

(RED)

Operator's Manual

30' High Clearance Full Press Drill
1983-1985

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

Operator's Manual
30' HC Full Press Folding Drill
Operating Instructions

Great Plains
30' HC FULL PRESS
FOLDING DRILL
Effective 2-85

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INTRODUCTION

Your Great Plains Folding 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.

Should your Grain Drill require replacement parts, go to your Great Plains Dealer. That way you will be sure you are getting the proper parts.

It is important you complete and send in your Warranty Card because it is not valid unless it is on file at Great Plains. If you need information not contained in this Manual, contact your Great Plains Dealer.

Thank you for buying a Great Plains Folding Drill.

Roy Applequist
President

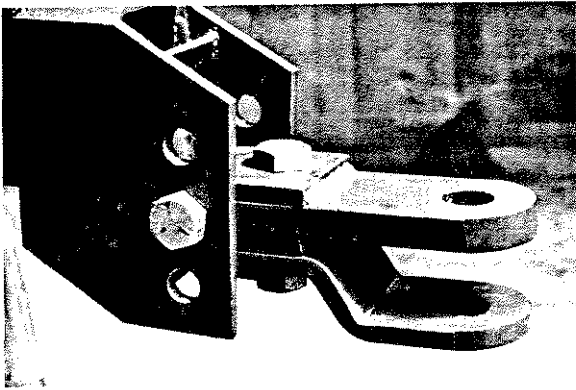
OPERATING CHECK LIST

Before operating your Drill for the first time, make sure you have checked the following items:

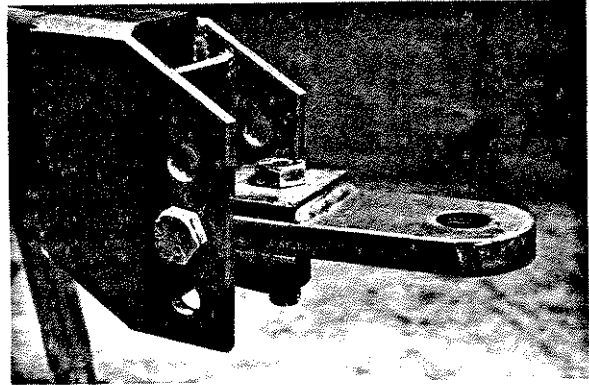
- 1. Read "Operating Instructions?"
- 2. Read "Safety Rules?"
- 3. Check machine for loose bolts, set screws, pins and chains.
- 4. See that all tires have proper air pressure.
- 5. Lubricate Drill.
- 6. Inspect feeder cups for foreign matter.
- 7. Rotate each gauge wheel to see that the drive system is operating smoothly.
- 8. Check for leaks in the hydraulic system.

TRACTOR HOOK-UP

1. Universal hitch can be used as either a clevis or a single strap hitch. (See Figures 1 and 2)

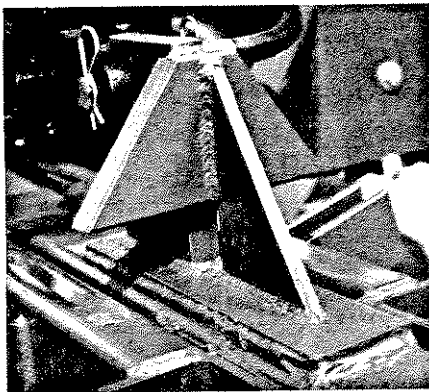


(Figure 1) Clevis Hitch

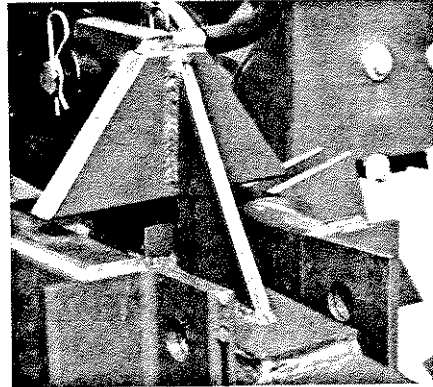


(Figure 2) Single Strap Hitch

2. In field position, the tongue of the Drill should be set with clearance as shown below. This can be accomplished by properly adjusting the hitch height. (See Figures 1 and 2)

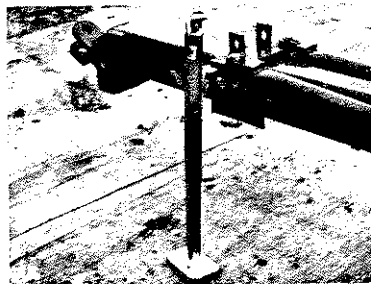


Too Much Clearance

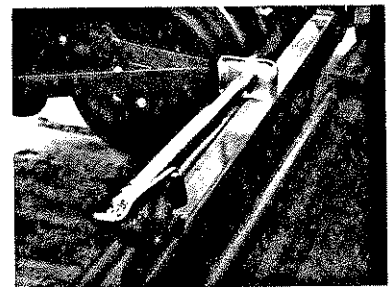


Too Little Clearance

3. The tongue jack makes it possible to raise and lower the tongue as needed. Always return jack to its horizontal storage position on pull bar slide assembly before folding Drill. (See Figures 4 and 5)



(Figure 4) Vertical Position



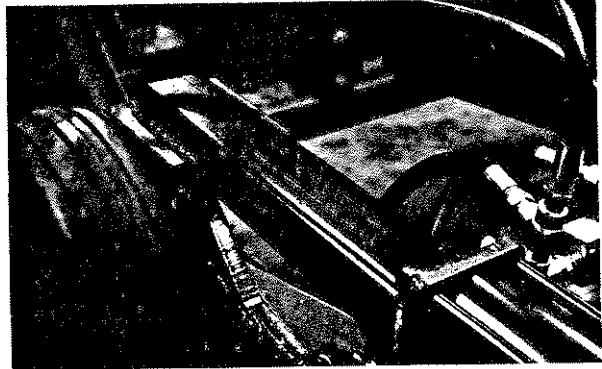
(Figure 5) Storage Position

4. Once you have the hitch pin in place and the jack in the storage position, you are ready to hook up your hydraulic hoses. You need a dual hydraulic system. If this is the first time you have had fluid in the systems, you should use the following procedure: (See detailed drawings of hydraulic system in Parts Manual)
- Hook hydraulic hoses to tractor outlets.
 - Loosen both connections on one cylinder.
 - Slowly work hydraulic lever back and forth.
 - When fluid begins to come out of one hose, tighten that connection.
 - When fluid begins to come out of the other hose, tighten that connection.
 - Repeat above process on each cylinder.
 - Check tractor hydraulic reservoir fluid level at this time. You will probably have to add some hydraulic fluid.
5. If wing cylinders do not operate properly, clean out small orifice fitting in wing cylinder.

TRANSPORTING

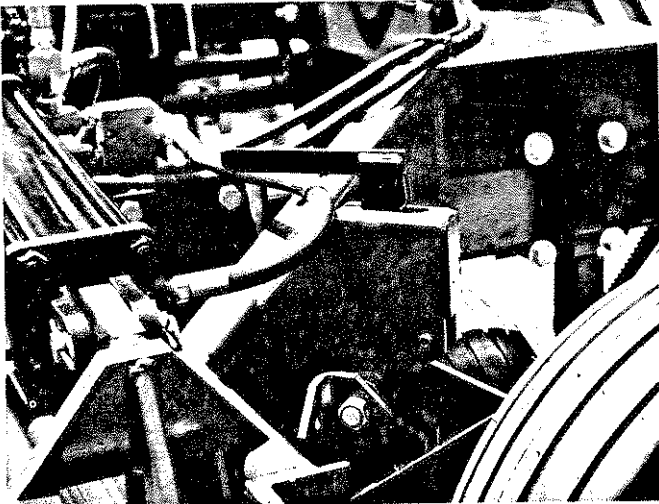
Before you start pulling the drill on the road, you should always check the following items:

1. Are the main cylinder block and lock pin in place? (See Figure 6)



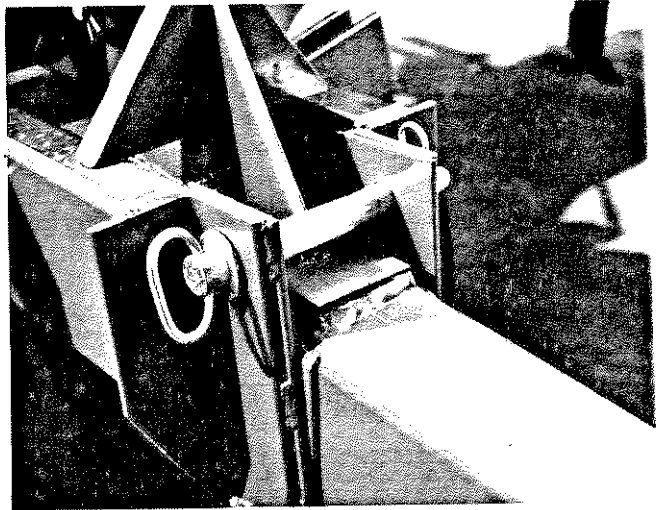
(Figure 6) Cylinder Block and Lock Pin in Transport Position.

2. Are both wing locks in place and locked securely? (See Figure 7)



(Figure 7) Wing Lock in Transport Position

3. Is the floating tongue lock pin in this position? (See Figure 8)



(Figure 8) Floating Tongue Lock Pin in Transport Position

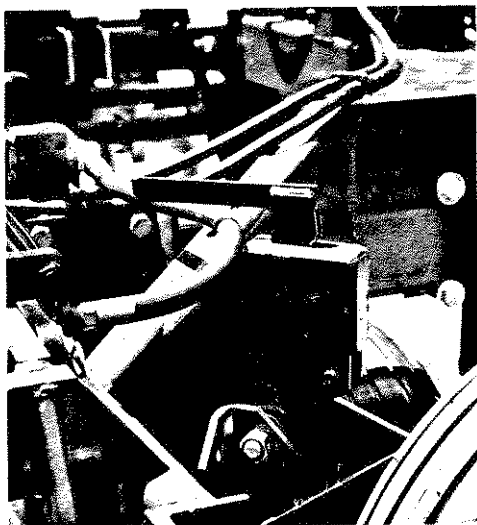
4. Have you checked to see if you have the required 60 lbs. of pressure in all four transport tires? (Gauge wheel tires should have 45 lbs.)
5. Are openers in up position for maximum road clearance?
6. Do you have proper highway warning devices to satisfy all Federal, State, and local highway safety laws?

CAUTION: This Drill should never be pulled faster than 20 miles per hour.

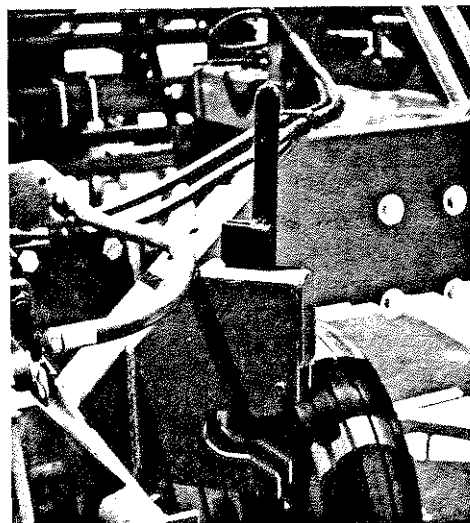
DO NOT LOWER THE DRILL IN FOLDED POSITION.

UNFOLDING

1. Raise wing lock handles. (See Figures 9 and 10) These locks MUST ALWAYS be used when moving the Drill in the folded position. (See Figure 7)

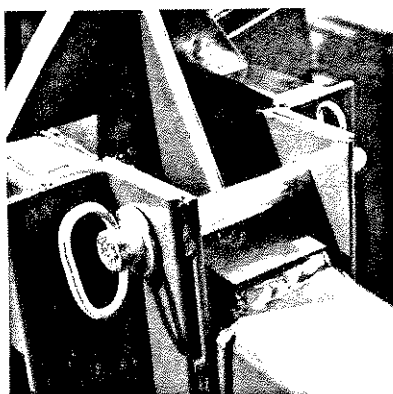


(Figure 9) Locked Position

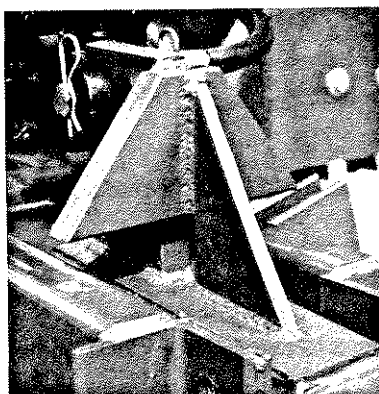


(Figure 10) Unlocked Position

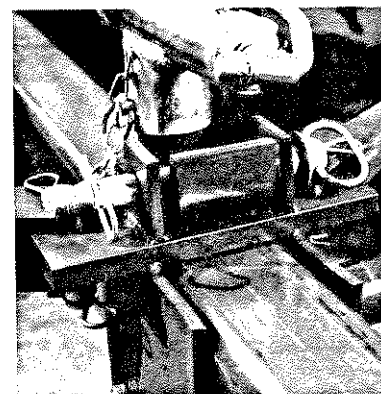
2. Unfold wings with hydraulic wing cylinders. Do this very slowly and carefully. If this is done fast and carelessly, serious damage could occur. Folding is best achieved on level ground.
3. Next, apply hydraulic pressure to the raising and lowering system. Use it to raise the machine to its highest possible position.
4. Remove main cylinder block. (See Figure 6).
5. Remove floating tongue lock pin. (See Figures 11 and 12) Take this same pin and lock the pull bar slide assembly into position. (See Figure 13)



(Figure 11) Floating Tongue Lock Pin in Transport Position.



(Figure 12) Floating Tongue in Unlock Field Position.



(Figure 13) Pull Bar Slide Assembly with Pin in Locked Position.

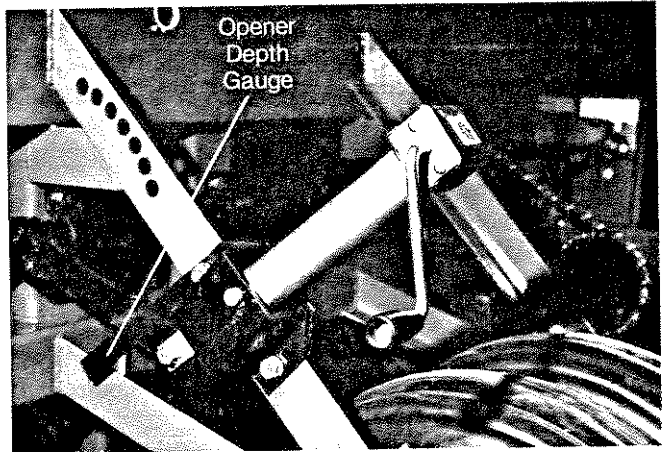
6. In order to fold up, just reverse the order of the unfolding instructions.

CAUTION: For Hoe opener drills, ALWAYS raise the wing box openers with screw jack (Figure 14) BEFORE folding the drill! Tire damage may occur.

DRILLING ADJUSTMENTS

Rotate each gauge wheel to see that feed cups and drive are working properly and free from foreign matter.

1. On a level seedbed typical to your soil conditions, lower the unfolded drill with the main hydraulic system. Be sure the top slide cylinder is completely extended for maximum flexibility.
2. Set the desired opener depth by turning the screw-jack shown in figure 14. Test the depth on the seedbed and mark the desired depth position on the opener depth gauge located beneath the screw-jack. This will allow you to set the same opener depth for each planting. **BE SURE THE DRILL TONGUE IS LEVEL TO THE GROUND WHEN DRILLING.**
3. Next, you need to adjust your seeding rate. **BE SURE** to read and follow the suggestions in the "Seeding Adjustments" section of this manual for more accurate calibration and seed metering.



(Figure 14) Screw Jack for setting planting depth.

4. Double check all transport pins, locks, adjustments and lubrications fittings. Check to see that hydraulic levels are up and hoses are properly routed to prevent kinking or pinching during folding operations. A few minutes of preparation can prevent hours of down time and repair.

FIELD OPERATIONS

1. Load seed boxes with seed. You should use cleaned seed to get the best results. You should **ALWAYS** have the drill hitched securely to the tractor before loading.
2. This machine can be transported with full grain boxes. 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.
3. **NEVER** back up with the openers in the ground. If this should happen, check all openers to be sure that none are clogged.
4. **AVOID** making turns of 90° or more without first raising the openers above planting depth. Sharp turns at planting depth will put extreme pressure on the openers and frames possibly causing unnecessary repair or readjustment.
5. **SPRING-TRIP OPENERS** — These openers require **DAILY** lubrication when used in extremely hard, dry soil conditions. The softer the soil, the less often lubrication is required. **REMEMBER**, although this drill is built for extra-heavy duty, it is not a no-till implement. See Hoe Drill Trunion, page 11.
6. The tension on each **DISK OPENER** spring can be adjusted to change down-pressure. This is especially useful when drilling in tractor tire tracks.
7. If your drill comes with a acre meter, it should be mounted to the left gauge wheel. It will accumulate the total acres drilled. Write down the beginning reading and subtract it from the ending reading for the total acres drilled.
8. Never allow anyone to ride on the machine.
9. Maximum drilling speed varies with soil conditions.
10. Be aware that some drill boxes do not have the same number of seed cups between each divider and bulkhead. The section with the larger number of cups will empty sooner.

CAUTION: DO NOT LOWER THE DRILL IN FOLDED POSITION.

SEEDING ADJUSTMENTS

NOTE: SEEDING RATES WILL VARY GREATLY WITH VARIATIONS IN SIZES OF THE SEEDS BEING DRILLED. ALTHOUGH THE SEEDING RATES LISTED IN THIS MANUAL ARE BASED ON AN AVERAGE SEED SIZE, WE RECOMMEND THAT YOU TEST AND ADJUST YOUR DRILL USING THE PROCEDURES LISTED BELOW TO HELP INSURE AN ACCURATE SEEDING RATE.

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

1. Rotate each gauge wheel to see that feed cups and drive are working properly and are free from foreign matter.
2. To adjust your seeding rate, first you must decide which sprocket arrangement you need (see seeding chart). In order to change sprockets, remove nut in center of double speed change sprocket and turn sprocket over. Loosen the idler arm bolt, put chains on and tighten both bolts. (The chains need to be reversed to make this change.)
3. There are many factors which will affect seeding rates: seed treatment, weight of seed, size of seed, surface condition of seed, and tire configuration, pressure and slippage. Minor adjustments will probably be needed to compensate for the above factors.
4. The pounds-per-acre in the seed charts are based on drills having 9.5L x 15 inch rib implement gauge wheel tires with 45 lbs. of air pressure.
5. The large differences in seed size and treatment can cause a wide variation in actual seeding rates. The seed rate charts on the following pages are based on average size seed. This may differ from the seed you are using. Use the seed rate charts as a guide. Set the pounds-per-acre desired at the indicator number for your row spacing and complete the following procedure to calibrate the drill for your specific seed.
 - a. Place several pounds of seed over three of the feeder cups at the outboard end of the drill box.
 - b. Pull the seed tubes out of these three openers.
 - c. Raise the drill off the ground. Be sure to insert cylinder block and lock pins to prevent injury should hydraulic system allow drill to lower while working around it.
 - d. Place a container under the three seed tubes to gather the seed as it is metered.
 - e. Rotate the drive gauge wheel until one acre has been tallied on the acremeter. This will be approximately 200 rotations on a 30' drill. Be sure to check the three feeder cups to make sure each cup has plenty of grain coming into it.
 - f. Weigh the seed which has been metered. Divide by three. This will give you the ounces/pounds metered by each feeder cup. Multiply by the number of openers on your drill to arrive at the total pounds-per-acre your drill would meter at that setting. If this figure is different than desired, set your feed cup adjustment lever accordingly.

Repeat procedures a through f on each drill section.

6. You may want to repeat the calibration procedure if the results of your calibration vary greatly from the suggested settings contained in this manual.

Remember: Tire size and field conditions will also affect seeding rates. Be certain that your gauge wheel tires are 9.5L x 15 and that they are inflated to 45 lbs. When drilling, check the amount of seed you are using by noting acres drilled, amount of seed added to drill, and level of seed in drill box. If you suspect that you are drilling more or less seed than desired, and you have accurately calibrated the drill to your seed, you may need to adjust the seeding rate slightly to compensate for your field conditions.

Seeding Rates

WHEAT (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	2	15	25	36	48	62	73	86	98	113	125	140	152	168	183	199	217	221	229	230
7"	0	1	13	22	31	41	52	62	73	84	96	106	119	129	143	156	169	185	188	194	196
7½"	0	1	12	20	29	39	49	59	69	79	90	100	118	121	134	147	159	174	177	183	184
8"	0	1	12	19	27	36	46	55	64	74	84	94	105	114	126	138	149	163	166	172	173
10"	0	0	9	15	22	29	37	44	52	59	68	75	84	91	101	110	119	130	133	137	138
12"	0	0	8	13	18	24	31	37	43	49	56	63	70	76	84	92	99	109	111	114	115

WHEAT (DRIVE TYPE 2A)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	1	10	17	24	32	43	49	58	66	76	84	94	102	113	123	133	145	148	153	154
7"	0	1	9	15	21	27	35	42	49	56	64	71	80	86	96	105	113	124	126	130	131
7½"	0	1	8	13	19	26	33	40	46	53	60	67	79	81	90	98	107	117	119	123	123
8"	0	1	8	13	18	24	31	37	43	50	56	63	70	76	84	92	100	109	111	115	116
10"	0	0	6	10	15	19	25	29	35	40	46	50	56	61	68	74	80	87	89	92	92
12"	0	0	5	9	12	16	21	25	29	33	38	42	47	51	56	62	66	73	76	76	77

RICE SHORT GRAIN (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	3	12	19	27	36	44	53	61	70	78	87	97	104	112	119	128	135	138	138	141
7"	0	2	10	16	23	31	38	45	52	59	67	74	83	89	95	101	108	115	118	118	120
7½"	0	2	9	15	21	29	35	42	49	56	63	70	78	83	90	95	102	108	111	111	113
8"	0	2	8	14	20	27	33	39	46	52	59	65	73	78	84	89	96	101	104	104	106
10"	0	1	7	12	16	22	27	32	37	42	47	52	58	63	67	72	77	81	83	83	85
12"	0	1	6	10	13	18	22	26	31	35	39	44	49	52	56	60	64	68	69	69	70

RICE SHORT GRAIN (DRIVE TYPE 1-A)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	6	20	36	52	65	86	103	120	138	158	175	203	219	233	250	272	288	294	298	300
7"	0	5	17	31	44	55	73	87	102	118	135	149	173	186	198	213	231	245	250	254	255
7½"	0	4	16	29	41	52	69	82	96	111	127	140	163	175	187	200	217	231	235	239	240
8"	0	4	15	27	39	49	64	77	90	104	119	131	153	164	175	188	204	216	221	224	225
10"	0	3	12	22	31	39	52	62	72	83	95	105	122	132	140	150	163	173	177	179	180
12"	0	2	10	18	26	33	43	51	60	69	79	88	102	110	117	125	136	144	147	149	150

RICE LONG GRAIN (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	1	8	16	24	35	43	50	60	68	75	83	89	96	102	107	115	123	123	124	126
7"	0	1	7	14	21	30	37	43	51	57	64	70	76	81	86	91	98	104	104	106	107
7½"	0	1	6	13	19	28	34	40	48	54	60	66	71	77	81	86	92	98	98	99	101
8"	0	1	6	12	18	26	32	38	45	51	56	62	67	72	76	80	86	92	92	93	94
10"	0	0	5	10	15	21	26	30	36	41	45	50	54	58	61	64	69	74	74	75	76
12"	0	0	4	8	12	18	22	25	30	34	38	41	45	48	51	54	58	61	61	62	63

RICE LONG GRAIN (DRIVE TYPE 1-A)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	3	12	28	47	64	81	101	117	129	151	169	185	196	213	226	242	262	268	272	273
7"	0	2	10	24	40	55	69	86	99	110	128	144	157	167	181	192	205	222	228	231	232
7½"	0	2	9	23	37	51	65	81	93	103	121	135	148	157	171	181	193	209	215	217	218
8"	0	2	9	21	35	48	61	76	88	97	113	127	139	147	160	169	181	196	201	204	205
10"	0	1	7	17	28	39	49	61	70	78	91	102	111	118	128	136	145	157	161	163	164
12"	0	1	6	14	23	32	40	50	58	65	75	85	93	98	107	113	121	131	134	136	137

BARLEY (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	11	19	27	35	43	51	58	66	74	82	90	98	106	114	121	129	137	145	151
7"	0	0	9	16	23	30	36	43	50	57	63	70	77	84	90	97	104	111	117	124	130
7½"	0	0	8.5	15	21	28	34	40	47	53	59	66	72	79	85	91	98	104	110	117	121
8"	0	0	8	14	20	26	32	38	44	50	56	62	68	74	80	86	92	98	104	110	116
10"	0	0	7	11	16	21	26	30	35	40	45	49	54	59	64	68	73	78	83	88	93
12"	0	0	6	10	14	18	22	26	29	33	37	41	45	49	53	57	60	64	68	72	76

SAFFLOWER OR OATS (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	7	14	22	29	37	45	53	62	71	83	87	98	104	113	123	134	147	150	156
7"	0	0	6	12	18	24	32	38	45	53	60	71	74	84	88	96	105	114	125	128	132
7½"	0	0	5	11	17	23	30	36	43	50	57	67	69	79	83	91	99	107	118	120	125
8"	0	0	5	10	16	22	28	33	40	47	53	63	65	74	78	85	93	101	110	113	117
10"	0	0	4	8	13	17	22	27	32	37	43	50	52	59	62	68	74	81	88	90	93
12"	0	0	3	7	11	14	19	22	27	31	35	42	43	49	52	57	62	67	74	75	78

RYE (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	4	8	12	15	18	21	28	30	33	38	41	45	48	53	58	62	63	68	69
7"	0	0	3	7	10	13	16	18	24	25	28	32	35	38	41	45	49	53	54	57	58
7½"	0	3	6	9	9	12	15	17	23	24	27	30	33	36	39	42	46	50	51	54	54
8"	0	0	3	6	9	11	14	16	21	22	25	28	31	34	36	40	43	47	48	51	52
10"	0	0	2	5	7	9	11	13	17	18	20	23	25	27	29	32	35	37	38	41	42
12"	0	0	2	4	6	8	9	11	14	15	17	19	21	23	24	26	29	31	32	34	35

MILLET (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	2	6	9	12	15	18	22	24	28	33	38	43	46	50	55	61	67	69	70	71
7"	0	1	5	7	10	13	16	18	21	24	28	32	36	39	43	47	52	57	59	60	61
7½"	0	1	4	6	9	12	15	17	19	23	27	30	34	37	40	44	49	53	55	56	57
8"	0	1	5	7	9	11	14	16	18	21	25	28	32	34	38	42	46	50	52	53	54
10"	0	0	4	5	7	9	11	13	15	17	20	23	26	28	30	33	37	40	42	43	44
12"	0	0	3	4	6	8	9	11	12	14	17	19	21	23	25	28	31	33	35	36	37

BUCKWHEAT (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	4	13	22	31	41	52	62	68	83	94	106	112	124	135	152	166	183	195	196	200
7"	0	4	11	19	27	35	44	53	57	71	80	90	95	106	114	129	141	156	166	167	170
7½"	0	3	10	18	25	33	41	50	54	67	75	85	89	99	108	122	133	147	156	157	160
8"	0	3	10	17	23	31	39	47	51	63	71	80	84	93	101	114	124	138	146	147	150
10"	0	3	8	13	19	25	31	37	41	50	57	64	67	75	81	91	100	110	117	118	120
12"	0	2	7	11	16	20	26	31	34	42	47	53	56	62	67	76	83	92	98	99	100

FLAX OR SUDAN (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. 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	38	42	47	50	53	56	57
7½"	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
12"	0	0	2	4	5	7	9	10	13	14	16	18	19	21	23	25	28	30	32	33	34

SUNFLOWERS (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	0	3.8	7.6	11.2	15	18.8	22.6	26	32	38	41	45	49	53	56	60	64	68	72
7"	0	0	0	3.2	6.4	9.6	12.8	16	19	22	27	32	35	38	41	45	48	51	54	57	60
7½"	0	0	0	3	6	9	12	15	18	21	25.5	30	33	36	39	42	45	48	51	54	57
8"	0	0	0	2.8	5.6	8.5	11.3	14	17	20	24	28	31	34	37	39	42	45	48	51	54
10"	0	0	0	2.3	4.5	6.8	9	11	13.5	16	19	23	25	27	29	32	34	36	38	41	43
12"	0	0	0	1.9	3.8	5.6	7.5	9.9	11.3	13	16	19	21	23	25	27	28	30	32	34	36

SOYBEANS (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	0	20	25	43	63	75	87	102	123	137	152	170	183	197	207	233	235	237	242
7"	0	0	0	17	21	37	54	63	74	86	104	116	129	144	156	167	176	198	199	201	205
7½"	0	0	0	16	20	35	51	60	69	81	98	109	121	136	147	157	165	187	188	189	193
8"	0	0	0	15	18	33	48	56	65	76	92	103	114	127	138	148	155	175	176	178	181
10"	0	0	0	12	15	26	38	45	52	61	74	82	91	102	110	118	124	140	141	142	145
12"	0	0	0	10	12	22	32	37	43	51	61	68	76	85	92	98	103	117	117	118	121

SOYBEANS (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	0	7	8	15	21	24	29	33	40	45	51	55	62	65	71	76	77	78	79
7"	0	0	0	6	7	13	18	20	24	28	34	38	43	47	52	55	61	65	66	67	68
7½"	0	0	0	5	6	12	17	19	23	27	32	36	41	44	49	52	57	61	62	62	63
8"	0	0	0	5	6	11	16	18	22	25	30	34	38	41	46	48	53	57	58	58	59
10"	0	0	0	4	5	9	13	14	17	20	24	27	31	33	37	39	43	46	46	47	48
12"	0	0	0	3	4	8	10	12	14	17	20	23	25	28	31	32	36	38	39	39	40

SOYBEANS (DRIVE TYPE 2-A)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	0	0	20	32	43	48	58	73	87	98	100	112	118	123	136	149	150	153	159
7"	0	0	0	0	17	27	37	41	50	62	74	83	85	95	101	105	115	127	128	130	135
7½"	0	0	0	0	16	25	35	39	47	59	69	78	80	89	95	99	109	119	120	123	127
8"	0	0	0	0	15	24	33	36	44	55	65	73	75	84	89	93	102	112	113	115	119
10"	0	0	0	0	12	19	26	29	35	44	52	59	60	67	71	74	82	90	91	92	95
12"	0	0	0	0	10	16	22	24	29	37	43	49	50	56	59	62	68	75	76	77	79

Setting the feed cup adjustment lever between 50 and 80 allows for optimum seeding of soybeans. These charts are computed with 2600 soybeans/lb seed size.

PEAS (DRIVE TYPE 1)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. 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
7½"	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	14	17	29	37	47	57	68	78	89	99	108	119	129	137	147	148	149	150
12"	0	0	3	12	14	24	31	39	48	56	65	74	82	90	99	108	114	122	123	124	125

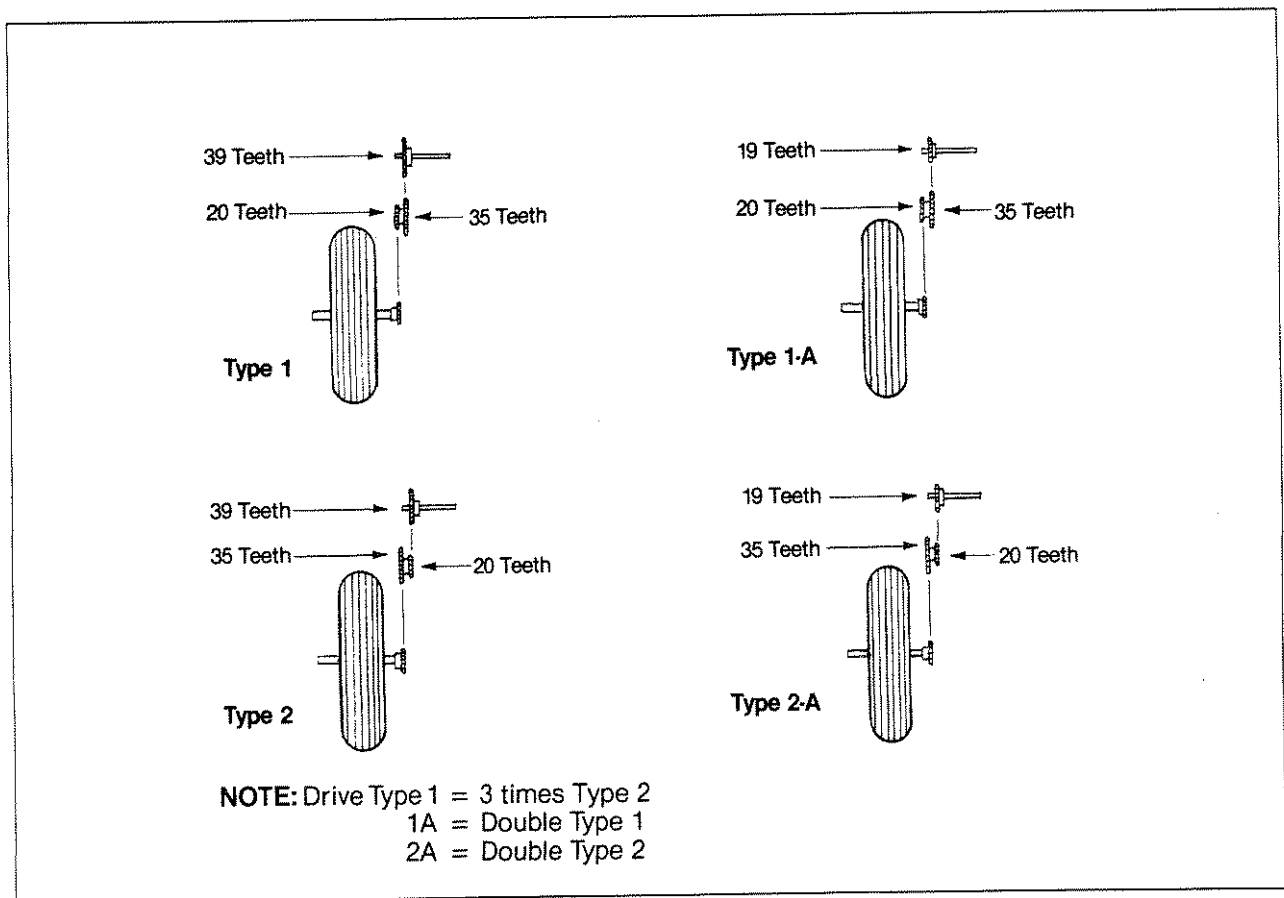
PINTO BEANS (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	0	0	2	3	7	12	17	24	29	40	45	48	54	61	71	73	75	76	80
7"	0	0	0	0	2	3	6	11	16	22	27	34	38	41	46	52	61	62	64	65	67
7½"	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
12"	0	0	0	0	0	1	3	7	12	16	17	20	23	24	27	30	36	37	38	38	40

RAPE OR ALFALFA (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	2	5	8	11	13	17	21	24	31	31	35	40	44	48	52	53	55	62	65	66
7"	0	2	4	6	9	11	14	18	20	26	27	30	34	37	41	44	45	47	52	55	56
7½"	0	1	3	6	8	10	13	17	19	25	25	28	32	35	39	42	43	44	49	52	53
8"	0	2	4	6	8	10	13	16	18	23	24	27	30	33	36	39	40	41	46	48	49
10"	0	1	3	5	7	8	10	13	14	19	20	21	24	26	29	31	32	33	37	39	40
12"	0	1	3	4	5	7	8	11	12	15	16	18	20	22	24	26	27	28	31	32	33

MILO (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	2	5	8	12	15	18	23	28	29	34	40	41	45	49	52	55	65	66	67	68
7"	0	1	4	7	10	13	15	19	23	24	29	34	35	38	41	44	47	55	56	57	58
7½"	0	1	4	6	9	12	14	18	22	23	27	32	33	36	39	41	44	52	53	54	55
8"	0	1	3	6	9	11	13	17	21	22	25	30	31	34	37	39	41	48	50	51	52
10"	0	0	3	5	7	9	11	14	17	18	20	24	25	27	29	31	33	39	40	41	42
12"	0	0	2	4	6	8	9	11	14	15	17	20	21	23	24	26	28	32	33	34	35

WHEAT GRASS (DRIVE TYPE 2)	SEED RATE INDICATOR SETTING NUMBER																				
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
Row Spacing	Lbs. Per Acre																				
6"	0	0	0	1	3	3	4	5	5	8	8	9	9	10	10	10	11	11	12	13	13
7"	0	0	0	1	2	3	3	4	4	6	7	7	8	9	9	9	9	10	10	11	11
7½"	0	0	0	0	2	3	3	4	4	6	6	7	7	8	8	8	9	9	9	10	11
8"	0	0	0	0	2	3	3	3	4	6	6	7	7	8	8	8	8	8	9	9	10
10"	0	0	0	0	2	2	2	3	3	5	5	5	6	6	6	6	7	7	7	8	8
12"	0	0	0	0	2	2	2	2	3	4	4	4	5	5	5	5	5	6	6	6	7

Drive Types:



HOE DRILL TRUNION

Extremely hard, dry or shallow-tilled ground may cause the front ranks of spring-trip and spring-shank openers to dig in and drill deeper than the rear ranks. To help compensate for this soil condition, the opener frames on these hoe drills have an adjustable trunion located on the vertical uprights of the frames (see figures 15 and 16).

The purpose of the trunion adjustment is to tilt the opener frames slightly higher in front to run level in tough soil conditions.

To adjust the trunion, should your soil conditions require it, start at one end of the drill and turn the first trunion bolt clockwise a few turns, counting the turns. Continue across the drill, repeating the same number of turns on each trunion bolt.

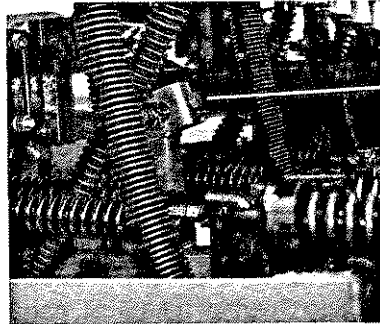


Figure 15
Spring-Trip Trunion

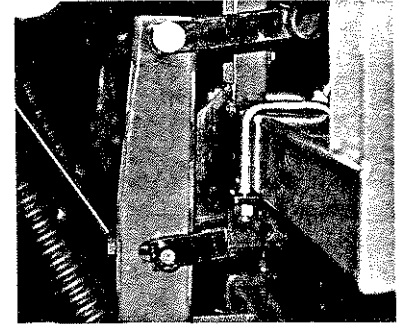


Figure 16
Spring-Shank Trunion

Next, lower the openers to planting depth and test the drill in operation. Adjust the trunion as necessary to obtain a consistent, level planting depth.

MAINTENANCE SERVICE

PROPER SERVICING AND ADJUSTMENT IS THE KEY TO THE LONG LIFE OF ANY FARM IMPLEMENT. WITH CAREFUL AND SYSTEMATIC INSPECTION OF OUR GRAIN DRILL, 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. Spring-Trip hoe openers must be lubricated DAILY when used in hard, dry soil conditions.
3. Lubrication— listed below are the items you need to lubricate every 12-15 hours of operation:
 - a. Gauge wheel bearings.
 - b. Jack shaft bearings.
 - c. Feeder cup drive sprocket bearings.
 - d. Oil all roller chains. This is important to do before putting the machine in storage.
 - e. Feeder cup drive sprocket should be oiled in its square bore. Move feeder cup adjustment lever away from the sprocket as far as possible in order to get the oil back into the square. This is most important to do before putting the machine in storage.
4. Disk scrapers should be kept properly adjusted.
5. Always maintain 45 lbs. of air pressure in gauge wheel tires and 60 lbs. in the transport tires.

STORAGE

1. Clean the drill as necessary. BE SURE that the seed boxes and all feeder cups are completely cleaned out for storage. Clean the fertilizer trays with a power sprayer if necessary.
2. Oil all chains, sprockets and feeder cup drive.
3. Lubricate all fittings as indicated in "Maintenance Service".
4. When storing in transport position, use all locking devices as described on page 3 and take pressure off of the hydraulic cylinders.
5. Store the drill inside if possible for longer drill life.

TROUBLE-SHOOTING SOLUTION

PROBLEM

- | | |
|---|--|
| 1. Uneven seed spacing or uneven stand | a. Check for trash in seed cup.
b. Check to see if seed tubes are plugged.
c. Reduce ground speed.
d. Check opener disks to see that turn freely.
e. Use faster drive speed (See page 6, No. 2) and close feed cup flutes to a more narrow position. |
| 2. Actual seeding rate is different than desired. | a. Check tire pressure. Proper inflation is 45 lbs. in gauge wheels and 60 lbs. in transport tires.
b. Check tire size. Proper size is 9.5L x 15.
c. Liquid 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 drive range. See Operator's Manual, page 10.
e. See Operator's Manual, page 6 for instructions on calculating seed rate. |
| 3. Excessive seed cracking | a. Slow drive speed (See page 6, No. 2) and open flutes in feed cup to a wider position. Open the adjustment handle on each feed cup one position. |
| 4. Acremeter doesn't measure accurately | a. Check tire pressure. Proper inflation is 45 lbs. in gauge wheel tires and 60 lbs. in transport tires.
b. Check tire size. Proper size is 9.5L x 15.
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, raise drill out of ground. Note acreage figure on acremeter; rotate the gauge wheel approximately 200 times. This should register one acre. |
| 5. Grain box not emptying evenly | a. Certain model drills do not have the same number of seed cups between each divider or bulkhead. The section with the larger number of cups will empty sooner.
b. Check adjustment levers on each box to see that they are set on same indicator number. |
| 6. Uneven seeding depth | a. See depth setting instructions, page 5. |
| 7. Openers plugging | a. Drilling in damp or wet conditions may increase this problem. Lower openers into wet soil while moving forward.
b. Never back up with openers at planting depth.
c. Reduce down pressure on disk openers. |
| 8. Opener disks not turning freely. | 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 and flanges.
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. Each opener spring can be adjusted for tension. This is useful when penetrating hard soil and for planting in tractor tire tracks. To adjust the tension, remove the "W" clip at the bottom of the spring and place it in a higher hole for more tension and in a lower hole for less tension. |

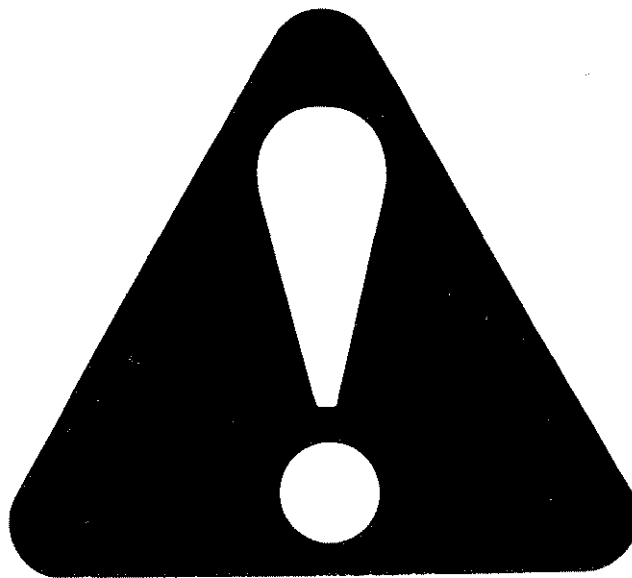
TROUBLE SHOOTING (Con't)

PROBLEM	SOLUTION
9. Markers (hydraulic) not working properly	<ol style="list-style-type: none">Check all hoses and fittings for air and oil leaks.The chain on the folding marker should be slack when the marker is both fully extended and fully retracted.To change the speed that the marker raises, adjust the thumbscrew located on the flow control valve of the marker cylinder.Check tractor hydraulic oil level. Check all bolts and fasteners. If conditions persists, have your dealer service department check the unit.
10. Rubber tire depth control wheels becoming packed with mud	<ol style="list-style-type: none">Install scrapers.Reduce spring tension on openers.
11. Improper folding of drills	<ol style="list-style-type: none">Check hydraulic system for air and oil leaks.Check drill for any loose bolts or hardware, or any damaged or bent parts that might affect proper folding.Check that the pull bars are exactly the same length.Clean out small orifice fittings in wing cylinders.
12. Front and rear hoe openers not penetrating to the same depth	<ol style="list-style-type: none">See "Hoe Drill Trunion" on page 11.Raising or lowering the gauge wheels at the adjustment slots located in the side plates at the ends of the gauge wheels axles will tilt the drill forward or backward to cause even penetration.
13. Uneven fertilizer application	<ol style="list-style-type: none">Clean the fertilizer system as described in the maintenance section of the fertilizer option operating manual.
14. Wing locks do not line up when boxes are folded for transport.	<ol style="list-style-type: none">To raise a seed box, loosen the 1" hex nuts located under the slide tri-angle where the box is attached to the pivot post, and tighten the adjacent 1" hex nuts located inside the box.To lower a seed box, first loosen the 1" hex nuts inside the box, then tighten the adjacent nuts on the pivot post.
15. Spring Trip Hoe has more movement or less movement than desired.	<ol style="list-style-type: none">Adjust the hex nuts located at the rear of the opener springs; loosen to release spring pressure and gain more hoe movement, tighten to put on more spring pressure and restrict hoe movement. You shouldn't have more than 2¼" of threads extending beyond the adjustment nut.
16. Disk Openers leaning to the side, twisting at the flanged U-Mount.	<ol style="list-style-type: none">Do not turn sharp turns or more than 90° turns with the openers at planting depth. Raise the openers slightly with the main lift cylinder when turning at the end of field rows.
17. Hydraulic fittings crack after repairs	<ol style="list-style-type: none">Always use liquid pipe sealant when adding or replacing hydraulic fittings. Plastic sealant tape can crack fittings and plug hydraulic lines.
18. Feed cup sprockets locked up or twisted feeder drive shaft.	<ol style="list-style-type: none">Check for foreign matter lodged in one or more feeder cup sprockets.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.
19. Center box drills deeper than the wing boxes.	<ol style="list-style-type: none">Stops may be added to the main lift cylinder to help support the heavier center section of the drill.

SAFETY RULES

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

1. Never permit anyone to ride on or walk beside the grain drill when moving.
2. Never permit anyone to ride on tractor when drill is being moved.
3. Never allow anyone to be near drill when performing operating functions with the grain drill or tractor.
4. Never load grain drill without being hooked-up to tractor.
5. Extra care should be taken when transporting with seed in the boxes.
6. Never back grain drill up when openers are in ground.
7. Reduce speed when transporting over uneven or rough terrain. Avoid all chuck holes and washboard areas in roads.
8. Reduce speed of tractor when transporting over hills or steep slopes.
9. Always set grain drill in field position before lubricating.
10. Do NOT lubricate, adjust or repair the grain drill while it is in operation.
11. Comply with all Federal, State and Local Laws when traveling on the highway.
12. Use "Slow Moving Vehicle" emblem for warning vehicles approaching from the rear.
13. Do NOT permit smoking, sparks or an open flame where combustible lubricants or liquids are being used.
14. When using treated grain, avoid direct contact with the seed.
15. When using compressed air to clean drill, wear safety glasses.
16. When transporting, remember the drill is wider than your tractor and extreme care must be taken to allow for safe clearance.





Warranty

Great Plains Manufacturing, Incorporated warrants to the original purchaser that this grain drill 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. 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: provided that any such defective part is returned to Great Plains within thirty (30) days of the failure.

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

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

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

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

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

Great Plains



Granular Fertilizer Option

Operating Instructions

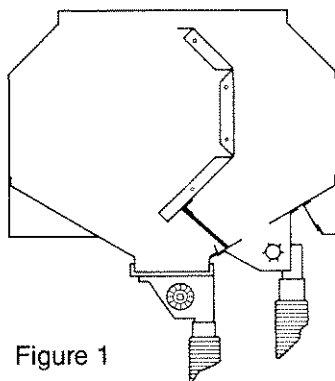


Figure 1

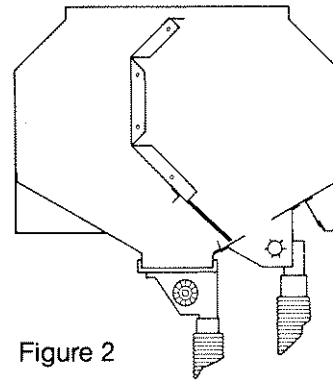
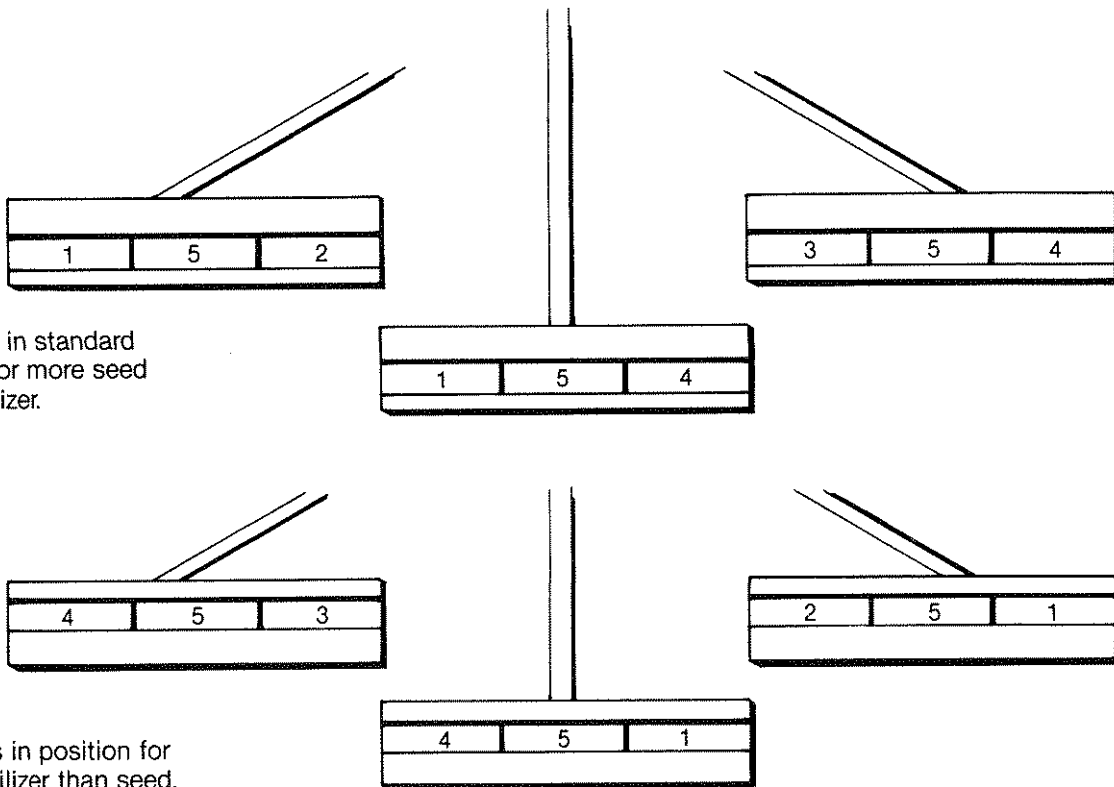


Figure 2

Great Plains folding fertilizer drills have interchangeable seed/fertilizer partitions. The drills are shipped from the factory with these partitions installed as shown in figure 1. This allows more seed capacity than fertilizer.

If more fertilizer capacity is desired, the partitions must be interchanged as shown in figure 2.

In order to convert the partitions to the more fertilizer position, they must be interchanged and inverted with each other as illustrated in figure 3.



Partitions in standard position for more seed than fertilizer.

Partitions in position for more fertilizer than seed.

Figure 3

To convert drill to seed only, remove lower outlet cover under partitions and bolt over fertilizer openings using ¼" x 1" bolts and spring clip nuts furnished in separate bag with drill.

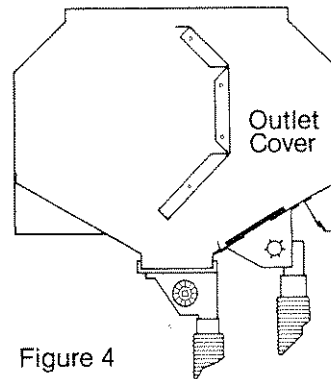


Figure 4

Fertilizer Application Rate

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

FERTILIZER INDICATOR SETTING NUMBER

Row Spacing	Pounds Per Acre																		
	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
6	15	23	31	48	64	87	109	125	140	168	195	210	225	248	270	295	320	345	369
7	13	20	26	38	54	74	93	106	119	143	166	179	191	211	230	251	272	293	314
7½	12	18	24	37	51	68	87	100	112	134	156	168	180	198	216	236	256	276	295
8	11	17	23	36	48	62	82	94	105	126	146	158	169	186	203	221	240	259	277
10	9	14	19	29	38	52	66	75	84	101	117	126	135	149	162	177	192	207	221
12	8	12	16	24	32	44	55	63	70	84	98	105	113	124	135	148	160	173	185

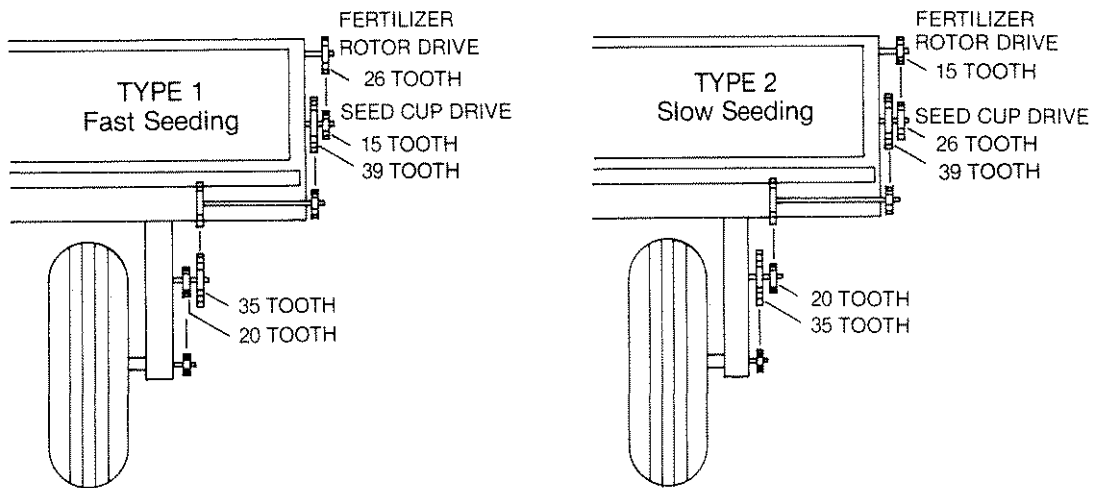
The preceding chart has been computed using fertilizer that has a density of 65 lbs./cubic foot. If you are applying fertilizer that has a density other than this, use the following conversion table:

Density	Conversion Factor
45	1.45
50	1.30
55	1.20
60	1.10
65	1.00
70	.93
75	.87
80	.81

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

Seeding Drive Speeds

IMPORTANT: When changing seeding drive speed for faster or slower seeding, the fertilizer drive sprocket must also be changed in order for the fertilizer rotor to maintain consistent speed. The drawings below illustrate the proper sprocket arrangement when using both types of seeding drive speeds.



Sprocket Arrangements

Maintenance

It is recommended that the fertilizer unit is thoroughly cleaned every two or three days during operating season and before putting the drill in storage for an extended period of time.

Drop fertilizer tray cover doors by releasing latches on back of box. Using a high-pressure water system, thoroughly clean the fertilizer tray, gate openings, and rotor. Rotate gauge wheel to insure cleaning of all fertilizer rotor fins.

The rotor may be removed if excessive build-up occurs. This is accomplished by removing the 3-bolt bearings, felt seal, and cover at the sprocket end of the tray. Loosen the two set screws on the other end of the rotor bearing and slide the rotor out of the tray. Removing the rotor is not necessary unless excessive build-up prevents using the high-pressure water system described above.

Lubrication

Before using the drill each year, apply lubricating oil to the felt seal at the end of each fertilizer tray in order to keep it pliable.

Grease bearings on each end of the trays every 12-15 hours of operating.

Shear Bolt

A shear bolt is provided on the rotor drive sprocket to prevent rotor damage.

Great Plains



Hydraulic Marker

30' Full Press and 30' Full Press H.C.

Installation Instructions

1. Attach Marker Mount Adapter (A) to drill frame using $\frac{5}{8}$ " x 4" x $5\frac{1}{4}$ " long U-bolts (B), and to Gauge Wheel Support Tube using $\frac{5}{8}$ " x 4" x $3\frac{3}{8}$ " long U-bolts (C) as shown in figure 1.
 2. Attach Marker Mount (D) to Marker Mount Adapter using $\frac{5}{8}$ " x $3\frac{1}{2}$ " x 5" long U-bolts (E) as shown in figure 2.
- NOTE:** The Folding Marker chain should be slack when both fully extended and fully retracted.

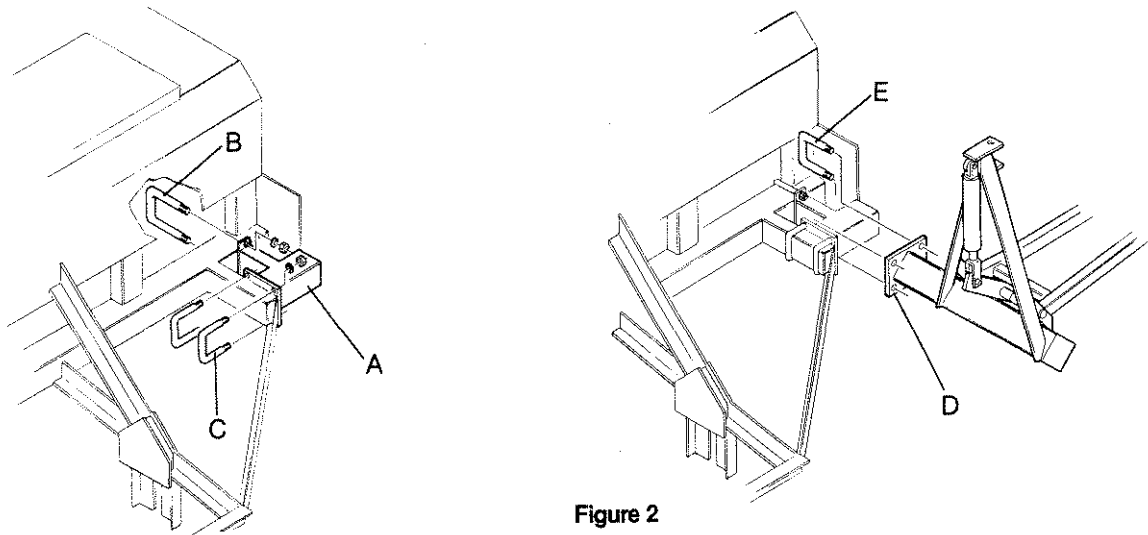


Figure 2

Hydraulics

NOTE: To avoid cracking the hydraulic fittings, **DO NOT** use plastic sealant tape. Use only liquid pipe sealant to seal the hydraulic fittings.

SINGLE MARKER

1. Replace existing fitting at cylinder-head port with $\frac{1}{2}$ " Service Tee (1) and 90° elbow (2) as shown in figure 3.
2. Install marker hose (3) and main lift hydraulic hose as shown.
ROUTE HOSE TO PREVENT KINKING OR PINCHING DURING FOLDING OPERATIONS.
Adjust the rate of rise of marker with Restrictor Valve, item 5, figure 3.

SINGLE HYDUAULIC MARKER

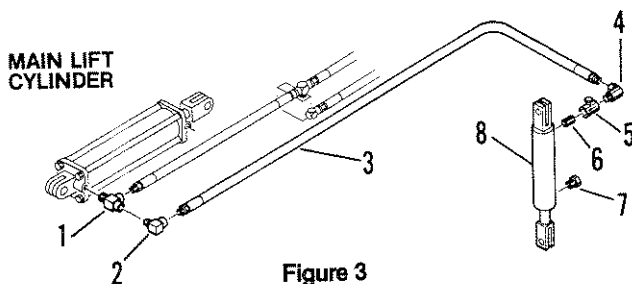


Figure 3

SINGLE MARKER PARTS LIST

No.	Part No.	Description
1.	811-011 C	Fitting, $\frac{1}{2}$ " Service Tee
2.	811-134 C	Fitting, M Elbow, $\frac{9}{32}$ " JIC x $\frac{1}{2}$ " pipe
3.	811-014 C	Hydraulic Hose, $\frac{1}{4}$ " x 24' long
4.	811-050 C	Fitting, $\frac{3}{8}$ " swivel x 90° elbow
5.	811-024 C	One-Way Restrictor Valve
6.	811-044 C	Fitting, $\frac{3}{8}$ " x close pipe
7.	811-019 C	Breather Plug
8.	810-005 C	Hydraulic Cylinder, 2" x 8" stroke

DUAL MARKERS

1. Assemble Double Selector Valve (1), $\frac{3}{4}$ " Connection Fitting (2), square head Pipe Plug (3) and Sequencing Valve (4) together as shown in figure 4.
2. Detach existing tractor hoses (12) from wing cylinder tees (18). Assemble hoses and fittings as shown in figure 4. Reattach tractor hoses to 90° elbows (11).
3. Attach the assembled Double Selector Valve (1) to the top rail of the main frame side brace using $\frac{3}{8}$ " hex bolts, flatwashers, lockwashers and hex nuts.
4. ROUTE HOSES TO PREVENT KINKING AND PINCHING DURING FOLDING OPERATIONS.
The speed at which the marker rises is adjusted with the restrictor valve (16).
 1. Right up — Left up
 2. Right down — Left up
 3. Right up — Left up
 4. Right up — Left down
 5. Sequence repeats

BE SURE MARKER LOCK PINS ARE REMOVED BEFORE ATTEMPTING TO USE MARKERS.

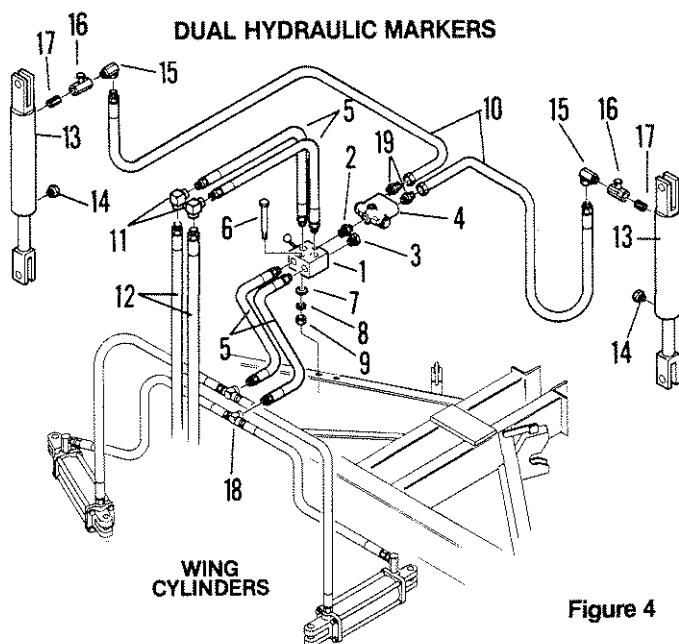


Figure 4

DUAL MARKER PARTS LIST

No.	Part No.	Description
1.	810-023 C	Double Selector Valve
2.	811-016 C	Fitting, $\frac{3}{4}$ " M ORB
3.	811-045 C	Pipe Plug, $\frac{1}{2}$ ", Square Head
4.	810-006 C	Sequencing Valve
5.	811-071 C	Hydraulic Hose, $\frac{3}{8}$ " x 40" long
6.	802-147 C	Bolt, hex, $\frac{3}{8}$ "-16 x $3\frac{1}{2}$ " long
7.	804-011 C	Flatwasher, $\frac{3}{8}$ " USS
8.	804-013 C	Lockwasher, $\frac{3}{8}$ "
9.	803-014 C	Nut, hex $\frac{3}{8}$ "-16
10.	811-014 C	Hydraulic Hose, $\frac{1}{4}$ " x 24' long
11.	811-108 C	Fitting, 90° pipe elbow
12.	811-001 C	Hydraulic Hose (existing), $\frac{3}{8}$ " x 20" long
13.	810-005 C	Hydraulic Cylinder, 2" x 8" stroke
14.	811-019 C	Breather Plug
15.	811-050 C	Fitting, $\frac{3}{8}$ " x 90° swivel
16.	810-024 C	One-Way Restrictor Valve
17.	811-044 C	Pipe Nipple, $\frac{3}{8}$ " x close
18.	811-009 C	Fitting (existing), $\frac{1}{2}$ " Female Tee
19.	811-133 C	Adapter Fitting, $\frac{3}{4}$ " ORB x $\frac{9}{16}$ " JIC

Field Operations and Maintenance

1. The double selector valve (Figure 4, item 1) transfers hydraulic power from the wing cylinders to the marker cylinders (dual markers only). After your drill boxes have been lowered to field position and locked open, change the selector valve knob. Hydraulic fluid is transferred to the marker hydraulics and one marker will lower due to no hydraulic pressure on cylinder. Activate your tractor hydraulics lever to lower the other marker and raise the marker that is down. To put the drill boxes in transport position, raise the markers hydraulically, lock into position and change the selector valve knob, transferring the hydraulic pressure to the wing cylinders.
2. The pitch angle of the marker disk may be varied by rotating the marker disk arm. Be sure the set screws are secure before operating.
3. The marker arm is attached to the marker main body with a $\frac{5}{16}$ " shear bolt. If excessive force is put on the marker during operation, the shear bolt will break, allowing the marker arm to swing away rather than cause damage to the marker. Should this occur, replace the bolt with a $\frac{5}{16}$ " x 1" long, **Grade 2 bolt ONLY**.
4. The marker has four lubrication fittings. These should be serviced after every 12 to 15 hours of operation to prevent excessive wear.
5. Always operate your marker with safety in mind. Never allow anyone near machinery while in operation.

Great Plains



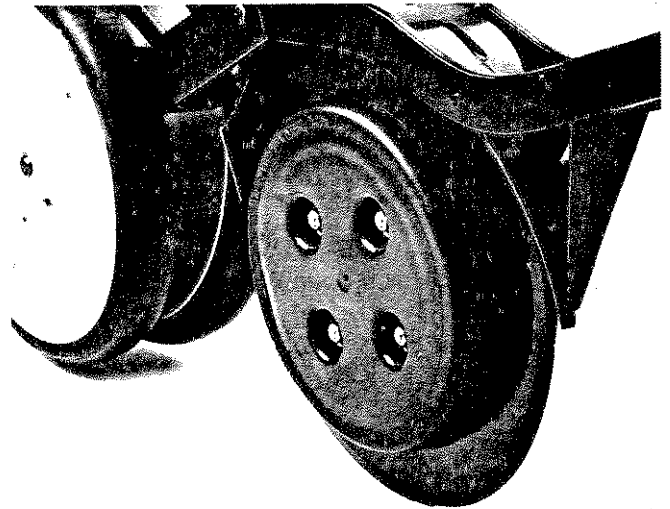
Rubber-Tired Depth Control Wheel

Installation Instructions

The Rubber-Tired Depth Control Wheel is available for all Great Plains double-disk openers.

1. Slip two carriage bolts $\frac{5}{16}$ " x $1\frac{1}{4}$ " long through square holes in disk blade. The carriage bolts must enter from the inside of disks to allow proper clearance.
2. Slip depth control wheel over carriage bolts and secure to disk blade with $\frac{5}{16}$ " USS flatwashers, $\frac{5}{16}$ " lockwashers and $\frac{5}{16}$ " hex nuts.

NOTE: FOR PROPER DEPTH-CONTROL WHEEL OPERATION, OUTSIDE DOUBLE-DISK SCRAPERS ARE REQUIRED.



Outside Double-Disk Scraper

Installation Instructions

NOTE: This scraper is designed to mount on the double-disk openers of any Great Plains grain drill to eliminate mud build-up on the opener and on rubber-tired depth control wheels. The rubber-tired depth-control wheels should not be used without the outside scraper.

30 Ft. Full Press and 30 Ft. H. C. Full Press Drills:

1. Remove $\frac{3}{8}$ " x $1\frac{1}{4}$ " long carriage bolt (A), washers and hex nuts which hold existing scraper mount (B) in position (see figure 1).
2. Remove inside scraper (C) from scraper mount (B). Scraper mount (B) is no longer needed.
3. Reposition inside scraper (C) onto new scraper mount (D) with $\frac{3}{8}$ " x 1" long carriage bolt (E), washers and hex nut (see figure 2).
4. Reattach new scraper assembly to opener frame with $\frac{3}{8}$ " x $1\frac{1}{4}$ " long carriage bolt (A), washers and hex nuts. BE SURE ANGLE OF NEW SCRAPER MOUNT (D) POINTS INWARD TOWARD CENTER OF OPENER DISK.
5. Install scraper blade (F) on each wing of scraper mount (D) with $\frac{5}{16}$ " x $\frac{3}{4}$ " carriage bolt, washers and hex nut. Adjust scraper blades to have MINIMUM CLEARANCE with disk opener and rubber-tired depth-control wheel.

BE SURE THE DISK OPENER CAN TURN FREELY AFTER INSTALLATION.

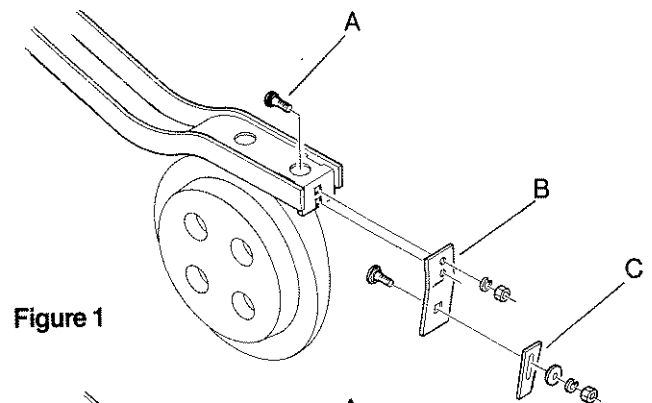


Figure 1

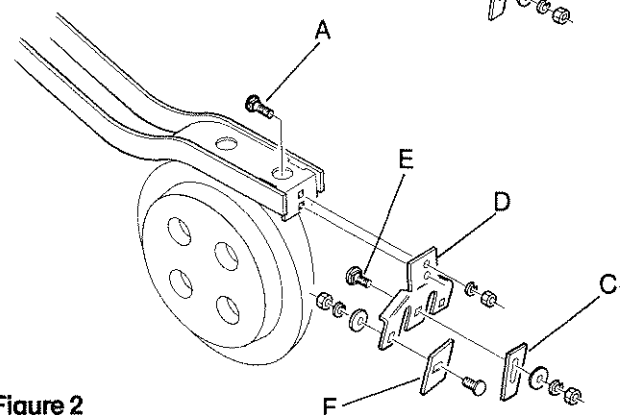


Figure 2

Solid Stand® 3-Point and Solid Stand® Folding Drills:

1. Remove $\frac{3}{8}$ " x 1" carriage bolt (A), washers and hex nut that holds inside scraper (B) to scraper mount. (see figure 3).
2. Reposition new outside scraper mount (B) to scraper mount on the back of the opener aligning the top holes of each and attaching with the $\frac{3}{8}$ " x 1 $\frac{1}{4}$ " carriage bolt (A), washers, and hex nut. (see figure 4).

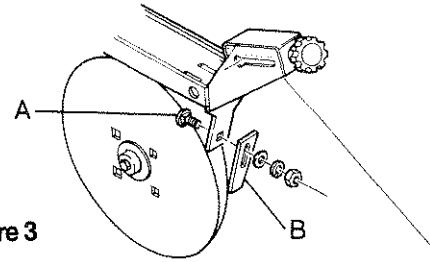


Figure 3

3. Attach inside scraper to outside scraper mount with $\frac{3}{8}$ " x 1 $\frac{1}{4}$ " carriage bolt, washers, and hex nut.
BE SURE ANGLE OF NEW SCRAPER MOUNT (D) POINTS TOWARD CENTER OF OPENER DISK.
4. Install scraper blade (C) on each wing of scraper mount (B) with $\frac{5}{16}$ " x $\frac{3}{4}$ " carriage bolt, washers and hex nut. Adjust scraper blades to have minimum clearance with disk opener and rubber-tired depth control wheel.
BE SURE THE DISK OPENER CAN TURN FREELY AFTER INSTALLATION.

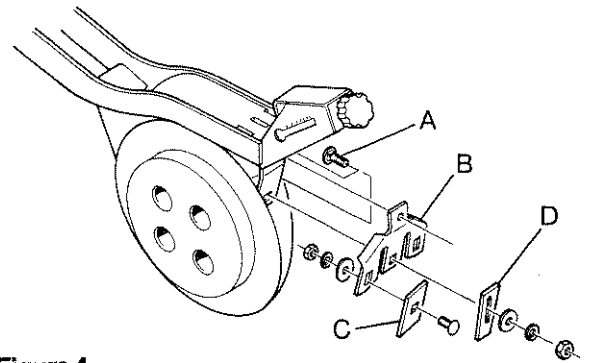


Figure 4