

Operator's Manual

EWD13

13-Foot End Wheel Drill

Model	Serial No.
EWD13	4109R+

Great Plains

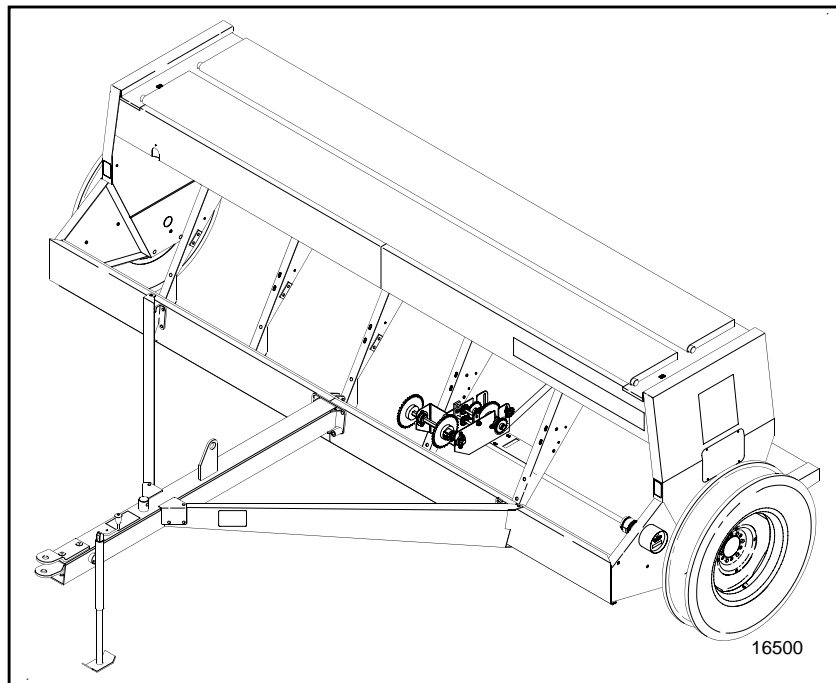
Manufacturing, Inc.

P.O. Box 5060 • Salina, Kansas 67402-5060



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.

PREDELIVERY

Before delivering machine the following check list should be completed. Use this Owner's Manual as a guide.

1. Assembly completed.
2. Fluids added & checked.
3. All grease fittings lubricated. Refer to "**Maintenance & Lubrication**" section.
4. Check & tighten all hardware. Refer to "**Nut & Bolt Torquing Chart**".
5. All decals are in place & readable. See "**Decal Placement**" section.
6. All safety shields or guards are in place.
7. Overall conditions good {i.e. paint, welds}.

This check list is to remain in Owner's Manual.

It is the responsibility of the dealer to complete the procedures listed above BEFORE delivery of this machine to the customer.

DELIVERY

Review this Owner's Manual with the customer. Explain the following & check off as completed.

1. Safety procedures for operation & service.
2. Basic operating & adjustments.
3. Daily & periodic maintenance & lubrication. Refer to "**Maintenance & Lubrication**" section.
4. Correct lubricants & usage.
5. Great Plains parts & service.
6. Record serial number. See "**Introduction**" on next page.
7. Remind customer that all decals should remain in place & readable. See "**Decal Placement**" section & contact dealership for replacements when needed.
8. Remind customer that **ALL** safety shields & guards are not to be removed.
9. Give customer this Owner's Manual & encourage them to read it.

Your Great Plains End Wheel Drill is designed to give you many years of dependable service. This manual has been prepared to instruct you in the safe and efficient operation of this machine. Read and study it thoroughly. Follow all instructions and service procedures carefully.

The parts on your End Wheel Drill have been specially designed and should only be replaced with genuine Great Plains parts. Therefore; should your drill require replacements parts, purchase them from your Great Plains Dealer.

Space has been provided below for you to record your model number and serial number of your drill. Be sure to bring this information with you to your dealer when ordering parts or attachments for your drill.

The following signal symbol and words should be clearly understood! When seen in this manual or on your equipment, this symbol and words will alert you to the seriousness of a situation. They should not be ignored or taken lightly.



The **SAFETY ALERT SYMBOL** indicates that there is a potential hazard to personal safety involved and extra safety precautions 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.

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.

WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

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.

Thank you for buying a Great Plains End Wheel Drill.

SERIAL NUMBER _____

MODEL NUMBER _____


DATE PURCHASED _____

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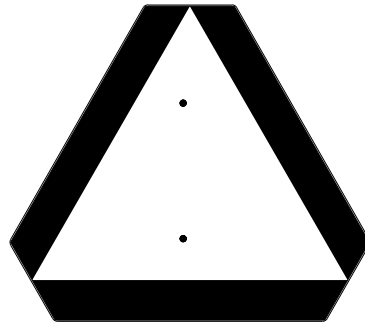
 **SAFETY RULES** 

The safe operation of machinery is a big concern to farmers and manufacturers. We have designed our End Wheel Drill with many built-in safety features. However, no one should operate this drill before carefully reading this Owner's Manual.

1. **NEVER** permit anyone to ride on or walk beside the drill when moving.
2. **NEVER** permit anyone to ride on tractor when the drill is being moved.
3. **NEVER** allow anyone to be near the drill when performing operating functions with the drill or tractor.
4. **DO NOT** allow anyone to operate the Drill who has not been properly trained in its safe operation.
5. **ALWAYS** fasten the drill hitch securely to the tractor drawbar with a safety lock type pin & fasten safety chain securely to tractor.
6. **NEVER** load the drill without being hooked up to a tractor
7. **NEVER** exceed 20 MPH when transporting.
8. Extra care should be taken when transporting with seed in the boxes.
9. Reduce speed of the tractor when transporting over uneven or rough terrain. Avoid all chuck holes and washboard areas in roads.
10. Reduce speed of the tractor when transporting over hills or steep slopes.
11. When in transport, use accessory lights and devices for adequate warning to operators of other vehicles and use safety hitch chain. Comply with all Federal, State and Local laws when traveling on public roads.
12. Use "Slow Moving Vehicle" emblem for warning vehicles approaching from the rear.
13. When transporting, remember the drill is wider than your tractor and extreme care must be taken to allow for safe clearance.
14. **NEVER** back up when openers are in the ground.
15. **ALWAYS** set the drill in field position **BEFORE** lubrication, making adjustments, or servicing.
16. **DO NOT** lubricate, adjust or repair the drill while it is in operation.
17. **DO NOT** permit smoking, sparks, or an open flame where combustible lubricants or liquids are being used.
18. When using treated seed, avoid direct contact with the seed.
19. When using compressed air to clean the drill, wear safety glasses.
20. **NEVER** unhook drill from tractor when negative tongue weight is present.

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

 **SAFETY DECALS** 



Slow Moving Vehicle
Emblem
818-055C



Reflector - Red
818-230C

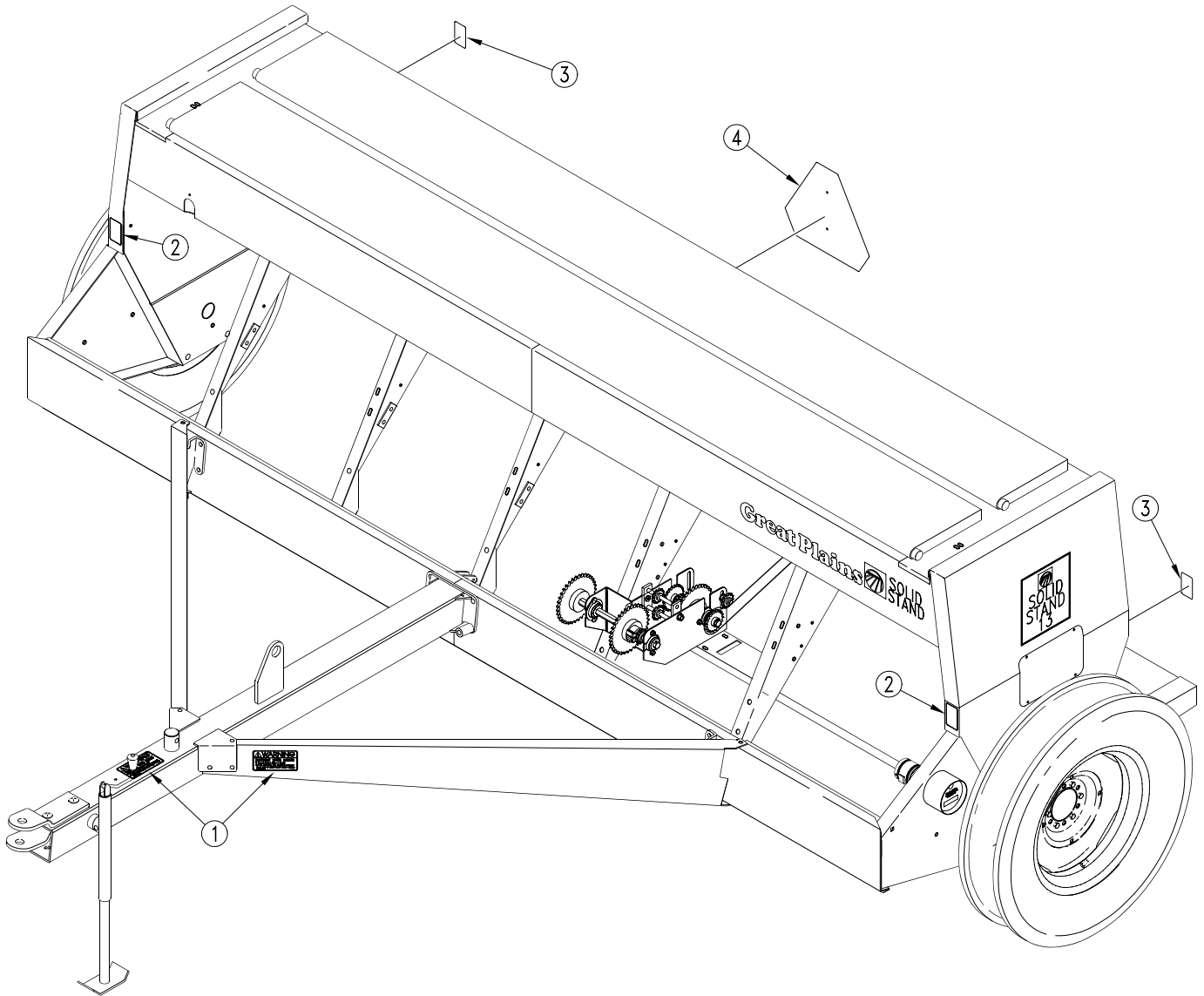


Reflector - Amber
818-229C

--IMPORTANT--

- * Your End Wheel Drill comes equipped with all safety decals in place.
- * Always keep safety decals clean and legible.
- * Replace all damaged or missing safety decals. To order new safety decals go to your Great Plains Dealer and reference part numbers as shown on page 1-3.
- * To install new safety decals:
 - A) Clean the area the decal is to be placed. (Refer to page 1-3.)
 - B) Peel backing from decal and press firmly onto clean surface.

Includes ALL SAFETY Decals As Shown Below.



Ref.	Part No.	Description
1.	818-188C	Warning Transport Speed
2.	818-229C	Amber Reflectors
3.	818-230C	Red Reflectors
4.	818-055C	Slow Moving Vehicle

NUT & BOLT TORQUING CHART

This chart is based on torque requirements in foot pounds for grade 5 bolts.

BOLT DIAMETER	MINIMUM TORQUE	MAXIMUM TORQUE	BOLT DIAMETER	MINIMUM TORQUE	MAXIMUM TORQUE
1/4"	9	11	3/4"	270	324
5/16"	17	20	7/8"	400	480
3/8"	35	42	1"	580	696
7/16"	54	64	1 1/8"	800	880
1/2"	80	96	1 1/4"	1120	1240
9/16"	110	132	1 3/8"	1460	1680
5/8"	150	180	1 1/2"	1940	2200

NOTE: Torque requirements listed above do not apply to self-locking nuts. For self-locking nuts increase the torque requirements listed above by 15%.

TIRE INFLATION CHART

TIRE SIZE	INFLATION PSI
5.90 x 15" 4 Ply Rib Implement	32
7.50 x 20" 4 Ply Rib Implement	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
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

For the following assembly instructions, refer to Fig. 1 below.

1. Remove the 5/8" x 3 1/2" x 5" long u-bolts (#17), 5/8" lockwashers (#19), and 5/8" nuts (#18) that hold the opener channel to the drill frame for shipping. Remove 1/2" nut (#8) and 1/2" lockwasher (#7) from the front of the opener channel leaving the 1/2" x 3 1/2" x 4 3/4" long u-bolt (#6) in place.
2. Assemble the rear of right and left pull bars (#1), {left hand shown} to the drill. First use 1/2" x 1" long carriage bolt (#2) and whiz nut (#3) to bolt the bottom leg of pull bar to the bottom leg of the opener channel.
3. Lift pull bar (#1) up and bolt top leg using 1/2" x 1 1/4" long whiz bolt (#4) and whiz nut (#5).
4. Attach inside leg of pull bar with 1/2" x 3 1/2" x 4 3/4" long u-bolt (#6), 1/2" lock washers (#7), and 1/2" hex nut (#8).

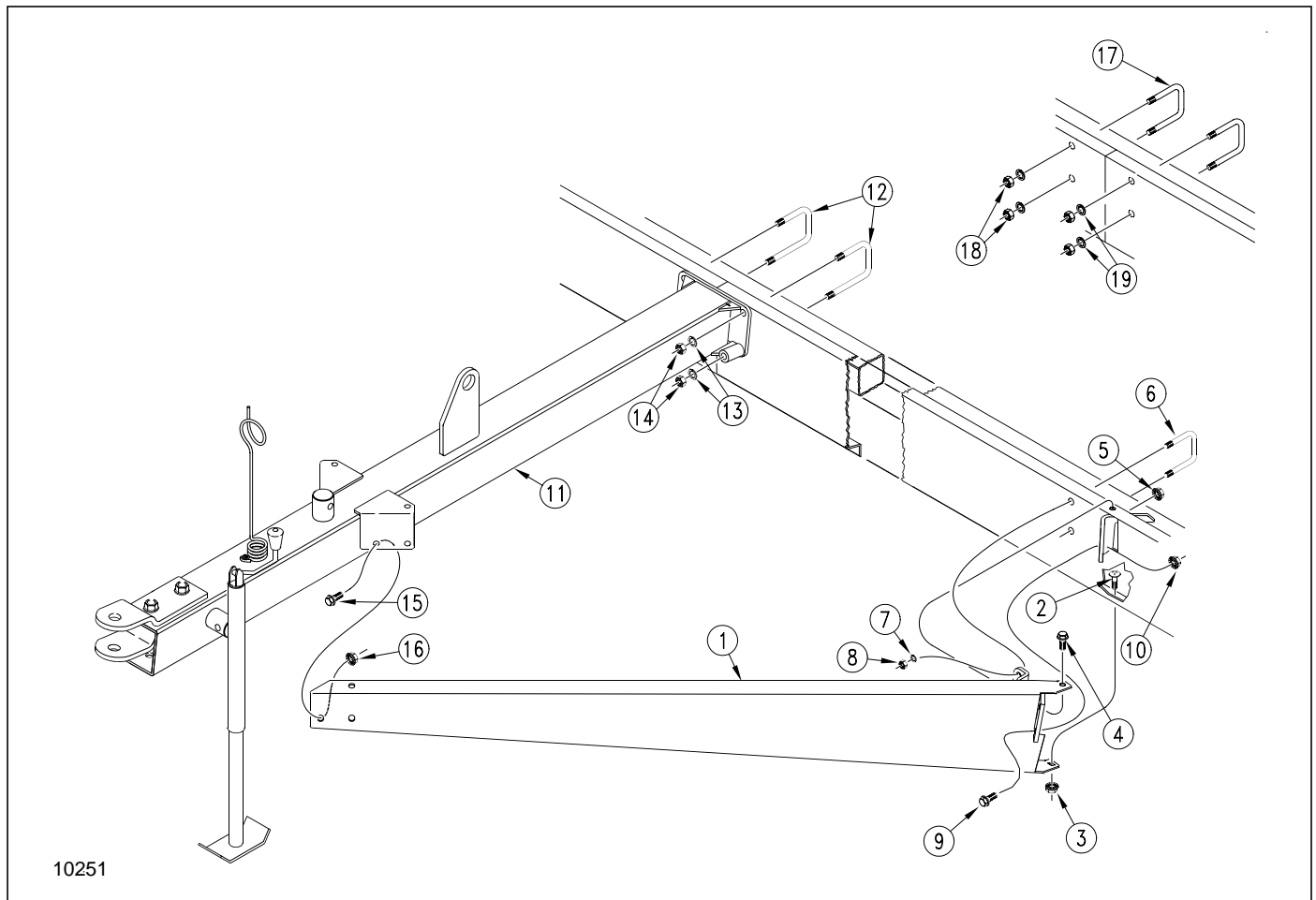
5. Attach outside leg of pull bar with 1/2" x 1 1/2" whiz bolts (#9), and whiz nuts (#10).

NOTE: DO NOT tighten hardware until final assembly.

6. Lay the tongue (#11) between the pull bars (#1) and bolt to the drill with 5/8" x 3 17/32" x uneven leg u-bolts (#12), 5/8" lock washers (#13), and 5/8" hex nuts (#14).

7. Assemble the front end of pull bars to the tongue (#11) with 1/2" x 1 1/4" long whiz bolts (#15), and whiz nuts (#16).

8. Tighten **ALL** mounting hardware when assembly is completed.



Tongue & Pull Bar Assembly Drawing
Fig. 1

For the following assembly instructions, refer to Fig. 2 below.

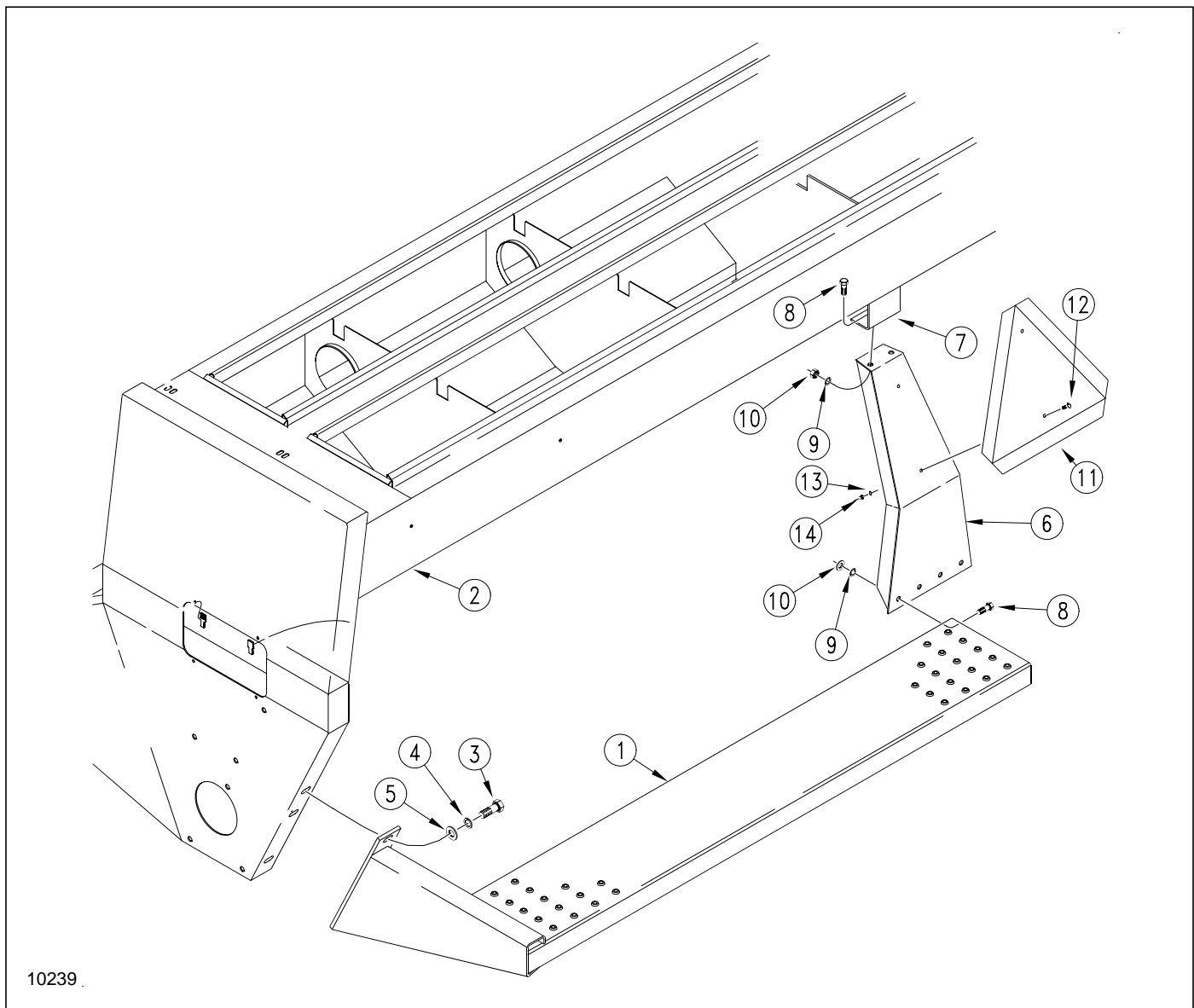
1. Start the bolts on each end of the step weldment (#1) to the drill (#2) using 3/4" x 2" long bolts (#3), 3/4" lock washers (#4), and 3/4" SAE flat washers (#5).

NOTE: DO NOT tighten hardware until final assembly.

2. Bolt the step hanger weldment (#6) to the center mount (#7) on the drill box (#2) using 1/2" x 1 1/4" long hex bolts (#8), 1/2" lock washers (#9), and 1/2" hex nuts (#10). Bolt the lower part of the step hanger to the front leg of the step using the same 1/2" hardware.

3. Tighten **ALL** hardware when assembly is complete.

4. Mount the Slow Moving Decal (#11) to the step hanger using 1/4" x 5/8" long round head screws (#12), 1/4" lock washers (#13), and 1/4" hex nuts (#14).



Step Assembly Instructions Drawing
Fig. 2

A minimum 65 H.P. tractor is required to operate your 13' End Wheel Drill in most field conditions.

1. One remote outlet is required to operate the drill.

2. Two remote outlets are required if your drill is equipped with markers.

TRACTOR DRAW BAR HOOKUP

When hitching the drill to the tractor drawbar, it is important to level the drill by adjusting the tongue jack so that the drill box is parallel with the ground.

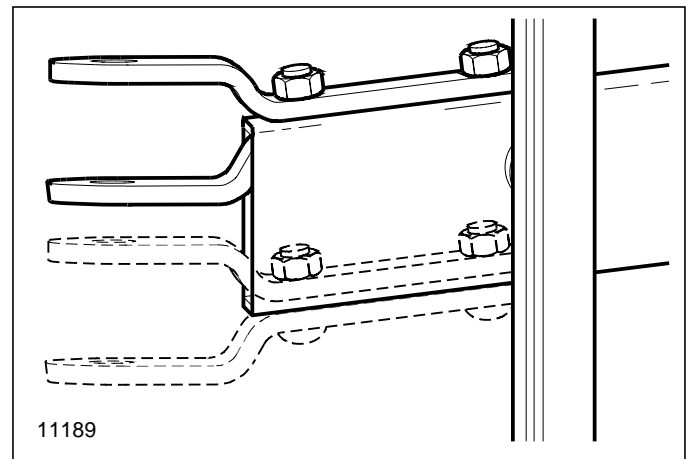
The hitch clevis straps can now be adjusted to match the tractor drawbar height, Fig. 3.

Your drill comes equipped with a hitch safety chain. The safety chain should be securely attached to the drill hitch and the tractor drawbar whenever towing or planting. Pin the drill hitch to tractor drawbar and lower the tongue using the screw jack. Unpin the tongue jack and move it to its horizontal transport position on top of tongue.

NOTE: Make sure the hitch is securely bolted to the drill tongue.

ALWAYS use a pin that contains a safety locking device to prevent it from falling out.

ALWAYS Attach safety chain from the drill hitch to the tractor and lock the hook securely on the chain. Adjust the chain length to allow just enough slack to permit turning of the drill and tractor.



Clevis Hitch
Fig. 3

HYDRAULIC HOOK-UP

Attach the female swivel end of the hydraulic hoses to the fittings on the cylinder.

You are now ready to hook-up your hydraulic hoses. Apply pipe sealant to the male pipe end of the hydraulic fitting and screw the two hydraulic fittings into your cylinder ports. Then insert hydraulic hoses through the spring type hose loop on the tongue and attach hydraulic male coupler tip to hoses. Plug the male coupler into tractor outlets as instructed in your tractor operators manual.

When using sealant on pipe threads the friction between

the threads is reduced, therefore be certain not to over tighten causing damage to the cylinder port or fitting.

NOTE: JIC fittings **DO NOT** require high torque. JIC and O-Ring fitting do not require sealant. **ALWAYS** use liquid pipe sealant when adding or replacing pipe thread fittings. To avoid possible danger of cracking hydraulic fittings from over tightening, **DO NOT** use plastic sealant tape.



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

This End Wheel Drill requires the use of a 3 1/2" bore x 8" stroke cylinder with a 20 1/4" {pin to pin} retracted length.

NOTE: Check the hydraulic fluid level in the tractor reservoir and fill to the proper level. If the bleeding is performed with a low tractor reservoir supply, there is a chance of drawing air into the system. The system capacity is approximately 1/2 gallon and requires 1 pair of remote outlets.

1. With the transport lock in the transport position, refer to "**Operating Transport Lock**" on page 3-1. Loosen the connection between the hose end and the cylinder base end fitting.

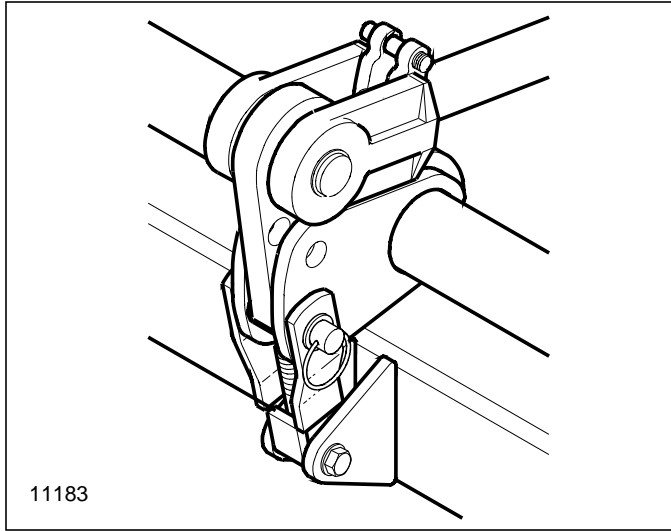
2. With the tractor at idle, slowly retract the lift cylinder. When the air is expelled and oil starts flowing out, tighten the base end hose connection.

3. Repeat this procedure with the rod end hose connection while extending the cylinder.

4. Recheck the tractor reservoir level and add clean fluid as necessary.

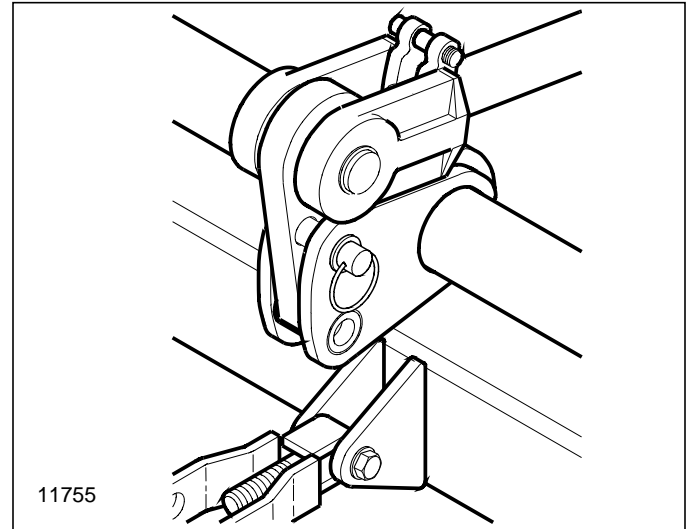
5. It is advisable to extend and retract the lift cylinder several times. The majority of air should now be expelled from the system. Any remaining air will gradually be pushed to the tractor during day to day operations.

To prepare your drill for field operation, you first must fully extend the cylinder, remove the transport lock pin from the lower hole in the rod end cylinder lug Fig. 4 and replace in the upper hole Fig. 5.



Lock Pin In Transport Position
Fig. 4

When transporting long distances, or transporting without a cylinder, the transport lock pin should be placed in the lock position as shown in Fig. 4.

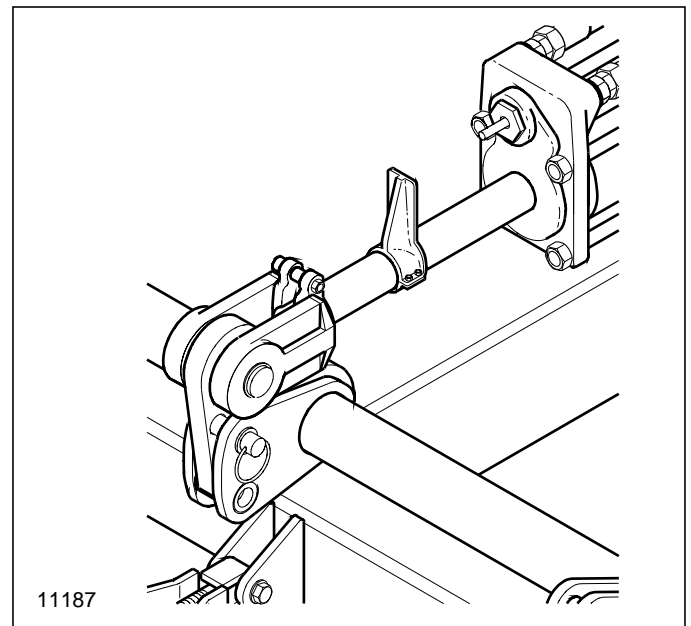


Lock Pin In Field Position
Fig. 5

NOTE: If your drill is equipped with markers the marker body must be pinned up for transport. See Marker Manual located in Optional Equipment Section.

HYDRAULIC DEPTH CONTROL

The optional cylinder package purchased with your drill contains a hydraulic cylinder with depth control stop, Fig. 6. This cylinder allows for a variable adjustment from zero to maximum stroke which controls the down pressure applied to your disk openers. In order to adjust the stroke of the cylinder, retract cylinder until the openers are set at the desired down pressure required. Next, loosen the bolt on the depth control actuator plate and slide it down the cylinder until it stops against the plunger of the control valve on the head of the cylinder. You will now need to extend the cylinder slightly and move the depth control actuator plate down to compensate for the control valve plunger length.



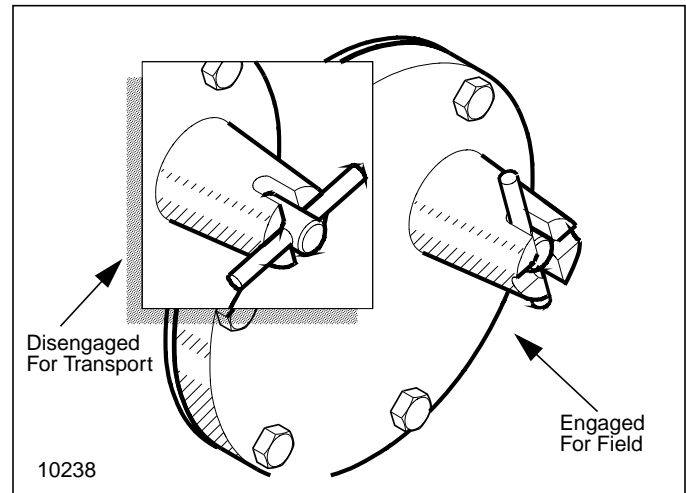
Hydraulic Depth Control
Fig. 6



CAUTION! THIS DRILL SHOULD NEVER BE PULLED FASTER THAN 20 MILES PER HOUR!

Before transporting the drill, you should always check the following items:

1. Make sure that drill is securely attached to the draw bar of the tractor and that the hitch safety chain has been securely attached.
2. To prevent possible damage in case of hydraulic failure during transport, always insert your transport lock pin in the lock position as shown on page 3-1 in Fig. 4.
3. Check to see that the end wheel tires have the proper inflation as noted on the "**Tire Inflation Chart.**"
4. Comply with all Federal, State and Local Safety Laws when traveling on public roads.
5. Remember, the drill is wider than the tractor and extreme care must be taken to allow for safe clearance.
6. Make sure the drive lock-out hub {left side} is disengaged before transporting, refer to Fig. 7. This will protect from excessive wear on the gauge wheel drive system.



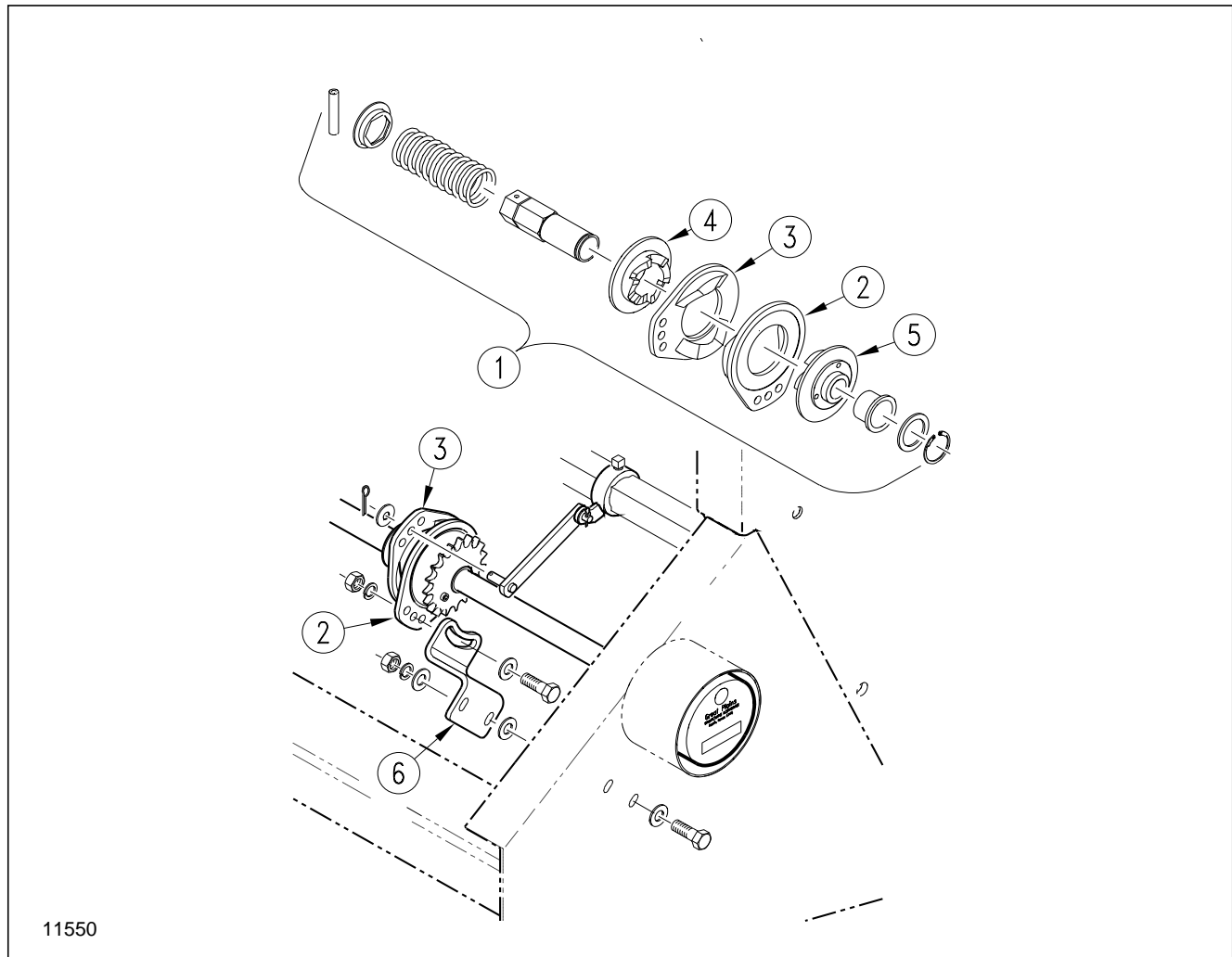
Lock-Out Hub
Fig. 7

CLUTCH

The main drive clutch (#1) on your drill is a mechanical release - jaw style design, which may require some adjustments before using your drill. Raise the drill openers to the transport position. Check between the two cam plates which disengage the jaws of the clutch halves (#2) & (#3).

The clutch jaws (#4) & (#5) should be completely separated at this point. Adjustments can be made to the cam plate (#2) that is bolted to the slot (#6) in the box frame.

By loosening the cam plate (#2) and rotating it, the clutch may be adjusted to engage quicker or slower as the drill openers are being lowered. Whenever adjusting the clutch, check to be sure the clutch jaws (#4) & (#5) are engaged completely when the openers are in the field position. The clutch jaws should also be completely disengaged when the openers are raised for transport.



11550

Clutch Actuator
Fig. 8

CHAIN DRIVE

This grain drill uses standard no. 40 roller chain through out its drive system. The drive system is simple and designed for low maintenance. At the speed change box and inside the double wall end panel on the left end of your drill are spring loaded chain idlers that should be checked at the beginning of each season to insure that chain wear has not exceeded the travel of the idler arm and spring.

To do a maintenance check, simply remove the inspection

cover from the inside of the box end panel and move idler arms back and forth to insure that they have not seized to their pivot bolt.

On fertilizer drills the inspection cover for the fertilizer drive is located on the outside of the left box end panel. This cover must be removed to inspect the fertilizer drive chain and idler.

Setting the seeding rate requires four steps: arranging the drive sprockets, setting the seed-rate adjustment handle, positioning the seed-cup doors, and checking the seeding rate.

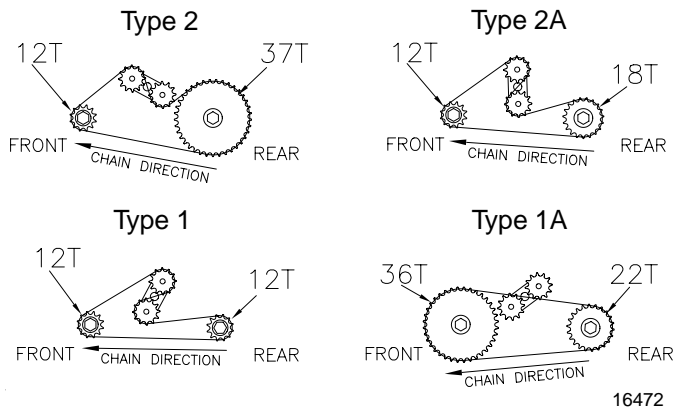
Refer to the seed-rate charts starting on page 5-3. These charts list the proper sprocket sizes and seed-rate-handle settings for various seeds and seeding rates. The seed-rate charts are based on cleaned, untreated seed of average size and test weight. The rates are based on 7.5 x 20 rib implement tires. 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 re-adjust the rate as necessary.

NOTE: Your drill can be equipped with a special pea drive (Great Plains part number 152-204A). This drive will include different seed-rate charts.

CHANGING DRIVE SPROCKETS

Refer to the seed-rate charts for the correct drive type—1, 1A, 2 or 2A. Fig. 9 shows the sprocket arrangement for each drive type.



Drive Types
Fig. 9

Drive-Type Ratios

Type 2 is Slowest

Type 2A is Two Times Faster Than Type 2

Type 1 is Three Times Faster Than Type 2

Type 1A is Five Times Faster Than Type 2

To change the drive types:

1. Refer to Fig. 10. Loosen the nut (1) holding the idler arm (2). Turn arm so chain is slack. Remove chain from sprockets.

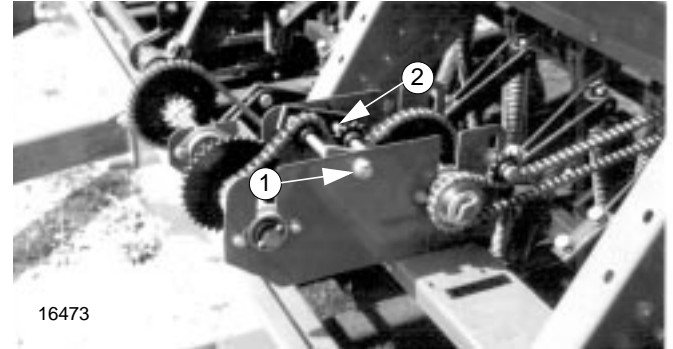
2. Refer to Fig. 11. Rearrange sprocket (1) and plastic spacers (2) on front shaft so the correct front and rear sprockets are aligned according to the drive type.

a. Pull spacers off shaft.

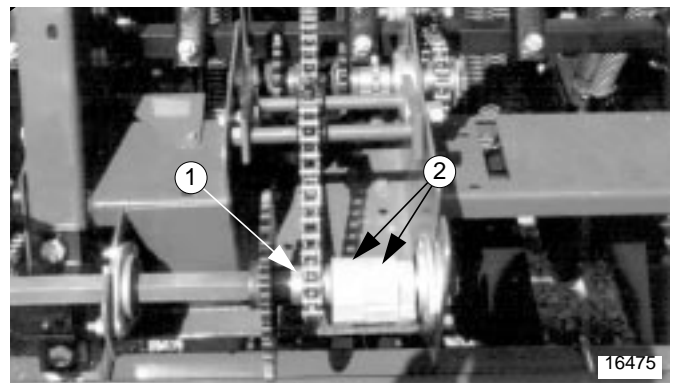
b. Slide sprockets as necessary and place plastic dividers back on shaft between sprockets as necessary.

3. Slide idlers on idler arms so they 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.



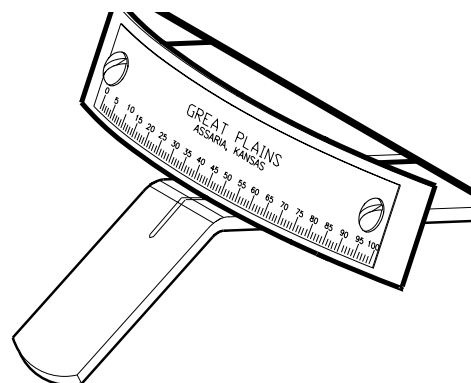
Loosen Idler Spacer
Fig. 10



Rearrange Sprockets on Front Shaft
Fig. 11

SETTING SEED RATE HANDLE

Position the handle shown in Fig. 12 to the setting indicated on the seed-rate chart. To adjust the handle, loosen the wing nut under the handle and slide until the indicator lines up with the correct setting.

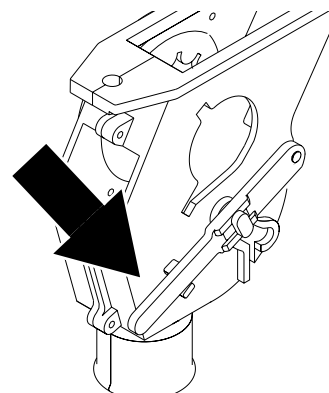


Seed-Rate Handle
Fig. 12

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POSITIONING SEED-CUP DOORS

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 the same position before drilling.



Seed-Cup-Door Handle
Fig. 13

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CHECKING SEEDING RATE

- Hydraulically lower the drill to planting position to activate clutch.
- Check that your tires are 7.5 x 20 rib implement and properly inflated. Refer to *Tire Inflation Chart*, page 1-5.
- Weigh an empty container large enough to hold the seed metered for one acre.
- Jack the drive (left) end wheel off the ground. Rotate the wheel to see that the drive system is working properly and seed cups are free from foreign material.
- 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.
- Turn the drive wheel several times to fill the seed cups. Turn the wheel until seed drops to the ground from all three cups.
- Place a container under the three tubes to gather metered seed.
- Rotate the drive wheel until one acre has been tallied on the acremeter. This will be about 348 rotations. Check that the three seed cups have plenty of seed coming into them.
- Weigh the metered seed. Subtract the initial weight of the container. Divide by three. Multiply by the number of openers on your drill to determine total pounds-per-acre seeded. 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.

10. When drilling, check the 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 the rate slightly to compensate for field conditions.

END WHEEL DRILL SEED RATE CHART

HARD RED WINTER WHEAT				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																				
6"	0	12	21	30	39	50	59	70	80	91	103	114	124	138	150	164	173	182	188	197	203
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	106	115	126	133	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 INDICATOR SETTING NUMBER																	
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																				
6"	0	8	14	20	26	33	39	47	54	61	69	76	83	92	100	109	115	121	125	131	136
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 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																				
6"	0	3	11	17	25	33	40	48	56	64	71	79	88	95	102	108	116	123	126	126	128
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 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																				
6"	0	5	18	33	47	59	78	94	109	126	144	159	185	199	212	228	248	262	268	271	273
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 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																				
6"	0	1	7	15	22	32	39	46	55	62	68	76	81	87	93	97	105	112	112	113	115
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 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																				
6"	0	3	11	25	43	58	74	92	106	117	137	154	168	178	194	206	220	238	244	248	248
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	197
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 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																				
6"	0	0	9	16	23	29	36	43	49	55	62	69	76	82	89	96	102	108	115	122	127
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	98	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 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																				
6"	0	4	9	15	20	27	33	39	47	55	61	68	76	82	90	97	103	109	115	120	124
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 INDICATOR SETTING NUMBER																			
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																				
6"	0	0	4	7	11	14	16	19	25	27	30	35	37	41	44	48	53	56	57	62	63
7"	0	0	3	6	9	12	15	17	22	23	25	29	32	35	37	41	45	48	49	53	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 INDICATOR SETTING NUMBER																			
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																				
6"	0	2	5	8	11	13	16	20	21	25	29	34	38	41	45	49	54	60	61	62	63
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 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																				
6"	0	4	12	20	28	37	47	56	62	76	86	96	102	113	123	138	151	167	177	178	182
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 INDICATOR SETTING NUMBER																			
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																				
6"	0	2	4	7	10	14	17	20	25	28	32	36	39	42	45	50	55	59	63	65	68
7"	0	1	4	6	8	12	15	17	21	24	27	31	33	36	8	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 INDICATOR SETTING NUMBER																			
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																				
6"	0	0	0	3	7	10	14	17	21	24	29	35	37	41	45	48	51	55	58	62	66
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	5	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 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																				
6"	0	0	9	24	37	51	67	79	93	108	121	134	149	162	174	188	197	208	220	228	234
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

END WHEEL DRILL SEED RATE CHART (CON'T.)

SOYBEANS		SEED RATE INDICATOR SETTING NUMBER																			
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																				
6"	0	0	3	8	12	17	22	26	30	35	39	43	48	53	57	61	64	67	71	74	76
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 INDICATOR SETTING NUMBER																			
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																				
6"	0	0	6	16	25	34	44	53	62	72	81	89	99	108	116	125	131	19	147	152	156
7"	0	0	5	14	22	30	39	47	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	72	77	81	85	90	93	96

*Based On 59.1#/Bushel. Setting the feed cup adjustment handle between 50 & 60 allows for optimum seeding of soybeans.

PEAS		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																				
6"	0	0	7	23	28	48	61	78	95	113	129	148	164	180	198	215	228	244	245	246	247
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	90	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	185	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 INDICATOR SETTING NUMBER																			
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																				
6"	0	0	0	0	2	3	7	12	17	24	29	40	45	48	54	61	71	73	75	76	80
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 INDICATOR SETTING NUMBER																			
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																				
6"	0	4	5	8	11	13	15	18	21	24	27	30	34	37	41	44	48	52	55	57	57
7"	0	3	5	7	10	12	14	16	18	21	24	27	30	33	36	39	43	4	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 INDICATOR SETTING NUMBER																			
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																				
6"	0	4	6	9	12	15	19	22	25	28	31	34	37	40	42	45	48	50	53	55	57
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 INDICATOR SETTING NUMBER																			
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																				
6"	0	3	5	8	12	15	19	22	26	29	32	36	40	44	48	52	57	61	64	65	65
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 INDICATOR SETTING NUMBER																			
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																				
6"	0	0	0	1	3	3	4	5	5	7	7	8	8	9	9	9	10	10	11	12	12
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

*Based On 60#/Bushel

OPTIONAL EQUIPMENT **FEED CUP PLUGS**

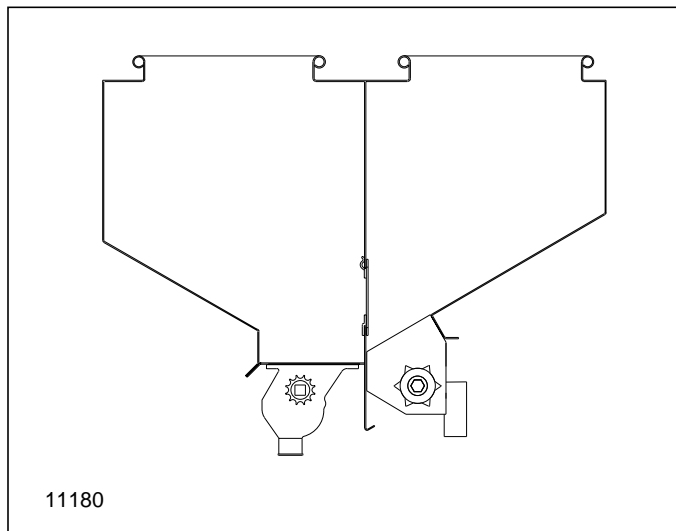
When you desire to block off certain rows to create wider row spacings, you should use Great Plains feed cup plugs which are available to cover feed cups not being used. To install, center plug over opening and push in. When ordering, specify Part No.109-009H.

Great Plains fertilizer drills have a center seed/fertilizer partition. This allows approximately the same seed capacity as fertilizer, Fig. 14. The partitions are removable panels to allow the drill to be used with all seed, Fig. 15.

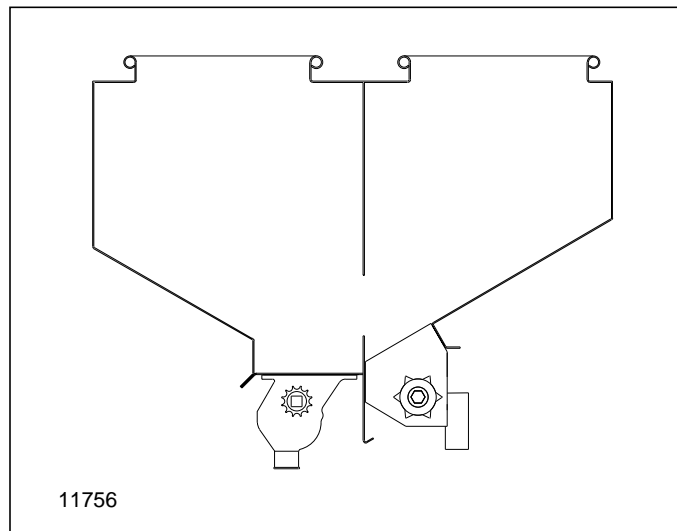
If fertilizer is not being used with grain, remove the chain from fertilizer drive sprocket to eliminate unnecessary wear on the fertilizer drive system. If total box capacity is desired for grain, remove seed/fertilizer doors, Fig. 15. Set fertilizer rate adjustment lever at "0" to avoid seed loss through the fertilizer outlets.

The fertilizer rate is set by the adjustment handle located on the fertilizer tray. The setting that the handle is set on corresponds to the fertilizer application chart setting number.

The application rate of dry granular fertilizer is affected by many factors: type, density, relative humidity, and the moisture content of the material itself. Due to these variables, the chart below should be used only to closely approximate the amount of fertilizer being applied.



Fertilizer Divider Panel In Place
Fig. 14



Seed Planting Only - Panel Out
Fig. 15

FERTILIZER APPLICATION CHART

This chart has been computed using fertilizer that has a density of 65 lbs/cubic foot.

Row Spacing	ADJUSTMENT HANDLE SETTING																		
	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	Pounds Per Acre																		
6"	23	34	46	59	72	84	97	111	125	139	153	166	179	193	206	221	235	248	262
7"	21	31	41	52	63	75	86	99	111	124	136	147	157	170	182	194	207	220	223
7 1/2'	18	28	38	48	58	68	79	90	100	111	123	133	144	155	166	177	189	200	212
8"	17	26	35	45	55	64	74	85	95	105	116	126	136	147	157	168	178	189	200
10"	14	21	29	36	44	51	59	67	76	85	95	102	109	118	127	136	145	154	162

If you are applying fertilizer that has a density other than this, use the following table:

Density	45	50	55	60	65	70	75	80
Conversion Factor	1.45	1.30	1.20	1.10	1.00	0.93	0.87	0.81

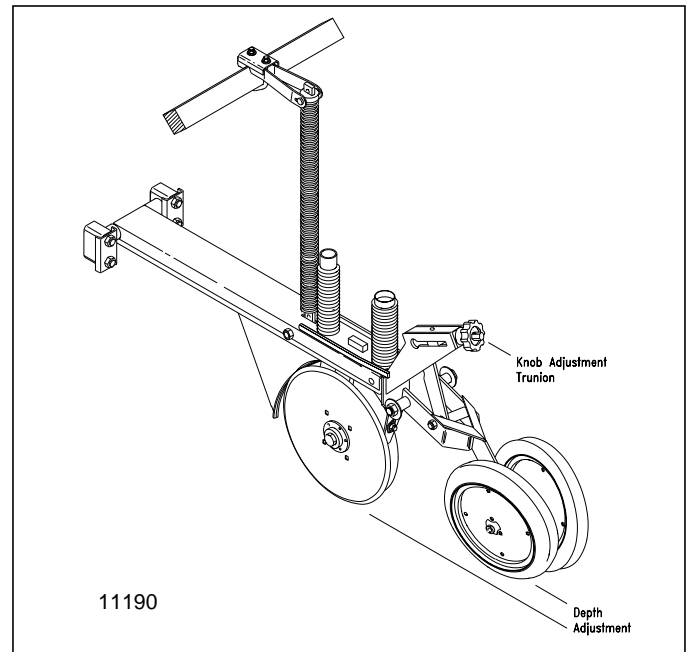
EXAMPLE: You're using fertilizer with a 75 lb/cubic foot density and you desire a rate of 100 lbs/acre. Multiply 100 x 0.87 = 87 lbs. Therefore, use the setting closest to 87 lbs.

The fertilizer feed speed is directly related to your ground speed so there are no chains or sprockets to adjust in order to change your rate. The rate is controlled by fertilizer

outlet opening size. For fertilizer rates see that section of your manual.

The depth of each opener can be adjusted by the position of the press wheel, Fig. 16. You can adjust your press wheels up or down to achieve the correct seeding depth.

With the drill level and openers lowered to planting position, adjust the knob and adjustment trunion located above each press wheel. This will vary the height of the press wheel which automatically changes the seeding depth of the opener. Simply rotate the knob until the seeding depth is correct.

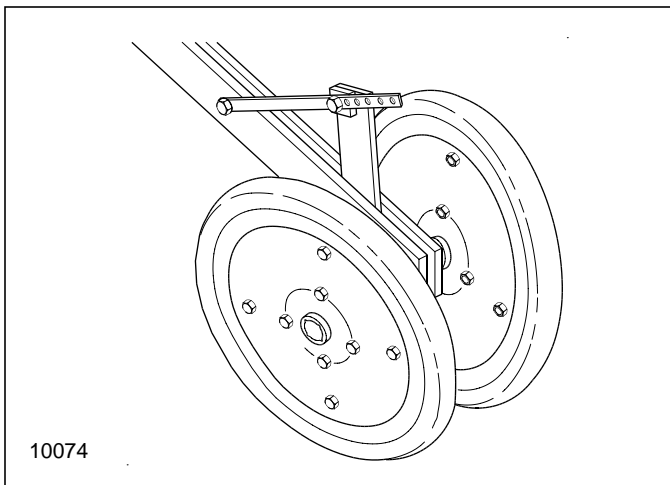


Opener Press Wheel Depth Adjustment
Fig. 16

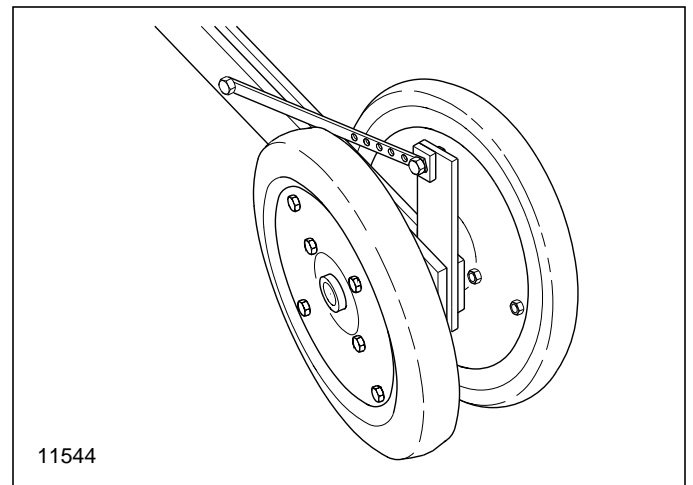
PRESS WHEEL ANGLE ADJUSTMENT {2 x 13 DOUBLE "V" PRESS WHEELS ONLY}

The camber angle of the 2" x 13" double "V" press wheels may be adjusted by removing the angle bar adjustment pin and moving the angle bar. Moving the angle bar for-

ward will cause the press wheels to pull more soil over the seed, Fig. 17. Moving the angle bar back will cause the press wheel to pull less soil over the seed, Fig. 18.



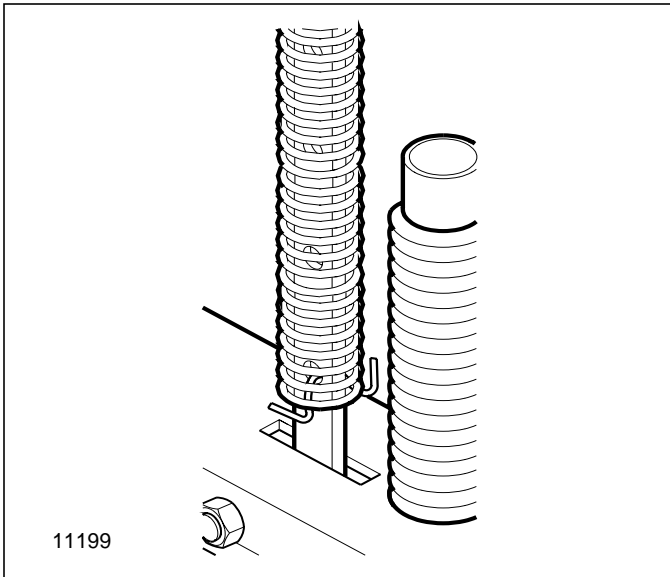
Forward Position
Fig. 17



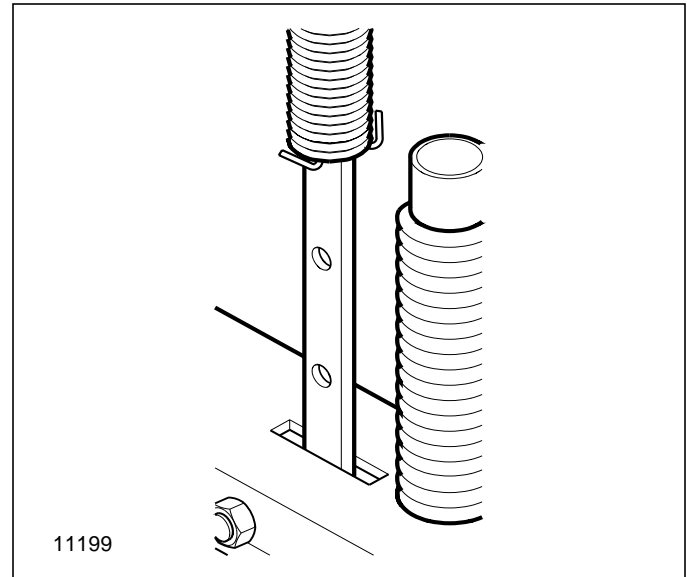
Rear Position
Fig. 18

Each opener spring can be individually adjusted for down pressure. This is useful when penetrating hard soil and for seeding in tractor tire tracks. To adjust the pressure,

remove the "w" clip at the bottom of the spring and place it in a higher hole in the spring rod for more pressure or in a lower hole for less pressure.



"W" Clip In Lower Position - Less Down Pressure
Fig. 19

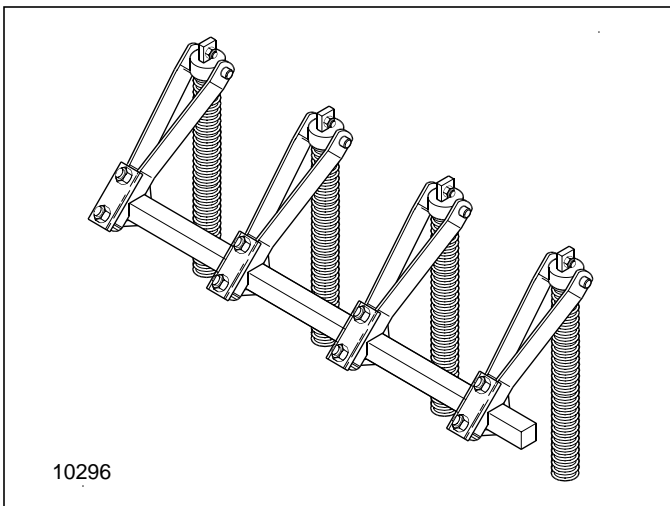


"W" Clip In Higher Position - More Down Pressure
Fig. 20

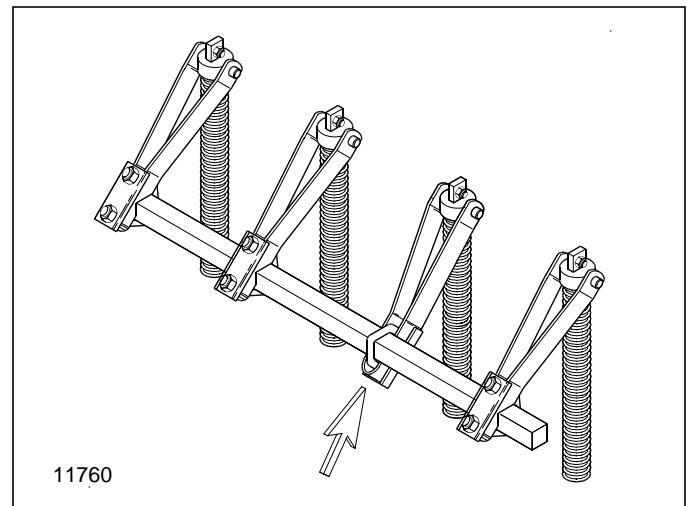
SEEDING IN TRACTOR TIRE TRACKS

When openers follow in tractor tire tracks and adjusting the spring pressure on the openers does not give satisfactory depth, Fig. 21, the opener lift arms at the top of the spring rods can be turned over and bolted on the underside of the square lift shaft, Fig. 22. Be sure to adjust spring pressure after making this change.

WARNING: Ground clearance of these openers will be reduced in transport.



Opener Lift Arm In Normal Position
Fig. 21



Opener Lift Arm In Lowered Position
Fig. 22

1. Be certain that your drill tires are 7.50 x 20 and that they are inflated to 28 PSI.
2. Load seed box with seed. Cleaned seed is recommended to get the best results.
3. This machine can be transported with a full box of seed. It is best **NOT** to do this unless necessary because the increased weight does increase the chances for problems on the road. **DO NOT EXCEED 20 MILES PER HOUR.**
4. Your drill comes equipped with an acremeter and it should be mounted on the left end of the jackshaft. It will accumulate the total acres drilled with the machine. In order to find out the acres covered, write down the beginning reading and subtract it from the end reading for the total acres planted.
5. Make sure that the seed-cup-door handle on each cup is set the same across the drill.
6. If you notice excessive cracking on large grain seeds, adjust all seed-cup-door handles to a more open setting.
7. **NEVER** back up with the openers in the ground. If you do, check all openers to be sure none are plugged.
8. **ALWAYS** raise the openers at the end of field rows and other sharp turns.

OPERATING CHECK LIST

BEFORE operating your drill for the first time, make sure you have checked the following items:

1. Read and follow the "Safety Rules" carefully.
2. Read all "Hook-Up" and "Operating Instructions".
3. Set drive sprockets for drive type desired.
4. Inspect the feeder cups for foreign matter.
5. Rotate drive (left) wheel to make sure the drive system operates smoothly.
6. Set seed rate.
7. Disconnect fertilizer drive chain when fertilizer is not used.
8. Inspect the fertilizer agitator for foreign matter
9. Set fertilizer rate.
10. Check disk opener scrapers for proper adjustment.
11. Lubricate the drill as needed.
12. Read and follow the "Drill Preparation" section.
13. See that the tires have the proper air pressure as listed on page 1-4.
14. Inspect seed and fertilizer tubes.
15. Check the drill initially and periodically for loose bolts, pins, and chains.
16. Check for leaks in the hydraulic system.



CAUTION! ESCAPING FLUID UNDER PRESSURE CAN HAVE SUFFICIENT FORCE TO PENETRATE THE SKIN. CHECK ALL HYDRAULIC LINES AND HOSES BEFORE APPLYING PRESSURE. FLUID ESCAPING FROM A VERY SMALL HOLE CAN BE ALMOST INVISIBLE. USE PAPER OR CARDBOARD, NOT BODY PARTS, TO CHECK FOR SUSPECTED LEAKS. IF INJURED, SEEK MEDICAL ASSISTANCE FROM A DOCTOR THAT IS FAMILIAR WITH THIS TYPE OF INJURY. FOREIGN FLUIDS IN THE TISSUE MUST BE SURGICALLY REMOVED WITHIN A FEW HOURS OR GANGRENE WILL RESULT.

PROPER SERVICING AND ADJUSTMENT IS THE KEY TO THE LONG LIFE OF ANY FARM IMPLEMENT. WITH CAREFUL AND SYSTEMATIC INSPECTION, YOU CAN AVOID COSTLY MAINTENANCE, TIME AND REPAIR.

1. After using your drill for several hours, check all bolts to be sure they are tight.
2. Lubrication -- listed below are the items you need to lubricate every 8 - 10 hours of operation:
 - a. Each opener lift tube, half clamp.
 - b. Clutch assembly.
3. Lubrication -- listed below is the item you need to lubricate once a season:
 - a. End wheel hub bearings.
4. Disk scrapers should be kept properly adjusted.
5. Always maintain the proper air pressure in the rib implement tires.

STORAGE

1. Clean the drill as necessary. **BE SURE** that the seed box, fertilizer box and all feed systems are completely cleaned before storing.
2. Oil and adjust all roller chains.
3. Feed cup drive sprocket hub should be oiled in its square bore. Squirt oil on to the square feed cup shaft and move feed cup adjustment lever back and forth in order to get the oil back into the square. This is most important before putting the drill in storage.
4. Lubricate all fittings as indicated in "Maintenance and Lubrication" on page 21.
5. When in storage, lower the drill with openers on a board or hard surface. Apply a light coat of oil to exposed cylinder rods.
6. Store the drill inside if possible for longer drill life.

PROBLEM**SOLUTION**

- | | |
|---|---|
| 1. Uneven seed spacing or uneven stand | <ul style="list-style-type: none"> a. Check for plugging in seed cup. b. Check to see if seed tubes are plugged. c. Reduce ground speed. d. Check opener disks to see they turn freely. e. Use faster drive type and close feed cup flutes to a more narrow position. f. Spring pressure on openers could be improperly adjusted causing opener to not penetrate low spots. g. Check for trash or mud build-up on Seed-Lok Wheel, refer to optional equipment section. h. Check to see if the drive clutch is fully engaged when openers are lowered. |
| 2. Opener disks not turning freely | <ul style="list-style-type: none"> a. Check for trash or mud build-up on disk scraper. Readjust scraper. b. Check to see if scraper is adjusted too tight and is restricting disk movement. c. Check disk bearings. d. Check opener frame for possible damage. e. If opener disks turn freely by hand but not in field, lessen down pressure on disk opener. f. Check press wheel adjustment for seeding depth. |
| 3. Actual seeding rate is different than desired | <ul style="list-style-type: none"> a. Check tire pressure. Proper inflation is listed on page 1-4 in "Tire Inflation Chart". b. Check tire size. Proper size is 7.50" x 20". c. Seed treatment will affect seeding rate if the chemicals build up in seed cup. Unless cleaned regularly, this build up can cause breakage of the feed shaft. d. Check sprocket drive type. e. See Operator's Manual for instructions on calculating seed rate. |
| 4. Excessive seed cracking | <ul style="list-style-type: none"> a. Use slower drive type and open flutes in feed cup to a wider position. b. Position feed cup handles to a lower notch. |
| 5. Acremeter doesn't measure accurately | <ul style="list-style-type: none"> a. Check tire pressure. Proper inflation is listed on page 1-4 in "Tire Inflation Chart". b. Check tire size. Proper size is 7.50" x 20". c. Check planting operation for excessive overlap or gaps between passes. d. Loose soil conditions and slippage will cause variations in acres registered. e. To check accuracy of acremeter, see page 5-1 on "Seeding Adjustments". f. Check to be sure your acremeter is for your width of drill. |
| 6. Uneven seeding depth | <ul style="list-style-type: none"> a. See section on depth adjustments. |
| 7. Press Wheel not compacting the soil as desired | <ul style="list-style-type: none"> a. Reset press wheel height, see seeding and press wheel adjustments sections. b. 2" x 13" Double "V" press wheel angles may need to be adjusted. c. Down pressure on disk openers is not enough (Refer to section on "Hydraulic Depth Control"). |
| 8. Grain box not emptying evenly | <ul style="list-style-type: none"> a. 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. |

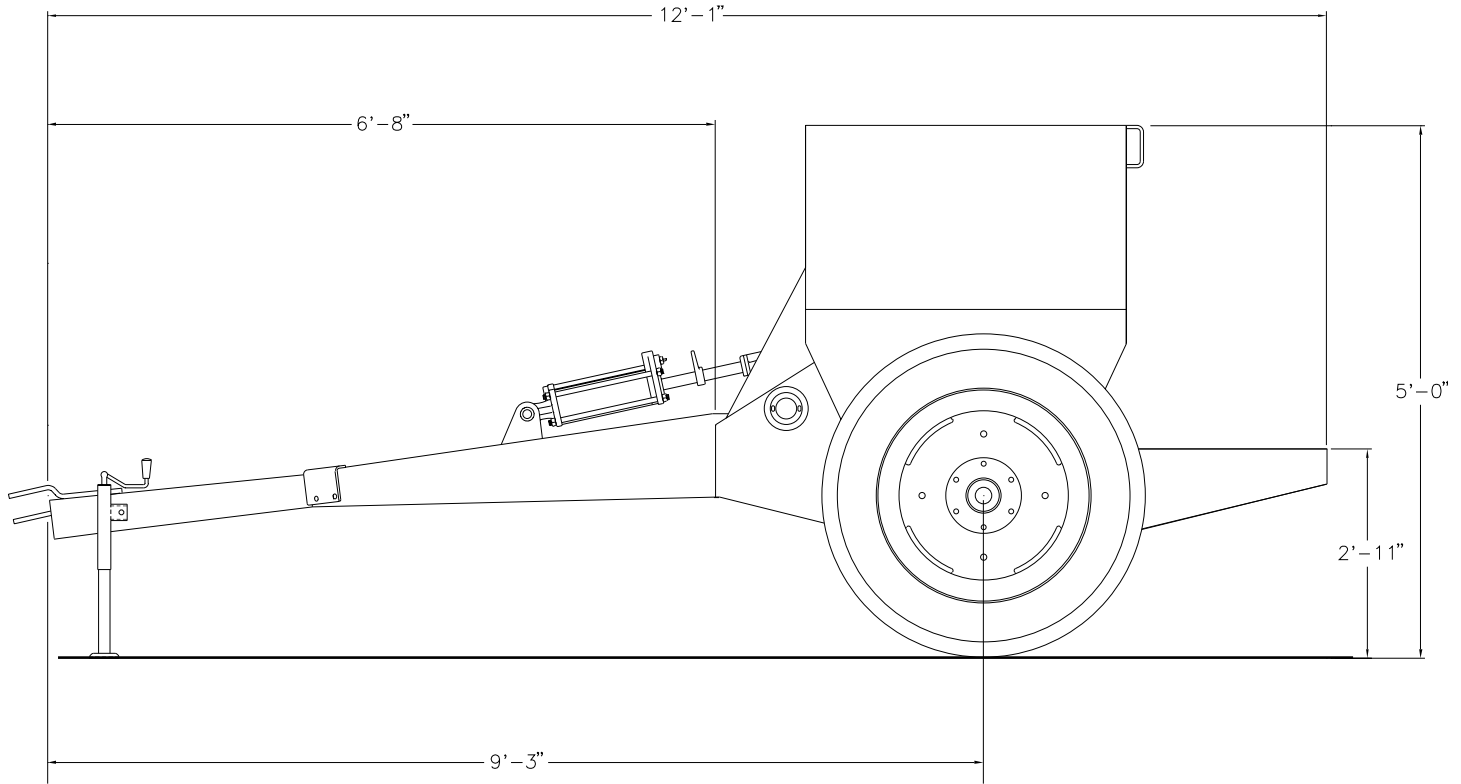
PROBLEM**SOLUTION**

9. Press wheel or openers plugging

- a. Drilling in damp or wet conditions may increase this problem
- b. Reduce down pressure on openers.
- c. Do not back up drill in the field, or stop and allow drill to roll backwards with openers in the ground.
- d. If using double "V" press wheels, adjust angle bar.
- e. Check Seed-Lok Wheel, refer to Optional Equipment manual.

11. Feeder cup sprockets locked up or twisted feeder drive shaft

- a. Check for foreign matter lodged in one or more feeder cup sprockets.
- b. Liquid insecticide from seed has dried within the feed cup. Remove the build up by disassembling each feed cup and scrape the foreign substance from the turning surfaces.
NOTE: Liquid inoculant should be applied with caution and care should be taken to clean the feeder system after drilling treated seeds.



11181

- Box Length: 13'
- Drill Width: 15' 2"
- Tire Size: 7.50" x 20"
- Box Capacity: 36 Bu. {All Seed}
- Box Capacity: 19 Bu./1308 lbs. {Seed/Fertilizer}

Drill Row Spacing	Opener Spacing	No. Of Openers	Drill Weight*
6"	6"	26	3390#
7"	6 13/16"	23	3240#
7 1/2"	7 1/2"	21	3140#
8"	7 7/8"	20	3090#
10"	10	16	2890#

*Approximate weights for machines equipped with double disk openers, 2" x 13" single press wheels, step and hydraulic cylinder package.

Warranty

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

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

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

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

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

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