YELLOW

Operator's Manual

705 and 1005

End-Wheel No-Till Drill

Model	*Serial No.*
705	1631Q and Later
1005	4569U and Later

Great Plains

Manufacturing, Inc.

www.greatplainsmfg.com

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!

Great Plains

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

Table of Contents

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. The signal words are:

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.

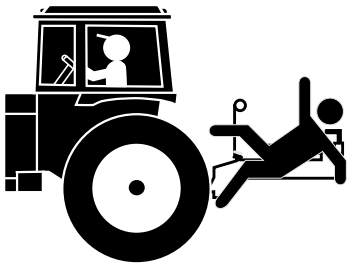
CAUTION!

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.

Keep Riders Off Machinery

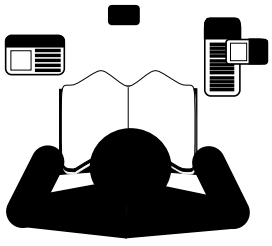
Riders obstruct the operator's view. Riders could be struck by foreign objects or thrown from machine.

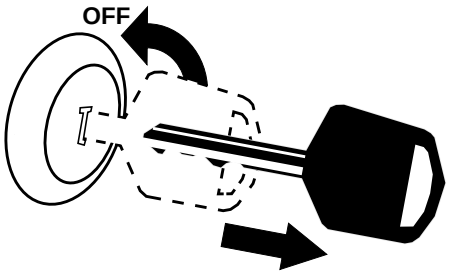
- ▲ Never allow riders on implement.
- ▲ Never allow children to operate equipment.



For Your Protection

- ▲ Thoroughly read and understand *Safety Decals*, page 4. Read all instructions noted on decals.





Shutdown and Storage

- ▲ Lower machine to ground, put tractor in park, turn off engine, and remove key.
- ▲ Detach and store implement in an area where children normally do not play. Secure implement with blocks and supports.

Handle Chemicals Properly

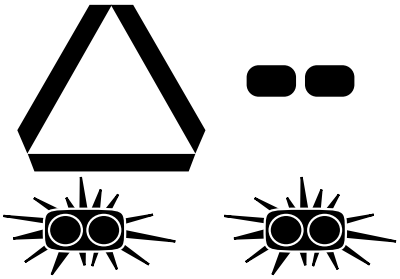
Agricultural chemicals can be dangerous. Improper use can seriously injure persons, animals, plants, soil and property.

- ▲ Wear protective clothing.
- ▲ Handle all chemicals with care.
- ▲ Follow instructions on container label.
- ▲ 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, self-propelled equipment and towed implements can create a hazard when driven on public roads. They are difficult to see, especially at night.

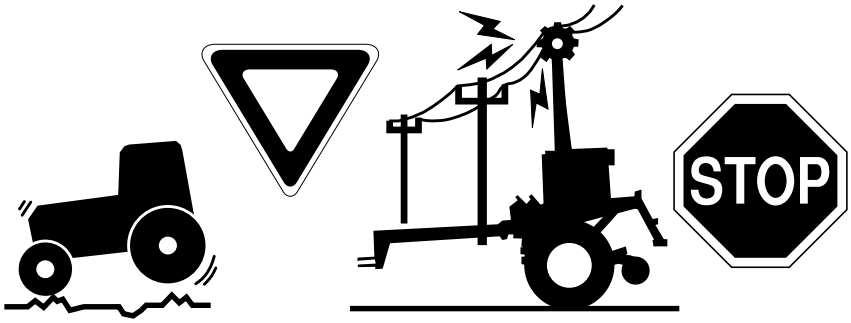
- ▲ Use flashing warning lights and turn signals whenever driving on public roads.
- ▲ Use lights and devices provided with implement.



Transport Machinery Safely

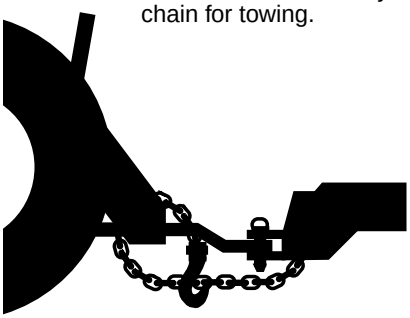
Maximum transport speed for implement is 20 mph. Some rough terrains require a slower speed. Sudden braking can cause a towed load to swerve and upset.

- ▲ Do not exceed 20 mph. 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.



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.

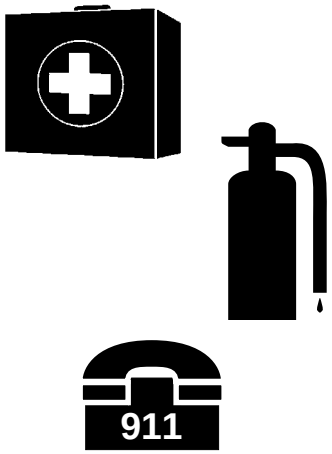


Practice Safe Maintenance

- ▲ Understand procedure before doing work. Use proper tools and equipment. Refer to this manual for additional information.
- ▲ Work in a clean, dry area.
- ▲ Lower implement to ground, put tractor in park, turn off engine, and remove key before performing maintenance.
- ▲ Allow implement to cool completely.
- ▲ 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 implement 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.



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 radio headphones while operating machinery.

Avoid High Pressure Fluids Hazard

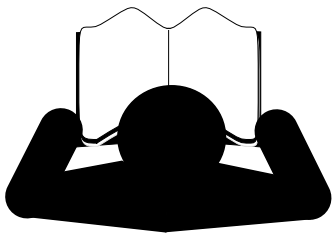
Escaping fluid under pressure can penetrate skin, causing serious injury.

- ▲ 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, see a doctor immediately. Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

Safety at All Times

Thoroughly read and understand this manual before operating implement. Refer to *Safety Decals*, page 4. Read all instructions noted on decals.

- ▲ Be familiar with all implement functions.
- ▲ Operate implement from driver's seat only.
- ▲ Do not leave tractor or implement unattended with 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 implement 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 raising implement. Make sure all persons are clear of working area.
- ▲ Do not turn tractor too tight, causing implement to ride up on wheels.



Tire Safety

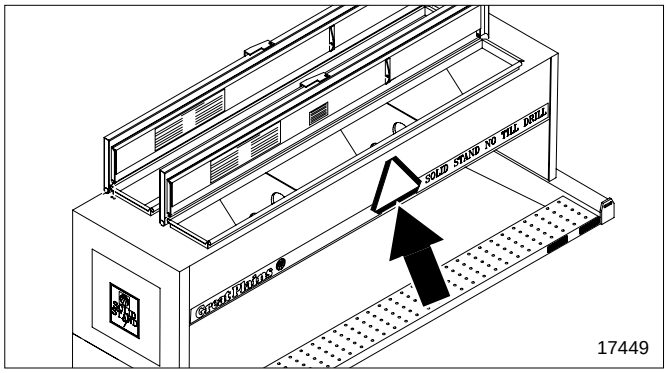
Tire changing can be dangerous and should be performed by trained personnel using correct tools and equipment.

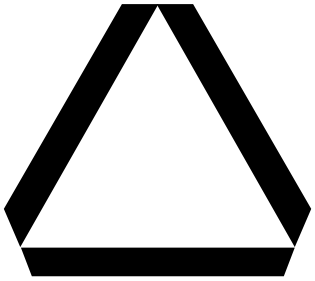
- ▲ When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side–not in front of or over tire assembly. Use a safety cage if available.
- ▲ When removing and installing wheels, use wheel-handling equipment adequate for weight involved.

Safety Decals

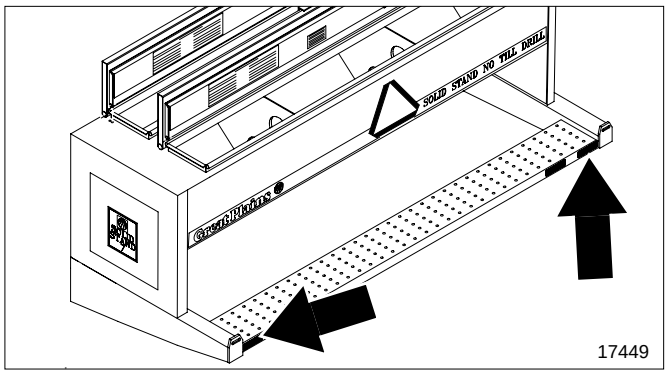
Your implement comes equipped with all safety decals in place. They were designed to help you safely operate your implement.

1. *Read and follow decal directions.*
2. *Keep all safety decals clean and legible.*
3. *Replace all damaged or missing decals. Order new decals from your Great Plains dealer. Refer to this section for proper decal placement.*
4. *When ordering new parts or components, also request corresponding safety decals.*
5. *To install new decals:*
   a. *Clean the area on which the decal is to be placed.*
   b. *Peel backing from decal. Press firmly on surface, being careful not to cause air bubbles under decal.*

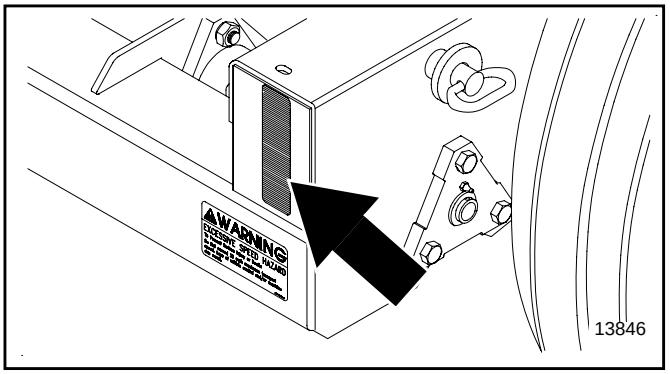




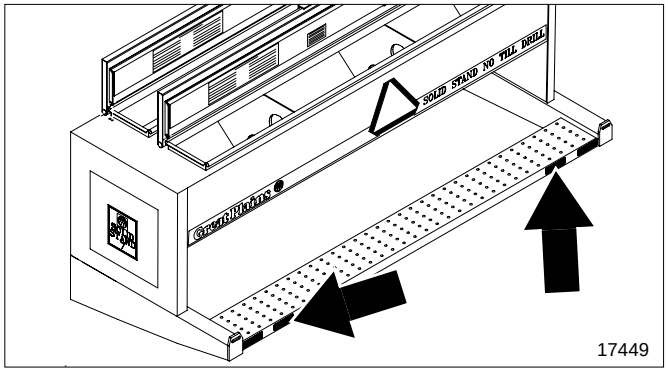
818-003C
Slow Moving Vehicle Sign



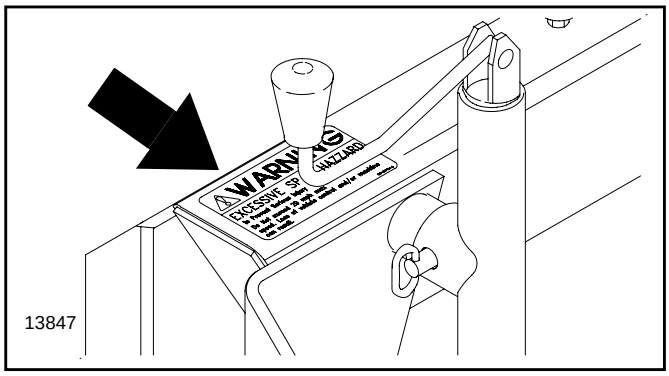
838-266C
Red Reflectors



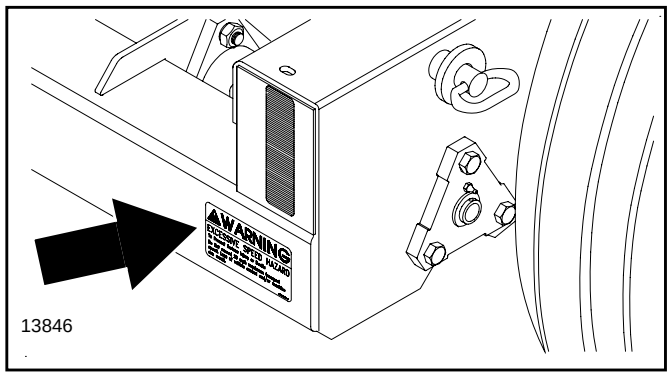
838-265C
Amber Reflectors
Left and right sides of drill; two decals total



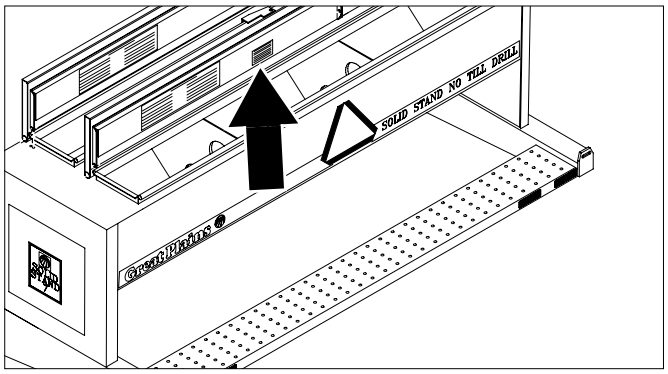
838-267C
Daytime Reflectors

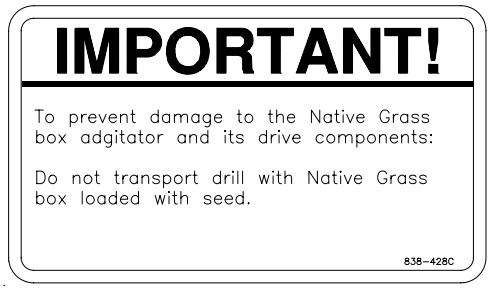


818-188C
Warning 20 MPH Trans
On drill tongue near jack

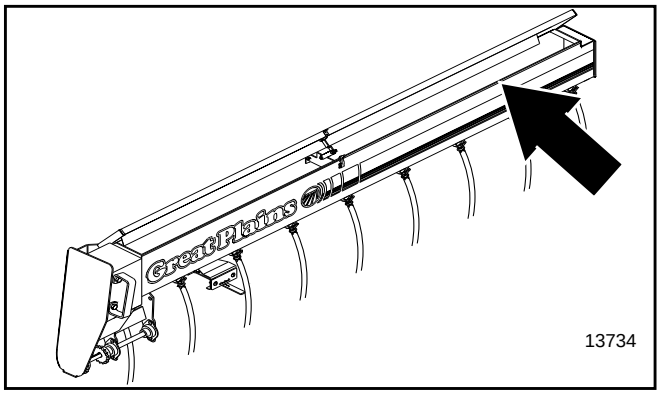


818-188C
Warning 20 MPH Trans
On front, left-hand side





838-428C
Important to prevent damage



838-467C
Possible Chemical Hazard
Underside of Lid

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 this drill.

Description of Unit

The 705 and 1005 are pull-type seeding implements. The drills are designed for no-till conditions. Coulters mounted on the drill frame cut channels for the opener disks. The opener disks clear away crop residue and open a seed trench. Seed tubes between the opener disks place seed in the trench, and press wheels firm soil over the seed. The press wheels also gauge opener depth. The 705 and 1005 are available in fertilizer or native-grass configurations.

Intended Usage

Use this drill to seed grasses or production-agriculture crops or to seed over existing grass stands.

Using This Manual

This manual will familiarize 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: A crucial point of information related to the preceding topic. For safe and correct operation, read and follow directions provided before continuing.

NOTE: Useful information related to the preceding 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.

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 on the drill frame on the front, right-hand side. See Figure A.

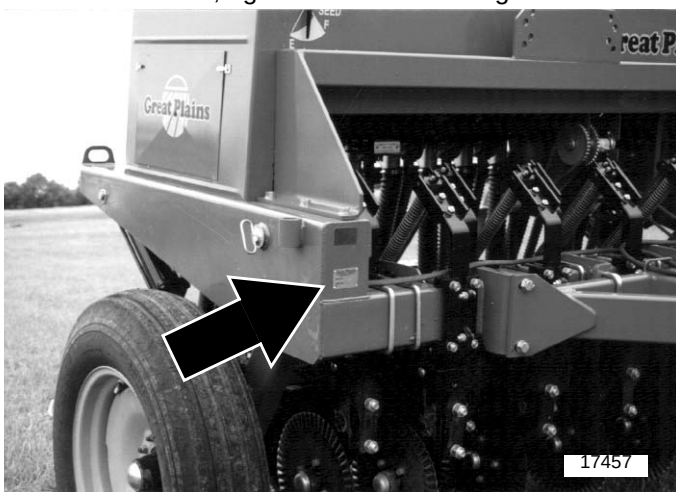


Figure A
Serial Number

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 not satisfied, seek out the owner or general manager of the dealership.
3. For further assistance write to:

Product Support

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

Section 1 *Preparation and Setup*

This section will help you prepare your tractor and drill for use. Before going to the field, you must hitch a tractor to the drill, hook up the hydraulics and check that the hydraulics have been bled.

Prestart Checklist

1. Read and understand "**Important Safety Information**" beginning 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*, "**Maintenance and Lubrication**," page 29.
4. Check that all safety decals and reflectors are legible. Replace if damaged. Refer to *Safety Decals*, "**Important Safety Information**," page 4.
5. Inflate tires and tighten bolts as recommended in the "**Appendix**," page 35.

Hitching Tractor to Drill

1. With drill lowered in field position and tongue jack mounted on side of tongue, raise or lower tongue jack to level drill tongue. See Figure 1-1.

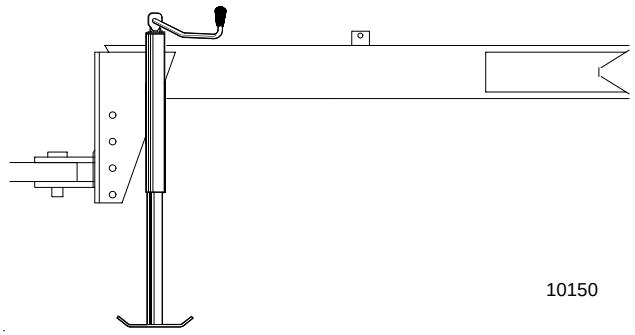


Figure 1-1
Tongue Level

2. With drill tongue level, adjust drill hitch on drill tongue to match your tractor-drawbar height. Refer to Figure 1-2. You can turn the hitch over for a total of six different hitch heights.

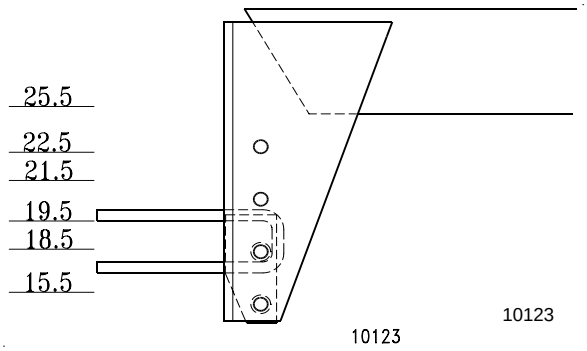


Figure 1-2
Hitch Height Adjustment

NOTE: When hitching drill to a different tractor, check for a difference in drawbar heights. If heights are different, readjust hitch height accordingly.

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 assembling ball swivel hitch.

3. When drill hitch matches tractor-drawbar height, hitch drill to tractor. Refer to Figure 1-3.
   a. Place a spacer tube (1) above and below ball swivel.
   b. Bolt ball-swivel plate (2) and spacers to drill hitch (3) with a 1-by-5-inch bolt (4), flat washer and nylock nut.
   c. Back tractor to drill hitch. Using tongue jack, adjust drill tongue up or down to center drawbar below ball-swivel plate.
   d. Align rear hole in ball-swivel plate with large hole in drawbar. Place lower hitch plate (5) under drawbar. Bolt lower hitch plate to ball-swivel plate using two 5/8-inch bolts (6), flat washers and nylock nuts.
   e. Bolt ball-swivel plate through hole in drawbar to lower hitch plate with 1-by-5 1/2-inch bolt (7), flat washer and nylock nut.

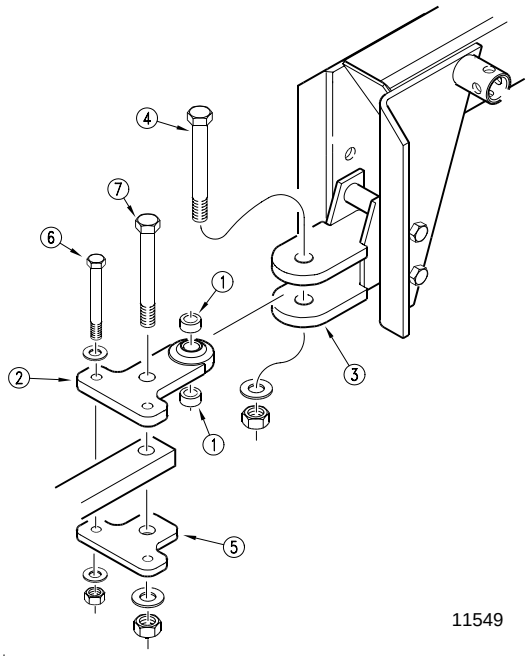


Figure 1-3
Ball Swivel Hitch

4. Securely attach drill safety chain to an anchor on tractor capable of pulling drill.

5. Store jack on top of tongue as shown in Figure 1-4.

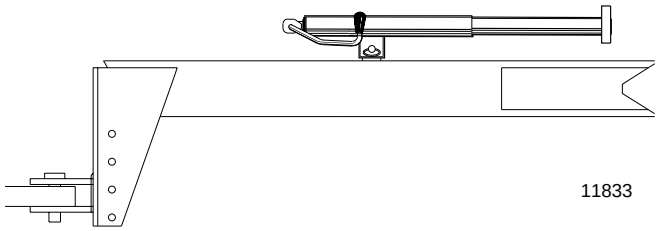


Figure 1-4
Jack in Transport Position

Hydraulic Hose Hookup

Great Plains hydraulic hoses are coded to help you hook-up hoses to your tractor outlets. To distinguish hoses on the same hydraulic circuit, refer to plastic hose holders. See Figure 1-5. Hose under extended-cylinder symbol feeds cylinder base ends. Hose under retracted-cylinder symbol feeds cylinder rod ends.

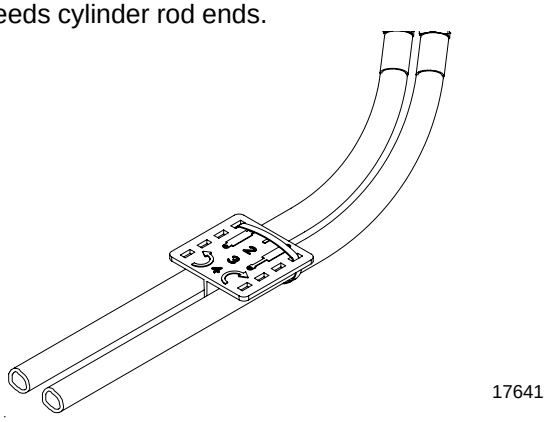


Figure 1-5
Hydraulic Hose Label

Route lift hoses along tongue and through hose loop on front of tongue. Connect hoses to tractor remote valve.

Bleeding the Hydraulics

To function properly, the hydraulics must be free of air. If the hydraulics have not been bled, they will operate with jerky, uneven motions. If hydraulics were not bled during initial drill setup or if you replace a part in hydraulic system during the life of the drill, complete the following procedures.

1. Check hydraulic fluid in tractor reservoir and fill reservoir to proper level. Drill-system capacity is about 1 gallon. Add fluid to system as needed. A low reservoir level may draw air back into the system, causing jerky or uneven cylinder movements.
2. Jack up and support front frame tube at a point close to each end wheel.
3. With frame blocked and supported, unpin cylinders from drill frame. Turn cylinders upside down and wire or otherwise safely support rod ends of cylinders higher than base ends.
4. With tractor engine idling, engage tractor hydraulics to extend cylinder rods. When cylinder rods are completely extended, hold remote lever on for one minute.
5. Retract cylinders. Extend cylinders again and hold remote lever on for one more minute. Repeat this step two more times to completely bleed system.
6. Repin cylinders to drill frame with rod ends to wheel arms. If any air still is trapped in either cylinder, the cylinder will have a spongy, erratic movement and the drill will not raise evenly. If necessary, repeat bleeding process.
7. Refill tractor hydraulic fluid reservoir to its proper level.

Section 2 *Operating Instructions*

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.

Prestart Checklist

1. Carefully read "**Important Safety Information**," beginning on page 1.
2. Lubricate the drill as indicated under *Lubrication*, "**Maintenance and Lubrication**," page 29.
3. Check that drill tires are 9.00 x 24 and are properly inflated as indicated on *Tire Inflation Chart*, "**Appendix**," page 35.
4. Check all bolts, pins and fasteners. Torque as specified on *Torque Values Chart*, "**Appendix**," page 35.
5. Check the drill for worn or damaged parts. Repair or replace them before going to the field.
6. Check hydraulic hoses, fittings and cylinders for leaks. Repair or replace before going to the field.

Field Operation

1. Hitch drill securely to a tractor with sufficient weight and horsepower. Refer to *Tractor Requirements,* "**Specifications and Capacities**," page 34 and *Hitching Tractor to Drill*, "**Preparation and Setup**," page 7. Make sure drill safety chain is secured to tractor.
2. Perform all checks listed on *Prestart Checklist*, this page.
3. Extend lift cylinders completely and remove lock pins from transport position. Place pins in storage. See Figure 2-1.

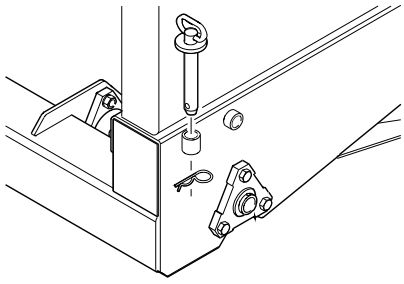
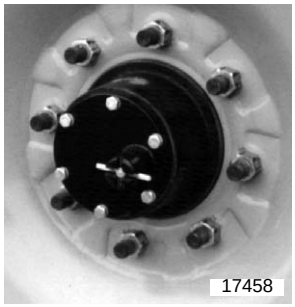
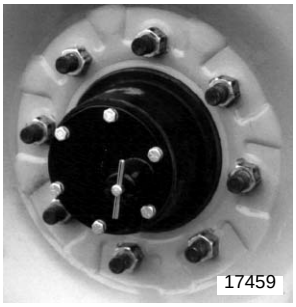


Figure 2-1
Lock Pin, Storage Position

4. Engage drive by turning lock-out hub. See Figure 2-2. The lock-out hub is on the left end wheel.



Engaged



Disengaged

Figure 2-2
Lock-Out Hub

5. Calibrate seeding rate as explained under *Seed Rate Adjustment*, "**Adjustments**," page 14.
6. Load seed box with seed. Use cleaned seed for best results.
7. Record reading on acremeter, which is mounted on right-hand end of jackshaft. Subtract this initial reading from later readings to calculate acres drilled.
8. Lower drill and begin seeding.
9. Always raise drill for field turns. Seeding will stop automatically as you raise drill.

Opener Operation

Never back up with openers in ground. If you do, check all openers to be sure none are clogged. Always lift drill out of ground when turning at ends of field rows and other short-radius turns.

For information on seeding depth and opener adjustments, refer to *Seeding Depth* and *Opener Depth*, "**Adjustments**," beginning on page 12.

Native Grass Operation

Native grass drills have a partition dividing the seed and native-grass compartments. Seed-compartment capacity is 1.3 bushels per foot, and native-grass capacity is 1.2 bushels per foot.

If native grass is not being used, remove chain from native-grass-drive sprocket to eliminate wear on drive system.

Fertilizer Operation

Fertilizer drills have a partition that divides the box into seed and fertilizer compartments. See Figure 2-3.

If you want to use both compartments for seeding grain:

1. Remove the doors in the partition.
2. Set fertilizer-rate-adjustment knob at zero so no seed escapes through the fertilizer outlets.
3. Remove chain from fertilizer-drive sprocket to eliminate unnecessary wear on fertilizer-drive system.

For information on adjusting the fertilizer application rate, refer to *Fertilizer Rate*, "**Adjustments**," page 22.

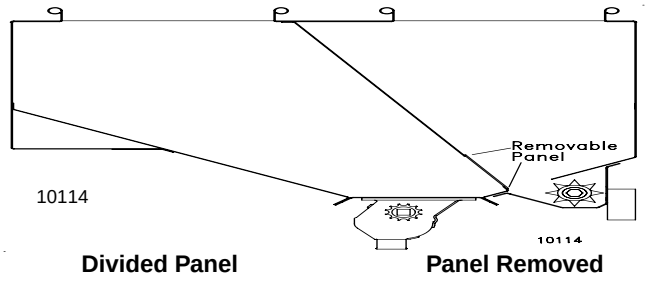


Figure 2-3
Fertilizer Partition

Hydraulic Lift System

After a period use, the lift cylinders may get out of time or phase. When one side of the drill is running too high because its lift cylinder is either overextended compared to the other lift cylinder, the cylinders are out of phase.

To rephase cylinders, raise drill until cylinders are completely extended and hold tractor hydraulic lever on for a few seconds. Momentarily reverse hydraulic lever immediately after rephasing cylinders to allow cylinders to retract about 1/2 inch to help maintain a level drill.

Transporting

WARNING!

Towing the drill 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:

- *Do not exceed 20 mph.*
- *Do not tow a drill that, when fully loaded, weighs more than 1.5 times the weight of the towing vehicle.*

WARNING!

Failure of the hydraulic cylinders during transport will cause the drill to drop suddenly, which could lead to serious road accidents, injury or death. To prevent an accident, always install the lock pins before transporting the drill.

Before transporting drill:

1. Check that drill is securely hitched to a sufficient tractor. Refer to *Tractor Requirements,* "**Specifications and Capacities**," page 34 and *Hitching Tractor to Drill*, "**Preparation and Setup**," page 7. Make sure drill safety chain is secured to tractor.
2. Unload drill box before transporting if at all possible. The drill can be transported with a full box of grain, but the added weight will increase stopping distance and decrease maneuverability**.**
3. Raise drill. Lock drill up for transport by installing a lock pin on each side of the drill. See Figure 2-4.

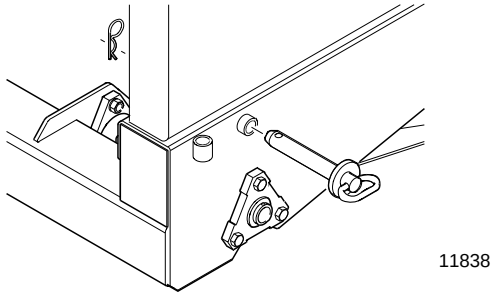


Figure 2-4
Lock Pin, Transport Position

4. Disengage drive by turning the lock-out hub. See Figure 2-5. The lock-out hub is on the left-hand end wheel.

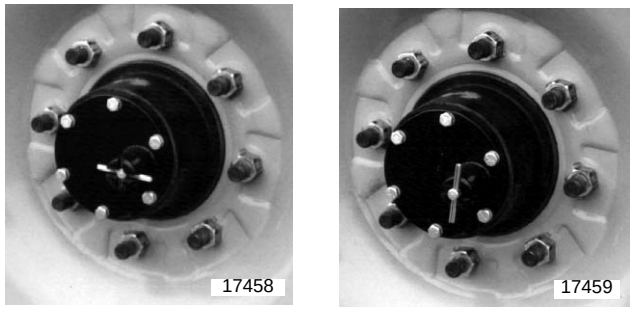


Figure 2-5
Lock-Out Hub

5. Check that tires are properly inflated. Refer to *Tire Inflation Chart*, "**Appendix**," page 35.
6. Comply with all federal, state and local laws when traveling on public roads.
7. Remember that the drill is wider than the tractor. Allow safe clearance.

Parking

Perform the following steps when parking the drill. Refer to *Storage*, “**Maintenance and Lubrication**,” page 29, to prepare for long-term storage.

1. Park drill on a level, solid area.
2. Lower drill until openers are resting on ground.
3. Securely block tires to prevent rolling.
4. Remove tongue jack from storage stob. Pin jack on side of tongue. If ground is soft, place a board or plate under jack.
5. Extend jack until tongue weight is off tractor drawbar.
6. Unplug hydraulic hoses from tractor. Do not allow hose ends to rest on ground.
7. Remove hitch bolt and safety chain from tractor drawbar.

Section 3 *Adjustments*

Seeding Depth

To set drill seeding depth, you must:

1. Set coulter depth with hydraulic stop.
2. Set opener depth with T-handles on press wheels.
3. If soil conditions make it necessary, increase coulter down pressure by adding weights.
4. If necessary, adjust individual coulters or openers to seed in tire tracks.

To correctly adjust seeding depth, you need a good understanding of how the coulters, openers and press wheels work. The following is an introduction to how the no-till coulter and double-disk openers are designed to control seeding depth.

Coulters

A no-till coulter is mounted directly ahead of each opener on the drill. The coulters cut through heavy trash and make a groove in the soil for the openers. The coulters are mounted on the drill frame so coulter cutting depth changes as the drill is raised and lowered.

Coulter cutting depth is controlled by an adjustable hydraulic depth stop on the master cylinder. Refer to *Coulter Depth*, page 12 for information on this adjustment.

The amount of coulter down force needed to cut a soil groove varies with soil conditions. Adding weight or shortening the coulter spring increases coulter down pressure and cutting force. Refer to *Coulter Down Pressure*, page 12 for more information on these adjustments.

Openers

Opener double disks widen the coulter groove to make a seed bed. A seed tube mounted between the disks delivers seed to the trench. Mounted on the rear of each opener is a press wheel. The press wheels control opener depth and firm the seed into the soil.

To maintain a consistent depth, upward press wheel movement is restricted by an independently adjustable stop on each opener. Moving this stop changes the depth at which seed is placed. The mounting height of openers that run in tire tracks also can be changed. Refer to *Opener Depth*, page 13 for information on these adjustments.

To cut and widen the coulter groove and to firm the seed into the soil, the openers have down-pressure springs. Shortening or lengthening these springs changes opener down force. Refer to *Opener Down Pressure*, page 14, for information on how to make this adjustment.

When making opener adjustments, keep in mind that openers will not run any deeper than coulters till the soil.

Coulter Depth

The master lift cylinder on your drill is equipped with a hydraulic depth stop. See Figure 3-1. The amount of cylinder extension controls coulter depth. The stop is adjustable from zero to maximum cylinder stroke.

To set coulter depth:

1. Retract cylinder until coulters are at desired depth.
2. Loosen bolt (1) on depth-control plate (2). Slide plate up cylinder rod until plate stops against control-valve plunger (3) on head of cylinder.
3. Extend cylinder slightly and move depth-control plate up to compensate for length of control-valve plunger.

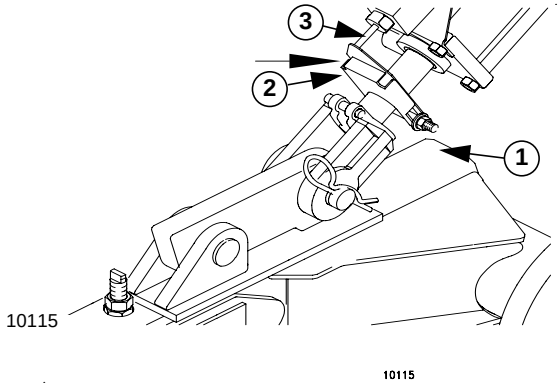


Figure 3-1
Hydraulic Depth Stop for Coulters

NOTE: Do not lower coulters to aid in penetrating hard soil. Instead, increase coulter down pressure by adding weight to drill. Refer to *Coulter Down Pressure*, this page.

Coulter Down Pressure

Weights

If more weight is required for your soil conditions, add weights to drill. Weight brackets are available from your Great Plains dealer. Refer to *Weight Brackets*, page 33, for ordering information. Add an equal amount of weight to each end of drill.

705	Pounds Per Coulter			
	7 inch	7.5 inch	8 inch	10 inch
Empty Drill	330	350	350	404
Drill with Weight Brackets	360	383	383	445
Drill with 200 pounds added	379	403	403	470
Drill with 600 pounds added	415	443	443	520

1005	Pounds per Coulter			
	7 inch	7.5 inch	8 inch	10 inch
Empty Drill	266	275	285	326
Drill with Weight Brackets	287	297	309	356
Drill with 800 pounds added	337	351	366	429
Drill with 1000 pounds added	350	364	380	447

Spring Length

Coulter springs are preset at 10 inches, giving coulters an initial operating force of 400 pounds. This setting is adequate for many difficult no-till conditions.

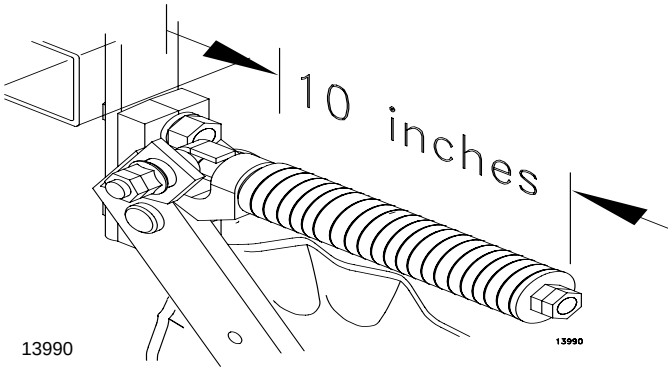


Figure 3-2
Coulter Spring Length

For lighter no-till conditions where rocks or other obstructions are a problem, you can lengthen coulter springs to protect coulters from impact. Refer to the chart below for spring length and corresponding coulter down force.

Spring Length	Initial Vertical Coulter Force
10 1/2 Inches	175 pounds
10 1/4 Inches	300 pounds
10 Inches	400 pounds
9 3/4 Inches	525 pounds

NOTE: Resetting coulter-spring length shorter than 9 3/4 inches may contribute to premature failure of parts and warranty will be voided. If additional force is needed, add weights to drill.

Opener Depth

Press Wheel Adjustment

Set opener seeding depth by adjusting press-wheel height. To adjust, first raise drill slightly, then lift and slide T-handles on top of openers as shown in Figure 3-3. Adjust all press wheels to same height.

- For shallower seeding, slide T-handles toward drill.
- For deeper seeding, slide T-handles away from drill.

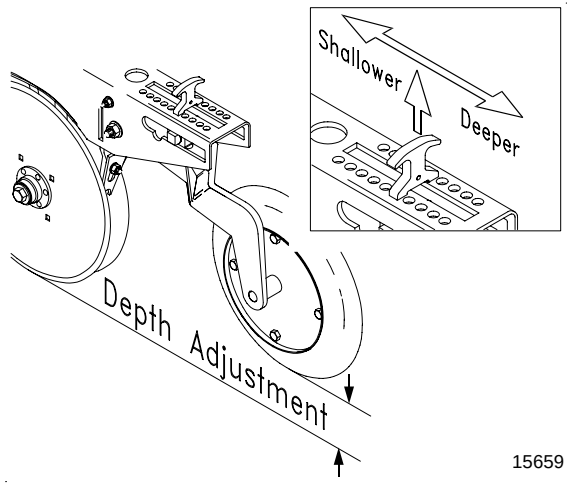


Figure 3-3
Press Wheel Depth Adjustment

Opener Mounting

You may need to lower openers that run in tire tracks. To lower individual openers, connect opener spring bar (1) in a higher hole (2). Move spring bar to a lower hole (3) to raise opener.

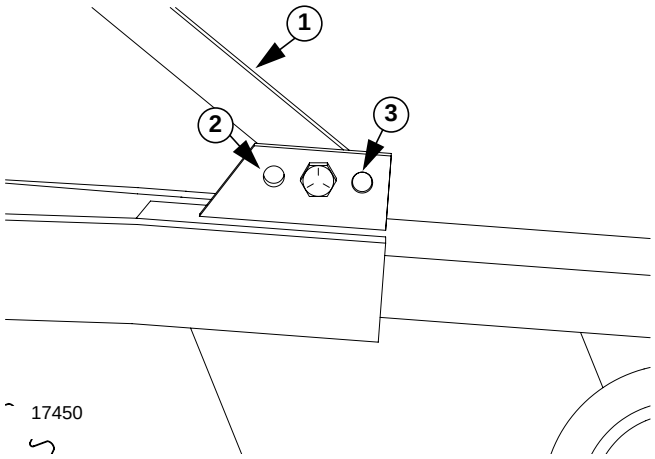


Figure 3-4
Spring Bar Adjustment

Opener Down Pressure

Each opener spring can be adjusted individually for down pressure. This is useful when penetrating hard soil and for seeding in tractor tire tracks. To adjust opener down pressure, remove W clip at bottom of spring. Place W clip in a higher hole for greater down pressure or in a lower hole for less down pressure. See Figure 3-5.

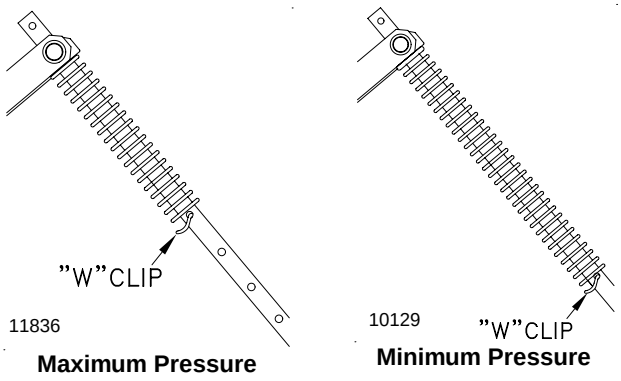


Figure 3-5
Opener Spring Length

Seeding Rate

Calibrating the seeding rate requires four steps:

1. arranging the drive sprockets,
2. setting the seed-rate handle,
3. positioning the seed-cup door, and
4. checking the seeding rate.

Refer to the seed-rate charts starting on page 16. These charts list the proper sprocket sizes and seed-rate-handle settings for various seeds and seeding rates.

The seed-rate charts are based on cleaned, untreated seed of average size and test weight. The rates are based on 9.00 x 24 rib implement tires. Many factors will affect seeding rates including foreign material, seed treatment, seed size, field conditions, tire pressure and test weight. Minor adjustments likely will be needed. Set and check the seeding rate using the procedures below, then adjust the rate as necessary.

Arrange Drive Sprockets

Refer to the seed-rate charts for the correct drive type–1, 1A, 2 or 2A. Figure 3-6 shows the sprocket arrangement for each drive type.

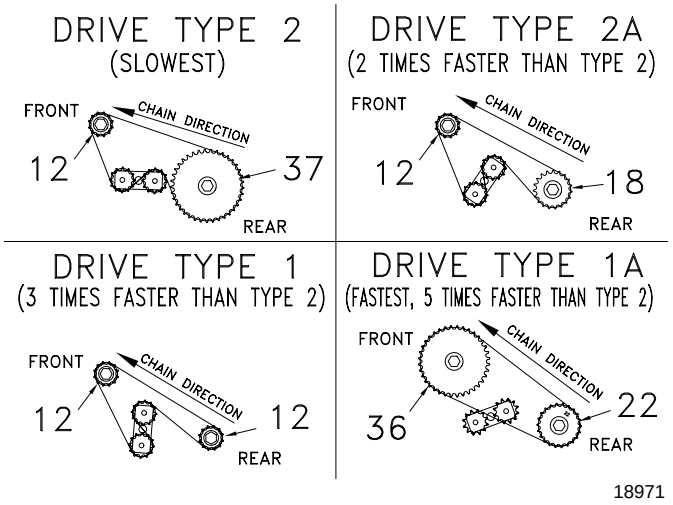


Figure 3-6
Drive Types

To change the drive types, refer to Figure 3-7.

1. Loosen nut (1) holding idler arm. Turn arm so chain is slack. Remove chain from sprockets.
2. Rearrange sprockets (2) and plastic spacers (3) on front shaft so correct front and rear sprockets are aligned.
3. Slide idlers on idler arms so idlers are aligned with correct sprockets. Reinstall chain.
4. Turn idler arm as indicated by drive type to remove slack from chain. Retighten nut that holds idler arm.

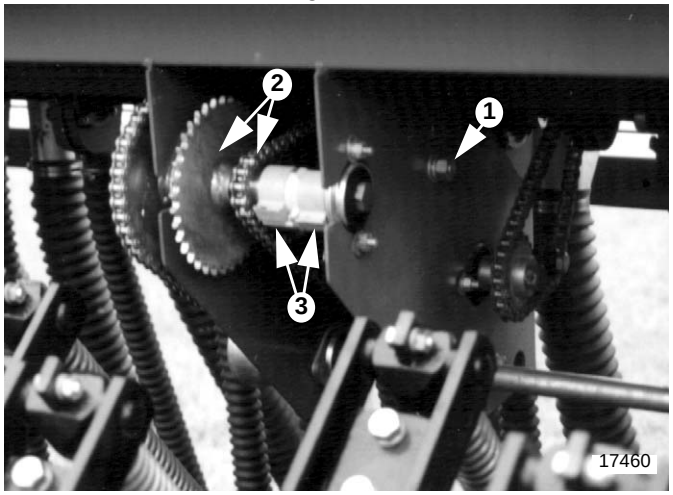


Figure 3-7
Sprocket Box

Set Seed-Rate Handle

The position the handle (shown in Figure 3-8) to the setting indicated on the chart. To adjust, loosen the wing nut under the handle. Slide handle until the indicator lines up with the correct setting.

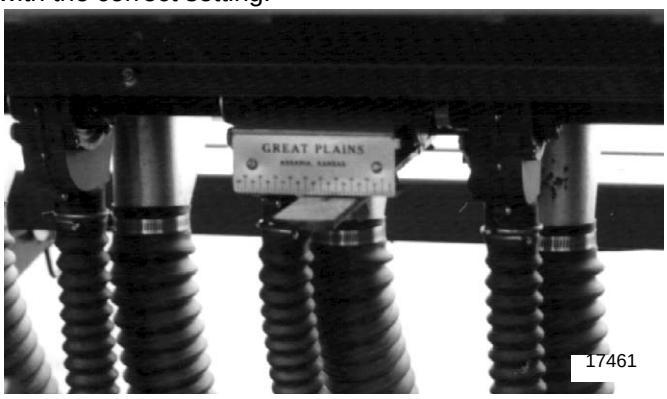


Figure 3-8
Seed-Rate Handle

Position Seed-Cup Doors

Refer to Figure 3-9. For wheat and other small seeds, move the seed-cup-door handles to the highest position. For soybeans and other large seeds, lower the handles to the second position. If excessive seed cracking occurs, lower the handles to the third position. Move the handles to the fourth, wide-open position for seed-cup clean out. Make sure all handles are in same position before drilling.

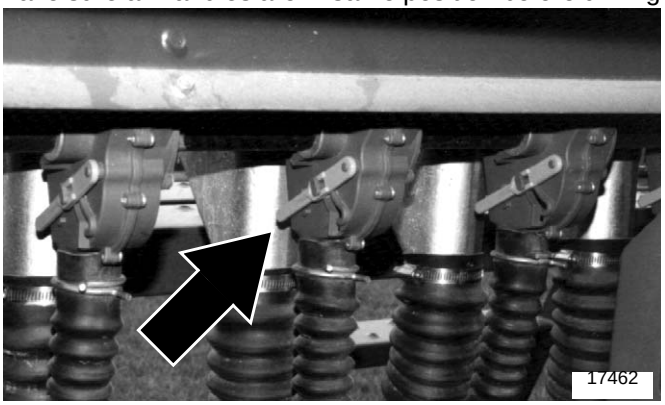


Figure 3-9
Seed-Cup-Door Handles

Check Seeding Rate

1. Hydraulically lower drill to planting position to activate clutch.
5. Check that tires are 9.0 x 24 rib implement and properly inflated. Refer to "**Tire Inflation Chart**," page 35.
6. Jack drive (left) end wheel off ground. Rotate wheel to see that drive system is working properly and seed cups are free from foreign material.
7. Record weight of an empty container large enough to hold seed metered for one acre.
8. Place several pounds of seed over three seed cups on an outside end of the drill box. Pull the seed tubes off of these three openers.
9. Turn drive end wheel several times to fill seed-cups with seed. Turn wheel until seed falls to the ground from each cup.
10. Place container under the three tubes to gather metered seed.
11. Rotate drive wheel until 1 acre is tallied on acremeter. This will be 592 rotations on a 7-foot drill or 422 rotations on a 10-foot drill. You can also rotate the gauge wheel jackshaft by means of a wrench or socket. If rotating gauge wheel jackshaft, disengage the lockout on the drive wheel and use same number of rotations as for rotating drive wheel. Check that the three seed cups have plenty of seed coming into them.
12. Weigh metered seed. Subtract initial weight of container. Divide by three. Multiply by the number of openers on your drill to determine total pounds seeded per acre. If this figure is different than desired, reset sprockets accordingly.

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

13. 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.

Seed Rate Charts

HARD RED WINTER WHEAT	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	11	19	27	35	44	52	62	71	81	91	101	110	122	133	145	153	161	166	174	180
7 1/2"	0	10	17	24	32	40	48	56	65	74	83	92	100	112	121	132	140	147	152	159	164
8"	0	9	16	23	30	39	46	54	62	70	79	88	96	100	112	121	132	140	145	152	156
10"	0	7	13	19	24	31	36	43	49	56	63	70	77	85	92	101	106	112	116	121	125

*Based On 60#/Bushel

HARD RED WINTER WHEAT	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	7	13	18	23	30	35	41	47	54	61	67	73	81	88	97	102	107	111	116	120
7 1/2"	0	6	11	16	21	27	32	38	43	49	55	61	67	74	81	88	93	98	101	106	109
8"	0	6	10	15	20	26	30	36	41	47	53	58	64	71	77	84	89	93	96	101	104
10"	0	5	9	12	16	21	24	29	33	37	42	47	51	57	62	67	71	75	77	81	83

*Based On 60#/Bushel

RICE SHORT GRAIN	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	2	9	15	21	28	35	41	47	54	61	67	76	81	86	92	98	105	107	107	109
7 1/2'	0	2	8	14	19	26	32	38	45	51	57	64	71	76	82	86	93	98	101	101	103
8"	0	2	7	13	18	25	30	35	42	47	54	59	66	71	75	81	87	92	95	95	96
10"	0	1	6	11	15	20	25	29	34	38	43	47	53	57	61	66	70	74	76	76	77

RICE SHORT GRAIN	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	5	15	28	40	50	66	79	93	107	123	136	157	169	180	194	210	223	228	231	232
7 1/2"	0	4	15	26	37	47	63	75	87	101	116	127	148	159	170	182	197	210	214	217	218
8"	0	4	14	25	35	45	58	70	82	95	108	119	139	149	159	171	186	197	201	204	205
10"	0	3	11	20	28	35	47	56	66	76	86	96	111	120	127	137	148	157	161	163	164

RICE LONG GRAIN	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	1	6	13	19	27	34	39	46	52	58	64	69	74	78	83	89	95	95	96	97
7 1/2"	0	1	5	12	17	25	31	36	44	49	55	60	65	70	74	78	84	89	89	90	92
8"	0	1	5	11	16	24	29	35	41	46	51	56	61	66	69	73	78	84	84	85	86
10"	0	0	4	9	14	19	24	27	33	37	41	46	49	53	56	58	63	67	67	68	69

RICE LONG GRAIN	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	2	9	22	36	50	63	78	90	100	116	131	143	152	165	175	187	202	207	210	211
7 1/2"	0	2	8	21	34	46	59	74	85	94	110	123	135	143	156	165	176	190	196	197	198
8"	0	2	8	19	32	44	56	69	80	88	103	116	126	134	146	154	165	178	183	186	187
10"	0	1	6	15	25	35	45	56	64	71	83	93	101	107	116	124	132	143	147	148	149

BARLEY	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	8	13	19	25	30	36	42	48	53	59	65	71	76	82	87	93	98	104	109
7 1/2"	0	0	7	13	18	23	29	34	39	45	50	55	60	66	71	76	82	87	93	89	102
8"	0	0	7	12	17	22	27	28	37	42	47	52	57	62	67	72	77	82	87	93	97
10"	0	0	6	9	13	18	22	25	29	34	38	41	45	50	54	57	61	65	70	74	78

OATS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	4	8	13	18	24	30	35	42	48	54	60	67	72	79	86	91	97	101	106	110
7 1./2"	0	3	7	12	16	22	27	32	38	44	49	55	61	66	72	78	83	88	93	97	100
8"	0	3	7	11	15	21	26	30	36	42	47	53	58	63	69	75	79	84	88	92	96
10"	0	3	6	9	13	17	21	24	29	34	37	42	47	50	55	60	63	67	71	74	76

*Based On 39#/Bushel

RYE	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	3	6	9	12	15	17	22	23	25	29	32	35	37	41	45	48	49	52	53
7 1/2"	0	0	3	5	8	11	14	16	21	22	24	28	30	33	35	38	42	46	46	49	49
8"	0	0	3	5	8	10	13	15	19	20	23	26	29	31	33	36	39	43	44	46	47
10’	0	0	2	4	6	8	10	14	16	17	19	21	23	25	27	29	32	34	35	37	38

MILLET	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	1	4	6	9	12	14	16	19	22	25	28	32	35	39	42	46	51	53	53	54
7 1/2"	0	1	3	5	8	11	13	15	17	21	24	27	31	33	36	40	44	47	49	50	51
8"	0	1	3	5	8	10	12	14	16	19	22	25	28	30	34	38	41	45	46	47	48
10"	0	0	2	4	6	8	9	11	13	15	18	21	23	25	27	29	33	36	37	38	39

BUCKWHEAT	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	4	10	18	25	32	40	48	52	63	73	82	86	96	104	117	128	142	151	152	155
7 1/2"	0	3	9	17	23	30	37	46	49	60	68	77	81	90	98	111	121	134	142	146	146
8"	0	3	9	16	21	28	35	43	46	57	63	73	76	85	92	104	113	126	133	134	137
10"	0	3	7	12	18	23	28	34	37	46	52	58	61	68	74	83	91	100	106	107	109

FLAX OR SUDAN	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	1	4	6	8	12	15	17	21	24	27	31	33	36	38	42	47	50	53	56	57
7 1/2"	0	1	3	5	7	11	14	16	20	22	25	29	31	34	36	40	44	47	50	52	54
8"	0	1	3	5	7	10	13	15	19	21	24	27	29	32	34	37	41	44	47	49	51
10"	0	0	3	4	6	8	10	12	15	17	19	22	23	25	27	30	33	36	38	39	41

SUNFLOWERS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	0	3	6	9	12	15	17	20	25	29	32	35	37	41	44	46	49	52	55
7 1./2"	0	0	0	3	6	8	11	14	16	19	23	27	30	33	35	38	41	44	46	49	52
8"	0	0	0	3	5	8	10	13	15	18	22	25	28	31	34	35	38	41	44	46	49
10"	0	0	0	2	4	6	8	10	12	15	17	21	23	25	26	29	31	33	35	37	39

SOYBEANS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	8	21	34	46	59	70	82	95	107	118	132	144	154	166	174	184	195	201	207
7 1/2"	0	0	7	20	31	42	54	64	75	87	98	108	120	131	141	152	159	168	178	184	189
8"	0	0	7	19	29	40	51	61	71	83	93	103	114	125	134	145	152	160	169	175	180
10"	0	0	6	15	23	32	41	49	57	66	75	82	91	100	107	116	121	128	135	140	144

*Based On 59.1#/Bushel

SOYBEANS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	2	7	11	15	19	23	27	31	35	38	43	47	50	54	57	60	63	65	67
7 1/2"	0	0	2	6	10	13	17	21	24	28	32	35	39	42	46	49	52	54	58	60	61
8"	0	0	2	6	9	13	17	20	23	27	30	33	37	40	43	47	49	52	55	57	58
10"	0	0	2	5	8	10	13	16	18	21	24	27	30	32	35	37	39	41	44	45	47

*Based On 59.1#/Bushel

SOYBEANS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	5	14	22	30	39	49	55	64	72	79	88	96	103	111	116	123	130	134	138
7 1/2"	0	0	5	13	20	28	36	42	50	58	65	72	80	87	94	101	106	112	118	123	126
8"	0	0	4	12	19	26	34	40	47	55	62	68	76	83	89	96	101	107	113	117	120
10"	0	0	4	10	16	21	27	32	38	44	50	55	61	67	70	77	81	85	910	93	96

*Based On 59.1#/Bushel; set seed-rate handle between 50 and 80 for optimum seeding of soybeans.

PEAS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	6	20	24	41	52	67	81	96	110	126	140	153	168	183	194	208	209	210	211
7 1/2"	0	0	5	19	22	38	50	63	76	91	103	118	131	144	158	172	182	196	196	197	198
8"	0	0	5	18	21	36	46	59	72	84	97	111	123	135	148	161	171	183	184	184	186
10’	0	0	4	13	17	29	37	47	57	68	78	89	99	108	119	129	137	147	148	149	150

PINTO BEANS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	0	0	2	3	6	11	16	22	27	34	38	41	46	52	61	62	64	65	67
7 1/2"	0	0	0	0	1	2	5	10	15	21	26	31	36	39	43	49	57	59	60	61	63
8"	0	0	0	0	1	2	5	9	14	19	25	30	34	36	41	46	53	55	56	57	59
10"	0	0	0	0	0	2	4	8	13	18	20	24	27	29	33	37	43	44	45	46	48

RAPE	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	3	5	7	10	12	14	16	18	21	24	27	30	33	36	39	43	46	49	50	50
7 1/2"	0	3	4	7	9	11	12	14	17	19	22	25	27	30	33	36	39	42	44	46	46
8"	0	3	4	6	8	10	12	14	16	18	21	23	26	29	31	34	37	40	42	42	43
10"	0	2	3	5	7	8	9	11	13	15	17	19	21	23	25	27	30	32	34	34	34

*Based On 49#/Bushel

ALFALFA	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	4	5	8	10	14	16	19	22	25	28	30	33	35	37	40	42	44	47	49	50
7 1/2"	0	3	5	7	10	12	15	17	20	22	25	28	30	32	34	37	38	40	43	44	46
8"	0	3	5	7	9	12	14	17	19	21	24	26	29	30	33	35	37	39	41	42	44
10"	0	2	4	5	7	9	11	13	15	17	19	21	23	24	26	28	29	31	33	34	35

*Based On 60.7#/Bushel

MILO	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	2	4	7	10	13	17	19	23	26	29	32	35	39	42	46	50	54	57	57	57
7 1/2"	0	2	4	6	9	12	15	18	21	24	26	29	32	35	38	42	46	49	52	52	52
8"	0	2	3	6	9	12	14	17	20	22	25	28	31	34	37	40	44	47	49	50	50
10"	0	2	3	5	7	9	11	14	16	18	20	22	24	27	29	32	35	37	39	40	40

*Based On 62.4#/Bushel

WHEAT GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	0	1	2	3	3	4	4	5	6	6	7	8	8	8	8	9	9	10	10
7 1/2"	0	0	0	0	2	3	3	4	4	5	5	6	6	7	7	7	8	8	8	9	10
8"	0	0	0	0	2	2	3	3	4	5	5	6	6	7	7	7	7	7	8	8	9
10"	0	0	0	0	2	2	2	3	3	4	4	4	5	5	5	5	6	6	7	8	8

KENTUCKY BLUE GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	3	7	11	14	18	21	25	29	32	36	39	42	45	48	52	54	57	60	63	65
7 1/2"	0	3	7	10	13	17	20	24	27	30	34	36	40	42	45	48	51	54	57	59	61
8"	0	3	6	9	12	15	18	22	25	28	31	34	37	39	42	45	47	50	53	55	57
10"	0	2	5	7	10	12	14	17	20	22	25	26	29	31	33	36	37	39	41	43	45

KENTUCKY BLUE GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	5	11	17	22	27	33	39	45	49	56	60	65	70	75	80	84	89	93	97	102
7 1 /2"	0	5	10	16	20	26	31	37	42	46	52	56	61	65	70	75	79	83	87	91	95
8"	0	5	10	15	19	24	29	34	39	43	49	52	57	61	65	70	74	78	82	85	89
10"	0	4	8	11	15	19	23	27	31	34	38	41	45	48	51	55	58	61	64	67	70

ORCHARD GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	.3	.8	2.1	3.3	4.4	5.6	6.9	8.0	9.2	10.3	11.6	12.8	13.9	15.1	16.4	17.5	18.7	19.8	21.1	22.3	23.4
7 1/2"	.3	.8	2.0	3.1	4.1	5.2	6.4	7.5	8.6	9.7	10.9	12.0	13.0	14.1	15.3	16.4	17.5	18.6	19.8	20.9	21.9
8"	.3	.7	1.9	2.9	3.9	4.9	6.0	7.0	8.0	9.0	10.2	11.2	12.2	13.2	14.3	15.3	16.3	17.3	18.5	19.5	20.5
10"	.2	.6	1.5	2.2	3.0	3.8	4.7	5.5	6.3	7.1	8.0	8.8	9.6	10.3	11.2	12.0	12.8	13.6	14.5	15.3	16.1

ORCHARD GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	.2	.4	1.0	1.6	2.1	2.7	3.3	3.9	4.5	5.0	5.7	6.2	6.8	7.3	8.0	8.5	9.1	9.6	10.3	10.8	11.4
7 1/2"	.1	.4	1.0	1.5	2.0	2.5	3.1	3.7	4.2	4.7	5.3	5.8	6.3	6.9	7.5	8.0	8.5	9.0	9.6	10.1	10.7
8"	.1	.3	.9	1.4	1.9	2.4	2.9	3.4	3.9	4.4	4.9	5.4	5.9	6.4	7.0	7.5	7.9	8.4	9.0	9.5	10.0
10"	.1	.3	.7	1.1	1.5	1.9	2.3	2.7	3.1	3.4	3.9	4.3	4.7	5.0	5.5	5.9	6.2	6.6	7.1	7.4	7.8

ORCHARD GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	.8	2.0	5.2	8.0	10.8	13.6	16.8	19.6	22.4	25.2	28.4	31.2	34.0	36.8	40.0	42.8	45.6	48.4	51.6	54.4	57.2
7 1/2"	.8	1.9	4.9	7.5	10.1	12.8	15.8	18.4	21.0	23.6	26.6	29.3	31.9	34.5	37.5	40.1	42.8	45.4	48.4	51.0	53.6
8"	.7	1.8	4.6	7.0	9.5	11.9	14.7	17.2	19.6	22.1	24.9	27.3	29.8	32.2	35.0	37.5	39.9	42.4	45.2	47.6	50.1
10"	.6	1.4	3.6	5.5	7.4	9.4	11.6	13.5	15.4	17.3	19.5	21.5	23.4	25.3	27.5	29.4	31.4	33.3	35.5	37.4	39.3

ORCHARD GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	.5	1.2	3.2	4.9	6.6	8.3	10.3	12.0	13.7	15.5	17.4	19.1	20.9	22.6	24.5	26.3	28.0	29.7	31.7	33.4	35.1
7 1/2"	.5	1.2	3.0	4.6	6.2	7.8	9.7	11.3	12.9	14.5	16.3	17.9	19.6	21.2	23.0	24.6	26.2	27.8	29.7	31.3	32.9
8"	.4	1.1	2.8	4.3	5.8	7.3	9.0	10.5	12.0	13.5	15.2	16.8	18.3	19.8	21.5	23.0	24.5	26.0	27.7	29.2	30.7
10"	.3	.8	2.2	3.4	4.6	5.7	7.1	8.3	9.4	10.6	12.0	13.2	14.3	15.5	16.9	18.1	19.2	20.4	21.8	22.9	24.1

BURMUDA GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	8	14	22	28	34	40	47	53	59	65	71	77	83	89	96	102	108	114	120	126
7 1/2"	0	8	13	21	26	32	38	44	49	55	61	67	72	78	84	90	95	101	107	113	118
8"	0	7	12	19	25	30	35	41	46	51	57	62	68	73	78	84	89	94	100	105	111
10"	0	6	10	15	19	24	28	32	36	40	45	49	53	57	61	66	70	74	78	83	87

BURMUDA GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 1A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	14	23	36	46	56	66	76	86	96	106	116	126	136	146	156	166	176	186	196	206
7 1/2"	0	13	21	34	43	52	62	71	81	91	99	109	118	127	137	146	156	165	174	184	193
8"	0	12	20	31	40	49	57	67	75	84	92	102	110	119	127	137	145	154	162	172	180
10"	0	9	15	25	32	38	45	52	59	66	73	80	87	93	100	107	114	121	128	135	142

BURMUDA GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41
7 1/2"	0	3	4	7	9	10	12	14	16	18	20	22	24	25	27	29	31	33	35	37	38
8"	0	2	4	6	8	10	11	13	15	17	18	20	22	24	25	27	29	31	32	34	36
10"	0	2	3	5	6	8	9	10	12	13	15	16	17	19	20	21	23	24	25	27	28

BURMUDA GRASS	SEED RATE HANDLE SETTING																				
DRIVE TYPE 2A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	6	9	15	19	23	27	31	35	39	43	47	52	56	60	64	68	72	76	80	84
7 1/2"	0	5	9	14	18	21	25	29	33	37	41	45	48	52	56	60	64	67	71	75	79
8"	0	5	8	13	16	20	24	27	31	34	38	42	45	49	52	56	59	53	66	70	74
10"	0	4	6	10	13	16	19	21	24	27	30	33	35	38	41	44	47	49	52	55	58

PERENNIAL RYE GRASS	SEED RATE INDICATOR SETTING NUMBER																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	5	11	16	22	27	33	38	44	49	55	60	66	71	77	83	88	94	99	105	110
7 1/2"	0	5	10	15	20	26	31	36	41	46	51	57	62	67	72	77	82	88	93	98	103
8"	0	4	9	14	19	24	29	33	38	43	48	43	48	62	67	72	77	82	87	91	96
10"	0	3	7	11	15	19	22	26	30	34	38	42	45	49	53	57	60	64	68	72	76

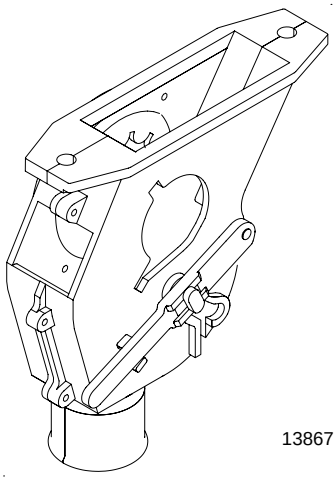
PERENNIAL RYE GRASS	SEED RATE INDICATOR SETTING NUMBER																				
DRIVE TYPE 1A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	8	17	25	34	43	51	60	69	77	86	95	104	112	121	130	138	147	156	164	173
7 1/2"	0	7	16	24	32	40	48	56	64	72	81	89	97	105	113	121	129	138	146	154	162
8"	0	7	15	22	30	37	45	52	60	67	75	83	91	98	106	113	121	128	136	143	151
10"	0	5	12	17	23	29	35	41	47	53	59	65	71	77	83	89	95	104	107	113	119

K-31 FESCUE	SEED RATE INDICATOR SETTING NUMBER																				
DRIVE TYPE 1	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	3	6	10	14	17	21	23	28	30	34	38	41	44	48	51	54	55	56	57
7 1/2"	0	0	2	6	10	13	16	19	22	26	28	32	36	38	41	45	48	51	51	53	53
8"	0	0	2	5	9	12	15	18	20	24	27	30	33	36	39	42	45	47	48	49	50
10"	0	0	2	4	7	10	12	14	16	19	21	23	26	28	30	33	35	37	38	39	39

K-31 FESCUE	SEED RATE INDICATOR SETTING NUMBER																				
DRIVE TYPE 1A	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Pounds Per Acre																				
7"	0	0	4	10	16	22	27	32	36	43	47	52	59	63	68	74	79	83	85	87	87
7 1/2"	0	0	4	9	15	21	25	30	34	40	44	49	55	59	64	69	74	78	79	81	82
8"	0	0	3	8	14	19	24	28	31	38	41	46	51	55	60	64	69	73	74	76	77
10"	0	0	3	7	11	15	19	22	25	30	32	36	40	43	47	51	54	57	58	60	60

Refer to Figure 4-5:

NOTE:This drill is equipped with four-position feed cup door on each feed cup. The highest handle position is for wheat and other small seeds, the second handle position is for soybeans and other large seeds. Should excessive cracking occur to the large seeds, drop the handle to the second position. The wide open position will allow complete clean out of the feed cup. **Make sure** all handles are in the same position before drilling.



Feed-cup
Figure 4-5

Native Grass Option

IMPORTANT: The rate charts are a guide only. Because of wide variations in seed size and weight, you must calibrate the drill to your seed. Set your drill according to the charts, then follow procedures under *Checking the Seeding Rate*, page 12.

Native-grass metering is directly related to revolutions of the clutch shaft. Different sprocket combinations give a broad range of seeding rates. Rates listed on the charts are for total bulk material, including live and inert material.

Many factors affect seeding rates including seed weight, seed size, relative humidity, moisture content of seed, different proportions of seed types and seed density. Tire size, pressure and slippage can also affect rates. Set and check the seeding rate using the procedures below, then readjust the rate as necessary.

To set the seeding rate on the native-grass option:

1. Find the sprocket combination for your desired application rate and drill row spacing on *Native Grass Rate Charts*, page 22.
2. Arrange clutch-shaft (1) and upper-shaft (2) sprockets. See Figure 3-1. Loosen idler arm and remove chain from sprockets. If necessary, loosen set screws and move clutch-shaft sprocket to align correct sprockets. Reinstall chain over correct sprockets.

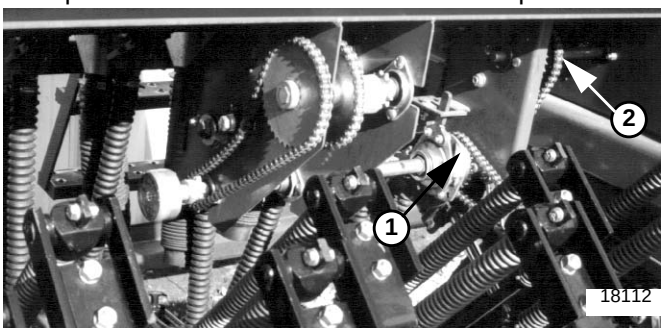


Figure 3-1
Shaft Sprockets, Native Grass

3. If necessary, switch drive (1) and driven (2) sprockets under end panel. Refer to Figure 3-2. Loosen idler arm and remove chain. Remove lynch pins on drive and driven sprockets and rearrange sprockets accordingly.

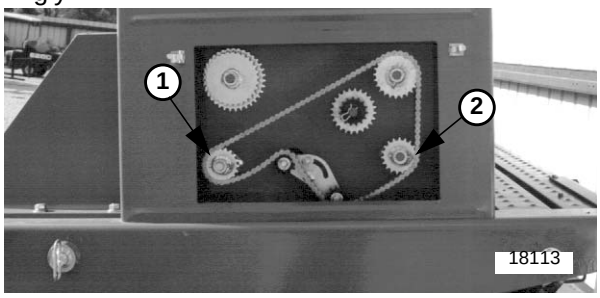


Figure 3-2
Drive and Driven Sprockets, Native Grass

4. After setting your sprockets, follow procedures under *Checking the Seeding Rate*, page 12, to calibrate drill for your seed mix.

IMPORTANT: To prevent damage to the Native Grass box agitator and its drive components:

Do not transport drill with Native Grass box loaded with seed.

IMPORTANT: The native grass attachment comes standard with the agitator shown in Figure 3-A. However, if your 705 drill has a S/N 1948Q and below, or if your 1005 drill has a S/N 5533U and below, you will have the standard agitator or the optional rod agitator shown in Figure 3-B. To order the new style agitator please contact your Great Plains dealer.

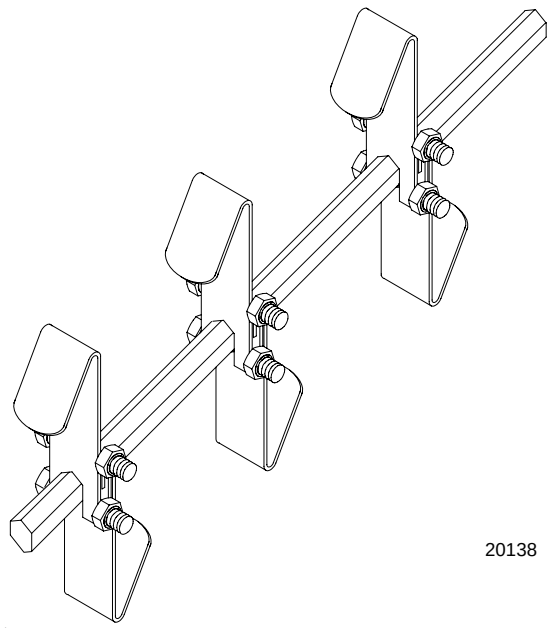


Figure 3-A
Rod Agitator's

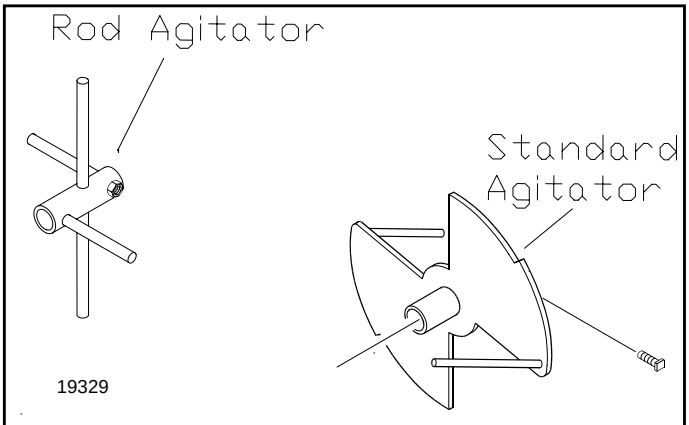


Figure 3-B
Early Model Agitators

Native Grass Rate Charts, Total Bulk Material

Native Grass Mix

Drill & Row Space	Clutch Shaft Spkt.	Upper Shaft Spkt.	Drive 15 / Driven 35	Drive 15 / Driven 30	Drive 19 / Driven 35	Drive 19 / Driven 30	Drive 24 / Driven 35	Drive 15 / Driven 19	Drive 30 / Driven 35	Drive 19 / Driven 19	Drive 35 / Driven 30	Drive 19 / Driven 15	Drive 35 / Driven 24	Drive 30 / Driven 19	Drive 35 / Driven 19	Drive 30 / Driven 15	Drive 35 / Driven 15
705 & 1005, 10 inch	12	35	2.4	2.8	3.1	3.6	3.9	4.4	4.8	5.6	6.6	7.1	8.2	8.9	10.4	11.2	13.1
	12	30	2.8	3.3	3.6	4.2	4.5	5.2	5.6	6.6	7.7	8.3	9.6	10.4	12.1	13.1	15.3
	15	35	3.0	3.5	3.8	4.5	4.8	5.6	6.0	7.0	8.2	8.9	10.3	11.1	13.0	14.1	16.4
	15	30	3.5	4.1	4.5	5.2	5.6	6.5	7.0	8.2	9.6	10.4	12.0	13.0	15.1	16.4	19.1
705, 8 & 7.5 inch; 1005, 8 inch	12	35	3.1	3.6	3.9	4.5	4.9	5.7	6.1	7.2	8.4	9.1	10.4	11.3	13.2	14.3	16.7
	12	30	3.6	4.2	4.5	5.3	5.7	6.6	7.2	8.4	9.7	10.6	12.2	13.2	15.4	16.7	19.5
	15	35	3.8	4.5	4.9	5.7	6.1	7.1	7.7	8.9	10.4	11.3	13.0	14.1	16.5	17.2	20.4
	15	30	4.5	5.2	5.7	6.6.	7.2	8.2	8.9	10.4	12.2	13.2	15.2	16.5	19.2	20.9	----
1005, 7.5 inch	12	35	3.3	3.8	4.2	4.9	5.3	6.1	6.6	7.7	8.9	9.7	11.2	12.1	14.1	15.3	17.9
	12	30	3.8	4.5	4.9	5.7	6.1	7.1	7.7	8.9	10.4	11.3	13.1	14.1	16.5	17.9	20.9
	15	35	4.1	4.8	5.2	6.1	6.6	7.6	8.2	9.6	11.2	12.1	14.0	15.1	17.7	19.2	22.4
	15	30	4.5	5.6	6.1	7.1	7.7	8.8	9.6	11.2	13.0	14.2	16.3	17.7	20.6	---	---
705 & 1005, 7 inch	12	35	3.5	4.1	4.4	5.2	5.6	6.5	7.0	8.2	9.5	10.4	11.9	12.9	15.1	16.4	19.1
	12	30	4.1	4.8	5.2	6.0	6.5	7.5	8.2	9.5	11.1	12.1	13.9	15.1	17.6	19.1	22.3
	15	35	4.4	5.1	5.5	6.5	7.0	8.1	8.8	10.2	11.9	13.0	14.9	16.4	20.5	23.8	----
	15	30	5.1	6.0	6.5	7.6	8.2	9.4	10.2	11.9	13.9	15.1	17.4	18.8	22.0	---	---

NOTE: The native-grass mix included 1.5 pounds big blue, 0.8 pound little blue, 0.6 pound side oats grama, 1 pound wheat grass, 0.3 pound switch grass, and 1.5 pounds indian grass.

Brome

Row Space	Clutch Shaft Spkt.	Upper Shaft Spkt.	Drive 15 / Driven 35	Drive 15 / Driven 30	Drive 19 / Driven 35	Drive 19 / Driven 30	Drive 24 / Driven 35	Drive 15 / Driven 19	Drive 30 / Driven 35	Drive 19 / Driven 19	Drive 35 / Driven 30	Drive 19 / Driven 15	Drive 35 / Driven 24	Drive 30 / Driven 19	Drive 35 / Driven 19	Drive 30 / Driven 15	Drive 35 / Driven 15
10 inch	12	35	5.5	6.5	7.0	8.2	8.9	10.2	11.1	12.9	15.1	16.4	18.9	20.4	23.8	25.9	30.2
	12	30	6.5	7.5	8.2	9.6	10.4	11.9	12.9	15.1	17.6	19.1	22.0	23.8	27.8	30.2	35.2
	15	35	6.9	8.1	8.8	10.2	11.1	12.8	13.9	16.2	18.9	20.5	23.6	25.5	29.8	32.4	37.7
	15	30	8.1	9.4	10.2	12.0	12.9	14.9	16.2	18.9	22.0	23.9	27.5	29.8	34.8	37.7	44.0
8 inch	12	35	7.1	8.2	8.9	10.4	11.3	13.0	14.1	16.5	19.2	20.9	24.0	26.0	30.3	32.9	38.4
	12	30	8.2	9.6	10.4	12.2	13.2	15.2	16.5	19.2	22.4	24.3	28.0	30.3	35.4	38.4	44.8
	15	35	8.8	10.3	11.2	13.0	14.1	16.3	17.6	20.6	24.0	26.1	30.0	32.5	37.9	41.2	48.0
	15	30	10.3	12.0	13.0	15.2	16.5	19.0	20.6	24.0	28.0	30.4	35.0	37.9	44.2	48.0	56.0
7.5 inch	12	35	7.6	8.8	9.6	11.2	12.1	13.9	15.1	17.6	20.6	22.4	25.7	27.9	32.5	35.3	41.2
	12	30	8.8	10.3	11.2	13.0	14.1	16.3	17.6	20.6	24.0	216.1	30.0	32.5	37.9	41.2	48.0
	15	35	9.5	11.0	12.0	14.0	15.1	17.4	18.9	22.1	25.7	27.9	32.2	34.8	40.6	44.1	51.5
	15	30	11.1	12.9	14.0	16.3	17.6	20.3	22.1	25.7	30.0	32.6	37.5	40.6	47.4	51.5	60.0
7 inch	12	35	8.1	9.4	10.2	11.9	12.9	14.9	16.1	18.8	22.0	23.8	27.5	29.7	34.7	37.6	43.9
	12	30	9.4	11.0	11.9	13.9	15.1	17.3	18.8	22.0	25.6	27.8	32.0	34.7	40.5	43.9	51.2
	15	35	10.1	11.8	12.8	14.9	16.1	18.6	20.2	23.5	27.5	29.8	34.3	37.2	43.3	47.1	54.9
	15	30	11.8	13.7	14.9	17.4	18.8	21.7	23.5	27.5	32.0	34.8	40.0	43.3	50.6	54.9	64.1

Note: The native grass attachment comes standard with the agitator shown in Figure 3-A , on page 21. However, if your 705 drill has a S/N 1948Q and below, or if your 1005 drill has a S/N 5533U and below, you will have the standard agitator or the optional rod agitator shown in Figure 3-B, on page 21. To seed brome with the native-grass option requires the new style agitator shown in Figure 3-A. To order the new style agitator please contact your Great Plains dealer.

Fertilizer Rate

On fertilizer drills, the fertilizer-application rate is directly related to ground speed. To adjust the application rate, turn adjustment knob on back of fertilizer tray. See Figure 3-1. This controls the size of the fertilizer outlet. For fertilizer rates, refer to the chart below.

The application rates for dry, granular fertilizer depend on many factors, including fertilizer type, fertilizer density, relative humidity and moisture content of the material.

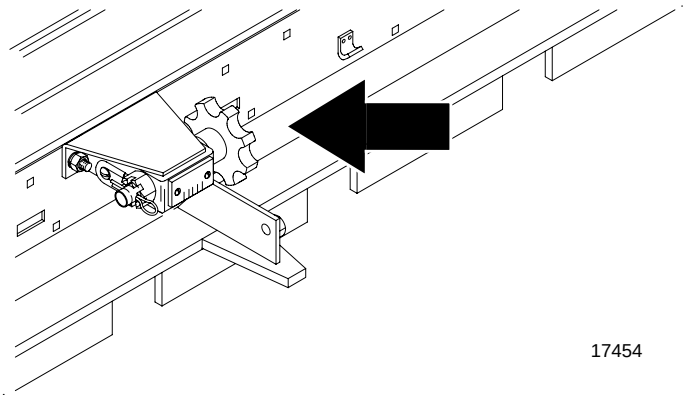


Figure 3-1
Fertilizer Adjustment Knob

Fertilizer Rate Chart

	KNOB SETTING NUMBER																		
Row Spacing	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	Pounds Per Acre																		
7"	0	11	21	40	57	75	93	111	128	144	163	181	196	217	232	245	252	258	260
7 1/2"	0	10	19	37	51	69	85	100	116	131	148	164	178	198	211	223	230	234	236
8"	0	10	19	37	51	69	85	100	116	131	148	164	178	198	211	223	230	234	236
10"	0	8	16	29	41	55	68	80	93	105	119	132	143	158	169	178	184	187	189

Density Conversion Chart

The fertilizer rate chart is based on fertilizer with a density of 65 pounds per cubic foot. If you are applying fertilizer of a different density, use the following table to convert your application rate.

Density, pounds per ft.^{3}	45.00	50.00	55.00	60.00	65.00	70.00	75.00	80.00
Conversion Factor	1.45	1.30	1.20	1.10	1.00	0.93	0.87	0.81

Example: Your fertilizer has a density of 75 pounds per cubic foot, and you want to apply 100 pounds per acre. Multiply desired application rate by the conversion factor.

100 x 0.87 = 87

Adjust drill to setting closest to 87 pounds per acre.

Small Seeds Attachment

To set and calibrate the seeding rate on the optional small-seeds attachment, follow these steps.

1. Set seed-rate handle on small-seeds attachment as indicated by the *Small Seeds Rate Chart*, page 24.
2. Calibrate small-seeds attachment to your material by following steps under *Checking the Seeding Rate*, page 15.

Small Seeds Rate Charts

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Kentucky Blue	7"	0	.2	1.0	1.6	2.3	2.8	3.5	4.0	4.5	5.0	5.4	5.9	6.3	6.7	7.1	7.5	7.9	8.0	8.6	9.0
Grass, Fescue	7 1/2"	0	.2	.9	1.5	2.2	2.7	3.3	3.7	4.2	4.6	5.1	5.5	5.9	6.3	6.7	7.0	7.4	7.7	8.1	8.4
	8"	0	.2	.9	1.4	2.0	2.5	3.0	3.5	3.9	4.3	4.8	5.1	5.5	5.9	6.2	6.6	6.9	7.5	7.5	7.9
	10"	0	.1	.7	1.1	1.6	2.0	2.4	2.7	3.1	3.4	3.7	4.0	4.3	4.6	4.9	5.2	5.4	5.7	5.9	6.2

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Ladino Clover,	7"	0	.9	1.7	2.8	4.1	5.2	6.6	7.9	9.2	10.5	11.8	13.3	14.6	15.9	17.4	18.7	20.0	22.0	23.4	25.1
Canary Grass,	7 1/2"	0	.9	1.6	2.6	3.9	4.9	6.1	7.4	8.6	9.8	11.1	12.5	13.7	14.9	16.3	17.6	18.8	20.4	21.9	23.5
Timothy	8"	0	.8	1.5	2.5	3.6	4.6	5.7	6.9	8.0	9.2	10.3	11.6	12.8	13.9	15.2	16.4	17.5	19.0	20.5	21.9
	10"	0	.6	1.5	1.9	2.5	3.6	4.5	5.4	6.3	7.2	8.1	9.1	10.0	10.9	12.0	12.9	13.8	14.9	16.1	17.2

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Bermuda, Red	7"	0	.6	.9	1.5	2.2	2.8	3.6	4.3	5.1	5.6	6.2	6.7	7.1	7.7	8.1	8.7	9.4	10.0	10.5	11.0
Top, Unhulled	7 1/2"	0	.5	.9	1.4	2.1	2.6	3.3	4.0	4.7	5.3	5.8	6.3	6.7	7.2	7.6	8.2	8.8	9.3	9.8	10.4
Lespedeza	8"	0	.5	.8	1.3	2.0	2.5	3.1	3.8	4.4	4.9	5.4	5.9	6.5	6.7	7.1	7.6	8.2	8.7	9.2	9.7
	10"	0	.4	.6	1.0	1.5	1.9	2.4	3.0	3.5	3.9	4.2	4.6	4.9	5.3	5.6	6.0	6.4	6.8	7.2	7.6

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Red & Sweet	7"	0	1.3	2.9	4.5	6.1	7.7	9.7	11.3	13.1	14.6	16.3	17.8	19.3	21.0	22.7	24.6	25.8	27.5	29.0	30.5
Clovers	7 1/2"	0	1.2	2.7	4.2	5.7	7.2	9.1	10.6	12.3	13.7	15.3	16.7	18.1	19.7	21.2	22.7	24.2	25.8	27.2	28.6
	8"	0	1.1	2.5	3.9	5.3	6.7	8.5	9.9	11.5	12.8	14.3	15.6	16.9	18.3	19.8	21.2	22.6	24.1	25.4	26.7
	10"	0	.9	2.0	3.1	4.2	5.3	6.7	7.8	9.0	10.0	11.2	12.2	13.3	14.4	15.6	16.6	17.8	18.9	19.9	20.9

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Birdsfoot	7"	0	1.5	2.8	4.5	5.8	7.5	9.2	10.9	12.5	14.4	16.5	18.2	20.0	21.9	24.0	25.6	27.5	29.0	31.1	32.9
Trefoil, Sudan	7 1/2"	0	1.4	2.6	4.2	5.4	7.0	8.6	10.2	11.9	13.5	15.4	17.0	18.8	20.5	22.5	24.0	25.8	27.6	29.1	30.9
	8"	0	1.3	2.5	3.9	5.1	6.6	8.1	9.5	11.0	12.6	14.4	15.9	17.5	19.2	21.0	22.4	24.1	25.7	27.2	28.8
	10"	0	1.0	1.9	3.1	4.0	5.1	6.3	7.5	8.6	9.9	11.3	12.5	13.8	15.1	16.5	17.6	18.9	20.2	21.4	22.7

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Orchard Grass	7"	0	0	.2	.6	.7	1.1	1.3	1.7	2.1	2.4	2.8	3.0	3.4	3.7	4.1	4.3	4.7	5.0	5.2	5.4
	7 1/2"	0	0	.2	.5	.7	1.1	1.2	1.6	1.9	2.3	2.6	2.8	3.2	3.5	3.9	4.0	4.4	4.6	4.9	5.1
	8"	0	0	.2	.5	.7	1.0	1.1	1.5	1.8	2.1	2.5	2.6	2.9	3.3	3.6	3.8	4.1	4.3	4.6	4.8
	10"	0	0	.1	.4	.5	.8	.9	1.2	1.4	1.7	1.9	2.1	2.3	2.6	2.8	3.0	3.2	3.3	3.6	3.7

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Millet, Reed	7"	4	1.2	2.1	3.0	3.8	4.7	5.6	6.4	7.3	8.1	9.0	9.9	10.7	11.6	12.5	13.3	14.2	15.1	15.9	16.1
Canary	7 1/2"	3	1.2	2.0	2.8	3.6	4.4	5.2	6.0	6.8	7.6	8.4	9.3	410.1	10.9	11.7	12.5	13.3	14.1	14.9	15.1
	8"	3	1.1	1.8	2.6	3.3	4.1	4.9	5.6	6.4	7.1	7.9	8.6	9.4	10.2	10.9	11.7	12.4	13.2	13.9	14.1
	10"	3	.8	1.4	2.0	2.6	3.2	3.8	4.4	5.0	5.6	6.2	6.8	7.4	8.0	8.6	9.2	9.8	10.4	10.9	11.5

Seed Variety	Spacing	SEED RATE INDICATOR SETTING NUMBER																			
		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
		Pounds Per Acre																			
Alfalfa, Red	7"	0	1.9	3.0	4.1	5.1	6.4	7.5	8.4	9.5	10.8	11.8	12.9	14.0	15.0	16.3	17.3	18.3	20.0	20.6	21.6
Alsika,	7 1/2"	0	1.8	2.8	3.9	4.8	6.0	7.0	7.9	9.0	10.0	11.1	12.1	13.2	14.0	15.3	16.2	17.2	18.3	19.3	20.3
Crimson	8"	0	1.6	2.6	3.6	4.5	5.6	6.6	7.4	8.4	9.4	10.3	11.3	12.3	13.1	1.3	15.2	16.1	17.1	18.0	18.9
Clover	10"	0	1.3	2.1	2.8	3.5	4.4	5.1	5.8	6.6	7.4	8.1	8.9	9.7	10.3	11.2	11.9	12.6	13.4	14.2	14.9

Disk Scraper Adjustment

To keep the opener disks turning freely, dirt scrapers are mounted between the disks to clean as the disks rotate. As field conditions vary, the scrapers may need to be adjusted. In damp conditions, the scrapers may need to be lowered. If openers are not turning freely, the scrapers may need to be raised. To adjust the scrapers, loosen 3/8-inch bolt as shown in Figure 3-1 and move scraper as needed.

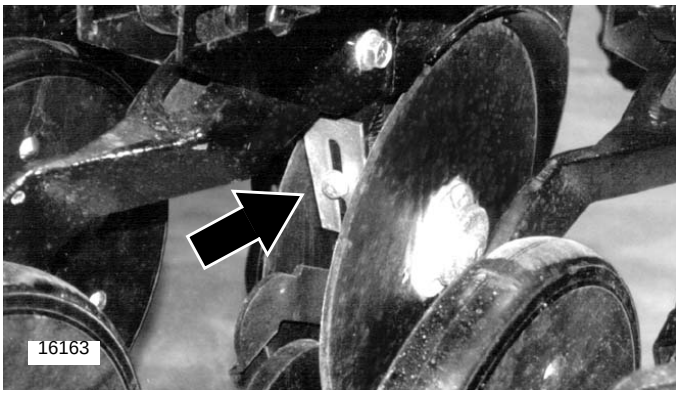


Figure 3-1
Disk Scraper

Drive Clutch

The main drive clutch on your drill is a mechanical-release, jaw-style design. You may need to adjust the clutch for proper engagement and disengagement.

When properly adjusted, the cam plates will disengage the clutch jaws completely when the drill is raised. When lowered in field position, clutch jaws should be engaged.

To adjust, loosen bolts on clutch tab (1). Slide tab forward or back to change point at which cam plates (2) meet. When satisfied with adjustment, retighten bolts on clutch tab.

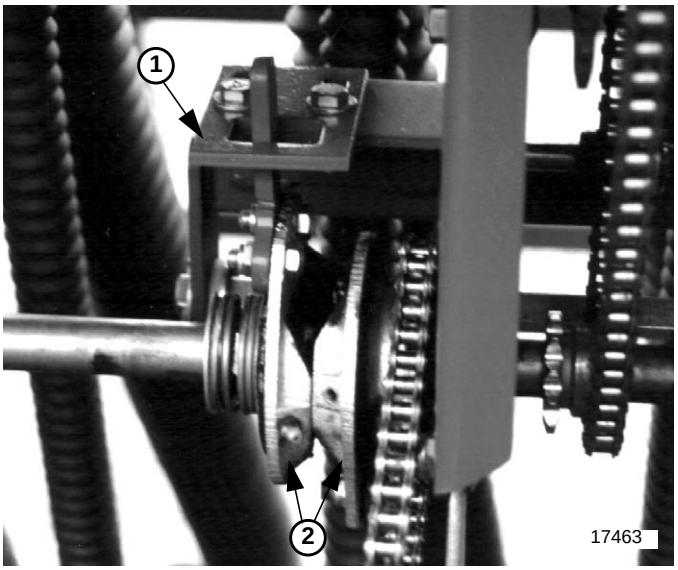


Figure 3-2
Jaw Clutch

Drive Train Operation

Check all chain idlers at beginning of each season for proper adjustment. Check that each idler is taking up excess chain slack. On fertilizer or native grass drills, remove left end panel to inspect drive chain and idler.

After first 100 hours of use and at beginning of each season, readjust idler sprocket in left wheel arm. To access idlers, remove access door. See Figure 3-3.

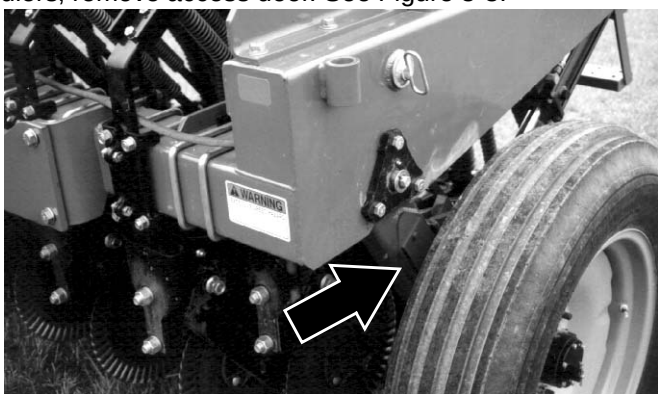


Figure 3-3
Access Door

To adjust idler sprocket, refer to Figure 3-4. Move top idler sprocket (1) down into chain by loosening jam nut and screwing in adjustment stud (2). Retighten jam nut to maintain idler position.

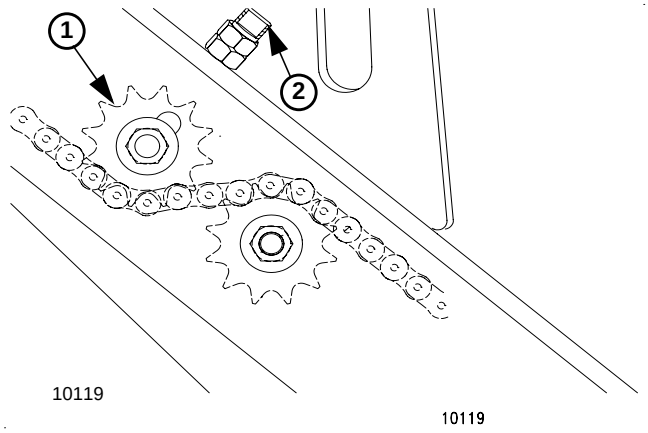


Figure 3-4
Idler Sprocket Adjustments

NOTE**:** Do not overtighten chains. Overtightening chains will cause excess wear on idlers and drive components. Be sure chain is installed with the chain connector link retainer towards the centerline and the clip opening (split end) faces the opposite way of the chain travel.

Harrow Adjustment

Figure 3-5 shows a successful harrow position for no-till conditions. Because of different soil moisture, trash levels and trash types, you may need to reposition the tube frame or tines. Initially position the frame and tines as shown in Figure 3-5, then readjust as necessary.

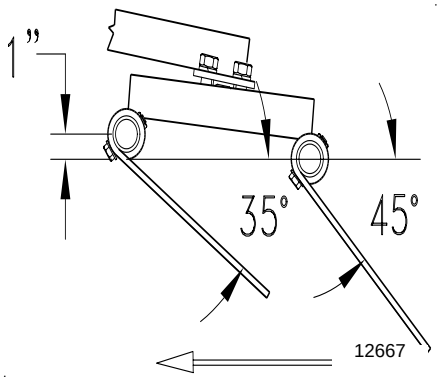


Figure 3-5
Tine Angle For No-Till Drilling

To adjust the frame, refer to Figure 3-6. Loosen the four hex nuts (1) on the u-bolts and rotate the frame tube (2) as necessary.

To adjust the tines, refer to Figure 3-6. Loosen the four 1/2-inch hex nuts (3) on the 1/2-inch u-bolts (4) on the support bar (5). Rotate tine tubes (6) so the tines (7) are against the stop bushings (8) and are angled back as necessary. Retighten hex nuts on u-bolts.

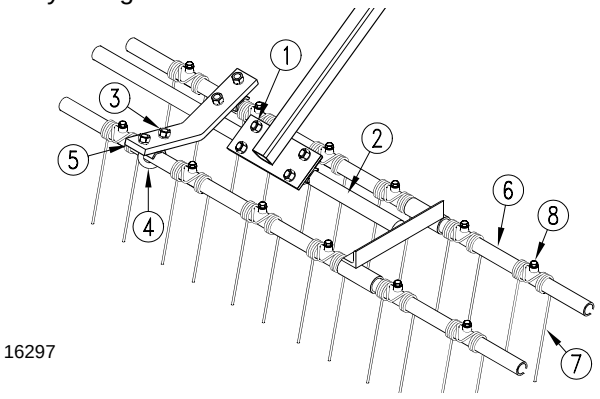


Figure 3-6
Harrow Adjustment

Seed-Lok

The 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 lock up the firming wheels, hook one end of the chain in the opener-body hole just above the wheel arm. Pull the firming- wheel arm up as high as possible and wrap the chain around the arm. Hook the other end of the chain in a link. Leave no slack in the chain; secure the wheel arm in its highest position.

Section 4 *Troubleshooting*

Problem	Solution
Uneven seed spacing or uneven stand	Check for plugging in seed cup.
	Check if seed tubes are plugged.
	Reduce ground speed.
	Check that opener disks turn freely.
	Use faster drive type and move seed-rate handle to a lower setting.
	Increase down pressure on openers to penetrate low spots. Refer to *Opener Down Pressure,* "**Adjustments**," page 13.
	Check for trash or mud build-up on Seed-Lok wheels. Lock up wheels if necessary. Refer to *Seed-Lok*, "**Adjustments**," page 26.
Opener disks not turning freely	Check for trash or mud build-up on disk scraper. Readjust scrapers if necessary. Refer to *Disk Scraper Adjustment*, "**Adjustments**," page 25.
	Check if disk scrapers are too tight, restricting disk movement. Refer to *Disk Scraper Adjustment*, "**Adjustments**," page 25.
	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. Refer to *Opener Down Pressure,* "**Adjustments**," page 13.
	Check press-wheel adjustment for seeding depth. Refer to *Opener Depth*, "**Adjustments**," page 13.
Actual seeding rate is different than desired	Check tire pressure. Proper inflation is listed on *Tire Inflation Chart***,** "**Appendix**," page 35.
	Check tire size. Correct size is rib implement 9.00L x 24.
	Check for build-up of seed treatment on turning surfaces. Clean off build-up regularly.
	Check seed-rate setting. Refer to *Seeding Rate*, "**Adjustments**," page 14.
	Consider your seed weight. Seed-rate charts are calculated off seed of average weight.
Excessive seed cracking	Use faster drive type and move seed-rate handle to a lower setting.
Acremeter doesn't measure accurately	Check tire pressure. Proper inflation is listed on *Tire Inflation Chart***,** "**Appendix**," page 35.
	Check tire size. Correct size is rib implement 9.00L x 24.
	Check planting operation for excessive overlap or gaps between passes.
	Consider soil conditions. The drill can slip in loose soil, causing variations in acres registered.
	Check that your acremeter is for your drill. Refer to 705 and 1005 parts manual.
Uneven seeding depth	Refer to *Opener Depth*, "**Adjustments**," page 13.
	Check that drill tongue matches tractor-drawbar height. Refer to *Hitching Tractor to Drill*, "**Preparation and Setup**," page 7.
Press wheel not compacting soil as desired	Increase down pressure on openers. Refer to *Opener Down Pressure,* "**Adjustments**," page 13.

Problem	Solution
Grain box not emptying evenly	Certain models do not have the same number of seed cups between each divider of bulkhead. The section with the larger number of cups will empty sooner.
Press wheel or openers plugging	Consider field conditions. Drilling in damp or wet conditions will increase this problem.
	Reduce down pressure on openers. Refer to *Opener Down Pressure,* "**Adjustments**," page 13.
	Do not back up or allow drill to roll backward with openers in ground.
	Check for trash or mud build-up on Seed-Lok wheels. Lock up wheels if necessary. Refer to *Seed-Lok*, "**Adjustments**," page 26.
Raising and lowering drill is rough or uneven	Lubricate wheel-arm-pivot casting. Refer to *Lubrication*, "**Maintenance and Lubrication,"** page 29.
	Check hydraulic fittings for leaks.
	Check that hydraulic cylinders have been properly bled. Refer to *Bleeding the Hydraulics*, "**Preparation and Setup**," page 8.
	When raising drill at the end of the field, extend cylinders fully to ensure cylinders are rephased. Refer to *Hydraulic Lift System*, "**Operation Instructions**," page 10.
Seed-cup sprockets locked up or seed-cup-drive shaft twisted	Check for foreign object lodged in seed-cup sprockets.
	Check for dried liquid insecticide inside seed cups. Remove build up by disassembling each seed cup and scraping foreign substance from turning surfaces.
Coulters not going deep enough	Add weight to drill. Refer to *Coulter Down Pressure*, "**Adjustments**," page 12.
	Check cylinder depth stop. Refer to *Coulter Depth*, "**Adjustments**," page 12.
Coulters and drill going to deep	Remove weight from drill. Refer to *Coulter Down Pressure*, "**Adjustments**," page 12.
	Check cylinder depth stop. Refer to *Coulter Depth*, "**Adjustments**," page 12.
Coulters or openers plugging in no-till conditions	Drill at a slight angle to the rows.
Chain	Be sure retainer clip is facing opposite way of chain travel

Section 5 *Maintenance and Lubrication*

Maintenance

Proper servicing and maintenance is the key to long implement life. With careful and systematic inspection, you can avoid costly maintenance, downtime and repair.

Always turn off and remove the 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.

1. After using drill for several hours, check all bolts to be sure they are tight.
2. Adjust idlers to remove excess slack from chains. Clean and use chain lube on all roller chains as needed.
3. Always maintain proper air pressure in drill tires. Refer to *Tire Inflation Chart*, "**Appendix**," page 35.
4. Keep disk scrapers properly adjusted. Refer to *Disk Scraper Adjustment*, "**Adjustments**," page 25.
5. Clean drill on a regular basis. Regular and thorough cleaning will reduce needed repair and lengthen drill life.
6. Replace any worn, damaged or illegible safety decals by obtaining new decals from your Great Plains dealer.

Fertilizer Unit

On fertilizer drills, clean fertilizer compartment thoroughly every two or three days during operating season and before storing drill for an extended period of time.

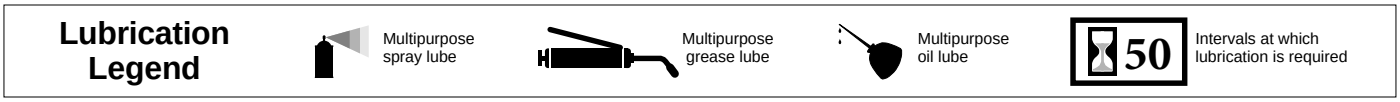
To clean fertilizer compartment, drop fertilizer-tray doors by releasing latches on back of tray. Using high-pressure water, thoroughly clean fertilizer tray, gate openings and rotor. Rotate end sprocket to clean entire fertilizer-metering star.

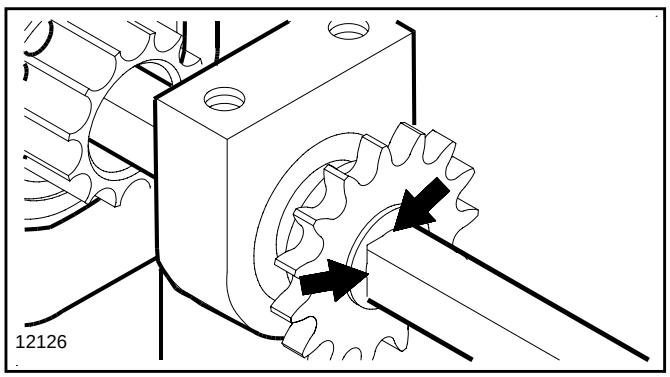
Storage

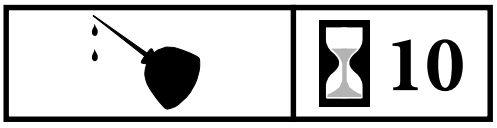
Store drill where children do not play. If possible, store drill inside for longer life.

1. Clean drill as necessary. Be sure seed boxes are cleaned completely before storing.
2. Lubricate and adjust all roller chains.
3. Lubricate all pivots as indicated under *Lubrication*, this page. Take special care to oil seed-cup-drive sprocket in its bore.
4. When in storage, lower drill with openers on a board or hard surface. Apply a light coat of oil to exposed cylinder rods.

Lubrication



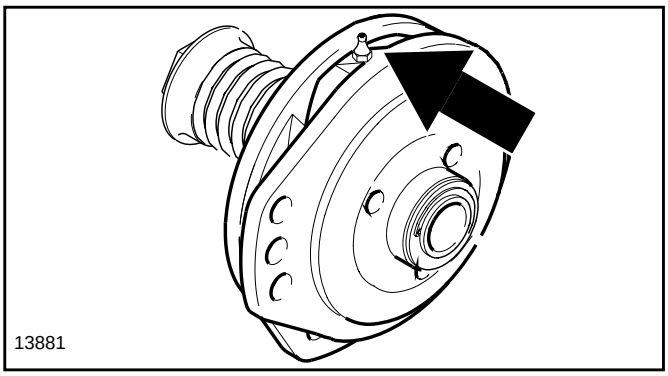


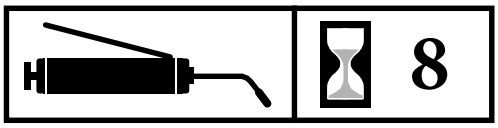


Seed-Cup-Drive Sprocket

Type of Lubrication: Oil

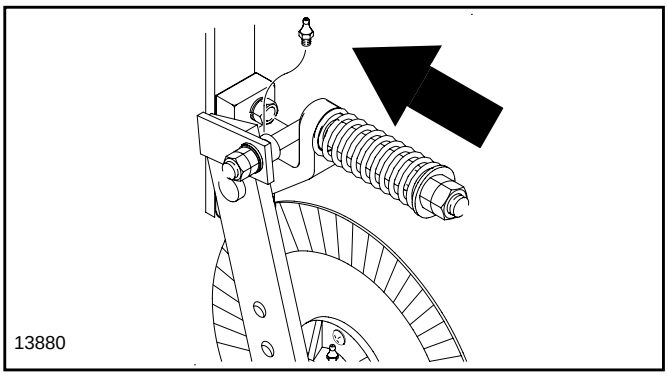
Quantity = Coat sprocket bore thoroughly; move seed-rate handle to get oil into sprocket bore

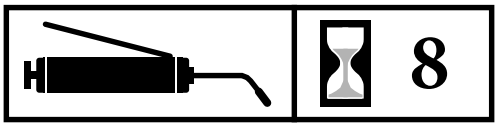




Clutch Cam

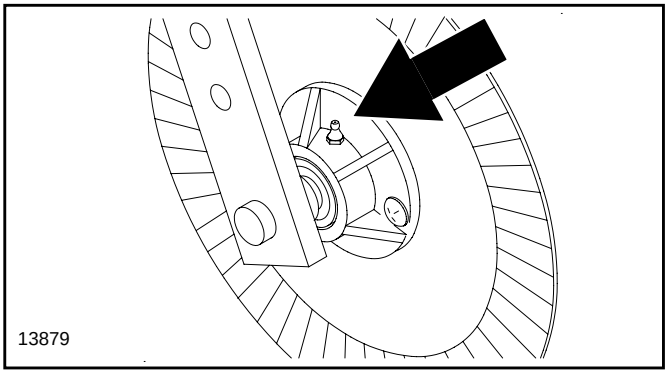
Type of Lubrication: Grease
Quantity = Until grease emerges

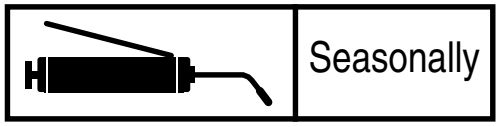




Coulter Arm Pivots

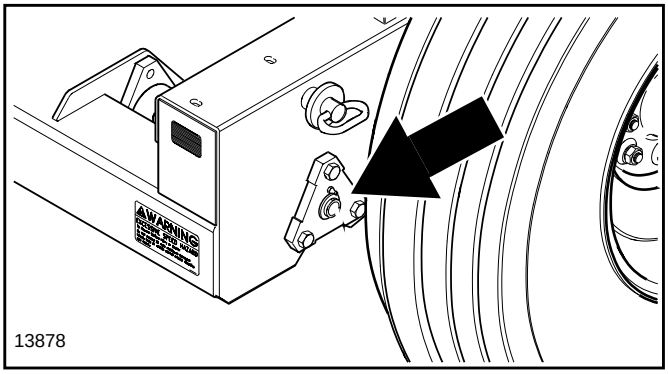
Type of Lubrication: Grease
Quantity = Until grease emerges

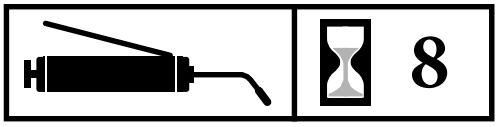




Coulter Hub Bearings

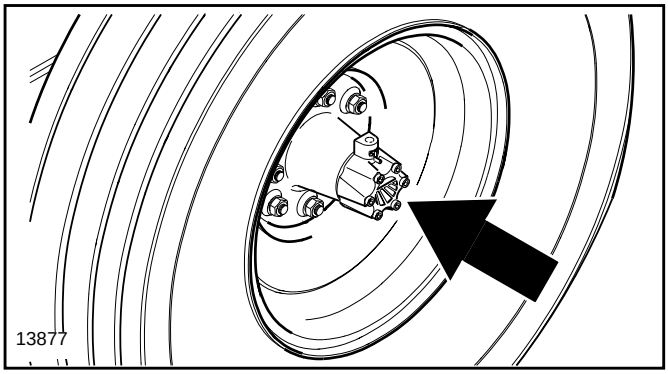
Type of Lubrication: Grease
Quantity = Until resistance is felt

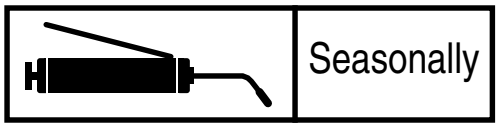




Wheel Arm Pivot Castings

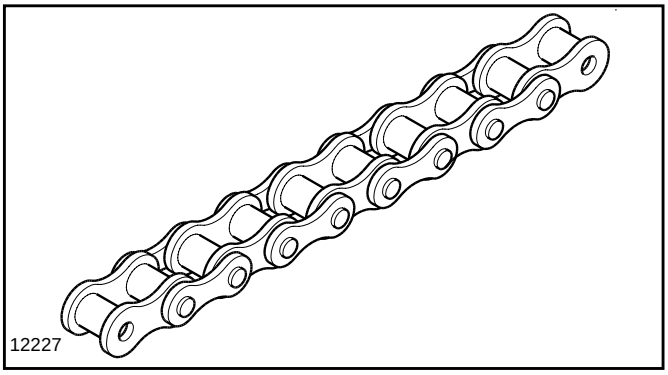
Type of Lubrication: Grease
Quantity = About two pumps

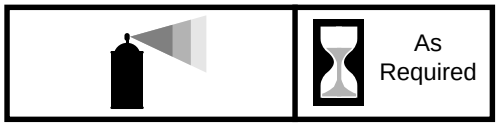




End Wheel Hub Bearing

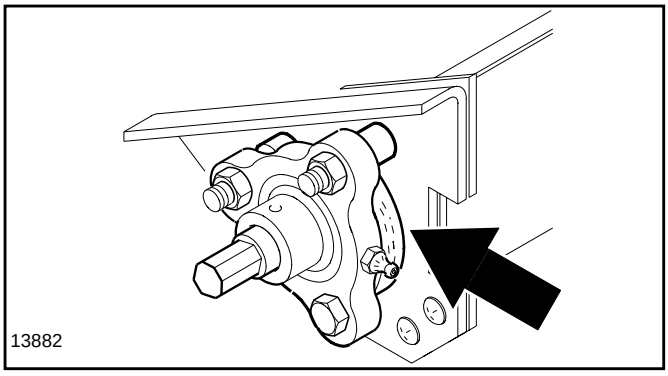
Type of Lubrication: Grease
Quantity = Repack

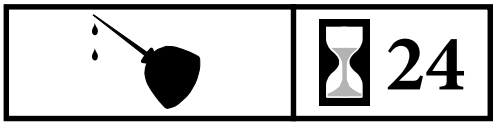




Drive Chains

Type of Lubrication: Chain lube
Quantity = Coat thoroughly

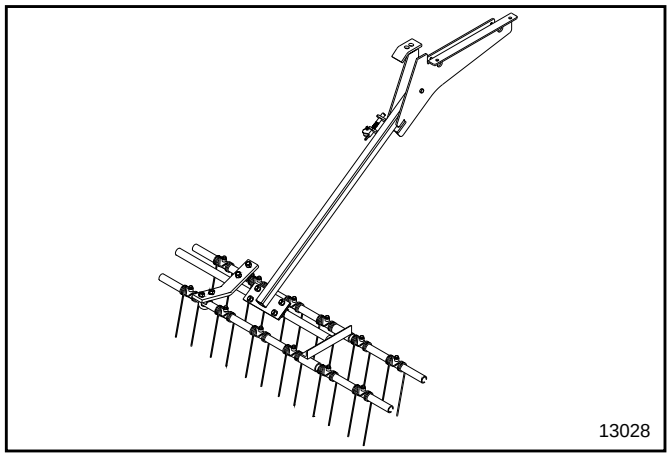




Fertilizer Felt Seals
Optional equipment; seal on each end fertilizer-feed shaft

Type of Lubrication: Oil
Quantity = Soak seals

Section 6 *Options*



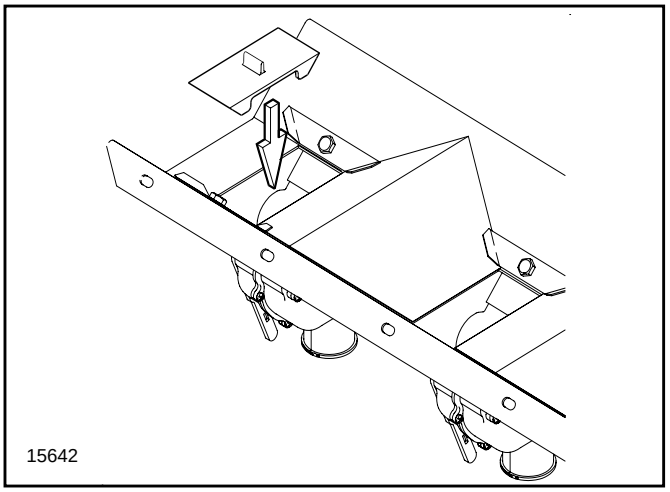
Harrow Attachment

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

For information on how to adjust the harrow, refer to *Harrow Adjustment*, "**Adjustments**," page 26.

To order the harrow attachment, contact your Great Plains dealer.

Harrow Package	Part Number
705 Harrow	116-072A
1005 Harrow	116-071A

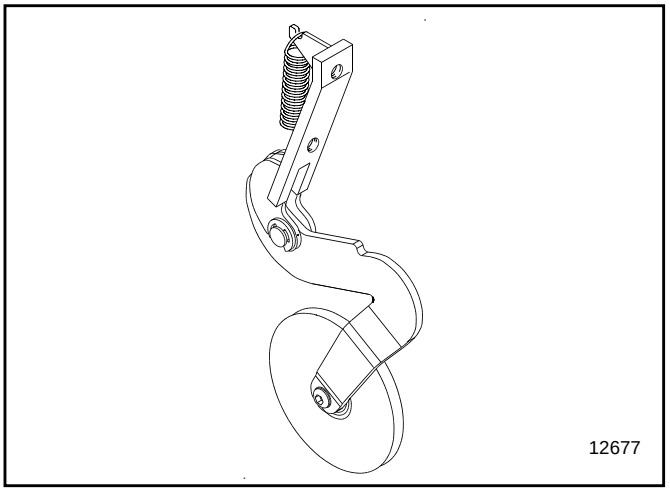


Seed Cup Plugs

Seed-cup plugs are available to block off individual rows when you want wider row spacing. These plugs are installed by pushing them into the seed-cup openings on desired rows.

To order seed-cup plugs, contact your Great Plains dealer.

Seed Cup Plugs Package	Part Number
1 1/4-in. Wide Seed-Cup Plug	817-200C

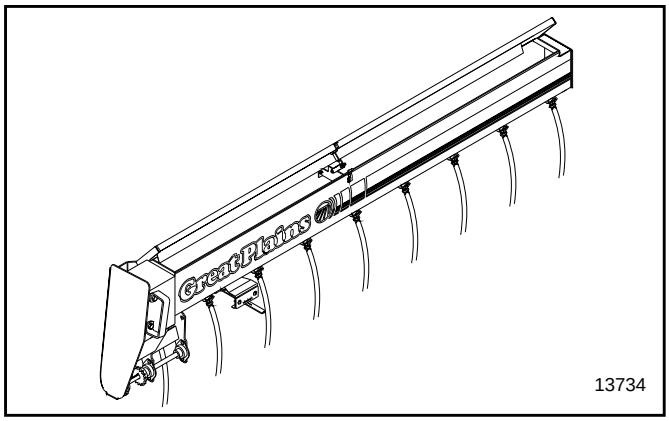


Seed-Lok Firming Wheels

The spring-loaded Seed-Lok firming wheels press seed directly into the bottom of the seed bed. The Seed-Lok option provides more even seed emergence since seeds are planted and firmed at the same depth.

To order Seed-Lok firming wheels, contact your Great Plains dealer.

Seed-Lok Bundle	Part Number
Solid Stand Removable 5-in. Seed-Lok Assembly	122-193K



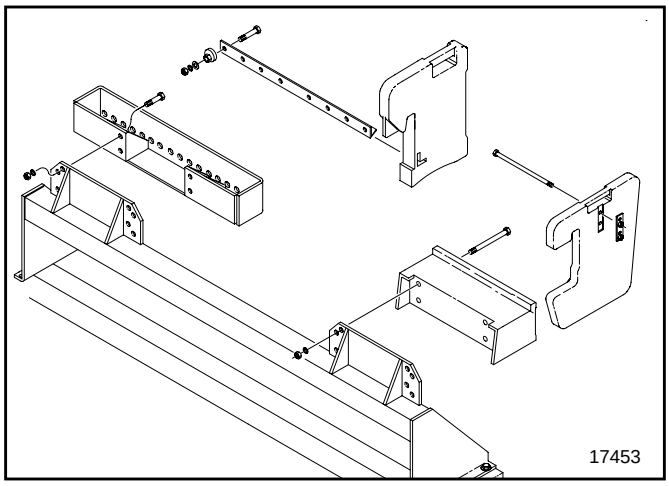
Small Seeds Attachment

The small-seeds attachment delivers the smallest seeds evenly and gently. The attachment holds 0.24 bushels per foot.

For setting the seeding rate on the attachment, refer to *Small Seeds Attachment*, “**Adjustments,**” page 23.

To order the small seeds attachment, contact your Great Plains dealer.

		Small Seeds Part Number		
Drill Size	**Drill Style**	**7 Inch Rows**	**7.5 Inch Rows**	**8 Inch Rows**
705	Basic	123-449A	123-500A	123-500A
	Fertilizer or Native Grass	123-517A	123-518A	123-518A
1005	Basic	123-495A	123-496A	123-497A
	Fertilizer or Native Grass	123-520A	123-521A	123-522A



Weight Brackets

If soil conditions require more weight for coulter penetration, weight brackets are available. The weight brackets hold several styles of suitcase weights commonly available through tractor dealers.

For information on how additional weight will affect coulter down pressure, refer to *Weights*, “**Adjustments**,” page 12.

To order weight brackets, contact your Great Plains dealer.

Weight Bracket Kit	Part Number
Bracket for John Deere Weights*	149-032A
Bracket for Case-IH Weights*	149-034A

*One package required for 705; two packages required for 1005.

Section 7 *Specifications and Capacities*

	705				1005			
Row Spacing, Inches	7	7.5	8	10	7	7.5	8	10
Rows Per Drill	11	10	10	8	16	15	14	11
Weight, Pounds	3,635	3,500	3,500	3,230	4,260	4,125	3,990	3,585
Working Width	7 feet				10 feet			
Transport Width	9 feet 8 inches				12 feet 6 inches			
Transport Height	6 feet 7 inches				6 feet 7 inches			
Transport Length	13 feet 10 inches				13 feet 10 inches			
Seedbox Capacity	17.1 bushels				23.75 bushels			
End Wheel Tires	9.00 x 24				9.00 x 24			
Tractor Requirements	55 horsepower; one remote valve				75 horsepower; one remote valve			

NOTE: All tires are warranted by the original manufacturer of the tire. Tire warranty information can be found in the brochures included with your Operator's and Parts Manuals or online at the manufacturer's websites. For service assistance or information, contact your nearest Authorized Farm Tire Retailer.

Manufacturer	**Website**
Titan	www.titan-intl.com
Goodyear	www.goodyearag.com
Firestone	www.firestoneag.com

Appendix

Torque Values Chart for Common Bolt Sizes

Bolt Size (Inches)	Bolt Head Identification: Grade 2		Grade 5		Grade 8	
in-tpi[1]	N · m[2]	ft-lb[3]	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 (Metric)	Bolt Head Identification: 5.8 Class 5.8		8.8 Class 8.8		10.9 Class 10.9	
mm x pitch[4]	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

[1] in-tpi = nominal thread diameter in inches-threads per inch

[2] N· m = newton-meters

[3] ft-lb= foot pounds

[4] mm x pitch = nominal thread diameter in millimeters x thread pitch

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

Tire Inflation Chart

Tire Size	Inflation PSI
7.50 x 20" 4-Ply Drill Rib	28
9.0 x 22.5 10-Ply Highway Service 70	70
9.0 x 24" 8-Ply Rib Implement	40
9.5L x 15" 6-Ply Rib Implement	32
9.5L x 15" 8-Ply Rib Implement	44
9.5L x 15" 12-Ply Rib Implement	60

Tire Size	Inflation PSI
11L x 15" 6-Ply Rib Implement	28
11L x 15" 12-Ply Rib Implement	52
12.5L x 15" 8-Ply Rib Implement	36
12.5L x 15" 10-Ply Rib Implement	44
16.5L x 16.1" 10-Ply Rib Implement	36
41 x 15" x 18 - 22-Ply Rib Implement	44

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 by 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.

Great Plains Manufacturing, Inc.
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