openers are running at the desired seeding depth ③. The primary adjustments for this are the row unit T-handle and the hydraulic down force.
- Check that the opener frames ④ are level, as this provides the most consistent depth control and predictable down-force. Once all the other adjustments are correctly tuned, the row units operate parallel to flat ground.

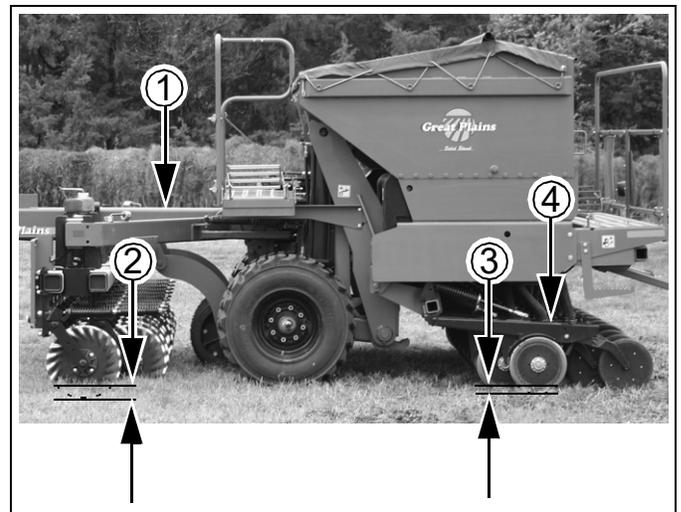


Figure 19
Checking Level, Depths

27208

Hydraulic Hitch Adjustment

The hydraulic hitch is the primary means of adjusting coultter depth.

Making changes to hitch height also affects hitch level, requiring spacer changes at the lift cylinders. If the hitch was already level, make about half the needed coultter depth change via hitch height. The compensating level adjustment with lift cylinder spacers makes the rest of the coultter depth change.

After adjusting the hitch height and spacers, check the new setting for depth.

Once the depth and level are satisfactory, record the reading on the stroke scale.



Figure 20
Setting Hitch Height

27234

Lift Spacer Adjustments

Refer to Figure 21

The height of the rear end of the hitch is determined by the implement lift cylinders. The drill includes two sets of five (ten total) spacers (cylinder stop bushings) that are used to raise the “down” position of the lift cylinders.

These spacers are provided in five different sizes, and are used in identical combinations on both sides of the drill. They are stored on rod loops on the hitch wings (see Figure 18 on page 23).

The combinations provide a range of spacer stack sizes from 19 to 166mm (0.75-6.5in), in 6.35mm (0.25in) increments.

The 6.35mm change increment corresponds to a change in coultter depth of about 3.3mm when the hitch is level. However, if the spacers are changed, the hitch needs to be adjusted to compensate for the depth change, and it amplifies the change caused by the spacers.

When raising or lowering the coultter depth with the hitch already level, add or remove spacers equal to the coultter depth change desired. The spacers provide about half the desired depth change, The re-leveling at the hitch cylinder provides the other half.

Re-check depth after spacer and hitch level changes.



Figure 21
Cylinder Stop Bushing (Spacer)

22622

Marker Setup

The V300 and V300F may have optional dual folding pass markers and dual pre-emergence/tramline markers.

Dual Marker Setup

Although dual markers may have been dealer-installed, they may not be set to ideal extension length or optimal operating speed. Check these items before first use.

If there is any question about the state of the marker hydraulics, see also “**Bleeding Marker Hydraulics**” on page 101.

Mark width and throw direction are adjustable.

Dual Marker Extension

Refer to Figure 22

1. Extend the marker on one side.
2. Lower the drill, and pull forward a meter or so to leave a mark with both the coulters and the marker.
3. Measure the distance ① from the mark left by the outside coulter to the mark left by the marker. Measure parallel to the hitch tool bars.

For the V300 and V300F in normal configuration (all row units in use), distance ① is:

① 37 : cm or 8404in ($\frac{1}{2}$ swath + $\frac{1}{2}$ row space).

You can also measure from drill centerline to the marker, in which case use:

5022m or 33 : 04in

4. If the marker extension needs to be adjusted, first make sure that the mark is satisfactory, as changing the disk angle or direction changes marker extension. See “**Dual Marker Disk Setup**” on page 26.

Refer to Figure 23

CAUTION

Be careful working around marker disks. The blades are often sharp.

5. Loosen the two nuts ② securing the U-bolt ③ securing the marker tube extension ④ in the outer marker arm tube ⑤.
6. Slide the marker tube extension ④ in or out as needed, and secure nuts.

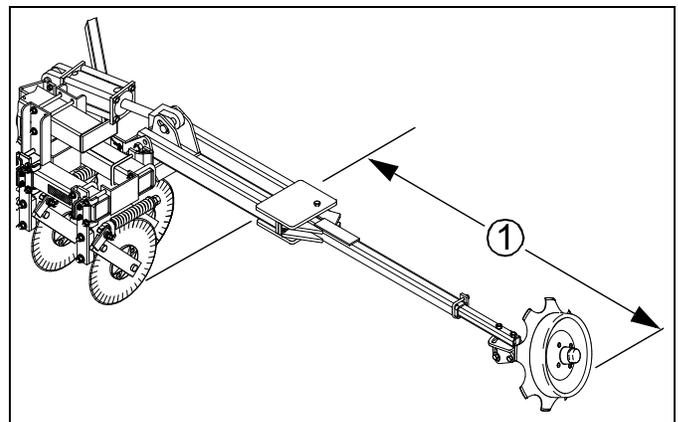


Figure 22
Marker Extension

27258

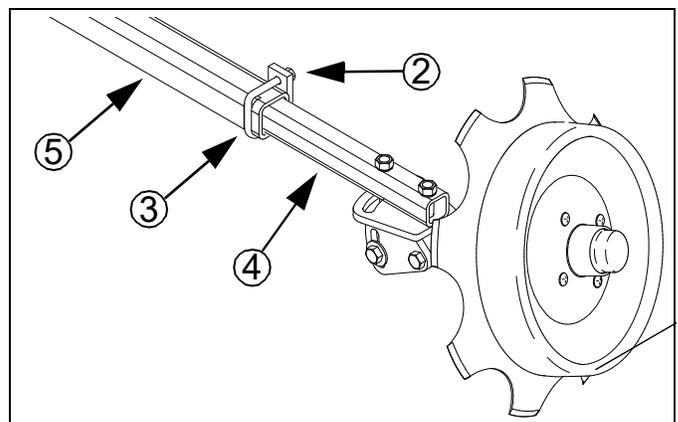


Figure 23
Marker Extension Adjustment

27259

Dual Marker Disk Setup

The marker disk is adjustable for width of mark and direction of throw. Make the adjustments with the marker side extended to field position.

Refer to Figure 24

1. Initially set the disk to be vertical with respect to the ground. Loosen the lower bolts ⑥ in the wrist weldment ⑧ and tip the top of the disk in or out with respect to the drill. Tighten bolts.
2. Adjust the width angle as needed to make a visible mark. Loosen the upper nuts ⑦ and adjust the wrist weldment ⑧ to the desired angle and throw direction. Tighten bolts.
3. Repeat for other marker.

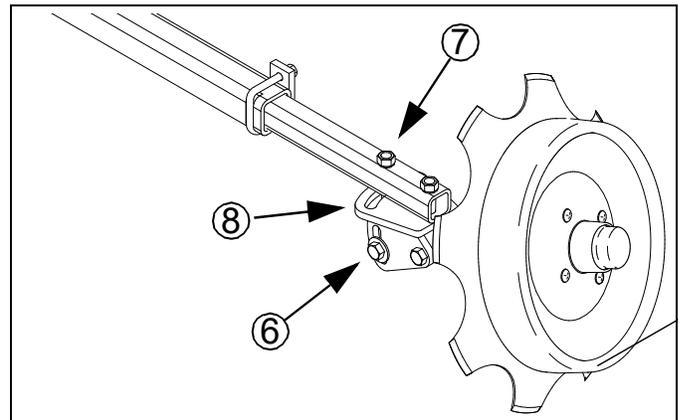


Figure 24
Marker Disk Setup

27259

Dual Marker Speed

The folding speed of sequenced dual markers is controlled by an adjustment at the sequence valve.

Excessive folding speed can damage markers and void the warranty.

Refer to Figure 25

There is one adjustment screw for unfolding speed ① and one for folding speed ②. You can identify adjustment screws by markings stamped in valve body.

WARNING

Do not adjust sequence valve while marker is in motion.

Turn adjustment screws clockwise (Ⓢ: slower) to decrease [un]folding speed and counterclockwise (ⓕ: faster) to increase [un]folding speed.

With tractor idling at a normal operating speed, adjust marker folding to a safe speed. Excessive [un]folding speed could damage markers and void the warranty.

After adjusting the folding speed, tighten jam nuts on hex adjustment screws to hold settings.

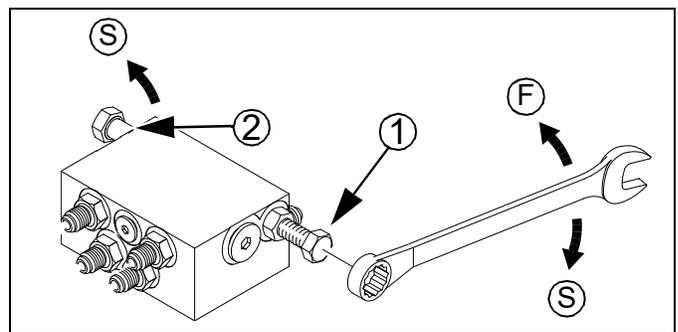


Figure 25
Sequence Valve Adjustment

14048

Pre-Emergence Marker Setup

Pre-emergence, or tramline markers may have been dealer-installed, but may not be optimally set for your intended operations.

The markers are normally set to mark directly behind row units controlled by tramline clutches. The factory default for tramline rows is 4 and 16 (counting from row 1 at drill left end). However, tramline rows can be any two of 1, 4, 6, 13, 14 or 16, plus an optional third clutch on row 13.

Refer to Figure 26

The position of the mount ① on the tool bar ② also depends on whether the marker disks ③ are oriented to the right of the marker arms ④ (as shown) or to the left. Determine disk orientation before adjusting mount location.

To adjust mount location:

1. Adjust disk if necessary (below).
2. Loosen four nuts ⑥ on the U-bolts.
3. Loosen four bolts ⑥ through the walkboard. If the mount must be moved more than a few cm, remove these bolts entirely.
4. Slide the mount ① until the disk blade ③ is directly in line with the opener controlled by the tramline clutch.
5. Re-insert the walkboard bolts if removed.
6. Tighten the U-bolt nuts and the walkboard bolts.

Tramline Marker Disk Setup

Refer to Figure 27

The marker disks ③ can be installed on either side of the marker arm (by reversing the wrist weldment ⑦), and at arbitrary vertical and horizontal angles.

1. Using the lower bolts ⑧, initially set the vertical angle of the disk to perpendicular to the ground. Adjust it later if the available range of horizontal angles does not produce a satisfactory mark.
2. Using the upper bolts ⑨, adjust the horizontal angle to produce a mark of the desired width. Pivot forward to throw dirt out. Pivot aft to throw dirt in.

To reverse the disk entirely, remove the upper bolts and rotate the wrist one half turn.

After any adjustments, make sure the mark centerline is still aligned with the tramline row opener.

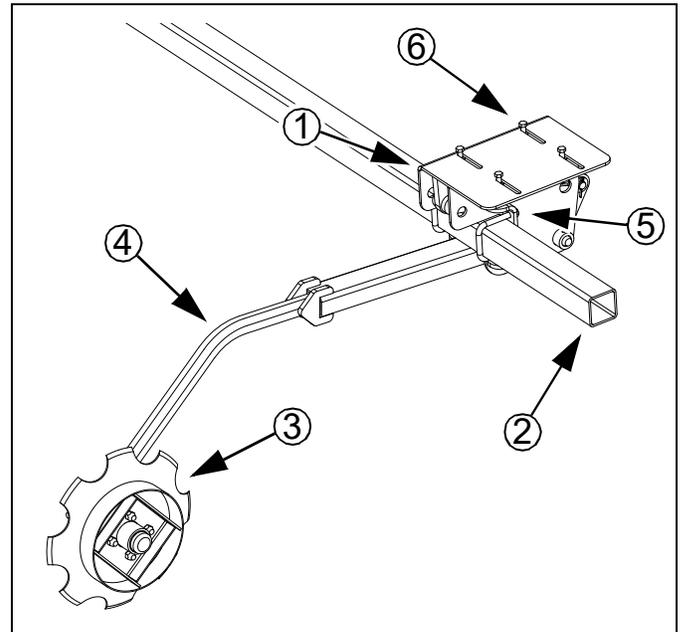


Figure 26
Tramline Marker Spacing

25005

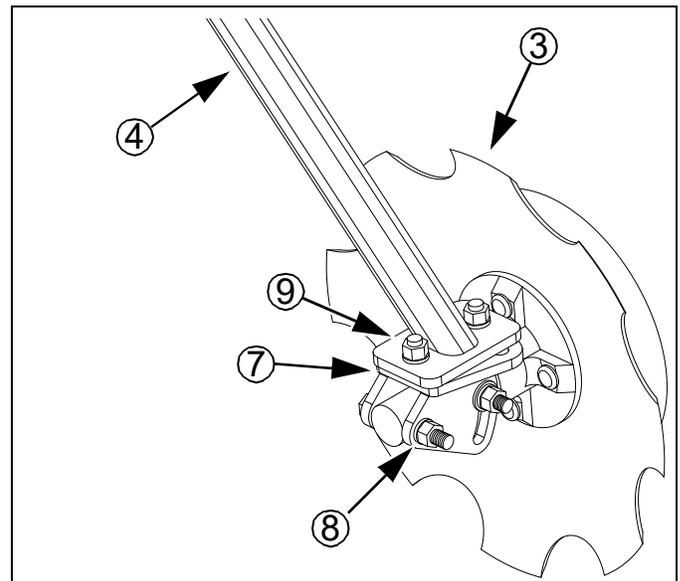


Figure 27
Tramline Marker Disk Angle

22620

Packer Setup

Refer to Figure 28

The optional packer arm kit as supplied by Great Plains does not include the packer assembly ① (wheels and tires). Your dealer can install the packer arms only if the packer assembly is also available during installation.

The packer arms have movable stop pins (② and ③), which limit the travel of the packer adjustment arms ④ in the adjustment arm weldment ⑤. Setting the pins depends in part on your field conditions and tillage practices.

Note: Should the pins fall out or be lost, limit bolts ⑥ are also present in the topmost arm hole, to prevent the packer from striking the ground when the drill is raised. Do not remove bolts. Replace lost pins.

Before setting up the packer, decide if you intend to let the packers rely strictly on their own weight, or carry some of the weight of the drill.

To adjust the packer, hitch the drill and, if not already completed, perform the leveling (page 19). Leave any extra weights or seed load present. Move the drill to level ground similar to expected field conditions.

1. Lower the drill and remove the upper stop pins ②. Raise the drill, install lift locks, and remove the lower stop pins ③.
2. Lower the drill until the presswheels just contact the ground. Note the lowest fully exposed hole in the adjustment arm ④ just above the adjustment arm weldment ⑤.

3. Lower the drill and insert the top pins ② in the next lower hole on each side.

Note: The packer wheel now raises to the same clearance as the press wheels. If the packer is not following into deeper field depressions, the pins can be moved up to increase the downward range. Do not set the pins so high that the packer can strike the ground during transport.

4. If you intend to have the packers rely only on their own weight, insert the lower pins ③ in the lowest holes of the adjustment arms ④. Skip the remaining steps below.

If you intend to have the packers carry some drill weight, continue with step 5.

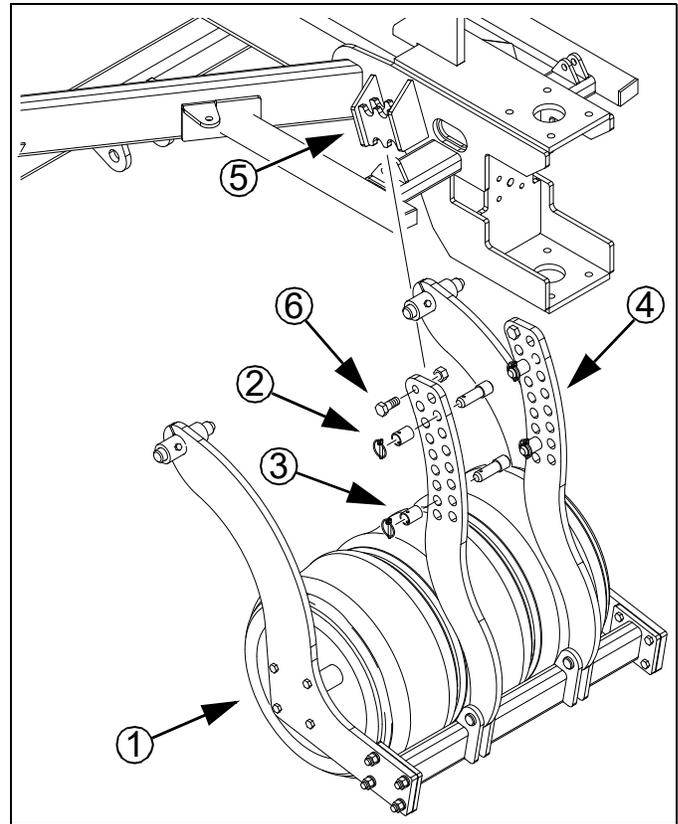


Figure 28
Packer Stops

27260

5. Lower the drill and pull forward 3 meters or so. Check that the hitch is level, and that coulter depth and opener depth are as intended.
6. Insert the lower pins ② in the highest available holes just beneath the adjustment weldment ⑤.
7. Raise the drill, and move the pins up by: one hole increment to transfer a small weight, or two hole increments to transfer significant weight.
8. Lower the drill, pull forward, and check:
 - packers not excessively compressed
 - hitch level
 - coulters at correct depth
 - openers at correct depth
 - gauge wheels have adequate traction

Harrow Setup

Before first use, check the height and the tine angle of the harrow.

Harrow Height Setup

Refer to *Figure 29*

1. Lower the drill. If the harrow is locked up, remove the pins ① securing the harrow lockup ② to the chains. Lay the lockup down on the harrow arm ③.
2. Raise the drill and insert lift locks.
3. Measure the distance from the bottom of the press wheels to the ground.
4. Lift the harrow until the lowest tine ends are at this same height.
5. Relocate the clevis ④ on each chain until the harrow is supported at this height.

Harrow Tine Setup

The setup shown in *Figure 30* has proven successful in no-till and minimum till conditions. Your field conditions may require adjustment due to soil type, residue type and amount, and moisture levels.

To set the tines to factory-recommended values:

Refer to *Figure 29* and *Figure 30*

1. Lower the drill to field position and pull forward.
2. Loosen the eight nuts ⑤ on U-bolts securing the arm to the tine assembly.
3. Rotate the assembly until the front frame tube ⑥ is higher than the rear frame tube ⑦ by:
elevation ⑧: 2.5cm or 1in.
Tighten the nuts.
4. Loosen the 4 nuts ⑥ securing the front frame tube ⑥ to the tube support.
5. Rotate the front tube to:
tine angle ⑧: 35°
Tighten the nuts.
6. Loosen the 4 nuts ⑥ securing the rear frame tube ⑦ to the tube support.
7. Rotate the rear tube to:
tine angle ⑨: 45°
Tighten the nuts.
8. Re-check the height when lifted.

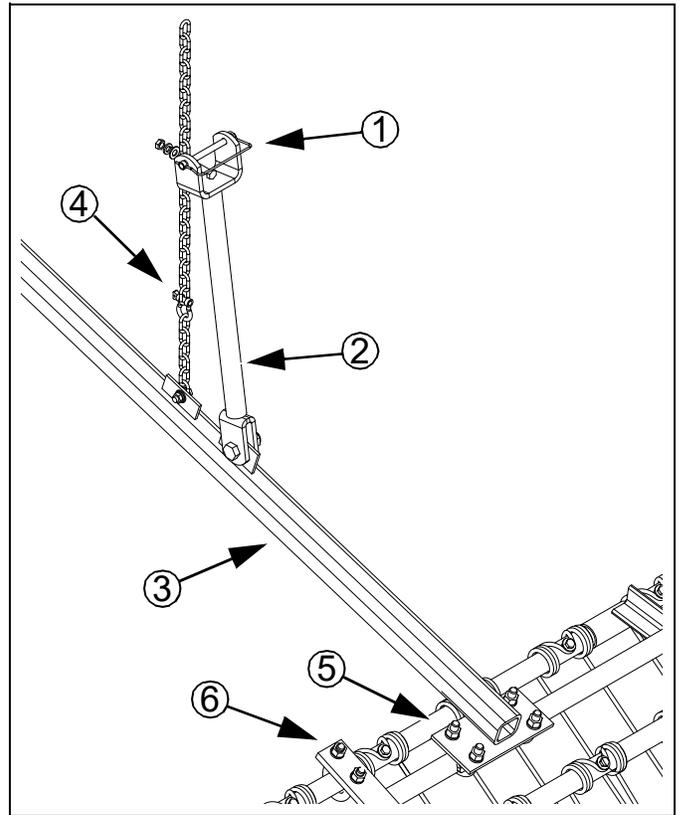


Figure 29
Harrow Chain Setup

27261

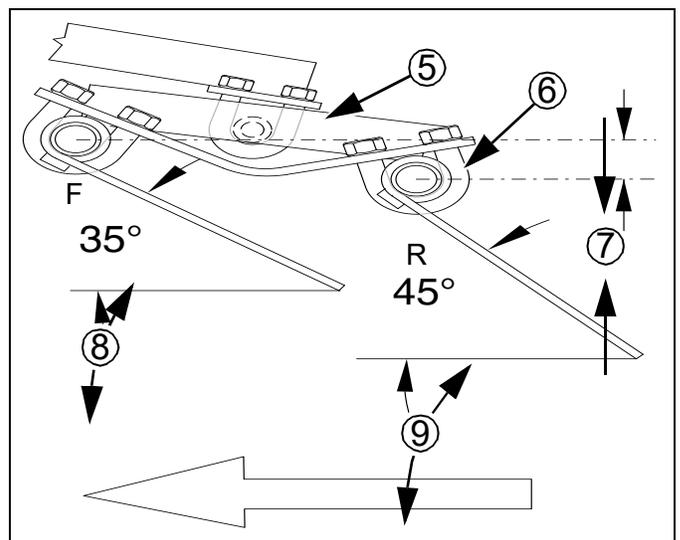
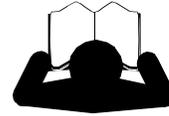


Figure 30
Harrow Tine Setup

14612

Operations

This section covers general operating procedures. Experience, machine familiarity and the following information will lead to efficient operation and good working habits. Always operate farm machinery with safety in mind.

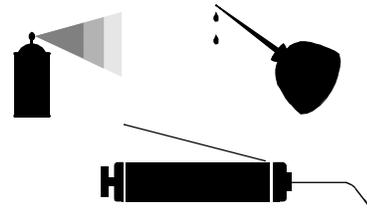


Pre-Start Checklist

WARNING

Escaping fluid under pressure can have sufficient pressure to penetrate the skin. Check all hydraulic lines and fittings before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, and wear heavy gloves to check for suspected leaks. If injured, seek medical assistance from a doctor that is familiar with this type of injury. Foreign fluids in the tissue must be surgically removed within a few hours or gangrene will result.

1. Review the entire section “**Important Safety Information**” on page 1.
2. Lubricate the drill as per “**Lubrication**” on page 105.
3. Check all tires for proper inflation per “**Tire Inflation Chart**” on page 115.
4. Check all bolts, pins and fasteners. Torque as specified per “**Torque Values**” on page 116.
5. Check implement for worn or damaged parts. Repair or replace before going to the field.
6. Check hydraulic hoses, fittings and cylinders for leaks. Repair or replace before going to the field.
7. Check seed monitor setup and ensure that the drill configuration data is loaded, prior to entering data for the current planting session.



Transport

Unload seed box before transporting if at all possible. The implement can be transported with a full box of grain, but added weight will increase stopping distance and decrease manoeuvrability. Some seed loss may also occur, as even when set to zero and not rotating, the meters do not completely block flow.



WARNING

Towing the implement at high speeds or with a vehicle that is not heavy enough can lead to loss of vehicle control. Loss of vehicle control can lead to serious road accidents, injury and death. To reduce the hazard:

1. Select a suitable tractor. Do not tow an implement that, when fully loaded, weighs more than 1.5 times the weight of the towing vehicle. Some reference weights are given below.

| Drill Configuration | V300 | | V300F | |
|---|--------|--------|--------|--------|
| | kg | lbs | kg | lbs |
| Base drill configuration, no options, empty | 3968 | 8747 | 4188 | 9233 |
| add for full main seed load | + 2542 | + 5604 | + 1002 | + 2209 |
| add for full fertilizer load | -0- | -0- | + 2055 | + 4531 |
| add for (18) maximum extra weights | + 816 | + 1800 | + 816 | + 1800 |
| add for Dual Markers | + 340 | + 749 | + 340 | + 749 |
| add for Packer | + 154 | + 339 | + 154 | + 339 |
| add for Small Seeds Option | + 128 | + 283 | + 128 | + 283 |
| add for Tramline Marker | + 163 | + 359 | + 163 | + 359 |
| add for Harrow | + 94 | + 208 | + 94 | + 208 |
| Your configuration | | | | |
| Maximum configuration | 9189 | 20258 | 9584 | 21128 |

2. Hitch to the tractor. See “**Hitching Tractor to Implement**” on page 15. Make sure safety chain is secured to tractor.
3. Check that tires are properly inflated. See “**Tire Inflation Chart**” on page 115.

Lift Cylinder Locks

Refer to Figure 31

4. Hydraulically raise drill with transport-lift cylinders, aligning the slotted hole in the lock channel with the hole in the lug.
5. Install pins in lift cylinder locks.

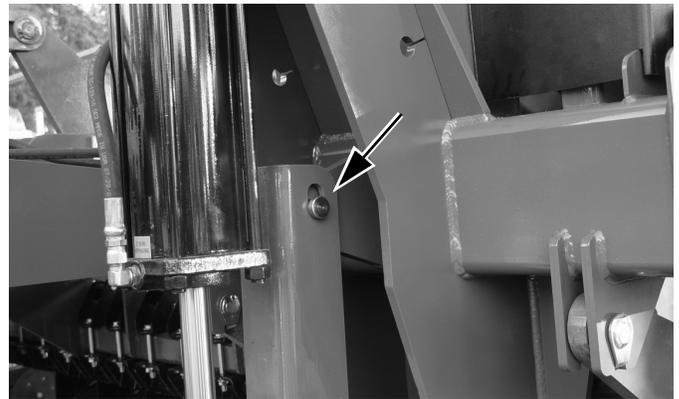


Figure 31
Lift Cylinder Lock

22604

Down Pressure Cylinder Lock

Refer to Figure 32

Note: The lock channel on the down pressure cylinder is part of the down pressure system and is never removed. Leave the bolt in place.

6. If folding markers are installed, check that they are completely folded. If they are on a circuit with a selector valve, set the valve to the tongue circuit when markers are fully folded.

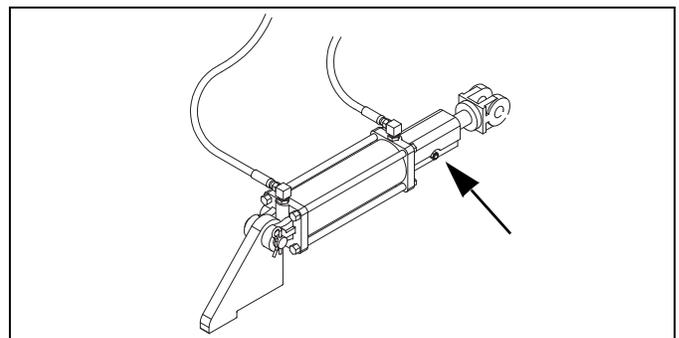


Figure 32
Down Pressure Cylinder Lock

27278

Tongue Transport Cylinder Lock

Refer to Figure 33

7. Fully extend the tongue lift hydraulic cylinder.
8. Install the lock channel over the tongue cylinder rod. it is stored on a lug just to the right of top center on the hitch cross-beam.



Figure 33
Tongue Cylinder Lock

22569

Pivot Lock

Although used primarily for transport, the pivot locks may also be engaged when drilling on steep slopes. They keep the coulters/hitch rigidly aligned with the openers.

Refer to Figure 34

9. Engage the pivot locks for transport. Remove the pin. Flip the lock to the rear and re-insert the pin.

The pivot locks are behind the stabilizer cylinders on each side of implement.

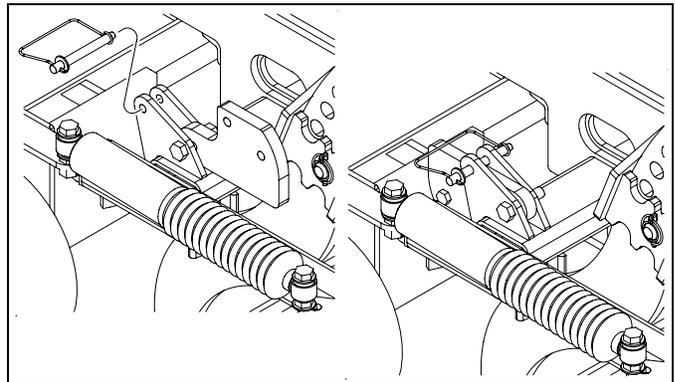


Figure 34
Pivot Lock

23151
23159

Walkboards

Refer to Figure 35

10. Swing up both walkboard ladders completely.

Ready for Transport

11. Know the implement dimensions in transport configuration. Choose a route that provides adequate clearance from all obstructions. See "**Specifications and Capacities**" on page 115.
12. Do not exceed 32 kph (20 mph).
13. Comply with all national, region and local laws when travelling on public roads.

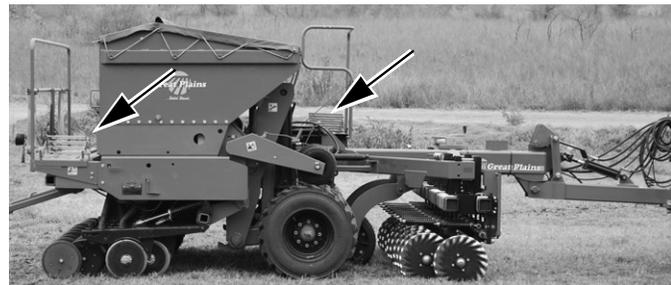


Figure 35
Walkboards

27196

Set Material Rate(s)

Drives may be set at any time. Meters are easiest to set before materials are loaded. The adjustment is different for each meter shaft.

When changing seed rate settings, adjust the control to move the indicator in the direction of the new setting, and about 10 scale counts past it. Then return the indicator to the desired setting. Set fertilizer rate directly at the desired reading.

Due to variations in materials and conditions, Great Plains strongly recommends performing a calibration with your material, rather than relying exclusively on the Seed Rate charts.

- See “**Setting Main Seed Box Rate**” on page 75.
- See “**Small Seeds Attachment Rate**” on page 80.
- See “**Setting Fertilizer Rate**” on page 83.

Material Loading

Main Seed Box & Fertilizer Loading

1. Remove transport lift locks and lower drill, to prevent movement, and for loading convenience.
2. Lower the walkboard ladder(s) for the walkboard(s) to be used.
3. Release the side bungees, and then a rear center strap to retract the tarp. Inspect all seed and fertilizer boxes and ensure that they are empty. See “**Box Cleanout**” on page 103. Install any seed tube plugs to be used.

Refer to Figure 36 and the table below

4. On model V300F, lift the handle end of adjuster bars and set the desired ratio of seed to fertilizer capacity.

| Bar Stop | Seed: Ahead of Divider | Fertilizer: Behind Divider |
|----------|---------------------------|-------------------------------|
| 1 | 1900 liters / 54 bu | 1274 liters / 45 CuFt |
| 2 | 1838 liters / 52 bu | 1338 liters / 47 CuFt |
| 3 | 1770 liters / 50 bu | 1397 liters / 49 CuFt |
| 4 | 1695 liters / 48 bu | 1451 liters / 51 CuFt |
| 5 | 1613 liters / 46 bu | 1500 liters / 53 CuFt |
| 6 | 1525 liters / 43 bu | 1545 liters / 55 CuFt |
| 7 | 1431 liters / 41 bu | 1584 liters / 56 CuFt |
| 8 | 1330 liters / 38 bu | 1619 liters / 57 CuFt |
| 9 | 1222 liters / 35 bu | 1649 liters / 58 CuFt |

5. Taking appropriate precautions for seed treatments and fertilizer, load seed and fertilizer.
6. Close tarp and secure with bungees and strap.

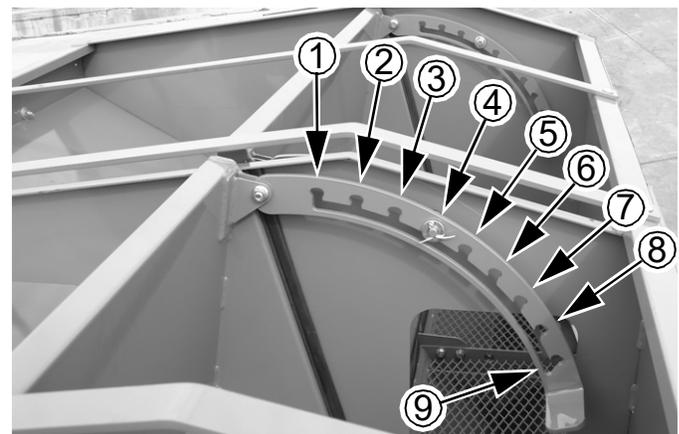
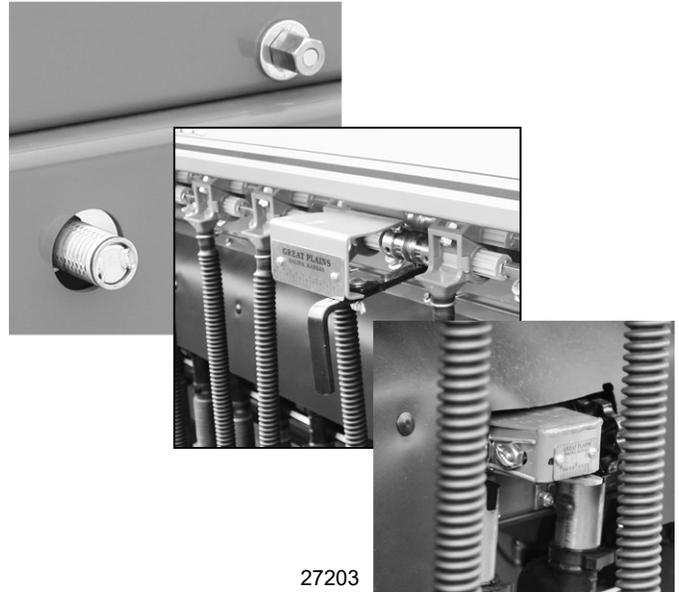


Figure 36 Adjustable Divider at Stop 4

27197

Note: Capacities are approximate. Actual capacities will be less if the materials must lie flat at the top surface, and cannot support a small angle of repose.

IMPORTANT !
Use only dry granular fertilizers.

Small Seed Box Loading

1. Remove transport lift locks and lower drill, to prevent movement, and for loading convenience.
2. Lower the rear walkboard ladder.
3. Inspect all seed and fertilizer boxes and ensure that they are empty. See “**Small Seeds Box Cleanout**” on page 103.

Refer to Figure 37

4. Inspect for debris and pest activity at the flute exits and funnels ① at the top of the drop tubes
5. Release the rubber latches ②, swing up the lid and load seed.
6. Close the lid and re-secure the latches.
7. Raise ladder.

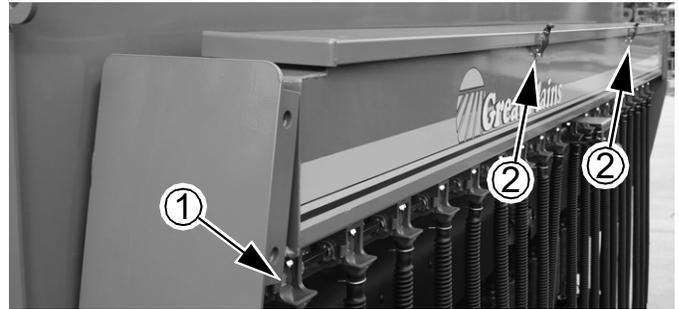


Figure 37
Small Seeds Box

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Lift/Lower Operations

Lowering the Drill

The gauge wheel lift cylinders are on the same circuit as the pressure compensating system (although the lift cylinders do not rely on the compensated pressure). Be aware of the sequencing during Lower.

1. Supply oil to the rod end of the lift cylinders (normally set circuit lever to Retract).
2. Gauge wheels lower drill onto cylinder stops of gauge wheel cylinders.
3. Opener sub-frame lowers opener to the ground and pressure compensating valve pressurizes openers to selected setting.
4. For planting, the circuit is left active in the Retract mode (see “**Hydraulic Down Pressure**” on page 36).

For adjustments, set the circuit lever to Neutral.

Raising the Drill

The gauge wheel lift cylinders are on the same circuit as the pressure compensating system (although the lift cylinders do not rely on the compensated pressure). Be aware of the sequencing during Raise.

1. Supply oil to the base end of the lift cylinders (normally set circuit lever to Extend).
2. Opener sub-frame lifts openers.
3. Gauge wheels lift drill.
4. Set circuit lever to Neutral to hold drill raised, for turns, and for installation of transport locks for movement or adjustment.

Lift Cylinders During Operations

The transport-lift cylinders are rephasing hydraulic cylinders. After a period of normal use, the cylinders may get out of sequence. If this happens, the hitch lifts unevenly or the coulters and openers on one side do not run at the proper depth.

To rephase cylinders, raise drill completely and hold hydraulic lever on for a few seconds to allow cylinders time to rephase.

Hydraulic Down Pressure

The pivoting openers are mounted a floating opener gang frame which follows the contour of the ground while maintaining constant opener down pressure. The down-pressure feature requires a tractor hydraulic circuit capable of continuous flow. The following instructions presume the drill hydraulic connections have been made per the hook-up Notes on page 17, and calibrated per the instructions on page 22.

1. Lower the opener frames by moving tractor remote hydraulic lever for the Lift/Lower circuit into the lever's continuous flow configuration. The remote lever must be LOCKED OPEN in this position to provide constant pressure/flow to the openers.

John Deere tractors with Sound-Gard® Body:

Use lever lock clip, John Deere part number R52667, to lock lever forward. See your tractor dealer for clip purchase and installation.

John Deere 7000 Series tractors: Rotate valve detent selector to motor position to lock lever in forward position.

John Deere 8000 Series tractors: Set timer to continuous. Push lever forward until detent clicks.

Case-IH Magnum tractors: Lock lever forward in detent position. You may need to turn up detent pressure to its maximum setting. Do not tie hydraulic lever past detent position with a strap. See your tractor dealer for hydraulic-system details.

Other tractors: Lock lever forward in detent position. You may need to turn up detent pressure to maximum or use a mechanical detent holder to hold lever forward. See your tractor dealer for proper means of providing constant flow to openers.

Refer to Figure 38

2. With the tractor hydraulic lever locked forward, release the lock disk ①, turn the knob ② on the pressure control valve ③.
3. Watch the pressure gauge ④ and dial in the desired pressure on the openers. Clockwise increases the pressure and counterclockwise decreases pressure.
4. Once the pressure is set, lock the knob with the lock disk.

The recommended pressure range for drilling is between 700 psi and 1400 psi. Setting the opener down pressure above 1600 psi raises the drive wheels off the ground when the seed box is empty, causing skips and poor seed metering. See the following table for the relationship between psi and down force.

The following down-forces are per-opener, with no extra weight on the hangers (at the lower down-force values). Higher down-force values may require weights on the hangers

| Adjustment Valve Effect | | |
|-------------------------|--------------------|-----|
| System PSI | Down Force per Row | |
| | kg | lbs |
| 700 | 123 | 272 |
| 800 | 139 | 306 |
| 900* | 155 | 341 |
| 1000* | 173 | 380 |
| 1100* | 194 | 427 |
| 1200* | 217 | 479 |
| 1300* | 249 | 548 |
| 1400* | 268 | 591 |

* Settings at and above 900 psi may require extra weights.

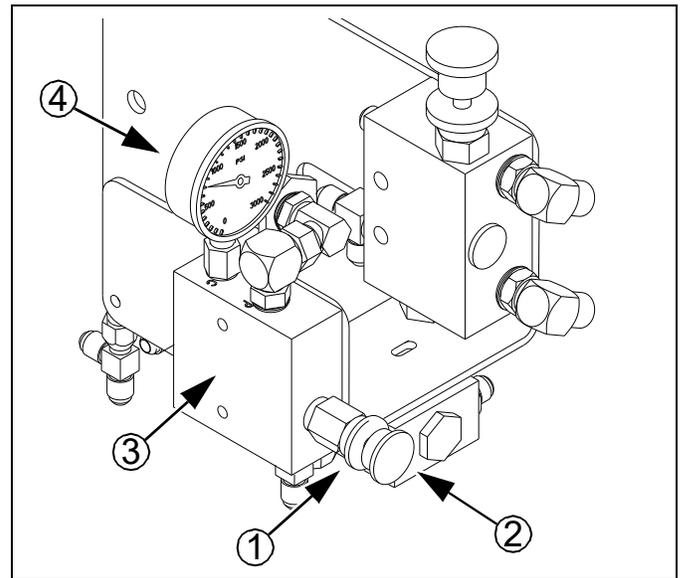


Figure 38
Down-Pressure Adjustment

27231

Refer to Figure 39

5. After the opener pressure is set, opener depth ① is controlled by the press wheel adjustment. Attached to the rear of each opener is one of several optional press wheels. The press wheels close the furrow and gently press soil over the seed while also providing depth control for the opener. To adjust the position of the press wheel, which automatically changes the seeding depth of the opener, lift the “T” handle ② located on top of the opener and slide it forward ④ or rearward ⑤ until the seeding depth is correct and soil firming is optimal. See “Opener Depth (Press Wheel Height)” on page 94 for additional detail.

Note: The opener pressure setting controls the soil firming pressure on the press wheel as well as the disk penetrating force. DO NOT use more opener down pressure than necessary to obtain the desired opener penetration and to maintain the proper firming action over the seed. Set the planting depth with the depth controlling press wheel and only use enough opener pressure to cut the proper seed groove and maintain the desired soil firming action. Excessive opener force will lead to excessive wear and damage of the opener components.

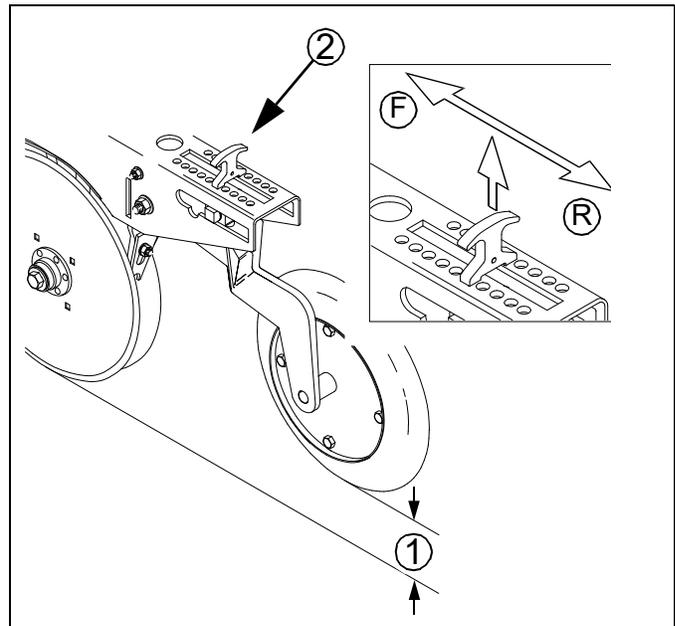


Figure 39
Opener Adjustment

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Priority Flow Hydraulic Systems

On some tractors with load-sensing hydraulics, the #1 circuit is capable of taking nearly 100% of available hydraulic flow. Operating the openers or markers on circuit #1 may starve the other circuits, making one or more functions inoperable.

To operate markers and constant opener down pressure at the same time, connect the openers to circuit #2 and the markers to circuit #3.

Note: On some tractors with very positive remote hydraulic checks, a slight increase in the reading on the pressure gauges may occur after the tractor remote lever is returned to neutral. This is caused by back pressure on the opener cylinders and may be ignored. The NET OPERATING PRESSURE on the opener cylinders is maintained at the pressure you selected while the tractor remote lever was held forward—not at the “apparently increased” pressure. Reactivating the tractor lever forward confirms this.

Final Field Preparation

1. Check that both calibration shafts are set so that diverter doors are *closed* (see page 79 and page 88).
2. Set coulter depth and force (see page 71).
3. Set opener depth (see page 94).
4. Check markers (see page 40).
5. Check packer (page 28).
6. Raise ladders.
7. Release pivot locks (flipped into forward position, see page 32) for normal flat fields, so hitch can pivot and drill openers can properly track coulters. If on steep slopes, leave pivot locks engaged.

Field Operation

1. Pull forward, lower coulters to desired depth and lower drill.
2. Extend marker, if used (see page 40).
3. Press monitor key to start tally.
4. Drive forward at no more than 10.5 kph (6.5 mph).
5. Raise drill for any short radius turns.
6. Periodically check seed monitor for alerts.

At pass turns:

7. Press monitor keys for tramlining.
8. Raise drill. Seeding stops automatically as drill is raised.
9. If using hydraulic markers, sequence sides as needed for marking the next pass.

When re-loading materials:

10. Check actual material consumption against expected rate, based on coverage area reported by seed monitor.

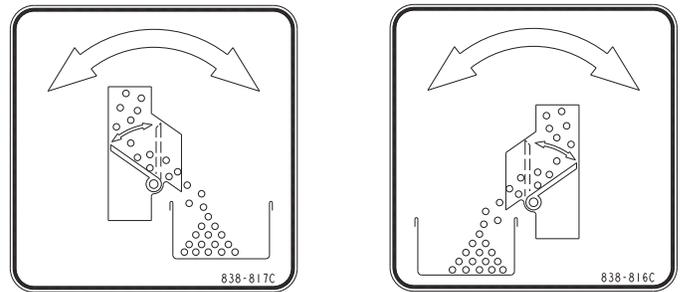


Figure 40
Calibration Diverters



IMPORTANT !

Never back up with openers in the ground, or row unit plugging and equipment damage is likely.

Note: Note reference measurement on tongue-cylinder gauge to help you achieve the same coulter depth with each field pass. Refer to “**Coulter Adjustments**” on page 71, for further adjustment instructions.

Marker Operation

Optional markers are usually operated on a separate hydraulic circuit.

Note: Selector valves are available to allow markers to share the tongue cylinder circuit. Set selector valve to Markers after setting coulter depth with tongue cylinder.

Dual Marker Operation

1. Extend the circuit and observe which marker side begins unfolding.

If it is not the desired side, move lever to Retract. When fully folded, move lever to Extend. The automatic sequence valve switches the circuit to the other marker.
2. When marker is fully extended, move lever to neutral.
3. At concentric pass end turns, retract circuit slightly before turn, to lift marker disk safely above ground.

At opposing pass end turns, retract marker fully. The automatic sequence valve switches the circuit to the other marker.

4. Move lever to Extend, unfolding either the same side (concentric pass), or the opposite side (opposing pass).
5. After last pass, Retract the circuit completely to fold the marker.
6. Set circuit to neutral.

Pre-Emergence Marker Operation

Optional pre-emergence, or tramline markers are controlled by solenoid valves on the same circuits as the tramline clutches.

The tramline markers are normally in the lifted state. If tramlining is enabled in the monitor, they are lowered automatically during tramline passes.

See also “**Pre-Emergence Marker Setup**” on page 27.

Harrow Operation

Harrows raise and lower as the openers are raised and lowered.

If results are unsatisfactory, experiment with different elevations and tine angles. To adjust see See **"Harrow Tine Setup"** starting on page 29.

Refer to Figure 41

To disable the harrows when not required:

1. Lower the drill.
2. Raise the harrows by hand until the top of a lock-up ① is at the top link of the chain ②.
3. Insert and secure the pin ③.
4. Repeat for the other arm.

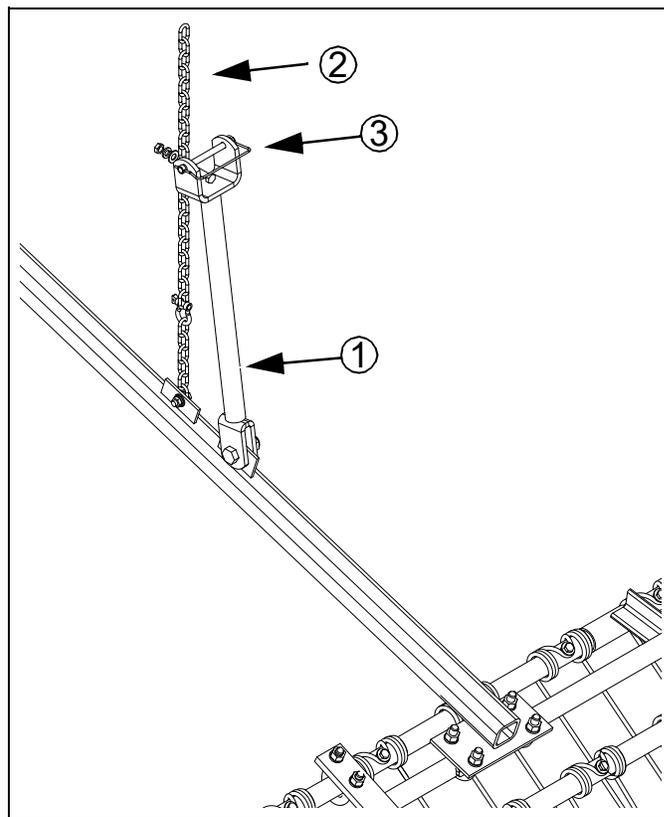


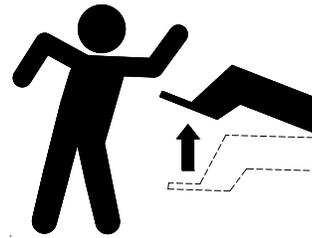
Figure 41
Harrow Lock-Up

27261

Parking

Perform the following steps when parking implement. Refer to Storage (next topic) for information on long-term storage preparation.

1. Park implement on a firm, level area.
2. Lower the hitch and drill openers to ground.



WARNING

Do not unhitch with openers raised.

3. Block tires securely to prevent rolling.
4. Set each hydraulic circuit to Float to release pressure. If Markers share the Tongue circuit, operate the selector valve with the circuit in Float.
5. Disconnect hydraulic lines. Check that hose ends do not rest on ground.
6. Move jack from transport position and place it on stob on side of hitch tongue.
7. Extend jack until all weight is off tractor drawbar.
8. If next use of tractor is that same drill, remove only the 1-8x10 bolt, washer and nut. Store on the drill.

If tractor may be used with another implement, remove both bolts and re-assemble hitch weldment on drill.

9. Unplug electrical connections to drill, including lights and monitor.

Storage

Store implement where children do not play. If possible, store inside for longer implement life.

1. Lower openers on a board or hard surface.
2. Perform the Parking checklist (previous topic).
3. Clean implement as necessary. Be sure main seed box and meters, fertilizer box and meters, small seed and meters, and; calibration tray are cleaned completely before storing.
4. Cap seed and fertilizer tubes with plastic bags, and tape over exposed Small Seeds funnels to prevent pest entry and nesting.
5. Lubricate all fittings per “**Lubrication**” on page 105. Apply a light coat of oil to exposed cylinder rods.
6. Perform any periodic maintenance.
7. Remove rust from any painted locations and apply Great Plains touch up paint.





Monitor Operation

Monitor Introduction

The multi-function drill monitor controls the operation and tramlining functions.

Refer to Figure 42 and Figure 43

The instrument¹ has:

- ① an illuminated four-digit/six-chevron display,
- ② six display functions (indicated by chevron),
- ③ three active control buttons.

There are alarm functions for forward speed, seed distribution shaft rpm, fertilizer shaft rpm and main hopper levels. The speed and area functions can be displayed in either metric or imperial units. A power switch on the back ④ is used primarily for certain system settings.

The instrument indicates:

- Forward Speed (plus low speed alarm)
- Part Area and Total Area worked
- The current bout number and tramline bouts for the selected tramlining sequence.
- Fertilizer Distribution Shaft Alarm
- Seed Distribution Shaft Alarm
- Seed Hopper Level Low
- Fertilizer Hopper Level Low

The tramlining² function is the priority display. Unless tramlining is disabled, the instrument defaults to this channel display 10 seconds after selecting another display function (with the exception of displaying an area total or when the drill is out of work).

Passes are automatically counted at each drill lift operation. Tramline bouts are automatically applied, unless overridden from the console.

The system has two memory registers (Total.1 and Total.2) to record area worked. The area is accumulated to both memory registers. Area totals and all calibration data are retained in memory when the instrument is powered off or disconnected from the drill.

The instrument must be initially calibrated to suit the implement being controlled. Three program modes allow the default settings to be altered as required. Most of these settings do not need to be revised in normal use.



Figure 42
Seed Monitor Console, Front

22632

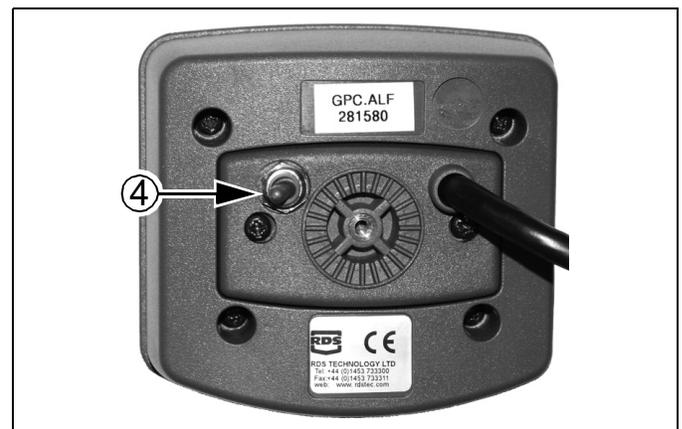


Figure 43
Seed Monitor Console, Back

27236

Note: The monitor console can be operated with the harness disconnected from the drill. Some functions, such as Speed Sensor Calibration, are unavailable when operated disconnected.

1. These instructions are based on firmware revision A.401 E.001 r.004

2. Tramlining is the selective disabling of seeding in rows that are to be in the tire tracks of a sprayer that to be employed post-panting, or even post-emergence. Different rows (or no rows) are automatically disabled on each pass by clutches controlled by the monitor.

Console Overview

There are three active switches on the front panel used individually or in combination to program set/reset or select a function. The two small outer buttons have no function.

Chevron: Channel/In-Out of Work Indicator
(in this case, Channel 1: Forward Speed is selected)

Current Channel Value
(in this case, kph or mph, as Channel 1: Forward Speed is selected)

Power Switch on rear

<button not used>

<button not used>



22632

Program Key

- Select Area Total channel then press to switch between Area Total 1 and Area Total 2. See page 51.
- Select Tramline Bout channel, then press to manually advance the Bout Number. See page 55.
- Hold continuously to select Program Mode 1. See page 46. Reverts to Normal mode upon button release.
- Hold while applying power to enter Program Mode 2 “ECN04”. See page 46.

Channel Select

- Channel
- Forward Speed
 - Area Total 1 or 2
 - Current/Tramline Bout
 - Fertilizer Shaft RPM
 - Seed Shaft RPM
 - Hopper Level Low
- Channel Select is also used to select different values in some menus.

Stop Reset

- Press and release to override automatic advance of Tramline Bout number if drill is lifted, then press and release again to resume.
- Hold continuously to reset currently displayed Area Total.
- Hold while applying power for Program Mode 3 “ECN05”. See page 46.

Note: Holding down all three main buttons at power-on resets the instrument to factory defaults. In addition to restoring some settings to values incorrect for V300, this also clears Grand Total Area to 0.

▼ Channel Indicator Chevron

The indicator chevron ▼ appears above the icon of the channel to which the information on the digits display relates.

⏴ Channel Select

In normal mode, press the Channel Select ⏴ button to move the indicator ▼ to above the next channel to the right.

When at channel six (Level), the next channel select function wraps around to channel one (Speed).

If Tramlining (🌿) is disabled, or Fertilizer/Seed shaft alarms are indefinitely disabled, the chevron does not stop at the icon for the disabled channel.

Normal Display Mode

The instrument has a normal display mode displaying six work functions.

When the drill is moving, and the Tramline 🌿 function is enabled, any other selected channel is displayed for 10 seconds before defaulting back to the Tramline Bout display channel.

When stationary, the instrument flashes between Forward Speed 🚗 and Tramline 🌿 channels. This also serves as an alarm in the event of speed sensor faults.

If the Tramline function is turned off, the instrument defaults to the Forward Speed channel.

Initial Console Setup

Prior to first use, the console needs to be setup for the drill.

Most of these parameters are set using Program Mode, summarized on the next page, and described in detail with each function.

The parameters that *must* be reviewed and set are:

- Speed Sensor Factor (Mode 1, Channel 🚗): use 50457 (meters) or 34906 (inches). See page 49.
- Working Width (Mode 1, Channel 🌿): use 50222 (meters) or 33:03 (inches). See page 52.

If you are using Imperial or U.S. customary units:

- Units (Mode 2, Channel 🌿): See page 47.

If the drill model is V300 (not V300F):

- Disable Fertilizer Shaft Alarm (Mode 3, Channel 🌿): Use 20222 for pulse-pairs per revolution. See page 64.



Figure 44
Advancing the Indicator Chevron

22632



Figure 45
Typical Tramline Display

22632

You may also need review and set/adjust/clear:

- Forward Speed Alarm: See page 48.
- Grand Total area: See page 51.
- Tramline Sequencing: See page 53.
- Tramlining On/Off: See page 56.
- Fertilizer Shaft Speed Alarm: See page 65.
- Fertilizer Alarm Delay: See page 66.
- Seed Shaft Speed Alarm: See page 66.
- Seed Alarm Delay: See page 68.
- Level Alarm On/Off: See page 69.

Program Modes

There are three program modes with various calibration factors and default settings. These need to be reviewed/ set during initial drill setup and console installation. This monitor console model is used with several different Great Plains products, and the factory defaults are not necessarily correct for the V300 and V300F drills.

Settings made during installation do not need changing unless the instrument is moved to a different drill.

| Operating Mode | | Mode 1 | Mode 2 “CAL . 2” | Mode 3 “CAL . 3” |
|--|---------------------------------|--|--|---|
| Channel 1  | Forward Speed See page 48 | Channel Select  , then press and hold  to enter mode 1 | Power on while holding  to enter mode 2. Use same key to select channel | Power on while holding  for 10 seconds to enter mode 3. Use same key to select channel |
| Channel 2  | Area Totals See page 51 | Speed Sensor Factor and Autocal Default: 40222m/9 : 09 : in Units: m/ or in/pulse-pair For V300/V300F, Autocal, or use: 3 . 235 (meters) or 127 . 4 (inches) See page 49. | Forward speed alarm Default: 3 (on) See page 48. | <no function> |
| Channel 3  | Tramline See page 53 | Working width Default: 60222m/37906in Units: meters or inches For V300/V300F, use: 3 . 000 (meters) or 118 . 1 (inches) See page 52. | Units selection Default: Metric See page 47. | Display Grand Total area. See page 51. |
| Channel 4  | Fertilizer Shaft See page 64 | Tramline sequence Default: U [026 See page 53. | Tramline on/off Default: 3 (on) See page 56. | Tramline on/off Default: 3 (on) See page 56. |
| Channel 5  | Seed Shaft See page 66 | Low alarm speed Default: 2 Units: rpm See page 65. | Fertilizer shaft alarm delay Default: 262 Units: seconds See page 66. | Fertilizer shaft rate Default: 50222 Units: pulse pairs/rotation For V300, use: 0 . 000 For V300F, use: 3 . 000 See page 65. |
| Channel 6  | Hopper Alarm See page 69 | Low alarm speed Default: 2 Units: rpm See page 66. | Seed shaft alarm delay Default: 262 See page 68. | Seed shaft rate Default: 50222 Units: pulse pairs/rotation For V300/V300F, use: 3 . 000 See page 68. |
| Channel 6  | Hopper Alarm See page 69 | Hopper alarm on/off Default: 3 (on) See page 69. | <no function> | <no function> |

Note: Holding down all three main buttons    at power-on resets the instrument to factory defaults.

Units

The instrument is factory preset for Metric entry/display, and can be set to Imperial units (use Imperial for U.S. customary units).

Functions affected by units mode are:

| Function | Top Bars = Metric | Bottom Bars = Imperial |
|---------------|-------------------|------------------------|
| Forward Speed | kph | mph |
| Area | Ha | acres |
| Width/S.S.F. | meters | inches |

The instrument remains in the selected units mode until changed. Any values previously entered or stored for other functions are converted to the new units, and need not be re-entered.

To determine the current units mode, Channel Select  either the Forward Speed  Area Total  channel, then press and hold the  button.

Either the top row of horizontal segments (Metric) or the bottom row of horizontal segments (Imperial) will briefly display, indicating the units selected.

Changing Units of Measure

1. Power-off the console using its rear panel switch.
2. Press and hold the  button while re-applying power. This enters Program Mode 2 "ECN04".
3. Release the  button when the indicator chevron is over the Area Total  channel icon.
4. Press  to switch between Metric and Imperial units.
5. Remove and re-apply power to save the selection. The instrument resumes normal mode at next power-on.



Figure 46
Metric Mode Selected

22632



Figure 47
Imperial Mode Selected

22632

Forward Speed Function

If the Tramline function is disabled, forward speed is the default display in normal mode.

If the Tramline function is enabled (the factory default), Channel Select  to Forward Speed .

Forward Speed displays for 10 seconds before returning to the Tramline Display.

The displayed speed is in the current units of measure (kph or mph). See page 47 to change.



Figure 48
Typical Forward Speed (kph)

22632

Forward Speed Alarm

If you stop while the drill is in work, or move at a speed less than 2.6 kph (1.6 mph), the instrument beeps twice, and the display alternates between the currently selected channel and the Forward Speed channel (which displays 0.0).

The alarm continues until the speed is increased above the alarm threshold.

Disable Forward Speed Alarm

1. Power-off the console using its rear panel switch.
2. Press and hold the  button while re-applying power. This enters Program Mode 2 "ECN04".
3. Release the  button when the indicator chevron is over the Forward Speed channel .

Refer to Figure 49

4. Press and release Channel Select  to alternate between:
 - 0 = Forward Speed Alarm OFF, and
 - 1 = Forward Speed Alarm ON
5. Remove and re-apply power to save the selection. The instrument resumes normal mode at next power-on.



Figure 49
Forward Speed Alarm On

22632

Speed Sensor Factor

The forward speed sensor is magnetically operated and senses the main drive shaft rotation. In order to display the correct speed and accumulate area correctly, the instrument must be programmed with the correct Speed Sensor Factor (SSF). This is the distance traveled between two signal pulses received from the sensor.

The S.S.F. entered can be entered from calculated values, or the instrument can automatically calculate it via the "Autocal" function. The Autocal function is more accurate, as it accounts for drill configuration, field conditions, tire slippage and the effective rolling radius of the actual tires in the present conditions.

Autocal

For maximum accuracy, perform an auto-calibration in field conditions.

Note: The drill must be hitched for this operation, and must be lowered to field position. Perform this calibration before loading seed and fertilizer. If materials are already loaded, disconnect clutches and/or chains or set meter rates to zero to avoid unintended planting.

1. Set two markers at 100 meters (328 feet) apart. Choose a convenient reference point on the tractor/ implement, that is visible to the tractor operator, and position this point opposite the first marker.
2. Channel Select  to Forward Speed .
3. Press and hold the  button. The units of measure display (see page 47) appears for a few seconds. Continue holding the button until a numeric display appears.

Refer to Figure 50

4. While continuing to hold , press . The display flashes "CWVQ" indicating that it is ready for calibration. Release all buttons.
5. Drive the vehicle until the chosen reference point on the tractor/implement is opposite the second marker. The instrument counts and displays the sensor pulses received over the distance traveled.
6. Press the  button to complete the Autocal routine. The calibration factor is automatically calculated and stored in memory.

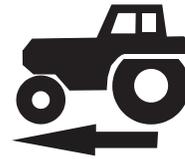


Figure 50
Ready for Autocal

22632

Manual S.S.F. Entry

For a typical V300, firm dry ground, nominal wheel slippage and new tires inflated to factory specification, the calculated calibration figure is:

3.235 meters (Metric units mode) or
127.4 inches (Imperial units mode).

Note: The factory default is 2.000 (meters) or 78.78 (inches), and is not correct for the V300/V300F.

To change the S.S.F.:

1. Channel Select  to Forward Speed .

Refer to Figure 51

2. Press and hold the  to enter Program Mode 1. The units of measure display (see page 47) appears for a few seconds. Continue holding the button until a numeric display appears.
3. While continuing to hold , use Channel Select  to select a digit, and then the decimal point. Continue to hold  to cycle slowly between 0-9 and decimal point positions. Release  at desired values.
4. While continuing to hold , press  again to select the next display element, and hold to change. Repeat until the desired value is entered.
5. Release  to save the new values.



Figure 51
Nominal S.S.F. Value (m)

22632

Area Function

The area is derived from the forward speed and the programmed implement width and is accumulated to whichever total is selected on the display – total 1 or total 2.

Area accumulates only while the drill is in work, that is, the drill is lowered and forward speed is detected.

The two separate area totals can be independently reset to zero.

Before Area Total values can be meaningful, Implement Width (page 52) and Speed Sensor Factor (page 49) must be set. Implement Width never needs changing, but S.S.F. may need attention if planting conditions vary.

Display Current Area Totals

1. Channel Select  to Area Total .

Refer to Figure 52

2. Press and release  to alternate between the two area totals. The display flashes “v2v03” or “v2v04” to indicate the total about to be displayed.
3. The display then shows the area accumulated since that total was last reset. This is either hectares or acres depending on the Units setting.

Display Grand Total

1. Power-off the console using its rear panel switch.
2. Hold down the  button and re-apply power.
3. Continue holding the button for 10 seconds, until the instrument enters Program Mode 3 “ECN05”.
4. Hold or press and release  button to select the Area Total  channel.

The grand total area displays. This is the area measured from original delivery of the instrument. This number cannot be reset independently.

Reset Totals

1. Channel Select  to Area Total .
2. Press and release  to alternate between the two area totals.
3. Press  and hold for five (5) seconds to reset that total. The instrument beeps once per second until the reset is performed.

Note: There is no reset function specifically for the grand area total alone.



Figure 52
Area Total 1 Identifier

22632

Set Implement Width

In order for the instrument to accumulate area correctly, the implement working width must be programmed. The correct figure is:

3.000 meters (Metric units mode) or
118.1 inches (Imperial units mode).

Note: The factory default is 4.000 (meters) or 157.5 (inches), and is not correct for the V300/V300F

1. Channel Select  to Area Total .
2. Press and hold  to enter Program Mode 1. The units of measure display (see page 47) appears for a few seconds. Continue holding the button until a numeric display appears.
3. While continuing to hold , use Channel Select  to select a digit, and then the decimal point. Continue to hold  to cycle slowly between 0-9 and decimal point positions. Release  at desired values.
4. While continuing to hold , press  again to select the next display element, and hold to change. Repeat until the desired value is entered.
5. Release  to save the new values.



Figure 53
Set Implement Width

22632

Tramlining Function

If not used, tramlining¹ may be disabled. See page 56. If disabled, the default display changes from Tramline Bout² to Forward Speed.

Tramlining is enabled by default. The factory defaults for tramlining bouts (on both drill and monitor console) are based on:

- 3 meter planting width with 19 openers equally spaced at 15.8 cm (6.2in). Rows are numbered 1-19 from left to right
- Primary Tramline clutch on row 4
- Secondary Tramline clutch on row 16
- 1.8 meter wheel spacing of the tramlines

With these assumptions, the fluted feed cups allow for the primary tramline clutch to be placed on rows 1, 4 or 6, and the secondary on rows 13, 14 and 16. An additional clutch and jumper Y-cable is available, and is required on some patterns (i.e. 20 meter sprayer/20 bouts).

The tramline clutch and marker activations are as follows:

12 meter sprayer / 4 bouts

Asymmetric right or left hand
Tramlines on rows 6 and 14

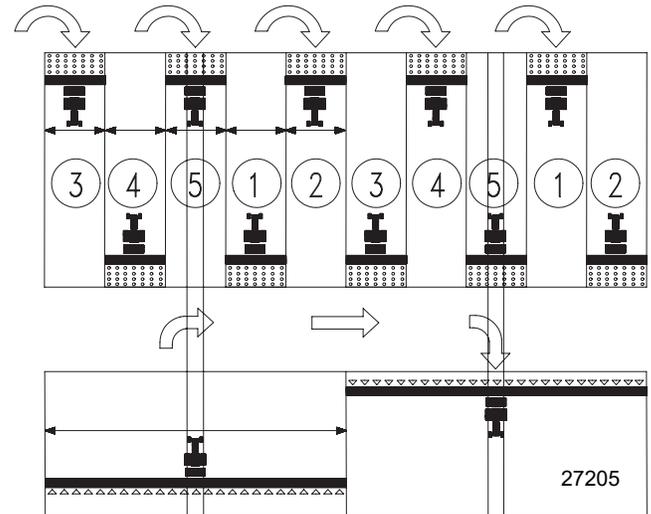
Symmetric

Tramlines on rows 4 and 16 (bout #2 must overlap bout #1 by half a drill width)

15 meter sprayer / 5 bouts

Symmetric

Tramlines on rows 4 and 16



18 meter sprayer / 6 bouts

Asymmetric right or left hand

Tramlines on rows 6 and 14

Symmetric

Tramlines on rows 4 and 16 (bout #2 must overlap bout #1 by half a drill width)

20 meter sprayer/20 bouts

Special Pattern

Tramlines on rows 1, 13, and 14 (this requires an optional clutch and jumper cable, which interconnects rows 1 and 13)

If pre-emergence (tramline) markers are installed, their lift cylinders are controlled by solenoid valves connected to the tramline clutch circuits. The markers are normally in the lifted state, and lower automatically during tramline bouts.

The monitor system automatically counts bouts when the drill is lifted at the end of a pass (bout). If it is necessary to override the count, use the  button.

There are five systems of tramlining - symmetric, asymmetric left, asymmetric right and 20 bout. The tramline bout is programmable from 1 to 15 in symmetric, asymmetric left and asymmetric right sequences.

1. Tramlining is the selective disabling of seeding in rows that are to be in the tire tracks of a sprayer that will be employed post-planting or post-emergence. Different rows (or no rows) may be disabled on each pass.
2. A "bout" is called a "pass" in North America.

Tramline Sequence/Bout Selection

1. If tramlining has been disabled, re-enable it before selecting the sequence. See page 56.
2. Channel Select  to Tramline .

Select The Sequence

Refer to Figure 54

3. Press and hold  to enter Program Mode 1. After 3 seconds the first two characters flash, indicating the tramline sequence currently set.

| | | |
|-----|--------------------|---------------------|
| U[0 | SYmmetric | Bouts .23 to .37 |
| CN0 | Asymmetric Left | Bouts .23 to .37 |
| Ct0 | Asymmetric right | Bouts .23 to .37 |
| CU0 | Asymmetric Special | Bouts 032, 03:, 042 |

4. While continuing to hold , hold Channel Select  to select the required sequence. Release only the  button when the sequence is set.

Select the Tramline Bout

Refer to Figure 55

5. While continuing to hold , press and release the  button to toggle between the tramline sequence and tramline bout number display. The 3rd and 4th characters flash indicating the tramline bout number currently set.
6. Press and hold the  button to cycle tramline the bout from 023 to 037.

Note: Setting the bout to "022" disables the tramline function. In normal mode, the indicator chevron may not index to the tramline function. To re-enable tramlining, see page 56.

Note: If either asymmetric left ("CN0") or asymmetric right ("Ct0") sequences are selected, the tramline output is also switched on for the bout following the target bout (i.e. bout 1).

If the special asymmetric sequence ("CU0") is selected, the only options for the tramline bout number are .32, .3: and .42.

7. Release all buttons.



Figure 54
Tramline Sequence Selection

22632



Figure 55
Tramline Bout Selection

22632

Normal Tramline Operations

Bout counting (resumption) and tramline clutch operation commence automatically upon next forward movement with the drill lowered. Bout counts at each lift operation.

Refer to Figure 56

In the figure, the drill is in bout 1 of a 4 bout cycle asymmetrical tramline cycle (the decimal point between the counts is on during Left or Right Asymmetrical tramlining).

During tramline bouts (passes where one or both tramline clutches operate), the console emits a beep at the beginning of the bout, and the display flashes for the duration of the bout.

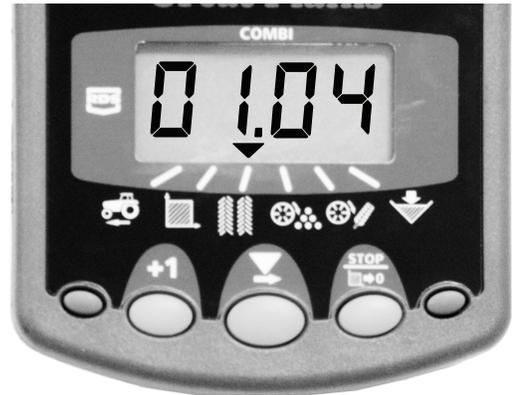


Figure 56
Typical Tramline Display

22632

Hold the Bout Number

Press  to “hold” the current bout when the drill goes out of work but has not completed the current bout.

The display flashes “UvQR”.

Press  again to resume the normal bout sequence.



Figure 57
Bout Count Hold

22632

Manually advance the bout number

Press  to advance the current bout number by 1.

This feature works with tramlining active or stopped, but does not exit “UvQR” mode. To resume counting after “UvQR”, press  before or after .



Figure 58
Increment Bout Count

22632

Turn Tramlining Off/On

With tramlining off:

- tramline bouts are not counted,
- tramline clutches do not operate, and;
- the default display becomes Forward Speed .

To disable Tramlining:

1. Power-off the console using its rear panel switch.
2. Press and hold the  button.
3. While holding it, re-apply power, to enter Program Mode 2 "ECN04".
4. Release and press  to select the Tramline channel .

Refer to Figure 59

5. Press the  button to cycle between:
 - "3" = Tramlining On
 - "2" = Tramlining Off
6. Release all buttons. Remove and re-apply power to save the selection. The instrument resumes normal mode at next power-on.

Note: If tramlining is disabled, the indicator chevron skips the  channel during selection with .



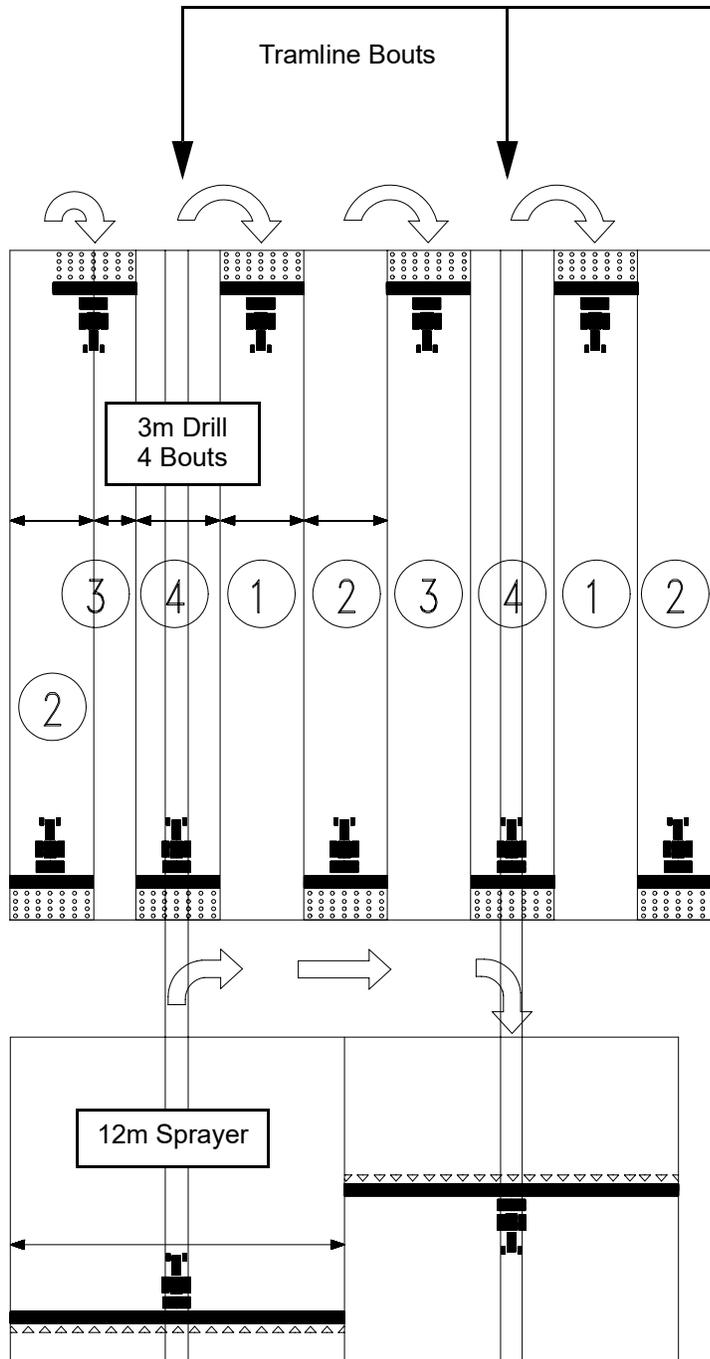
Figure 59
Tramlining Off

22632

12 Meter Symmetric Tramlining Sequence

For use with a 3 meter drill and 12 meter sprayer. 2nd bout must overlap 1st bout by 1/2 drill width. 2+2 seed spouts are closed during the tramline bout only.

The instrument beeps once at the beginning of a tramline bout (#4 in this case), and the display continues flashing for the duration of the bout.



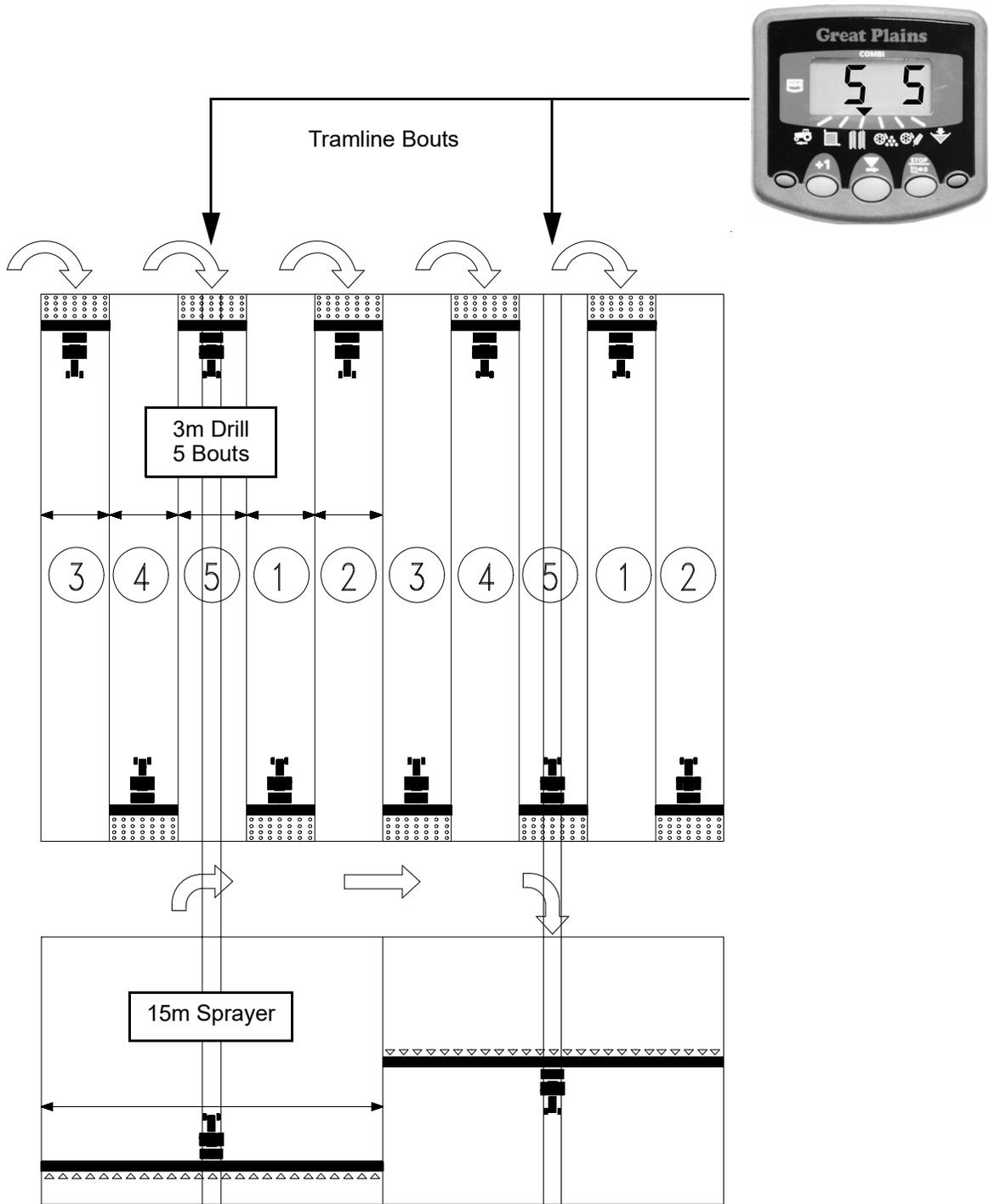
22640

15 Meter Symmetric Tramlining Sequence

For use with a 3 meter drill and 15 meter sprayer.

2+2 seed spouts are closed during the tramline bout only.

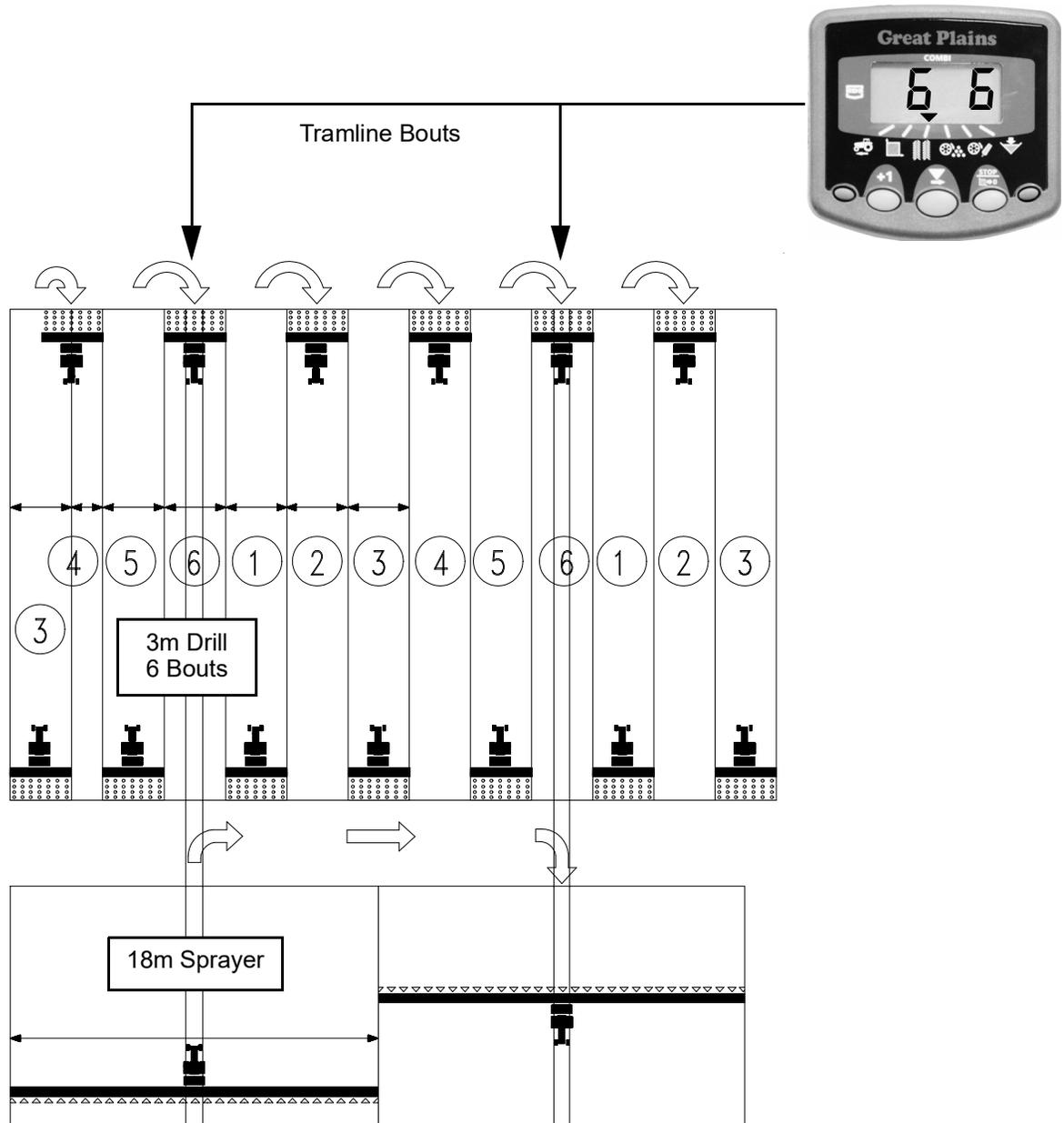
The instrument beeps once at the beginning of a tramline bout (#5 in this case), and the display continues flashing for the duration of the bout.



18 Meter Symmetric Tramlining Sequence

For use with a 3 meter drill and 18 meter sprayer. 2nd bout must overlap 1st bout by $\frac{1}{2}$ drill width. 2+2 seed spouts are closed during the tramline bout only.

The instrument beeps once at the beginning of a tramline bout (#6 in this case), and the display continues flashing for the duration of the bout.



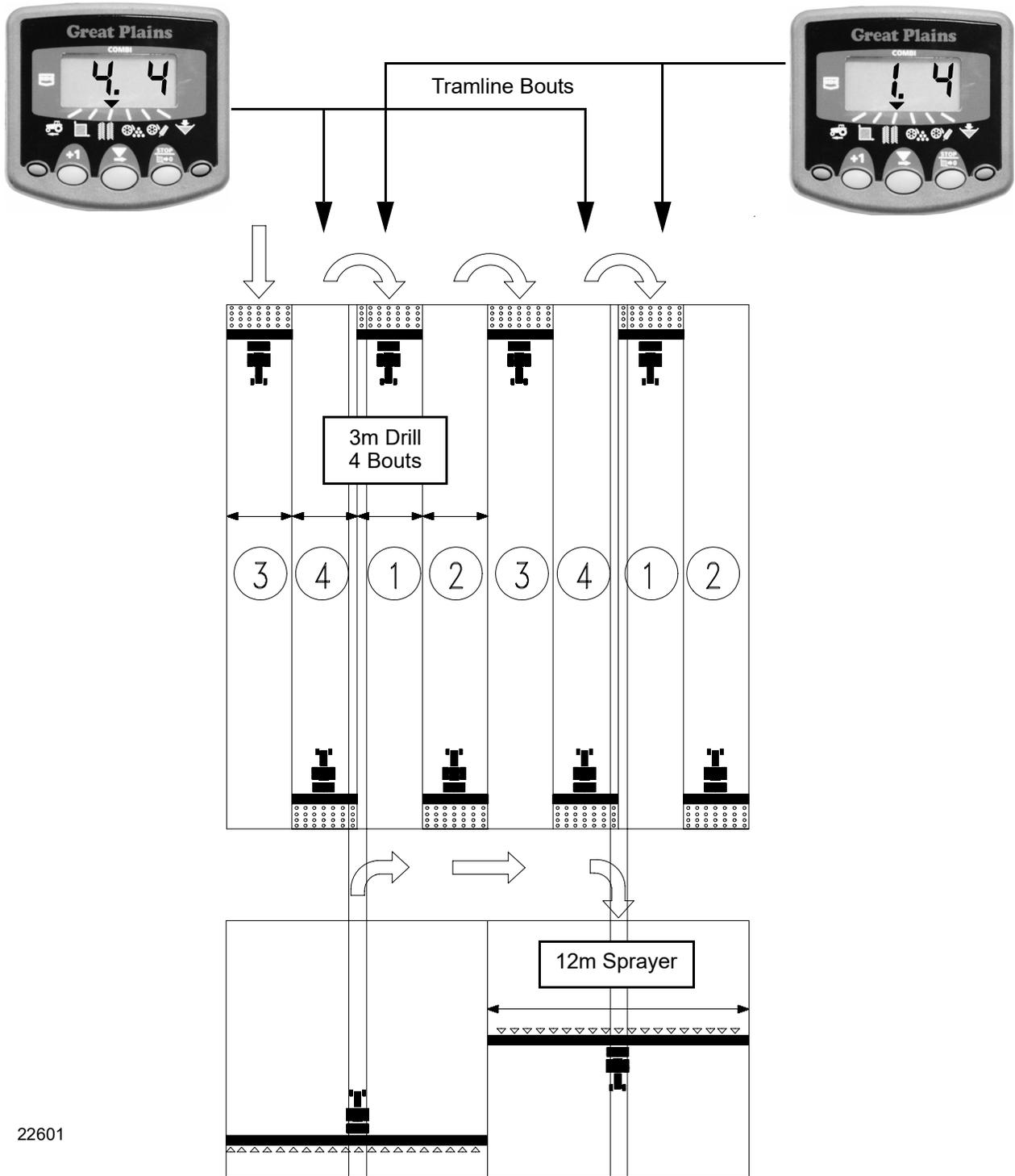
22641

12 Meter Asymmetric Right Tramlining Sequence

For use with a 3 meter drill and 12 meter sprayer.

Two seed spouts are closed on the right hand side of the drill on the tramline bouts.

The instrument beeps once at the beginning of a tramline bout (#1 and #4 in this case), and the display continues flashing for the duration of the bout.



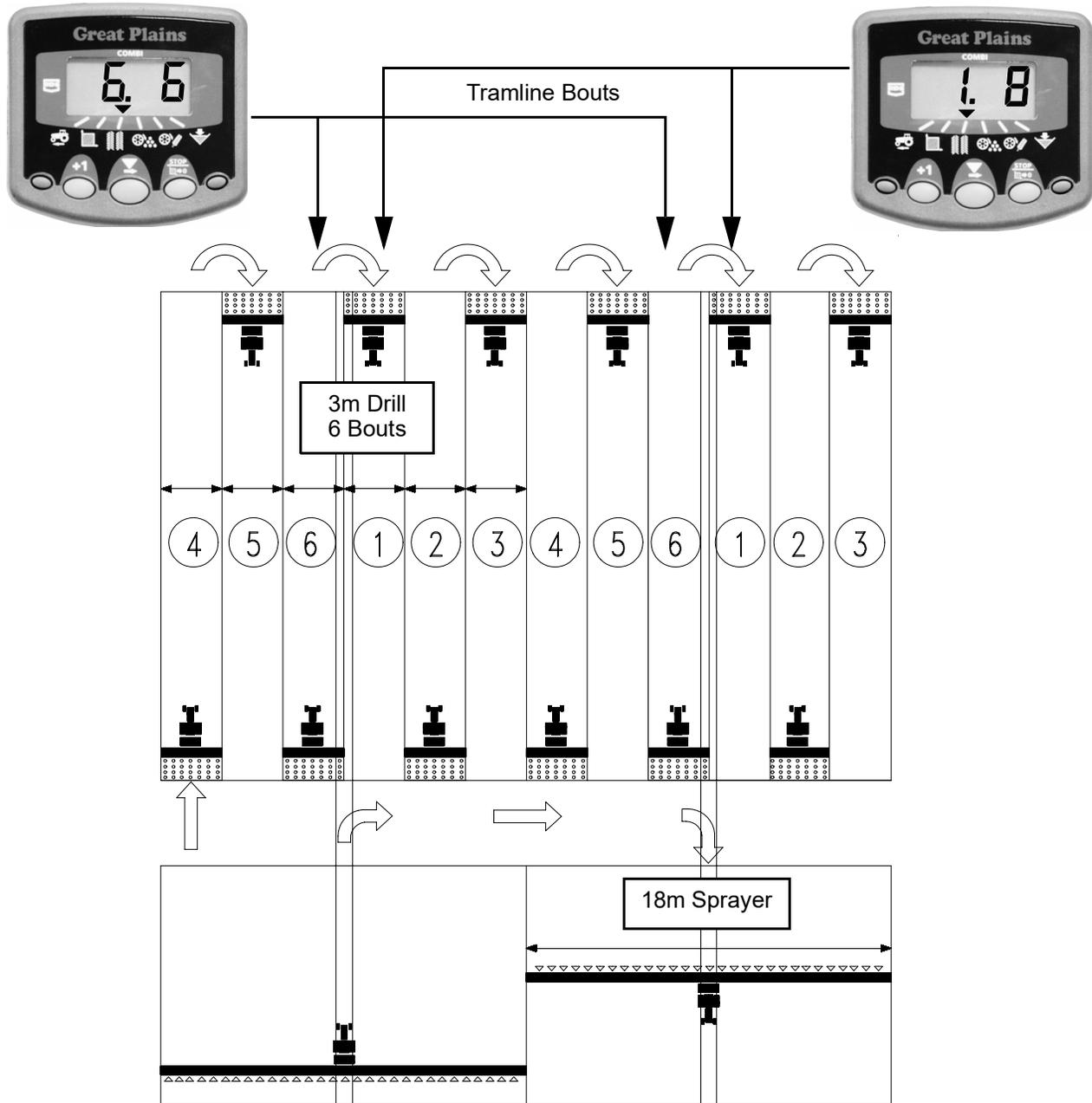
22601

18 Meter Asymmetric Right Tramlining Sequence

For use with a 3 meter drill and 18 meter sprayer.

Two seed spouts are closed on the right hand side of the drill on the tramline bouts.

The instrument beeps once at the beginning of a tramline bout (#1 and #6 in this case), and the display continues flashing for the duration of the bout.



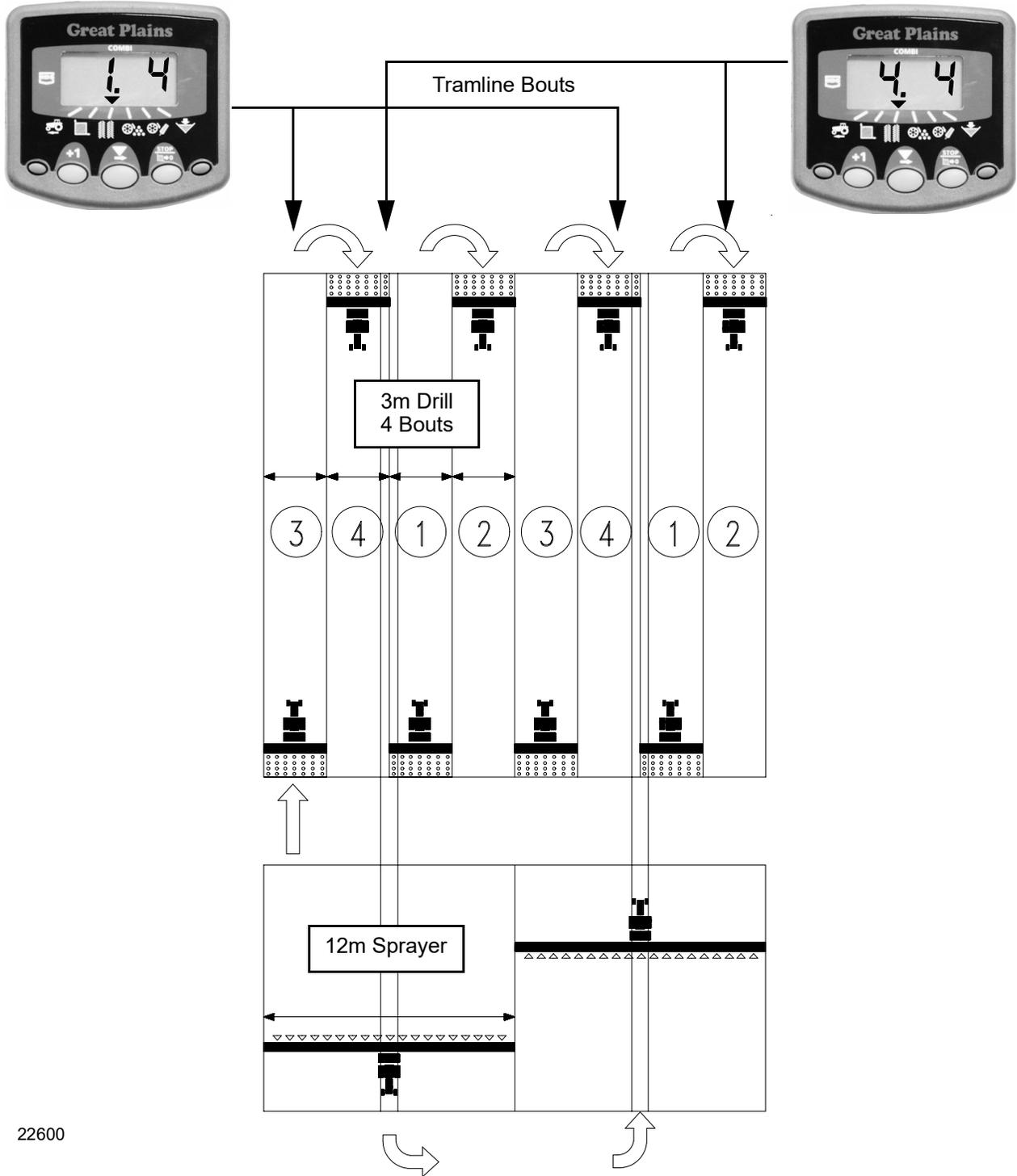
22608

12 Meter Asymmetric Left Tramlining Sequence

For use with a 3 meter drill and 12 meter sprayer.

Two seed spouts are closed on the left hand side of the drill on the tramline bouts.

The instrument beeps once at the beginning of a tramline bout (#1 and #4 in this case), and the display continues flashing for the duration of the bout.



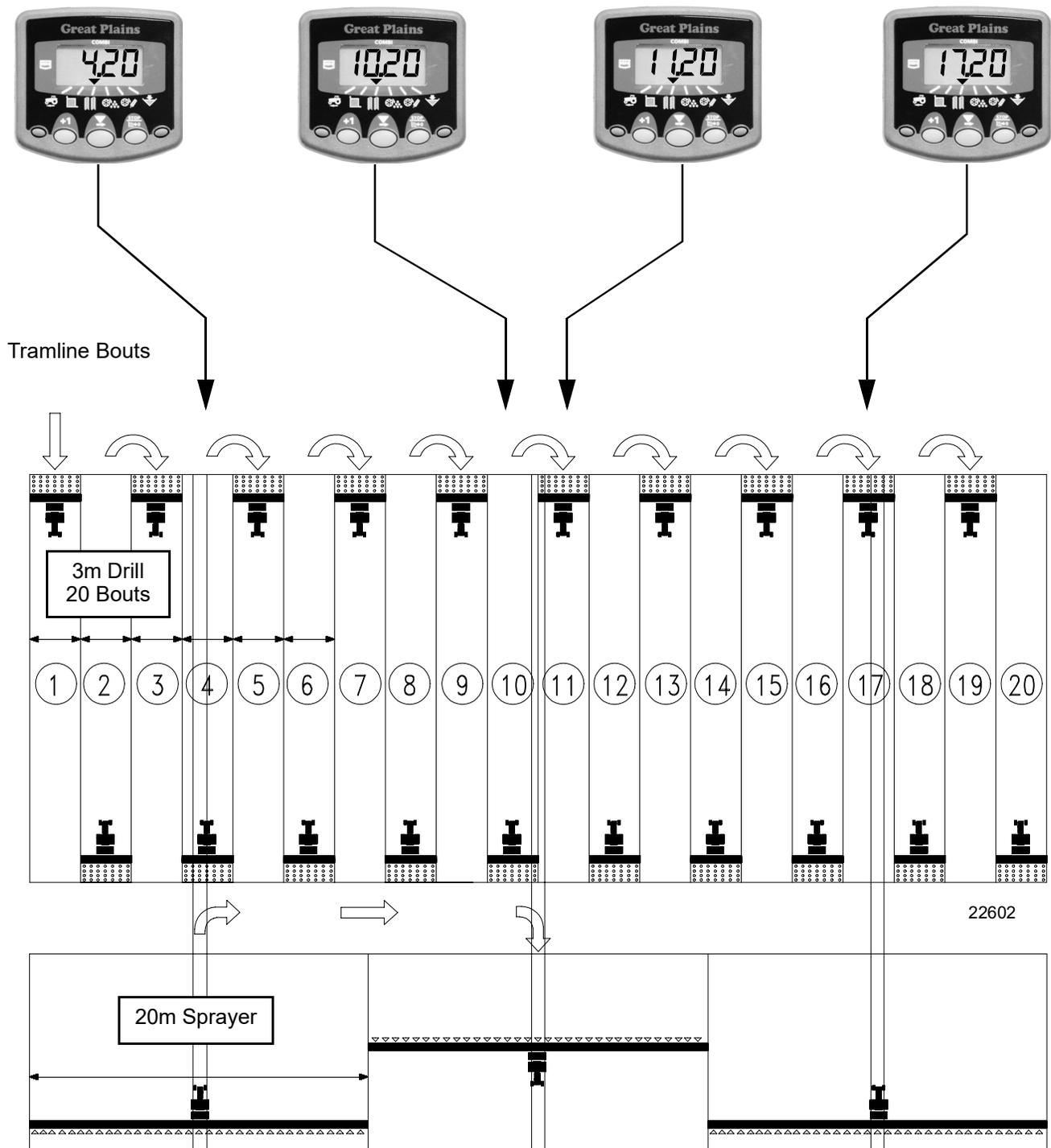
22600

20 Meter 20 Bout Tramlining Sequence

For use with a 3 meter drill and a 20 meter sprayer. 2 + 2 left-hand seed spouts are closed on bouts 4 and 17, Asymmetric right-hand seed spouts closed on bouts 10 and 11. Starting on bout 1 requires turning LEFT at the end of the first bout.

The instrument beeps once at the beginning of a tramline bout (#4, #10, #11 and #17 in this case), and the display continues flashing for the duration of the bout.

This sequence requires an optional 3rd tramline clutch.



Fertilizer Shaft Function

Note: If your drill is the model V300 (and not the V300F), you need to disable the Fertilizer Shaft alarm function to prevent nuisance alarms.

Display Fertilizer Shaft Speed

1. Channel Select  to Fertilizer .
2. The shaft speed (rpm) displays for 10 seconds before returning to the tramline display.

Fertilizer Shaft Alarm

With the default alarm setting, if:

- forward speed is at least 2 kph (1.24 mph), and
- the shaft speed drops to 0 for more than 40 seconds, the instrument sounds 5 beeps and changes the default display to the  channel.

The audible alarm sounds every 30 seconds until the alarm condition is resolved.

Note: The current alarm can be cancelled - by:
restoring the shaft rotation,
selecting another channel or
switching the instrument off and then on again.

Fertilizer Shaft Setup

The default pulses per shaft revolution is 50222, and usually only needs changing for V300 (not V300F) setup, or perform an extended disable of the alarm on V300F. Disabling the V300F alarm for short periods is discussed in the next topic.

To indefinitely disable the alarm, or restore alarm function after having set it to 0:

1. Power-off the console using its rear panel switch.
2. Hold down the  button and re-apply power.
3. Continue holding the button for 10 seconds, until the instrument enters Program Mode 3 "ECN05".
4. Hold or press and release  button to select the Fertilizer  channel.

The pulses per revolution displays.

5. Press  to select the digit to change.
Hold  to change the selected digit.
Release  to select the next digit, and repeat as above.

Set 50222 to enable fertilizer shaft alarm.

Set 20222 to disable fertilizer shaft alarm indefinitely.



Figure 60
Fertilizer Shaft Speed 5 rpm

22632



Figure 61
Fertilizer Pulses per Revolution

22632

Disable Fertilizer Shaft Alarm

This procedure disables the fertilizer shaft alarm for the current planting session.

1. Channel Select  to Fertilizer .
2. Push and hold the Stop/Reset  button for 5 seconds. The console displays "OFF" and beeps twice, indicating that the function is disabled.

The function remains disabled until power is lost. This is the recommended setting for V300F drills that are not presently applying fertilizer.

Note: There is no key sequence to re-enable fertilizer shaft alarm during the current session. Cycle power to restore it.

To disable fertilizer alarms in a manner that is preserved across power cycles, set the shaft rate (pulses per revolution) to 2 (page 64). This is the recommended setting for V300 drills, which have no fertilizer system (but do have the shaft sensor lead, which would otherwise always report 0 rpm, resulting in nuisance alarms).

Fertilizer Alarm Speed Threshold

The default alarm threshold is 2222 rpm (shaft stopped). If you want an alarm at some low speed other than stopped, change the threshold rpm as follows:

1. Channel Select  to the Fertilizer  channel.
2. Press and hold the  button to enter Program Mode 1.

The threshold rpm displays after 3 seconds.

3. Continue holding the  button and press  to select the digit to change.
Hold  to change the selected digit.
Release  to select the next digit, and repeat as above.
4. Release both buttons when done. The instrument returns to the normal display mode.



Figure 62
Fertilizer Alarm Temporarily Disabled

22632



Figure 63
Fertilizer Alarms at 1 rpm

22632

Fertilizer Alarm Delay Time

The default alarm delay is 262 seconds after the shaft rpm drops below the threshold value (or to 222).

At very low planting speeds, 40 seconds may be too short. At higher planting speeds, it may be too long.

The minimum delay is 227 seconds.

If you want an alarm earlier or later change the delay time as follows:

1. Power-off the console using its rear panel switch.
2. While holding down the **+1** button, re-apply power to enter Program Mode 2 "ECN04".
3. Hold or press and release **+1** button to select the Fertilizer  channel.

The threshold rpm displays after 3 seconds.

4. Press  to select the digit to change. Hold  to change the selected digit. Release  to select the next digit, and repeat as above.
5. Release all buttons. Switch off and restore power to save the selection. The instrument resumes normal mode at next power-on.



Figure 64
Fertilizer Alarm at 50 Seconds

22632

Seed Shaft Function

This function applies to the main seed box only. The monitor does not have sensors on the optional small seeds box.

Display Seed Shaft Speed

1. Channel Select  to Seed .
2. The shaft speed (rpm) displays for 10 seconds before returning to the tramline display.

Seed Shaft Alarm

With the default alarm setting, if:

- forward speed is at least 2 kph (1.24 mph), and
 - the shaft speed drops to 0 for more than 40 seconds,
- the instrument sounds 5 beeps and changes the default display to the Seed  channel.

The audible alarm sounds every 30 seconds until the alarm condition is resolved.

Note: The current alarm can be cancelled - by:
restoring the shaft rotation,
selecting another channel or
switching the instrument off and then on again.



Figure 65
Seed Shaft Speed 2 rpm

22632

Seed Shaft Setup

The default pulses per shaft revolution is 50222, and usually only needs changing to perform an extended disable of the main seed box alarm (for example, if only small seeds box planting is to be done for some time). Disabling the seed alarm for short periods is discussed in the next topic.

To indefinitely disable the alarm, or restore alarm function after having set it to 0:

1. Power-off the console using its rear panel switch.
2. Hold down the  button and re-apply power.
3. Continue holding the button for 10 seconds, until the instrument enters Program Mode 3 "ECN05".
4. Hold or press and release  button to select the Seed  channel.

The pulses per revolution displays.

5. Press  to select the digit to change.
Hold  to change the selected digit.
Release  to select the next digit, and repeat as above.

Set 50222 to enable seed shaft alarm.

Set 20222 to disable seed shaft alarm indefinitely.

Disable Seed Shaft Alarm

1. Channel Select  to Seed .
2. Push and hold the Stop/Reset  button for 5 seconds. The console displays "JCNH"¹, then a moment later "QHH", indicating that the function is disabled.

The function remains disabled until power is lost. This is the recommended setting for drills that are not presently applying seed from the main seed box (for example, planting small seeds or applying fertilizer only).



Figure 66
Fertilizer Pulses per Revolution

22632



Figure 67
Seed Alarm Disabled

22632

1. The "HALF" mode is not used on the V300/V300F. It is intended for point row operations on 2-section drills.

Seed Alarm Speed (Shaft Rate)

The default alarm threshold is 2 rpm (shaft stopped). If you want an alarm at some low speed other than stopped, change the threshold rpm as follows:

1. Channel Select  to the Seed  channel.
2. Press and hold the  button to enter Program Mode 1.

The threshold rpm displays after 3 seconds.

3. Continue holding the  button and press  to select the digit to change.
Hold  to change the selected digit.
Release  to select the next digit, and repeat as above.
4. Release both buttons when done. The instrument returns to the normal display mode.

Seed Alarm Delay Time

Some crops – notably oilseed rape (canola) are drilled at very low rates, the seed shaft runs extremely slowly and the instrument may incorrectly sense a stoppage. Change the delay time to prevent nuisance alarms.

When drilling at higher rates, a long time delay is equally undesirable. In this case program a shorter delay.

The default alarm delay is 262 seconds after the shaft rpm drops below the threshold value (or to 0). The minimum delay time is 227 seconds.

Change the delay time as follows:

1. Power-off the console using its rear panel switch.
2. While holding down the  button, re-apply power to enter Program Mode 2 "ECN04".
3. Press  to select the Seed  channel.

The threshold rpm displays after 3 seconds.

4. Press  to select the digit to change.
Hold  to change the selected digit.
Release  to select the next digit, and repeat as above.
5. Release all buttons. Switch off and restore power to save the selection. The instrument resumes normal mode at next power-on.



Figure 68
Seed Shaft Alarms at 0 rpm

22632



Figure 69
Seed Alarms at 10 Sec.

22632

Hopper Level Function

These functions are for the main seed box and optional fertilizer compartment only. The monitor has no sensors for the optional small seeds box.

Refer to Figure 70

When the seed or fertilizer levels drop below the sensor fitted in the side of the hopper, the instrument defaults to this channel, sounds 5 beeps, and displays “CNCT”.



Figure 70
Hopper Level Low Alarm

22632

Enable / Disable Hopper Level Alarm

1. Channel Select  to the Level  channel.

Refer to Figure 71

2. Press and hold the  button to enter Program Mode 1.

The current setting is displayed:

“3” = alarm function enabled
“2” = alarm function disabled.

3. Continue holding the  button and press  to select to change the setting.
4. Release both buttons when done. The instrument returns to the normal display mode.



Figure 71
Seed Level Alarm Enabled

22632

Adjustments

To get full performance from your drill, you need an understanding of all component operations, and many provide adjustments for optimal field results.

The V300 & V300F has hitch-mounted coulters, and double-disk 00 Series openers with depth-controlling press wheels. The opener gang frame is under hydraulic down-pressure control. This system provides accurate depth control and seed placement over uneven terrain.

Each opener is mounted on a pivoting opener frame. Opener bodies are staggered for easy soil flow. A spring provides the down pressure necessary for opener double disks to open a seed furrow. The spring allows openers to float down into depressions and up over obstructions. Individual openers adjust for tire tracks.

Even if your planting conditions rarely change, some of these adjustment items need periodic attention due to normal wear.

Planting Depth

Setting nominal planting depth, and achieving it consistently, is affected by multiple adjustable drill functions, from greatest to least effect they are:

- Frame Leveling,
- Coulters Depth,
- Opener Depth (Press Wheel Height)
- Hydraulic Down Pressure,
- Row Unit Down Pressure (Spring),
- Frame Weights (at higher pressures), and;
- Disk Blade Adjustments (as row unit blades wear).

| Adjustment | Page | The Adjustment Affects |
|---------------------------------------|--------|---|
| Hitch and Coulters Adjustments | | |
| Hydraulic Hitch Adjustment | 23, 24 | Gang coulters depth and hitch level |
| Individual Coulters Height | 71 | Individual coulters depth |
| Coulters Spring | 72 | Consistent individual coulters depth |
| Lift Spacer Adjustments | 21, 24 | Gang coulters depth and hitch level |
| Hitch-Frame Adjustments | | |
| Frame Weights | 73 | Maximum available down-force |
| Hydraulic Down Pressure | 36 | Compensating for unusually light or heavy conditions |
| Packer Setup | 28 | Consistent surface conditions |
| Material Rate Adjustments | | |
| Main Box Seed Rate | 75 | Planting from the standard seed box |
| Small Seeds Rate | 80 | Planting from the optional small seeds attachment |
| Fertilizer Rate | 83 | Applying material from aft section of main box (V300F only) |
| Row Unit Adjustments | | |
| Row Unit Down Pressure (Spring) | 91 | Consistent seeding depth in tire tracks |
| Disk Blade Adjustments | 92 | Consistent seeding depth |
| Disk Scrapers Adjustments | 92 | Consistent furrow |
| Seed Firmer Adjustments | 93 | Consistent seed placement and coverage |
| Opener Depth (Press Wheel Height) | 94 | Seeding depth |
| Wing Marker Adjustments | | |
| Marker Extension Adjustment | 25 | Pass alignments with no overlap or excessive gap |
| Dual Marker Disk Setup | 26, 27 | Visibility of mark for next pass |
| Dual Marker Speed | 26 | Efficient marker operation at turns |
| Tramline Marker Adjustments | 27 | Visible mark for subsequent pre-emergence applications |
| Harrow | 29 | Even residue distribution |



Coulter Adjustments

Because coulters prepare the soil ahead of the seed furrow, coulters need to be adjusted prior to making opener and seeding depth adjustments. Coulters are generally set to run 25mm (1in) lower than opener disks.

In normal operation, the coulters are resting on their stops. They rise against their springs only when riding up over obstructions. If you observe multiple coulters rising against their springs for extended periods, and the depth is correct, the springs may need adjusting.

Coulter Factory Settings

Refer to Figure 72

- ① Height 28.26cm (11.13in) from bottom of tool bar to bottom of pivot casting
- ② Force 25.4cm (10.0in) spring length - see table in this section for forces
- ③ Depth 5.1cm (2in) below surface if openers are running at 2.5cm (1in)

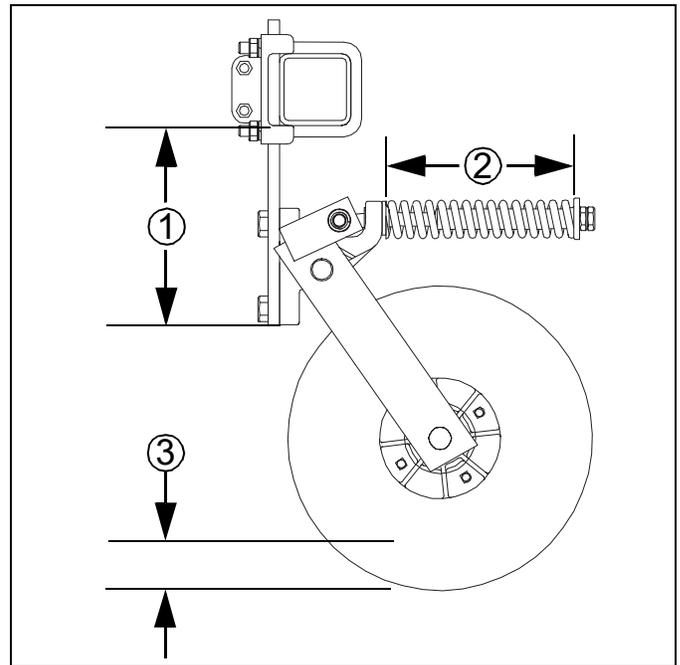


Figure 72
Coulter Factory Settings

27209

Gang Coulter Depth

The depth at which the entire coulters gang runs is controlled by the height of the hitch at the front and back. In general, both ends of the hitch must be adjusted to change coulters depth, as changes to either end also change hitch level. Make about half the change at each end.

See “Initial Hitch Height” on page 23, “Initial Lift Cylinder Spacers” on page 21, “Hydraulic Hitch Adjustment” on page 24 and “Lift Spacer Adjustments” on page 24.

Individual Coulter Depth

Adjust coulters height to compensate for lower soil surface height in some rows, such as in tire tracks. When a surface height difference exists, adjust coulters height before adjusting coulters force.

Adjust coulters down-force to compensate for firmer soil in some rows.

Coulter Height

You can change the depth of individual coulters by adjusting coulters-mounting height. Do not make this adjustment to all coulters.

If you adjust coulters height, be sure to re-bolt coulters vertically straight and correctly spaced. Check coulters alignment by lowering drill and pulling straight for about 5m (16ft). Inspect furrows to ensure that coulters furrows align with opener furrows.

To raise or lower individual coulters:

Refer to Figure 73

Note: The coulters heights are factory-set to 28.26cm (11.13in) from bottom of tool bar to bottom of pivot casting. Do not lower top of coulters spring bar ① below tops of U-bolts ② on coulters clamp.

1. Loosen mounting all six clamp ③ and U-bolt ④ nuts and adjust coulters spring bar ⑤ to desired height.
2. To re-tighten the two clamp nuts ③. Snug these hex-head clamp bolts just until U-bolts shanks are tight against each side of spring bar.
3. Tighten nuts ④ on U-bolts.
4. Finish tightening hex-head clamp bolts ③.

Note: Even when coulters are held securely, there is usually a gap between clamp halves.

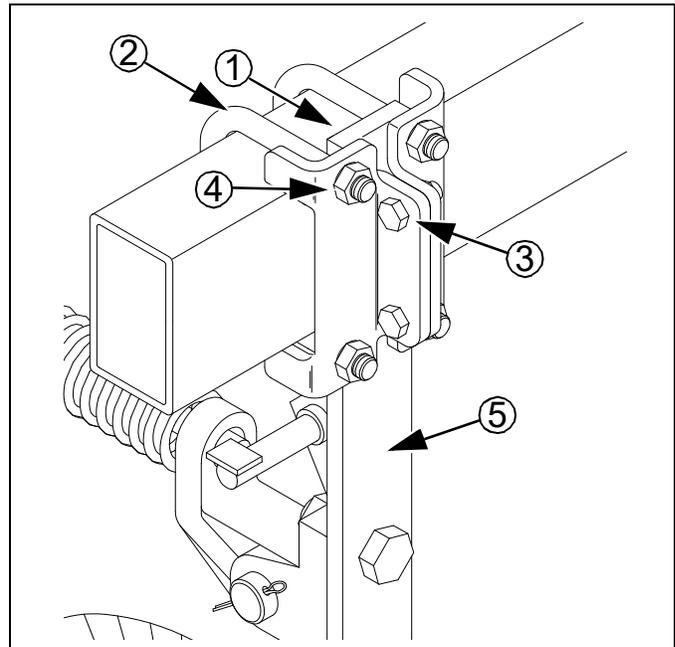


Figure 73
Coulters Height

10300

Coulters Down-Force

Coulters down-force relies on all of the weight of the hitch, plus some of the weight of the tractor, and some of the weight of the drill. Adjusting individual rows for running in tire tracks typically does not require weight adjustment.

Adjusting all rows to higher forces may require adding weights to the drill. Conduct tests with an empty seed box, and check that tires are not slipping and that row units remain level, with openers at desired depth.

Coulters Down-Force Settings

| | Spring Length | Down Force |
|---|-------------------|------------------|
| | 267 mm (10.5 in) | 79 kg (175 lbs) |
| | 260 mm (10.25 in) | 136 kg (300 lbs) |
| ① | 254 mm (10.0 in) | 181 kg (400 lbs) |
| | 248 mm (9.75 in) | 238 kg (525 lbs) |

The factory preset ① for coulters spring length is 254mm (10in). This setting is adequate for many difficult no-till conditions. For lighter no-till conditions where rocks or other obstructions are a problem, reduce coulters down pressure to give coulters better impact protection.

To adjust the force, loosen the jam nut ②, and turn the adjuster nut ②. Re-tighten jam nut at desired length.

Note: Do not reset coulters-spring length shorter than 248 mm (9.75in). Doing so may contribute to premature failure of parts and warranty is voided.

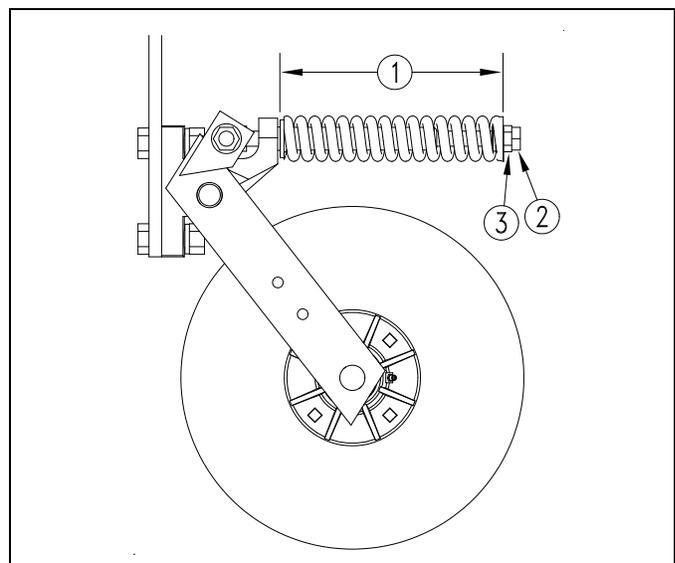


Figure 74
Coulters Spring

27139

Opener Down-Pressure

There are two adjustments for opener down-pressure:

1. gang adjustment using hydraulic down-pressure, described at See “**Hydraulic Down Pressure**” starting on page 36
2. individual row adjustments via the row unit springs, described on See “**Row Unit Down Pressure (Spring)**” starting on page 91.

Adjust row unit down-pressure after adjusting coulters.

The goal of opener down-pressure is to keep the row unit frame level with the ground when the opener disks are running at the desired depth in your soil conditions.

Setting all row units to high forces (either with hydraulics or springs) can cause wheel skipping and/or uneven row unit depth. Using high settings may require adding weights to the drill frame (next topic).

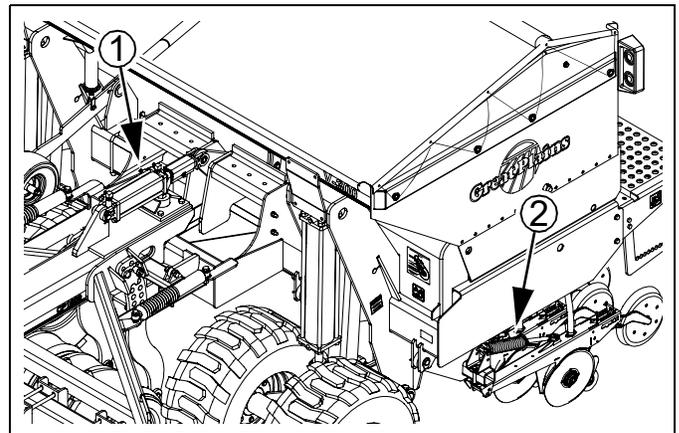


Figure 75
Opener Down-Force

22574

Frame Weights

The standard V300 and V300F drill includes two hangers which each accept up to nine 100 pound (45 kg) weights (18 total, 1800 pounds or 816 kg total). The drill does not include the weights, which are the widely-available “suit-case” tractor style.

In more severe conditions,
 + higher coulter forces,
 + higher hydraulic down force and/or
 + higher row unit spring settings across all rows,
 may be necessary to obtain consistent planting depth. If the settings result in lifting or skipping of the ground drive tires, add weight to the drill frame.

IMPORTANT !

Extra weight on the drill frame increases any negative tongue weight.

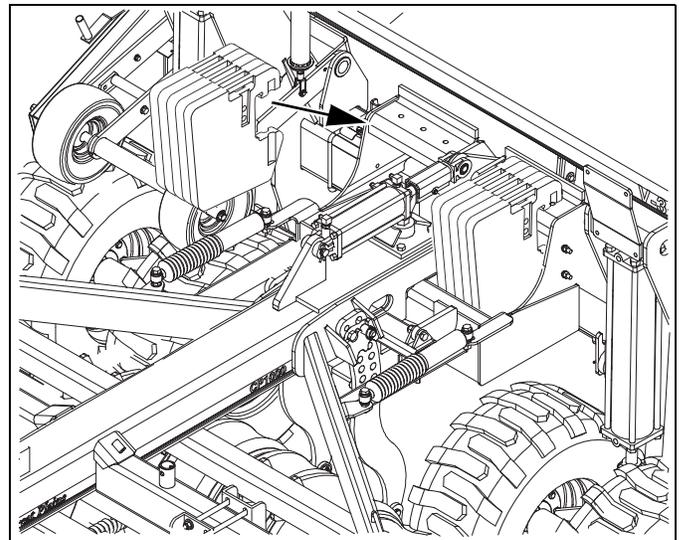


Figure 76
Adding Weights

27229

Material Rate Adjustments

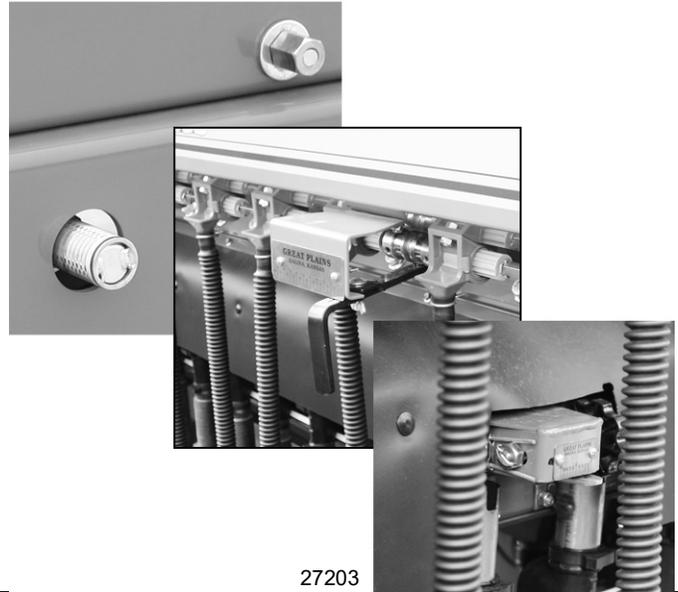
Material rates for each of the boxes are set independently.

Use the settings in the Seed and Fertilizer Rate charts as a starting point for the calibration. The charts are provided in a separate manual (part number 148-057B), normally stored in a weatherproof holder on the drill.

To reduce unnecessary wear, disengage clutches for any drives not used.

Great Plains recommends calibration with your seed and fertilizer for most accurate results.

Densities vary from those used to develop the tables. Meter shaft rates vary with penetration required, soil surface conditions and normal tire wear.



27203

| Adjustment | Main Seed Box | Small Seeds Attachment | Fertilizer |
|----------------|-----------------------------|--|--|
| Sprockets | Drive Type sets coarse rate | No adjustment required Unaffected by Drive Type | Range sets coarse rate Driver/Driven sets fine rate |
| Adjuster Scale | Handle sets fine rate | Handle sets rate | Knob can adjust rate down |
| Meter Door | Controls rate consistency | No adjustment required | (knob controls meter door) |
| Disable | Clutch | Remove chain | Clutch |
| See... | page 75 | page 80 | page 83 |

Calibration Crank Revolutions

The V300 and V300F include a convenient calibration crank for operating the metering systems with the drill raised. The following table shows the number of crank turns required to simulate different areas.

| Area | 1 Full | 1/10th | 1/100th |
|----------------|--------|--------|---------|
| Acre | 1451 | 145 | 14.5 |
| Hectare | 3200 | 320 | 32 |

For most accurate results, operate the crank at rpms which mimic the actual anticipated planting speed.

| rpm | 80 | 96 | 112 | 128 | 144 |
|------------|-----|-----|-----|-----|-----|
| mph | 3.1 | 3.7 | 4.3 | 5 | 5.6 |
| kph | 5 | 6 | 7 | 8 | 9 |

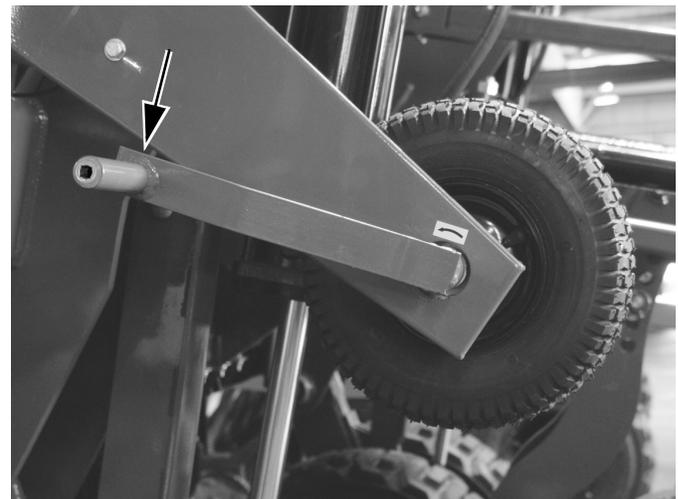


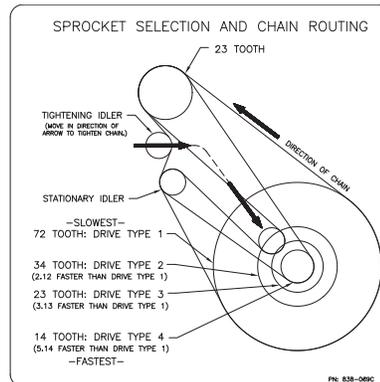
Figure 77
Calibration Crank Installed

22613

Setting Main Seed Box Rate

Setting main seed box rate requires setting the coarse speed via Drive Type, and the fine speed via the meter rate adjuster.

1. Consult the Seed Rate Charts (Main Seed Box) for the initial values of Drive Type and Meter Setting for your seed and desired population.



Setting Drive Type

Drive Type is set by a single sprocket change in the main seed box transmission. The transmission is located below, behind, and to the right of the left lift cylinder, and is protected by the guard just left of the weight brackets.

Refer to Figure 78

(seed box and lift structure removed for clarity)

2. Remove the bolts securing the guard over the seed box transmission, and remove the guard.

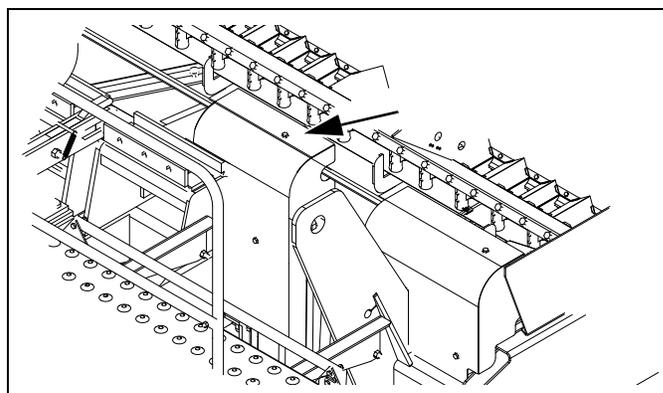


Figure 78
Transmission Guards

23160

Refer to Figure 79

3. Based on the Drive Type from the rate chart, note the sprocket ① presently in use. The tooth count is stamped on the face of the sprockets. If the sprocket in use is the one called for, skip to step 7.
4. Loosen the idler ② and remove the chain from the current sprocket. Remove the pin ③ on the lower shaft.
5. Exchange the current sprocket with the correct size for the Drive Type required:

| Drive Type | Sprocket | Relative Rate |
|------------|----------|------------------|
| 1 | 72T | Slowest |
| 2 | 34T | 2.1 times Type 1 |
| 3 | 23T | 3.1 times Type 1 |
| 4 | 14T | 5.1 times Type 1 |

6. Place all unused sprockets back on the tree and re-pin. Engage the idler, leaving $\frac{1}{4}$ in (6.4mm) slack in the longest chain span.
7. Re-mount the guard and secure with bolts.

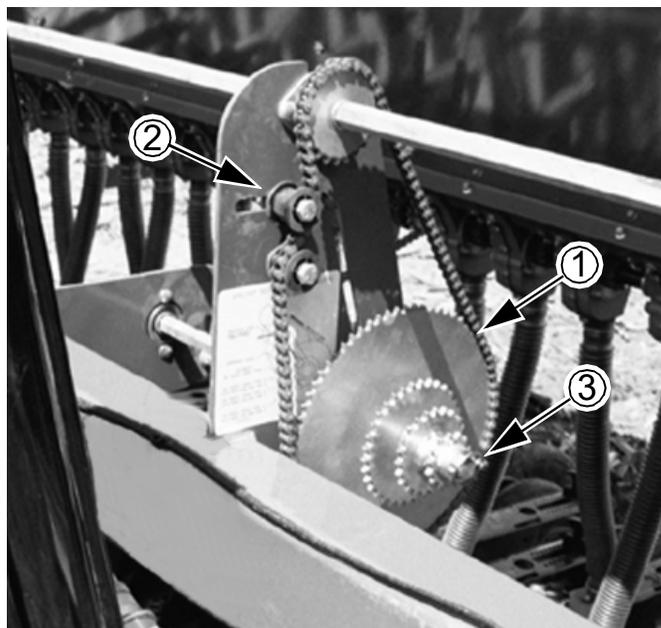


Figure 79
Drive Type Sprocket

17211

Setting Meter Rate

Refer to Figure 81

The main seed box meters have one rate setting control and two rate indicators. The external rate screw ② and indicator ④ are used. They are located on the right outside of the main seed box frame.

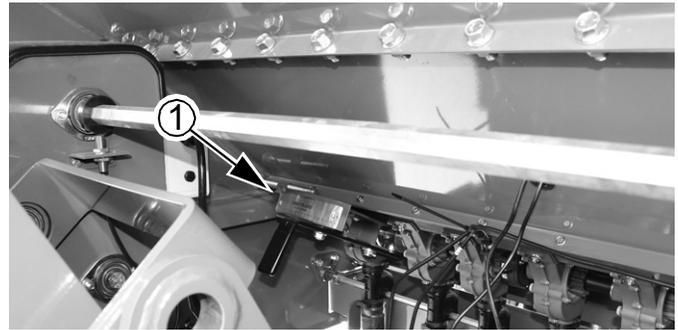


Figure 80
Main Seed Internal Indicator

27199

Refer to Figure 80, 81 and 82

The internal indicator and scale ① may be used as a backup for the external indicator. The internal handle cannot be used to set the rate.

1. Remove the calibration crank ③ from its storage location on the ground drive arm.
2. Place the socket end of the crank on the seed rate screw shaft ②.
3. Operate the crank to move the indicator ④:
out: higher scale readings
in: lower scale readings
4. Sight parallel to the exterior surface of the frame ⑤.
If unsure of reading, consult the inside scale ①.
5. Return crank handle to storage location.

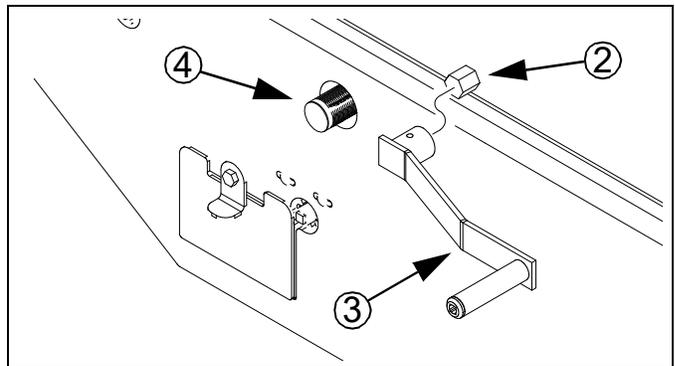


Figure 81
Main Seed Rate Adjusting

23187

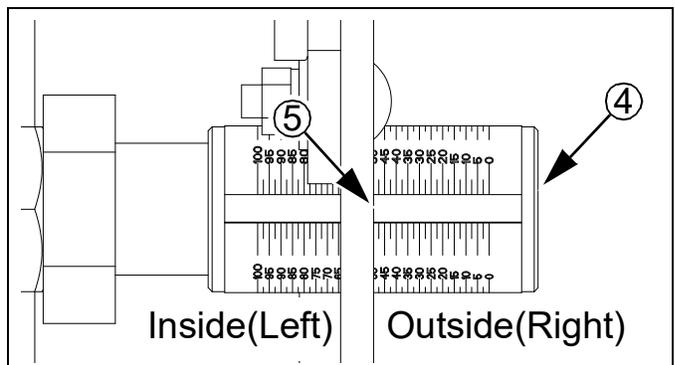


Figure 82
Main Seed Rate Scale

23188

Position Seed Cup Doors

Refer to *Figure 83*, which depicts the seed cup door handle in position ③.

At each main seed box seed tube, adjust the seed cup door handle ④ for the seed size.

The handle has three normal operating position detents:

- ① (top detent) is for the smallest seeds.
Use it for wheat and similar small seeds.
- ② (middle detent) is for larger seeds.
Use it for soybeans and similar larger seeds.
- ③ (bottom detent) is for oversize or fragile seeds.
If you experience excessive cracking with setting ②, use setting ③.

Note: Handle position ⑤ is used for cleanout, not planting. If set to this position with seed loaded, it may be difficult to reset it to a normal operating position.

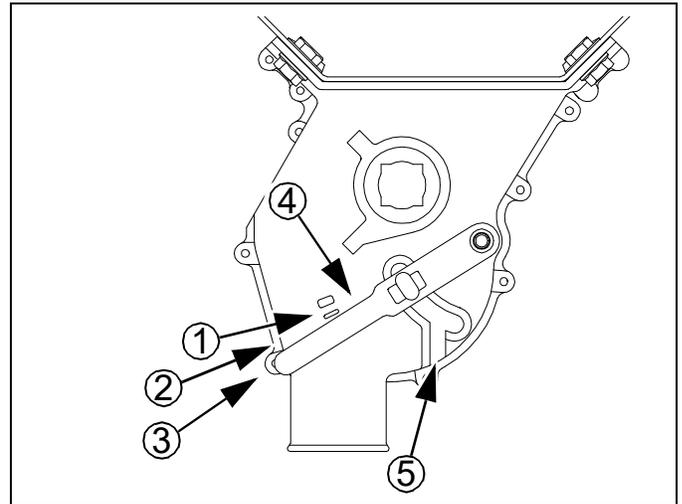


Figure 83
Seed Cup Door Handle

26211

Disabling Main Seed Box Drive

To prevent wear when not applying seed from main seed box, and when calibrating other than main seed, the main seed shaft can be disengaged from the drive system.

The drive is engaged when the cross pin in the clutch is seated in the deeper detent, with the pin perpendicular to the shaft.

Refer to *Figure 84*, a rear view of the shaft with the seed boxes removed, and *Figure 85*, an exploded view from above left rear

1. It may be necessary to remove one or both guards to gain access to the clutch.
2. Pull the cross pin away from the shaft, and rotate it $\frac{1}{4}$ turn, seating it in the shallower detent parallel to the shaft.

To re-enable the main seed drive:

3. Pull the cross pin away from the shaft, and rotate it $\frac{1}{4}$ turn, seating it in the deeper detent perpendicular to the shaft.

Note: The pin does not need to fully seat at this time. It automatically drops into full engagement at the next movement of the ground drive.

4. Re-mount any removed guards.

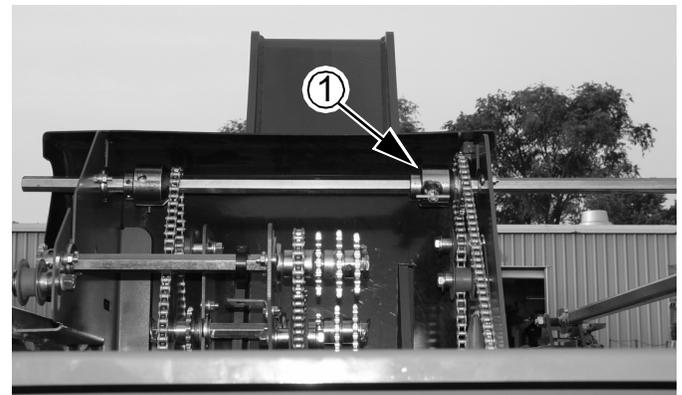


Figure 84
Main Box Drive Clutch

22611

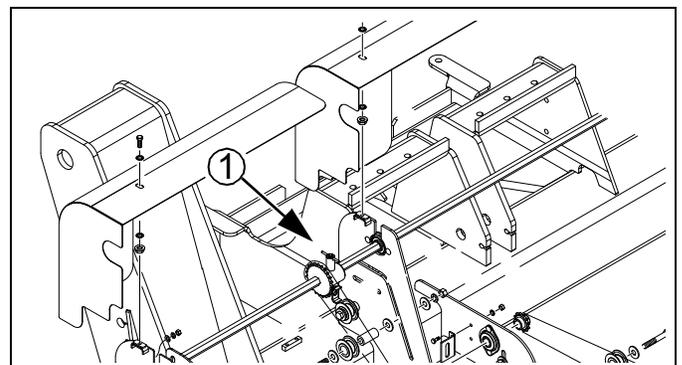


Figure 85
Main Box Drive Clutch

23276

Calibrating Main Box Seed Rate

The V300 and V300F has diverters on each main seed box meter, which send metered seed to a calibration tray:

| | | | |
|---------------|-------------|----------|-------------|
| Tray Capacity | 37.3 liters | 1.06 bu. | 1.32 cu.ft. |
|---------------|-------------|----------|-------------|

The V300 and V300F includes a calibration bag for weighing samples, and a spring scale:

| | | |
|----------------|--------------|----------------|
| Scale Capacity | 2.5-to-25 kg | 5-to-50 pounds |
|----------------|--------------|----------------|

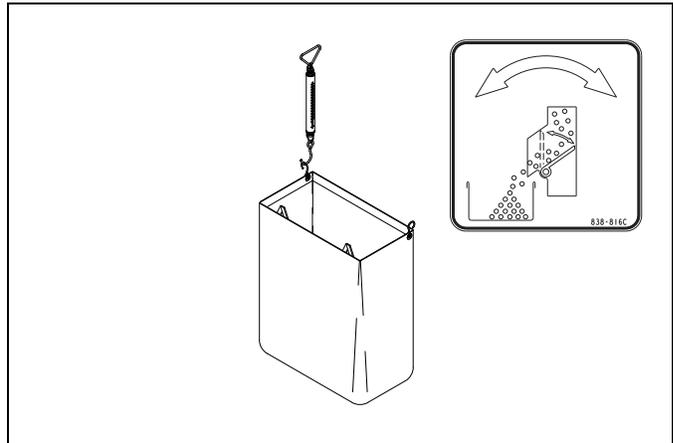
The spring scale requires a sample weight of at least 2.5 kg or 5 lbs for useful precision. Typically, this requires simulating at least $\frac{1}{10}$ hectare or acre. If you have a scale that is accurate at lower weights, you can use a smaller sample size.

These instructions presume a calibration using the supplied accessories.

1. Using the seed rate chart, and the crank revolutions table on page 74, determine how many crank revolutions are required to generate a measurable sample size.
2. Set the initial Drive Type, Meter Scale and Meter Doors per the chart and seed characteristics.
3. Make sure the calibration bag is empty and clean. Hang it from the scale, and adjust the knurled disk on the top of the scale until the scale reads zero (0).

Refer to Figure 86

4. Rotate the latch ① and remove the tray ②. Empty and clean it. Re-insert it with the opening facing up.
5. Disengage the clutch for fertilizer drive (see page 86), and remove the drive chain from small seeds (page 118).
6. If the drill is model V300F, adjust the seed/fertilizer divider for the intended field operations (see page 33).
7. Load about 50 kg or 100 lbs of seed in the main seed box. Distribute it evenly over all meters.



Example:

Seed: **Barley**

Desired Population: **120 kg per hectare**

Expected planting speed: **7 kph**

Drive Type: **2**

Meter Scale Setting: **65**

Meter Door setting: **1**

Expected sample size for $\frac{1}{10}$ hectare: **12 kg**

Crank revolutions for $\frac{1}{10}$ hectare: **320**

Recommended crank rpm: **112**

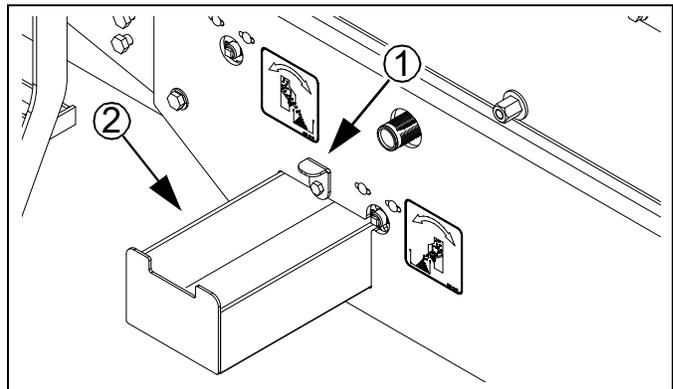


Figure 86
Calibration Tray Removal

27252

Refer to Figure 87 - The diverter shaft for the main seed box is just forward of the calibration tray.

8. Remove the calibration crank from its storage location on the ground drive.
9. Position the square socket of the *handle* ③ end of the crank over the calibration shaft index collar ④ for the main seed box. Push in and rotate the shaft clockwise to set the diverter gates to send seed to the calibration tray.
10. If the drill is a model V300F, use the crank on the fertilizer diverter shaft to close the gates, so that no fertilizer is mixed with the seed sample. See page 88.
11. Raise the drill openers and install lift locks.

Refer to Figure 88

12. Position the hex socket end of the calibration crank on the ground drive contact wheel shaft, and rotate the shaft counter-clockwise 3 turns. This is to ensure that the meters are full of seed and metering at the current rate.
13. Remove the calibration tray. Empty it into the main seed box, and re-insert it (open side up).
14. Rotate crank counter-clockwise. Stop after the first two turns and check that seed is flowing from all meters. Slowly remove the tray and check for comparable seed piles.

Continue rotating, at an rpm that simulates the expected planting speed (see table on page 74).

Stop periodically. Check that the tray is not over-full.

Stop when the count (from step 1) is reached.

15. Carefully remove the calibration tray. Empty it into the calibration bag. Weigh the bag.
- Note: If the scale was “zeroed” for the bag weight at step 3, the scale reading is the seed weight only.
16. Calculate the rate for a full hectare or acre. In the chart, note the setting reported for that rate, and the difference between that setting and the setting used.
 17. Adjust the meter scale setting by the difference.
 - If the sample size was high, adjust down.
 - + if the sample size was low, adjust up.
 18. If the change was significant, retest at new setting.
 19. Empty the bag into the seed box.
 20. Re-insert the tray facing down (to prevent collection of debris), and swing latch down to secure it.
 21. Using the crank handle, push in and turn the meter diverter shaft counter-clockwise, back to normal operating position.

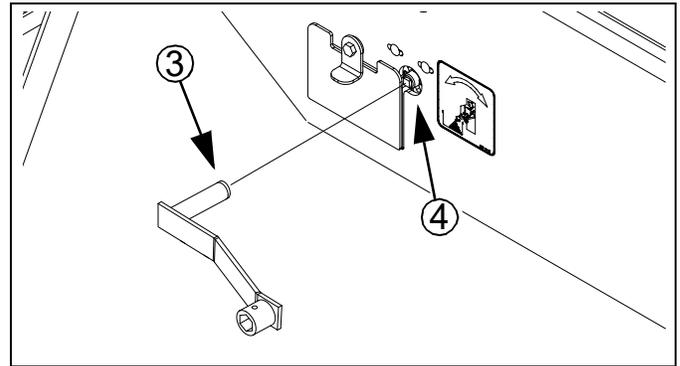


Figure 87
Main Box Diverter Shaft

23268

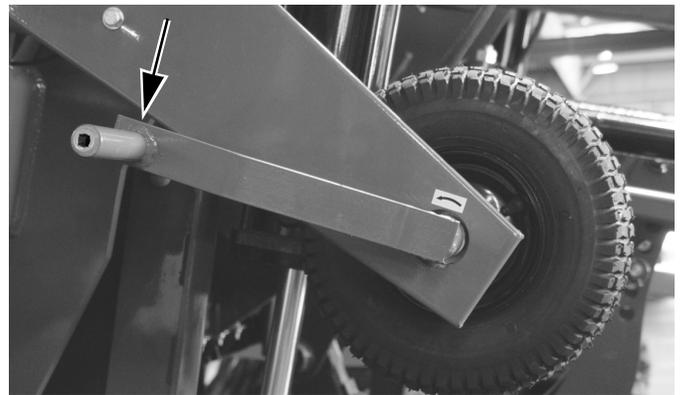


Figure 88
Calibration Crank Installed

22613

Example:

Sample weight: **13.5 kg**

Full hectare rate: $10 \times 13.5 = 135 \text{ kg}$
 Chart setting for 135 kg: approximately **71**
 A difference from 65 of: **6**

Sample weight was high.
 Subtract 6 from previous setting ($65 - 6 = 59$).

Retest at a scale setting of 59.

Small Seeds Attachment Rate

Small seeds attachment box planting rate is controlled by:

- Seed Rate handle setting

Refer to Figure 89

The small seeds drive ① is independent of the main seed box and fertilizer drives. The small seeds cups do not have doors to adjust.

Before setting the rate, raise the drill and rotate the gauge wheels. Check that seed meters, seed tubes and drives are working properly and are free from foreign material.

To reduce wear, disengage the clutch ② for the main seed box drive. See page 79.

If the drill is a model V300F, and fertilizer will not be applied during small seed planting, and during small seeds calibration, also disengage the fertilizer drive clutch. See page 88.

The procedure for setting the small seeds box rate is:

Refer to Figure 90

1. Consult the charts for your crop in the Seed Rate manual. That provides the initial Rate Handle settings.
2. Configure the Seed Rate handle.
3. Calibrate the drill for your specific seed.

Small Seeds Rate Handle

Position the small seeds seed cup rate lever to setting indicated on the Rate Chart in the Seed Rate manual.

To adjust:

1. Loosen wing nut ④ under handle ⑤.
2. Slide handle ⑤ until indicator is about 10 past the desired value, then move it back to the desired value.
3. Tighten wing nut.

Disabling Small Seeds

Refer to Figure 89

The small seeds drive does not have a clutch. When not planting small seeds, reduce wear by removing the chain.

1. Remove the guard over the fertilizer/small seeds drive.
2. Loosen the idler ⑥ and lift the chain off the driving sprocket ①.
3. Tighten the idler and secure the chain to prevent its loss.

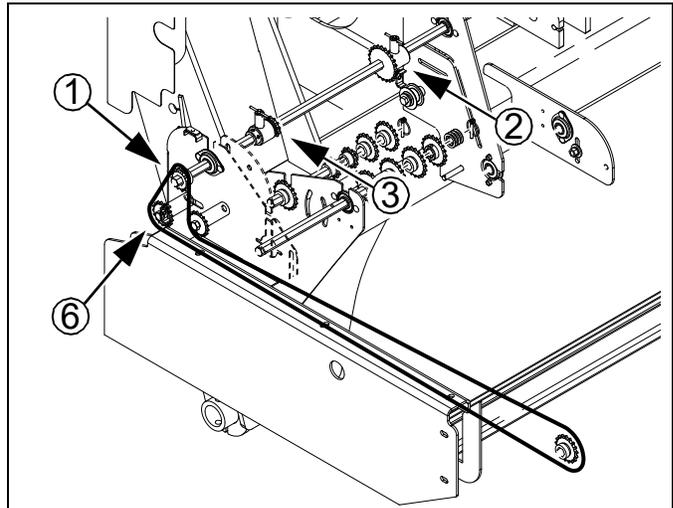


Figure 89
Small Seeds Drive

27257

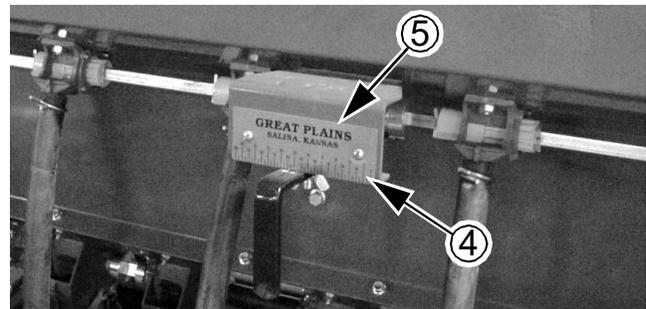


Figure 90 Small Seeds
Seed Cup Lever Adjustment

18511

- Re-install the guard.

Small Seeds Rate Calibration

The V300 and V300F small seeds attachment does not have a diverter to the calibration tray. Calibration is performed by sampling at three seed tubes.

The spring scale included with the drill is unlikely to be able to accurately read the weight of small seed calibration samples of practical size. Likewise, the supplied calibration bag may be too heavy relative to sample sizes. A scale with gram or ounce precision, and small lightweight containers are needed.

Refer to formulas in instructions and sample data at right.

- Consult the rate chart for your seed.
- Set rate handle per the earlier instructions.
- Record weight of one or more small empty containers with sufficient capacity to hold seed metered for one tenth hectare or acre for three rows.
- Place several kg or pounds of seed over three seed cups on an outside end of a drill box. Pull seed tubes off of these three, at the openers, and route the tubes to the container(s).
- Raise the drill.
- Rotate gauge wheel or calibration crank a few turns to confirm drivetrain is operating and to confirm that the seed paths are free from foreign matter.
- Turn gauge wheel several times to fill seed cups with seed. Turn wheel until seed falls from each cup. Place seed collected so far back in the box.
- Rotate gauge wheel until one tenth hectare or one tenth acre has been tallied (see table on page 74). Simulate field speed.
- Check that the three seed cups have ample seed coming into them.
- Weigh metered seed.
- Subtract initial weight of container (tare weight).

$$\text{SeedWeight} = \text{TotalWeight} - \text{ContainerWeight}$$

- Divide by three.

$$\text{WeightPerCup} = \frac{\text{SeedWeight}}{3}$$

- Multiply by ten.

$$\text{CupPerArea} = \text{WeightPerCup} \times 10$$

Note: You may need to increase seed cup setting for lighter than average seed or decrease seed cup setting for heavier than average seed.

Note: The seed rate charts are based on cleaned, untreated seed of average size and test weight. For seed not listed on the charts, compare weight and size to those listed and use a similar setting.

Example:

Seed: **Millet**

Target population: **9 kg/hectare**

Expected planting speed: **7 kph**

Rate Handle from chart:

between 50 and 55, approximately: **52**

Assume 3 plastic jars, each 14.2 grams.

ContainerWeight of: $3 \times 14.2 = \mathbf{42.6 \text{ gr (0.0426 kg)}}$

From table, rotations per tenth hectare is: **320**

Tire rpm for 7 kph is: **112 rpm**

Sample in containers weighs: **192.1 grams**

TotalWeight = **0.1921 kg**

SeedWeight: (kg)

$0.1921 - 0.0426 = \mathbf{0.1495 \text{ kg}}$

WeightPerCup:

$0.1495 \div 3 = \mathbf{0.04983 \text{ kg}}$

CupPerArea:

$0.04983 \times 10 = \mathbf{0.4983 \text{ kg}}$

CurrentRate:

$0.4983 \times 17 = \mathbf{8.47 \text{ kg/Ha}}$

14. Multiply by the number of openers (17) on your drill to determine total pounds seeded per acre.

$$\text{CurrentRate} = \text{CupPerArea} \times \text{OpenerCount}$$

15. If this figure is different than desired, set your seed rate adjustment handle accordingly.

Note: You may want to repeat the calibration procedure if your results vary greatly from seed rate chart.

When drilling, check seeding rate by noting acres drilled, amount of seed added to drill and seed level in drill box. If you are seeding more or less than desired, adjust seeding rate slightly to compensate for field conditions.

Target was 9 kg/Ha.

$8.47 \div 9 = 0.94$ (**94%**)

Result is **6% low**.

Adjust handle up by **3** (6% of 52)
to a new Seed Rate Handle setting of: **55**

Setting Fertilizer Rate

Fertilizer rate is controlled by:

- Range sprockets for coarse rate
- Driver/Driven sprockets for general control of rate
- Rate adjuster for fine control of rate

Fertilizer rate is independent of main seed box Drive Type and independent of Small Seeds. The fertilizer cups do not have doors to adjust other than the gates controlled by the adjuster knob.

Before setting the rate, raise the drill and rotate the contact wheels. Check that meters, tubes and drives are working properly and are free from foreign material.

The procedure for setting the fertilizer rate is:

1. Know your material density. If substantially different from the chart reference material, apply a correction factor before selecting the initial rate from the charts.
2. Consult the fertilizer rate chart for desired applications density (kg/hectare or pounds/acre). The chart provides the initial range and driver/driven settings.

Note: Chart rates are at adjuster setting 100.

3. If a chart rate is not sufficiently close to the desired rate, choose a higher rate, and reduce it with an adjuster setting. A chart provides a rough correspondence between knob setting and percent of maximum rate.

Note: Calibration is always recommended, but if an adjuster setting of less than 100 is needed, calibration is essential.

4. Calibrate the drill for your specific material.



CAUTION

Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.

Do not use liquid treatments with drill.

Read and follow chemical manufacturer's instructions.

Wear protective clothing.

Handle all chemicals with care.

Avoid inhaling smoke from any type of chemical fire.

Never drain, rinse or wash dispensers within 30m (100 feet) of a freshwater source, nor at a car wash.

Store or dispose of unused chemicals as specified by chemical manufacturer.

Dispose of empty chemical containers properly. Laws generally require power rinsing or rinsing three times, followed by perforation of the container to prevent re-use.

Fertilizer Density Correction

The Fertilizer Rate charts in the Seed Rate manual are based on a *StandardDensity* of: 1.04 kg/liter or 65 pounds/cu-ft.

If your material is substantially different, and/or if you don't intend to calibrate, calculate a *CorrectedRate* before consulting the rate chart.

1. Obtain your material density from the packaging. If it is not documented, you will need to weigh a known volume of it, and convert the results to kilograms-per-liter or pounds-per-cubic-foot.
2. Compute the correction factor.

$$CorrectionFactor = \frac{StandardDensity}{YourDensity}$$

3. Apply the correction factor to your desired rate.

$$CorrectedRate = ActualRate \times CorrectionFactor$$

4. Look up the setting for the *CorrectedRate* in the Fertilizer Rate charts.
5. The *CorrectedRate* is used only to obtain an initial setup for the sprockets. Calibrate to your real field rate (the *ActualRate*).

Setting Fertilizer Drive Range

Refer to Figure 88

1. Consult the fertilizer rate charts in the Seed Rate manual. Determine which of the following ranges is necessary for your intended application rate:

| Range | Sprockets | | Relative Rate |
|---------------|-----------|---------|---------------|
| | Input ② | Final ③ | |
| Standard Low | 44T | 12T | Slowest |
| Standard High | 16T | 12T | 2.8x |
| Special Low | 12T | 12T | 3.7x |
| Special High | 12T | 19T | 5.8x |

2. Remove the guard ① at the fertilizer drive (behind the left lift cylinder)
3. Loosen idler on input chain (sprocket ②). Exchange sprockets from storage trees. Engage idler. Leave 1/4 in (6.4mm) slack in the long chain span.
4. If changing to or from Special High Range, also exchange the final drive sprocket ③. This sprocket is secured by set screw, and not by a pin.
5. Engage the fertilizer drive clutch ④. Pull pin away from shaft. Rotate 1/4 turn and release into deeper detent. The pin fully seats at next shaft rotation.

Example Fertilizer Density Correction

Desired Application Rate (*ActualRate*): 128 kg/Ha

Your Fertilizer Density:
0.73 kg/liter

CorrectionFactor:
1.04 ÷ 0.73 = **1.42**

CorrectedRate:
128 x 1.42 = **182 (kg/Ha)**

The closest chart rate to 182 is
182.7
Standard High Range, 17T Driver, 20T Driven

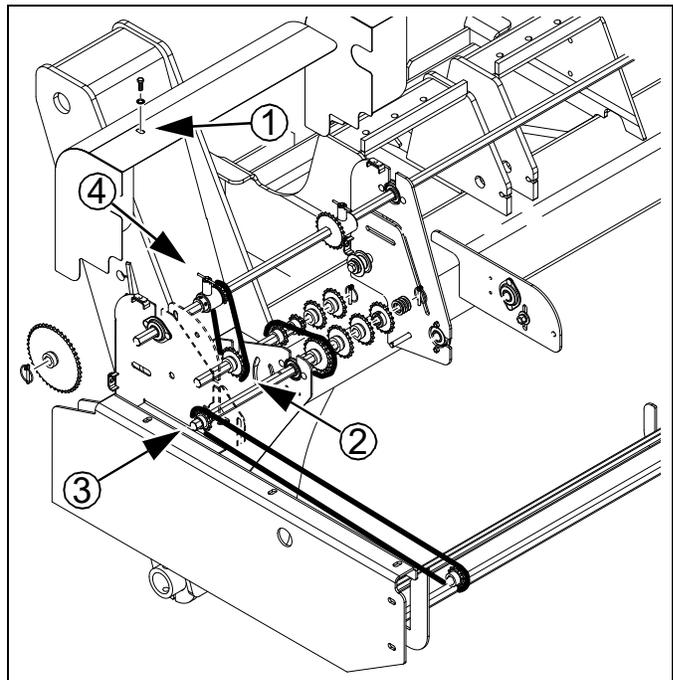


Figure 91
Fertilizer Drive: Range

27255

Setting Fertilizer Transmission

Refer to Figure 92

The fertilizer transmission is a variable pair of sprockets (the DRIVING sprocket ⑤ on the input shaft and the DRIVEN sprocket ⑥ on the output shaft).

The available sprockets provide an 8:1 span of rates within each Range sprocket setting, and a rate increment of about 4% per step. This usually provides enough control to achieve target application rates without using the adjuster.

The sprocket pair to use is initially determined by the fertilizer rate chart (with any density correction applied), and then by calibration.

To change the transmission setting:

1. Loosen the chain idler. Lift the chain off both sprockets and move it to machine left, resting on the shafts.
2. Un-pin the shaft ends and remove all sprockets. The sprocket sizes (tooth counts) are stamped on the face of each sprocket.
3. Install the specified Driving and Driven pair.
4. Return unused sprockets to the shafts and re-pin.
5. If fertilizer rate calibration is planned, and/or the planting is from the small seeds box, disengage the main seed box clutch ⑦.
6. Replace guard ①.

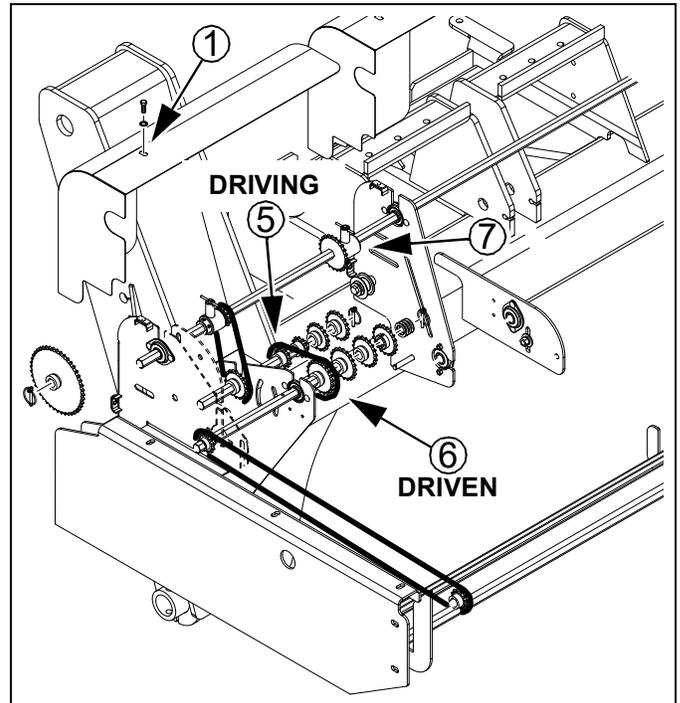


Figure 92
Fertilizer Drive: Range 27255

Setting the Fertilizer Adjuster

Refer to Figure 93

The fertilizer box has an adjuster, located near box center. On the V300 and V300F drills, it is normally left at 100, but can be used to fine tune a rate where the nearest Range and Driver/Driven combinations are not close enough to the desired rate.

Note: Always calibrate when using the adjuster. Avoid using adjuster settings below 35. Pick a higher sprocket rate, and adjust down from that.

To adjust, rotate the adjuster knob ⑧ located to the right of the scale ⑨. Rotate clockwise to reduce rate. The knob stays at your setting due to springs clamping a nut at the left end of the shaft.

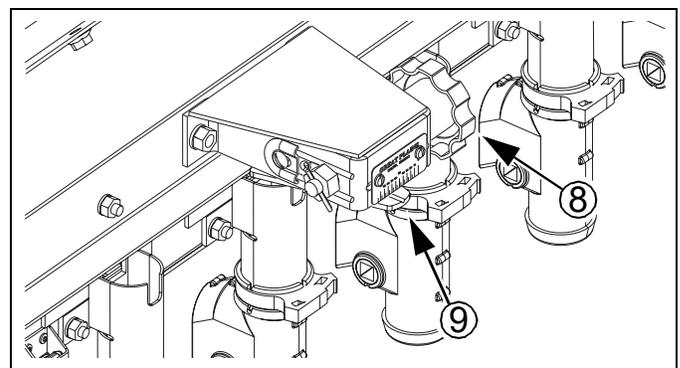


Figure 93
Fertilizer Rate Adjuster 26299

The effect of the adjuster is not linear. The following table shows the approximate effect of various settings.

| Fertilizer Rate Handle Scale Setting | | | | | | | | | | | | | | | | | | | | | Chart: f1a |
|--------------------------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 | |
| Reduced Fertilizer Rate (percent) | | | | | | | | | | | | | | | | | | | | | |
| 0% | 0% | 3% | 4% | 8% | 16% | 22% | 29% | 36% | 43% | 50% | 56% | 64% | 71% | 76% | 85% | 91% | 95% | 98% | 99% | 100% | |

Disabling Fertilizer Box Drive

To prevent wear when applying only seed, and when calibrating main seed, the fertilizer shaft can be disengaged from the drive system.

The drive is engaged when the clutch cross pin ① seats in the deeper detent, pin perpendicular to the shaft.

Refer to Figure 94, a rear view of the shaft with the seed boxes removed, and Figure 85, an exploded view from above left rear

1. It may be necessary to remove one or both guards to gain access to the clutch.
2. Pull the cross pin away from the shaft. Rotate $\frac{1}{4}$ turn. Seat in shallower detent parallel to the shaft.

To re-enable fertilizer drive:

3. Pull the cross pin away from the shaft, and rotate it $\frac{1}{4}$ turn, seating it in the deeper detent perpendicular to the shaft.

Note: The pin does not need to fully seat at this time. It automatically drops into full engagement at the next movement of the ground drive.

4. Re-mount any removed guards.

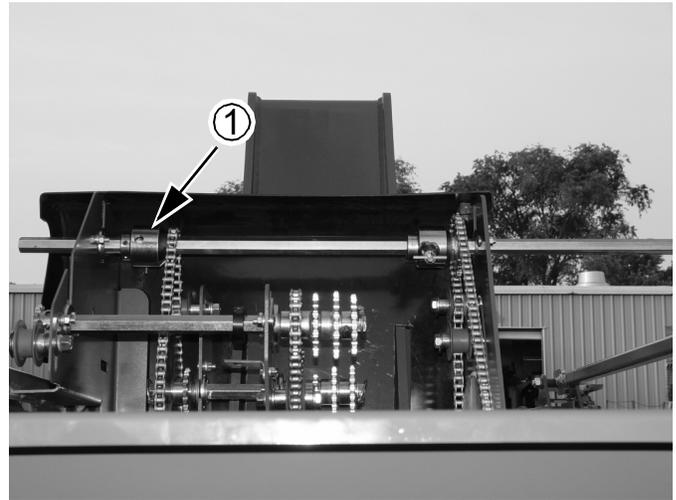


Figure 94
Fertilizer Drive Clutch

22611

Fertilizer Rate Calibration

Calibration is strongly recommended. Fertilizer density and can granularity can be substantially different from the material used to generate the charts.

The V300F has a diverter on each fertilizer meter, which send metered material to a calibration tray:

| | | | |
|---------------|-------------|----------|-------------|
| Tray Capacity | 37.3 liters | 1.06 bu. | 1.32 cu.ft. |
|---------------|-------------|----------|-------------|

The V300F includes a calibration bag for weighing samples, and a spring scale:

| | | |
|----------------|--------------|----------------|
| Scale Capacity | 2.5-to-25 kg | 5-to-50 pounds |
|----------------|--------------|----------------|

The spring scale requires a sample of at least 2.5 kg or 5 lbs for useful precision. Typically, this requires simulating at least $\frac{1}{10}$ hectare or acre. If you have a scale accurate at lower weights, you can use a smaller sample size.

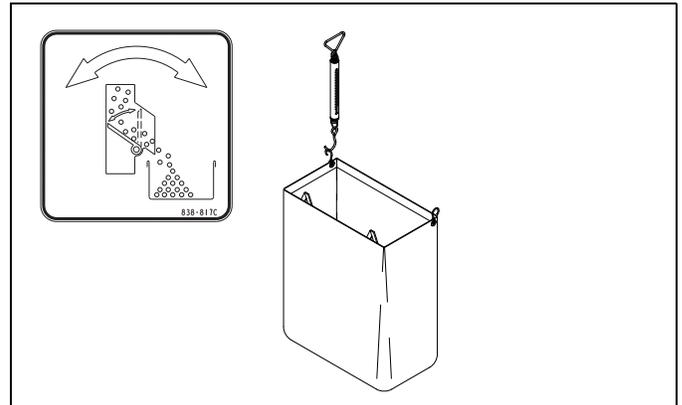
These instructions presume a calibration using the supplied accessories.

Refer to sample data and formulas at right.

1. Correct for density, if that step was completed.
2. Consult the fertilizer rate chart in the Seed Rate Manual.
3. Set the Range, Driving and Driven sprockets.
4. Using the rate chart, and the crank revolutions table on page 74, determine how many crank revolutions are required to generate a measurable sample size.
5. Engage the clutch for the fertilizer drive. See page 86.
6. If not already done, disengage the clutch for main seed drive (see page 77).
7. If not already done, adjust the seed/fertilizer divider for the intended field operations (see page 33).
8. Place about 50 liters (20kg, 40 lbs, 2 cu.ft, or 1.5bu) of material in the fertilizer box.

Refer to Figure 95

9. Rotate the latch ① and remove the calibration tray ②. Empty and clean it. Re-insert it with the opening facing up.



Example:

Desired Application Rate: **128 kg per hectare**
Expected planting speed: **7 kph**

Density-corrected rate: **182 kg/Ha**

Range: **High (16T)**
Driving sprocket: **17T**
Driven sprocket: **20T**

Expected sample size for $\frac{1}{10}$ hectare: **12.8 kg**

Crank revolutions for $\frac{1}{10}$ hectare: **320**

Recommended crank rpm: **112**

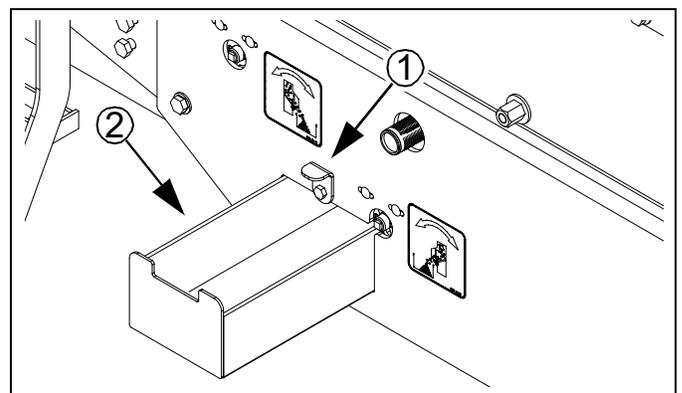


Figure 95
Calibration Tray Removal

27252

10. Make sure the calibration bag is empty and clean. Hang it from the scale, and adjust the knurled disk on the top of the scale until the scale reads zero (0).

Refer to Figure 96 - The diverter shaft for the fertilizer box is behind and above the calibration tray.

11. Remove the calibration crank from its storage location on the ground drive.
12. Position the square socket of the *handle* end of the crank over the calibration shaft index collar for the fertilizer box. Push in and rotate the shaft counter-clockwise to set the diverter gates to send material to the calibration tray.
13. Also use the crank on the *seed* diverter shaft to close the gates, so that no seed is mixed with the fertilizer sample. See page 79.
14. Raise the drill openers and install lift locks.

Refer to Figure 97

15. Position the hex socket end of the calibration crank on the ground drive contact wheel shaft, and rotate the shaft counter-clockwise 3 turns. This is to ensure that the meters are full of material and metering at the current rate.
16. Remove the calibration tray. Empty it into the main seed box, and re-insert it (open side up).
17. Rotate crank counter-clockwise. Stop after the first two turns and check that material is flowing from all meters. Slowly remove the tray and check for comparable seed piles.

Continue rotating, at an rpm that simulates the expected application speed (see table on page 74).

Stop periodically. Check that the tray is not over-full.

Stop when the count (from step 4) is reached.

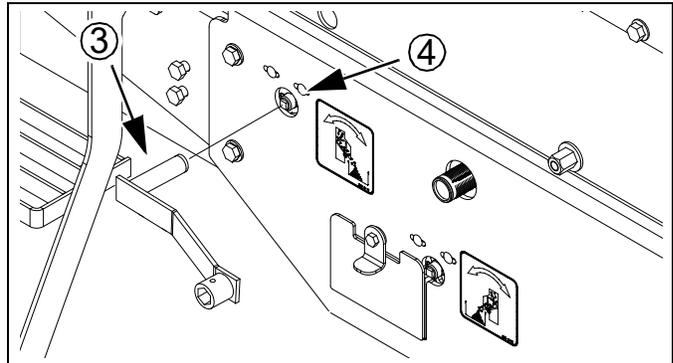


Figure 96
Fertilizer Diverter Shaft

27254

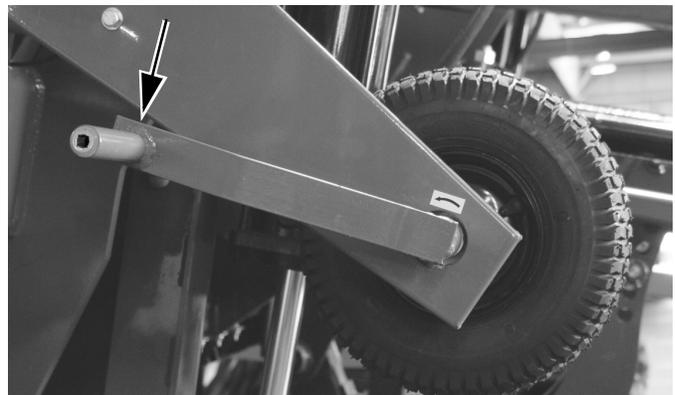


Figure 97
Calibration Crank Installed

22613

18. Carefully remove the calibration tray. Empty it into the calibration bag. Weigh the bag.

Note: If the scale was “zeroed” for the bag weight at step 10, the scale reading is the fertilizer weight only.

19. Calculate the rate for a full hectare or acre. Figure the difference between the measured rate, and the original target rate (not the density-corrected rate).

20. From the current sprocket setting in the chart, move up or down in the chart by this difference.
- If the sample rate was high, adjust down.
+ if the sample rate was low, adjust up.

Note: If the sample rate was high, it may be more convenient to use the rate adjuster to reduce it, rather than changing sprockets.

21. If the change was significant, retest at new setting.

22. Empty the bag into the fertilizer box.

23. Re-insert the tray facing down (to prevent collection of debris), and swing latch down to secure it.

24. Using the crank handle, push in and turn the fertilizer meter diverter shaft clockwise, back to normal operating position.

When drilling, check material rate by noting acres drilled, amount of material added to drill and material level in drill box. If you are applying more or less than desired, adjust rate slightly to compensate for field conditions.

Example:

Sample weight: **13.5 kg**

Full hectare rate: $10 \times 13.5 = 135 \text{ kg}$

Target rate: **128 kg**

Difference: **7 kg**

Sample weight was: **high**

Previous chart rate was: **182.7**

Subtract **7** from previous setting

New chart rate: **175.7**

Closest chart rate is: **174.0**

Use new settings of:

Range: **High**

Driver: **17T**

Driven: **21T**

Adjuster Method:

Sample was $7/128 = 5.5\%$ high

Reduced rate as a percentage: $100 - 5.5 = 94.5\%$

Adjuster setting for $94.5\% = 84.5$

Use new sprocket settings, or adjuster 84.5, and retest.

Row Unit Adjustments

Refer to Figure 98 (which depicts a row unit fully populated with all optional accessories supported for use with the V300 and V300F drill)

From front to back, a Great Plains 00 Series row unit can include the following capabilities (some optional):

1. Opener height adjustment: standard
If a few rows need to run deeper, such as in tire tracks, the arm's pivot point may be lowered. See "**Opener Height**" on page 91.
2. Single Down Pressure Spring: standard
Each row unit is mounted on the drill as a pivoting arm which allows the row unit to independently move up and down. The adjustable spring provides the force to get the row unit and attachments into the soil. See "**Row Unit Down Pressure (Spring)**" on page 91.
3. Disc Blades: standard, 2 per row unit
Double disc blades open a furrow, creating the seed bed. Spacers adjust the blades for a clean furrow. See "**Disk Blade Adjustments**" on page 92.
4. Seed delivery tube: standard
No adjustments are necessary.
5. Disk Scraper: standard
In sticky soils, a scraper helps keep the opener disks operating freely. See "**Disk Scraper Adjustments**" on page 92.
6. Seed firmer: seed flap (not shown) standard:

Seed-Lok™ firming wheel (optional, shown)
Improves seed-soil contact. See "**Seed-Lok™ Seed Firmer Lock-Up**" on page 93.
7. Press wheels: standard (choice of types)
These close the seed trench. The wheels also support the free end of the row unit, and provide the primary control over seeding depth. See "**Opener Depth (Press Wheel Height)**" on page 94.

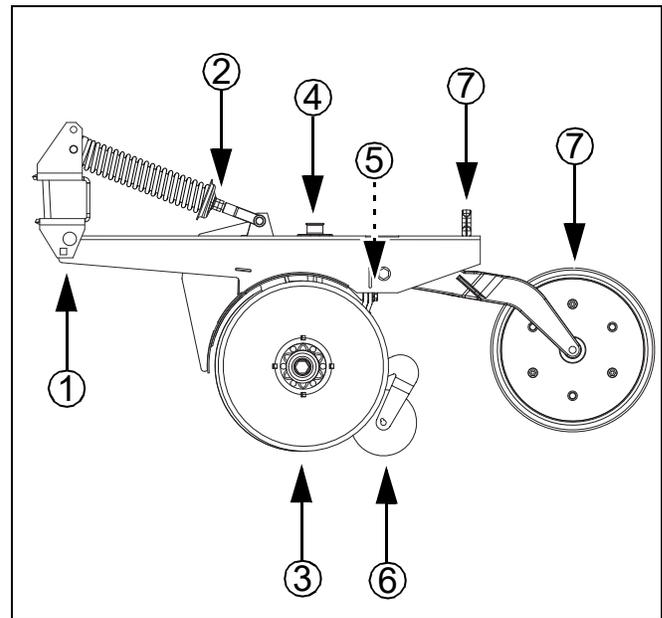


Figure 98
00 Series Row Unit

26382

IMPORTANT !

Do not back up with row units in the ground. To do so will cause severe damage and row unit plugging.

Opener Height

The depth to which the opener disk blades penetrate the soil is controlled in front by the tool bar and pivot (opener height), and in the back by the press wheel height.

If the actual ground level is lower for some rows, such as those in tire tracks, you can lower that row unit by lowering the pivot point.

Refer to Figure 99

1. Raise the drill just enough to relieve tension in the down-pressure spring.
2. Remove the bolt from the upper hole ①.
3. Re-position the arm at the lower hole ②, and secure with bolt.

Note: No spring tension or position adjustment is required. The pivot holes are designed for neutral effect on spring tension. The bolt at the top end of the spring uses a hole that depends on spring length, and not opener height.

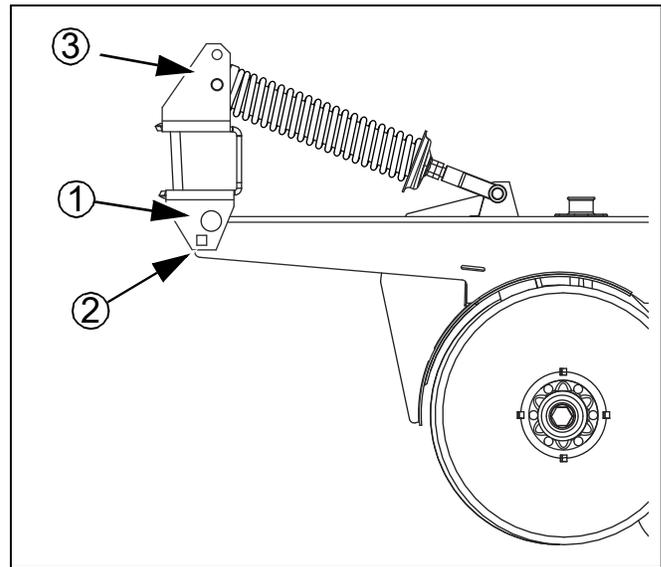


Figure 99
Pivot Point Bolt Holes

26382

Row Unit Down Pressure (Spring)

For planting in tire tracks, and no-till conditions, you can increase spring pressure on individual or on all openers. Adjust the spring in conjunction with the sub-frame down-force, and opener height, to keep the top of the row unit parallel to the ground.

To set all rows to a higher force, see “**Hydraulic Down Pressure**” on page 36.

Refer to Figure 100 and Figure 101

To increase spring pressure:

1. Loosen jam nut ① at lower end of opener spring.
2. Tighten flange against spring tension.

Note: Each cm adjustment adds about 9 kg of force at opener disk (approximately 13 pounds per $\frac{1}{4}$ in). Do not tighten nut more than 2.5 cm (one inch).

3. After adjusting, lock flange nut in place with jam nut.

The length ② of the spring is factory-set to: 33.8cm ($13\frac{5}{16}$ in).

The reference points for this length are the center of the upper/front clevis pin ③ and the base of the lower/rear spring stop cup ④.

The factory preset length is recommended for conventional till and min-till conditions. Shorten it for rows in tire tracks or more difficult min-till conditions. The minimum recommended length is:

31.3cm ($12\frac{5}{16}$ in).

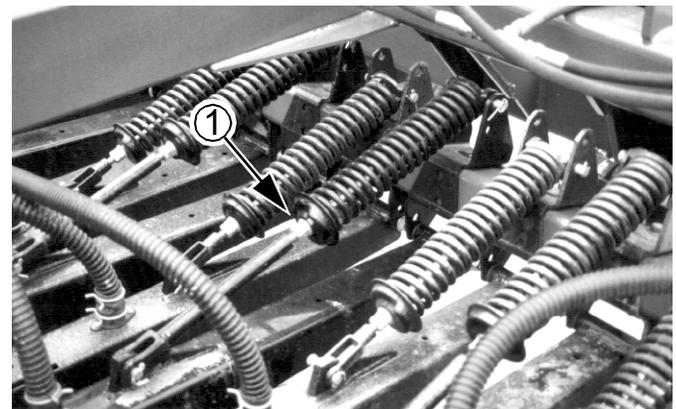


Figure 100
Row Unit Spring Tension

17158

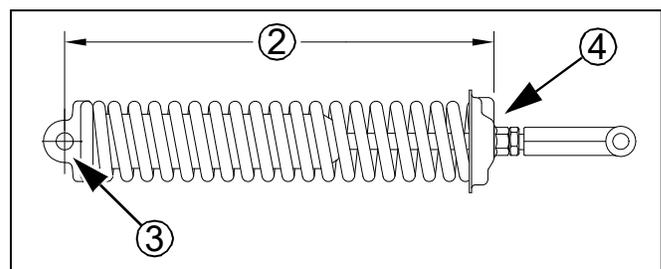


Figure 101
00 Series Spring Length

26454

Disk Blade Adjustments

Opener disc angle and stagger is not adjustable, but disc-to-disc spacing is, and may need attention as discs experience normal wear. Spacers will need to be reset when blades are replaced.

Refer to Figure 102

The ideal spacing causes the blades to be in contact for about one inch. If you insert two pieces of notebook paper between the blades, the gap between them should be 0-to-4.4cm (0 to 1.75in).

If the contact region is significantly larger or smaller (or there is no contact at all), it needs to be adjusted by moving one or more spacer washers. If the contact region varies with blade rotation, one or both blades is likely bent and in need of replacement.

Adjusting Disc Contact

CAUTION

Row unit disk blades may be sharp. Use caution when making adjustments in this area.

Refer to Figure 103

1. Raise the drill and lock it up by moving the Transport/Field handle to TRANS.
2. Remove the bolt retaining the opener disc on one side. Carefully remove the disc, noting how many spacers are outside the disc and inside the disc. Do not lose the hub components and spacer washers.
3. To reduce the spacing between the discs (the normal case), move one spacer washer from the inside to the outside of the disc.
4. Re-assemble and check disc contact.

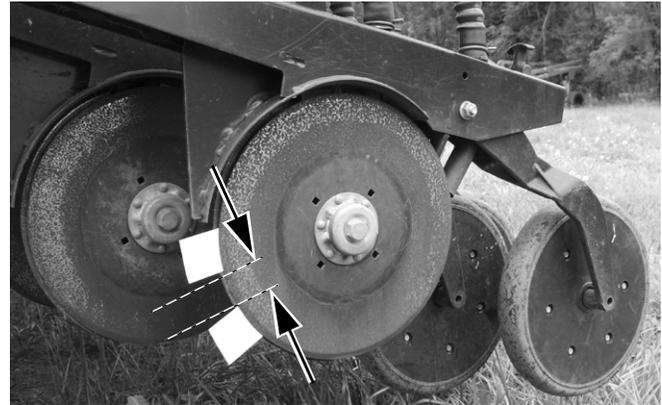


Figure 102
Checking Disk Contact

26451

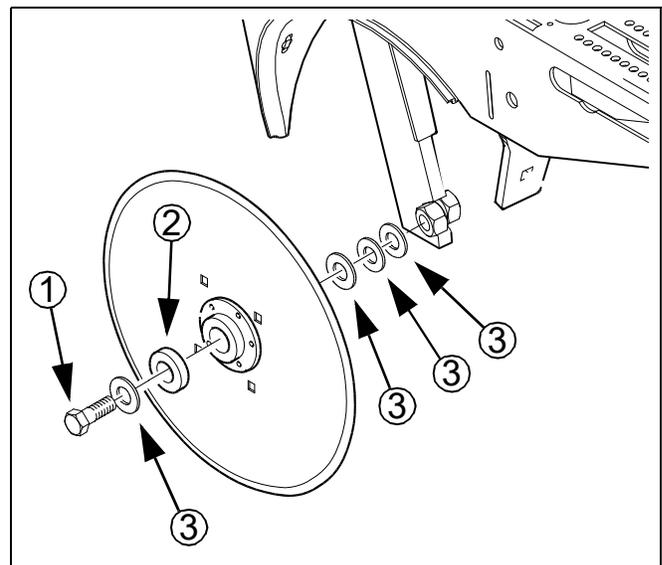


Figure 103
Adjusting Disk Spacers

26385

Disk Scraper Adjustments

To keep opener disks turning freely, dirt scrapers are mounted between disks to clean as disks rotate. Standard 00 Series row units include a double-disk slotted scraper.

Refer to Figure 104

As field conditions vary, scrapers may need to be adjusted. In damp conditions, lower scrapers. If openers are not turning freely, raise scrapers. To adjust, loosen bolt and move scraper as needed.

CAUTION

Row unit disk blades may be sharp. Use caution when making adjustments in this area.

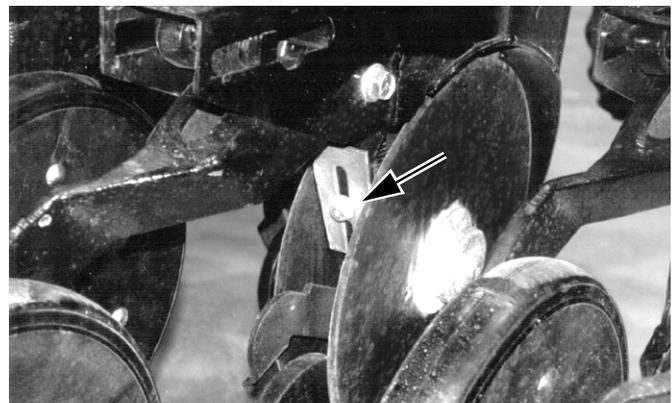


Figure 104
Opener Disk Scraper

16163

Seed Firmer Adjustments

00 Series row units include a seed flap, and an optional Seed-Lok seed firmer.

The seed flap requires no adjustment, but may need to be replaced if worn, and may need to be shortened if an optional seed firmer is added after initial delivery.

CAUTION

Row unit disk blades may be sharp. Use caution when making adjustments in this area.

Seed-Lok™ Seed Firmer Lock-Up

Optional Seed-Lok firming wheels provide additional seed-to-soil contact. The wheels are spring loaded and do not require adjusting. In some wet and sticky conditions the wheels may accumulate soil. To avoid problems associated with this, you can lock-up the firmers.

Refer to Figure 105 (shown with an opener disk removed for clarity - this task can be performed with disks mounted)

To lock up Seed-Lok wheels:

1. Pull catch wire aside ①.
2. Pull firming-wheel arm ② up and release wire to catch arm.

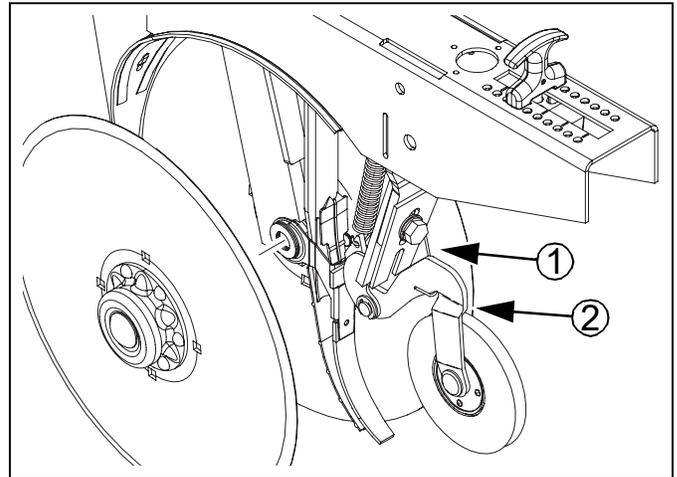


Figure 105
Seed-Lok™ Lock-Up

27122

Opener Depth (Press Wheel Height)

Refer to Figure 106

After the opener pressure is set, opener depth ① is controlled by the press wheel adjustment. Attached to the rear of each opener is one of several optional press wheels. The press wheels close the furrow and gently press soil over the seed while also providing depth control for the opener. To adjust the position of the press wheel, which automatically changes the seeding depth of the opener, lift the “T” handle ② located on top of the opener and slide it forward ④ or rearward ⑤ until the seeding depth is correct.

Moving the handle:

④ forward plants shallower, and

⑤ rearward plants deeper.

A spring loaded pin holds the “T” handle at the setting to maintain the proper depth. Lift the opener frames slightly to take the pressure off the “T” handles when adjusting the press wheel depth.

Note: The opener pressure setting controls the soil firming pressure on the press wheel as well as the disk penetrating force. **DO NOT** use more opener down pressure than necessary to obtain the desired opener penetration and to maintain the proper firming action over the seed. Set the planting depth with the depth controlling press wheel and only use enough opener pressure to cut the proper seed groove and maintain the desired soil firming action. Excessive opener force will lead to excessive wear and damage of the opener components.

If press wheels are lifting off ground, increase hydraulic down pressure.

If press wheels are digging into ground, reduce hydraulic down pressure.

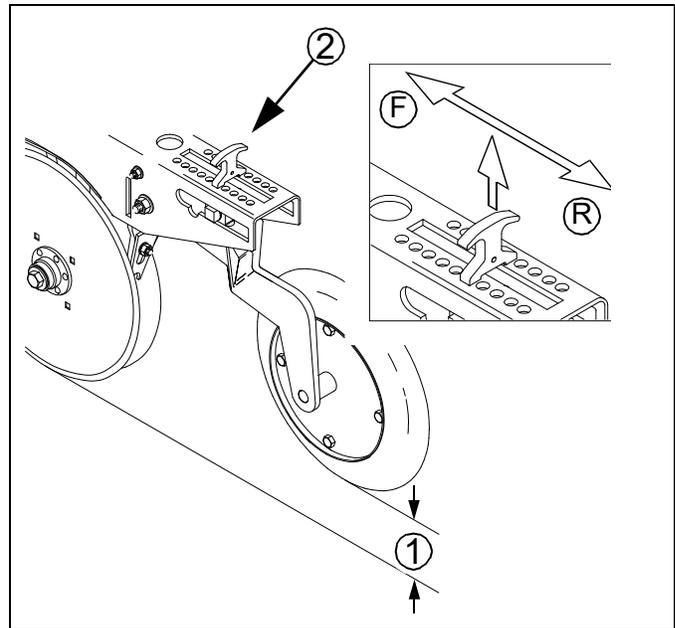


Figure 106
Opener Adjustment

15659



Troubleshooting

| Problem | Solution |
|--|---|
| Drill raising and lowering rough and uneven | Check for too little play in slide-block area. Refer to <i>Maintenance</i> , “Maintenance and Lubrication,” See “ Leaf Spring Adjustment ” on page 102. |
| | Check for air trapped in hydraulic lines or cylinders. Bleed hydraulics if necessary. See “ Bleeding Hydraulic Systems ” on page 97. |
| Coulters not going deep enough | Retract tongue cylinder and re-check level. See “ Leveling Drill ” on page 19 |
| | Add weight to hitch frame. See “ Frame Weights ” on page 73. |
| | Too much weight is being used by openers; set drill openers to lighter spring setting. See “ Row Unit Down Pressure (Spring) ” on page 91. |
| | Shorten coulter springs to increase down pressure. See “ Coulter Down-Force ” on page 72. |
| Drill not tracking behind coulter | Check if coulter is aligned with openers. |
| | Check that pivot-lock tubes are in drilling position. See “ Pivot Lock ” on page 32. |
| | Check if leaf spring is out of alignment. See “ Leaf Spring Adjustment ” on page 102. |
| Openers plugging in no-till conditions | Drill across standing residue. |
| | Check opener disk blade spacing. See “ Adjusting Disc Contact ” on page 92. |
| Drill seeding too deep | Change the press-wheel setting. See “ Opener Depth (Press Wheel Height) ” on page 94. |
| Uneven seed spacing or uneven stand | Check for plugs or plugging in seed cups. |
| | Check for ground drive skidding or skipping. Causes can include low tire pressure, packer wheels carrying too much weight, coulter or opener forces set too high, coulter or openers running too deep, and damp conditions making the soil too slick. |
| | Ground speed too high. Reduce ground speed. |
| | Check that opener disks turn freely. |
| | Use a faster drive type and a lower seed-rate-handle setting. See “ Material Rate Adjustments ” starting on page 74. |
| | Increase opener down pressure so opener disks penetrate. See “ Opener Down-Pressure ” on page 73. |
| | Check for trash or mud build-up on optional Seed-Lok® wheels. |
| Opener disks not turning freely | Check for trash or mud build-up on disk scrapers. Re-adjust scrapers. See “ Disk Scraper Adjustments ” on page 92. |
| | Check if scrapers are too tight, restricting disk movement. See “ Disk Scraper Adjustments ” on page 92. |
| | Check disk bearings. |
| | Check opener frame for possible damage. |
| | Check if opener disks turn freely by hand but not in field. If so, reduce down pressure on openers. See “ Opener Down-Pressure ” on page 73. |
| | Check press-wheel adjustment for seeding depth. See “ Opener Depth (Press Wheel Height) ” on page 94. |

| Problem | Solution |
|---|---|
| Actual seeding rate is different than desired | If not already performed, calibrate. |
| | Check marker extension (page 25). If too short, overlap results in over-seeding. If too long, gaps result in under-seeding. |
| | Check tire sizes and pressures, listed at “ Tire Inflation Chart ” on page 115. |
| | Check for build-up of seed treatment in seed cup. Disassemble cups and scrape off any build-up. |
| | Check seed-rate setting. Seeding rates will vary with seed weight and size. See “ Material Rate Adjustments ” starting on page 74. |
| Excessive seed cracking | Use a faster drive type and a lower seed-rate-handle setting. |
| | Position seed-cup handles to a lower notch (higher number). |
| Monitor does not measure accurately | Check tire sizes and pressures against “ Tire Inflation Chart ” on page 115. |
| | Check seeding operation for excessive overlap or gaps between passes. |
| | Consider soil conditions—loose soil and slippage will cause variations in acres registered. |
| | Recalibrate monitor. |
| Uneven seeding depth | Check that openers have sufficient down pressure. See “ Opener Down-Pressure ” on page 73. |
| Press wheel not compacting soil as desired | Reset press-wheel depth. See “ Opener Depth (Press Wheel Height) ” on page 94. |
| | Increase down pressure on openers. See “ Opener Down-Pressure ” on page 73. |
| Press wheels or openers plugging | Consider field conditions. Drilling in damp or wet conditions may increase this problem. |
| | Reduce down pressure on openers. See “ Opener Down-Pressure ” on page 73. |
| | Do not back up or stop and allow drill to roll back with openers in ground. |
| | Check optional Seed-Lok wheels. |
| Seed-cup sprockets locked up or twisted seed-cup shaft | Check for foreign material lodged in seed-cup sprocket. |
| | Look for dried liquid insecticide in seed cups. Remove build-up by disassembling each cup and scraping turning surfaces. |
| Chain-Debris/retainer clip | Be sure retainer clip open end is facing the opposite way of chain travel. |



Maintenance and Lubrication

Maintenance

Proper servicing and adjustment are key to long life of any farm implement. With careful and systematic inspection, you can avoid costly maintenance, time and repair.

Always turn off and remove tractor key before making any adjustments or performing any maintenance.

WARNING

You may be severely injured or killed by being crushed by the falling implement. Always have transport locks in place and frame sufficiently blocked up when working on implement.

WARNING

Escaping fluid under pressure can have sufficient pressure to penetrate the skin. Check all hydraulic lines and fittings before applying pressure. Fluid escaping from a very small hole can be almost invisible. Use paper or cardboard, not body parts, and wear heavy gloves to check for suspected leaks. If injured, seek medical assistance from a doctor that is familiar with this type of injury. Foreign fluids in the tissue must be surgically removed within a few hours or gangrene will result.

Only trained personnel should work on system hydraulics!

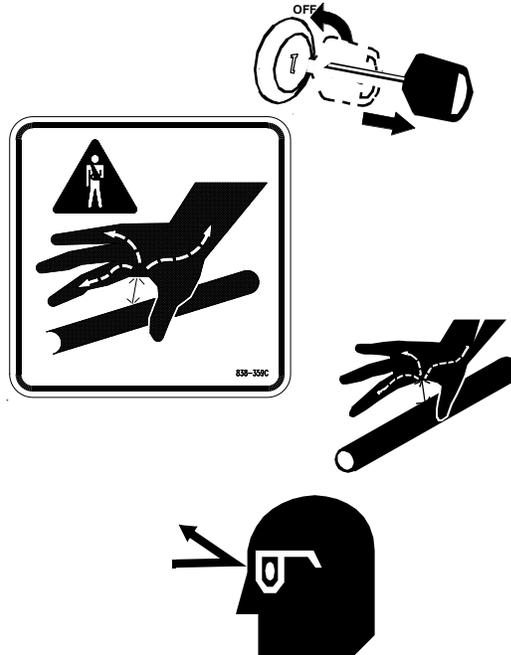
1. After using implement for several hours, check all bolts to be sure they are tight.
2. Inflate tires as specified under “**Tire Inflation Chart**” on page 115.
3. Replace any worn, damaged or illegible safety decals. Obtain new decals from your Great Plains dealer. See “**Safety Decals and Reflectors**” on page 6 for decal placement.
4. Check drill drive chains for wear. Replace if necessary. Adjust idlers to remove excess slack from chains.

Bleeding Hydraulic Systems

For safe and smooth operation, the hydraulic systems must be free of air. The hydraulic systems should be bled during initial implement set-up. If not, or if you repair replace a hydraulic component, bleed the hydraulics.

IMPORTANT !

Bleed only at:
 JIC (Joint Industry Conference, 37° flare) or
 NPT (National Pipe Thread, tapered thread) fittings.
 Never bleed at:
 ORB (O-Ring Boss) or
 QD (Quick Disconnect) fittings.



IMPORTANT !

JIC fittings do not require high torque. JIC and O-ring fittings do not require sealant. Always use liquid pipe sealant when adding or replacing (NPT) pipe-thread fittings. To avoid cracking hydraulic fittings from over tightening, and to keep tape fragments from clogging filters, do not use plastic sealant tape.

Check/Clean In-Line Filter

Refer to Figure 107

When performing maintenance on the hydraulics, disassemble, inspect, and as needed clean or replace the in-line filter. It is located on the down-pressure control valve.

Use two 38mm (1.5in) open-end or adjustable wrenches to open the filter body. Carefully crack the JIC end first, to release any pressure.

The replacement 50 micron filter element is Great Plains part 810-553C.

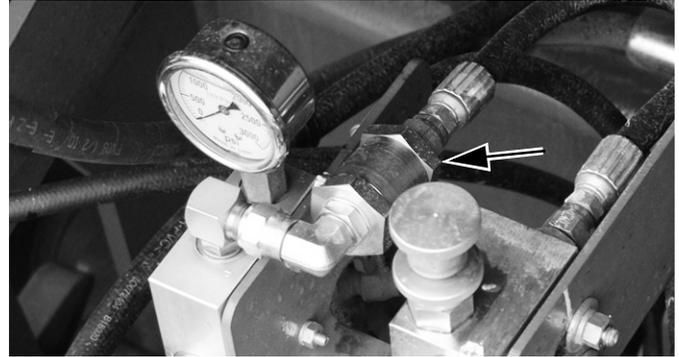


Figure 107
In-line Filter

27267

Bleeding Tongue Cylinder

1. Check hydraulic fluid in tractor reservoir and fill to proper level. Add fluid to system as needed. Tongue cylinder capacity is 1.89 liters (one-half gallon).
2. Raise and safely support hitch, transport frame and front tongue.

Refer to Figure 108

3. Unpin rod end ① of tongue cylinder. Block, wire or otherwise safely support cylinder so when rod end is fully extended it does not contact anything.
4. Cycle cylinder completely in and out at least three times to purge air from cylinder and hoses.
5. Fully extend cylinder and re-pin rod end.
6. Recheck tractor reservoir and fill to proper level.

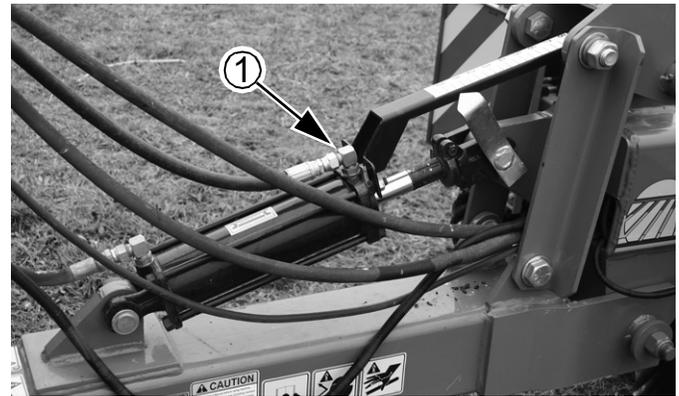


Figure 108
Tongue Cylinder

27176

Bleeding Transport Lift Cylinders

The transport-lift cylinders are rephasing cylinders and require a special procedure for bleeding air from the circuit. Read and follow procedure carefully. Cylinders do not function properly with air in the hydraulic circuit.

1. Check hydraulic fluid in tractor reservoir and fill to proper level. Add fluid to system as needed. Transport-lift-cylinder capacity is about 7.57 liters (2 gallons).
2. Jack up and support hitch frame.
3. Set hydraulic circuit for lift and down-pressure to Float.

Refer to Figure 109

4. Disable the down-pressure cylinder:

Release lock disk ① and set down-pressure valve to zero (turn knob ② fully counter-clockwise).

Release lock disk ③ and close bypass valve (turn knob ④ fully clockwise).

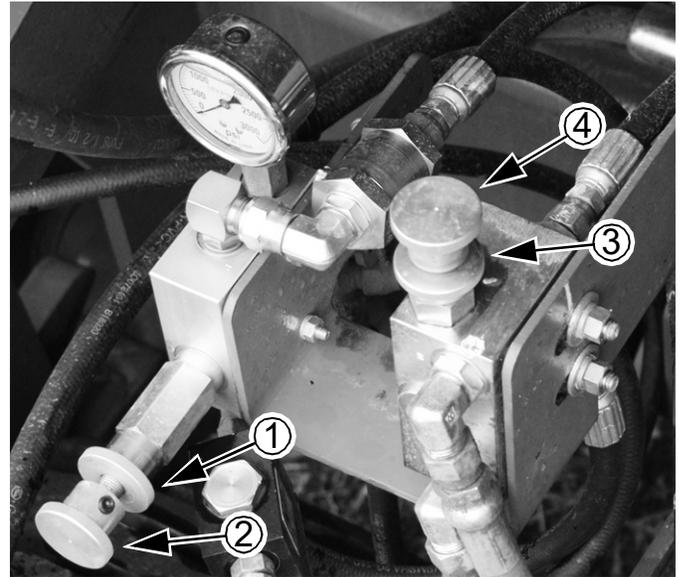


Figure 109
Down-Pressure Valves

27267

Refer to Figure 110

5. Remove the retaining clips from the pins at both ends of the cylinders for both transport lifts.
6. Turn cylinders to a position where rod ends are higher than base ends. Support cylinders in a safe location.
7. Start tractor and run engine at idle speed. With rod ends higher than base ends, hydraulically extend cylinders. After cylinder rods are fully extended, continue to hold control lever for one minute before hydraulically retracting cylinders.
8. Repeat step 7 three times to completely bleed system. If air is still trapped in either cylinder, it will operate in jerky, erratic motions. Repeat steps until cylinder movement is smooth and even.
9. Re-pin cylinders to the transport lift.
10. Refill tractor hydraulic-fluid reservoir to proper level.
11. If the down-pressure cylinder is to be bled next, skip to step 12.

If down-pressure cylinder will not be bled at this time, re-calibrate the down pressure (page 22), then restore your preferred pressure setting (page 36).

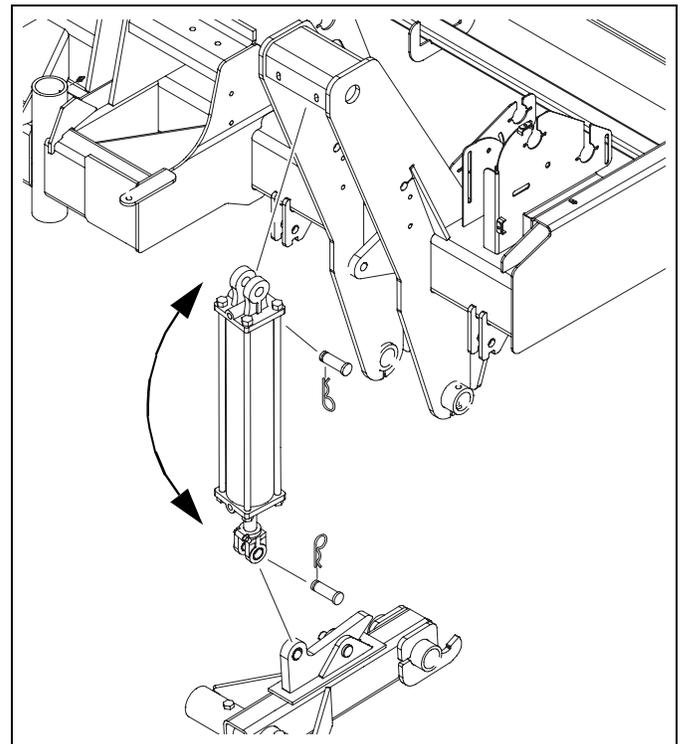


Figure 110
Lift Cylinder Un-Pin & Rotate

27177

Bleeding Down-Pressure Cylinder

Bleed (rephase) the lift cylinders before bleeding the down-pressure cylinder.

Any jacks or stands under the hitch mainframe may be left in place or removed.

12. Raise the drill and install transport locks on lift cylinders only (not down-pressure cylinder). This is to minimize drill movement during the bleed.
13. Set the lift circuit to Float. Shut off the tractor.

Refer to Figure 111

14. Set the down-pressure knob ⑤ to maximum (fully clockwise). With the circuit in Float, there will be no reading on the gauge. Leave the bypass valve closed.

Refer to Figure 112

15. Disconnect both ends of the down-pressure cylinder, and support it with the elbows on top, or with the elbows on one side with hoses down.
16. Activate the lift circuit to fully extend the rod of the down-pressure cylinder. Set the circuit to Float.
17. Crack (slightly loosen) the JIC fitting ⑥ at the elbow of the rod end of the cylinder.
18. Slowly reverse the lever for the hydraulic circuit until oil seeps from the loose fitting. Set the circuit to Neutral and secure the fitting.
19. Continue supplying oil and fully retract the cylinder. Set the circuit to Neutral.
20. Crack (slightly loosen) the JIC fitting ⑦ at the elbow of the base end of the cylinder.
21. Slowly reverse the lever for the hydraulic circuit until oil seeps from the loose fitting. Set the circuit to Neutral and secure the fitting.
22. Set the circuit to Float. Shut off the tractor. Re-install the cylinder.
23. Re-calibrate the down pressure (page 22), then restore your preferred pressure setting (page 36).

Bleeding Tramline Lift Cylinders

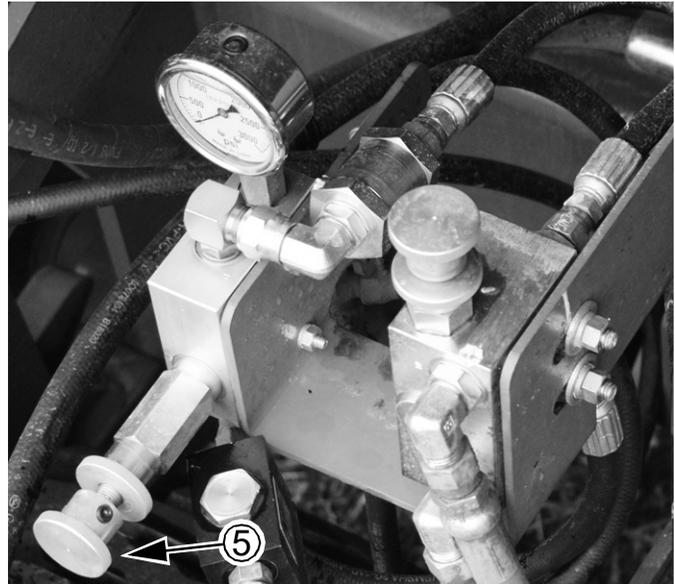


Figure 111
Down-Pressure Valves

27267

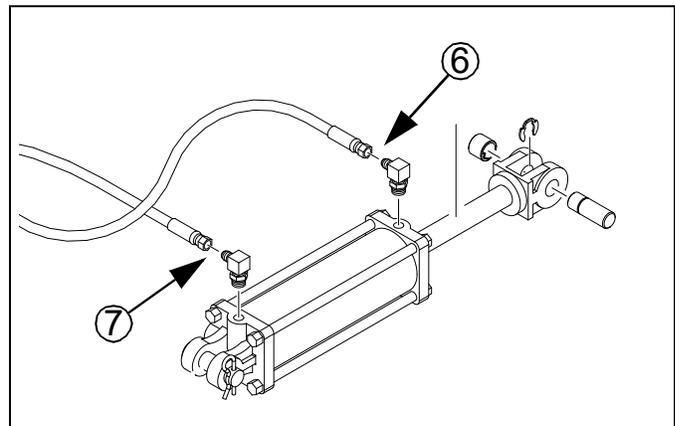


Figure 112
Down-Pressure Cylinder

27160

Marker Maintenance

See also:

“Marker Setup” on page 25,

“Marker Operation” on page 40

Bleeding Marker Hydraulics

CAUTION

You may be injured if hit by a folding or unfolding marker. Markers may fall quickly and unexpectedly if the hydraulics fail. Never allow anyone near the drill when folding or unfolding the markers.

1. Check that tractor hydraulic reservoir is full.

Refer to Figure 113

2. Extend a marker.
3. Loosen hydraulic-hose JIC fittings at rod and base ends of the marker cylinder.
4. Loosen fittings on back side of sequence valve for that side.
5. With tractor idling, activate tractor hydraulic valve to extend marker, until oil seeps out around a loosened fitting. Tighten that fitting.
6. Re-activate (for extend) until oil seeps at another fitting. Tighten it.

Note: The markers are controlled by an automatic sequence valve, which can complicate bleeding. If the marker on the other side begins moving before you intend it, momentarily reverse the lever for the circuit.

7. Reverse the tractor hydraulic valve (to retract) until oil seeps out around the loosened fitting on the other end of the cylinder or sequence valve port. Tighten that fitting.
8. Re-activate (for retract) until there is seepage at the final loose fitting on that side. Tighten the fitting.
9. Fully retract the marker on that side.
10. Repeat step 2 through step 9 for the other side.

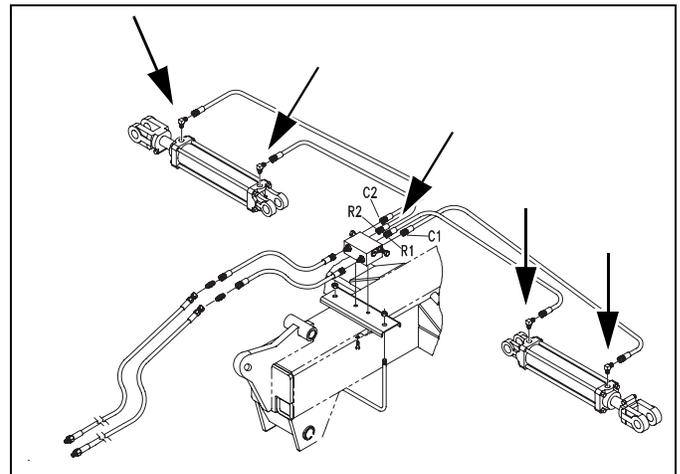


Figure 113
Marker Cylinder Bleed

17873

Leaf Spring Adjustment

Refer to Figure 114

A leaf spring is located just ahead of the vertical pivot. The spring is designed to provide just enough force to keep the hitch square and stable for turning at field ends and to add stability for drilling in rough field conditions. Proper leaf-spring adjustment is important for smooth implement operation.

To adjust properly, square tongue with transport frame, adjust $\frac{3}{8}$ inch U-bolts ① on each side until leaf-spring rollers ② just make contact with roller pads ③ on transport frame.

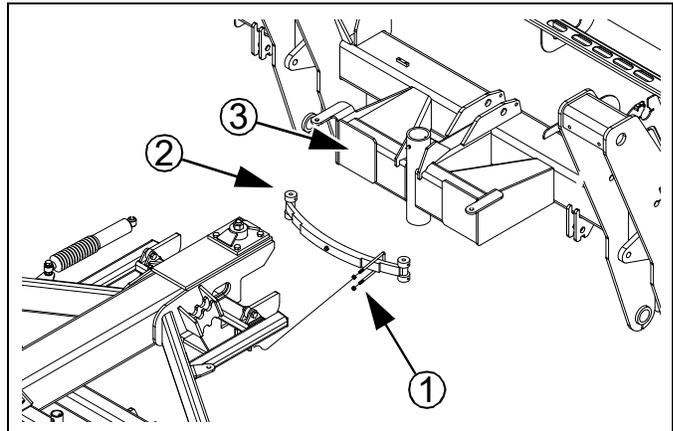


Figure 114
Leaf Spring Adjustment

22619

Chain Maintenance

Inspect and lubricate chains regularly. The slack of new chains tends to increase during the first few hours of operation due to seating. Check slack within the first 8 hours of operation and tighten idlers as necessary.

Refer to Figure 115, which, for clarity, greatly exaggerates slack, and omits the idlers.

1. Measure the span ① for allowable slack:
Locate the longest span of each chain (usually the span which does not run through the idlers). The ideal slack is between 2% and 4% of the span.
For example:
A slack of 1cm is appropriate for a 30cm span.
2. Measure the current slack ②:
Acting at a right angle to the chain span at the center of the span, deflect the chain in both directions with a force of about 4kg (9 lbs). The slack is the distance of the movement.
3. Adjust the idlers for ideal slack.

Whenever mounting a chain, make sure the clip at the removable link is oriented to minimize snags.

Refer to Figure 116

Install clip with open end facing away from direction of chain travel (shown by gray arrows in chain routing diagrams).

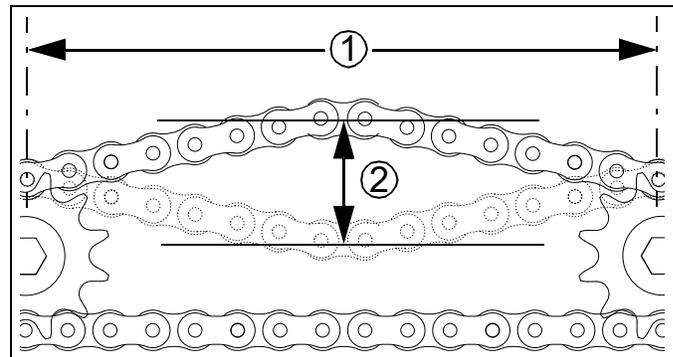


Figure 115
Measuring Chain Slack

27264

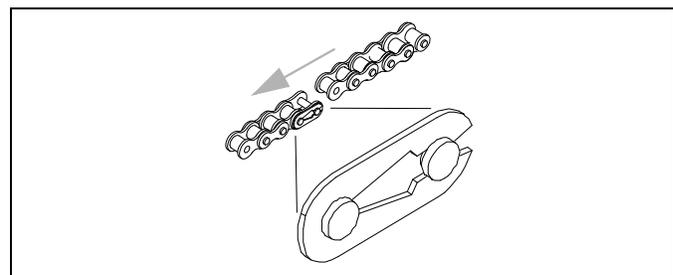


Figure 116
Chain Clip Orientation

26482

Box Cleanout

Main Box Cleanout

Before clean-out, estimate the amount of remaining seed. If less than 37 liters or 1 bushel, you can use the calibration tray for collection. Remove the tray and re-install it open side up. See page 78 for illustrations.

For amounts of seed too large for the calibration tray, spread a tarp or plastic sheet on the ground under the opener seed tubes.

Refer to Figure 117, which depicts the seed cup door handle ① in normal operating position (1).

1. Set the Seed Rate Handle to zero. This moves the seed cup sprockets out of the seed path.
2. At the seed cup for that row, pull the door handle ① out of the operating detent range, and swing it down to position ②.
3. Open the main seed box and use a small brush to sweep seed toward seed cups set to clean-out. If seed does not flow freely, inspect seed cup, hose and seed tubes for obstructions.
4. Wash out the seed box with high pressure water. Prop the lid slightly open until dry.

It is not necessary to operate the seed meter drive shaft for clean-out. With the Seed Rate set to zero, nothing moves inside the seed cups; however, an inspection of the flutes for excess wear and damage does require shaft rotation.

Set the Seed Rate Handles to 100. With openers raised, each gauge wheel can be slowly turned by one person, while another inspects the flutes from the open seed boxes.

Small Seeds Box Cleanout

1. Open lid of each box and scoop out as much seed as possible.
2. To recover remaining seed, place a collection tarp under the seed tubes at the openers.
3. Raise drill.
4. Set seed rate handles to 100.
5. Rotate gauge wheels until no seed flows.
6. If a vacuum cleaner is available, remove any residual seed from top of meters.

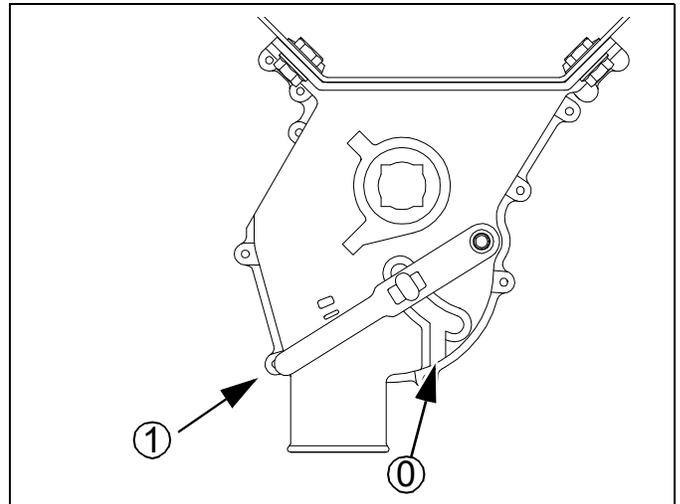


Figure 117
Seed Cup Cleanout

26211

Fertilizer Box Cleanout

If sharing collection devices between seed and fertilizer clean-out, always perform seed clean-out first.

Fertilizers often contain chemicals corrosive to metal. Although stainless steel is used extensively in the fertilizer meter assembly, it is not used above it. After applying fertilizer, empty and clean drill boxes as soon as possible.

Before clean-out, estimate the amount of remaining fertilizer. If less than 37 liters or 1 bushel, you can use the calibration tray for collection. Remove the tray and re-install it open side up. See page 87 for illustrations.

For amounts of fertilizer too large for the calibration tray:

- either remove it via tray in small amounts at a time, or
- scoop it out from above.

In either case, spread a tarp or plastic sheet on the ground under the fertilizer box and use the cleanout door to release the remaining amount.

Clean Out Using Calibration Tray

1. Install tray open side up. See page 87.
2. Set fertilizer rate adjuster to 100.
3. Raise the drill.
4. Set the fertilizer diverter to send material to the tray. See page 87.
5. Rotate the contact drive wheel until tray is full.
6. Empty the tray and re-insert it.
7. Repeat from step 5 until no fertilizer flows.
8. Close diverter. Clean tray. Install open side down. Perform clean out using clean out door, as some fertilizer remains in the box.

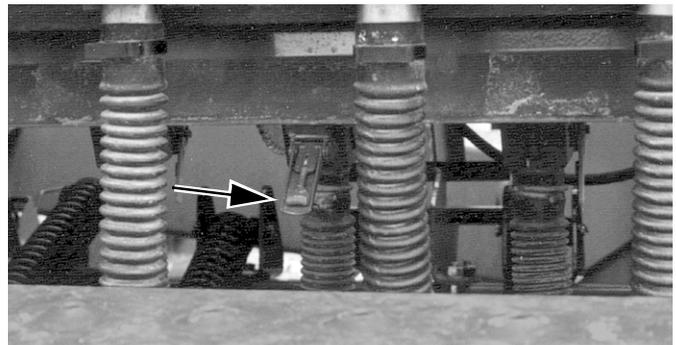


Figure 118
A Fertilizer Cleanout Latch

16376

Clean Out Using Clean Out Door

Refer to Figure 118

1. Unless the tray was used to remove most of the remaining fertilizer, use a small scoop or can to remove as much fertilizer as possible from the drill box.
2. The clean-out door releases material across the entire length of the box. Have collection equipment prepared, such as a tarp or plastic sheet.
3. Release all clean-out latches, and open clean-out door. Leave door open until after washout.
4. Operate contact drive wheel to free fertilizer from meter flutes.
5. Remove collected material.
6. Wash inside of drill boxes with water under high pressure.
7. Let drill boxes dry before closing clean-out doors.

Lubrication

| | | | | |
|---|--|---|--|--|
|  Multipurpose spray lube |  Multipurpose grease lube |  Multipurpose oil lube |  50 | Intervals (service hours) at which lubrication is required |
|---|--|---|--|--|

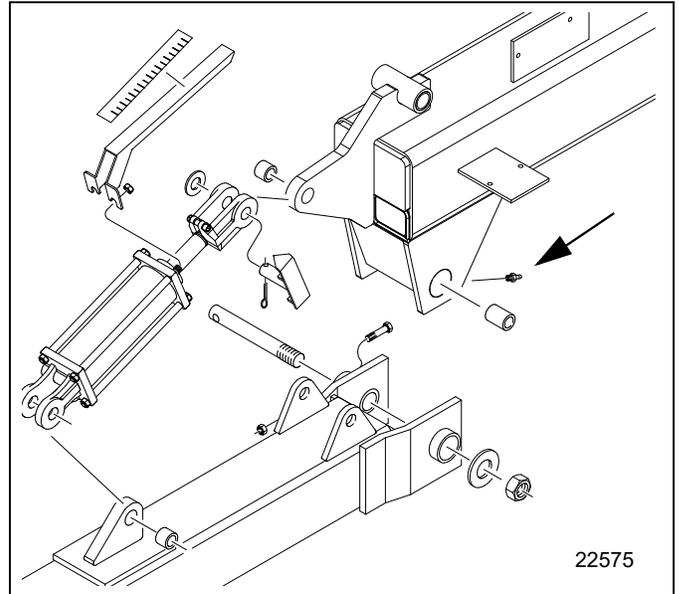
Tongue-Mainframe Pivot

| | |
|---|---|
|  |  8 |
|---|---|

1 zerk behind tongue

Type of Lubrication: Grease

Quantity: Until grease emerges



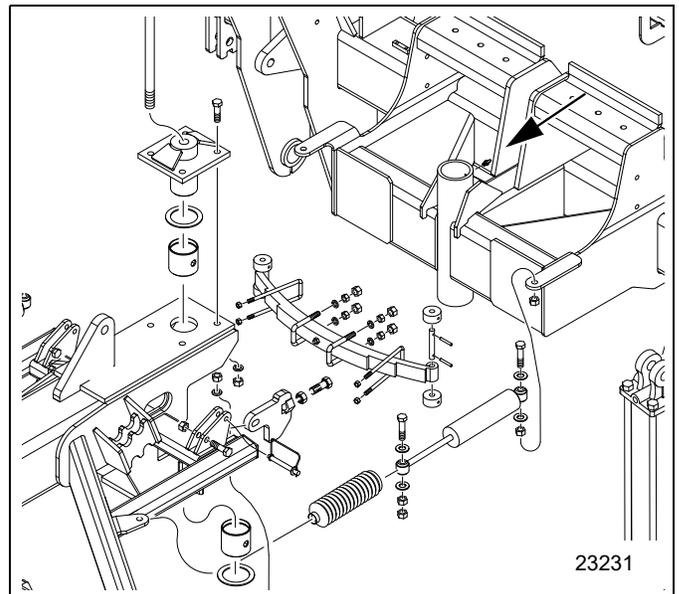
Vertical Pivot Bushing

| | |
|---|---|
|  |  8 |
|---|---|

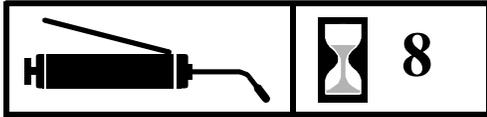
2 zerks behind tube on drill frame

Type of Lubrication: Grease

Quantity: Until grease emerges

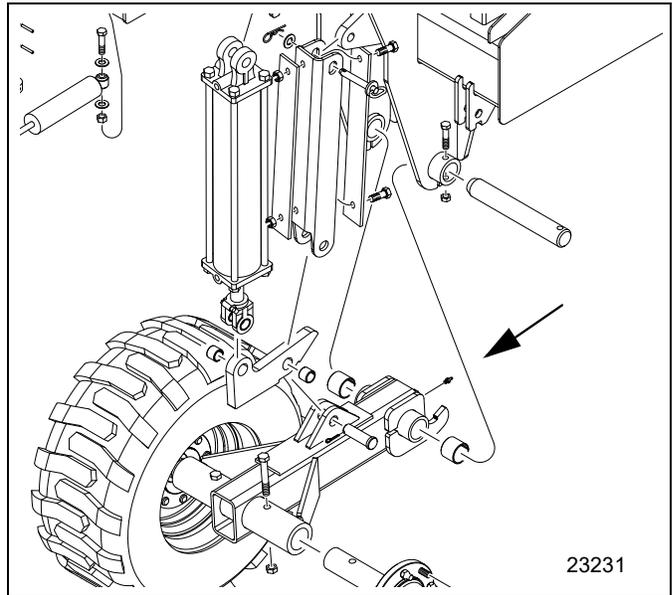


Gauge Wheel Arm Pivots

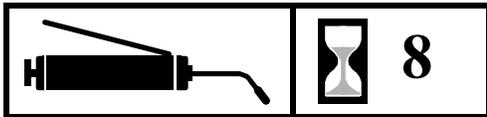


1 zerk each gauge wheel, in tube at arm rear;
2 zerks total

Type of Lubrication: Grease
Quantity: Until grease emerges

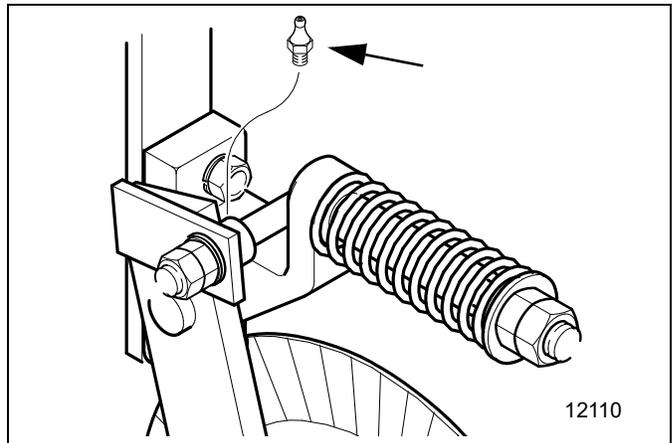


Coulter Swing Arm Pivots

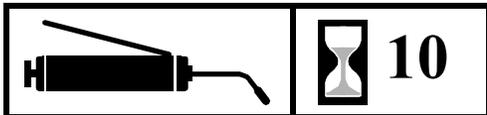


1 zerk each coulter;
19 zerks total

Type of Lubrication: Grease
Quantity: Until grease emerges

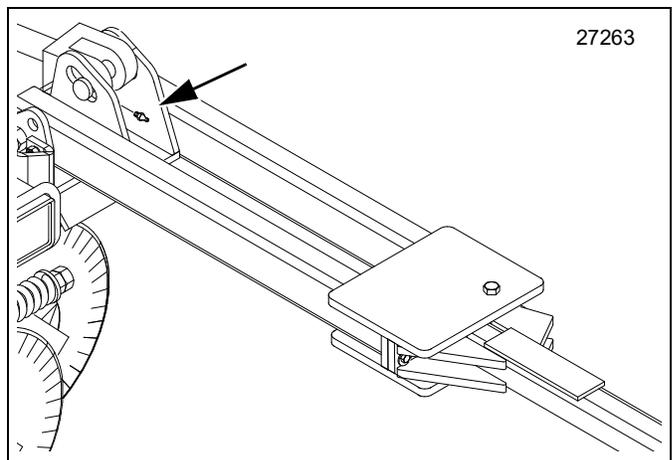


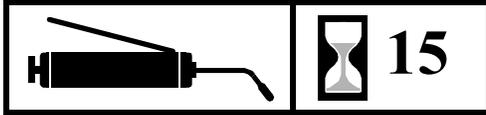
Marker Pivots (Option)



1 zerk each marker arm;
2 zerks total

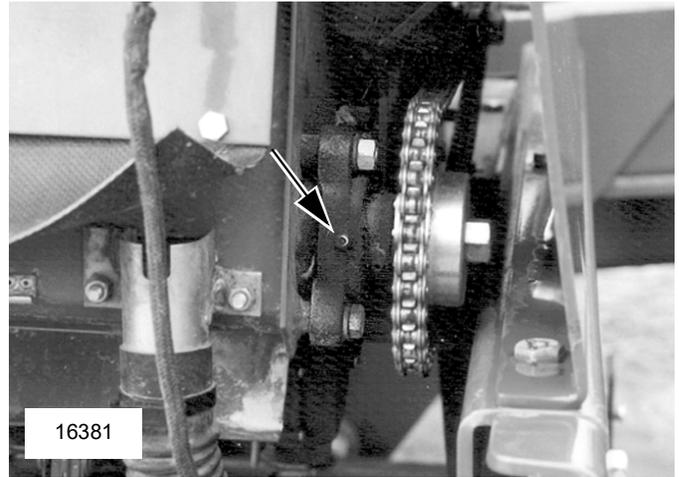
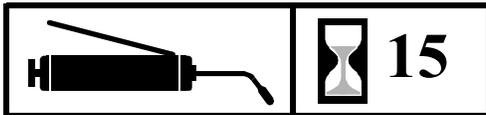
Type of Lubrication: Grease
Quantity: Until grease emerges



Fertilizer Shaft Bearings (Option)

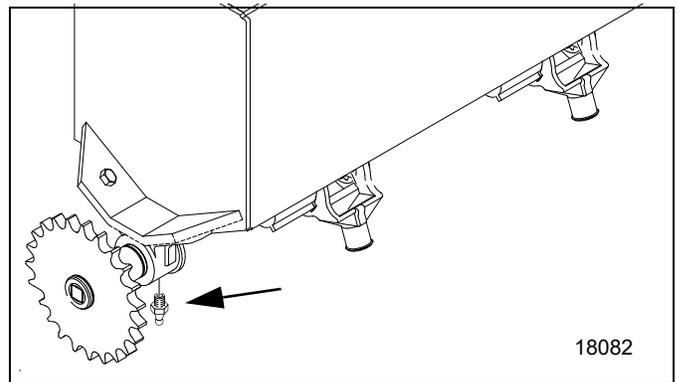
1 zerk at each shaft end, 2 per shaft;
2 total

Type of Lubrication: Grease
Quantity: Until grease emerges

**Small Seeds Shaft Bearings (Option)**

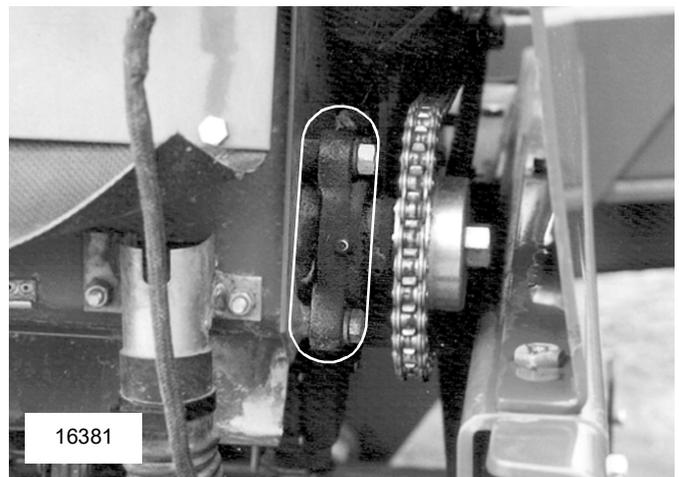
1 zerk at each shaft end, 2 per shaft;
2 total

Type of Lubrication: Grease
Quantity: Until grease emerges

**Fertilizer Felt Barrier Seals (Option)**

1 seal at each shaft end, 2 per shaft;
4 total

Type of Lubrication: Oil
Quantity: Soak seal



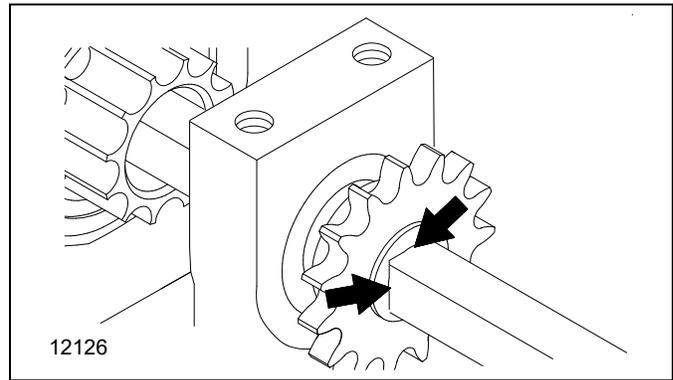
Main Seed Cup Drive Shaft Sprocket



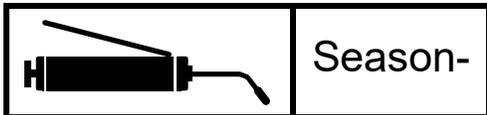
2 sliding sprockets per box - one each side;
4 total

Type of Lubrication: Oil
Quantity: Coat thoroughly

Move the Seed Rate adjustment handle back and forth to get oil back into the square bore. Do this with no seed in seed box, or handle may be difficult to return to zero.

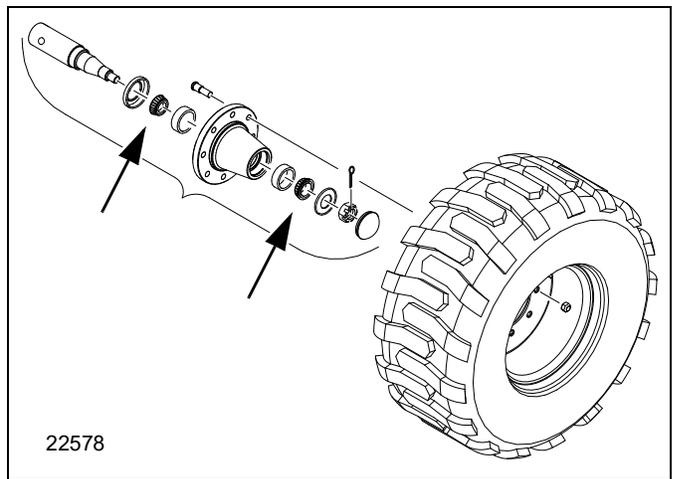


Gauge Wheel Hubs

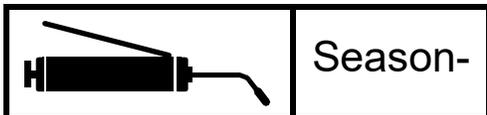


2 bearings each wheel assembly;
8 bearings total

Type of Lubrication: Grease
Quantity: Repack

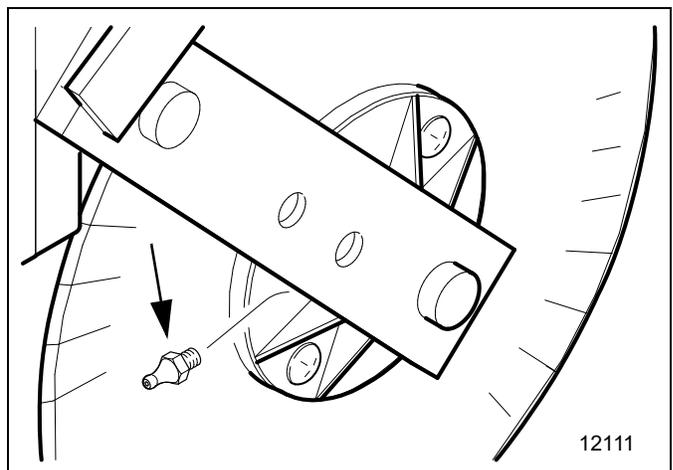


Coulter Hub Bearings



1 zerk each coulter;
19 zerks total

Type of Lubrication: Grease
Quantity: Until grease emerges

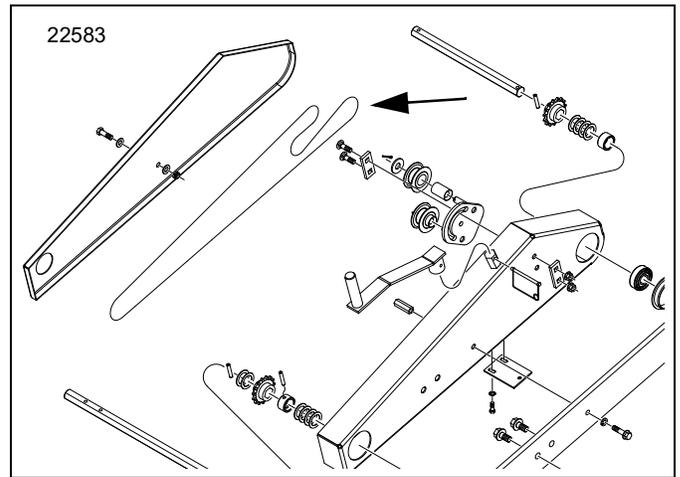


Contact Drive Chain



1 chain

Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

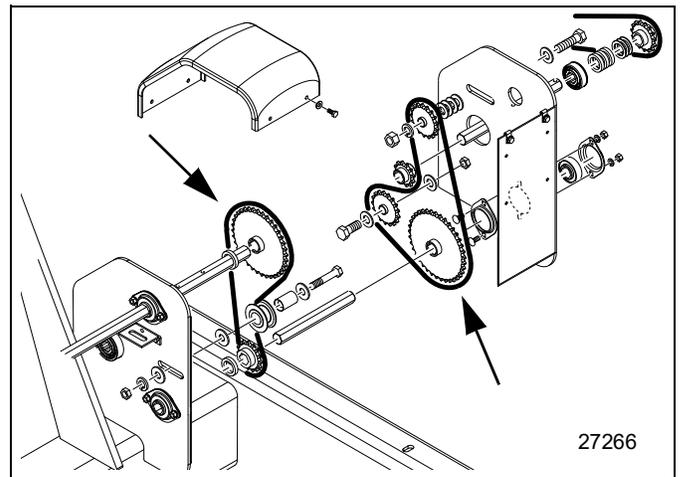


Right Drive Chains



2 chains

Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

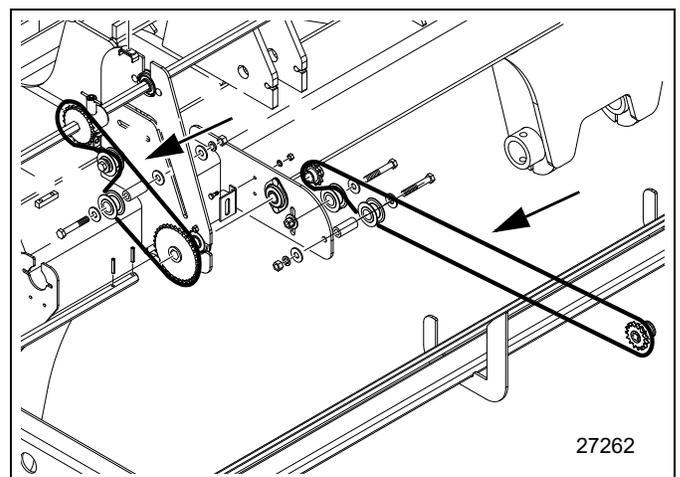


Drive Type and Main Seed Box Chains



2 chains

Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

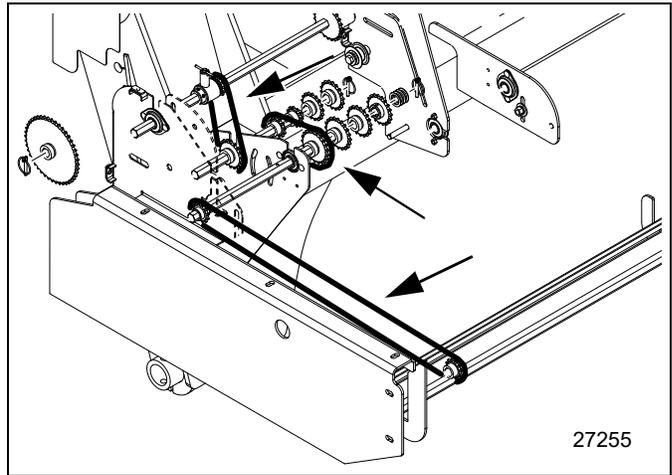


Fertilizer Chains (Option)



3 chains

Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

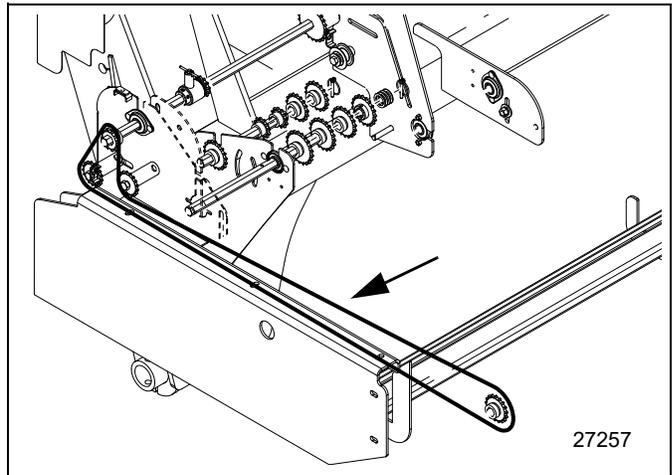


Small Seeds Drive Chain (Option)



1 chain

Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

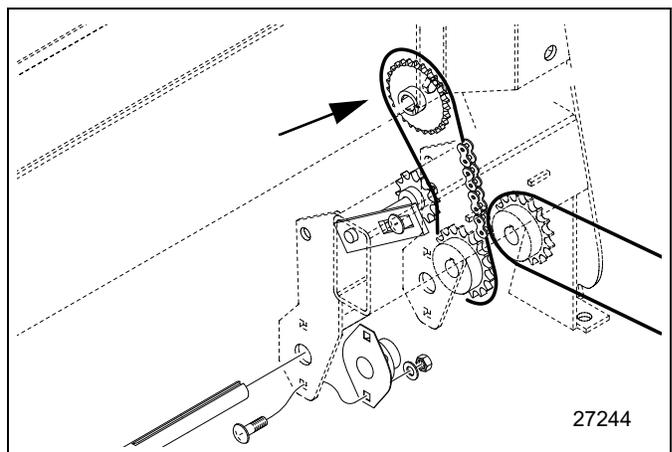


Small Seeds Box Chain (Option)

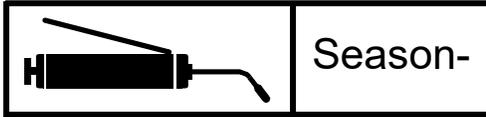


1 chain

Type of Lubrication: Chain Lube
Quantity = Coat thoroughly

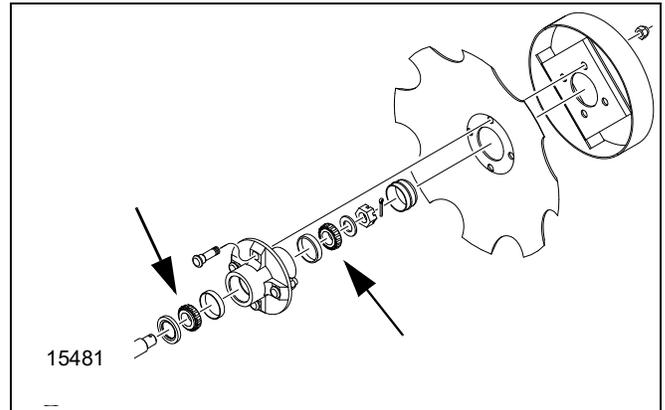


Marker Disk Bearings (Option)



2 races each marker;
4 or 8 total

Type of Lubrication: Grease
Quantity: Repack



Options

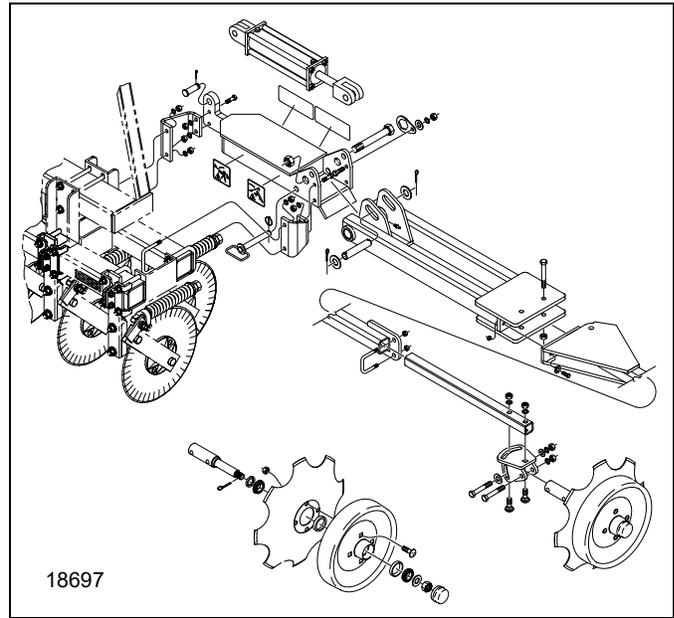
For weight added to drill by each option, see page 31.

Dual Markers

Dual markers include a sequence valve.

| Marker Package | Part Number |
|------------------------|-------------|
| Dual Sequenced Markers | 148-430A |

For operations, see:
 "Marker Setup" on page 25,
 "Marker Operation" on page 40, and
 "Marker Maintenance" on page 101.



Packer

The packer wheel helps to take some of the weight off of the drive wheel resulting in firm soil across the full width of the drill with minimal wheel tracks.

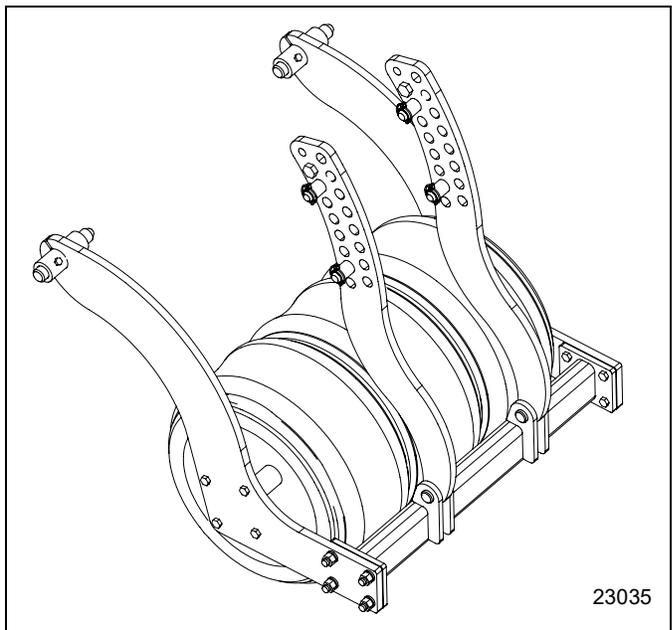
The Great Plains 148-741A part below includes only the packer arm assembly. The packer wheel assembly (wheel and tire) must be separately ordered from Otico

| Marker Package | Part Number |
|------------------------|-------------|
| V300 Packer Arm Bundle | 148-741A |
| Farmflex 520 CTX X 775 | 1880 |

Packer Wheel Supplier

OTICO SAS
 20 rue Gabriel Garnier
 77650 CHALMAISON. France
www.otico.com

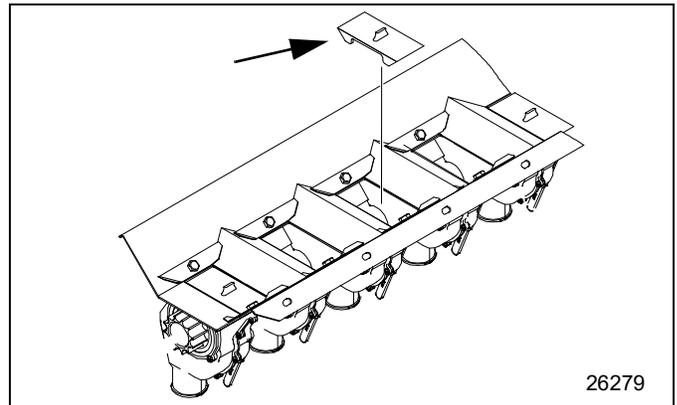
For operations, see "Packer Setup" on page 28.



Seed Tube Plugs

This plug stops seed flow from the main seed box at the top of a seed tube. It prevents flow independently of the sliding sprocket in the seed cup. Order one per row to set inactive.

| Description | Part Number |
|----------------|-------------|
| Seed tube plug | 817-087 |

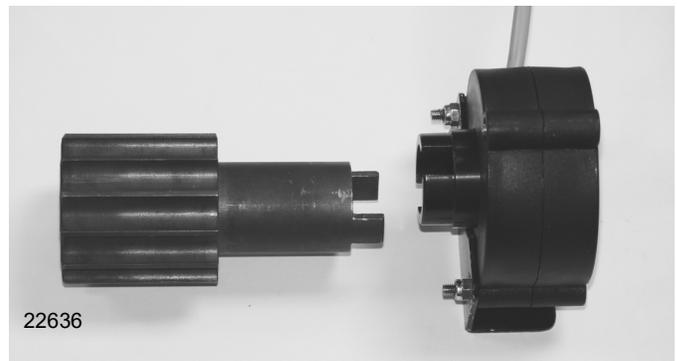


Third Tramline Clutch

The standard V300 & V300F includes two tramline clutches on rows 4 and 16. For some tramline patterns, such as 20m 20-bout, a third clutch is required. The three clutches are [re]installed on rows 1, 13 and 14, with the extra clutch on row 13, and controlled by row 1.

| Description | Part Number |
|-------------------------------|-------------|
| V300 Clutch with Jumper cable | 148-759A |

If adding a 3rd tramline clutch, consider also adding a 3rd tramline marker.



Small Seeds

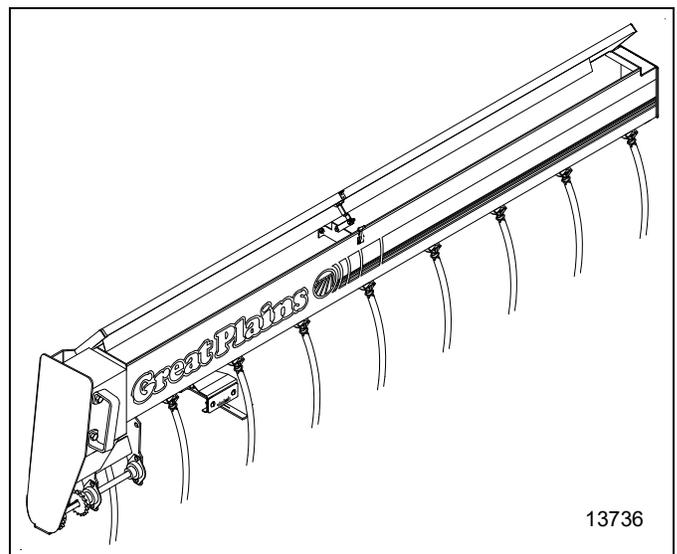
The Small Seeds attachment is a separate seed box with independent drive and metering.

Order the Small Seeds Attachment as an option on the original drill order.

The Small Seeds option is factory-installed.

| Description | Part |
|-------------------------------|----------|
| FCP1000F 157.9MM SS W/PW HOSE | 133-236A |

For operations, see:
 "Material Loading" on page 33
 "Small Seeds Attachment Rate" on page 80
 "Small Seeds Box Cleanout" on page 103

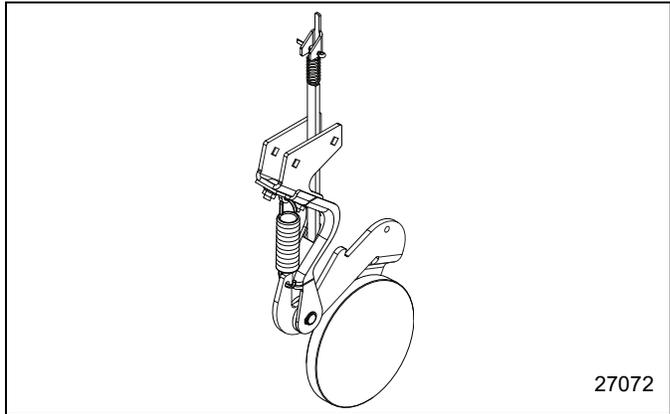


Seed-Lok Seed Firmer

The standard V300 & V300F includes seed flaps. An optional Seed-Lok firmer replaces the flap. The Seed-Lok is field-installed.

| Description | Part Number |
|---------------------------------|-------------|
| 5in Seed-Lok, 00- and 10-Series | 122-193K |

For operations, see “Seed Firmer Adjustments” on page 93.



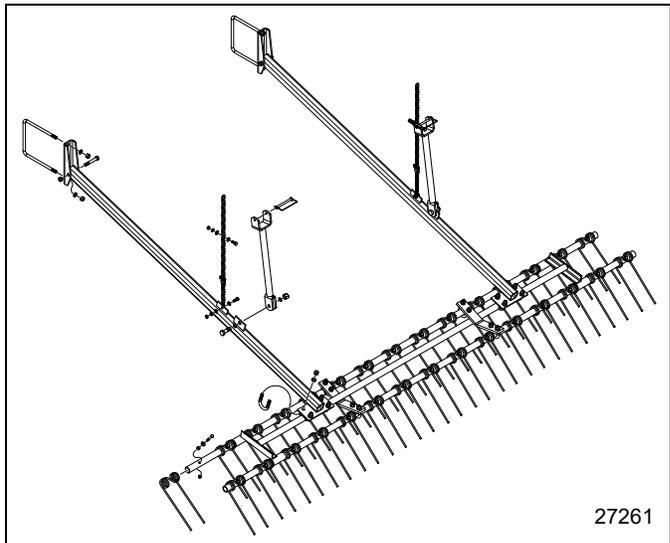
Harrow

The coil-tine harrow finishes no-till surfaces by levelling and distributing residue for enhanced seed emergence.

| Description | Part Number |
|----------------------|-------------|
| V300 Harrow Assembly | 148-728A |

For operations, see:

see “Harrow Setup” on page 29 and see “Harrow Operation” on page 41.



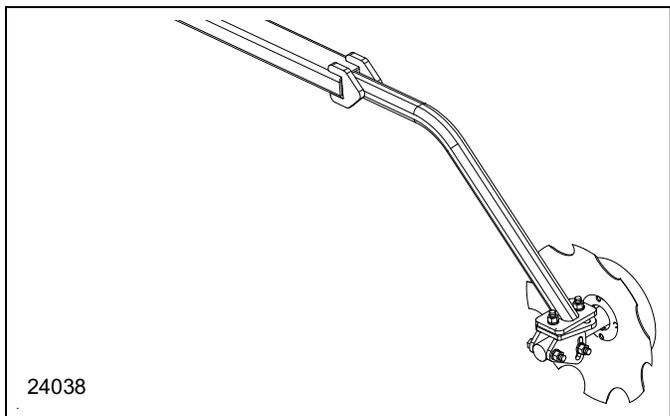
Tramline Markers

This pair of markers identifies unplanted tramline rows, for application of materials subsequent to planting but pre-emergence. They are plumbed into the lift circuit and operated automatically by cylinders controlled by solenoid valves on the tramline clutch circuit.

| Description | Part Number |
|---------------------------|-------------|
| Dual Pre-Emergence Marker | 148-724A |
| Third Tramline Marker | 148-729A |

For operations, see:

see “Pre-Emergence Marker Setup” on page 27 and see “Pre-Emergence Marker Operation” on page 40.





Appendix

Specifications and Capacities

| | V300-1962 | V300F-1962 |
|---|---|-----------------------------------|
| Openers | 00 Series | |
| Rows | 19 | |
| Row Spacing | 15.8cm (6.22in) | |
| Swath | 3.00m (118.1in) | |
| Capacities: Main Seed Box | 3100 liters (88 bu) | 1222 to 1900 liters (35 to 54 bu) |
| Fertilizer | - | 1649 to 1274 liters (47 to 36 bu) |
| Small Seeds Box | 832 liters (23.6 bu) | 832 liters (23.6 bu) |
| Tractor Requirements | 75kW (100 hp) | |
| Hydraulic Circuits | 2 remotes | |
| Weight* (empty, no markers or coulters) | 3968 kg (8747 lbs) | 4188 kg (9233 lbs) |
| Clearance | 40.6cm (16in) | |
| Transport Height | 2.75m (9 ft) | |
| Transport and Working Width | 3.0m (9 ft 10 in) | |
| Length | 5.8m (19 ft) | |
| Opener Depth Range | 0-7.6cm (-03in) | |
| Tire Sizes | Gauge Wheel: 395/55B 16.5 12 ply Contact Drive: 13-5x6 4 ply | |

* See page 31 for additional weight detail.

Tire Inflation Chart

| Tire Size | Inflation |
|--------------------|-------------------|
| 395/55B 16.5 12ply | 414 kPa 60 psi |
| 3-5x6 4 ply | 276 kPa 40 psi |

Tire Warranty Information

All tires are warranted by the original manufacturer of the tire. Tire warranty information is found online at the manufacturer's websites listed below. For assistance or information, contact your nearest Authorized Farm Tire Retailer.

Manufacturer Website

| | |
|-----------|--|
| Firestone | www.firestoneag.com |
| Gleason | www.gleasonwheel.com |
| Titan | www.titan-intl.com |

Torque Values

| Bolt Size in-tpi ^a | Bolt Head Identification | | | | | |
|----------------------------------|---|--------------------|---|-------|---|-------|
| |  | |  | |  | |
| | Grade 2 | | Grade 5 | | Grade 8 | |
| | N-m ^b | ft-lb ^d | N-m | ft-lb | N-m | ft-lb |
| 1/4-20 | 7.4 | 5.6 | 11 | 8 | 16 | 12 |
| 1/4-28 | 8.5 | 6 | 13 | 10 | 18 | 14 |
| 5/16-18 | 15 | 11 | 24 | 17 | 33 | 25 |
| 5/16-24 | 17 | 13 | 26 | 19 | 37 | 27 |
| 3/8-16 | 27 | 20 | 42 | 31 | 59 | 44 |
| 3/8-24 | 31 | 22 | 47 | 35 | 67 | 49 |
| 7/16-14 | 43 | 32 | 67 | 49 | 95 | 70 |
| 7/16-20 | 49 | 36 | 75 | 55 | 105 | 78 |
| 1/2-13 | 66 | 49 | 105 | 76 | 145 | 105 |
| 1/2-20 | 75 | 55 | 115 | 85 | 165 | 120 |
| 9/16-12 | 95 | 70 | 150 | 110 | 210 | 155 |
| 9/16-18 | 105 | 79 | 165 | 120 | 235 | 170 |
| 5/8-11 | 130 | 97 | 205 | 150 | 285 | 210 |
| 5/8-18 | 150 | 110 | 230 | 170 | 325 | 240 |
| 3/4-10 | 235 | 170 | 360 | 265 | 510 | 375 |
| 3/4-16 | 260 | 190 | 405 | 295 | 570 | 420 |
| 7/8-9 | 225 | 165 | 585 | 430 | 820 | 605 |
| 7/8-14 | 250 | 185 | 640 | 475 | 905 | 670 |
| 1-8 | 340 | 250 | 875 | 645 | 1230 | 910 |
| 1-12 | 370 | 275 | 955 | 705 | 1350 | 995 |
| 1 1/8-7 | 480 | 355 | 1080 | 795 | 1750 | 1290 |
| 1 1/8-12 | 540 | 395 | 1210 | 890 | 1960 | 1440 |
| 1 1/4-7 | 680 | 500 | 1520 | 1120 | 2460 | 1820 |
| 1 1/4-12 | 750 | 555 | 1680 | 1240 | 2730 | 2010 |
| 1 3/8-6 | 890 | 655 | 1990 | 1470 | 3230 | 2380 |
| 1 3/8-12 | 1010 | 745 | 2270 | 1670 | 3680 | 2710 |
| 1 1/2-6 | 1180 | 870 | 2640 | 1950 | 4290 | 3160 |
| 1 1/2-12 | 1330 | 980 | 2970 | 2190 | 4820 | 3560 |

| Bolt Size mm x pitch ^c | Bolt Head Identification | | | | | |
|--------------------------------------|--|-------|---|-------|---|-------|
| |  | |  | |  | |
| | Class 5.8 | | Class 8.8 | | Class 10.9 | |
| | N-m | ft-lb | N-m | ft-lb | N-m | ft-lb |
| M 5 X 0.8 | 4 | 3 | 6 | 5 | 9 | 7 |
| M 6 X 1 | 7 | 5 | 11 | 8 | 15 | 11 |
| M 8 X 1.25 | 17 | 12 | 26 | 19 | 36 | 27 |
| M 8 X 1 | 18 | 13 | 28 | 21 | 39 | 29 |
| M10 X 1.5 | 33 | 24 | 52 | 39 | 72 | 53 |
| M10 X 0.75 | 39 | 29 | 61 | 45 | 85 | 62 |
| M12 X 1.75 | 58 | 42 | 91 | 67 | 125 | 93 |
| M12 X 1.5 | 60 | 44 | 95 | 70 | 130 | 97 |
| M12 X 1 | 90 | 66 | 105 | 77 | 145 | 105 |
| M14 X 2 | 92 | 68 | 145 | 105 | 200 | 150 |
| M14 X 1.5 | 99 | 73 | 155 | 115 | 215 | 160 |
| M16 X 2 | 145 | 105 | 225 | 165 | 315 | 230 |
| M16 X 1.5 | 155 | 115 | 240 | 180 | 335 | 245 |
| M18 X 2.5 | 195 | 145 | 310 | 230 | 405 | 300 |
| M18 X 1.5 | 220 | 165 | 350 | 260 | 485 | 355 |
| M20 X 2.5 | 280 | 205 | 440 | 325 | 610 | 450 |
| M20 X 1.5 | 310 | 230 | 650 | 480 | 900 | 665 |
| M24 X 3 | 480 | 355 | 760 | 560 | 1050 | 780 |
| M24 X 2 | 525 | 390 | 830 | 610 | 1150 | 845 |
| M30 X 3.5 | 960 | 705 | 1510 | 1120 | 2100 | 1550 |
| M30 X 2 | 1060 | 785 | 1680 | 1240 | 2320 | 1710 |
| M36 X 3.5 | 1730 | 1270 | 2650 | 1950 | 3660 | 2700 |
| M36 X 2 | 1880 | 1380 | 2960 | 2190 | 4100 | 3220 |

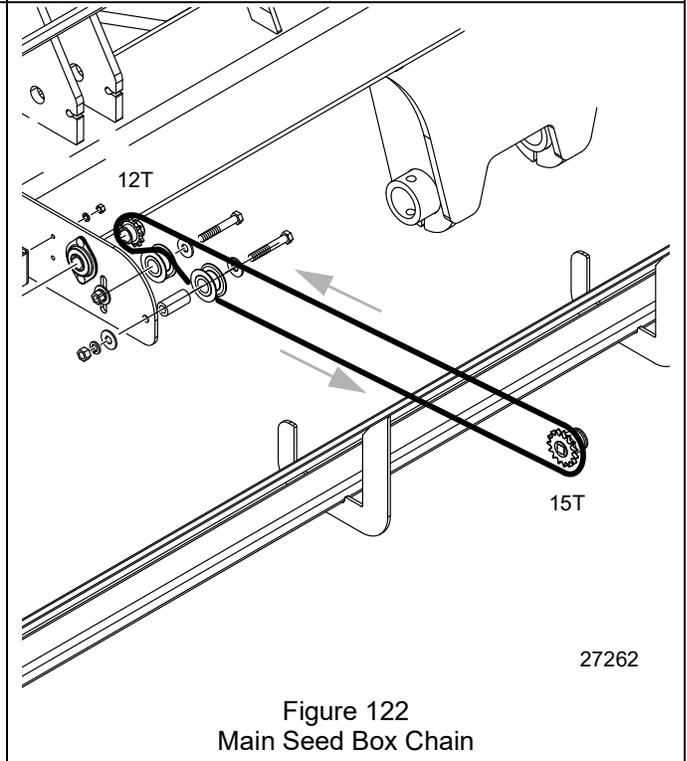
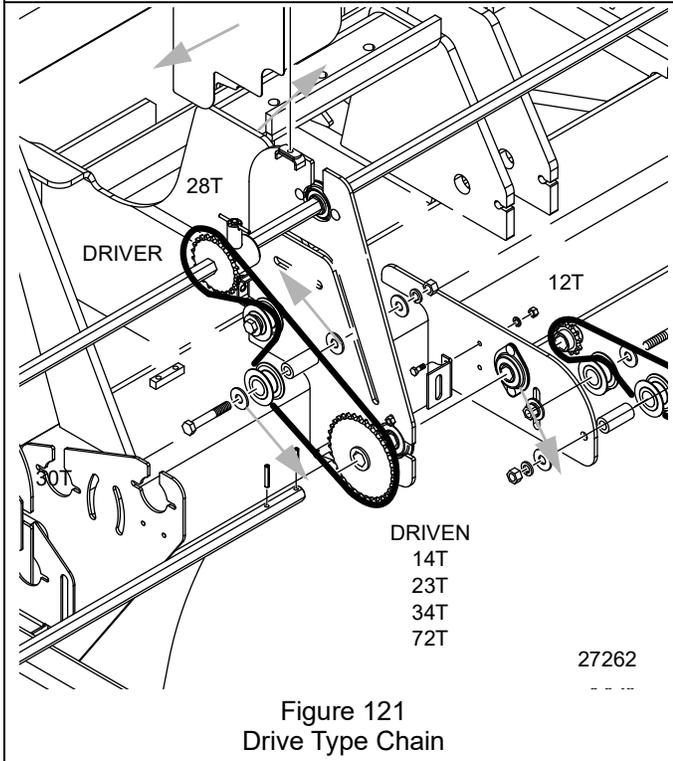
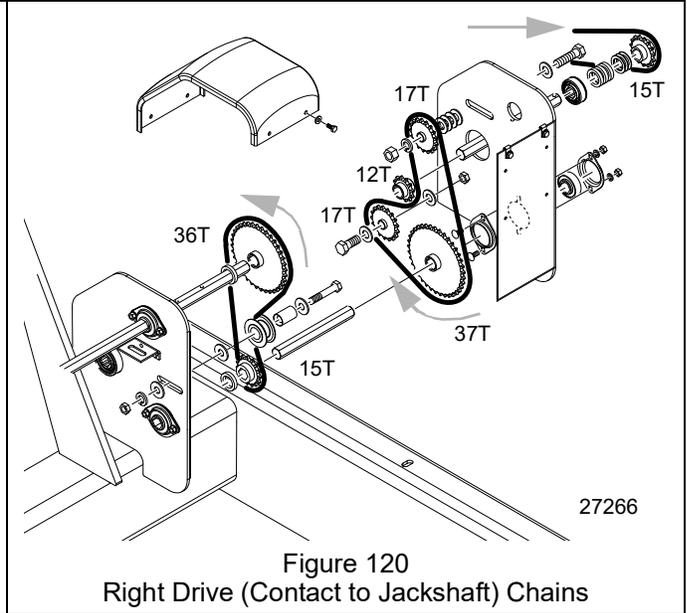
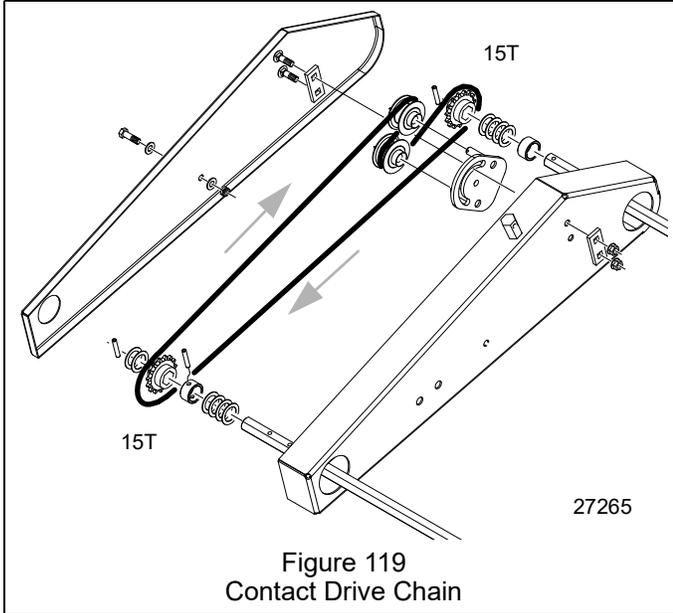
- a. in-tpi = nominal thread diameter in inches-threads per inch
- b. N·m = newton-meters
- c. mm x pitch = nominal thread diameter in mm x thread pitch
- d. ft-lb = foot pounds

Torque tolerance + 0%, -15% of torquing values. Unless otherwise specified use torque values listed above.

25199

Chain Routing

Contact, Right and Main Seed Chains



Fertilizer and Small Seed Chains

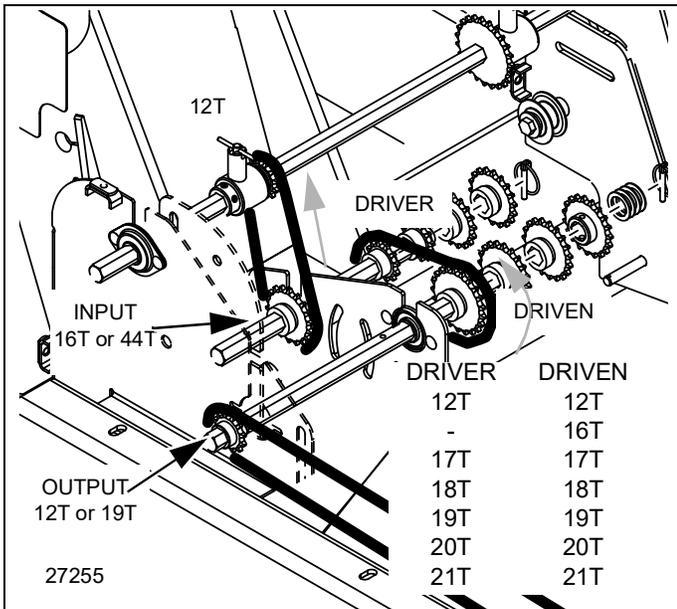


Figure 123
Fertilizer Transmission Chain

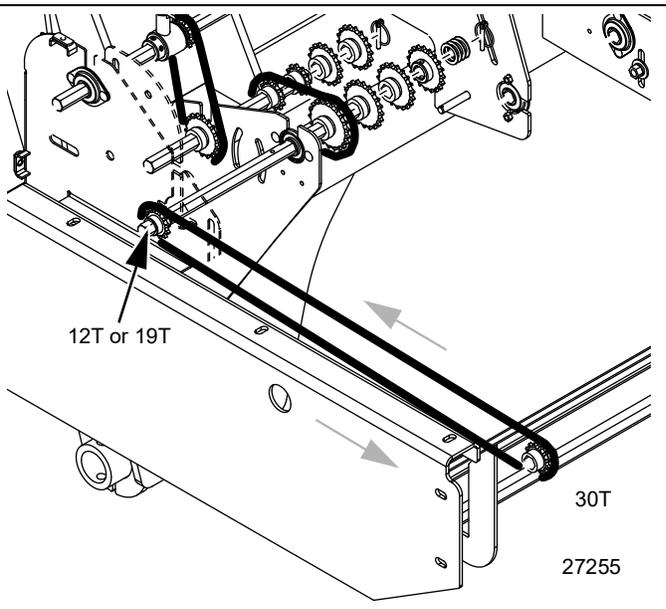


Figure 124
Fertilizer Final Drive Chain

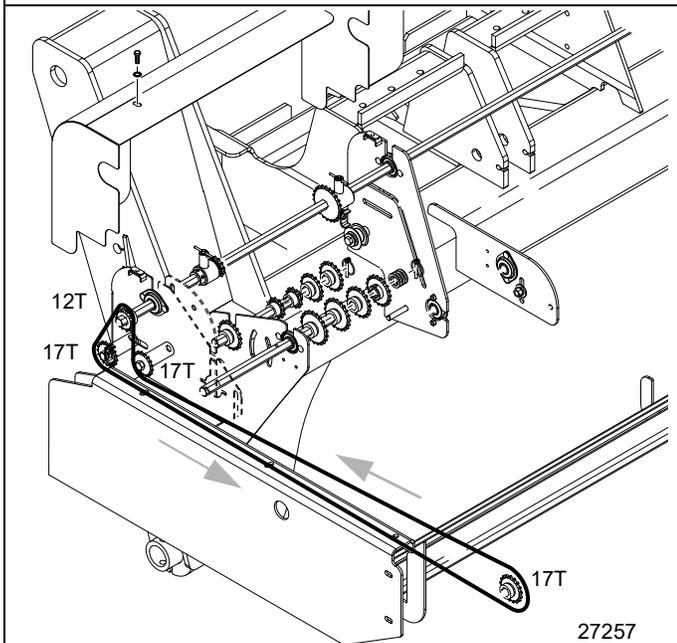


Figure 125
Small Seeds Drive Chain

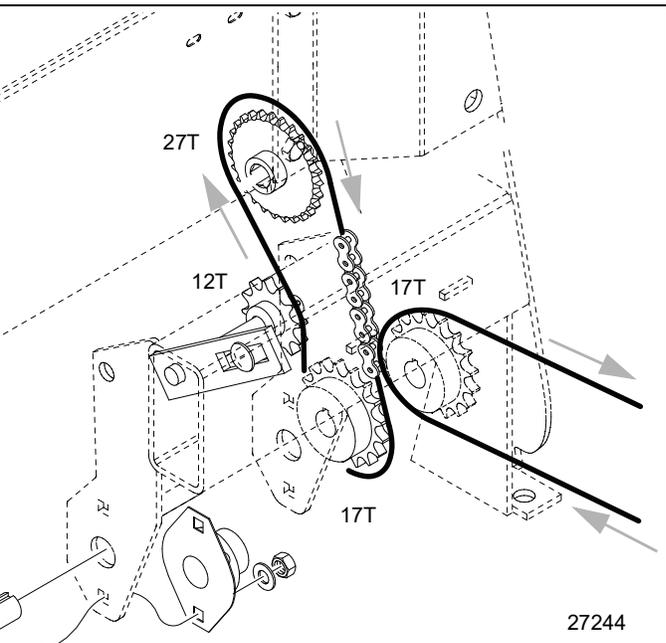
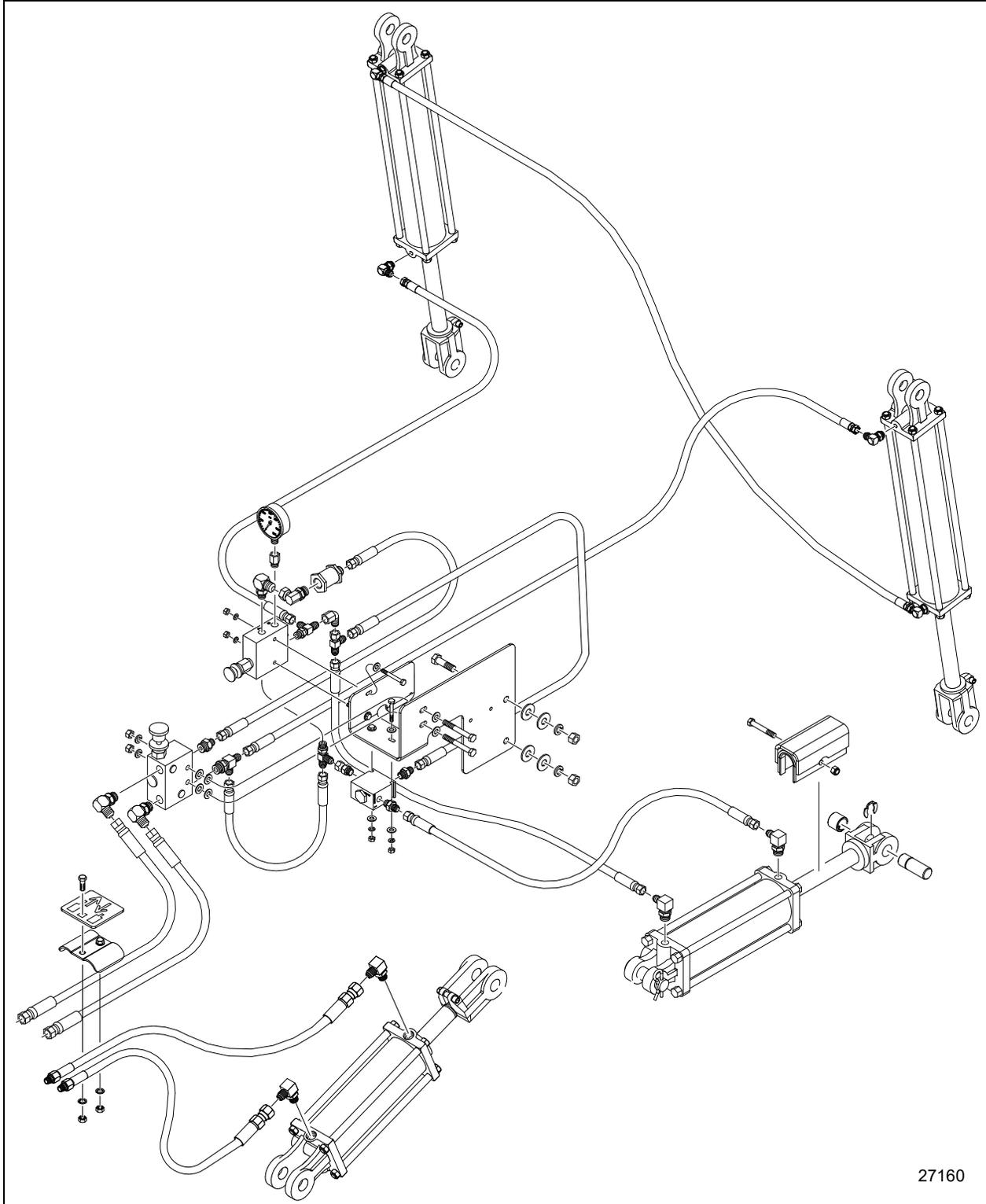


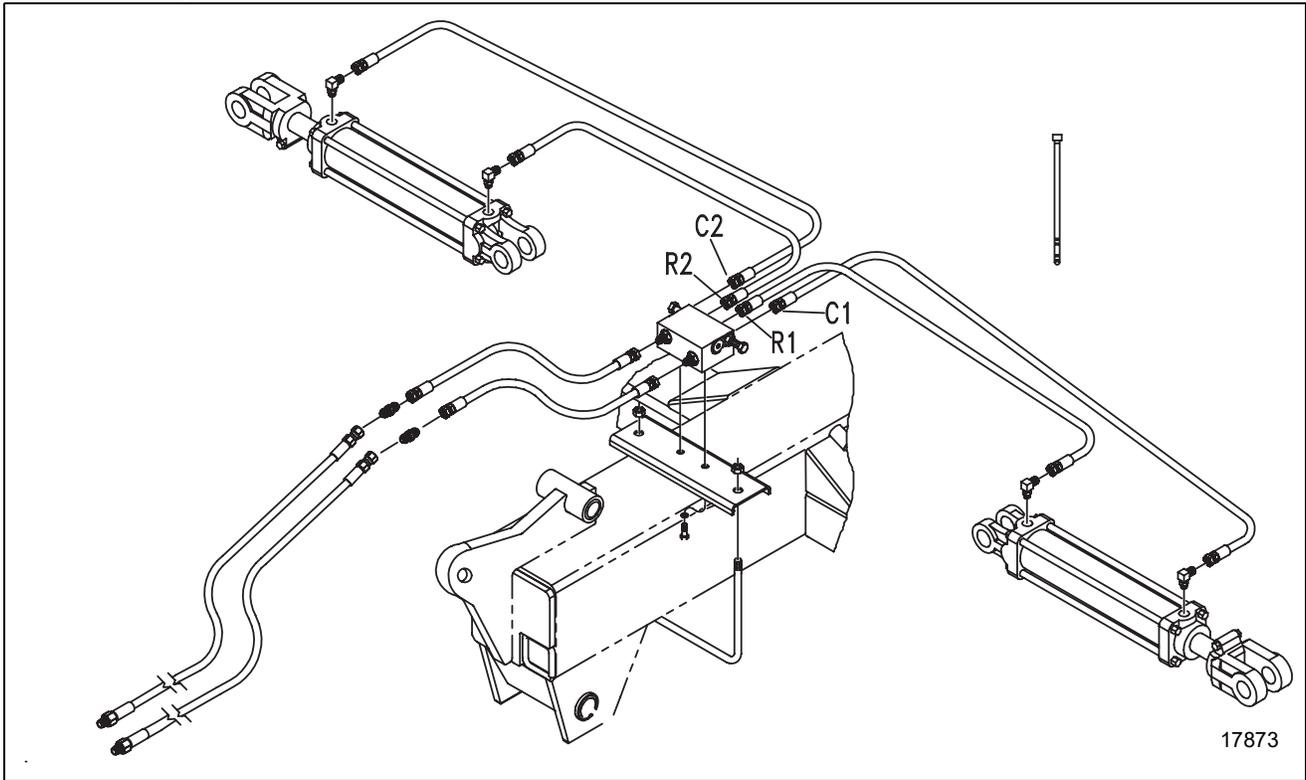
Figure 126
Small Seeds Final Drive Chain

Hydraulic Diagrams

Lift and Down-Pressure Hydraulics



Dual Marker Hydraulics



ASAE Lighting Circuit

The standard lighting harness on the V300 and V300F has a European 7-terminal connector.

Refer to Figure 127, which depicts the rear (inside) view of the implement plug. To convert the harness to an ASAE J560B connector, standard in North America, remove the European connector and wire the J560B per the following table.

| Pin | Wire Color | Drill Function |
|-----|--------------|------------------------|
| 1 | White (WHT) | Common/Ground |
| 2 | Black (BLK) | N/C |
| 3 | Yellow (YEL) | Left Amber Flasher |
| 4 | Red (RED) | N/C |
| 5 | Green (GRN) | Right Amber Flasher |
| 6 | Brown (BRN) | Red Lamps (both sides) |
| 7 | Blue (BLU) | N/C |

Note: These are the ASAE pin-outs, and not the European pin-outs.

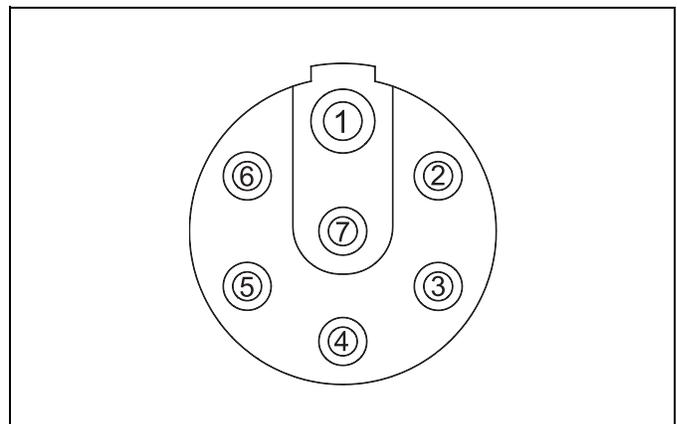
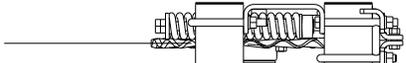
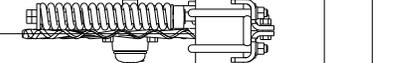
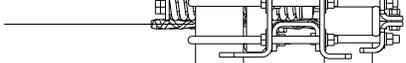
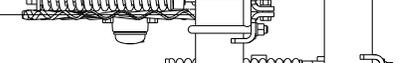
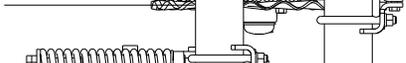
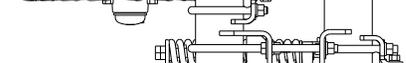
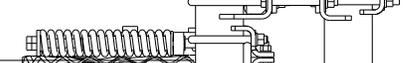
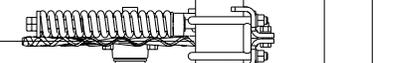
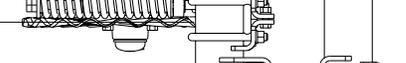
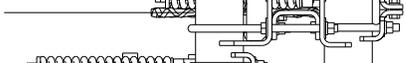
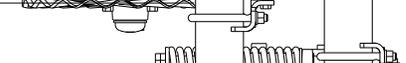
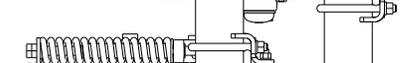
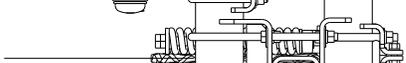
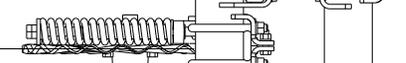
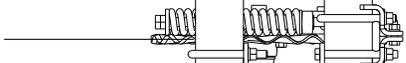


Figure 127
ASAE J560B Inside Terminals

27233

Coulter Stations

Measured from right end of tool bar to blade centerline.
These measurements also apply to row unit openers.

| | | |
|---------|---------------------|--|
| Row 1: | 291.39cm (114.72in) |  |
| Row 2: | 275.59cm (108.50in) |  |
| Row 3: | 259.79cm (102.28in) |  |
| Row 4: | 243.99cm (96.06in) |  |
| Row 5: | 228.19cm (89.84in) |  |
| Row 6: | 212.42cm (83.63in) |  |
| Row 7: | 196.62cm (77.41in) |  |
| Row 8: | 180.82cm (71.19in) |  |
| Row 9: | 165.02cm (64.97in) |  |
| Row 10: | 149.23cm (58.75in) |  |
| Row 11: | 132.92cm (52.33in) |  |
| Row 12: | 117.63cm (46.31in) |  |
| Row 13: | 101.83cm (40.09in) |  |
| Row 14: | 86.06cm (33.88in) |  |
| Row 15: | 70.26cm (27.66in) |  |
| Row 16: | 54.46cm (21.44in) |  |
| Row 17: | 38.66cm (15.22in) |  |
| Row 18: | 22.86cm (9.00in) |  |
| Row 19: | 7.06cm (2.78in) |  |
| | 0.00cm (0.00in) |  |

Warranty

Great Plains Manufacturing, Incorporated warrants to the original purchaser that this seeding equipment will be free from defects in material and workmanship for a period of one year from the date of original purchase when used as intended and under normal service and conditions for personal use; 90 days for commercial or rental purposes. This Warranty is limited to the replacement of any defective part by Great Plains Manufacturing, Incorporated and the installation by the dealer of any such replacement part. Great Plains reserves the right to inspect any equipment or part which are claimed to have been defective in material or workmanship.

This Warranty does not apply to any part or product which in Great Plains' judgement shall have been misused or damaged by accident or lack of normal maintenance or care, or which has been repaired or altered in a way which adversely affects its performance or reliability, or which has been used for a purpose for which the product is not designed. This Warranty shall not apply if the product is towed at a speed in excess of 20 miles per hour.

Claims under this Warranty must be made to the dealer which originally sold the product and all warranty adjustments must be made through such dealer. Great Plains reserves the right to make changes in materials or design of the product at any time without notice.

This Warranty shall not be interpreted to render Great Plains liable for damages of any kind, direct, consequential, or contingent, to property. Furthermore, Great Plains shall not be liable for damages resulting from any cause beyond its reasonable control. This Warranty does not extend to loss of crops, losses caused by harvest delays or any expense or loss for labor, supplies, rental machinery or for any other reason.

No other warranty of any kind whatsoever, express or implied, is made with respect to this sale; and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

This Warranty is not valid unless registered with Great Plains Manufacturing, Incorporated within 10 days from the date of original purchase.

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