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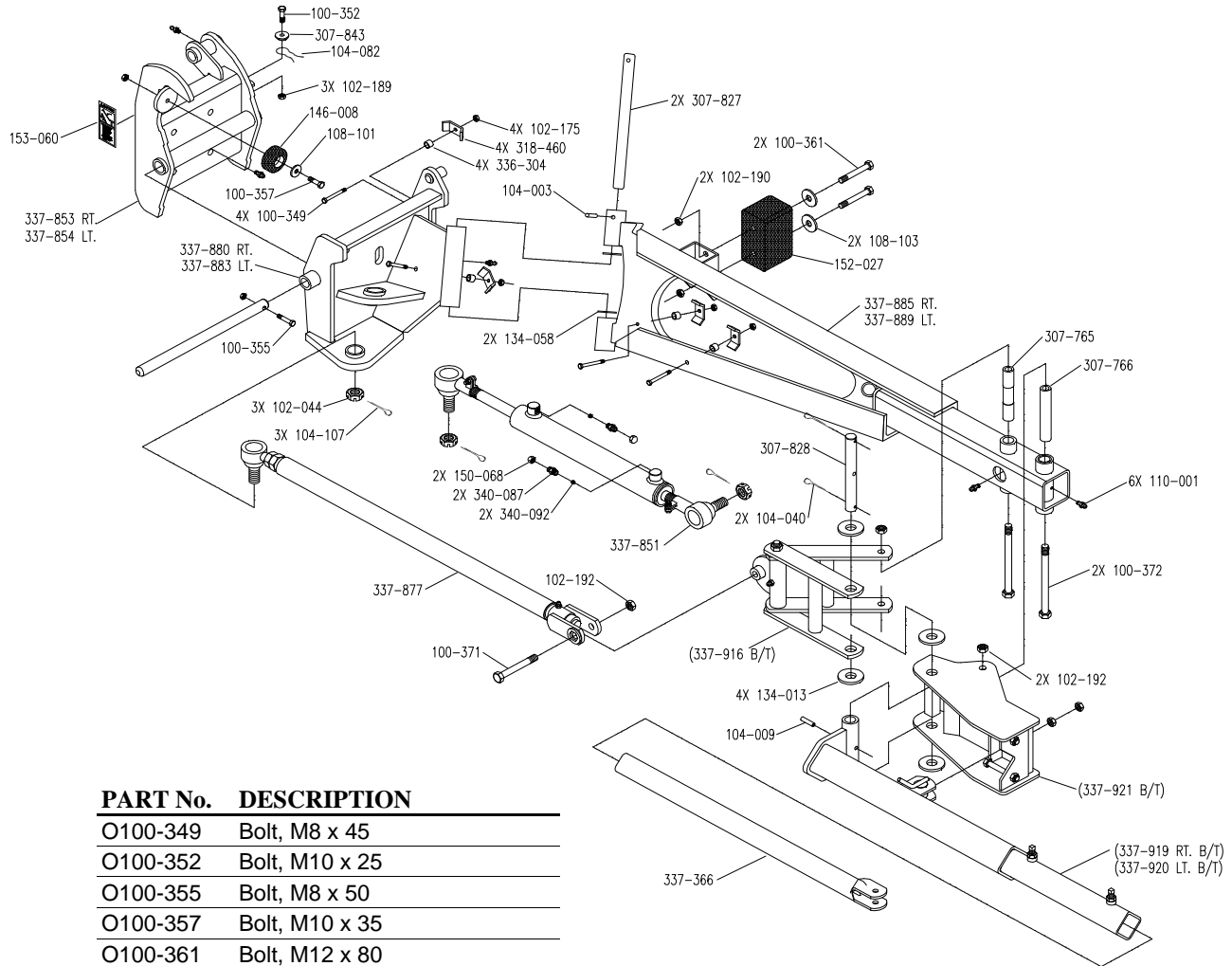
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ROW MARKERS

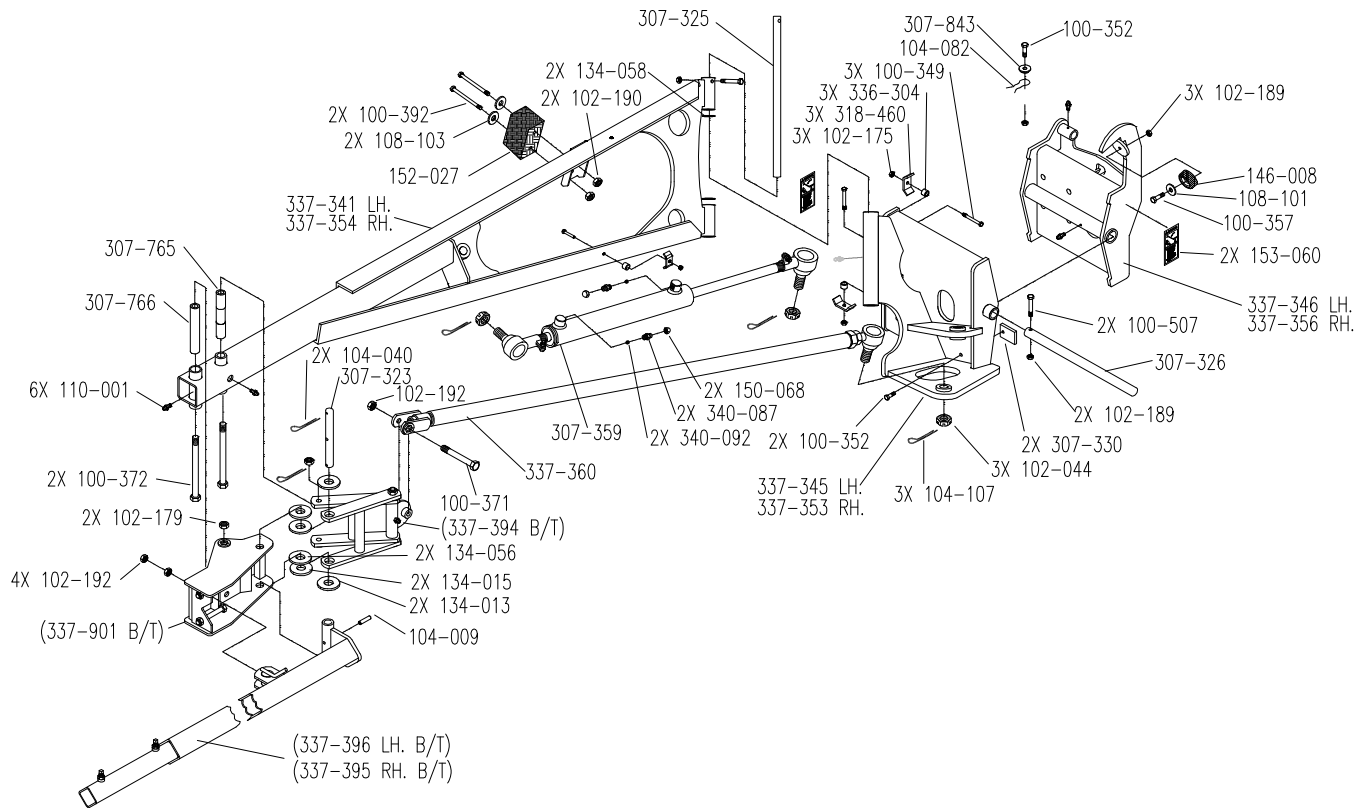
8-row STACKER BAR Row Marker



PART No.	DESCRIPTION
O100-349	Bolt, M8 x 45
O100-352	Bolt, M10 x 25
O100-355	Bolt, M8 x 50
O100-357	Bolt, M10 x 35
O100-361	Bolt, M12 x 80
O100-371	Bolt, M16 x 80
O100-372	Bolt, M16 x 200
O102-044	Slotted hex nut, 3/4-16
O102-175	Hex nut M8
O102-189	Lock nut M10
O102-190	Lock nut, M12
O102-192	Lock nut, M16
O104-003	Roll pin, 3/8 x 1 3/4
O104-009	Roll pin, 3/8x1 1/2
O104-040	Cotter pin, 1/4 x 2
O104-082	Hair pin clip, 5/164
O104-107	Cotter pin, 1/8 x 1 1/2
O108-101	Washer, M10.5 x 21 x 2
O108-103	Washer, M13 x 24 x 2.5
O110-001	Grease fitting, 1/4-28
O134-013	Bushing, 1 1/2 x 1 x 14Ga.
O134-058	Washer, 1"x2"x10Ga.
O146-008	Rubber bumper
O150-068	Cap nut, 7/16-20x1/4 tube
O152-027	Rubber bumper
O307-765	Bushing
O307-766	Bushing
O307-827	Pin, 16 5/8"
O307-828	Pin, 8 5/8"
O307-843	Lock washer
O318-460	Strap
O336-304	Spacer
O337-366	Extension tube, 2" x 60", blue
O337-851	Hydraulic cylinder, blue
O337-853	Mounting bracket R.H., blue
O337-854	Mounting bracket L.H., blue
O337-877	Strut, blue
O337-880	Pivot R.H., blue
O337-883	Pivot L.H., blue
O337-885	Arm, R.H., blue
O337-889	Arm, L.H., blue
O340-087	Adapter, 7/16" tapped
O340-092	Restrictor, .046"

ROW MARKERS

12-row STACKER BAR Row Marker

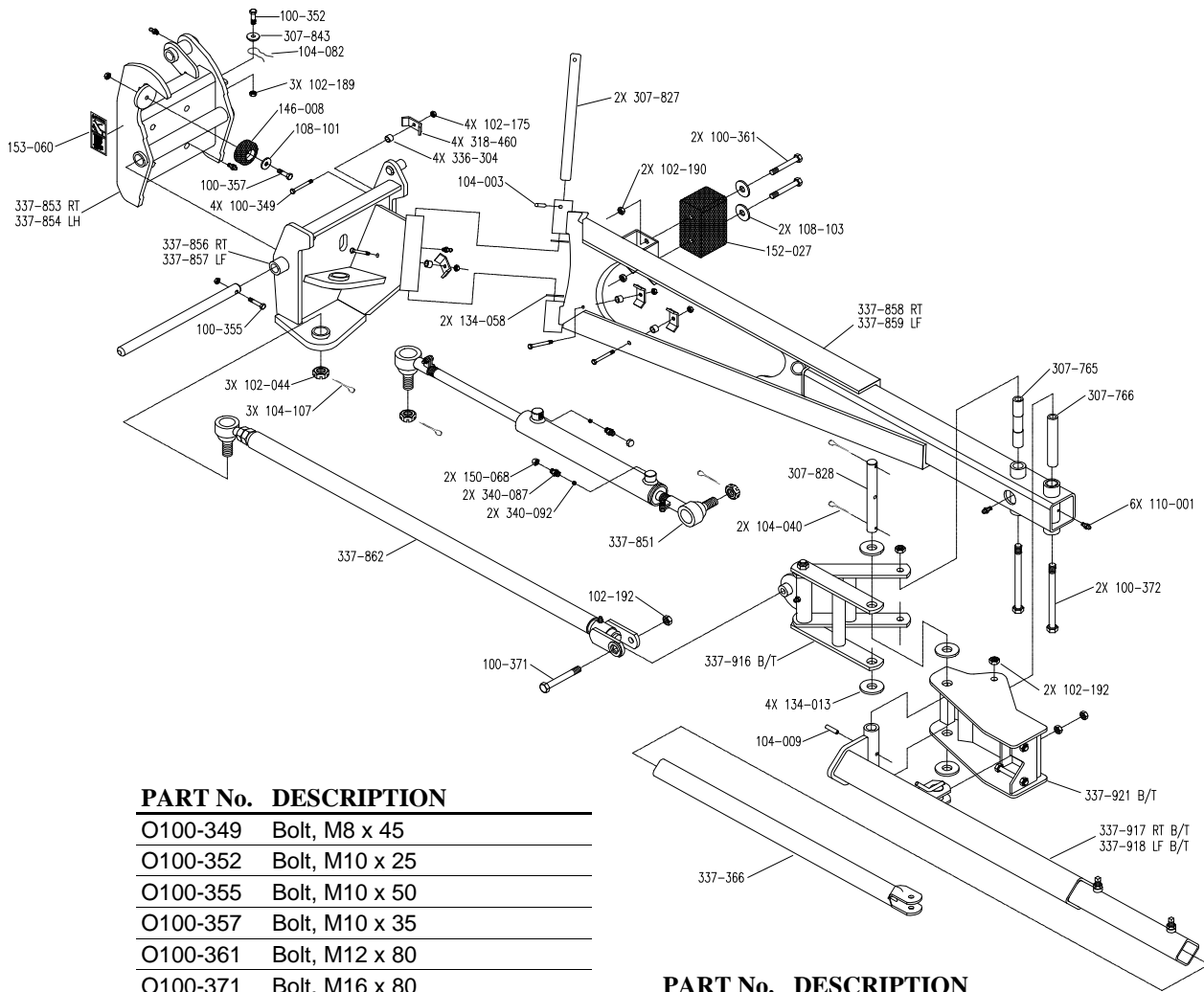


PART No.	DESCRIPTION
O100-349	Bolt, M8 x 45
O100-352	Bolt, M10 x 25
O100-357	Bolt, M10 x 35
O100-371	Bolt, M16 x 80
O100-372	Bolt, M16 x 200
O100-392	Bolt, M12 x 70
O100-507	Bolt, M10 x 55
O102-044	Hex nut, 3/4-16
O102-175	Hex nut, M8
O102-189	Lock nut, M10
O102-190	Lock nut, M12
O102-192	Lock nut, M16
O104-009	Roll pin, 3/8 x 1 1/2
O104-040	Cotter pin, 1/4 x 2
O104-082	Hair pin clip 51/64"
O104-107	Cotter pin, 1/8 x 1 1/2
O108-101	Washer
O108-103	Washer
O110-001	Grease fitting, 1/4-28 TPRT
O134-013	Bushing
O134-015	Bushing
O134-056	Washer
O134-058	Washer

PART No.	DESCRIPTION
O146-008	Rubber bumper
O150-068	Cap nut, 7/16-20
O152-027	Rubber bumper
O307-323	Pin
O307-325	Pin
O307-326	Pivot pin
O307-330	Mounting tab
O307-359	Hydraulic cylinder
O307-765	Bushing 6"
O307-766	Bushing 6"
O307-843	Lock washer
O318-460	Strap
O336-304	Spacer
O337-341	Arm L.H. ATI
O337-345	Pivot L.H., ATI
O337-346	Mounting bracket L.H. ATI
O337-353	Pivot R.H., ATI
O337-354	Arm R.H. ATI
O337-356	Mounting bracket R.H. ATI
O337-360	Strut, blue
O340-087	Adaptor, 7/16MB x 7/16MJ
O340-092	Restictor, 1/2-20 x 3/8 (.046)

ROW MARKERS

12-row 30" STACKER BAR Row Marker



PART No. DESCRIPTION

O100-349	Bolt, M8 x 45
O100-352	Bolt, M10 x 25
O100-355	Bolt, M10 x 50
O100-357	Bolt, M10 x 35
O100-361	Bolt, M12 x 80
O100-371	Bolt, M16 x 80
O100-372	Bolt, M16 x 200
O102-044	Slotted hex nut, 3/4-16
O102-175	Hex nut, M8
O102-189	Lock nut, M10
O102-190	Lock nut, M12
O102-192	Lock nut, M16
O104-003	Roll pin, 3/8 x 1 3/4
O104-009	Roll pin, 3/8 x 1 1/2
O104-040	Cotter pin, 1/4 x 2
O104-082	Hair clip pin, 51/64"
O104-107	Cotter pin, 1/8 x 1 1/2
O108-101	Washer, M10.5x21x2
O108-103	Washer, M13.5x24x2.5
O110-001	Grease fitting, 1/4-28 TPRT
O134-013	Bushing, 1 1/2" x 1" x 14GA
O134-058	Washer, 1 x 2 x 10GA
O146-008	Rubber bumper
O150-068	Cap nut, 7/16-20x1/4
O152-027	Rubber bumper

PART No. DESCRIPTION

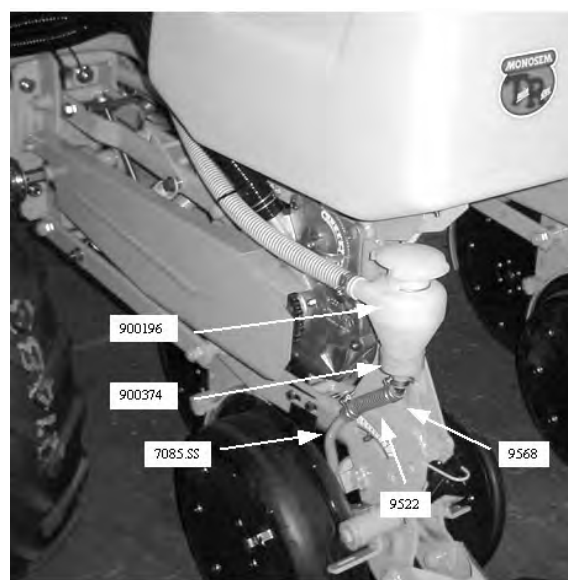
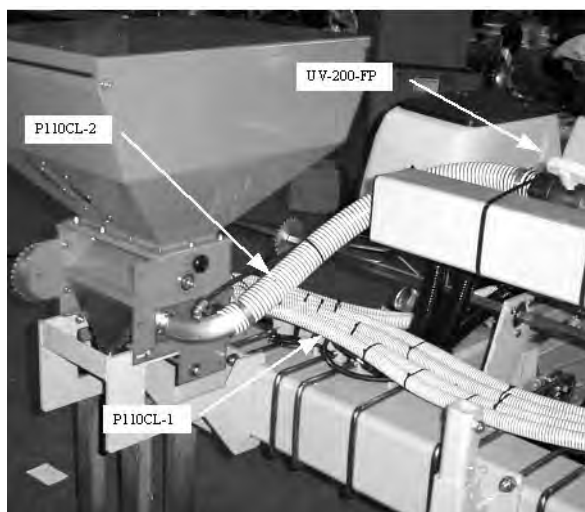
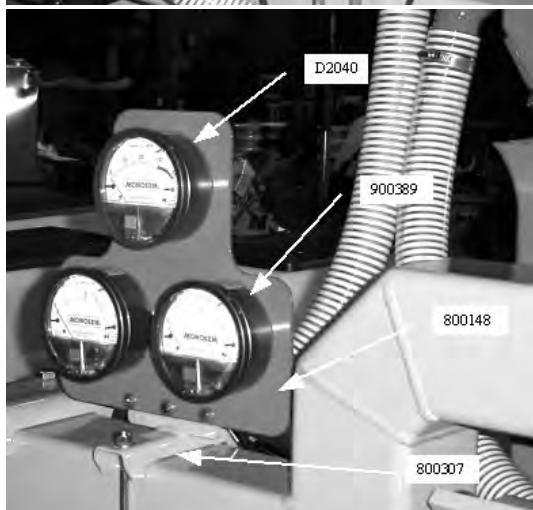
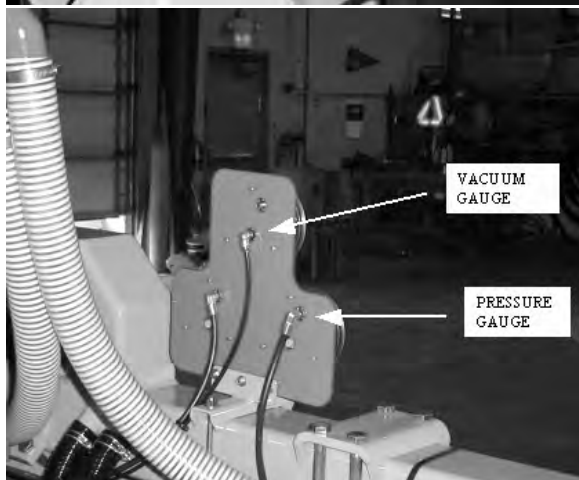
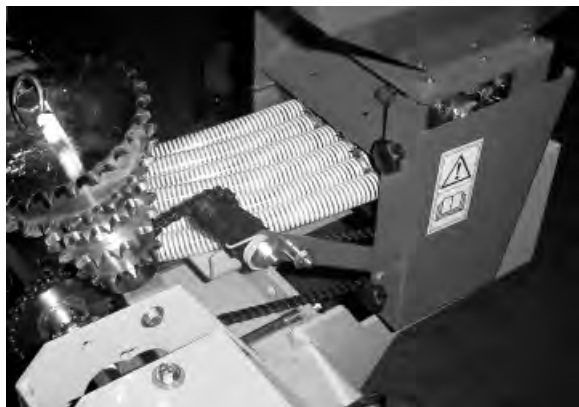
O307-765	Bushing
O307-766	Bushing
O307-827	Pin
O307-828	Pin
O307-843	Lock washer
O318-460	Strap
O336-304	Spacer
O337-366	Extension tube, 2"x 60" blue
O337-851	Hydraulic cylinder, blue
O337-853	Mounting bracket R.H., blue
O337-854	Mounting bracket L.H., blue
O337-856	Pivot R.H., blue
O337-857	Pivot L.H., blue
O337-858	Arm R.H., blue
O337-859	Arm L.H., blue
O337-862	Strut, blue
O340-087	Adaptor
O340-092	Restrictor, 1/4-20x3/8 (.046")

AIR INSECTICIDE

SYSTEM ASSEMBLY

The ¼” vacuum hose connects to the bottom port in the back of the vacuum gauge. The filter is to be used in the top port in back of the vacuum gauge. Use plugs in the side ports.

The ¼” pressure hose connects to the top port in the back of the vacuum gauge. Use the filter in the bottom port in back of the vacuum gauge. Use plugs in the side ports.



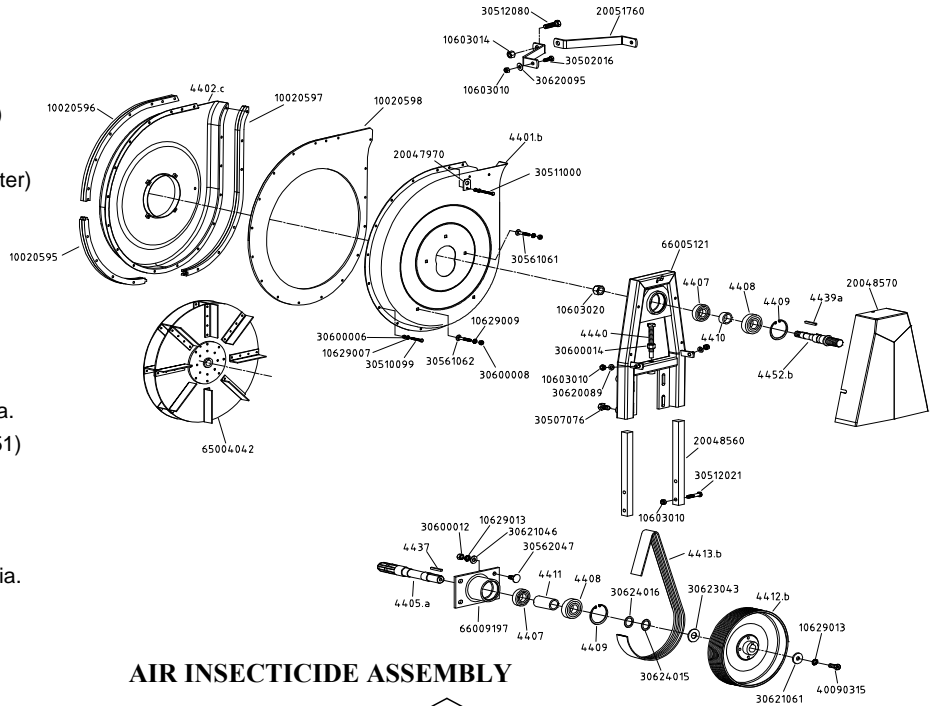
PART NO.	DESCRIPTION
D2040	Vacuum Gauge
90389	Pressure Gauge
800148	Panel Triple Gauge
800307	Bracket Gauge panel
UV-200-FP	2” Ball valve, (requires Fitting TERHB200-200, qty 2)
P110CL-2	2” Hose (Specify Length)
P110CL-1	1” Hose (Specify Length)
UV-200-FP	2” Ball valve, (requires Fitting TERHB200-200, qty 2)
P110CL-2	2” Hose (Specify Length)
P110CL-1	1” Hose (Specify Length)
900196	Cyclone (includes fitting)
900374	Cyclone clamp
7085.SS	Drop tube
9522	Hose (Specify Length)
9568	Hose Clamp

AIR INSECTICIDE

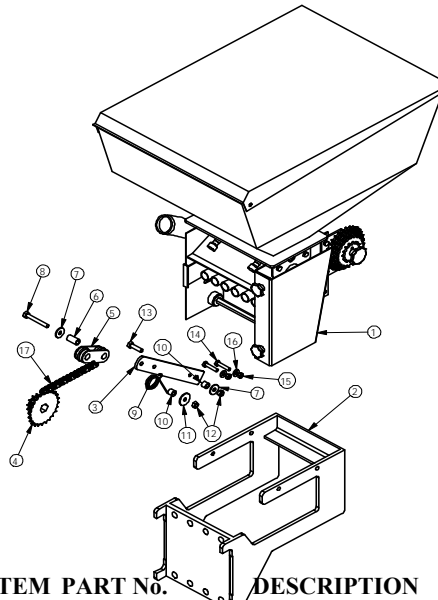
DOUBLE TURBOFAN ASSEMBLY

PART No. DESCRIPTION

4401.B	Fan housing (support frame side)
4402.C	Fan housing manifold side
4405.A	Lower shaft (1 3/8" 6 spline adapter)
4407	Bearing 62mm (62062RS)
4408	Bearing 72mm (63062RS)
4409	Snap ring internal 72mm
4410	Spacer upper shaft
4411	Spacer lower shaft
4412.B	Pulley, 500/540rpm
	Hi-Output 25 grooves 290mm dia.
4413.B	Fan belt, 25 grooves (1244JEJ151)
4437	Key lower shaft (8x7x40mm)
4439.A	Key upper shaft (6x6x45mm)
4440	Special bolt tension adjustment
4452.B	Upper shaft, 25 grooves 29mm dia.
10020595	Lower spacer segment
10020596	Upper spacer segment
10020597	Front spacer segment
10020598	Divider plate
10603010	Nut, 10mm
10603014	Nut, 14mm
10603020	Nut, 20mm
10629007	Washer, 6mm
10629009	Washer, 8mm
10629013	Washer, 12mm
20047970	Lift hook
20048560	Support bar
20048570	Belt guard
20051760	Anti vibration strap
30502016	Bolt, 12 x 25mm
30507076	Bolt, 14 x 25mm
30510099	Bolt, 6 x 40mm
30511000	Bolt, 6 x 45mm
30512021	Bolt, 10 x 50mm
30512080	Bolt, 14 x 45mm
30561061	Carriage bolt, 8 x 50mm
30561062	Carriage bolt, 8 x 55mm
30562047	Carriage bolt, 12 x 30mm
30600006	Nut, 6mm
30600008	Nut, 8mm
30600012	Nut, 12mm
30600014	Nut, 14mm
30620089	Washer, 10.5 x 20 x 2mm
30620095	Washer, 10.5 x 27 x 2mm
30621046	Washer, 13 x 27 x 2mm
30621061	Washer, 13 x 40 x 4mm
30623043	Washer, 22.5 x 48 x 4mm
30624015	Washer, 31 x 41 x 1.5mm
30624016	Washer, 31 x 41 x 2mm
40090315	Screw, 12 x 30mm
65004042	Double fan blade
66005121	Support frame
66009197	Lower bearing housing



AIR INSECTICIDE ASSEMBLY

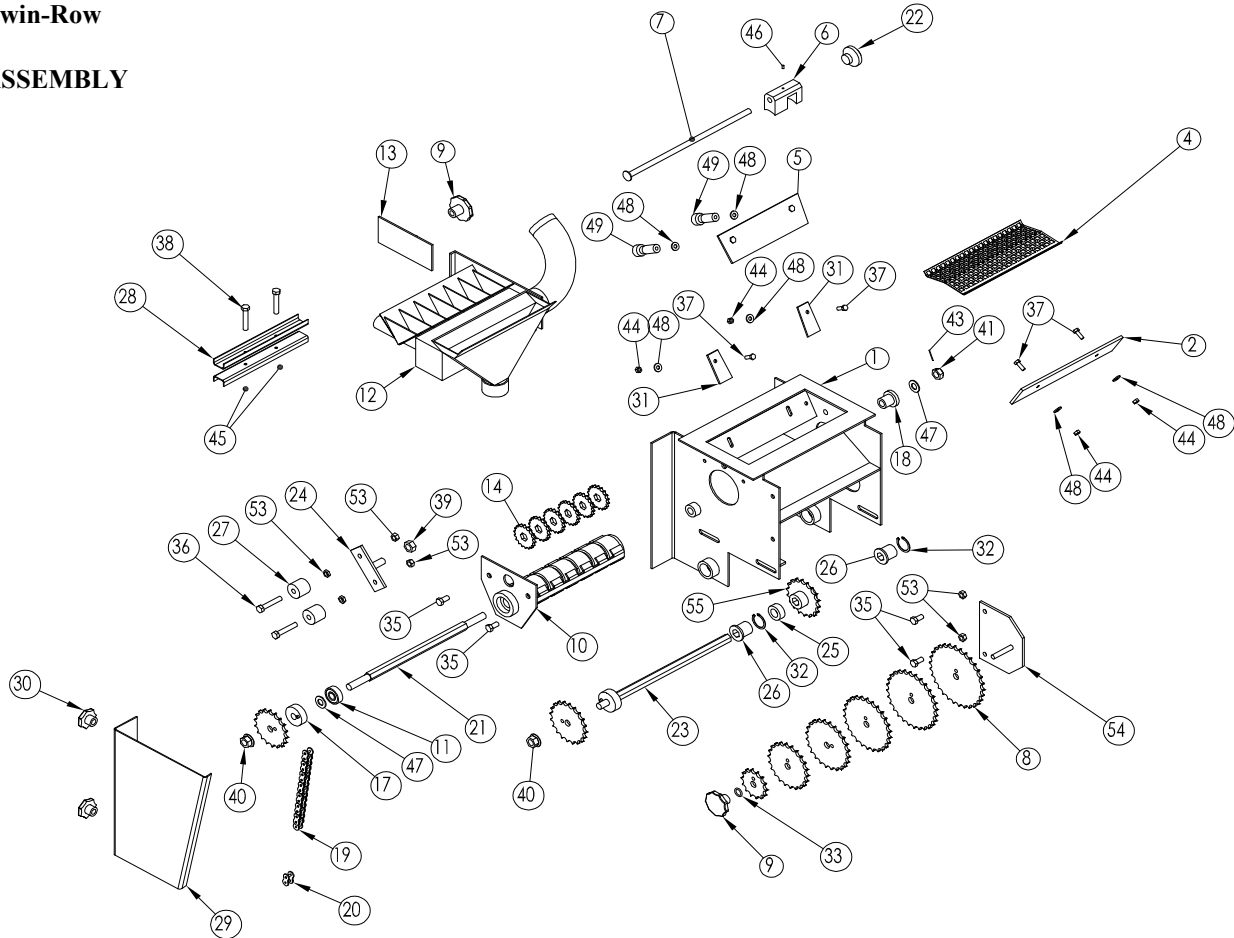


ITEM	PART No.	DESCRIPTION
1	641400	Air Insecticide hopper w/ meter
2	800261	Hopper bracket
3	800123	Idler support arm
4	9555.A	Double Sprocket 12-25
5	KD11962	Idler, US Insect
6	KD1026	Long sleeve tube
7	F33008	3/8" Flat washer
8	F15114	3/8" x 2 3/4" Bolt
9	KD9306	Spring, US Insecticide Idler
10	KD2971-10	Short sleeve tube
11	K10210	3/8" Large Flat washer
12	F37212	3/8" Center lock nut
13	F13109	3/8" x 1 1/2" Bolt
14	F13059	5/16" x 1 1/2" Bolt
15	F37211	5/16" Center lock nut
16	F33114	5/16" Flat washer

AIR INSECTICIDE SYSTEM

Twin-Row

ASSEMBLY



ITEM PART No.	DESCRIPTION
1	Main housing
2	Stainless steel plate
3	Guard
4	Screen
5	Clean out trapdoor
6	Shut off gate to create 4 or 6 outlet
7	Shaft for shut off gate
8	7701.14 Sprocket, 14T, 5R
	7701.16 Sprocket, 16T, 5R
	7701.18 Sprocket, 18T, 5R
	7701.20 Sprocket, 20T, 5R
	7701.22 Sprocket, 22T, 5R
	7701.24 Sprocket, 24T, 5R
	7701.26 Sprocket, 26T, 5R
	7701.28 Sprocket, 28T, 5R
	7701.30 Sprocket, 30T, 5R
27	7714 Plastic chain idler tensioner
28	Support plates for hose
29	Chain guard
30	7715 Threaded knob, 8mm
31	Corner plate for clean out door
32	7716 Snapping, external, 24mm
33	7717 O ring, 12mm ID
35	Hex bolt, 8 x 16mm
36	Hex bolt, 8 x 45mm
37	Hex bolt, 6 x 16mm
38	Hex bolt, 5 x 40mm
39	Hex nut, 12mm
40	7718 Hex nut, 12mm w/ washer

ITEM PART No.	DESCRIPTION
9	7702 Sprocket carrier w/threaded knob
10	7703 Rotor weldment
11	7704 Bearing, 6201, 12x 32x 10mm wide
12	Venturi manifold w/ 6 outlets
13	Plate with weldment, 8mm stud bolt
14	7705.5 Serrated roller, 5mm
17	7706 Hub w/ locator pin, 12 mm ID
18	7707 Plastic bushing, 12 mm ID
19	10107 Roller chain, 5R
20	10111 Connecting link, 5R
21	7708 Meter shaft, 15mm hex w/ 12mm thread
22	7709 Threaded knob, 10mm
23	7710 Hex shaft, 14mm w/ hub & locator pin
24	7711 Chain tensioner bracket
25	7712 Aluminum lock collar w/ set screw
26	7713 Plastic bushing, w/ 14 mm hex bore
41	Nylon locknut, 12mm w/ hole for roll pin
42	Set screw w/ spring loaded ball end, 6mm
43	Roll pin, 3 x 20mm
44	Hex nut, 6mm
45	Nylon locknut, 5mm
46	Set screw, 6 x 1 mm
47	Flat washer, 12 x 24 x 2mm
48	Flat washer, 6.5 x 15 x 1.5mm
49	7719 Threaded knob, 6mm
53	Hex nut, 8mm
54	Sprocket storage bracket
55	4426.18 Sprocket, 18T, bottom hex shaft

AIR INSECTICIDE SYSTEM

Twin-Row

AIR INSECTICIDE APPLICATION RATES

Double sprocket on hex shaft and changeable sprockets on 6 outlet insecticide metering boxes.

Rates are in pounds per acre

These settings are theoretical and approximate. Actual output may vary.

TEMIK 15G		Gypsum							
		Double Sprocket: 12							
		Sprockets on insecticide meter box							
Driver		14	14	14	14	28	30	22	26
Driven		30	26	22	16	30	28	18	18
Row Spacing	36"	8.9	10.3	12.2	16.8	17.9	20.5	23.4	27.7
	38"	8.5	9.8	11.5	15.9	16.9	19.4	22.2	26.2
	40"	8	9.3	11	15.1	16.1	18.5	21.1	24.9

TEMIK 15G		Grit							
		Double Sprocket: 12							
		Sprockets on insecticide meter box							
Driver		14	14	14	14	28	30	22	26
Driven		30	26	22	16	30	28	18	18
Row Spacing	36"	3.6	4.2	4.9	6.8	7.2	8.3	9.4	11.1
	38"	3.4	3.9	4.7	6.4	6.8	7.8	8.9	10.6
	40"	3.2	3.7	4.4	6.1	6.5	7.4	8.5	10

COUNTER 15G		Gypsum							
		Double Sprocket: 12							
		Sprockets on insecticide meter box							
Driver		14	14	14	14	28	30	22	26
Driven		30	26	22	16	30	28	18	18
Row Spacing	36"	5.4	6.2	7.4	10.1	10.8	12.4	14.1	16.7
	38"	5.1	5.9	7	9.6	10.2	11.7	13.4	15.8
	40"	4.9	5.6	6.6	9.1	9.7	11.2	12.7	15

THIMET 20G		Gypsum							
		Double Sprocket: 12							
		Sprockets on insecticide meter box							
Driver		14	14	14	14	28	30	22	26
Driven		30	26	22	16	30	28	18	18
Row Spacing	36"	5.5	6.3	7.5	10.2	10.9	12.5	14.3	16.9
	38"	5.2	6	7.1	9.7	10.4	11.9	13.6	16
	40"	4.9	5.7	6.7	9.2	9.8	11.3	12.9	15.2

MICROSEM MICROGRANULAR INSECTICIDE SYSTEM

Twin-Row

MICROSEM SYSTEM

The microsem system meters microgranular products such as insecticide and herbicide with precision. The system is ground driven and has a positive displacement. The output is set by a transmission that is unaffected by a change in planting speed. The microsem system is mounted to the toolbar frame with support brackets to reduce weight on the planter unit. The microsem system with auger is equipped with a telescoping outlet, and its output starts from a minimum of 2-3 lbs/acre.

Each microsem hopper has a 33 lb. capacity and can be used with a double outlet for two row units or with a single outlet for one row unit.

The drive sprocket is mounted on the upper hex shaft. The hoses direct the granular product directly between the disc openers via drop tubes, or behind the disc openers via a spreader tube.

TROUBLE SHOOTING

PROBLEM:

Variations between the outlets or metering boxes.

POSSIBLE CAUSE:

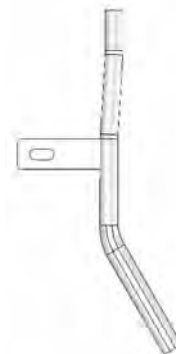
- There may be foreign material mixed with the product
- ATTENTION! there may be moisture in the product.
- The metering unit may have been assembled improperly.
- The outlet chute may be warped.
- The hose may be too long or bent, causing the hose to clog.

INSECTICIDE DROP TUBE

7085.SD Mounts on the right hand side of the unit, towards the front with a single bolt. It then curves down through a notch cut into the shield covering the front of the double disc opener. It deposits material into the seed trench in front of the seed tube. This tube is used on the set back unit on twin-row machines. The top of the tube curves to the left to accept the feeder hose coming down on the left hand side of the parallel linkage.



7085.SU Mounts on the right hand side of the unit, towards the front with a single bolt. It then curves down through a notch cut into the shield covering the front of the double disc opener. It deposits material into the seed trench in front of the seed tube. This tube is used on the set back unit on twin-row machines. The top of the tube extends straight up to accept the feeder hose coming through the middle of the parallel linkage.



7085.DA Mounts on the right hand side of the unit, with the same bolts that attach the disc scraper. It deposits material down in the seed trench behind the seed tube. The top of the tube points straight up.



7085.GA Mounts on the left hand side of the unit, with the same bolts that attach the disc scraper. It deposits material down in the seed trench behind the seed tube. The top of the tube points straight up.

7085.SS



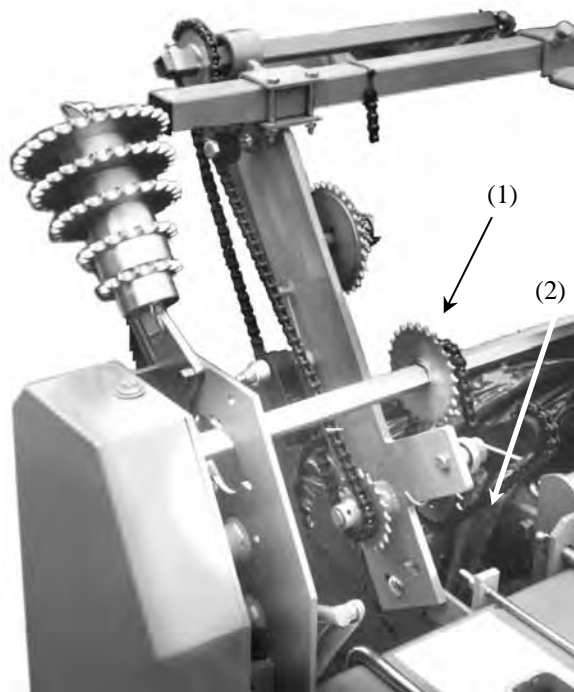
Mounts on the left hand side of the unit, with the same bolts that attach the disc scraper. It deposits material down in the seed trench behind the seed tube. The top of the tube curves towards the rear to accept the feeder hose from the Air Insecticide System.

MICROSEM MICROGRANULAR INSECTICIDE SYSTEM

Twin-Row

SETTING THE OUTPUT

The output is a function of the number of rotations of the spindle of the metering boxes, which is set primarily with the double sprocket (1) and the interchangeable sprockets (2). The chart provided will assist with the setting and also indicates the sprockets to be used for the principle commercial products. The furnished information is a recommendation only.



NOTE: Avoid moisture contamination. Moisture in the product will cause hardening and could cause chain breakage. To avoid this problem, empty hoppers and store in a dry place.

NOTE: This unit should be used only with microgranulars and not with powders or granulates. It is possible to meter large granulars provided the inside auger is changed for a special one.



WARNING Agricultural chemicals can be dangerous. Improper use can result in injury to persons, animals and soil. Handle with care and follow instructions of the chemical manufacturer.

HOW TO TEST FOR INSECTICIDE RATES

Measure out a distance of 328 feet (100m).

Set the sprocket combination to: A=12, B=30, C=12. (This ratio = 0.24 or the number of Microsem shaft rotations for 1 drive wheel rotation.)

Remove the hoses from a 2-outlet hopper, placing a bag or other container to catch the product. Put the product into the Microsem hopper. Engage the Microsem and drive forward the pre-measured distance. Weigh the amount of product caught in the container and convert to grams.

$$\begin{aligned} \text{Ounces} \times 31.103481 &= \text{grams} \\ \text{Inches} \times 2.54 &= \text{cm} \end{aligned}$$

Use the following formula:

$$\text{Output} = \frac{10 \times \text{quantity weighted (g)}}{\text{Inter-rows (cm)} \times 2}$$

Example:

Inter-rows = 60 cm (23.63")
Quantity weighed = 60 grams (1.929 oz)

If you require 8 kg/ha or 8 lb/acre, choose the ratio
 $\frac{8}{5} \times 0.24 = 0.384$
A=12, B=18, C=12

If you require 11 kg/ha or 11 lb/acre, choose the ratio
 $\frac{11}{5} \times 0.24 = 0.528$
A=12, B=22, C=20

$$\text{Output} = \frac{10 \times 60}{60 \times 2} = 5 \text{ kg/ha or } 5 \text{ lb/acre}$$

From the following chart, find the closest sprocket combination to achieve appropriate lbs/acre.

Note: Because of the large variety of insecticides and its density and irregularity of granulars, it is impossible to provide an exact chart. This is a close approximation only.

MICROSEM MICROGRANULAR INSECTICIDE SYSTEM

Twin-Row

Possible Sprocket Combinations			Ratios Obtained	
A	B	C		
12	35	12	-----	0.21
12	32	12	-----	0.22
12	30	12	-----	0.24
12	25	12	-----	0.29
12	22	12	-----	0.33
12	20	12	-----	0.36
12	18	12	-----	0.40
12	16	12	-----	0.45
12	15	12	-----	0.48 or
12	25	20	-----	0.48
12	23	20	-----	0.51
12	22	20	-----	0.54
12	21	20	-----	0.57
12	12	12	-----	0.60
12	24	12	-----	0.63
12	18	21	-----	0.66
25	22	12	-----	0.68
12	10	12	-----	0.72
25	20	12	-----	0.75
12	15	20	-----	0.80
25	18	12	-----	0.83
25	16	12	-----	0.94
25	15	12	-----	1 or
12	12	20	-----	1
25	22	20	-----	1.13
12	10	20	-----	1.20
25	12	12	-----	1.25
25	18	20	-----	1.40
25	10	12	-----	1.50
25	15	20	-----	1.66
25	12	20	-----	2.08
25	10	20	-----	2.50

Less Product



Note: The bold sprocket numbers for the interchangeable B sprocket are standard.

The remaining sprockets for the interchangeable B sprocket are available on request. (13-14-16-23-26-35)



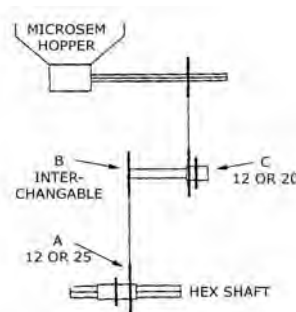
More Product

MICROSEM MICROGRANULAR INSECTICIDE SYSTEM

TWIN-ROW MICROSEM SETTING CHART - Drive sprockets to be used

These settings are theoretical and approximate. Actual output may vary. Other outputs can be obtained by using different sprocket arrangements of the Microsem drive, however travel speed variations will not affect the output.

- A = Double sprocket on hex shaft - driven 1**
- B = Interchangeable sprocket - driven 2**
- C = 12 or 20 tooth sprocket**



NOTE: For Planters with Sync-Row® seed timing system, the following rates need to be adjusted. Multiply these rates by 0.69.

		A / B / C	A / B / C	A / B / C	A / B / C	A / B / C	A / B / C
#'s per acre		4.8	5.4	6.2	7.2	8.1	9.0
THIMET	36"	12 / 25 / 12	12 / 22 / 12	12 / 18 / 12	12 / 16 / 12	12 / 23 / 20	12 / 21 / 20
20G	38"	12 / 22 / 12	12 / 20 / 12	12 / 16 / 12	12 / 25 / 20	12 / 22 / 20	12 / 12 / 12
	40"	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 23 / 20	12 / 21 / 20	25 / 24 / 12
#'s per acre		7.1	8.5	9.5	10.8	11.6	13.2
FURADAN	36"	12 / 30 / 12	12 / 25 / 12	12 / 22 / 12	12 / 20 / 12	12 / 18 / 12	12 / 16 / 12
15G	38"	12 / 27 / 12	12 / 22 / 12	12 / 20 / 12	12 / 18 / 12	12 / 16 / 12	12 / 23 / 20
	40"	12 / 25 / 12	12 / 20 / 12	12 / 18 / 12	12 / 16 / 12	12 / 23 / 20	12 / 22 / 20
#'s per acre		4.7	5.5	6.3	7.3	7.8	9.0
COUNTER 15G	36"	12 / 25 / 12	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 23 / 20	12 / 12 / 12
LORSBAN 15G	38"	12 / 22 / 12	12 / 18 / 12	12 / 15 / 12	12 / 23 / 20	12 / 22 / 20	25 / 24 / 12
	40"	12 / 20 / 12	12 / 15 / 12	12 / 23 / 20	12 / 22 / 20	12 / 12 / 12	12 / 18 / 20
#'s per acre		6.5	7.8	8.9	9.7	10.8	
TEMIK	36"	12 / 30 / 12	12 / 25 / 12	12 / 22 / 12	12 / 20 / 12	12 / 18 / 12	
15G	38"	12 / 27 / 12	12 / 22 / 12	12 / 20 / 12	12 / 18 / 12	12 / 16 / 12	
GYPSUM	40"	12 / 25 / 12	12 / 20 / 12	12 / 18 / 12	12 / 16 / 12	12 / 15 / 12	
#'s per acre		5.2	6.3	7.1	8.6	10.3	
AMEBIN	36"	12 / 30 / 12	12 / 25 / 12	12 / 22 / 12	12 / 18 / 12	12 / 15 / 12	
	38"	12 / 25 / 12	12 / 22 / 12	12 / 18 / 12	12 / 16 / 12	12 / 23 / 20	
	40"	12 / 22 / 12	12 / 18 / 12	12 / 16 / 12	12 / 15 / 12	12 / 22 / 20	

MICROSEM MICROGRANULAR INSECTICIDE SYSTEM

TWIN-ROW MICROSEM SETTING CHART - Drive sprockets to be used

These settings are theoretical and approximate. Actual output may vary. Other outputs can be obtained by using different sprocket arrangements of the Microsem drive, however travel speed variations will not affect the output.

NOTE: For Planters with Sync-Row® seed timing system, the following rates need to be adjusted. Multiply these rates by 0.69.

	A / B / C	A / B / C	A / B / C	A / B / C	A / B / C	A / B / C
#'s per acre	4.4	5.3	5.7	6.0	6.7	7.3
TEMIK 15G 36"	12 / 18 / 12	12 / 15 / 12	12 / 23 / 12	12 / 22 / 20	12 / 12 / 12	12 / 18 / 20
CORNCOB 38"	12 / 15 / 12	12 / 23 / 20	12 / 22 / 20	12 / 12 / 12	12 / 24 / 12	25 / 22 / 12
GRIT 40"	12 / 23 / 20	12 / 22 / 20	12 / 12 / 12	12 / 24 / 12	12 / 18 / 20	12 / 10 / 12
#'s per acre	7.6	8.3				
	25 / 22 / 12	25 / 20 / 12				
	12 / 10 / 12	12 / 15 / 20				
	25 / 20 / 12	25 / 18 / 12				

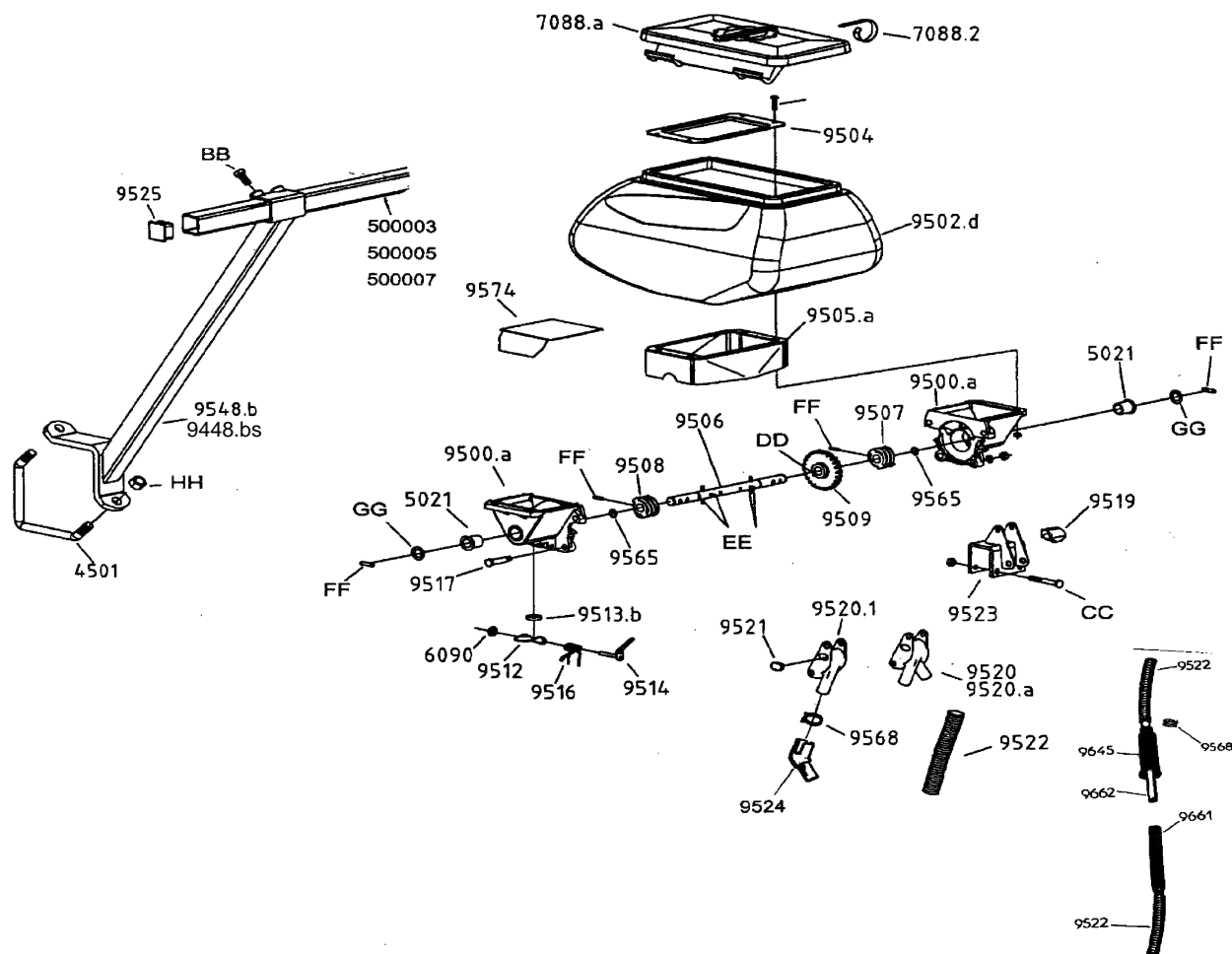
#'s per acre	4.0	4.5	5.4	6.1	6.7	7.4
ZENECA FORCE 3G 36"	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 12 / 12	12 / 12 / 12	12 / 18 / 20
38"	12 / 18 / 12	12 / 15 / 12	12 / 23 / 20	12 / 12 / 12	25 / 24 / 12	25 / 22 / 12
40"	12 / 16 / 12	12 / 23 / 20	12 / 22 / 20	24 / 24 / 12	12 / 18 / 20	25 / 20 / 12
#'s per acre	8.4					
	25 / 20 / 12					
	12 / 15 / 20					
	12 / 18 / 12					

#'s per acre	4.0	4.4	4.9	5.8	6.6	7.4
RIDOMIL 36"	12 / 22 / 12	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 22 / 20	12 / 12 / 12
GOLD GR 38"	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 23 / 20	12 / 12 / 12	12 / 18 / 20
PC11G 40"	12 / 18 / 12	12 / 15 / 12	12 / 23 / 20	12 / 22 / 20	12 / 18 / 20	25 / 22 / 12
#'s per acre	8.1					
	12 / 18 / 20					
	25 / 22 / 12					
	25 / 20 / 12					

#'s per acre	5.1	5.8	6.4	7.1	8.5	9.5
GOLD PC 36"	12 / 25 / 12	12 / 22 / 12	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 22 / 20
38"	12 / 22 / 12	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 22 / 20	12 / 12 / 12
40"	12 / 20 / 12	12 / 18 / 12	12 / 15 / 12	12 / 22 / 20	12 / 12 / 12	12 / 18 / 20

MICROSEM INSECTICIDE ASSEMBLY

Microsem Assembly



PART No. DESCRIPTION

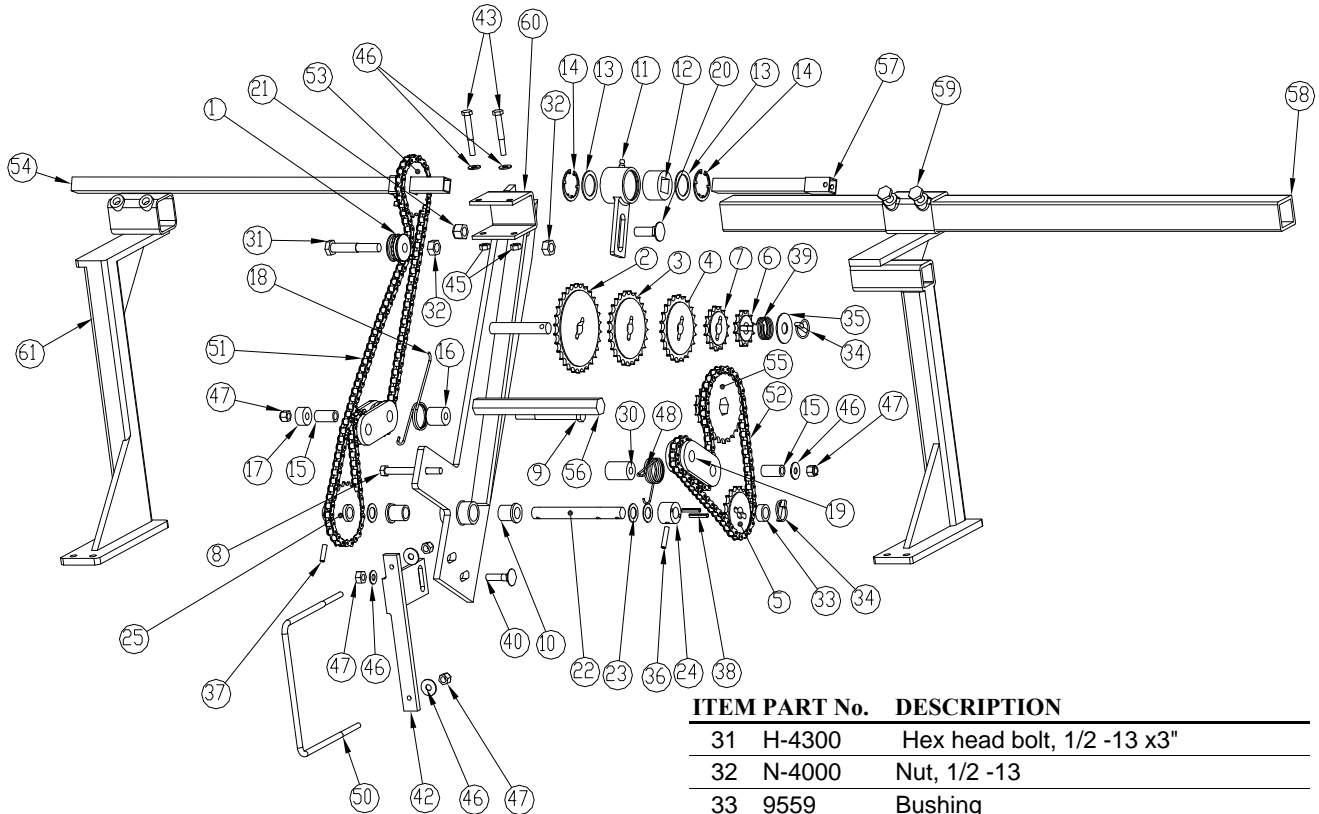
4501	V-bolt, 16mm
5021	Self lubricated bushing
6090	Snapping, 6mm
7085.da	Drop tube, right hand
7085.ga	Drop tube, left hand
7088.a	Lid, hopper, with clip (7088.2)
7088.2	Clip, for hopper lid
9500.a	Housing(half), metering unit (replaces old 9500 & 9501 left & right sides)
9502.d	Plastic hopper only, 25 liter, -'03
9504	Steel base (hopper to meter)
9505.a	Rubber skirt
9506	4x35 roll pins)
9507	Worm gear, lft(reqrs 6x25 roll pin)
9508	Worm gear, rht(reqrs 6x25 roll pin)
9509	4x25 roll pin)
9512	Trap door (to clean out meter unit)
9513.a	Seal for trap door
9514	Lever for trap door
9516	Spring for trap door
9517	Bolt (fastens housings together)
9519	Rubber plug
9520	Two outlet chute (towards the front)
9520.a	Two outlet chute (towards the rear)

PART No. DESCRIPTION

9520.1	Single outlet
9521	Rubber plug for side of chute
9522	Hose (specify length)
9523	Clamp/mounting bracket
9524	Elbow for single outlet
9525	End cap for bar
9548.b	Support bar(for mounting to a 5x5 bar)
9548.bs	Support bar(for mounting to a 7x7 bar)
9565	Rubber O-ring
9568	Hose clamp (for 9522)
9574	Plate for hopper (to convert to single outlet)
9645	Protective Sleeve
9661	Female half of sliding drop tube assy
9662	Male half of sliding drop tube assy
500003	Carrier bar, 8' 2" long(1-1/2" square)
500005	Carrier bar, 11' 6" long(1-1/2" square)
500007	Carrier bar, 14' 9" long(1-1/2" square)
AA	10530096 - Phillips head bolt, 6 x 25
BB	HM-61225 - Hex bolt, 12 x 25
CC	HM-2860 - Hex bolt, 8 x 60
DD	10172041 - Roll pin, 4 x 25
EE	10172043 - Roll pin, 4 x 35
FF	10172090 - Roll pin, 6 x 25
GG	10622024 - Washer, 16 x 26 x 1
HH	NM-51605 - 16mm nylon locknut

MICROSEM TRANSMISSION

Twin-Row



ITEM PART No.	DESCRIPTION
1	9562 Chain roller
2	9554.21 Interchangeable sprocket, 30T
3	9554.16 Interchangeable sprocket, 25T
4	9554.13 Interchangeable sprocket, 22T
5	9554.9 Interchangeable sprocket, 18T
6	9554.3 Interchangeable sprocket, 12T
7	9554.6 Interchangeable sprocket, 15T
8	H-3320 Hex head bolt, 3/8" -16 x 3 1/2"
9	H-3410 Hex head bolt, 3/8" -16 x 4"
10	5021 Self lubricated bushing
11	E2002 Housing to hold nylon bushing
12	9280 Nylon support bushing
13	10624014 Flat washer, 31x 41x 1
14	4329.A Snapping 44mm
15	KD1026 Sleeve, 1 3/16" long
16	E2004 Spacer, 1" long
17	E2005 Spacer, .6" long
18	7157 Spring
19	KD11962 Chain idler, plastic
20	CB-4411 Carriage head bolt, 1/2 -13 x 1 1/2"
21	N-2300 Rev lock nut, 1/2 -13
22	9612 Intermediate shaft
23	10622024 Flat washer, 16.5 x26 x1
24	9552 Spacer/driver for sprocket
25	9654 Double intermediate sprocket, 12- 20T
30	E2003 Spacer, 1.4" long

ITEM PART No.	DESCRIPTION
31	H-4300 Hex head bolt, 1/2 -13 x3"
32	N-4000 Nut, 1/2 -13
33	9559 Bushing
34	9557 Lynch pin
35	W-5410 Flat washer, 5/8 SAE
36	10172091 Roll pin, 6 x 30
37	10172090 Roll pin, 6 x 25
38	10170065 Roll pin, 5 x 30
39	9158 Compression spring
40	CB-2221 Carriage head bolt, 3/8 -16 x 1 1/2"
42	E2007 Mounting strap to 7 x 7 toolbar
43	HM-2865 Hex head bolt, 8 x 60mm
45	NM-1801 Nut, 8mm
46	W-2210 Flat washer, 3/8, USS
47	N-2101 Nylon locknut, 3/8 -16
48	7150 Spring
50	4647.S U Bolt, 7 x 7, 3/8 -16
51	9553.E Upper drive chain, 5R, 99 links for 12T driver sprocket, 103 links for 20T
52	9553.F Lower drive chain, 5R, 60 links for 25T driver sprocket, 54 links for 12T
53	9606.A Sprocket, square drive, 20T
54	9651.085 Female drive conductor tube, 33 1/2"
55	9555.A Double drive sprocket, hex bore, 12- 25T
56	4520 7/8" Hex shaft
57	9650.085 Male drive connector tube, 33 1/2"
58	9549.125 Carrier bar, 1 1/2" sq., specify length
59	E1011 Support bracket with offset
60	E2001 Transmission main frame
61	E1010 Support bracket

LIQUID FERTILIZER

3-point Mounted Planters

PUMP MOUNTING AND HOSE ARRANGEMENT

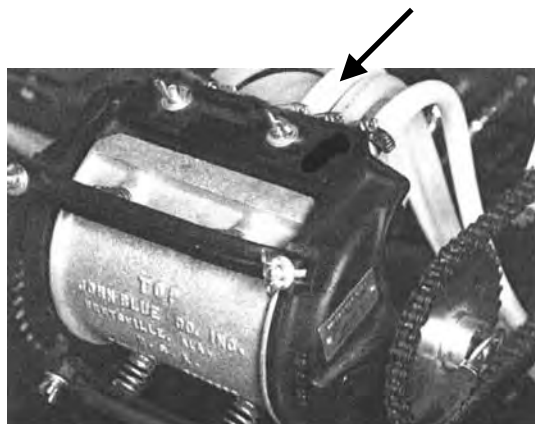
The squeeze pump is shipped with the discharge manifold in the rearward or non-operating position. Before operating or mounting the pump, position the discharge manifold in the forward or operating position and secure by tightening the wing nuts.

The pump should always be mounted even with or lower than the fertilizer tank for accurate metering. The rate of liquid fertilizer application is determined by the combination of sprockets on the squeeze pump and the drive shafts (see chart). When changing the sprocket combinations, check that the sprockets are in alignment, that the sprocket retaining collars are tight and that the chain tension is restored.

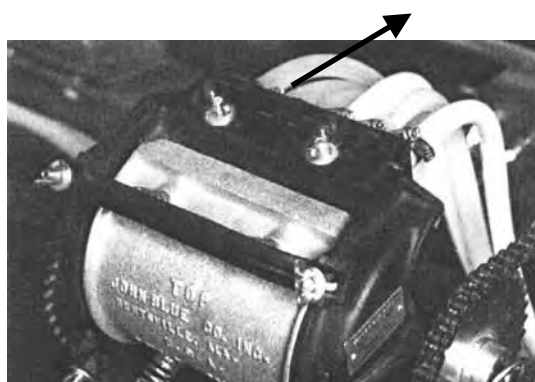
The shut-off valves should be closed to shut off the flow when the pump is not in use, either overnight, or for an extended amount of time. Also close the valves when servicing either the pump or the hoses.

To prolong the life of the hoses, the discharge manifold must be repositioned to the rearward position when not in use to prevent hose distortion.

The discharge pump must be in the forward position when the pump is in operation. To reposition the manifold, loosen the wing nuts and slide the manifold forward and sideways or rearward as required and retighten the nuts.



DISCHARGE MANIFOLD REARWARD



DISCHARGE MANIFOLD FORWARD



WARNING

Agricultural chemicals can be dangerous. Improper use can result in injury to persons, animals, and soil. Handle with care and follow instructions of the chemical manufacturer.



IMPORTANT

If the fertilizer is placed too close to the seed, it may cause germination or seedling damage especially if used in amounts in excess of the fertilizer manufacturer's recommendations. Check with your fertilizer dealer or manufacturer for the correct amount and placement of fertilizer.

LIQUID FERTILIZER

3-point Mounted Planters

DELIVERY RATE CHART

The following delivery rate chart provides an approximate application rate only. Actual delivery will vary with temperature and the type of fertilizer being used.

Chart is shown in gallons per acre. This chart is for a pump with a 1/2" hose. For settings with a 5/16" hose, cut gal/acre in half.

8 Tooth Driver Sprocket

Sprocket					
Part #	Driven	40"	38"	36"	30"
L-1383	8	21.9	23.1	23.9	29
L-1384	9	19.1	20.4	21.0	25.3
L-1385	10	17.2	18.3	18.9	22.7
L-1386	15	11.4	12.1	12.5	15.
L-1381	20	8.6	9.1	9.4	11.3
L-1387	22	7.7	8.2	8.5	10.2
L-1388	23	7.5	8.0	8.3	9.6
L-1389	26	6.7	7.1	7.3	8.8
L-1390	30	5.8	6.2	6.4	7.7
L-1391	31	5.6	5.9	6.1	7.4
L-1392	32	5.5	5.8	6	7.3

Gallons per Acre

15 Tooth Driver Sprocket

L-1383	8	40.0	43.0	44.5	53.3
L-1384	9	35.9	38.2	39.5	47.4
L-1385	10	32.2	34.3	39.5	42.6
L-1386	15	21.5	22.9	23.6	28.4
L-1381	20	16.1	17.1	17.7	21.3
L-1387	22	14.6	15.6	16.1	19.3
L-1388	23	14.0	14.9	15.4	18.4
L-1389	26	12.5	13.3	13.7	16.5
L-1390	30	10.7	11.4	11.8	14.2
L-1391	31	10.3	11.0	11.3	13.6
L-1392	32	10.1	10.7	11.1	13.3

Gallons per Acre

OPTIONAL PISTON PUMP

If the machine is equipped with the piston pump option, the rate of liquid fertilizer application is determined by the piston pump settings.

To adjust delivery rate, loosen the 3/8" lock nut that secured the arm with the pointer and rotate the scale flange until the pointer is over the desired scale setting. The adjustment wrench will facilitate rotation of the scale flange. Tighten the 3/8" lock nut being careful not to over tighten.



CLEANING

The tanks and all hoses are made of sturdy plastic and rubber to resist corrosion. However, the tanks, hoses and metering pump should be thoroughly cleaned with water at the end of the planting season or prior to an extended period of non-use. Do not allow fertilizer to crystallize due to cold temperature or evaporation.

On machines equipped with the piston pump, the strainer located between the piston pump and ball valve should be taken apart and cleaned daily. Remove the end cap to clean the screen

PISTON PUMP STORAGE

KEEP AIR OUT OF THE PUMP! This is the only way to prevent corrosion. Even for short periods of storage, the entrance of air into the pump will cause **RAPID AND SEVERE CORROSION.**

Overnight Storage

Suspension Fertilizer must be flushed from the pump for ANY storage period.

Winter Storage

1. Flush pump thoroughly with 5 to 10 gallons of fresh water and circulate until all corrosive salts are dissolved in the pump.
2. With the pump set on 10, draw in a mixture of half diesel fuel and half 10 weight oil until the discharge is clean. Then plug inlet and outlet

LIQUID FERTILIZER

3-point Mounted Planters

PISTON PUMP APPLICATION RATES

Pump Setting	2	3	4	5	6	7	8	9	10
4-row 30"	13	19	26	32	38	45	51	58	64
4-row 36"	11	16	21	27	32	37	43	48	54
4-row 38"	10	15	20	26	30	35	41	46	51
6-row 30"	9	13	17	21	25	30	35	39	43
6-row 36"	7	11	14	18	21	25	29	32	36
6-row 38"	7	10	13	17	20	24	27	31	34
8-row 30"	7	10	13	16	19	23	26	29	32
8-row 36"	5	8	11	13.5	16	19	21.5	24	27
8-row 38"	5	7	10	13	15	18	20	23	25
12-row 30"	4	6.5	8.5	11	13	15	17	19.5	21
12-row 36"	4	5.5	7	9	11	12.5	14.5	16	18
12-row 38"	3	5	6.5	8.5	10	12	13.5	15	17

The above chart is for planters equipped with ground drive wheels that have 7.60 x 15 tires, 26 tooth drive sprocket, and a 22 tooth driven. This chart is based on average wheel slippage and liquid viscosities. This chart is also based on standard pump sprockets of 30 tooth drive and 16 tooth driven. Other sprockets are available.

Measure and weigh one gallon of actual fertilizer solution to determine exact application rates. This chart was calculated based on a solution weighing 10 pounds per gallon.

IMPORTANT: Fertilizer application rates can vary from the above chart. To prevent application miscalculation, make field checks to be sure you are applying fertilizer to all rows at the desired rate.

NOTE: Flow to all rows should be checked periodically. If one or more lines are plugged, the desired rate will be delivered to the remaining rows keeping total application rate at desired rate.

To check the exact number of gallons your fertilizer attachment will actually deliver on 30" row spacing, proceed as follows:

1. Remove the hose from one of the fertilizer openers and insert it into a collection container that has been secured to the planter frame.
2. Engage the fertilizer attachment and drive forward for 174'.
3. Measure the fluid ounces caught in the container and multiply that amount by 100.
4. Divide that amount by 128.
5. The result will be the gallons of fertilizer delivered per acre when planting in 30" rows. Rinse the collection container and repeat test on other rows if necessary. To convert this delivery rate for wider rows, multiply by the following conversion factors:

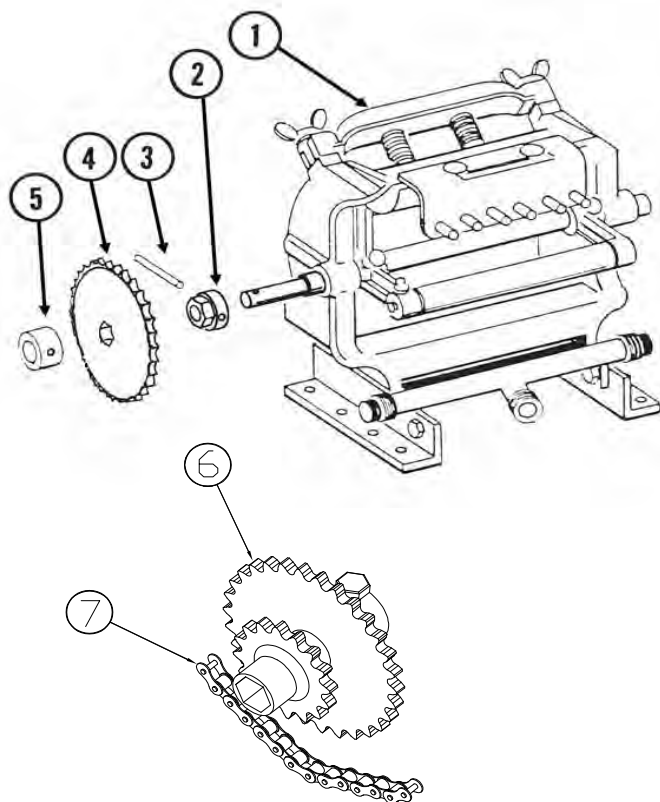
For 36" rows, multiply by .83 by result

For 38" rows, multiply by .79 by result

LIQUID FERTILIZER

3-point Mounted Planters

SQUEEZE PUMP ASSEMBLY



ITEM	PART No.	DESCRIPTION
1	JBL6C	SQUEEZE PUMP 2 - 6 ROWS
	JBL8LC	SQUEEZE PUMP 8 ROWS
	JBL12C	SQUEEZE PUMP 12 ROWS
2	MPL1414	7/8" SPROCKET ADAPTER
3	F64286	SPRING PIN 5/16 X 2-1/4"
4	MPL1381	SPROCKET, 20 TOOTH
	MPL1383	SPROCKET, 8 TOOTH
	MPL1384	SPROCKET, 9 TOOTH
	MPL1385	SPROCKET, 10 TOOTH
	MPL1386	SPROCKET, 15 TOOTH
	MPL1387	SPROCKET, 22 TOOTH
	MPL1388	SPROCKET, 23 TOOTH
	MPL1389	SPROCKET, 26 TOOTH
5	MPL4414	7/8" SPROCKET RETAINER
6	MPL3016	DOUBLE SPROCKET, 16-30T
7	MPL2040A	DRIVE CHAIN 4 FT.

TROUBLESHOOTING

PROBLEM: Pump hard or impossible to prime

POSSIBLE CAUSE	SOLUTION
Valves fouled or in wrong place.	Inspect and clean valves.
Air leak in suction line.	Repair leak.
Pump is set too low.	Adjust pump setting.
Packing washers are worn out.	Replace.

PROBLEM: Low metering.

POSSIBLE CAUSE	SOLUTION
Valves are fouled or in wrong place.	Inspect and clean valves.
Air leak in suction line.	Repair leak.
Pump is set too low.	Adjust pump setting.
Broken valve spring.	Replace spring.

PROBLEM: Over meters.

POSSIBLE CAUSE	SOLUTION
Broken discharge valve spring.	Replace spring.
Trash is under valves.	Inspect and clean valves.
Improper rate setting.	Adjust pump setting.

PROBLEM: Leaks through when stopped.

POSSIBLE CAUSE	SOLUTION
Broken discharge valve spring.	Replace spring.
Trash is under valves.	Inspect and clean valves.

PROBLEM: Fertilizer solution leaking under stuffing box.

POSSIBLE CAUSE	SOLUTION
Packing washers are worn out.	Replace.

PROBLEM: Pump is using excessive oil.

POSSIBLE CAUSE	SOLUTION
Oil seals or o-ring worn and leaking.	Replace.

PROBLEM: Pump operates noisily.

POSSIBLE CAUSE	SOLUTION
Crankcase components worn excessively.	Inspect and replace if necessary.