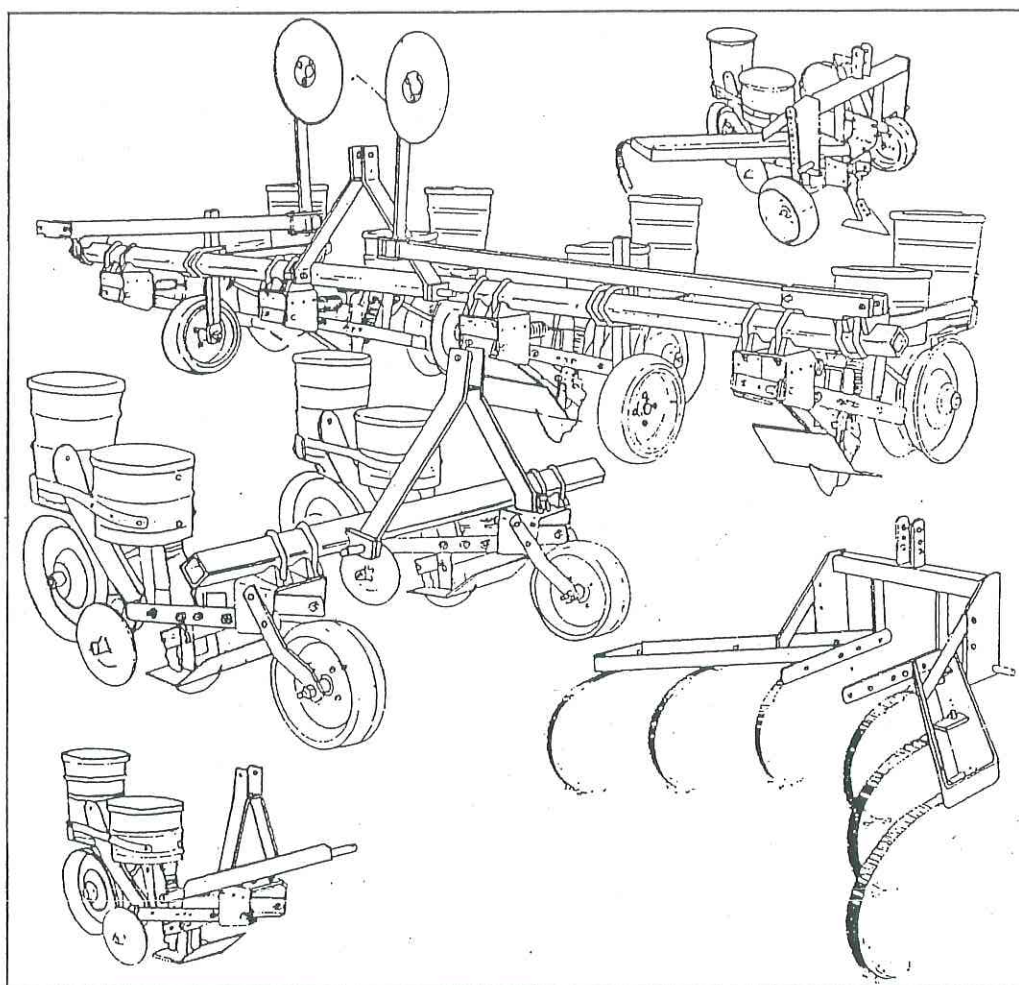


ASSEMBLY AND OPERATION INSTRUCTIONS



OWNER'S MANUAL

HH-LPMULTIFLEX PLANTER SYSTEM



HEHAI MECHANICAL CO., LTD. TAIYUAN, SHANXI, P.R.CHINA.

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MOBILE, AL 36652

SAFETY

- ▲ This safety – alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read and follow the message that follows. Failure to follow these procedures may result in serious personal injury.

SUGGESTIONS AND PRECAUTIONS

- ▲ 1. Lower the unit when adjusting it or doing maintenance work.
- ▲ 2. Always lower the unit from the transport position before detaching it from the tractor.
- ▲ 3. The implement should be operated by only those responsible and delegated to do so. Only one person should be on the tractor during operations; the operator. Do not allow anyone to ride on the implement.
- ▲ 4. Do not wear loose fitting clothes around the moving parts of the implement. These may catch in the moving parts.
- ▲ 5. Make sure that everyone is clear before starting the machine.
- ▲ 6. Do not drive too fast on curves or hillsides and do not drive too close to ditches or creeks.
- ▲ 7. Do not try to operate the tractor unless you are in the driver's seat and do not dismount while it is still in motion.
- ▲ 8. Check clearance before driving the planting unit under electric lines, bridges or into building.
- ▲ 9. Comply with state and local laws when moving machinery on the highway and use approved lights or warning devices.
- ▲ 10. The owner is responsible to properly train every operator initially and at least annually thereafter in the safe operation and servicing of the equipment.
- ▲ 11. The unit is unstable and must be securely supported throughout assembly.

CONTENTS

Section 1:	Assembly of planter
Section 2:	Assembly of 1 – row implements
Section 3:	Assembly of Multiple – row Tool Bar implements
Section 4:	Operation
Section 5:	Trouble shooting and storage
Section 6:	Parts listing
Section 7:	Warranty

SECTION 1

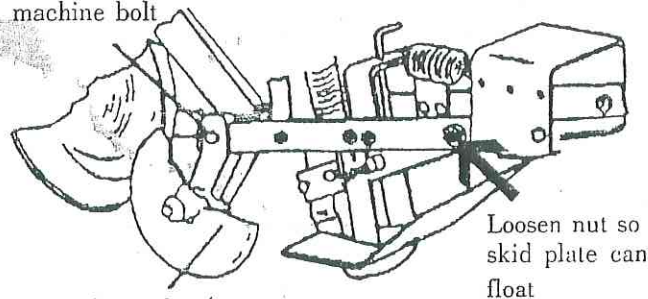
ASSEMBLY OF PLANTER

The HH-LP multiflex planter is one of the most versatile planters on the market, resulting from our many years of experience. This one planter simultaneously plants and places fertilizer. We offer a variety of hitches, enabling the HH-LP planter to be used with almost any tool bar, cultivator or tractor.

A. MOUNTING THE FERTILIZER SIDE - PLACER DISC.

For safer shipment, the HH-LP planter is packaged with the fertilizer side-placer disc removed. When you are preparing to use your HH-LP planter for the first time, the fertilizer side-placer disc must be assembled on the right side of the chassis between the sword and the rear press wheel. (See Figure 1) Position on the disc as shown, with the spout to the inside and secure the assembly to the chassis using $3/8" \times 1 - 1/2"$ machine bolt. Also, loosen locknut so skid plate will float (See Figure 1)

$3/8" \times 1 - 1/2"$
machine bolt



side-placer disc (cut away to show assembly)

Fig. 1

B. USING THE PLANTER GAUGE WHEEL (OPTIONAL).

The planter gauge wheel allows the planter to function independently of the tractor. It is recommended when using a tractor without position control. The gauge wheel firms the seedbed and promotes uniform seed depth. To attach the planter gauge wheel, remove the $3/8" \times 1 - 1/2"$ machine bolts holding the attaching bracket to the chassis of the planter. (See Figure 2) Position the planter gauge wheel as shown and substitute the $3/8" \times 2"$ machine bolts

through the planter chassis, attaching bracket, and arm of the gauge wheel. Use the $3/8" \times 1 - 1/2"$ machine bolts to secure the arm of the gauge wheel to the attaching bracket, using the top center hole. (Note that planter gauge wheel cannot be used in conjunction with planter-mounted opening foot.) 2

$3/8" \times 1 - 1/2"$ machine bolt

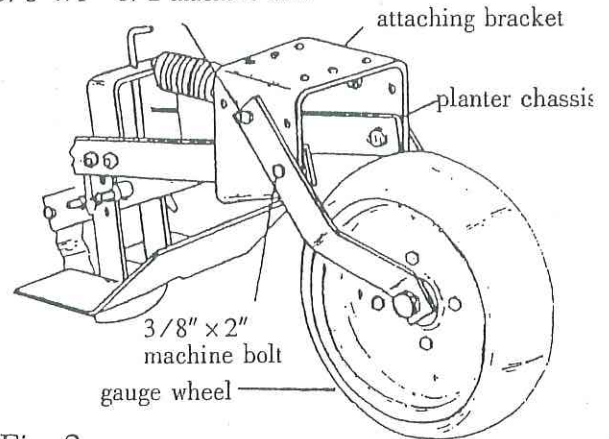


Fig. 2

C. USING THE PLANTER-MOUNTED OPENING FOOT (OPTIONAL).

The planter mounted opening foot tops the seedbed, so that seeds are planted in moist soil. It also levels the seedbed for more uniform seed depth. Most applications require that the opening foot and mounting bracket be assembled together. Figure 3 shows position of foot. Also, refer to planter mounting bracket you are going to use.

Depth of the opening foot may be readily changed by removing the $3/8" \times 2 - 1/2"$ machine bolts holding the trip foot to the shank, moving the trip foot to another hole on the shank and replacing the bolts. Add a sweep of your choice to the trip foot. (Note that planter opening foot cannot be used with planter gauge wheel.) $1/2" \times 1 - 1/2"$ machine bolts

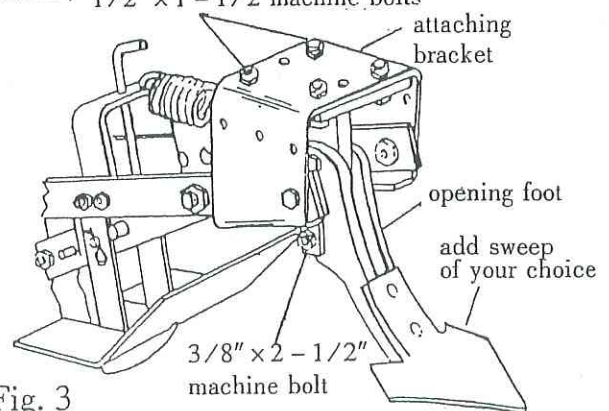


Fig. 3

SECTION 2

ASSEMBLY OF 1 - ROW IMPLEMENTS

A. USING THE HH-LP MULTIFLEX

PLANTER WITH 301 AND 501 CULTIVATORS

B. USING THE HH-LP PLANTER WITH CAT. 0 AND CAT. 1 THREE POINT HITCHES

A. USING HH-LP MULTIFLEX

PLANTER WITH HEHAI CULTIVATORS (OPTIONAL).

Hehai's cultivators are designed to work as a planting unit with the HH-LP Multiflex planters. To attach the planter to the cultivator, attach the U-shaped yoke to the cultivator using the four $3/8" \times 1"$ machine bolts. (See Figure 4) Attach the planter to the yoke using the four $1/2" \times 1 - 1/2"$ machine bolts.

Gauge wheels may be mounted to the 501 Deluxe cultivator. The leg of the gauge wheel mounts to the side of the cultivator using $3/8" \times 1 - 1/4"$ machine bolts. Final setting of these gauge wheels should be done prior to planting with the unit in the field. Lower the unit until the top of the attaching bracket of the planter is approximately 13" (330mm) off the ground. Move the gauge wheels to hold this position.

A planter mounted opening foot may be used with the planting unit. The opening foot tops the seedbed and exposes moist soil.

(Note yoke may be reversed for planting on beds.)

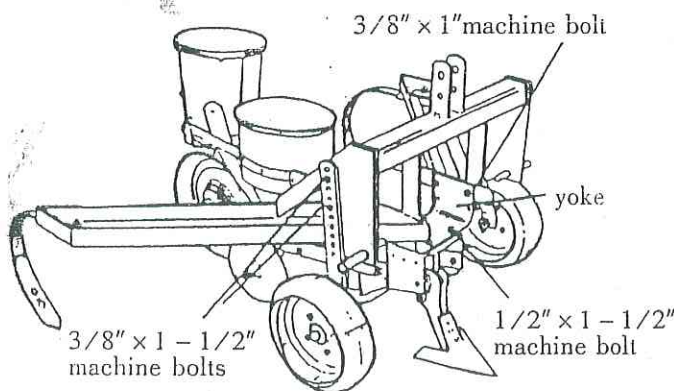


Fig. 4

B. USING THE HH-LP PLANTER WITH CAT. 0 AND CAT. 1 THREE - POINT HITCHES (OPTIONAL).

These two hitches allow the attachment of the HH-LP Multiflex planter to tractors with Category 0 or Category 1 three - point hitch. Attach the hitch as shown to the top of the planter attaching bracket using four $1/2" \times 1 - 1/2"$ machine bolts, lock washers and nuts. (See Figure 5)

Before planting, make these adjustments. With the planter attached to your tractor's three - point hitch, adjust the top link so that the top link mast is at a right angle to the ground when the unit is in planting position. This can be checked by viewing the unit from the side. Adjust your tractor, so that the top of the attaching bracket of the planter is 13" (330mm) off the ground when the unit is in planting position.

Either a planter mounted gauge wheel or a planter mounted opening foot may be used. The planter gauge wheel helps maintain planter position. The opening foot tops the seedbed exposing moist soil. They cannot be used together. (See Figures 2 and 3, Page 3).

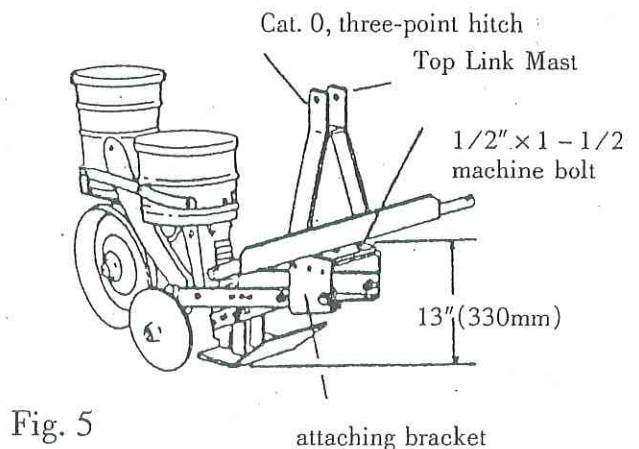
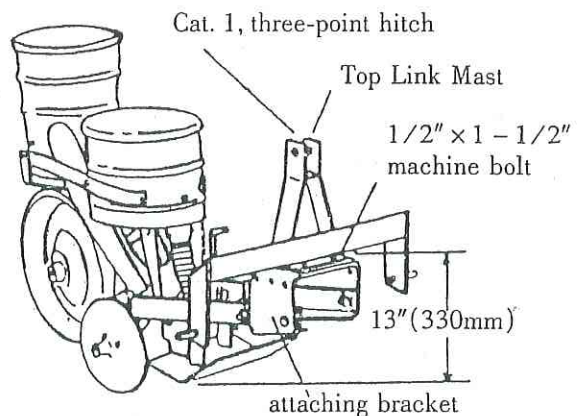


Fig. 5

SECTION 3

ASSEMBLY OF TOOL BAR UNITS

- A. MOUNT PLANTERS TO TOOL BAR
- B. USING CARRIER GAUGE WHEELS
- C. USING TRACK ERADICATORS/MIDDLE SWEEPS

A. MOUNT PLANTERS TO TOOL BAR AT CORRECT ROW SPACING.

Hehai offers tool bars for multiple row use with the HH-1P Multiflex planter. Block the tool bar securely to a height of approximately 13" (330mm) over the ground. Find and mark the center of the tool bar between the A-frame bracket. Measure and mark row spacing along the tool bar. Place the planters under the tool bar at the row spacing. Attach the planter to the tool bar as shown in Figure 14. Place the cast V-blocks on the attaching bracket of the planter, as shown, under the tool bar so that the tool bar rests in the "V" of the block. Place the U-bolts over the tool bar, through the cast V-block and attaching bracket. secure with lock washers and nuts. Wait to tighten the nuts until all planters have been mounted. Recheck the row spacing and make final adjustments. Then, tighten the U-bolts. Minimum recommended row spacing for multiple row planters on single tool bar is 15" (381mm).

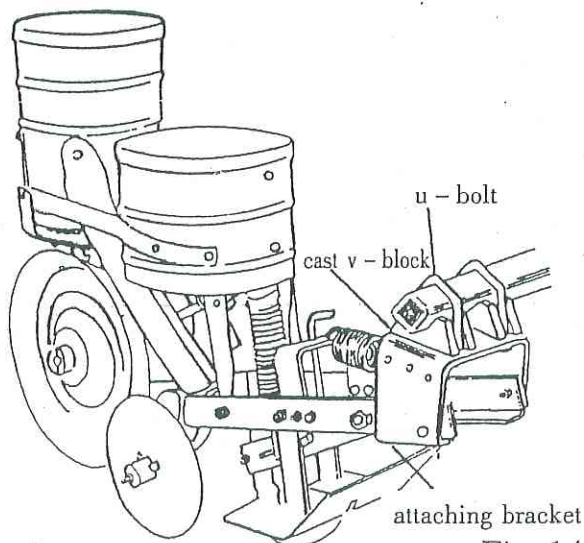


Fig. 14

B. USING GAUGE WHEELS

Use of either the carrier mounted gauge wheels or the planter-mounted gauge wheels is recommended for two or four-row planting units to help maintain more uniform planting depth. The planter-mounted gauge wheel helps firm the seedbed as well as promoting uniform seed depth.

The carrier-mounted gauge wheels maintain uniform planting height and at the same time allow you to use the planter-mounted opening foot, since the gauge wheels mount to the carrier. (See Figure 15) Place the gauge wheel to the rear of the diamond tool bar. Change the height of the tool bar by loosening the bolts and sliding the stem of the gauge wheel either up or down. The height of the tool bar should be such that the attaching bracket of the planter is approximately 13" (330mm) above the seedbed when the unit is in planting position. The hopper tops of the planters should be level when planting (See section on operation, Page10)

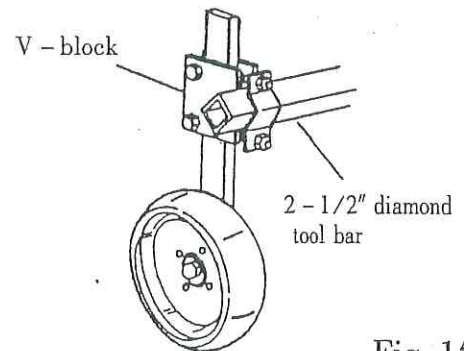


Fig. 15

C. USING TRACK ERADICATORS/MIDDLE SWEEPS (OPTIONAL).

The track eradicator/middle sweeps are useful when planting to loosen dirt between rows and behind the tractor wheels. The mounting stem is rectangular to prevent twisting in the field.

To attach the track eradicator to the tool bar, (Refer to Figure16 Page9)center the track eradicators between rows or behind tractor tires. Place the shank to the rear of the tool bar. The angle of the tool bar should rest in the notch. Secure the shank to the tool bar as shown using the bolts, lock washers and nuts.

The depth of the track eradicators/middle sweeps is set by loosening the nuts on the bolts, sliding the shank either up or down, and retightening the nuts.

SECTION 4

OPERATION

- C. OBTAINING THE CORRECT SEED SPACING
- D. SET THE SEED DEPTH
- E. SET THE FERTILIZER RATE

C. OBTAINING THE CORRECT SEED SPACING.

Select and install the correct distance gear for the seed spacing that you desire. Refer to the seed spacing chart. To change the distance gear, loosen the wing nut under the seed hopper, pull the drive shaft down and change the gear. Then, push the drive shaft back up until the gears engage properly and tighten the wing nut. (See Figure 19) Raise planter off the ground and rotate wheel to insure the gears do not bind.

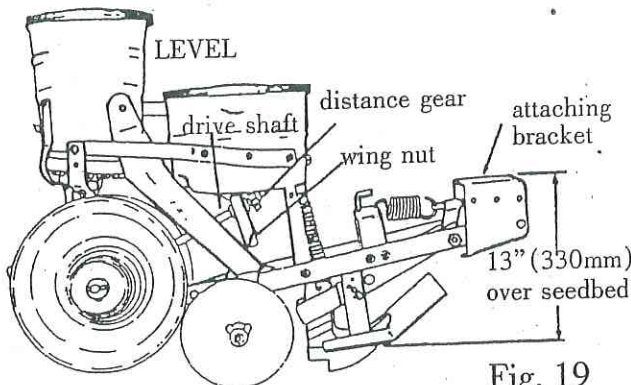


Fig. 19

SEED SPACING				
Distance Gear	8 - Tooth	10 - Tooth	12 - Tooth	14 - Tooth
	SEED SPACING			
Number of Cells in Plate	INCH (CM)			
1	180(457.2)	144(365.8)	120(304.8)	100(254)
2	90(228.6)	72(182.9)	60(152.4)	50(127)
4	45(114.3)	36(91.4)	30(76.2)	26(66)
6	30(76.2)	24(61)	20(50.8)	17(43.2)
8	22(55.9)	18(45.7)	15(38.1)	13(33)
10	18(45.7)	14(35.6)	12(30.5)	10(25.4)
12	15(38.1)	12(30.5)	10(25.4)	8(20.3)
16	11(27.9)	9(22.9)	7(17.8)	6(15.2)
18	10(25.4)	8(20.3)	6.5(16.5)	5(12.7)
26	7(17.8)	5.5(14)	4.5(11.4)	3.5(8.9)
30	6(15.2)	4.5(11.4)	4(10.2)	3(7.6)
32	6(15.2)	4.5(11.4)	4(10.2)	3(7.6)
36	5(12.7)	4(10.2)	3.5(8.9)	2.5(6.4)
40	4.5(11.4)	3.5(8.9)	3(7.5)	2.5(6.4)
46	4(10.2)	3(7.6)	2.5(6.4)	2(5.1)
60	3(7.6)	2.5(6.4)	2(5)	1.5(3.8)

D. SET THE SEED DEPTH.

Decide on the correct depth for type of seed you are planting. Seed depth may be set by two methods. (See Figure 20) Use the sliding shoe depth gauge for planting flat or on beds. Change seed depth by removing the hair pin and sliding the holding pin out. Move the depth gauge to the correct position. and replace the holding pin and hair pin. Seed planting depth, when using the sliding shoe depth gauge. is set in 1/2" (13mm) increments. Rotate the hand crank completely out to insure maximum float of the seed opener.

When planting in furrows, remove the sliding shoe depth gauge completely and use the hand crank to set seed depth.

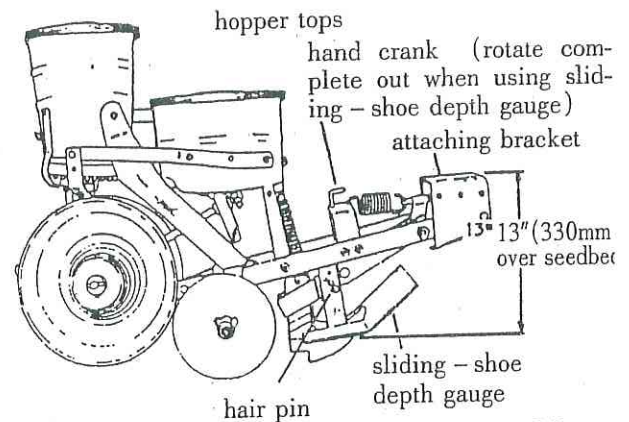


Fig. 20

E. SET THE FERTILIZER RATE.

To regulate the amount of fertilizer, loosen the wing nut at the rear of the fertilizer hopper. (See Figure 21) Moving the lever to the left will decrease the fertilizer application. Minimum application is 34 lbs. per acre (38kg/ha). (Rates are based on fertilizer with a density of 72 lbs. per cubic foot (80kg/m³) and calculated on 36" (91cm) row spacings.) Moving the lever to the right will increase fertilizer application up to 650 lbs. per acre (730kg/ha). After setting fertilizer output, retighten wing nut.

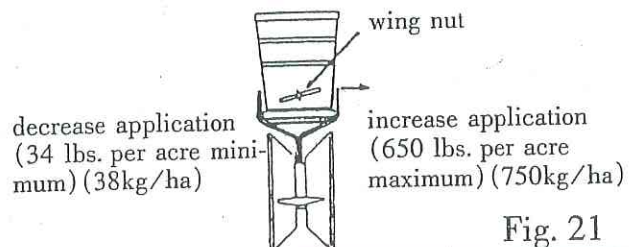


Fig. 21

SECTION 5

TROUBLE SHOOTING/STORAGE

TROUBLE SHOOTING

PROBLEM	SOLUTION
Improper seed distribution	<ol style="list-style-type: none"> 1. Check that planter is mounted correctly to hitch or tool bar and that planter is adjusted so that the top of the attaching bracket is approximately 13"(330mm) above seedbed. Hopper tops should be level when planting. 2. Check to make sure that distance gear meshes properly. Have you used the correct distance gear? 3. Check seed plate to be sure that it is not too tight or too loose. if plate is too tight, turn cap to the left one or more notches on the partition. If too loose, check for trash caught under the plate, and then turn the cap to the right one or more notches. 4. Check to be sure the seeds being planted and seed plate used are properly matched. 5. Check that all mountings are securely bolted.
Improper fertilizer distribution	<ol style="list-style-type: none"> 1. Check that planter is mounted correctly to hitch or tool bar, that planter is adjusted so that the top of the attaching bracket is approximately 13" (330mm) above seed bed. Hopper tops should be level when mounting. 2. Check to see that wing nut at the rear of the fertilizer hopper is set on the correct setting. 3. Check drive wheel to be sure that it turns freely. 4. Check for large lumps of fertilizer clogging spout or fertilizer cutoff band. Fertilizer may have picked up too much moisture. 5. Check that all mountings are securely bolted.

STORAGE

DAILY

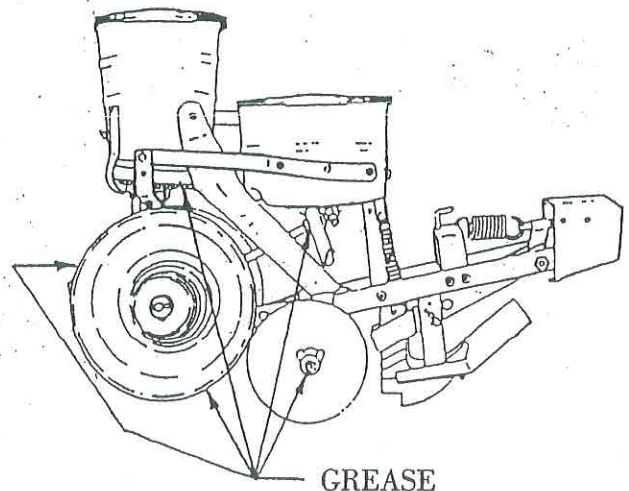
1. Remove seed and fertilizer from hoppers.
2. Check unit/units for broken or badly worn parts. Replace as required.
3. Store out of the weather.
4. Store planter so that it is stable and will not turn over and cause personal injury.

END OF SEASON OR PROLONGED STORAGE

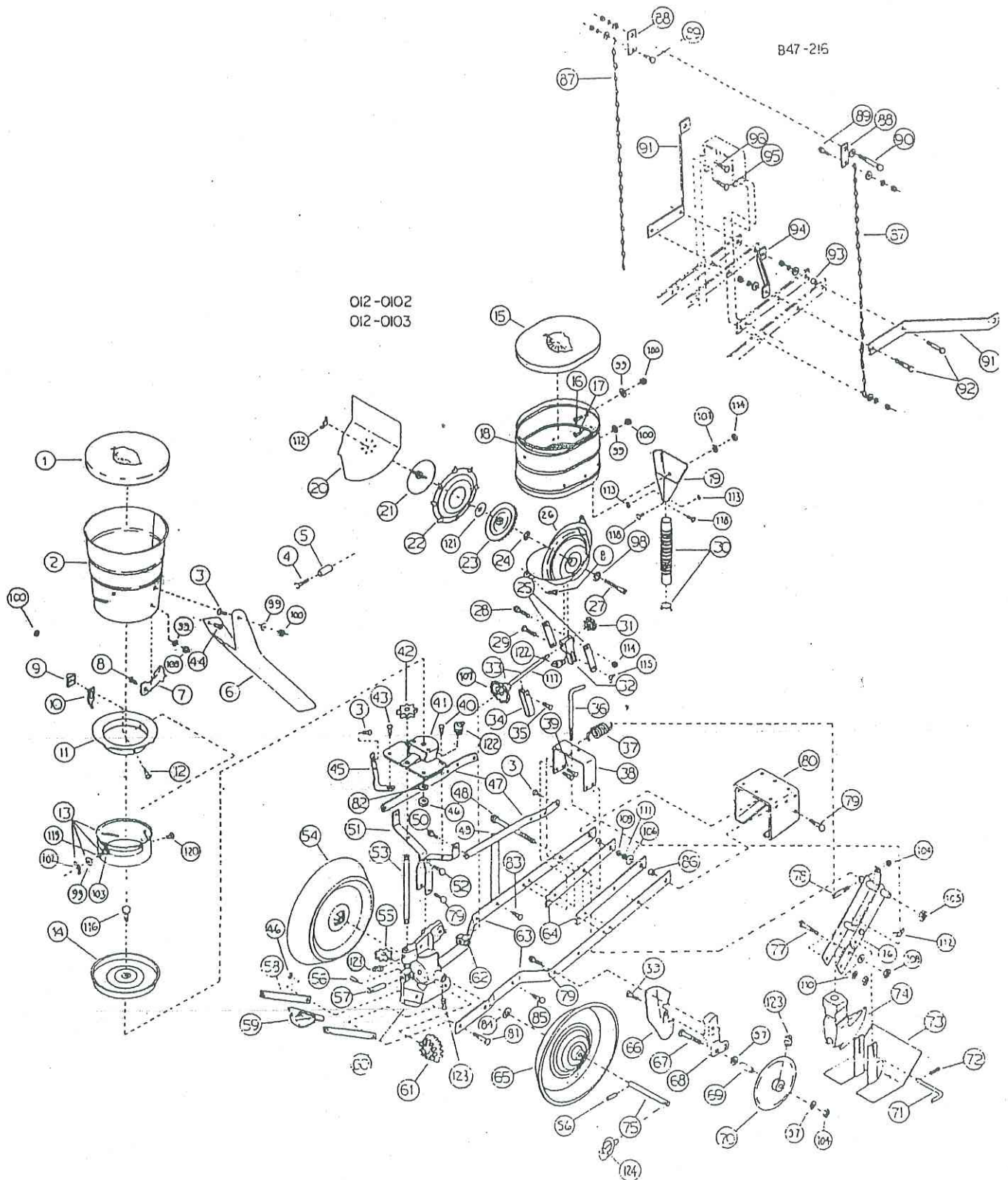
1. Remove all seed from hopper.
2. Remove all fertilizer from hopper and wash entire unit thoroughly with water. Allow to dry.
3. Lubricate unit. Coat all metal parts with a light oil or commercial corrosion preventive.
4. Check unit for broken or badly worn parts. Order necessary parts from your dealer.
5. Store planter so that it is stable and will not turn over and cause personal injury.

LUBRICATION OF PLANTER

Grease daily the fertilizer side plunger, upper bearing, fertilizer hopper saddle and the rear of the main support. Remove the lynch pin securing the right drive wheel and grease the main support.



HH-LP Planter Assembly



11 and 12MX Planter Assembly

012-0102, 012-0103 and B47-216

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION	NUMBER PER ASSEMBLY
1	P20-909	Lid, Fertilizer Hopper (Plastic)	1
2	P30-593	Can, Fertilizer Riveted	1
3	001-2549-S	Bolt, Crg., 1/4-20NC x 5/8 Lg. Short Shoulder	7
4	001-2558	Bolt, Crg., 1/4-20NC x 2-1/2	1
5	P20-235	Spacer, Hopper	1
<hr/>			
6	POS-35	Spout, Fertilizer	1
7	POA-50	Scrape, Outside Fertilizer Casting	1
8	001-2986	Screw, Machine Flat Head 1/4-20NC x 3/4	1
9	P00-52	Shield, Scrape	1
10	POA-51	Scrape, Inside Fertilizer	1
<hr/>			
11	P00-57	Ring, Fertilizer	1
12	001-2991	Screw, Machine Flat Head 1/4-20NC x 1-1/2	1
13	30S-37	Assembly, Cut-off Band	1
	BNS-34	Assembly, Fertilizer Hopper, Complete	1
14	P00-246	Plate, Fertilizer	1
<hr/>			
15	B21-025	Lid, Seed Hopper	1
16	001-2985	Screw, Machine Flat Head 1/4-20NC x 5/8	1
17	001-2980	Screw, Machine Flat Head 1/4-20NC x 3/4	1
18	B30-592	Can, Seed Hopper	1
	B30-602	Seed Hopper Assembly, Complete	1
<hr/>			
19	P46-689	Spout, Seed	1
20	P20-927	Partition, Seed	1
21	P20-926	Cap, Seed Plate	1
22	P30-433	Plate, Seed 42 Cell	1
	P30-434	Plate, Seed 16 Cell	1
	P30-435	Plate, Seed 8 Cell	1
	POX-367	Plate, Seed 12 Cell	1
<hr/>			
23	P00-187	Gear, Under Seed Plate	1
24	001-0140	Nut, 3/8 Psi.	1
25	P30-342	Steel, Bottom	2
26	P00-B189	Bottom, Hopper	1
	POB-189	Hopper Bottom Assembly	1
<hr/>			
27	001-2073-S	Screw, Cap HH 3/8-16NC x 3 Sq. Hd.	1
28	001-2037	Screw, Cap HH 5/16-18NC x 1-1/2	1
29	001-2576	Bolt, Crg., 5/16-18NC x 1-1/2	1
30	P21-104	Spout, Seed, Rubber W/Wire	1

11 and 12MX Planter Assembly

012-0102, 012-0103 and B47-216

<u>DIAGRAM NUMBER</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>NUMBER PER ASSEMBLY</u>
31	POG-8	Gear, 8 Tooth	1
	POG-10	Gear, 10 Tooth	1
	POG-12	Gear, 12 Tooth	1
	POG-14	Gear, 14 Tooth	1
32	P00-206	Bearing, Upper	1
33	PCB-45	Assembly, Drive Shaft W/Gear	1
34	POC-43	Stop, Axle	1
35	001-2553	Bolt, Crg., 1/4-20NC x 1-1/4	1
36	P21-132A	Rod, Depth Adjusting	1
37	P21-108	Spring	1
38	P21-114	Bracket, Adjusting	1
39	001-2598	Bolt, Crg., 3/8-16NC x 1-1/4	5
40	001-2575	Bolt, Crg., 5/16-18NC x 1-1/4	2
41	P20-512	Saddle	1
42	POB-255	Gear, Upper Drive	1
43	001-2574-S	Bolt, Crg., 5/16-18NC x 1 Short Shoulder	2
44	001-2002	Screw, Cap HH 1/4-20NC x 1/2	1
45	POS-257	Brace	2
46	001-0055	Locknut, 3/8-16NC Hex	2
47	POC-179	Brace, Hopper	2
48	001-2163	Screw, Cap HH 5/8-11NC x 7	1
49	PCL-178	Brace, Left	1
	PCR-178	Brace, Right	1
50	001-2033	Screw, Cap HH 5/16-18NC x 3/4	2
51	P20-324	Leg	2
52	001-2035	Screw, Cap HH 5/16-18NC x 1	1
53	P20-713A	Shaft, Drive 5/8	1
54	P00-186B-G	Wheel, Half, Gear Side	1
55	P20-712	Gear, Lower Drive	1
56	001-3433	Pin, Roll 1/4 x 1-1/2	3
57	P20-322	Axle, Drive Gear	1
58	P20-630	Arm, Scraper	2
59	P20-720	Scrape, Wheel	1
60	P20-320	Support, Main	1
61	POA-253	Gear, Drive	1
62	POA-214	Bearing, Lower	1
63	P21-112	Beam, Planter	2

11 and 12MX Planter Assembly

012-0102, 012-0103 and B47-216

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION	NUMBER PER ASSEMBLY
64	P21-113	Beam, Back-up	2
65	P00-186B-P	Wheel, Half, Plain Side	1
66	P21-174	Spout, Side Placer	1
<hr/>			
67	001-2651	Bolt, Crg., 1/2-13NC x 3-1/4	1
68	P21-175	Bracket, Attaching, Side Placer	1
69	P20-705	Bushing, Side Placer	1
70	P20-697	Placer, Side, Fertilizer	1
71	P21-134	Pin	1
<hr/>			
72	P20-277	Hair Pin #16 (1/8) Wire	1
73	P21-109	Skid Plate	1
74	P21-131	Foot, Opener	1
75	F0S-99	Axle, Wheel 3/4	1
76	P21-115	Support, Arm	1
<hr/>			
77	001-2043	Screw, Cap HH 5/16-18NC x 3	2
78	P21-120	Rod, Adjusting 1/2	1
79	001-2067	Screw, Cap HH 3/8-16NC x 1-1/2	4
80	P21-121	Bracket, Attaching	1
81	001-2600	Bolt, Crg., 3/8-16NC x 1-3/4	2
<hr/>			
82	001-1067	Washer, Flat Special	1
83	001-2597	Bolt, Crg., 3/8-16NC x 1	2
84	001-1046	Washer, 1-7/8 OD x 15/16 ID x 1/16	1
85	001-2065	Screw, Cap HH 3/8-16NC x 1	4
86	P21-133	Bushing, 45/64 OD x 13/32 ID x 17/32	2
<hr/>			
87	P46-709	2/0 Twist Chain, 30 Links	2
88	P46-708	Plate, Attaching	2
89	001-2035	Screw, Cap HH ZP 5/16-18NC x 1	2
90	001-2073	Screw, Cap HH ZP 3/8-16NC x 3	1
91	P46-706	Arm, Main	2
<hr/>			
92	001-2068	Screw, Cap HH ZP 3/8-16NC x 1-3/4	4
93	P21-133	Bushing, 45/64 OD x 13/32 ID x 17/32	2
94	P46-710	Brace, Cross	1
95	001-2600	Bolt, Crg., ZP 3/8-16NC x 1-3/4	2
96	001-2598	Bolt, Crg., ZP 3/8-16NC x 1-1/4	2
<hr/>			
97	001-1005	Washer, Flat 1/2	2
98	P30-450	Ring, "O", 9/16 OD x 3/8 ID x 3/32	1
99	001-1001	Washer, Flat 1/4	11
100	001-0005	Nut, 1/4-20NC Hex	14
101	001-1002	Washer, Flat 5/16	1

11 and 12MX Planter Assembly

012-0102, 012-0103 and B47-216

DIAGRAM NUMBER	PART NUMBER	DESCRIPTION	NUMBER PER ASSEMBLY
102	001-0100	Nut, Wing 1/4-20NC	1
103	001-1005	Nut, 1/4 -20NC Hex	1
104	001-0009	Nut, 1/2-13NC Hex	2
105	001-0057	Locknut, 5/8-11NC	1
106	011-1003	Washer, Flat 3/8	2
<hr/>			
107	P00-220	Gear, Drive Shaft	1
108	001-0006	Nut, 5/16-18NC Hex	10
109	001-0007	Nut, 3/8-16NC Hex	16
110	001-1251	Washer, Lock 5/16	2
111	001-1252	Washer, Lock 3/8	4
<hr/>			
112	001-0103	Nut, Wing 3/8-16NC	2
113	001-0004	Nut, Hex 10-24NC	2
114	001-0061	Locknut, 5/16-18NC	2
115	001-0101	Nut, Wing 5/16	1
116	001-2066	Screw, Cap HH 3/8-16NC x 1-1/4	1
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117	P20-644	Shaft, Hopper Drive	1
118	001-3096	Screw, Mach. Rd. Hd. #10-24NC x 1/2	2
119	001-2552-S	Bolt, Crg., 1/4-20NC x 1 Short Shoulder	1
120	001-3486	Rivet, 1/4 x 1/2	3
121	001-1309	Washer, Special Fender 1-1/2 OD x 13/32 ID x 24 GA.	1
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122	003-8520	Fitting, Grease, 65 deg., 1/4" drive included with P20-512, P00-206	2
123	003-8523	Fitting, Grease, St., 1/4" drive included with P20-320, P20-697	3
124	001-3727	Pin, Lynch, 1/4" x 1-3/4"	1