

# OPERATION

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## ATTACHING TO THE TRACTOR



**CAUTION: Exercise extreme caution while hooking the tractor to the grain drill.**

The 9530 grain drills are designed to be used with category III tractors. The hitch pins are furnished with your drill. Pin the hitch to the two lower lift arms of the tractors three-point hitch. Once the drill is hooked to the tractor, be sure pins are secure before lifting or moving the drill.

The drill should be vertical while planting through the field, never tilted back. This is achieved by setting the height of the tractor 3-point hitch.

## INITIAL OPERATING CHECK LIST

Your grain drill has been manufactured and assembled at the factory, utilizing optimum levels of quality control standards. However, before taking the drill to the field, minor adjustments may be necessary for your field conditions. The following check points will help insure safe and efficient operation of your grain drill.

Read through the operating section and service your machine accordingly.

Pay special attention to all safety suggestions.

Check the tire pressure. Tires should be equally inflated. Refer to the inflation chart in the Lubrication and Maintenance Section.

Gauge wheel turnbuckles must be adjusted equally, so that planting depth does not vary from one side of the drill to the other side.

Visually inspect each hopper and seed cup assembly. Remove any foreign objects which could cause damage to the seed meters.

Check the following on the drive systems:

- Chain and sprocket alignment.
- Adjust the chain idler.
- Maintain the proper tension on the chain.

Rotate each drive unit. The drive system should operate smoothly.

Visually inspect all opener assemblies. Check for freedom of movement on all moving parts.

Check the sprocket ratio.

Adjust the seed meter calibration at each end of the drill.

Set the seed rate using the seed rate chart, found in the lid of the seed hopper and in the Operating Section of this manual.

*NOTE: Make sure all seeder openings are identical, to insure accurate and uniform seeding.*

## HYDRAULIC LIFT SYSTEM

The rephasing lift system on the folding drill has been filled with oil and purged of air before leaving the factory. In the event of a hose rupture or cylinder replacement, the air trapped in the lines will need to be purged from the system.



**WARNING: Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Wear proper hand and eye protection when searching for leaks. Use a piece of cardboard or paper instead of your hand. If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.**

The cylinders are purged by connecting the lift system hoses to the tractor. Make sure the tractors reservoir is full of the manufacturers recommended hydraulic oil. Raise the unit and hold the tractor lever to allow oil to bypass and fill each wing cylinder. Lower the unit making sure the cylinders actuate simultaneously throughout the stroke. If the cylinders are not in unison, continue holding the cylinders extended and cycling the oil to purge any remaining air.



**CAUTION: If cylinders are not in unison do not attempt to fully retract (lower the drill). Damage to the center lift may occur. Fully extend the cylinders (raise the drill) to cycle oil through the system, then the cylinders should be in unison.**

Do not loosen any hydraulic fittings. Recheck the tractors oil reservoir to make sure it is within operating limits.

Prior to starting any field operation, verify that all lift cylinders are operating in unison. If the cylinders are not operating together, hold the cylinders fully extended to cycle the oil through the lift system. During field operations with the drill, always fully raise the unit when making turns. This will insure that the cylinders are working in unison and keep the drill operating level.

*NOTE: Retracting the cylinders during periods of storage will prevent rusting of the shafts and subsequent damage to the seals.*

# OPERATION

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## HYDRAULIC FOLD SYSTEM

*NOTE: Keep all persons away from the drill when folding or unfolding.*

The hydraulic fold cylinders on the folding drill have been filled with oil and purged of air before leaving the factory. In the event of a hose rupture or cylinder replacement, the air trapped in the lines will need to be purged from the system.

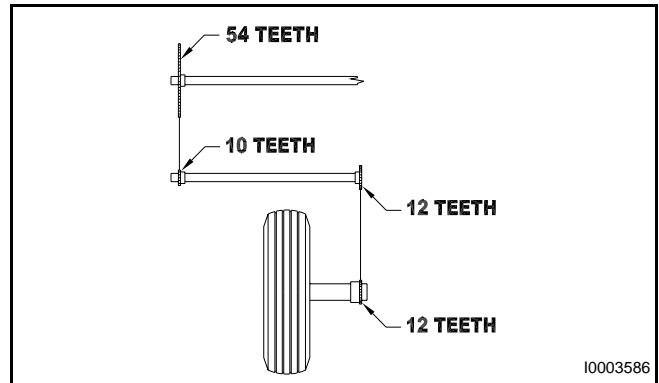


**CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Wear proper hand and eye protection when searching for leaks. Use a piece of cardboard or paper instead of your hand. If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type of injury or gangrene may result.**

To purge the fold cylinders of air, unpin the rod ends of the cylinders, position cylinders to allow for rod extension and connect fold system hoses to the tractor couplers. Make sure the tractor reservoir is full of the manufacturers recommended hydraulic oil. Fully extend and retract the cylinders several times until the action is positive and immediately responsive. Do not loosen or crack any hydraulic fittings. Recheck the tractor reservoir to make sure it is within operating limits. Reconnect the cylinders to the drill.

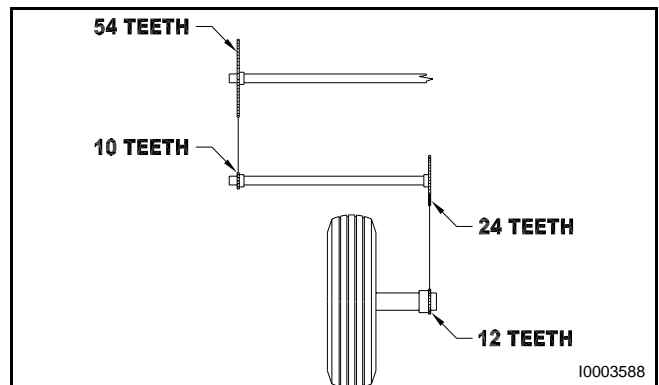
**SPROCKET RATIO**

**FIG. 1:** The grain drills are assembled at the factory with a 1 to 1 sprocket ratio as shown. Most commonly desired seed rates can be achieved without changing this ratio.



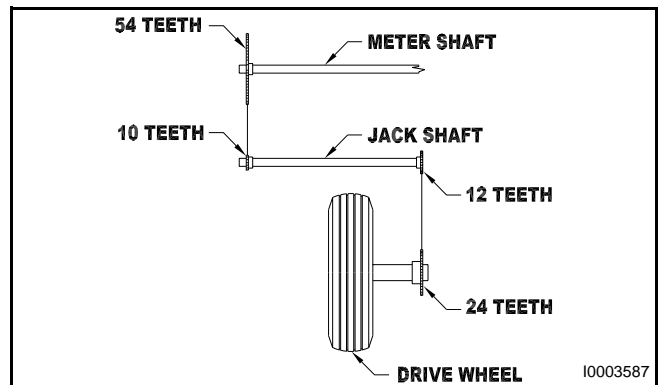
**FIG. 1**

**FIG. 2:** However, if a less seed rate is required, the drive ratio may be changed to a 1 to 2 ratio, as shown, which reduces rates in half.



**FIG. 2**

**FIG. 3:** If a greater seed rate is required, the drive ratio may be changed to a 2 to 1 ratio, as shown, which approximately doubles the seeding rate of the 1 to 1 ratio.



**FIG. 3**

## OPERATION

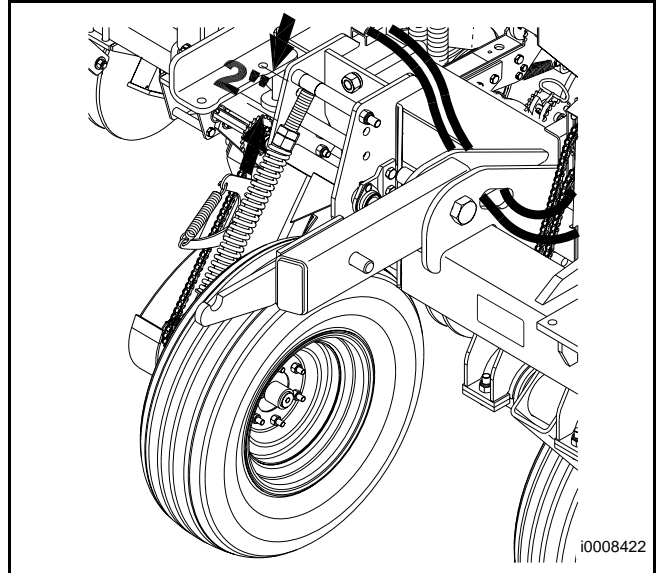
### GAUGE WHEEL ADJUSTMENT

**FIG. 4:** After the drill has been properly hooked to the tractor, it may be necessary to adjust the gauge wheel turnbuckles.

*NOTE: The purpose of the gauge wheels is to drive the drill when planting.*

The purpose of the floating turnbuckle adjustment, as shown, is to maintain adequate down pressure between the tire and the ground to prevent slippage. Little weight should be carried by the gauge wheels. The weight should be kept on the transport wheels and the openers.

To adjust the gauge wheels, loosen the jam nuts on the turnbuckle. For an initial adjustment, the top jam nut on the turnbuckle screw should be adjusted 5 cm (2 in) from the top as shown. After adjustments have been made, tighten the jam nuts.



**FIG. 4**

## DRILL HEIGHT AND LEVELING ADJUSTMENTS

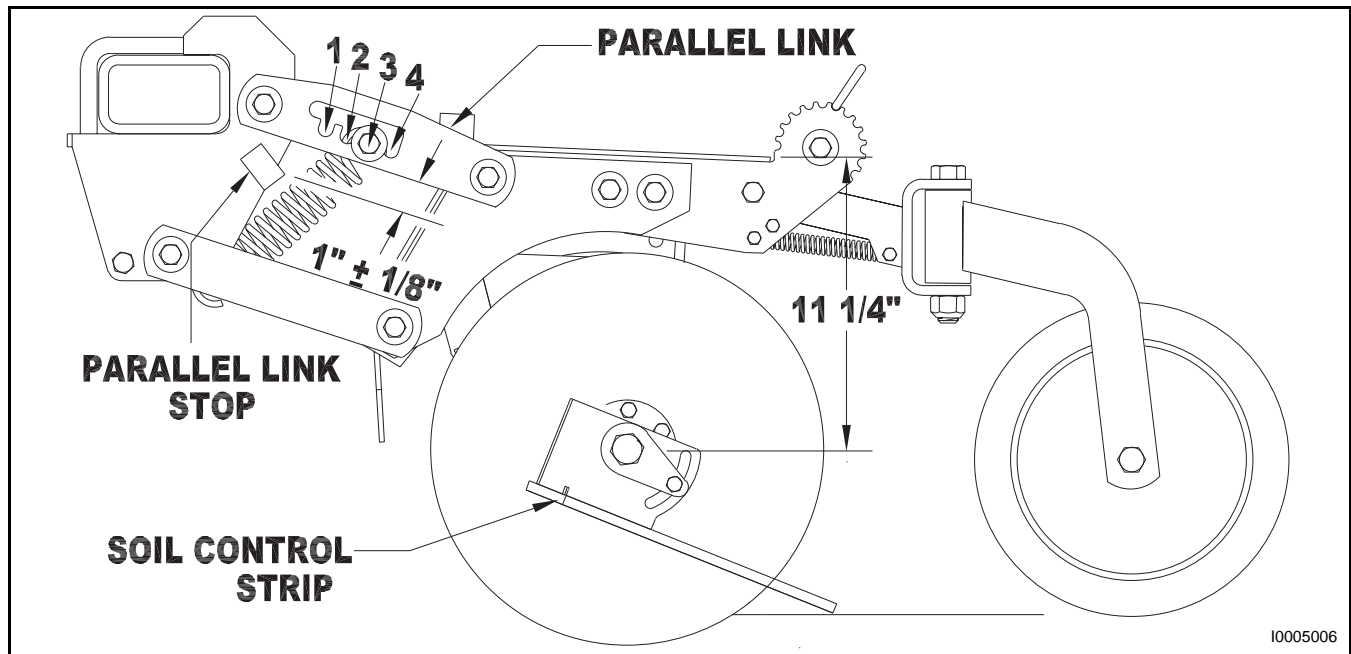


FIG. 5

**FIG. 5:** The top parallel link must maintain the 2 - 2 1/2 cm (3/4 - 1 in) measurement from the parallel link stop during planting, or the opener and seed tubes will not function properly. To increase the distance from the top parallel link and the parallel link stop, simply lower the drill. Raising the drill will decrease the distance between the link and the stop.

*NOTE: When the drill is shipped new from the factory, stroke control segments (cylinder stops) are placed in the hopper box. These segments are used to maintain the proper height when drilling.*

Lower the drill down to achieve the 2 - 2 1/2 cm (3/4 - 1 in) measurement between the top parallel link and the parallel link stop during drilling. Check this measurement on the inside openers toward the center of the drill.

*NOTE: The when leveling the drill from front to rear, always level the center drill box. The tongue may not be parallel to the ground when the center drill box is level.*

When the desired planting depth and the 2 - 2 1/2 cm (3/4 - 1 in) measurements are achieved, install the stroke control segments (cylinder stops) on the two center lift cylinders.

*NOTE: The stroke control segments (cylinder stops) must be installed only on the two center lift cylinders. Do not install segments on the wing cylinders. The two center lift cylinders will control the depth of the entire drill.*

After the stroke control segments (depth stops) have been installed on the two center lift cylinders, check the measurement on the openers toward the outside on the ends of the wings. The measurement on the openers at the ends of the wings should also be 2 - 2 1/2 cm (3/4 - 1 in). If the measurements are not the same, adjust the wings as shown on the next page, to achieve the proper measurement on the opener.

Use the lift system to maintain proper drill height in soft or loose soils.

When changing fields or different soil conditions (conventional to no-till or loose vs. firm soil), the depth settings should be checked again.

## OPERATION

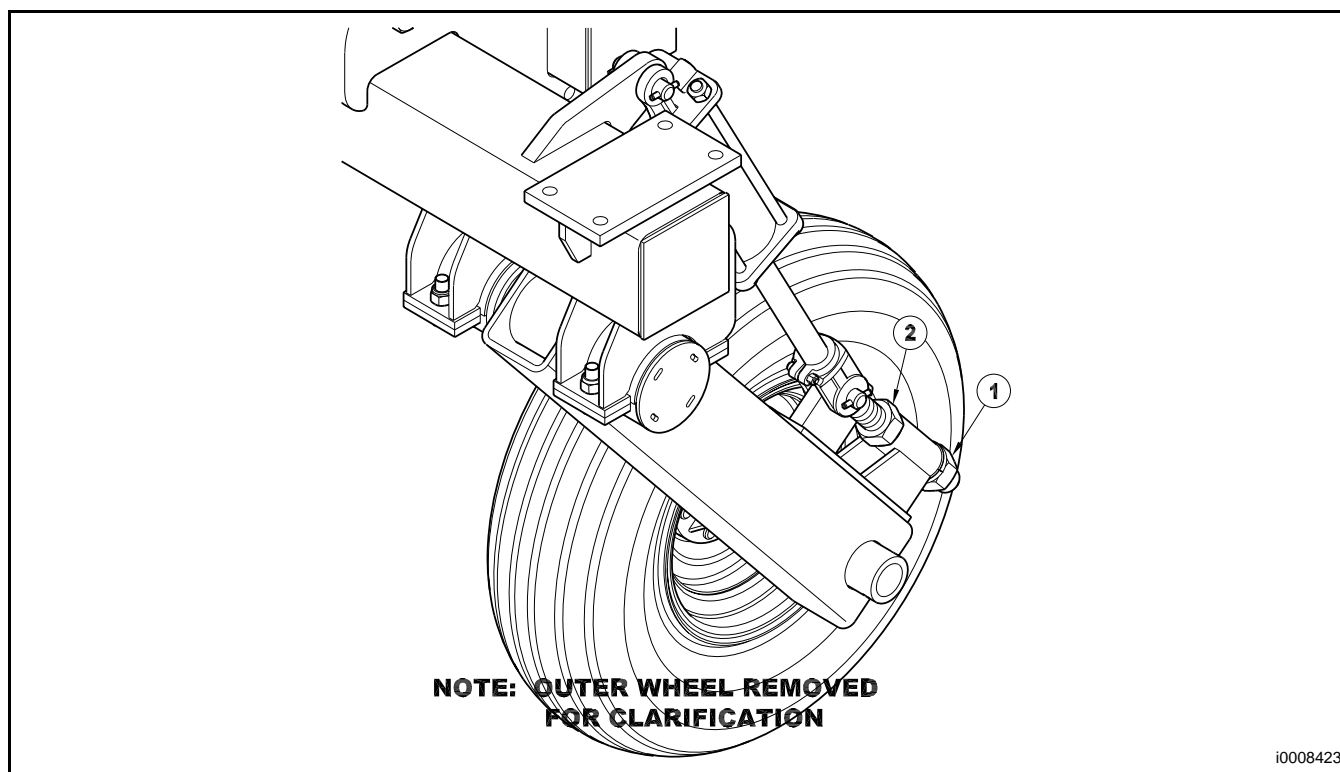


FIG. 6

FIG. 6: Leveling the Wings (side to side)

### SEEDING DEPTH ADJUSTMENT

FIG. 7: The seeding depth of each opener is controlled by the position of the depth cam assembly located on the back of the opener frame. To change the setting, pull the spring-loaded D-handle out of the notch while rotating the cam to a different setting, release the D-handle in the new notch. To decrease the seeding depth, rotate the cam to a notch more forward.

*NOTE: Adjusting the opener down pressure does not change the seeding depth. The seed depth is controlled by the adjustment on the press wheel.*

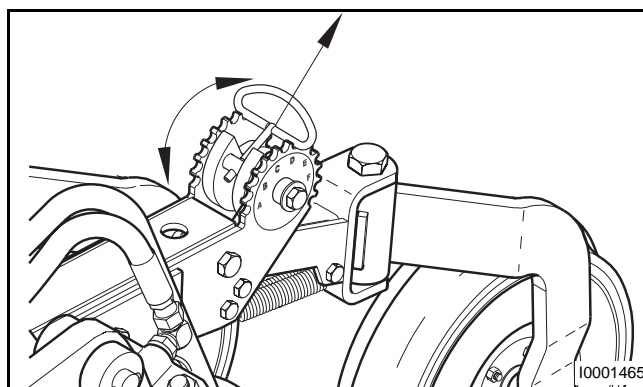


FIG. 7



## OPENER ADJUSTMENTS

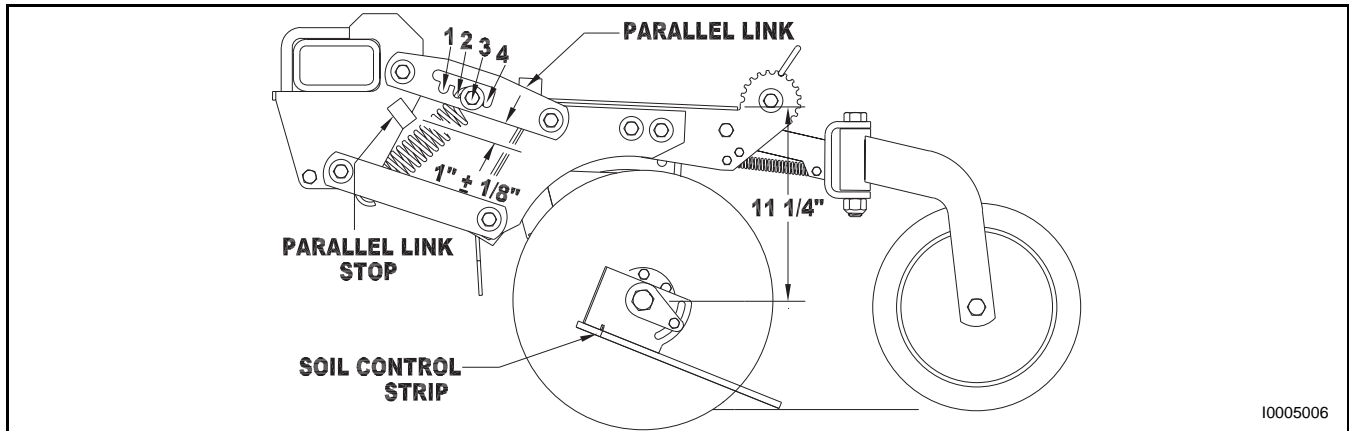


FIG. 8

**FIG. 8:** The opener down pressure is adjusted, as shown, by changing the notch setting on the top parallel link. The first notch, number 1, provides the least down pressure. The rear notch, number 4, provides the greatest down pressure.

*NOTE: Adjusting the opener down pressure does not change the seeding depth. The seed depth is controlled by the adjustment on the press wheel.*

Stop the tractor and raise the drill until the openers are off the ground, move the adjustment bolt from one notch to the other by grasping each end of the bolt and moving it to the new notch setting.

Initially set all of the openers in the same notch. Lower the drill until the 2 - 2 1/2 cm (3/4 - 1 in) measurement is reached on all of the openers. Next measure the two center main frame master lift cylinders. Measure from the cylinder head casting to the clevis on the rod end of the cylinder to determine how many stroke control segments are needed to hold the drill at this height.

Place the same number of stroke control segments on the two master lift cylinders. The outer slave cylinders on the wings do not require any segments, they will stop when the master cylinders reach the stroke control segments.

Openers behind the tire tracks might require additional down pressure for uniform seed placement. Place the openers in the tire tracks in a higher setting if more down pressure is required.

## SOIL FIRING DEVICE ADJUSTMENT

The purpose of the firming device is to prevent blowout and to minimize soil and residue disturbance. For most seeding conditions, the firming device angle should be set at approximately 11 1/4 inch measurement. If you are seeding excessively deep or shallow, you may need to change the angle of the firming device to match your conditions.

## RIGID SCRAPER ADJUSTMENT

The rigid scrapers should maintain slight contact with the inside of the blades for best performance. If adjustment is required, loosen the two mounting bolts and adjust the scraper. Tighten the mounting bolts.

## MAINTAINING PROPER PINCH POINT

The point at which the two opener blades contact each other is called the pinch point. The pinch point must be properly setup with the right amount of pressure to maximize performance and extend blade and bearing life. If the pressure is too tight, excessive wear, bearing failure and plugging may occur. If the pressure is too light, bearing failure and seed trench deterioration may result.

## Checking for Loose Pinch Point

With the openers off the ground, grasp a blade from behind and rotate it in the forward direction. The pinch point pressure should be adequate enough to rotate both blades while turning only one. A slight loss of contact during rotation is acceptable. Ideally, you want full contact between the blades during rotation.

If the blades are loose, shims must be removed from behind the opener blades to move them closer together. As blades wear and bearings break in, shims should be removed. Remove the number of shims necessary to maintain pinch point. Store the shims on the other side of the bearing under the dust cap.

## Checking for Tight Pinch Point

With the openers off the ground, grasp each blade from behind and rotate them independently in the opposite direction from each other. The blades should glide against each other easily without binding.

If the blades bind or work against each other while rotating, shims need to be installed between the opener bar and the blade to space them apart. When new blades are installed, shimming is sometimes required. Add the number of shims necessary to maintain pinch point.

# OPERATION

## Adding or Removing Shims

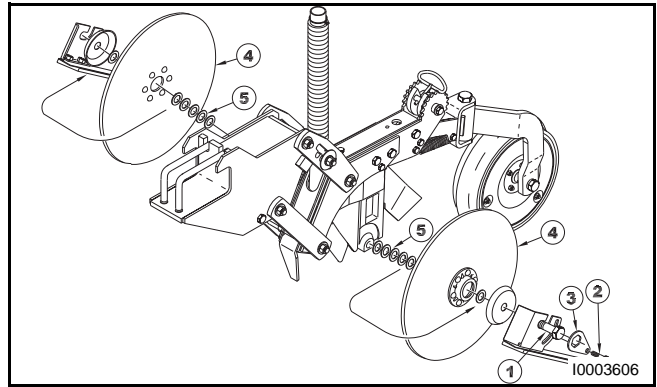
**NOTE:** Each shim is equal to 1/32 inch at pinch point.

**FIG. 9:** To add or remove opener shims, loosen the 3/4 inch bolt (1) (the left side has left hand threads) that mounts the blade to the opener bar. If the drill is equipped with soil control devices, remove the locking arm 3/8 inch bolt (2) and the locking arm (3) first.

Slowly remove the blade (4) and bolt (1) together being careful not to drop and lose any shims (5) on the ground. Remove the 3/4 inch bolt (1) and transfer the shims (5) from one side to the other, depending on the adjustment required.

Insert the bolt (1) through the blade bearing and place the shims (5) on the end of the bolt, against the bearing. Reattach the blades (4) to the opener bar with the 3/4 inch bolt (1).

Tighten the bolts and recheck the pinch point pressure, as described above. Install the soil control devices (if equipped), and set the angle while tightening the 3/4 inch bolt (1). Again check the pinch point pressure as described above. If the pinch point pressure is correct, attach the locking arm (3) and the locking arm 3/8 inch bolt (2).



**FIG. 9**

## UNFOLDING AND FOLDING THE DRILL

**NOTE:** The folding and unfolding operation of the folding drill should be done on smooth terrain.

### Unfolding Instructions

**FIG. 10:** The transport bar (1), locks the wing frames in position for transport by a 1 x 6 inch transporting pin (Pin has been removed for picture). When the machine is folded for transport, the pin should be inserted through the hole (2). This pin (shown removed) must be removed to unfold the drill. Store the pin in the holder (3), to prevent loss.

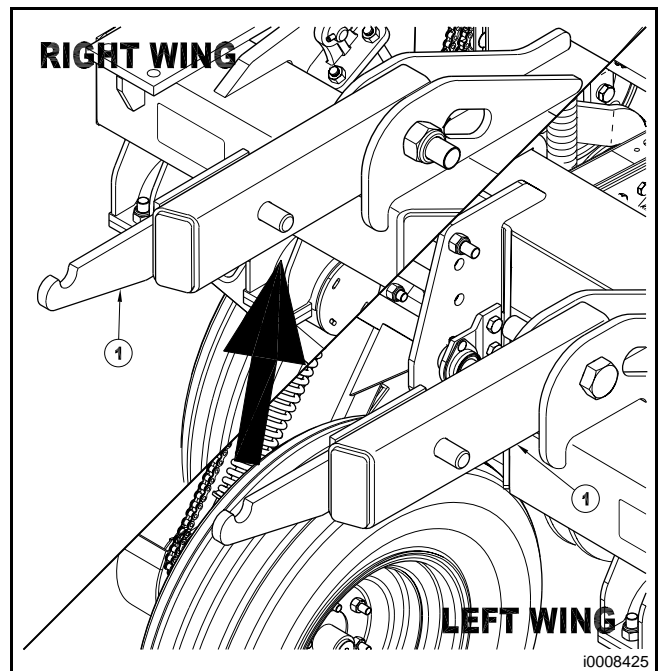
**NOTE:** Make sure the bolts that connect the wing braces to the tongue latch are tight. Periodically check these bolts to see that they are kept tight.

Raise the drill completely. Lower the tractor's 3-point lift arms. This allows the transport bar to clear the lock pin. Now you are ready to unfold.

Place the tractor in neutral - NOT PARK. This allows the drill to pull the tractor backward and forward, allowing the wing lift arm wheels to roll more easily instead of a sliding motion.

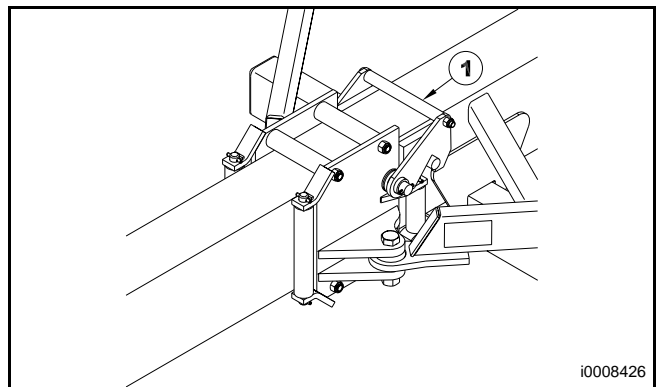
**NOTE:** Always keep your tractor idled down as slow as possible. Be sure the drill tongue is low enough for the transporting bar to clear the lock bracket.

Slowly activate the lever on the tractor that controls the hydraulic fold cylinders. This will allow the drill wings to unfold. During this procedure, the slide lock will slide toward the back of the machine. After the cylinders are fully extended, move the tractor ahead until the tongue latch is engaged.



**FIG. 10**

**FIG. 11:** Once the slide lock is locked in position, the unfolding operation is complete.



**FIG. 11**

## Folding Instructions

**FIG. 12:** The drill folds basically the same as it unfolds. Raise the drill up with the lever that controls the hydraulic lift cylinders.

*NOTE: Never fold the drill while it is in the ground. Also, it is not recommended to fold and transport the drill with the boxes full of seed.*

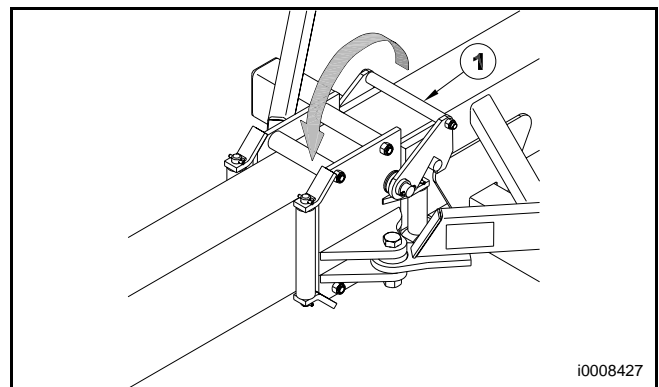
Unlatch the slide hook (1) by rotating it forward in the direction of the arrow to unlatch the hook.

Lower the 3-point arms on the tractor just enough so that the transport bar will clear the transport locking pin when the drill is completely folded.

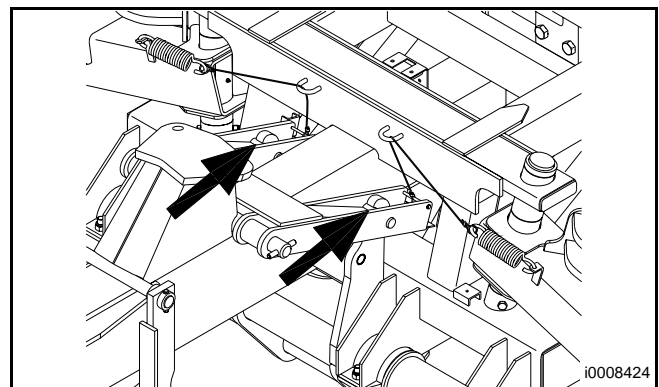
Slowly activate the lever on the tractor that controls the hydraulic fold cylinders, and the drill will begin to fold. Once the drill is fully folded, lift the tractor's 3-point lift arms. This places the transport bar in a locked position.

**FIG. 13:** Check to see if the transport lock is in the locked position. Using the lever on the tractor that controls the lift cylinders. Raise the wing lift arms (lower the drill).

Place the 1 x 6 inch transport pin, under the transport bar in hole (2). The drill is now in the transport position.



**FIG. 12**



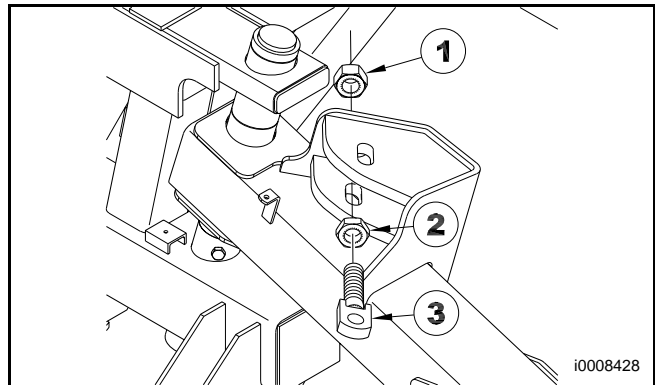
**FIG. 13**

## OPERATION

*NOTE: If the wings will not fold completely so the transport lock bar will latch make the necessary adjustments in the following steps.*

**FIG. 14:** Loosen the jam nut (2) on the inside of the mount. By tightening the nut (1) on the outside of the mount, the stroke of the fold cylinder will lengthen which will bring the wings together at the front of the drill. Make equal adjustments to each side.

Small adjustments to the bolts (3) will bring the wings in a significant distance. Measure the starting dimension before adjusting the rear nut so the same adjustment can be made to the other side.



**FIG. 14**

## SEED RATE ADJUSTMENT

The seed rate data chart, found in the Operating Section, and in the hopper lid of the drill, are approximate calculations based on using seed of average size and density. There are many factors which will affect seeding rates; size of seed, seed treatment, moisture content, weight of seed, tire size and slippage due to soil conditions. The seed charts should only be used as a guide.

*NOTE: Actual output should always be verified.*

## AS YOU DRILL

Check the amount of seed your using by noting acres drilled.

Note the amount of seed added to fill the hopper to the previous level.

Divide the weight of the seed used in pounds by the planted area in acres.

If you suspect that you are drilling more or less than desired, and you have accurately calibrated the seed meter adjustment, you may need to adjust the seeding rate slightly to compensate for your field conditions.

## SEED RATE GUIDE

The following three steps are a guide that will be helpful in reading the seed chart accurately.

Determine which rate chart corresponds to the row spacing your drill is set on. (If you are not planting with all openers, multiply your seed rate by the total number of openers and divide by the number of openers you are planting with. Use this modified rate to set your meter opening.)

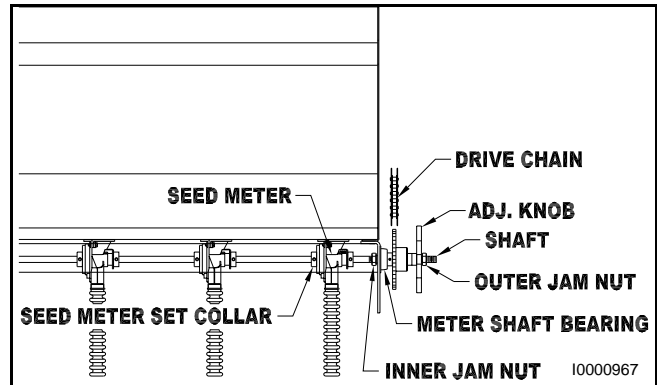
Choose the seed column to be planted. Select the desired rate in pounds per acre. (The correct sprocket ratio your drill is set on.)

Select the proper meter opening which corresponds with pounds per acre you desire to plant.

## SEED METER ADJUSTMENT

**FIG. 15:** To adjust the seed meter opening, first loosen the inner and outer jam nuts, and the adjustment knob. Screw the outer jam nut and adjustment knob to the end of the shaft.

Stand behind the unit on the same end as the adjustment knob. Turn the adjustment knob or inner jam nut to open or close the seed meter setting (the shaft may need to be pushed inward by hand before making this adjustment).

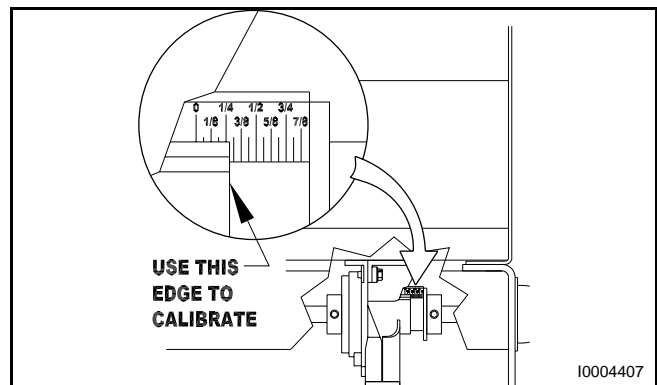


**FIG. 15**

**FIG. 16:** Once the seeder units have been set corresponding to the distance on the seed chart, simply tighten the jam nuts (inner and outer) to secure the desired meter setting. Each adjustment sets the entire drill section.



**WARNING:** Meters may require rotating during adjustment to prevent seed meter damage due to seed pinching.



**FIG. 16**

## OPTIONAL BIN LEVEL AND SHAFT MONITOR OPERATION

Refer to the instructions included with the Shaft Trak monitor kit for information on operation and maintenance of the bin level and shaft monitor option.

# OPERATION

## GRAIN DRILL SEED CHART

### Grain Drill Seed Chart

SEEDING RATE CHART - RATES IN POUNDS PER ACRE RATES ARE APPROXIMATE.  
 OPERATOR SHOULD VERIFY ACTUAL OUTPUT. 9.5L X 15 INCH TIRE (93 IN. CIRCUMFERENCE)

SEED	SOY-BEAN		RICE		WHEAT & RYE			MILO		FESCUE			OATS			BARLEY			*ALFALFA		PEARL/PROSO *MILLET		SEED													
	ROW SPACING	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	ROW SPACING														
SPROCKET RATIO	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	1:2	1:1	SPROCKET RATIO													
METER OPENING (INCHES)	3/16	-	-	-	-	-	-	4	9	3	7	7	14	5	10	2	4	1	3	-	-	-	-	16	-	12	-	17	-	13	-					
	1/4	-	-	-	-	-	-	14	23	10	18	16	32	12	24	4	9	3	7	-	-	-	-	9	16	7	12	23	-	18	-	24	-	19	-	
	5/16	-	-	-	-	-	-	19	39	14	29	22	46	18	34	12	19	9	14	-	-	-	-	14	25	10	19	28	-	21	-	29	-	22	-	
	3/8	16	32	12	24	23	47	18	35	25	54	19	40	-	-	-	14	25	10	19	-	-	-	23	47	18	35	32	-	24	-	33	-	25	-	
	7/16	23	44	17	33	28	59	21	44	35	71	26	53	-	-	-	17	29	12	22	-	-	-	29	59	22	44	35	-	26	-	37	-	28	-	
	1/2	30	56	23	42	32	70	24	53	45	87	33	65	-	-	-	19	32	14	25	32	60	24	45	35	70	26	53	37	-	27	-	46	-	35	-
	9/16	35	72	26	54	45	85	31	63	49	103	36	77	-	-	-	21	39	16	29	37	70	27	53	42	79	31	60	44	-	33	-	49	-	39	-
	5/8	42	79	31	60	47	94	35	70	59	117	40	88	-	-	-	24	47	19	35	42	75	31	57	47	89	35	67	47	-	35	-	55	-	41	-
	11/16	46	93	34	69	52	108	38	80	60	124	45	93	-	-	-	27	52	21	38	45	89	33	67	56	103	42	77	52	-	36	-	-	-	-	-
	3/4	52	103	38	77	56	119	42	89	62	141	47	106	-	-	-	30	56	23	42	52	94	38	70	60	115	45	86	-	-	-	-	-	-	-	-
13/16	62	123	47	91	60	132	45	98	79	155	60	117	-	-	-	32	60	25	45	55	112	41	84	68	122	51	91	-	-	-	-	-	-	-	-	
7/8	65	132	49	98	65	139	49	104	84	166	63	124	-	-	-	37	66	27	49	61	122	45	91	72	123	54	93	-	-	-	-	-	-	-	-	

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\*USE OF SEED METER REDUCER RECOMMENDED.

FIG. 17

FIG. 17: Grain Drill Seed Chart

NOTE: Rates Shown on this chart are based on seeds of average weight per bushel.

For lighter seed, increase the seed meter opening. For heavier seeds, decrease the seed meter opening.

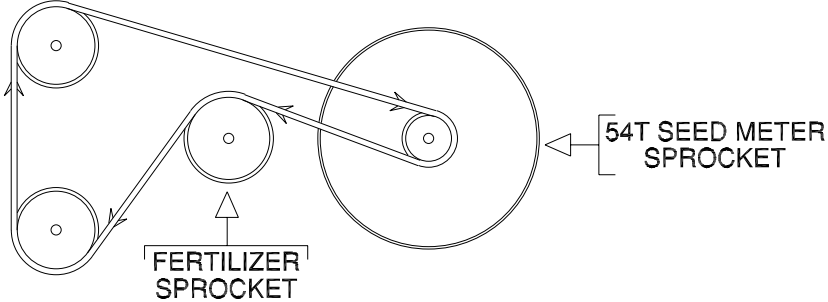
For seeds not listed on this chart, choose a seed which is listed that is similar in weight and size.

GRAIN DRILL FERTILIZER CHART

### Grain Drill Fertilizer Chart

FERTILIZER RATE CHART - RATES IN POUNDS PER ACRE, RATES ARE APPROXIMATE. DENSITY OF FERTILIZER WILL AFFECT OUTPUT. OPERATOR SHOULD VERIFY ACTUAL OUTPUT. 9.5L X 15 INCH TIRE (93 IN. CIRCUMFERENCE) AT THE 1:1 RATIO.

SPROCKET TEETH	54		44		36		30		26		23		20		18		SPROCKET TEETH
ROW SPACING	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	7 1/2	10	ROW SPACING
RATE LB./ACRE	40	--	50	--	60	40	70	50	80	60	90	70	100	80	--	90	RATE LB./ACRE



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FIG. 18

FIG. 18: Grain Drill Fertilizer Chart

# OPERATION

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## PLANT SPACING FORMULA

To determine the plants per acre or the pounds per acre:

Known information:

- Pounds per acre to be planted or the plans per acre wanted
- The seeds per pound (refer to the seed bag or ask your seed dealer)
- Seed germination% (refer to the seed bag or ask your seed dealer)
- Row Spacing (inches)

$$\text{Plants per acre} = \frac{(\text{lbs. per acre})(\text{seeds per lb.})(\text{Germination}\%)}{100}$$

Example: The lbs. per acre x the seeds per lb. x the germination% divided by 100 = the plants per acre

$$\text{Pounds per acre} = \frac{(\text{plants per acre})(100)}{(\text{seeds per lb.})(\text{germination}\%)}$$

Example: The plants per acre x 100 divided by the seeds per lb. x the germination% = the pounds per acre

## SEED METER CALIBRATION

1. Set the seed meters to the chart on the hopper lid. Make adjustments if you are not planting all the openers.
2. Disconnect the three (3) seed tube hoses at the seed meter.
3. Catch the seed from each of the 3 seed meters in separate containers, while turning the drive wheel.

$$\# \text{ seeds per container} = \frac{(\# \text{ wheel rotations})(\text{plants per acre})(\text{row spacing})}{674 (\text{germination}\%)}$$

Example: The number of wheel rotations x the plants per acre x the row spacing divided by 674 x the germination% = the number

$$\# \text{ seeds per container} = \frac{(\# \text{ wheel rotations})(\text{seed per lb.})(\text{lbs per acre})(\text{row spacing})}{67,447}$$

Example: The number of wheel rotations x the seeds per pound x the pounds per acre x the row spacing divided by 67,447 = the number of seeds per container

4. Count the seed in the three containers and take an average. (Total seeds divided by 3)
5. If the count is short, open the seed meters accordingly, then recalibrate.
6. If the count is long, close the seed meters accordingly, then recalibrate.



**SEED METER CALIBRATION (FOR SMALL SEED AND GRAINS)**

Known information:

- Pounds per acre to be planted
  - Row spacing of planting seed (inches)
1. Make rate adjustments if not planting with all the openers.

$$\text{lbs per acre (chart)} = \frac{(\text{lbs. per acre to be planted})(\text{total \# of openers})}{\text{\# planting openers}}$$

Example: The pounds per acre to be planted x the total number of openers divided by the number of actual planting openers = the pounds per acre (from the seed rate chart).

2. Set the seed meter according to the chart on the hopper lid. If the seed is not on the chart, use the closest seed of equal size and weight.
3. Disconnect three (3) seed tube hoses at the seed meter.
4. Catch the seed from the 3 seed meters while turning the drive wheel. Count the wheel rotations (usually 5 to 10).
5. Weigh the seed. Divide the weight by 3 to get the average weight per seed meter.

$$\text{Seed weight per seed meter} = \frac{(\text{\#wheel rotations})(\text{lbs per acre})(\text{row spacing})}{67,447}$$

Example: The number of drive wheel rotations you made x the pounds per acre x the row spacing divided by 67,447 = the seed weight per seed meter.

6. If the seed weight is short, open the seed meters or increase the drive ration and recalibrate. If the seed weight is long, close the seed meters or decrease the drive ratio and recalibrate.

## **OPERATION**

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### **STORAGE AT THE END OF THE SEASON**

Clean the drill thoroughly and inspect all parts for wear and breakage. Order replacement part required now so needless delays can be avoided at the beginning of the next planting season.

Remove any seed remaining in the hopper. Any remaining grain in the seeder units should be removed by rotating the seeder shaft.

Remove the rubber seed tubes and store inside.

Coat the double disc with oil and grease to prevent rusting.

Remove all drive chains and clean with diesel fuel. Oil thoroughly and store in a dust proof and moisture proof container.

Coat all sprockets with oil or grease to prevent rusting.

### **AT THE BEGINNING OF THE NEXT SEASON**

Clean off any dirt or grease that may have accumulated while the drill was stored. This will prevent any abrasive action that could cause excessive wear.

Install the rubber seed tubes.

Install all drive chains and lubricate.

Again inspect all nuts and bolts for tightness. Make sure all moving parts move freely and do not bind.

Take the time to read through the Operator's Manual to refresh yourself with the safety information and the operating instructions. This time spent could prevent an injury to yourself and also prevent damage to the drill.

### **LUBRICATION**

Your grain drill is designed to give maximum service life, but a lubrication and maintenance schedule must be followed.

The machine should be thoroughly greased with a multipurpose grease after initial setup and prior to the first field operation. Greases that may be used are SAE Multipurpose EP grease with 3 to 5 percent molybdenum disulfide or SAE multipurpose EP grease.

Lubricating and regular servicing of the grain drill will insure long life and maximum performance of moving parts. Wipe dirt from the grease fittings before lubrication. If a grease fitting is lost, replace it immediately.

The illustrations in the Lubrication and Maintenance Section show the locations of the grease fittings.