

## SPECIFICATIONS

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### Pull-Type Planter, 8-row Rigid, 12-row, 16-row, or 24-row Centerflex

**FRAME:** 12-row, 16-row, and 24-row: Pull-Type Center Flex Hydraulic Forward Fold  
8-row: Rigid Frame

**PLANTING UNIT :** NG Plus 4 Monosem  
Vacuum Metering Box  
Double Disc Opener  
Gauge Wheels  
Adjustable Closing Wheels

STANDARD ROW SPACING	Transport WIDTH	WEIGHT*
8-Row Narrow - 30" Rows -----	11' 6"	6140 lbs.
8-Row Wide - 36" or 38" Rows -----	26' 1"	4,972 lbs.
12-Row Narrow - 30" Rows -----	16' 4"	7389 lbs.
16-Row Narrow - 30" Rows -----	21' 4"	8639 lbs.
24-Row Narrow - 22"-24" Rows -----	23' 2"	10489 lbs.

\*The base machine weights include planter frame, row markers, drive components, tires and wheels, hydraulic cylinders and NG Plus 2 row units with seed hopper and lid.

### DRIVE SYSTEM

Spring-loaded contact drive tire (4.10" x 6")  
with #40 chain, two on 12-row, four on 16  
and 24-row.

Two quick adjust seed spacing transmission  
with machined sprockets, 7/8" hex shafts with  
spring-loaded wing couplers.

### TRANSPORT TIRES

Four - 7.50"x20", 6 ply tires on 8-row  
Six - 7.50"x20", 6 ply tires on 12-16-24 row  
Adjustable height wheels for ridge planting

### TYPE LIFT

Master/slave hydraulics re-phasing with 4  
cylinders on 8-row, 6 cylinders on 12-16-24 row

### MARKERS

Low profile three-fold marker

### HYDRAULICS

Dual SCV for independent operation of lift and  
markers. Hydraulic sequence valve with flow  
controls for markers.

### OPTIONAL EQUIPMENT

Liquid Fertilizer  
Granular Gravity Flow System Insecticide  
Air Delivery Insecticide System  
Electronic Seed Monitor

## QUICK REFERENCE

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### PULL-TYPE CENTERFLEX, 12-row, 16-row, 24-row & 8-row rigid PLANTER

#### 1 SAFETY

GENERAL SAFETY	1. 1
BEFORE, DURING, AFTER OPERATION	1. 1
UNHOOKING THE PLANTER	1. 2
STORING THE PLANTER	1. 2
PERFORMING MAINTENANCE	1. 3
TIRE SAFETY	1. 3
DRIVE LINE SAFETY	1. 3
HYDRAULIC SAFETY	1. 3
SAFETY STICKERS	1. 4

#### 2 PREPARING THE PLANTER

LUBRICATION	2. 1
CHAIN TENSION ADJUSTMENT	2. 2
TIRE PRESSURE	2. 2
VALVE BLOCK INSPECTION	2. 3
TRACTOR HOOKUP	2. 3
LEVELING THE PLANTER	2. 4
TRANSPORTING THE PLANTER	2. 4
OPERATING SPEED	2. 4
FIELD TEST	2. 5
CHECKING SEED POPULATION	2. 5
UNHOOKING THE PLANTER	2. 6
STORING THE PLANTER	2. 6

#### 3 FRAME

GENERAL ASSEMBLY	3. 1
8-ROW 30" RIGID FRAME	3. 2
12, 16, & 24-ROW CENTER FLEX FRAM	3. 3
ABOUT HYDRAULIC WING FOLD	3. 6
HYDRAULIC PLANTER LIFT OPERATIC	3. 7
HYDRAULIC WING FOLD ASSEMBLY	3. 8
PARTS -HITCH	3. 9
PARTS- LIFT AND DRIVE WHEEL	3. 11
PARTS- HYDRAULIC ASSEMBLY	3. 23
PARTS-CYLINDER ASSEMBLY	3. 27
PARTS-CYLINDERS AND SEAL KITS	3. 30

#### 4 TRANSMISSION

SOWING DISTANCES	3. 1
PLANTING RATES 22" SPACING	3. 2
DENSITIES- SEED POP CHART	3. 3
PLANTING RATES CORN	3. 4
PLANTING RATES SOYBEAN	3. 5
PARTS - 8-ROW 30	3. 6
PARTS - 8-ROW 38, 12-ROW, 16-ROW	3. 8
PARTS - 24-ROW	3. 10

#### 5 DRIVE

STANDARD TURBOFAN	5. 1
PTO SAFETY	5. 1
HIGH & EXTRA HIGH OUTPUT FAN	5. 2
PARTS- STANDARD TURBOFAN	5. 3
PARTS- HIGH OUTPUT TURBOFAN	5. 4
PARTS- EXTRA HIGH OUTPUT	5. 5
HYDRAULIC DRIVE	5. 6
PARTS - VACUUM GAUGE	5. 7
PARTS - MOTOR BRACKET, STANDAI	5. 8
PARTS - MOTOR , STND & HIGH OUTI	5. 10
PARTS - MOTOR BRKT, X-TRA HIGH	5. 12
PARTS - MOTOR , X-TRA HIGH OUTPI	5. 14

#### 6 ROW UNIT

SEED DEPTH	6. 2
V PRESS WHEELS	6. 2
DEPTH GAUGE WHEELS	6. 2
DOUBLE DISC OPENERS	6. 3
DRIVE CHAIN	6. 3
SEED HOPPER	6. 3
DOWN PRESSURE SPRINGS	6. 3
SEED METERING SYSTEM	6. 4
REPLACING THE WEAR GASKET	6. 4
<b>OUTSIDE LEVER ADJUSTMENTS</b>	6. 5
METERBOX COVER	6. 6
<b>INTERIOR SHUTTER ADJUSTMENTS</b>	6. 6
TROUBLESHOOTING METERBOX	6. 7
EXTRA LARGE SEED	6. 8
DISENGAGING THE METERBOX	6. 8
SEED CHUTE & SEED DISC	6. 8
SEED DISC IDENTIFICATION	6. 9
SEED DISC RECOMMENDATIONS	6. 9
PARTS- ROW UNIT	6. 11
PARTS- METERING BOX	6. 13
PARTS- GAUGE WHEEL & ARM	6. 14
PARTS- UP / DOWN PRESSURE	6. 15
PARTS- HILLER DISC	6. 17
PARTS- CONCAVE PRESS WHEEL	6. 18
PARTS- CLOSING WHEEL	6. 20
PARTS- HOPPER	6. 22

#### 7 OPTIONAL EQUIPMENT

##### HYDRAULIC LOCKING AND FOLDING

ROW MARKERS 7. 1.

GANDY AIR INSECTICIDE 7. 2.

This is a downloadable version of the manual. A partial download may not contain all pertinent information. Make Sure to read Chapter 1, Safety!  
Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.

**TABLE OF CONTENTS**

---

**1. SAFETY**

**2. PREPARATION**

**3. FRAME**

**4. TRANSMISSION**

**5. DRIVE**

**6. ROW UNIT**

**7. OPTIONAL EQUIPMENT**

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## SAFETY PRECAUTIONS



This symbol means:  
**ATTENTION - BECOME ALERT  
YOUR SAFETY IS INVOLVED.**



When you see this symbol on the machine or in this manual, be alert to the potential for personal safety. Follow all recommended precautions. Safety of the operator is one of the main concerns in designing and developing a new piece of equipment. You, the operator, can avoid many accidents by observing the warning signs.

Keep safety warning signs clean and readable. Replace all labels on your machine that are damaged, unreadable, or missing.

The signal words used in this manual and on the machine are **DANGER, WARNING, and CAUTION**. Signal words designate a level of hazard:

**DANGER:** Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

**WARNING:** Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury, and includes hazards that are exposed when guards are removed, or to alert against unsafe practices.

**CAUTION:** Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury, or to alert against unsafe practices.

Listed below are safety precautions that should become standard practice before and during operation, transport, and maintenance of the planter.



## GENERAL SAFETY

Any alterations to the design of this planter may create safety hazards. In the case of alterations or changes, you **MUST** follow all appropriate safety standards and practices to protect you and others near this machine from injury.

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.



## BEFORE OPERATION

- Carefully study and understand this manual.
- Learning takes time. Do not hurry the learning process or take the unit for granted. Ease into it and become familiar with your new planter.
- Practice operating your planter and its attachments. Completely familiarize yourself and other operators with its operation before using.
- Do not wear loose fitting clothing that could catch in moving parts.
- Wear suitable protective clothing, shoes, protective hearing and safety glasses. Have necessary safety equipment for handling certain materials you may come in to contact with, such as extremely dusty, molds, fungi, bulk fertilizers, insecticides, etc.
- Inflate the planter tires evenly.
- Inspect the planter for loose bolts, worn parts or cracked welds, and make necessary repairs. Never operate equipment that is not in safe working condition.
- Before applying pressure to the hydraulic system, make sure all connections are tight and that hoses and fittings are not damaged. Hydraulic fluid escaping under pressure can penetrate the skin causing serious injury.
- Before operating the planter for the first time and periodically thereafter, check to be sure the lug nuts on the transport wheel are properly torqued. This is especially important you are going to transport the planter for a long distance.
- Do not allow anyone to stand between the tongue or hitch and the towing vehicle when backing up to the planter.
- Lower the toolbar stands to support the planter. Do not stand between the tractor and the planter when connecting or disconnecting the implement.
- Install lock ups on markers, as provided prior to transporting the planter or working around the unit.
- Stay clear when raising or lowering folding sections. Make sure no one else is near the planter when the folding sections are raising or lowering.
- Remove any tools that are on or in the planter.

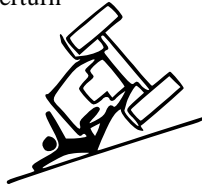


## SAFETY PRECAUTIONS



### DURING OPERATION

- Beware of bystanders, particularly children! Always look around to make sure that it is safe to start the engine of the towing vehicle.
- Use necessary safety lights and devices and observe legal regulations before transporting on public roads. Check to be sure that all warning lights are working properly before transporting machine.
- Do not allow passengers anywhere on or in the planter during operation.
- Be especially observant of the operating area and terrain – watch for holes, rocks or other hidden hazards.
- Always inspect the operating area prior to operation. Do not operate near the edge of drop-offs or banks. Be extra careful when working on inclines.
- Do not operate on steep slopes as overturn may result.
- Avoid sudden uphill turns on steep slopes, as shift of weight could cause a rollover.
- Reduce speed prior to turns to avoid the risk of overturning.
- Keep hands and clothing clear of moving parts.
- Always make sure there are no persons near the planter when the marker assemblies are in operation.
- If a marker cylinder was removed for any reason, do not attach the rod end of the cylinder until the cylinder is cycled several times to remove any air that may be trapped in the system.
- Serious injury or death can result from contact with electric lines. Use care to avoid contact with electric lines when moving or operating this machine.
- This planter is designed to be driven by ground tires only. The use of hydraulic, electric or PTO drives may create serious safety hazards to you and the people nearby. If you install such drives you must follow all appropriate safety standards and practices to protect you and others near this planter from injury.



- Lower the planter when not in use and cycle the hydraulic control lever to relieve pressure in hoses.



### FOLLOWING OPERATION

- When you stop operation of the planter, even if periodically, stop the tractor, set the tractor or towing vehicle brakes, disengage the PTO and all power drives, shut off the engine and remove the ignition key.



### UNHOOKING THE PLANTER

- Lower the toolbar stands to support the planter. Do not stand between the tractor and the planter when connecting or disconnecting the implement.
- Before unhooking the planter from the tractor, fully extend the jack stands to the point where the toolbar will remain level. Lock the stands securely in place with the locking pins.
- Lower the planter to the ground. Set the tractor or towing vehicle brakes, disengage PTO and all power drives, shut off the engine and remove the ignition key.
- Unhook the tractor lift arms from hitch pockets and remove center link. If a quick attach is used, position levers so that the locking mechanism is in the “unlatched” position and lower.
- When the lift arms or quick attach arms are clear of the tractor, slowly drive the tractor away from the planter.



### STORING THE PLANTER

- Store the planter on a dry, level surface. An uneven surface could cause the planter to shift or fall, resulting in injury or death. Store planter in an area away from human activity.
- Do not permit children to play on or around the stored planter.
- The planter should be stored in a dry and dust-free location with the hydraulic cylinders closed.
- Engage all safety devices for storage.
- You may need wheel chocks to prevent the parked planter from rolling.
- Never work under the planter while in raised position without installing safety lockup pin.

## SAFETY PRECAUTIONS



### PERFORMING MAINTENANCE

- Good maintenance is your responsibility.
- Make repairs in an area with plenty of ventilation. Never operate the engine of the towing vehicle in a closed building. The exhaust fumes may cause asphyxiation.
- As a precaution, always recheck the hardware on equipment following every 100 hours of operation. Correct all problems.
- Before working on the planter, stop the towing vehicle, set the brakes, disengage the PTO and all power drives, shut off the engine and remove the ignition keys.
- Never work under the planter while it is in a raised position.
- Be certain all moving parts have come to a complete stop before attempting to perform maintenance.
- Always use the proper tools or equipment for the job at hand.
- Never use you hands to locate a hydraulic leak. Use a small piece of cardboard or wood. Hydraulic fluid escaping under pressure can penetrate the skin. If injured by escaping hydraulic fluid, see a doctor at once. Gangrene can result. Without immediate medical treatment, serious infection and reactions can occur.
- Replace all shields and guards after servicing and before moving.
- After servicing, remove all tools, parts and service equipment from on or in the planter.
- If the planter has been altered in anyway from the original design, the manufacturer does not accept any liability for injury or warranty. Any alterations to the design of this planter may create safety hazards. Follow safe practices to avoid injury.



### TIRE SAFETY

- Inflating or servicing tires can be dangerous. Do not attempt to mount a tire unless you have the proper equipment and experience to do the job. Whenever possible, call a trained person to service and/or mount tires.
- Failure to follow proper procedures when mounting a tire on a rim can produce an explosion that may result in serious injury or death.
- Check wheels for low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.



### DRIVE LINE SAFETY

- DANGER.** Contact with a Rotating drive line can cause death – keep away. Do not operate without all driveline, tractor and equipment shields in place. Make sure driveline is securely attached at both ends, and that driveline shields turn freely on driveline.



### HYDRAULIC SYSTEM SAFETY

- DANGER.** Before applying pressure to the hydraulic system, check that all connections are tight and that the hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can penetrate the skin causing serious injury. If injured by escaping hydraulic fluid see a doctor at once. Gangrene can result.



- Relieve pressure on system before repairing, adjusting or disconnecting.

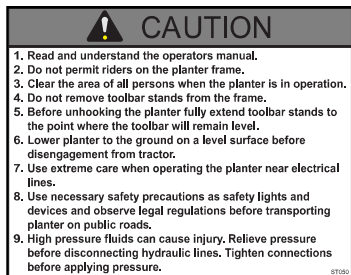
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.



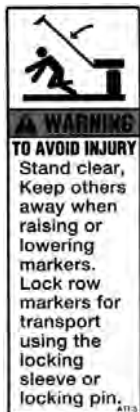
- Keep all components in good repair.

**SAFETY PRECAUTIONS**

Shown below are various safety stickers, their part number and location. Keep the safety warning signs clean and readable. **Replace all damaged, unreadable, or missing warning labels on your machine.**



ST050 On Front Toolbar



ST052 Row Marker



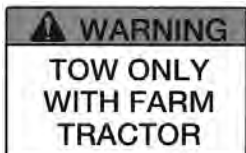
ST053 Front of hopper of inside wing unit of stacker



ST054 Front Toolbar



ST055 Inside of Granular hopper lid.



ST056 Front of Pull-Type toolbar.



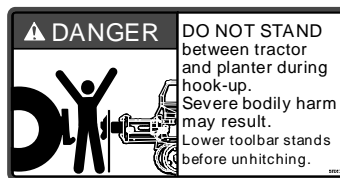
ST057 PTO Shaft.



ST058



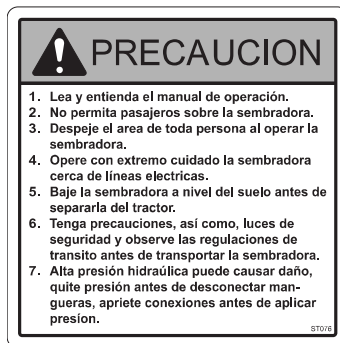
ST059



ST061 Front Toolbar Near Hitch



ST075 Spanish ver. of ST054



ST076 Spanish ver. of ST050



ST077 Spanish ver. of ST055



ST079 Spanish ver. of ST057



**TABLE OF CONTENTS**

---

**1. SAFETY**

---

**2. PREPARATION**

---

**3. FRAME**

---

**4. TRANSMISSION**

---

**5. DRIVE**

---

**6. ROW UNIT**

---

**7. OPTIONAL EQUIPMENT**

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## PREPARING THE PLANTER

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### Pull-Type Planter

For the initial preparation of the planter, lubricate the planter and row units. Make sure all tires are properly inflated, that all drive chains have the proper tension, alignment and lubrication.



**CAUTION** Before starting up the planter, check that all main bolts are properly tightened and that planting units are equipped with the proper seed disc. Also check that the shutters inside the metering boxes are adjusted correctly. (See Metering Box.)



**CAUTION** Except when absolutely necessary, do not leave the turbofan running when the planter is in a raised position.

When planting small seeds (rape, cabbage, uncoated sugarbeet), make sure that the hoppers fit tightly at the bottom. This may be improved if necessary by using a sealant. When planting these small seeds, it is recommended to fill the hopper only one-third full.

### LUBRICATION

Proper lubrication of all moving parts will help ensure efficient operation of your Monosem planter and prolong the life of friction producing parts.

All bearings (wheels, disc openers, turbofan, and metering box) are self-lubricated for life and therefore no additional greasing is necessary.

The gauge wheel arms may require daily greasing.

The hub of each drive wheel requires greasing once per season.

A general lubricant each day of the chains for the seed spacing gearbox, drive wheel blocks and metering units is recommended (preferably with a chain lubricant which does not attract dust).

Before starting up the planter, grease the hexagonal shaft where the upper sprocket cluster of the gearbox slides to allow easier alignment of the sprockets. Also lubricate the claws of the safety clutch of each planting unit to allow for disengagement in case of a blockage.

Oil the chain rollers and shafts of the metering unit chain moderately.

All transmission and drive chains should be lubricated daily with a chain lubricant (which does not attract dust). Extreme operating conditions such as dirt, temperature or speed may require more frequent lubrication. If a chain becomes stiff, it should be removed, soaked and washed in solvent to loosen and remove dirt from the joints. Then soak the chain in oil so that the lubricant can penetrate between the rollers and bushings.

### LUBRICATE WHEEL BEARINGS

Wheel bearings should be repacked with clean, heavy-duty axle grease once a year or at the beginning of each planting season. This applies to all drive wheels, transport wheels, and marker hubs. Follow the procedure outlined for wheel bearing replacement with the exception that bearings and bearing cups are reused.

#### Wheel Bearing Lubrication or Replacement

1. Raise the tires clear of the ground and remove wheel.
2. Remove the double jam nuts and slide the hub from the spindle.
3. Remove the bearings and cups and discard if bearings are being replaced. Clean the hub and dry. Remove the bearings only if repacking.
4. Press in new bearing cups with thickest edge facing in. (Bearing replacement procedure only.)
5. Pack bearings with heavy-duty wheel bearing grease thoroughly forcing grease between roller cones and bearing cage. Also fill the space between the bearing cups in the hub with grease.
6. Place inner bearing in place.
7. Clean spindle and install hub.
8. Install outer bearing and nut. Tighten the jam nut while rotating the hub until there is some drag. This assures that all bearing surfaces are in contact. Back off jam nut 1/4 turn or until there is only slight drag when rotating the hub. Install second jam nut to lock against first.
9. Install wheel on hub and tighten evenly and securely.

## PREPARING THE PLANTER

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### Pull-Type Planter

#### LUBRICATE GREASE FITTINGS

Those parts equipped with grease fittings should be lubricated at the frequency indicated with SAE multipurpose type grease. Be sure to clean the fitting thoroughly before using a grease gun. The frequency of lubrication recommended is based on normal operating conditions. Severe or unusual conditions may require more frequent attention.

There are a number of sealed bearings on your planter to provide trouble free operation. These sealed bearings are lubricated for life.

Frequency of lubrication for:

#### Chain Lubricant

##### DAILY

- Unit drive chains
- Wheel block drive chains
- Transmission chains & rollers
- Insecticide drive chains
- Liquid fertilizer squeeze pump drive
- Chain rollers and shafts on unit drive chains

#### Grease

##### DAILY

- Gauge wheel arms
- Row marker hinge points

##### WEEKLY

- Row unit closing wheel/disc
- Closing assembly pivot points.

#### SPRING ADJUST CONTACT DRIVE WHEEL

There are two down pressure springs on each contact drive wheel. The down pressure is factory preset and should need no further adjustment.

The spring tension is set leaving 2 1/4" between the spring plug and the bolt head.

Tire pressure should be checked regularly and maintained.

#### CHAIN TENSION ADJUSTMENT

The drive chains are spring loaded and therefore self-adjusting. The only adjustment needed is to shorten the chain if wear stretches the chain and reduces spring tension. The pivot point of these idlers should be checked periodically to ensure that they will rotate freely.

#### TIRE PRESSURE

Tire pressure should be checked regularly and maintained as follows:

Transport Ground Drive – 7.50x20 - 40 PSI  
Contact Drive – 4.10x6 - 50 PSI



**DANGER** Rim and tire servicing can be dangerous. Explosive separation of a tire and rim parts can cause serious injury or death.

**Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. This should only be done by properly trained people who are equipped to do the job.**

**Maintain the correct tire pressure. Do not inflate the tires above the recommended pressure.**

**When inflating tires, use a clip-on air chuck and extension hose long enough to allow you to stand to one side, and not in front of or over the tire assembly. Use a safety cage to enclose the tire and assembly when inflating.**

**Inspect tires and wheels daily. Do not operate with low pressure, cuts, bubbles, damaged rims or missing lug bolts and nuts.**

## PREPARING THE PLANTER

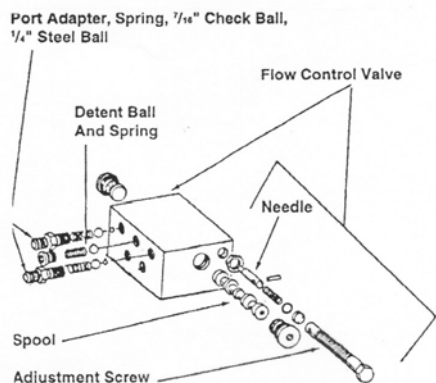
### Pull-Type Planter

#### VALVE BLOCK ASSEMBLY INSPECTION

The valve block assembly consists of the marker sequencing and flow control valves in one assembly. The sequencing valve consists of a chambered body containing a spool and series of check valves to direct hydraulic oil flow. Should the valve malfunction, the components may be removed for inspection as follows.

1. Remove valve block assembly from planter
2. Remove detent assembly and port adapter assemblies from rear of valve block.
3. Remove plug from both sides of valve block and remove spool.
4. Inspect all parts for pitting, contamination or foreign material. Also check seating surfaces inside the valve. Replace any parts found to be defective.
5. Lubricate spool with light oil and reinstall. Check to be sure spool moves freely in valve body.
6. Important: Make sure the correct check ball(s) and spring are installed in each valve bore before reassembly.


A flow control valve is located on each side of the block assembly. The flow control valves should be adjusted for raise and lower speed as part of the assembly procedure or upon initial operation. If the valve fails to function properly or requires frequent adjustment, the needle valve should be removed for inspection. Check for foreign material and contamination. Be sure the needle moves freely in adjustment screw. Replace any components found to be defective.




#### TRACTOR PREPARATION & HOOKUP

Consult your dealer for information on the minimum tractor horsepower requirements and tractor capability. Tractor requirements will vary with planter options, tillage and terrain.

1. Adjust the tractor drawbar so it is 13 to 17 inches above the ground. Adjust the drawbar so that the hitch pinhole is directly below the centerline of the PTO shaft. Make sure the drawbar is in a stationary position.
2. Back the tractor to the planter and connect them with a hitch pin. Make sure the hitch pin is secured with a locking pin or cotter pin.
3. Connect the PTO drive shaft to the tractor. In addition to a standard 450/540 rpm PTO, a 1000-rpm shaft is available.

 **CAUTION** Make sure that you connect the proper end of the PTO to the tractor. An arrow on the PTO indicates the end of the constant velocity (double clutch) that is attached to the tractor.

A sticker with the following warning is placed on your PTO shaft for your safety:


 **DANGER** Rotating driveline contact can cause death – keep away. Do not operate without all driveline, tractor and equipment shields in place; do not operate without drivelines securely attached at both ends, and without driveline shields that turn freely on driveline.




4. Connect the hydraulic hoses to tractor ports in a sequence that is both familiar and comfortable to the operator.

## PREPARING THE PLANTER

### Pull-Type Planter

 **DANGER** Before applying pressure to the hydraulic system, make sure all connections are tight and hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin, causing injury or infection.



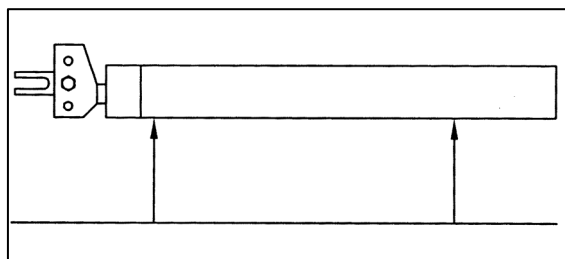
 **CAUTION** Always wipe hose ends to remove any dirt before connecting couplers to tractor parts.

5. Raise the jack stand and remount horizontally on the storage bracket.
6. Lower the planter to the planting position and check that the planter is level (front to back and side to side). If the hitch height is too high or too low, disconnect the planter and adjust the hitch clevis in an up or down position as necessary.


### LEVELING THE PLANTER

For proper operation of the planter and row units, it is important that the unit operate level. Unless the tractor drawbar is adjustable for height, the fore and aft level adjustment must be maintained by the position of the hitch clevis. Holes in the hitch bracket allow the clevis to be raised or lowered. When installing clevis-mounting bolt, tighten hex nut to proper torque setting. With the planter lowered to proper operating depth, check to be sure the frame is level fore and aft (front to back and side to side). Recheck once the planter is in the field.

It is also important for the planter to operate level laterally. Tire pressure can affect the lateral leveling of the planter. Maintain the tire pressure as mentioned in this section.



### TRANSPORTING THE PLANTER

 **CAUTION** Use necessary safety precautions, such as turning on safety lights and devices.

**CAUTION** Always install all cylinder lockup brackets before transporting the planter.

Observe legal regulations before transporting the planter on public roads.

Always drive at a safe speed relative to local conditions and ensure that your speed is low enough for an emergency stop to be safe and secure.

Do not carry passengers on transported equipment.

Watch for obstructions overhead and to the side while transporting.

Make allowances for increased length and weight of the planter when making turns, stopping, etc.

### OPERATING SPEED

The operating speed needs to be selected as a function of:

- The desired consistency in the row
- The ground conditions
- The density of the seed

A high speed is not conducive to accuracy, especially in rough or rocky conditions that causes the unit to bounce.

Likewise, a high seed density may cause the disc to rotate fast, thus burdening the metering.

It should be noted, and especially for corn, that misshapen and angular seeds are difficult to sow regularly, particularly at high working speeds.

A base speed of 3 ½ to 4 ½ mph (5-7 km/h) assures good results for most seeds in the majority of conditions. However when planting corn at lighter population more than 6" (15 cm) between the seed, 5-6 mph (8-10 km/h) is quite possible.

For planting of high seed population such as peanuts, edible beans, and kidney beans, best results can be obtained by not going faster than 3-4 mph (4.5-6 km/h).

## PREPARING THE PLANTER

### Pull-Type Planter

#### FIELD TEST

Before the initial operation of the planter, a field test is advised. Check for the following:

- That the planter is level (front to back and side to side)
- That the hydraulics of the 3-point hitch of the tractor is in a float position while planting.
- That all of the row units are running level and remain parallel to the ground when planting.
- That each metering unit is metering properly (see metering unit section).
- That the row markers are adjusted properly.
- That you are using the proper application rates of chemicals on all rows.
- That you have set the desired depth of seed placement and checked your seed population on all rows.

#### CHECKING SEED POPULATION

1. Only one planting unit is necessary to check you seed population. Tie up the sets of closing wheels on one unit with a heavy cord or light chain. It may be necessary to decrease the tension of the closing wheel arm.
2. Put seed in the seed hopper.
3. Begin planting. At the end of a short distance (for example 100 yards or 90 meters) check to see if seed is visible in the seed trench. Make adjustments in your seed depth if necessary.
4. Measure off 1/200 of an acre of the test row just planted. Use the chart below to find the approximate distance. Mark this distance with flags.
5. Count the seeds within the distance between the flags. Multiply the number of seeds counted in this distance by 200. This will give you the total number of seeds planter per acre.

Length of Row in Feet

Fraction Of Acre	Row Width			
	22"	30"	36"	40"
1/200	119	87	72 ½	66

NOTE: When viewing the test row for seed population and placement, remember that the closing wheels were tied up in a raised position. Therefore, the seeds may have rolled or bounced and will affect your seed placement for accuracy.

## PREPARING THE PLANTER

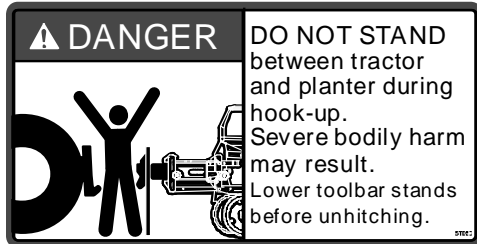
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### Pull-Type Planter

#### UNHOOKING THE PLANTER



**WARNING** Before unhooking the planter from the tractor, fully extend the jack stands to the point where the toolbar will remain level. Lock the stands securely in place with the locking pins.



1. Lower the planter to the ground. Set the tractor or towing vehicle brakes, disengage PTO and all power drives, shut off the engine and remove the ignition key.
2. Unhook the tractor lift arms from hitch pockets and remove center link. If a quick attach is used, position levers so that the locking mechanism is in the “unlatched” position and lower.
3. When the lift arms or quick attach arms are clear of the tractor, slowly drive the tractor away from the planter.

#### STORAGE

After the season, thoroughly clean the machine, especially the metering boxes. The microgranular applicator should be completely emptied and the fertilizer applicator scraped of any fertilizer residue. After emptying the trap doors, turn the shafts manually to remove any residual product from the mechanism.

Except for the microgranular applicator, protect all metal parts against oxidation by applying a coat of oil or diesel fuel.

Grease the exposed areas of cylinder rods. Also grease or paint the disc openers to prevent rust.

Inspect and replace any worn parts at the end of the planting season. New parts are available for replacement from your dealer.

Remove all trash that may be wrapped on sprockets or shafts and remove dirt that can draw and hold moisture.

Clean all drive chains and coat with a rust preventative spray, or remove chains and submerge in oil.

Lubricate planter and row units at all lubrication points.

**The planter should be stored in a dry and dust-free location with the hydraulic cylinders closed.**



This is a downloadable version of the manual. A partial download may not contain all pertinent information. Make Sure to read Chapter 1, Safety!  
Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.

**TABLE OF CONTENTS**

---

1. SAFETY

2. PREPARATION

**3. FRAME**

4. TRANSMISSION

5. DRIVE

6. ROW UNIT

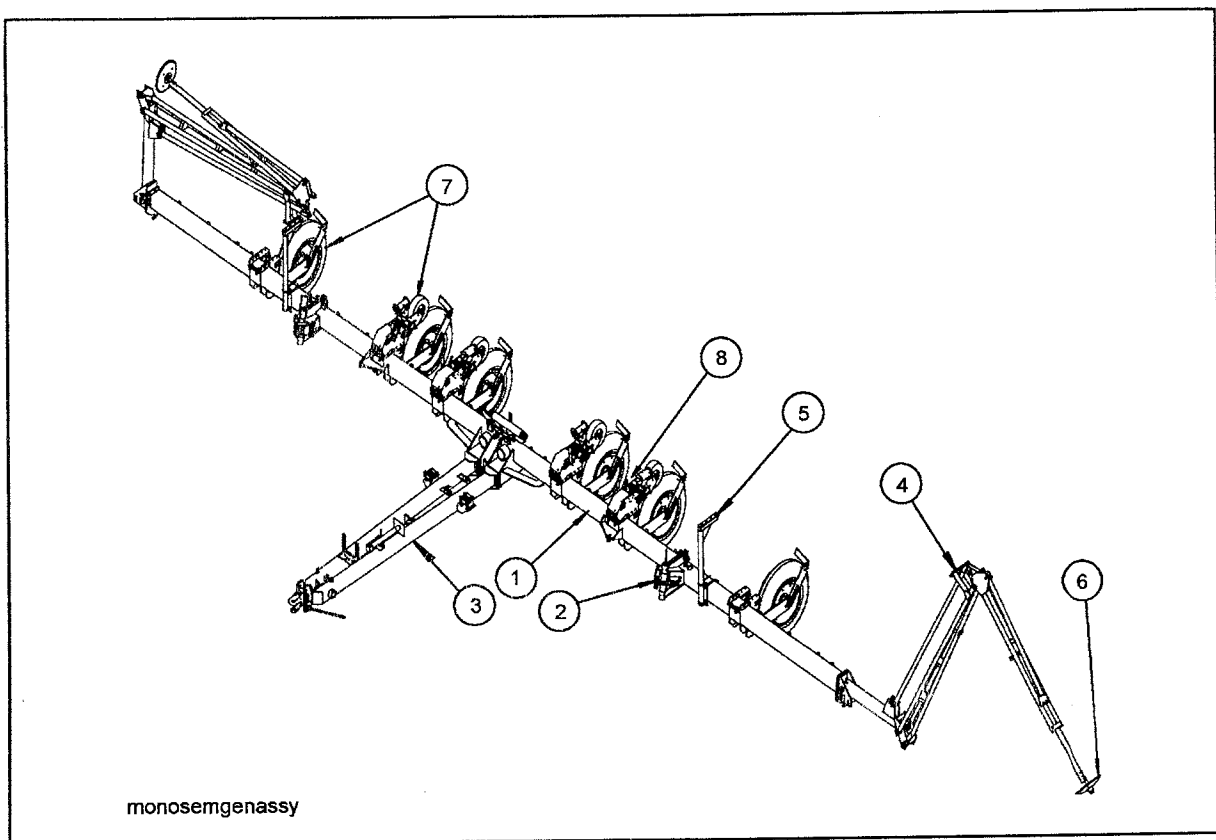
7. OPTIONAL EQUIPMENT

## FRAME

### Pull-Type 8-row Rigid, 12-row, 16-row, and 24-row Center Flex

#### GENERAL ASSEMBLY

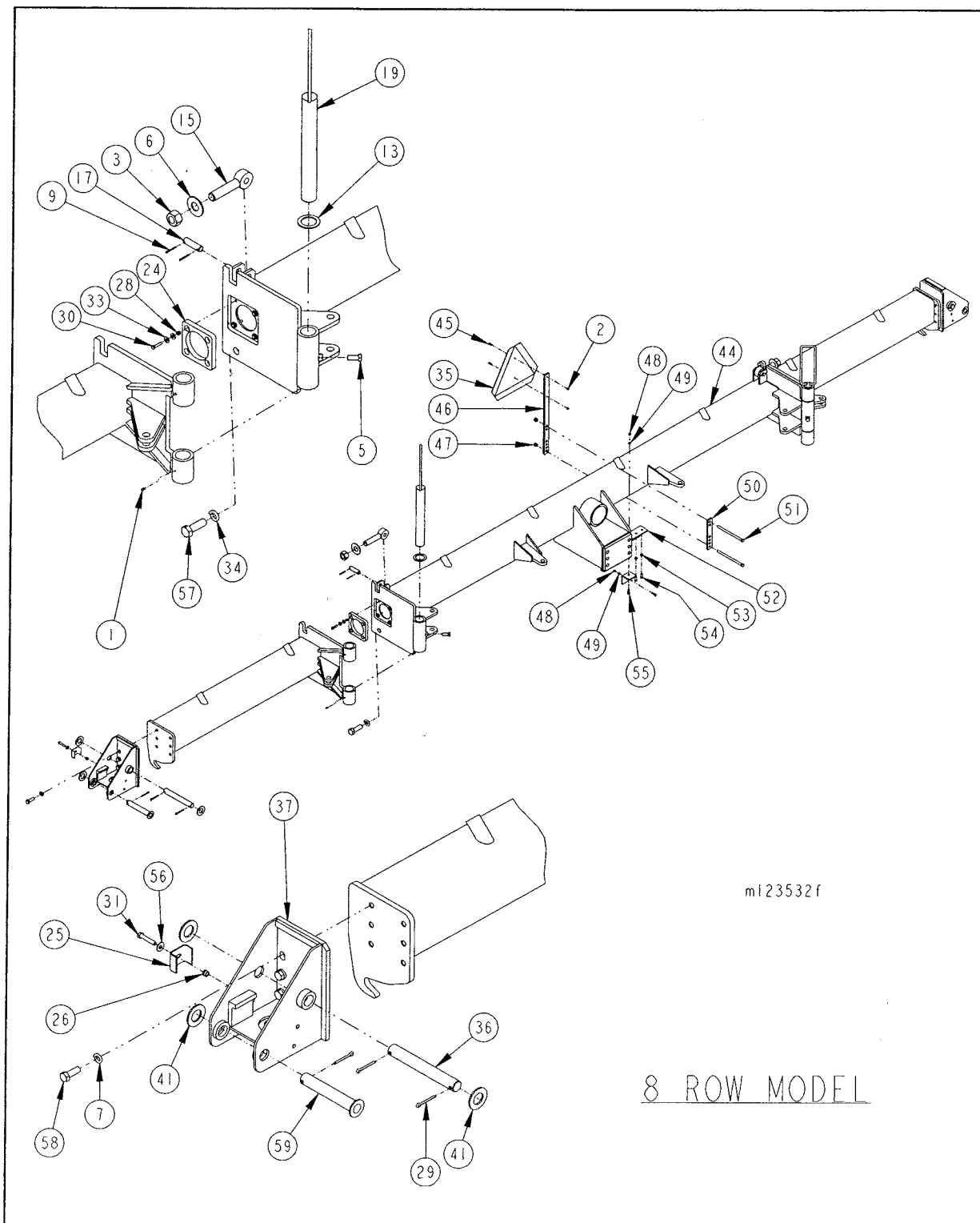
Item	Description
1	Frame assembly
2	Hydraulic wing fold assembly
3	Hitch assembly
4	Row marker assembly
5	Marker support assembly
6	Marker spindle/ Hub/ Blade assembly
7	Lift wheel and drive wheel assembly
8	Transmission



**FRAME**

**Pull-Type Frame**

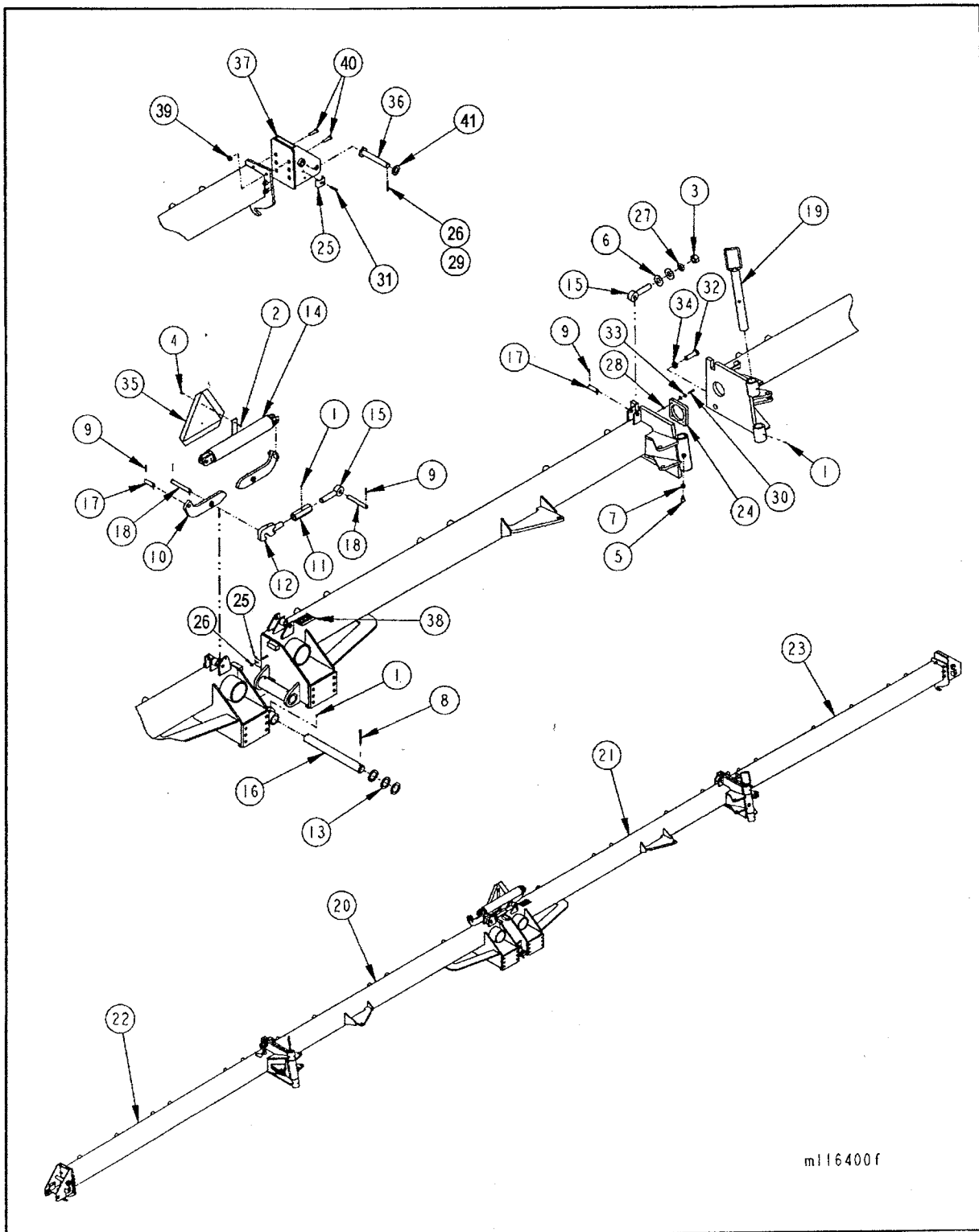
**8-ROW 30" RIGID FRAME**



**FRAME**

**Pull-Type Frame**

**8-ROW 38", 12-ROW, 16-ROW, & 24-ROW CENTER FLEX FRAME**



m116400f

**FRAME**

**Pull-Type Frame**

**FRAME ASSEMBLY**

ITEM	PART NO.	DESCRIPTION
1	F58805	GREASE FITTING, 1/4-28
2	F37183	NYLON LOCKNUT, 1/4-20 GR 8
3	F36124	HEX NUT, 1-1/4-7 GR 8
4	F13033	SCREW, HEX HEAD CAP, 1/4-20 X 3/4 GR 5
5	F13309	SCREW, HEX HEAD CAP, 5/8-11 X 1-1/2 GR 5
6	F33026	WASHER, FLAT, 1-1/4 USS
7	F33630	WASHER, SPLIT LOCK, 5/8
8	F65191	COTTER PIN, 3/8 X 3
9	F65105	COTTER PIN, 5/32 X 1-1/2
10	L116076	SPRING LEVELING ARM WELDMENT
11	L116237	TURNBUCKLE, CONNECTOR WING TO MAIN FRAME
12	L116238	HOOK WELDMENT, 1-1/4-7
13	L116248	BUSHING, MACHINERY, 10GA
14	L116260	CENTER SPRING WELDMENT
15	L116351	EYEBOLT, 1-1/4-7
16	L116358	PIN, 2-1/8 X 20
17	L116359	PIN, 7/8 X 3-1/8
18	L116363	PIN, 7/8 X 6-9/16
19	L116365	WING HINGE PIN WELDMENT
20	L122608	MAIN FRAME WELDMENT, RH (8 ROW 38)
	L125721	MAIN FRAME WELDMENT, RH (12 ROW 28)
	L122799	MAIN FRAME WELDMENT, RH (12 ROW 30)
	L120346	MAIN FRAME WELDMENT, RH (16 ROW 30)
	L125540	MAIN FRAME WELDMENT, RH (24 ROW 22)
21	L122609	MAIN FRAME WELDMENT, LH (8 ROW 38)
	L125722	MAIN FRAME WELDMENT, LH (12 ROW 28)
	L122800	MAIN FRAME WELDMENT, LH (12 ROW 30)
	L120345	MAIN FRAME WELDMENT, LH (16 ROW 30)
	L125542	MAIN FRAME WELDMENT, LH (24 ROW 22)
22	L123226	WING WELDMENT, RH (8 ROW 30)
	L122610	WING WELDMENT, RH (8 ROW 38)
	L125723	WING WELDMENT, RH (12 ROW 28)
	L122801	WING WELDMENT, RH (12 ROW 30)
	L120348	WING WELDMENT, RH (16 ROW 30)
	L125544	WING WELDMENT, RH (24 ROW 22)
23	L123227	WING WELDMENT, LH (8 ROW 30)
	L122611	WING WELDMENT, LH (8 ROW 38)
	L125724	WING WELDMENT, LH (12 ROW 28)
	L122802	WING WELDMENT, LH (12 ROW 30)
	L120347	WING WELDMENT, LH (16 ROW 30)
	L125545	WING WELDMENT, LH (24 ROW 22)
24	L116367	GASKET SEAL, HINGE POINT
25	L2-181-010001	HOSE CLAMP BRACKET
26	F37212	REV LOCK NUT, 3/8-16
27	L100825	WASHER, SPLIT LOCK, 1-1/4
28	F37211	REV LOCK NUT, 5/16-18
29	F65147	COTTER PIN, 1/4 X 2
30	F13059	SCREW, HEX HEAD CAP, 5/16-18 X 1-1/2 GR 5
31	F13111	SCREW, HEX HEAD CAP, 3/8-16 X 2 GR 5
32	F15466	SCREW, HEX HEAD CAP, 1-8 X 3-1/4
33	F33006	WASHER, FLAT, 5/16 USS

ITEM	PART NO.	DESCRIPTION
34	F33674	WASHER, SPLIT LOCK, 1"
35		SMV EMBLEM
36	L116034	PIN, ROW MARKER PIVOT, 1-1/4 x 9-1/2"
37	L116070	ROW MARKER PIVOT WELDMENT (8/12/16 RO
	L117297	ROW MARKER PIVOT WELDMENT (24 ROW)
38	ST050	DECAL, WARNING
39	F36314	HEX NUT, 5/8-11
	F33630	WASHER, SPLIT LOCK, 5/8"
40	F15312	SCREW, HEX HEAD CAP, 5/8-11 X 2-1/4 GR 8
41	F33100	WASHER, FLAT 1-1/4 SAE
44	L123225	MAIN FRAME (8 ROW 30 ONLY))
45	F13005	SCREW, HEX HEAD CAP, 1/4-20 X 1 GR 5
46	L108830	BRACKET, MOUNTING SMV
47	F37214	REV LOCK NUT, 1/2-13
48	F36104	HEX NUT, 5/16-18
49	F33620	WASHER, SPLIT LOCK, 5/16"
50	L2-054-010461	BAR, WARNING LIGHTS
51	F13230	SCREW, HEX HEAD CAP, 1/2-13 X 8-1/2 GR 5
52	L116036	BRACKET, HITCH ANGLE
53	F33622	WASHER, SPLIT LOCK, 3/8"
54	F13105	SCREW, HEX HEAD CAP, 3/8-16 X 1 GR 5
55	F13055	SCREW, HEX HEAD CAP, 5/16-18 X 1 GR 5
56	F33082	WASHER, FLAT, 3/8 USS
57	F15465	SCREW, HEX HEAD CAP, 1-8 X 3 GR 8
58	F15310	SCREW, HEX HEAD CAP, 5/8-11 X 1-3/4 GR 8
59	L116032	PIN, W/WASHER WELDMENT, 1-1/4 X 7-1/2

## FRAME

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### Pull-Type Frame

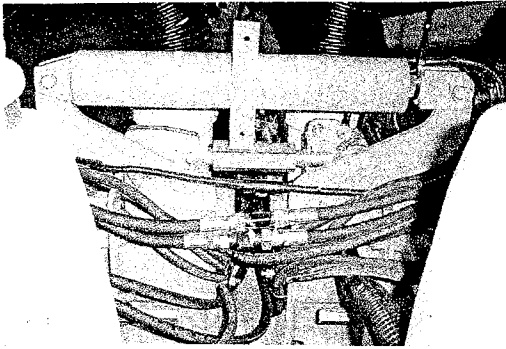
#### HYDRAULIC WING FOLD



**WARNING** Be sure the planter is on a level surface. Avoid standing between the wing and main frame when folding the planter. The wing may suddenly swing.

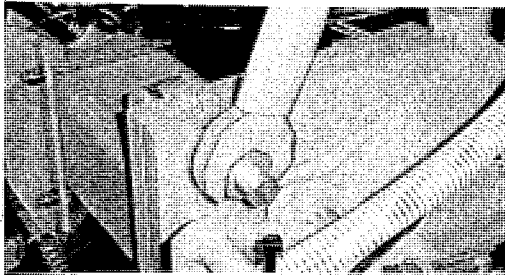
To fold from a field to transport position use the following 8 steps.

- 1) Fold the markers into transport position.



- 2) Swing the center turnbuckle into position and lower the planter to the ground.

- 3) Move the lever on the hand operated selector valve to the "fold" position. Remove any pressure from the hydraulic system before moving the selector handle.



- 4) Loosen the 1 1/4" hex nuts which secures the wing locking bolts. Swing the wing locking bolt on each wing over to release the planter wings.

- 5) Raise the planter.

- 6) Install cylinder lockups on the four center section lift cylinders

- 7) Place the tractor hydraulic lever in the lowering position and hold until the wing cylinders are fully retracted, raising the wing tires.

- 8) Move the tractor hydraulic lever to fold the wings forward into transport position and lock wings in place at the marker support and hitch.



**WARNING** Be sure the planter is on a level surface. Avoid standing between the wing and main frame when folding the planter. The wing may suddenly swing.

To fold from transport to field operation use the following 11 steps.

- 1) Retract the wing lift tires. With the cylinder lockups in place on the four center section lift cylinders, move the tractor hydraulic lever to the lowering position until the cylinders are fully retracted, thus raising the wing tires.

- 2) With the planter in a raised position and the cylinder lockups in place, release the wing lock pins at the marker support and hitch.

- 3) Position the selector handle on the manual selector valve in the "fold" position.

- 4) Move the tractor hydraulic lever and fold the wings out to operating position.

- 5) Swing the wing locking bolts into position to lock each wing.

- 6) Operate the hydraulic lever to extend all the lift cylinders.

- 7) Remove the cylinder lockups from the four center section lift cylinders and place them in the storage position on the wheel module.

- 8) Lower the planter.

- 9) Tighten the 1 1/4" hex nuts to secure the wing locking bolts.

- 10) Release the turnbuckle located in the center of the planter frame and fold it to one side.

- 11) Remove pressure from the hydraulic system. Move the selector handle on the manual selector valve to the "marker" position.

**FRAME**

**Pull-Type Frame**

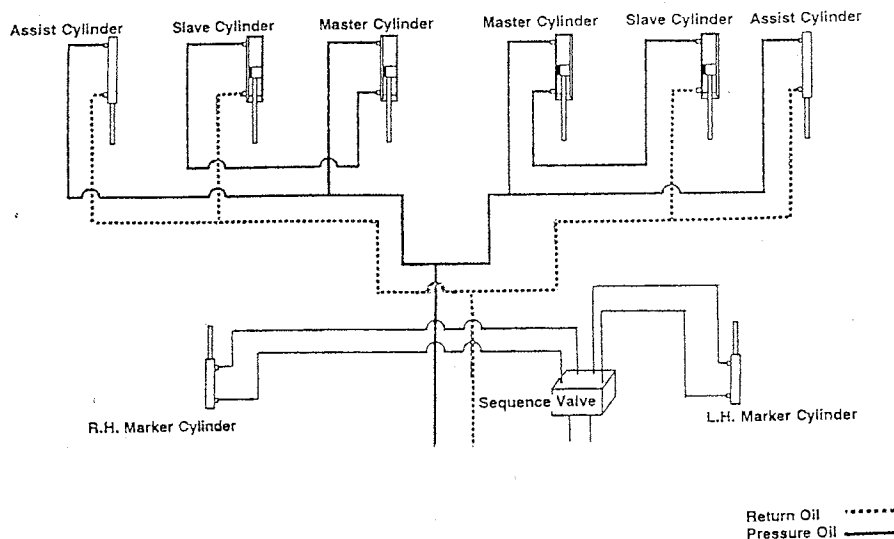
**HYDRAULIC PLANTER LIFT OPERATION**

The planter lift system consists of a master cylinder on one side of the planter, and a slave cylinder on the other side of the planter. On 6 row and larger models, lift assist cylinders are also used.

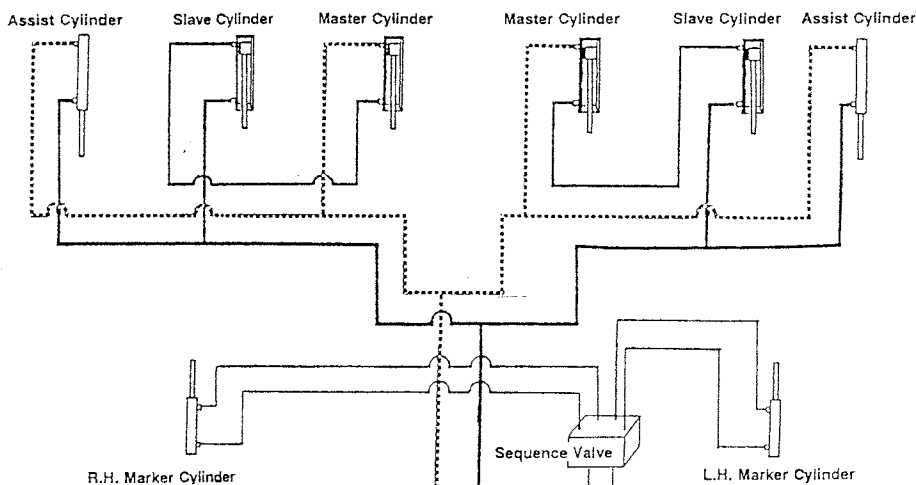
With the master/slave hydraulic lift system, oil is forced into the butt end of the master and lift assist cylinders when the hydraulic lever on the tractor is moved to the raise position.

As the master cylinder is extended, oil from the rod end of the master cylinder is forced into the butt end of the slave cylinder. This displacement on the rod end of the master cylinder is equal to the displacement on the butt end of the slave cylinder. This causes the two cylinders to move at the same rate so the planter will raise and lower evenly.

HYDRAULIC SYSTEM SCHEMATIC 24-ROW - PLANTER RAISING



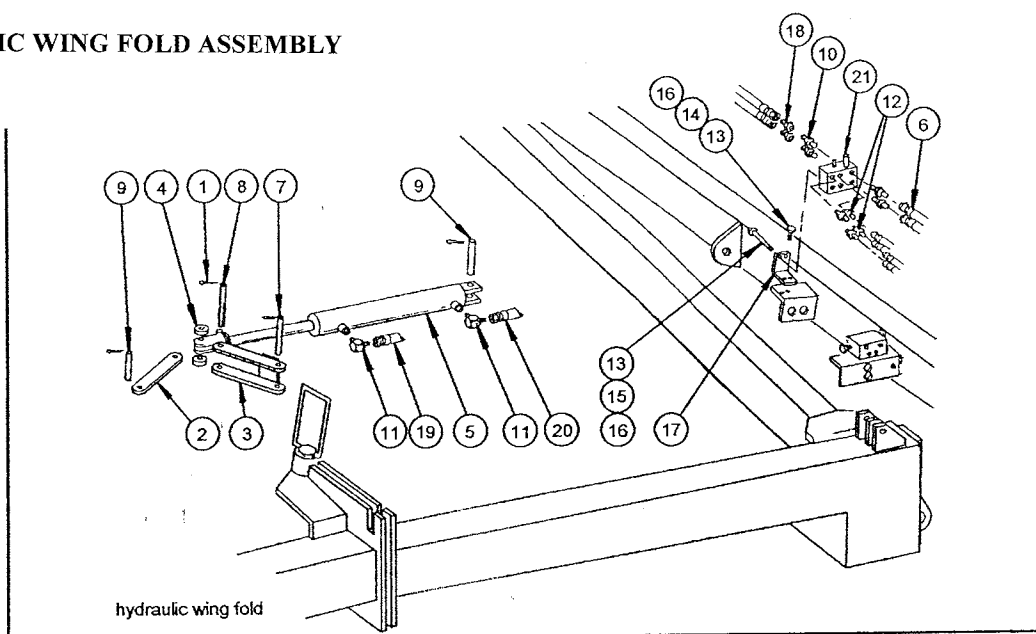
HYDRAULIC SYSTEM SCHEMATIC 24-ROW - PLANTER LOWERING



**FRAME**

**Pull-Type Frame**

**HYDRAULIC WING FOLD ASSEMBLY**



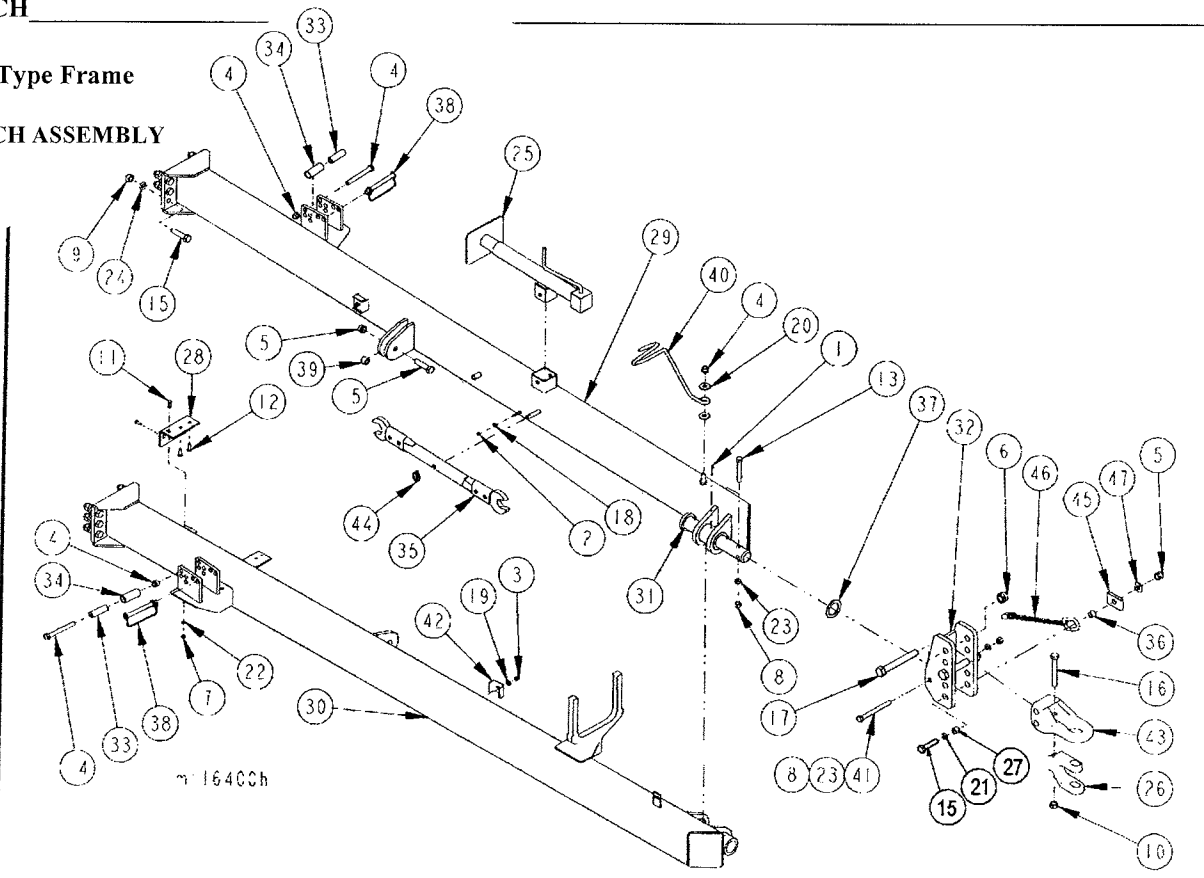
ITEM	PART NO.	DESCRIPTION
1	F65145	COTTER PIN, 1/4 X 1-1/2 (8 ROW 38, 12,16, & 24 ROW)
	F65144	COTTER PIN, 1/4 X 1-1/4 (8 ROW 30)
2	L116037	BAR, WING HINGE, PIVOT
3	L116256	ARM WELDMENT, WING HINGE
4	L116258	SPACER, WING HINGE
5	L116341	CYLINDER, 3 X 16
6		HOSE ASSEMBLY, 3/8 X 25
7	L116440	PIN, 1 X 7-3/16
8	L116441	PIN, 1 X 5-3/4
9	L116442	PIN, 1 X 3-1/8
10	J6400-8-6	CONNECTOR, 3/4"-16 MALE JIC TO 9/16"-18 O-RING
11	J6801-8	ELBOW, 9/16"-18 MALE TO 3/4"-16 O-RING
12	J6400-6	CONNECTOR, 9/16"-18 MALE JIC TO O-RING
13	F36102	HEX NUT, 1/4-20
14	F13005	SCREW, HEX HEAD CAP, 1/4-20 X 1 GR5
15	F13015	SCREW, HEX HEAD CAP, 1/4-20 X 3 GR5
16	F33618	WASHER, SPLIT LOCK, 1/4"
17	L116259	MOUNTING ANGLE
18	J2406-08-06	REDUCER, 3/4"-16 FEMALE JIC TO 9/16"-18 MALE JIC
19		HOSE ASSEMBLY, 3/8 X 113 (8 ROW 38)
		HOSE ASSEMBLY, 3/8 X 120 (12 ROW)
		HOSE ASSEMBLY, 3/8 X 158 (16 & 24 ROW)
20		HOSE ASSEMBLY, 3/8 X 124 (8 ROW 38)
		HOSE ASSEMBLY, 3/8 X 132 (12 ROW)
		HOSE ASSEMBLY, 3/8 X 136 (16 ROW)
		HOSE ASSEMBLY, 3/8 X 174 (24 ROW)
21	L116350	SELECTOR VALVE ASSEMBLY



**HITCH**

**Pull-Type Frame**

**HITCH ASSEMBLY**

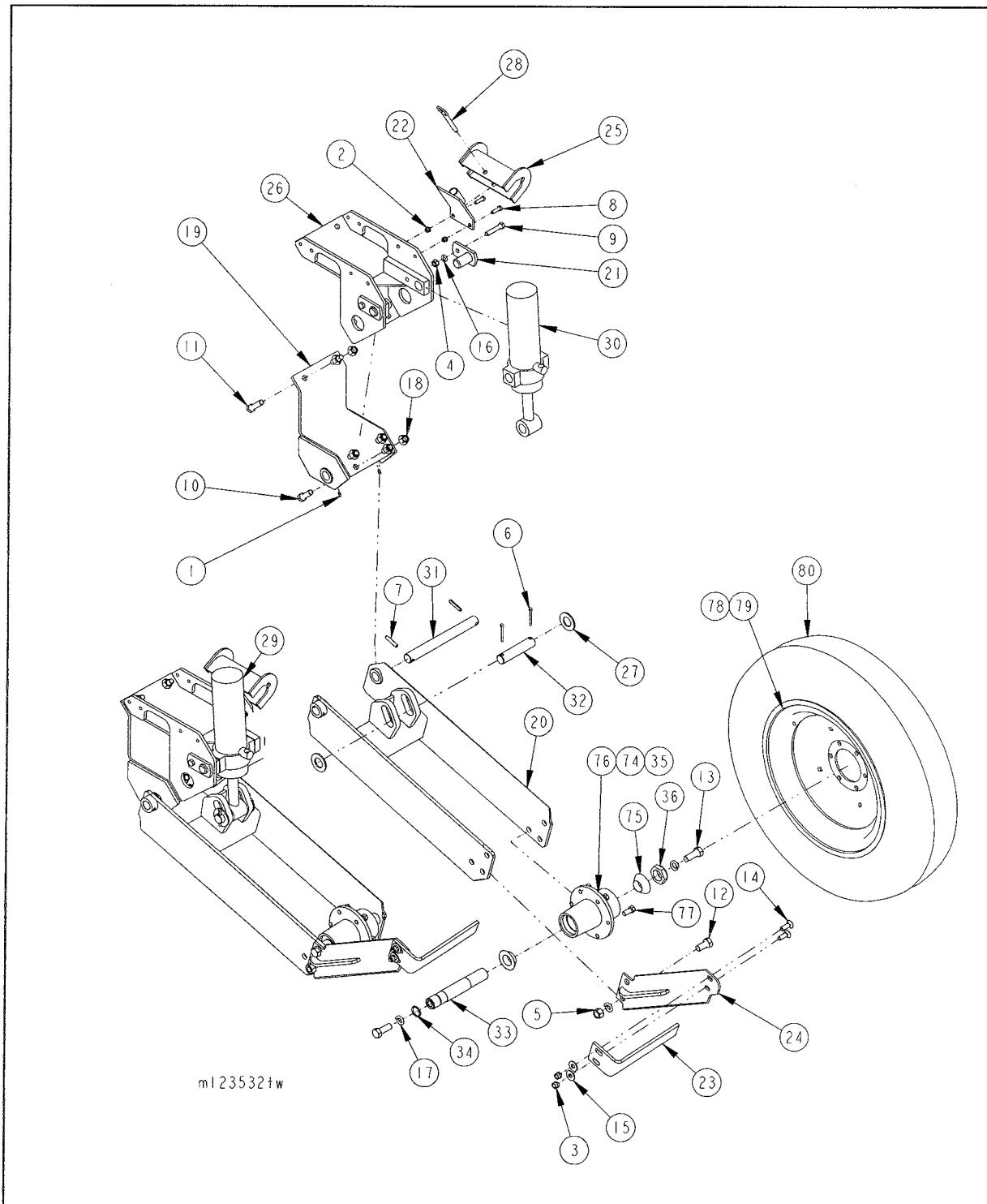


ITEM	PART No.	DESCRIPTION
1	F58805	GREASE FITTING, 1/4-28
2	F37210	REV LOCK NUT, 1/4-20
3	F37212	REV LOCK NUT, 3/8-16
4	F37216	REV LOCK NUT, 5/8-11
5	F37217	REV LOCK NUT, 3/4-10
6	F37219	REV LOCK NUT, 1-8
7	F36104	HEX NUT, 5/16-18
8	F36114	HEX NUT, 5/8-11
9	F36116	HEX NUT, 3/4-10
10	F36366	HEX NUT, 3/4-16
11	F13055	SCREW, HEX HEAD CAP, 5/16-18 X 1 GR5
12	F13105	SCREW, HEX HEAD CAP, 3/8-16 X 1 GR5
13	F13319	SCREW, HEX HEAD CAP, 5/8-11 X 4 GR5
14	F13324	SCREW, HEX HEAD CAP, 5/8-11 X 5-1/2 GR5
15	F13365	SCREW, HEX HEAD CAP, 3/4-10 X 3 GR5
16	F17939	SCREW, HEX HEAD CAP, 3/4-16 X 5-1/2 GR8
17	F15478	SCREW, HEX HEAD CAP, 1-8 X 7-1/2 GR8
18	F33004	WASHER, FLAT, 1/4 USS
19	F33008	WASHER, FLAT, 3/8 USS
20	F33016	WASHER, FLAT, 5/8 USS
21	F33018	WASHER, FLAT, 3/4 USS
22	F33620	WASHER, SPLIT LOCK, 5/16
23	F33630	WASHER, SPLIT LOCK, 5/8
24	F33632	WASHER, SPLIT LOCK, 3/4
25	L1A63478	JACK, 7000 LB
26	L100214	HITCH CLEVIS PPI-208V
27	L100676	BUSHING, 1.06 X .79 X .62
28	L116036	BRACKET
29	L116093	HITCH TUBE WELDMENT, LH (ALL MODELS EXCEPT 8 ROW 30)
30	L116106	HITCH TUBE WELDMENT, RH (8 ROW 38, 12 & 16 ROW 30)
	L117402	HITCH TUBE WELDMENT, RH (W/o TURBO MOUNT FOR 12 ROW 28 & 24 ROW 22)
31	L116113	PIN WELDMENT
32	L116183	HITCH CAP WELDMENT
33	L116184	SLEEVE, 3-3/16
34	L116185	SLEEVE, 3-1/8
35	L116196	WRENCH
36	L116211	SPACER, SAFETY CHAIN
37	L116248	BUSHING, MACHINERY 10GA
38	L116250	PIN, 5/8 W/LOCK
39	L116407	BUSHING, MIDDLE HINGE
40	L116445	HOSE HOLDER
41	F15326	SCREW, HEX HEAD, 5/8-11x6-1/2 GR8
42	L2-181-010001	HOSE CLAMP
43	L2-375-010601	HITCH, RING CAT III
44	6077	LYNCHPIN, 6MM
45	L70328064	PLATE, TO SECURE SAFETY CHAIN
46	L70594087	SAFETY CHAIN ASSEMBLY, 10,500#
47	L70927326	PLATE WASHER, .78 X 1.75 X 7GA
48	L123237	HITCH WELDMENT (8 ROW 30)

**FRAME**

**8-row 30" Pull Type**

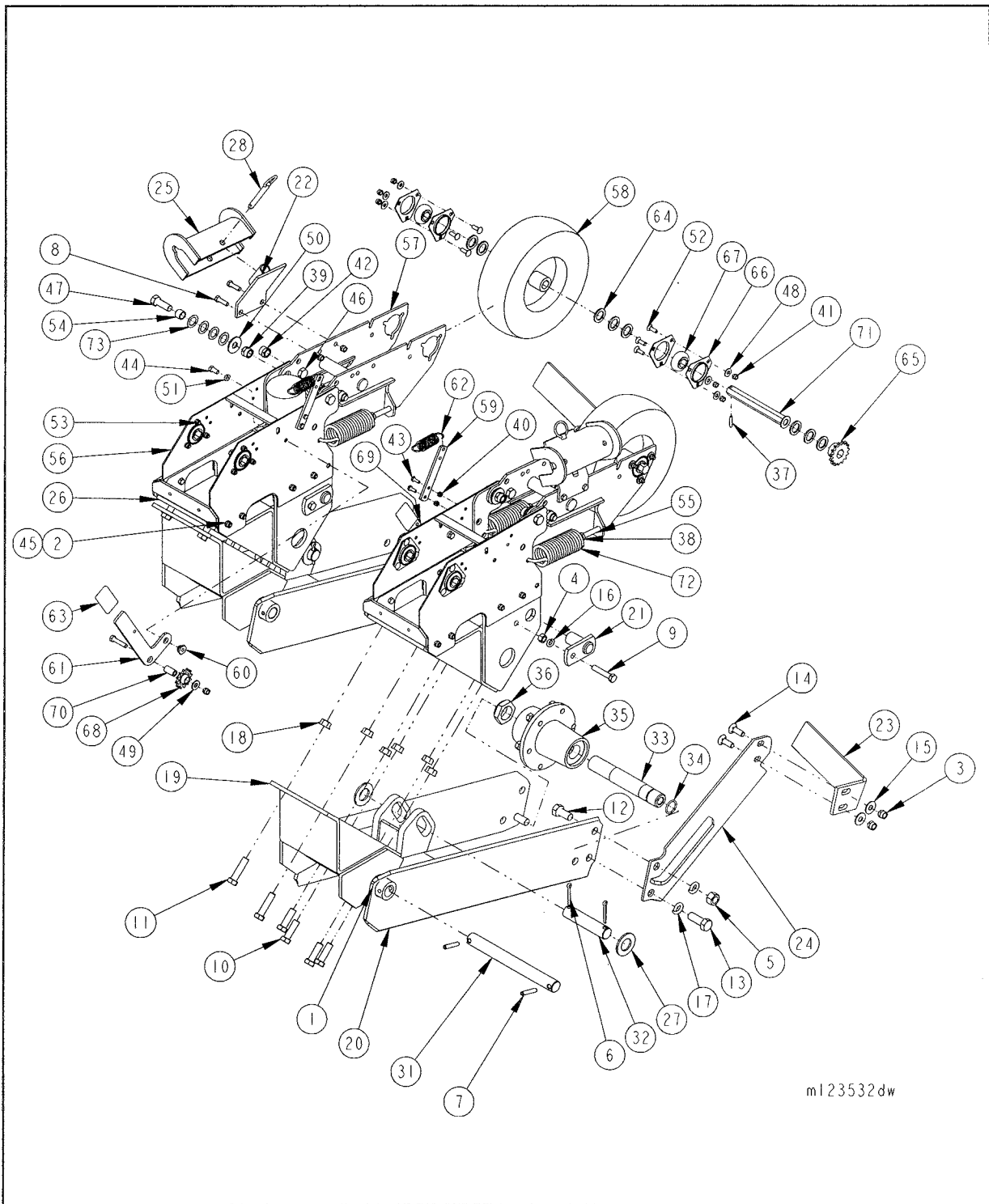
**LIFT AND DRIVE WHEEL**



**FRAME**

**8-row 30" Pull Type**

**LIFT AND DRIVE WHEEL**



**FRAME**

**8-row 30" Pull Type**

**LIFT AND DRIVE WHEEL**

ITEM	PART NO.	DESCRIPTION
1	F58805	GREASE FITTING, 1/4-28
2	F37212	REV LOCK NUT, 3/8-16
3	F37214	REV LOCK NUT, 1/2-13
4	F36110	HEX NUT, 1/2-13
5	F36116	HEX NUT, 3/4-10
6	F65145	COTTER PIN, 1/4 X 2
7	F64315	ROLL PIN, 3/8 X 2
8	F13107	SCREW, HEX HEAD CAP, 3/8-16 X 1-1/4 GR5
9	F13213	SCREW, HEX HEAD CAP, 1/2-13 X 2-1/2 GR5
10	F13311	SCREW, HEX HEAD CAP, 5/8-13 X 2 GR5
11	F13313	SCREW, HEX HEAD CAP, 5/8-11 X 2-1/2 GR5
12	F13359	SCREW, HEX HEAD CAP, 3/4-10 X 1-1/2 GR5
13	F13361	SCREW, HEX HEAD CAP, 3/4-10 X 2 GR5
14	F21824	CARRIAGE HEAD BOLT, 1/2-13 X 1-1/2
15	F33012	WASHER, FLAT, 1/2 USS
16	F33626	WASHER, SPLIT LOCK, 1/2
17	F33632	WASHER, SPLIT LOCK, 3/4
18	F37349	HEX FLANGE NUT, SERRATED, 5/8-11
19	L116018	DRIVE WHEEL CLAMP WELDMENT
20	L116023	DRIVE WHEEL ARM WELDMENT
21	L116041	RETAINING PIN WELDMENT
22	L116065	STORAGE BRACKET FOR LOCK-UP WELDMENT
23	L116068	SCRAPER
24	L116086	SCRAPER MOUNT WELDMENT
25	L116087	LOCK-UP WELDMENT W/PIN
26	L116090	DRIVE WHEEL CLAMP TOP WELDMENT
27	F33100	WASHER, FLAT, 1-1/4 SAE
28	L116251	PIN, 1/2 X 4-1/2
29	L116342	CYLINDER, SLAVE LIFT, 3-1/4 X 8
30	L116343	CYLINDER, SLAVE LIFT, 3-1/2 X 8
31	L116356	PIN, 1-1/4 X 12, 2 - 3/8" HOLES
32	L116360	PIN, 1-1/4 X 5-5/8, 2 - 1/4" HOLES
33	L116406	SPINDLE, TRANSPORT WHEEL
34	L116569	SNAP RING
35	L123879	HUB ASSEMBLY (ITEMS 74 - 77 )
36	L70917835	NUT, HEX THIN NYLON LOCK
37	F64249	ROLL PIN, 1/4 X 1-1/4
38	F36210	NUT, HEX JAM, 1/2-13
39	F37312	HEX NUT, 5/8-18
40	F37210	REV LOCK NUT, 1/4-20
41	F37211	REV LOCK NUT, 5/16-18
42	F37216	REV LOCK NUT, 5/8-11
43	F13003	SCREW, HEX HEAD CAP, 1/4-20 X 3/4 GR5
44	F13103	SCREW, HEX HEAD CAP, 3/8-16 X 3/4 GR5
45	F13105	SCREW, HEX HEAD CAP, 3/8-16 X 1 GR5
46	F13307	SCREW, HEX HEAD CAP, 5/8-11 X 1-1/4 GR5
47	F13311	SCREW, HEX HEAD CAP, 5/8-18 X 2 GR5

**TABLE OF CONTENTS**

---

1. SAFETY

2. PREPARATION

3. FRAME

**4. TRANSMISSION**

5. DRIVE

6. ROW UNIT

7. OPTIONAL EQUIPMENT

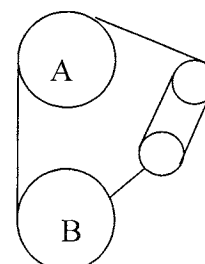
**TRANSMISSION**

**Pull-Type, CenterFlex Frame**

Planting population rate changes are made at the end mounted transmission. The planter is designed to allow simple, rapid changes in sprockets to obtain the desired planting population. By removing the lynch pins on the hexagon shafts, sprockets can be interchanged with those from the sprocket storage rod bolted to the transmission.

Chain tension is controlled by a spring-loaded dual sprocket idler. The idler assembly is adjusted with a ratchet arm. This arm has a release position to remove spring tension for replacing sprockets. The amount of spring tension on the chain can be controlled by the ratchet arm.

The sowing distances chart will aid you in selecting the correct sprocket combinations.



**SOWING DISTANCES**

Number of Holes in the Seed Disc                      Transmission selection                      Seed spacing shown in inches

	Transmission selection															Driver A	
	A	30	28	26	28	26	25	25	27	24	24	19	19	19	17	17	Driven B
Seed Disc	B	17	17	17	23	23	23	24	28	26	27	23	26	28	28	30	
9		8.9	9.6	10.3	13	14	14.7	15.3	16.6	17.3	18	19.4	22	23.7	26.5	28.4	
12		6.7	7.2	7.8	9.8	10.5	11	11.4	12.4	13	13.5	14.6	16.5	17.8	19.9	21.3	
18		4.4	4.8	5.1	6.5	7	7.3	7.7	8.3	8.6	9	9.7	11	11.9	13.2	14.1	
24		3.3	3.6	3.8	4.8	5.2	5.4	5.7	6.2	6.4	6.7	7.2	8.2	8.9	9.9	10.6	
30		2.6	2.8	3.1	3.9	4.2	4.4	4.6	5	5.1	5.3	5.7	6.5	7	7.8	8.3	
36		2.2	2.4	2.6	3.3	3.5	3.7	3.9	4.2	4.3	4.4	4.8	5.5	6	6.6	7	
40		1.9	2.1	2.3	2.9	3.1	3.2	3.4	3.7	3.9	4.1	4.4	5	5.3	6	6.4	
48		1.6	1.7	1.9	2.4	2.6	2.7	2.9	3.1	3.1	3.2	3.5	4	4.4	5	5.3	
60		1.2	1.3	1.4	1.8	2	2.1	2.2	2.4	2.5	2.6	2.9	3.2	3.5	3.9	4.2	
72		1.1	1.2	1.3	1.6	1.7	1.8	1.9	2.1	2.3	2.4	2.6	2.8	3	3.3	3.5	
120		0.6	0.6	0.7	0.9	1	1	1.1	1.2	1.2	1.3	1.4	1.6	1.7	1.9	2	

Seed spacing shown in inches  
Above chart applies only to planters manufactured after 10/01/2003

REVISED 8/16/04

**TRANSMISSION**

**Pull-Type**

Planting distances obtained with standard assembly and sprocket system. Additional settings are possible by using different combinations or special sprockets. Please consult us in case you have such special requirements. Important: Poor alignment of the sprockets of the seed spacing transmission and stiffness of the chain will cause premature side wear on the pinions. Make sure the chains are tight and properly lubricated, and the tires are properly inflated. The above-indicated spacings are theoretical and may vary from 5-10% depending on soil conditions.

**APPROXIMATE PLANTING RATES**

**22" ROW SPACING**

Transmission sprockets	72 Cell Disc SOYBEANS		60 Cell Disc EDIBLE BEANS		48 Cell Disc EDIBLE BEANS		40 Cell Disc BEETS		12 Cell Disc SUNFLOWER	
	Seed spacing	Population per acre	Seed spacing	Population per acre	Seed spacing	Population per acre	Seed spacing	Population per acre	Seed spacing	Population per acre
17 30	3.5	81,500	4.2	67,900	5.3	53,800	6.4	44,500	21.3	13,400
17 28	3.3	86,400	3.9	73,100	5	57,000	6	47,500	19.9	14,300
19 28	3	95,000	3.5	81,500	4.4	64,800	5.3	53,800	17.8	16,000
19 26	2.8	101,800	3.2	89,100	4	71,300	5	57,000	16.5	17,300
19 23	2.6	109,700	2.9	98,300	3.5	81,500	4.4	64,800	14.6	19,500
24 27	2.4	118,800	2.6	109,700	3.2	89,100	4.1	69,500	13.5	21,100
24 26	2.3	123,900	2.5	114,000	3.1	91,900	3.9	73,100	13	21,900
27 28	2.1	135,700	2.4	118,800	3.1	91,900	3.7	77,000	12.4	22,900
25 24	1.9	150,000	2.2	129,600	2.9	98,300	3.4	83,900	11.4	25,000
25 23	1.8	158,500	2.1	135,800	2.7	105,600	3.2	89,100	11	25,900
26 23	1.7	167,700	2	142,500	2.6	109,700	3.1	91,900	10.5	27,100
28 23	1.6	178,200	1.8	158,400	2.4	118,800	2.9	98,300	9.8	29,100
26 17	1.3	219,300	1.4	203,600	1.9	150,000	2.3	123,900	7.8	36,500
28 17	1.2	237,600	1.3	219,300	1.7	168,000	2.1	135,800	7.2	39,600
30 17	1.1	259,200	1.2	237,600	1.6	178,200	1.9	150,000	6.7	42,500

The above rates are theoretical and approximate. The actual output may vary slightly.

Spacing shown in inches.

Above chart applies only to planters manufactured after 10/01/2003

REVISED 8/16/04

**TRANSMISSION**

**Pull-Type**

**APPROXIMATE PLANTING RATES**

**CORN AT 30" ROW SPACING**

Transmission sprockets		30 CELL		24 CELL		18 CELL	
Driver	Driven	Seed spacing	Population per acre	Seed spacing	Population per acre	Seed spacing	Population per acre
17	30	8.2	25,548	10	20,950	13.7	15,400
17	28	7.7	27,207	9.6	21,725	12.8	16,336
17	27	7.3	28,699	9.3	22,529	12.3	16,940
17	26	7.0	29,929	8.9	23,396	11.9	17,592
19	28	6.8	30,809	8.7	24,280	11.5	18,258
17	25	6.7	30,942	8.6	24,332	11.4	18,295
19	27	6.5	32,021	8.3	25,180	11.0	18,934
17	24	6.5	32,231	8.2	25,345	10.9	19,058
19	26	6.3	33,254	8.0	26,148	10.6	19,662
17	23	6.2	33,472	7.9	26,447	10.5	19,887
19	25	6.0	34,418	7.7	27,195	10.2	20,449
19	24	5.8	25,850	7.4	28,326	9.8	21,300
23	28	5.6	37,199	7.1	29,391	9.5	22,101
19	23	5.6	37,410	7.0	29,558	9.4	22,226
23	27	5.4	38,608	6.8	30,480	9.1	22,919
24	28	5.4	38,848	6.8	30,669	9.0	23,062
23	26	5.3	40,049	6.6	31,653	8.8	23,802
24	27	5.2	40,288	6.6	31,806	8.7	23,917
25	28	5.2	40,467	6.5	31,947	8.7	24,023
17	19	5.2	40,553	6.5	32,051	8.7	24,074
23	25	5.0	41,697	6.3	32,919	8.5	24,753
24	26	5.0	41,800	6.3	33,029	8.4	24,836
25	27	5.0	41,929	6.3	33,131	8.4	24,913
26	28	4.9	42,049	6.3	33,226	8.4	24,984
23	24	4.8	43,396	6.1	34,290	8.1	25,784
24	25	4.8	43,471	6.1	34,350	8.1	25,829
25	26	4.8	43,541	6.0	34,405	8.0	25,870

The above rates are theoretical and approximate. The actual output may vary slightly.



**TRANSMISSION**

**Pull-Type**

**APPROXIMATE PLANTING RATES**

**SOYBEANS AT 30" ROW SPACING**

Transmission sprockets		60 CELL		60 CELL with high population sprocket	
Driver	Driven	Seed spacing	Population per acre	Seed spacing	Population per acre
17	30	4.1	51,097	2.9	72,327
17	28	3.8	55,131	2.7	78,037
17	27	3.7	27,173	2.6	80,928
17	26	3.5	59,372	2.5	83,926
19	28	3.4	61,617	2.4	87,154
19	27	3.3	63,899	2.3	90,449
17	24	3.2	64,319	2.2	93,799
17	23	3.1	67,116	2.2	94,416
19	25	3.1	69,011	2.1	98,521
19	24	3.0	71,887	2.1	101,303
23	28	2.9	74,589	2.0	105,524
19	23	2.8	75,012	1.9	109,491
24	28	2.7	77,832	1.9	110,112
24	27	2.6	80,715	1.8	114,252
17	19	2.6	81,246	1.8	118,483
24	26	2.5	83,819	1.8	119,263
26	28	2.5	84,319	1.7	123,040
24	25	2.4	87,172	1.7	123,773
26	27	2.4	87,441	1.6	127,962
23	23	2.4	90,804	1.6	128,357
27	26	2.3	94,296	1.6	133,294
24	23	2.3	94,752	1.5	138,420
25	23	2.2	98,700	1.5	139,089
19	17	2.2	101,487	1.4	144,884
27	24	2.1	102,154	1.4	148,975
28	24	2.0	105,938	1.4	149,955
23	19	2.0	109,920	1.3	155,509
28	23	1.9	110,544	1.3	161,355
24	19	1.8	114,700	1.3	162,270
25	19	1.8	119,479	1.2	168,371
23	17	1.7	122,853	1.2	175,386
26	19	1.7	124,259	1.2	180,338
27	19	1.6	129,037	1.1	182,402
28	19	1.6	133,817	1.1	189,417
26	17	1.5	138,877	1.1	196,433
27	17	1.4	144,219	1.0	203,861
28	17	1.4	149,560	.9	211,702
30	17	1.3	155,600	.9	219,542

\* To achieve a higher than average population, a 23 tooth sprocket can replace the 15 tooth sprocket on the contact drive wheel. Three (3) additional chains are needed on the contact drive wheel when using this combination. The above rates are theoretical and approximate. The actual output may vary.

**TRANSMISSION**

**Single Row**

**DENSITIES- SEED POPULATION CHART**

**AVERAGE  
SEED  
SPACING**

**ROW SPACING**

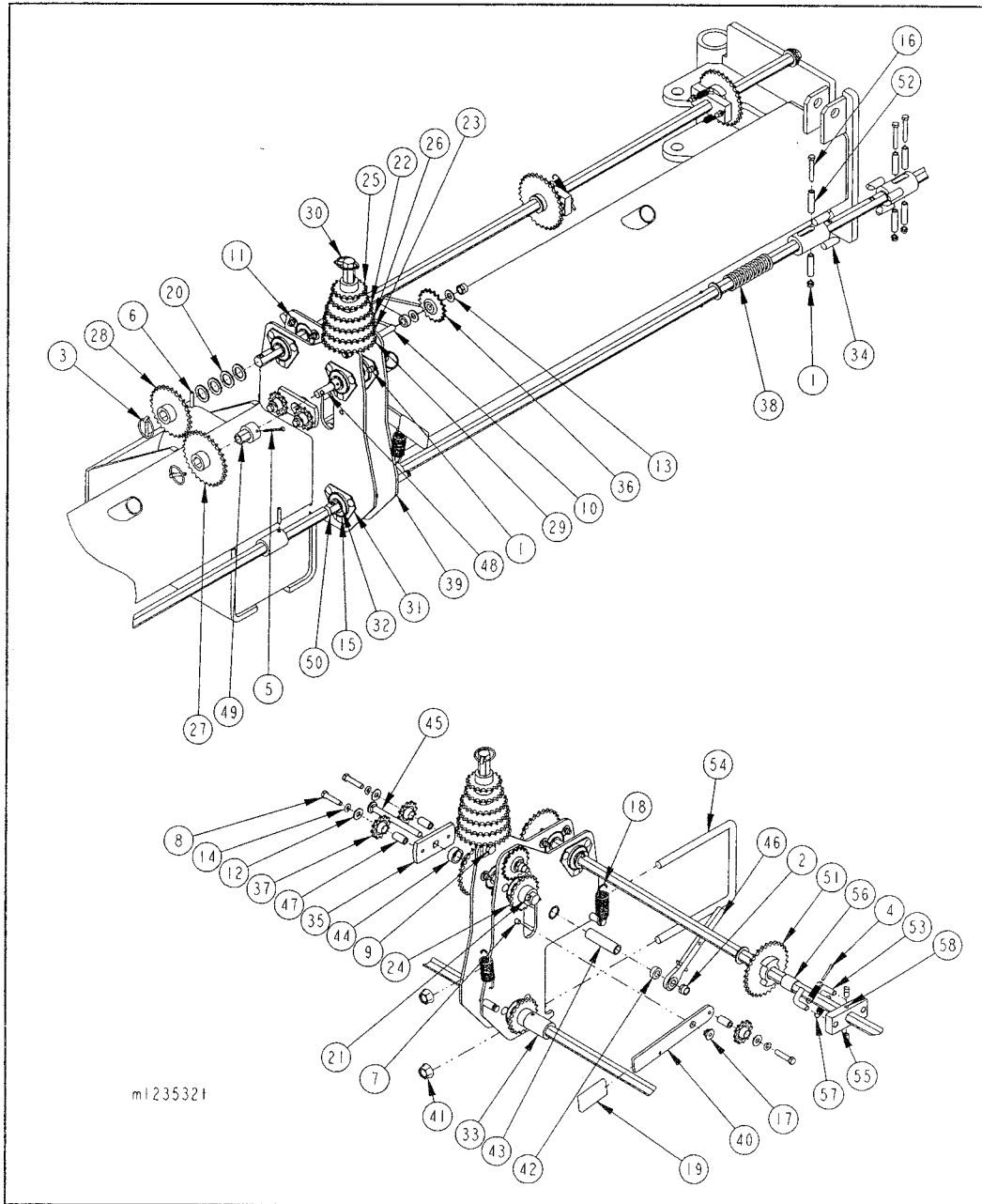
	10"	22"	26"	30"	34"	36"	38"	40"
1"	627,600	285,200	241,200	209,200	184,400	174,400	165,000	156,800
2"	313,800	142,600	120,600	104,600	92,200	87,200	82,500	78,400
2 3/4"	228,000	103,600	87,800	76,000	67,000	63,400	60,000	57,000
3 1/4"	193,200	87,800	74,200	64,400	56,800	53,600	50,800	48,200
3 1/2"	180,300	81,900	69,300	60,100	53,000	50,000	47,400	45,000
3 3/4"	167,400	76,034	64,300	55,800	49,200	46,500	44,000	41,800
4"	156,900	71,300	60,300	52,300	46,100	43,600	41,250	39,200
4 1/4"	147,600	67,000	56,800	49,200	43,400	41,000	38,800	36,900
4 1/2"	139,500	63,400	53,600	46,500	41,000	38,700	36,700	34,850
5"	125,400	57,000	48,250	41,800	36,900	34,850	33,000	31,400
5 1/2"	114,000	51,800	43,900	38,000	33,500	31,700	30,000	28,500
6"	104,550	47,500	40,200	34,850	30,750	29,000	27,500	26,100
6 1/2"	96,600	43,900	37,100	32,200	28,400	26,800	25,400	24,100
7"	90,150	40,950	34,650	30,050	26,500	25,000	23,700	22,500
7 1/2"	83,700	38,000	32,200	27,900	24,600	23,200	22,000	20,900
8"	78,750	35,750	30,300	26,250	23,150	21,850	20,700	19,675
8 1/2"	73,800	33,500	28,400	24,600	21,700	20,500	19,400	18,450
9"	69,900	31,750	26,900	23,300	20,550	19,425	18,387	17,475
9 1/2"	66,000	30,000	25,400	22,000	19,400	18,350	17,375	16,500
10"	62,850	28,575	24,200	20,950	18,475	17,475	16,537	15,725
10 1/2"	59,700	27,150	23,000	19,900	17,550	16,600	15,700	14,950
11 1/2"	54,600	24,800	21,000	18,200	16,050	15,150	14,350	13,650
12"	52,275	23,750	20,100	17,425	15,375	14,500	13,750	13,050
13"	48,300	21,950	18,550	16,100	14,200	13,400	12,700	12,050
13 1/2"	46,689	21,213	19,163	15,563	13,725	12,950	12,275	11,650
14 1/2"	43,464	20,475	17,938	14,488	12,775	12,050	11,425	10,850

Rev 8-07

**TRANSMISSION**

**8-Row 30" Pull Type**

**ASSEMBLY 8-Row 30**



ITEM	PART NO.	DESCRIPTION
1	F37211	REV LOCK NUT, 5/16-18
2	F37214	REV LOCK NUT, 1/2-13
3	6077	LYNCHPIN, 1/4 X 1-1/4
4	F65123	COTTER PIN, 3/16 X 1
5	F65128	COTTER PIN, 3/16 X 2-1/4
6	F64251	ROLL PIN, 1/4 X 1-1/2
7	F15103	SCREW, HEX HEAD CAP, 3/8-16 X 3/4 GR5
8	F13110	SCREW, HEX HEAD CAP, 3/8-16 X 1-3/4 GR5

## TRANSMISSION

### 8-Row 30" Pull Type

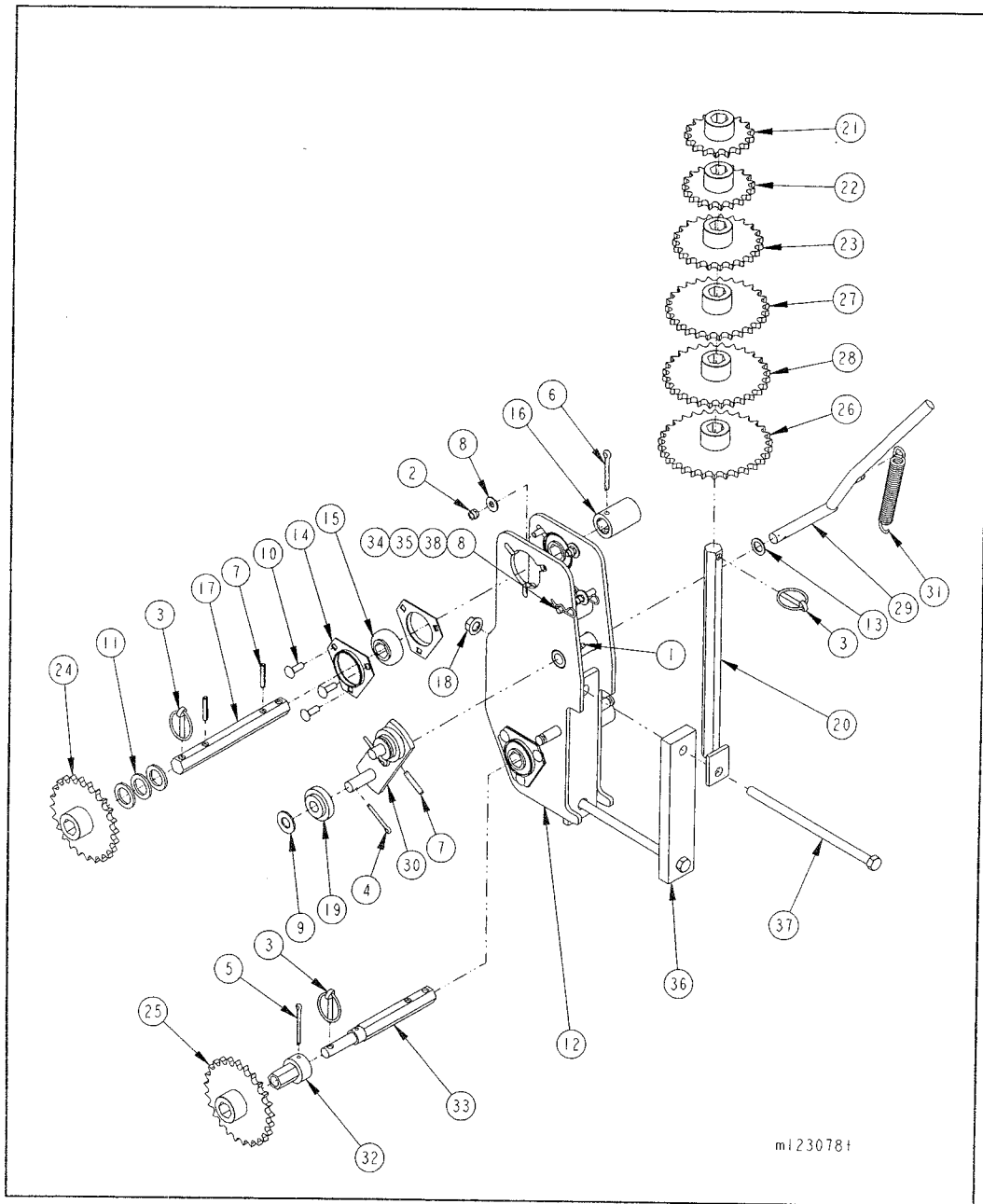
#### ASSEMBLY

ITEM	PART NO.	DESCRIPTION
9	F13207	SCREW, HEX HEAD CAP, 1/2-13 X 1-1/4 GR5
10	F13213	SCREW, HEX HEAD CAP, 1/2-13 X 2-1/2 GR5
11	F33080	WASHER, FLAT, 5/16 SAE
12	F33008	WASHER, FLAT, 3/8 USS
13	F33086	WASHER, FLAT, 1/2 SAE
14	F33622	WASHER, SPLIT LOCK, 3/8
15	F21811	CARRIAGE BOLT, 5/16-18 X 1 GR5
17	L117271	NUT WITH PIVOT SHOULDER, 3/8-16
18	KD5857	SPRING, CHAIN TIGHTENER
19	KD5827	HANDLE GRIP, RED PLASTIC
20	K10233	MACHINE BUSHING, 1 ID X 1-1/2 OD X 1/8 THICK
21	F65144	COTTER PIN, 1/4 X 1-1/4
22		SPROCKET, #40, HEX BORE, 23T
23		SPROCKET, #40, HEX BORE, 26T
24		SPROCKET, #40, HEX BORE, 19T
25		SPROCKET, #40, HEX BORE, 17T
26		SPROCKET, #40, HEX BORE, 25T
27		SPROCKET, #40, HEX BORE, 30T
28		SPROCKET, #40, HEX BORE, 28T
29		SPROCKET, #40, HEX BORE, 27T
30	L122844	SPROCKET STORAGE WELDMENT
31	4515.2	BEARING FLANGETTE, 3 BOLT HOLE
32	4515.1	BEARING ONLY, HEX BORE, SELF ALIGNING
33	KD2373	COUPLER, 7/8 HEX BORE, 1-1/2" LONG W/1/4 HOLE
	KD2374	COUPLER, 7/8 HEX BORE, 3-1/4" LONG
38	KD2961	SPRING, COMPRESSION, 4-1/2"
39	L123345	TRANSMISSION WELDMENT
40	L123348	HANDLE, CHAIN TIGHTENER
41	F37349	HEX FLANGE NUT, SERRATED, 5/8-11
42	L125701	BUSHING, 9/16 ID X 1 OD X 3/8 WIDE
43	L125702	BUSHING, 5/8 ID X 7/8 OD X 3-3/8 LONG
44	L125703	BUSHING, 7/8 ID X 1-1/4 OD X 1/2 WIDE
45	L125704	CARRIAGE BOLT, 1/2-13 X 5-1/2, MACHINED HEAD
46	L125705	RATCHETING WRENCH, CAN SUB #KA4235
47	KD1026	BUSHING, IDLER SPROCKET, 3/8 ID X 1-3/16 LONG
37	L125711	SPROCKET STORAGE WELDMENT
47	L125782	SPROCKET WELDMENT, CLUTCH, #40, 30T
48	L125775	HEX SHAFT, 7/8, MACHINED TO ACCEPT SHEAR COUPLER
49	L125776	SHEAR COUPLER
50		7/8 HEX SHAFT
51	L125782	SPROCKET WELDMENT, CLUTCH, #40, 30T
52	F64251	Spring pin 1/4" x 1-1/2"
53	L70579768	L-PIN, CLUTCH
54	4502.S	U BOLT, 5/8-11, 7 X 7
55	L71502624	CLUTCH BLOCK W/HEX BORE
56	L71502909	SELF LUBRICATED BUSHING, HEX BORE, SPROCKET
57	L71506635	SPRING, L-PIN
58		SET SCREW, SQ. HEAD, 3/8-16 X 5/8

## TRANSMISSION

### 8-Row 38", 12-Row, and 16-Row Pull Type

#### ASSEMBLY 8-Row 38, 12-Row, 16-Row



**TRANSMISSION**

**8-Row 38", 12-Row, and 16-Row Pull Type**

**ASSEMBLY 8-Row 38, 12-Row, 16-Row**

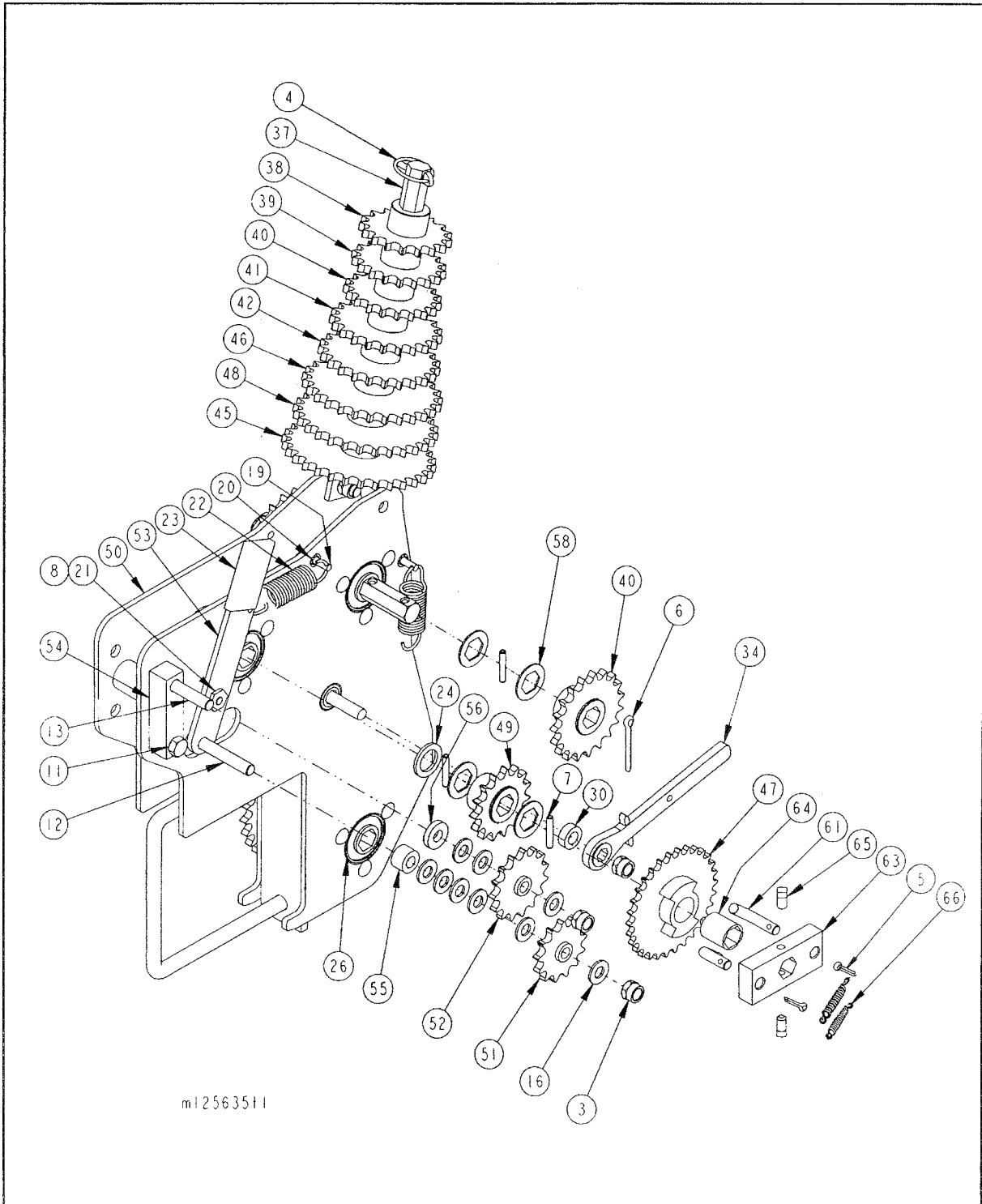
ITEM	PART NO.	DESCRIPTION
1	F58805	GREASE FITTING, 1/4-28
2	F37211	REV LOCK NUT, 5/16-18
3	6077	LYNCHPIN, 1/4 X 1-1/4
4	F65125	COTTER PIN, 3/16 X 1-1/2
5	F65128	COTTER PIN, 3/16 X 2-1/4
6	F65147	COTTER PIN, 1/4 X 2
7	F64251	ROLL PIN, 1/4 X 1-1/2
8	F33006	WASHER, FLAT, 5/16 USS
9	F33090	WASHER, FLAT, 5/8 SAE
10	F21811	CARRIAGE BOLT, 5/16-18 X 1 GR5
11	K10233	MACHINE BUSHING, 1 ID X 1-1/2 OD X 1/8 THICK
12	L117974	TRANSMISSION WELDMENT
13	L118657	MACHINE BUSHING, 5/8 ID X 1 OD
14	4515.2	BEARING FLANGETTE, 3 BOLT HOLE
15	4515.1	BEARING ONLY, HEX BORE, SELF ALIGNING
16	KD5961	COUPLER, 7/8 HEX BORE, 2-1/4 LONG W/1/4 HOLE
17	L122865	HEX SHAFT, 7/8 X 8-1/2, 4 - 1/4" HOLES
18	F37345	HEX FLANGE NUT, SERRATED, 1/2-13
19	L125706	IDLER, #50 CHAIN, CAN SUB #4319
20	L125711	SPROCKET STORAGE WELDMENT
21	G50B17	SPROCKET, #50, HEX BORE, 17T
22	G50B19	SPROCKET, #50, HEX BORE, 19T
23	G50B23	SPROCKET, #50, HEX BORE, 23T
24	G50B24	SPROCKET, #50, HEX BORE, 24T
25	G50B25	SPROCKET, #50, HEX BORE, 25T
26	G50B30	SPROCKET, #50, HEX BORE, 30T
27	G50B27	SPROCKET, #50, HEX BORE, 27T
28	G50B28	SPROCKET, #50, HEX BORE, 28T
ABOVE SPROCKETS ARE STANDARD, OTHER SPROCKETS AVAILABLE:		
	G50B14	SPROCKET, #50, HEX BORE, 14T
	G50B15	SPROCKET, #50, HEX BORE, 15T
	G50B18	SPROCKET, #50, HEX BORE, 18T
	G50B21	SPROCKET, #50, HEX BORE, 21T
	G50B26	SPROCKET, #50, HEX BORE, 26T
29	L125793	HANDLE WELDMENT, CHAIN TIGHTENER
30	L125934	IDLER WELDMENT, CHAIN TIGHTENER
31	L125935	SPRING, CHAIN TIGHTENER
32	L125948	SHEAR COUPLER
33	L125949	HEX SHAFT, 7/8, MACHINED TO ACCEPT SHEAR COUPLER
34	L125953	LOCK PIN, CHAIN TIGHTENER
35	5681.B	SPRING
36	L126354	PLATE
37	F13232	SCREW, HEX HEAD CAP, 1/2-13 X 9-1/2 GR5
38	7091	SPRING CLIP PIN

TRANSMISSION CHAIN, #50, 72 LINKS W/CONN.LINK

**TRANSMISSION**

**24-Row Pull Type**

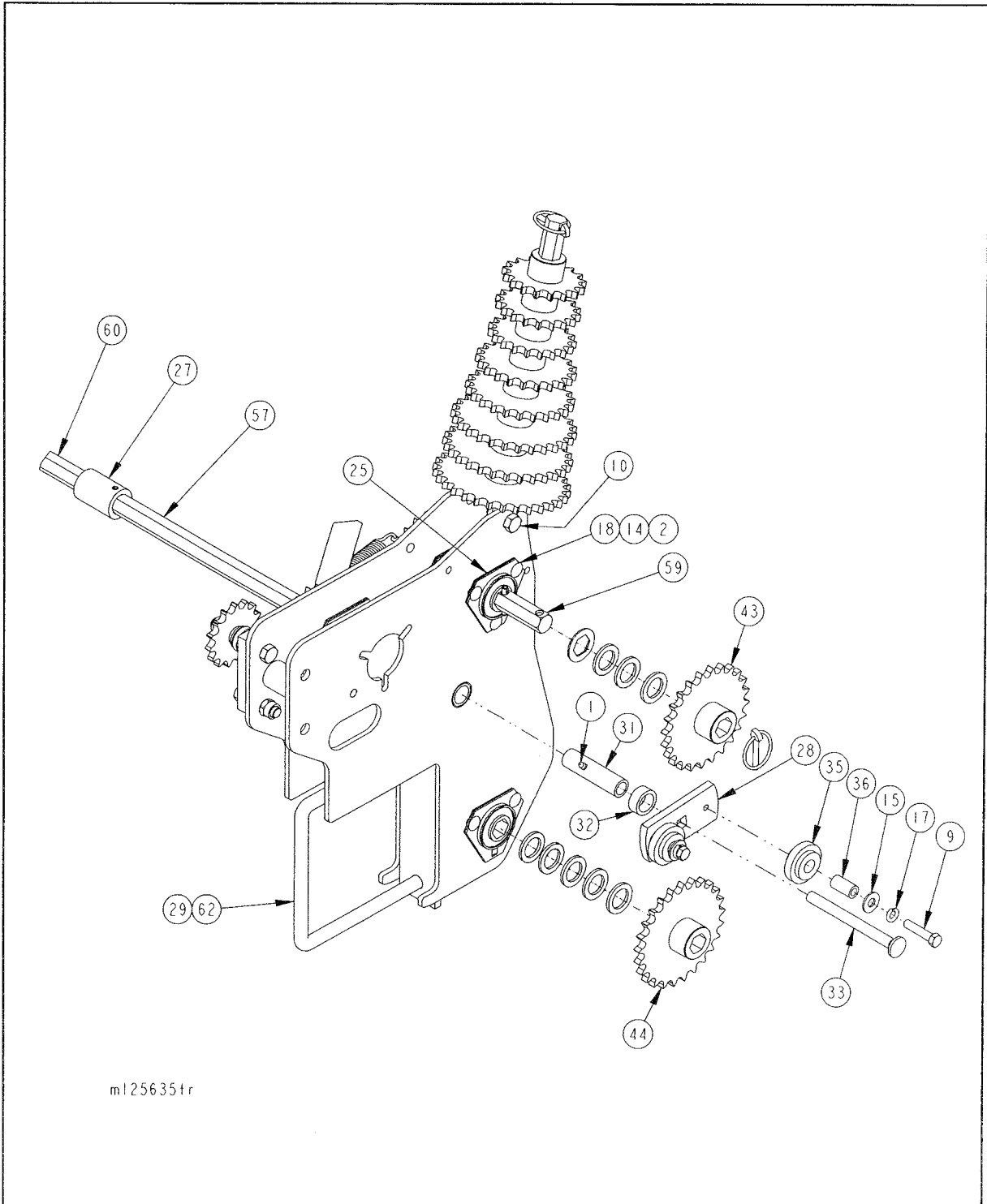
**ASSEMBLY 24-Row**



## TRANSMISSION

### 24-Row Pull Type

#### ASSEMBLY





**TRANSMISSION**

**24-Row Pull Type**

**ASSEMBLY**

ITEM	PART NO.	DESCRIPTION
1	F58805	GREASE FITTING, 1/4-28
2	F37211	REV LOCK NUT, 5/16-18
3	F37214	REV LOCK NUT, 1/2-13
4	6077	LYNCHPIN, 1/4 X 1-1/4
5	F65123	COTTER PIN, 3/16 X 1
6	F65147	COTTER PIN, 1/4 X 2
7	F64251	ROLL PIN, 1/4 X 1-1/2
8	F13105	SCREW, HEX HEAD CAP, 3/8-16 X 1 GR5
9	F13110	SCREW, HEX HEAD CAP, 3/8-16 X 1-3/4 GR5
10	F13207	SCREW, HEX HEAD CAP, 1/2-13 X 1-1/4 GR5
11	F13211	SCREW, HEX HEAD CAP, 1/2-13 X 2 GR5
12	F13215	SCREW, HEX HEAD CAP, 1/2-13 X 3 GR5
13	F13216	SCREW, HEX HEAD CAP, 1/2-13 X 3-1/4 GR5
14	F33080	WASHER, FLAT, 5/16 SAE
15	F33008	WASHER, FLAT, 3/8 USS
16	F33086	WASHER, FLAT, 1/2 SAE
17	F33622	WASHER, SPLIT LOCK, 3/8
18	F21811	CARRIAGE BOLT, 5/16-18 X 1 GR5
19	L116249	PIN, CLEVIS, 5/16 X 1
20	L116336	RETAINING RING, 5/16
21	L117271	NUT WITH PIVOT SHOULDER, 3/8-16
22	KD5857	SPRING, CHAIN TIGHTENER
23	KD5827	HANDLE GRIP, RED PLASTIC
24	K10233	MACHINE BUSHING, 1 ID X 1-1/2 OD X 1/8 THICK
25	4515.2	BEARING FLANGETTE, 3 BOLT HOLE
26	4515.1	BEARING ONLY, HEX BORE, SELF ALIGNING
27	KD5961	COUPLER, 7/8 HEX BORE, 2-1/4 LONG W/1/4 HOLE
28	L122870	IDLER BAR, FOR BOLT ON IDLERS
29	F37349	HEX FLANGE NUT, SERRATED, 5/8-11
30	L125701	BUSHING, 9/16 ID X 1 OD X 3/8 WIDE
31	L125702	BUSHING, 5/8 ID X 7/8 OD X 3-3/8 LONG
32	L125703	BUSHING, 7/8 ID X 1-1/4 OD X 1/2 WIDE
33	L125704	CARRIAGE BOLT, 1/2-13 X 5-1/2, MACHINED HEAD
34	L125705	RATCHETING WRENCH, CAN SUB #KA4235
35	L125706	IDLER, #50 CHAIN, CAN SUB #4319
36	KD1026	BUSHING, IDLER SPROCKET, 3/8 ID X 1-3/16 LONG
37	L125711	SPROCKET STORAGE WELDMENT
38	G50B17	SPROCKET, #50, HEX BORE, 17T
39	G50B18	SPROCKET, #50, HEX BORE, 18T
40	G50B19	SPROCKET, #50, HEX BORE, 19T

**TRANSMISSION**

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**24-Row Pull Type**

**ASSEMBLY**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
41	G50B21	SPROCKET, #50, HEX BORE, 21T
42	G50B23	SPROCKET, #50, HEX BORE, 23T
43	G50B24	SPROCKET, #50, HEX BORE, 24T
44	G50B25	SPROCKET, #50, HEX BORE, 25T
45	G50B30	SPROCKET, #50, HEX BORE, 30T
46	G50B27	SPROCKET, #50, HEX BORE, 27T
47	L125782	SPROCKET WELDMENT, CLUTCH, #40, 30T
48	G50B28	SPROCKET, #50, HEX BORE, 28T
49	G50B15	SPROCKET, #50, HEX BORE, 15T
50	L125788	TRANSMISSION WELDMENT
51	G5013E	IDLER SPROCKET W/BEARING, 13T, #50
52	G5015E	IDLER SPROCKET W/BEARING, 15T, #50
53	L125797	HANDLE
54	L125798	SPACER BLOCK, 2 HOLE
55	L125799	SPACER, 1 OD X 1/2 ID X 1-5/8 WIDE
56	L125930	SPACER, 1-3/16 OD X 1/2 ID X 1/4 WIDE
57	L125936	SHAFT, 7/8 HEX, 16" LONG
58	10629031	HEX WASHER, 26 X 41 X 2
59	L125939	SHAFT, 7/8 HEX, 9" LONG
60	L125944	SHAFT, 7/8 HEX, 55" LONG
61	L70579768	L-PIN, CLUTCH
62	4502.S	U BOLT, 5/8-11, 7 X 7
63	L71502624	CLUTCH BLOCK W/HEX BORE
64	L71502909	SELF LUBRICATED BUSHING, HEX BORE, SPROCKET
65		SET SCREW, SQ. HEAD, 3/8-16 X 5/8
66	L71506635	SPRING, L-PIN

TRANSMISSION CHAIN, #50, 72 LINKS W/CONN.LINK  
 REVERSER CHAIN, #50, 76 LINKS W/CONN. LINK  
 SLIP CLUTCH/CONTACT DRIVE CHAIN, #40, 132 LINKS W/CONN. LINK

This is a downloadable version of the manual. A partial download may not contain all pertinent information. Make Sure to read Chapter 1, Safety!  
Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.

**TABLE OF CONTENTS**

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**1. SAFETY**

---

**2. PREPARATION**

---

**3. FRAME**

---

**4. TRANSMISSION**

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**5. DRIVE**

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**6. ROW UNIT**

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**7. OPTIONAL EQUIPMENT**

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This is a downloadable version of the manual. A partial download may not contain all pertinent information. Make Sure to read Chapter 1, Safety!  
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**DRIVE**

**STANDARD Turbofan  
540, 450 & 1000 RPM with PTO Drive**

Your Monosem planter will be equipped with either a 540, 450 or 1000 rpm turbofan. A special pump pulley is available as optional equipment for the 450 and 540 turbofans. It is recommended to use a 450 rpm turbofan when using a hydraulic drive.


The vacuum hose is attached to the outlets on the back of the turbofan and delivers suction to the metering box of each unit. An arrow sticker on the back of the turbofan indicates that the turbofan blade runs in a counter clockwise direction. A protection shield against the rain is located at the top of the turbofan, and when in a raised position, indicates that the turbofan is operating.

Note: Before planting, make sure that the support brackets are tight to eliminate any vibrations of the turbofan. A vacuum gauge may also be mounted to the frame.




**PTO (Power Take Off)**

The PTO connects the tractor to the turbofan.

 Make sure you connect the proper end of the PTO to the tractor. An arrow on the PTO indicates the end that is attached to the tractor.

The following warning is placed on your PTO shaft for your safety.

 **DANGER** Rotating drive line contact can cause death – keep away. Do not operate without all driveline, tractor and equipment shields in place, without drivelines securely attached at both ends, and without driveline shields that turn freely on driveline.



Vacuum gauge



**DRIVE**

**HIGH Output Turbofan  
500 & 1000 RPM**

The high output turbofan provides more air than the standard turbofan. The high output turbofan is to be used when the planter is 8 rows or more and when planting heavy seed such as beans.

When using a hydraulic drive, a 500-rpm high output turbofan should be used instead of a 1000-rpm high output turbofan.

An extended shaft (#4405.A2) is used for planters with 7" X 7" mounted toolbar frames and PTO drive, to provide more room for the PTO.

The vacuum hose is attached to the outlets on the front of the turbofan and deliver suction to the metering box of each unit. An arrow decal sticker on the turbofan indicates the direction that the turbofan blade runs, which is counter clockwise. A shield to protect the turbofan from the rain is located at the top of the turbofan, and when in a raised position, indicates that the turbofan is operating.

**Note: Before planting, make sure that the support straps (1) are tight to eliminate any vibrations of the turbofan.**

You can mount a vacuum gauge to the turbofan.

**EXTRA HIGH Output Turbofan  
540 & 1000 RPM**

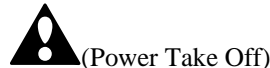
The extra high output turbofan was designed to provide more volume of air than the standard or high output turbofan. The extra high output turbofan is most often used with planters of 16 rows or more.

The extra high output turbofan can be used with either a PTO or a hydraulic motor. When using a PTO, this turbofan requires a PTO with an overrunning clutch. When using a hydraulic motor, this turbofan requires a larger motor.

The vacuum hose is attached to the outlets on the front of the turbofan and deliver suction to the metering box of each unit. An arrow decal sticker on the turbofan indicates the direction that the turbofan blade runs, which is counter clockwise. A shield to protect the turbofan from the rain is located at the top of the turbofan, and when in a raised position, indicates that the turbofan is operating.

You can mount a vacuum gauge to the turbofan.

**PTO Drive**



(Power Take Off)

The PTO connects the tractor to the turbofan.

Make sure you connect the proper end of the PTO to the tractor. An arrow on the PTO indicates the end that is attached to the tractor.

The following warning is placed on your PTO shaft for your safety. (part # ST057)



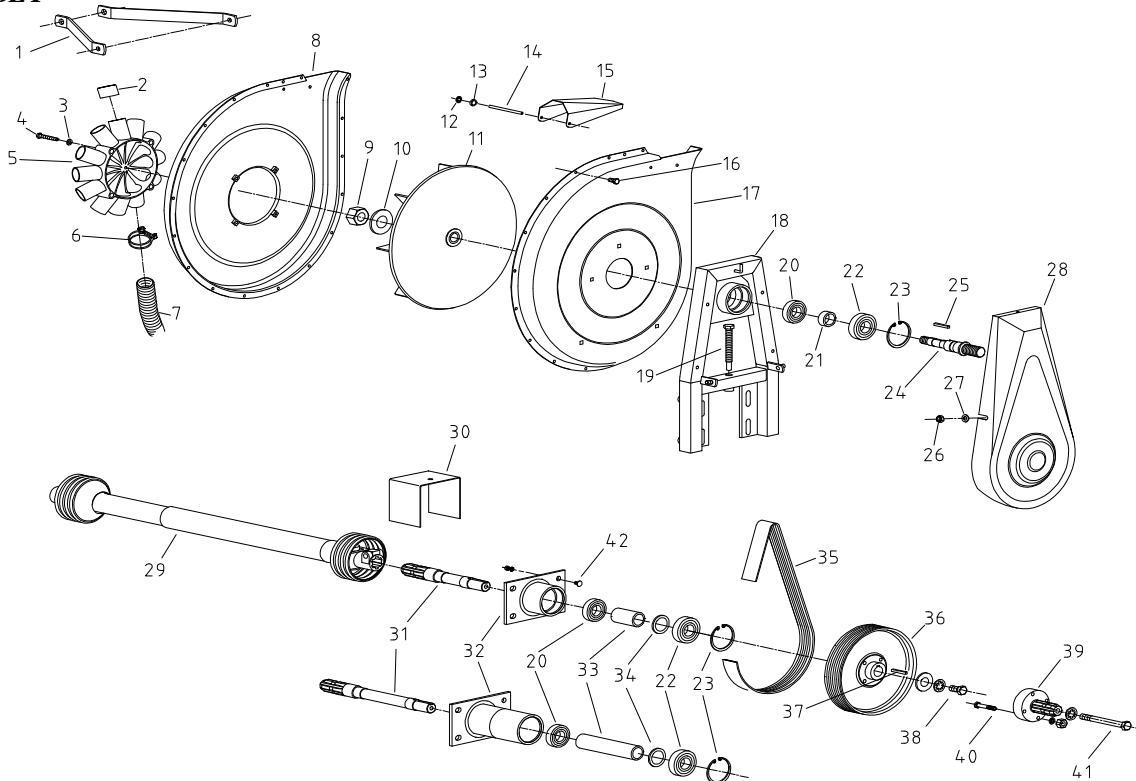
**DANGER**  
**Rotating drive line contact can cause death – keep away. Do not operate without all driveline, tractor and equipment shields in place, without drivelines securely attached at both ends, and without driveline shields that turn freely on driveline.**



**DRIVE**

**Standard Turbofan 540, 450 and 1000 rpm with PTO drive**

**ASSEMBLY**



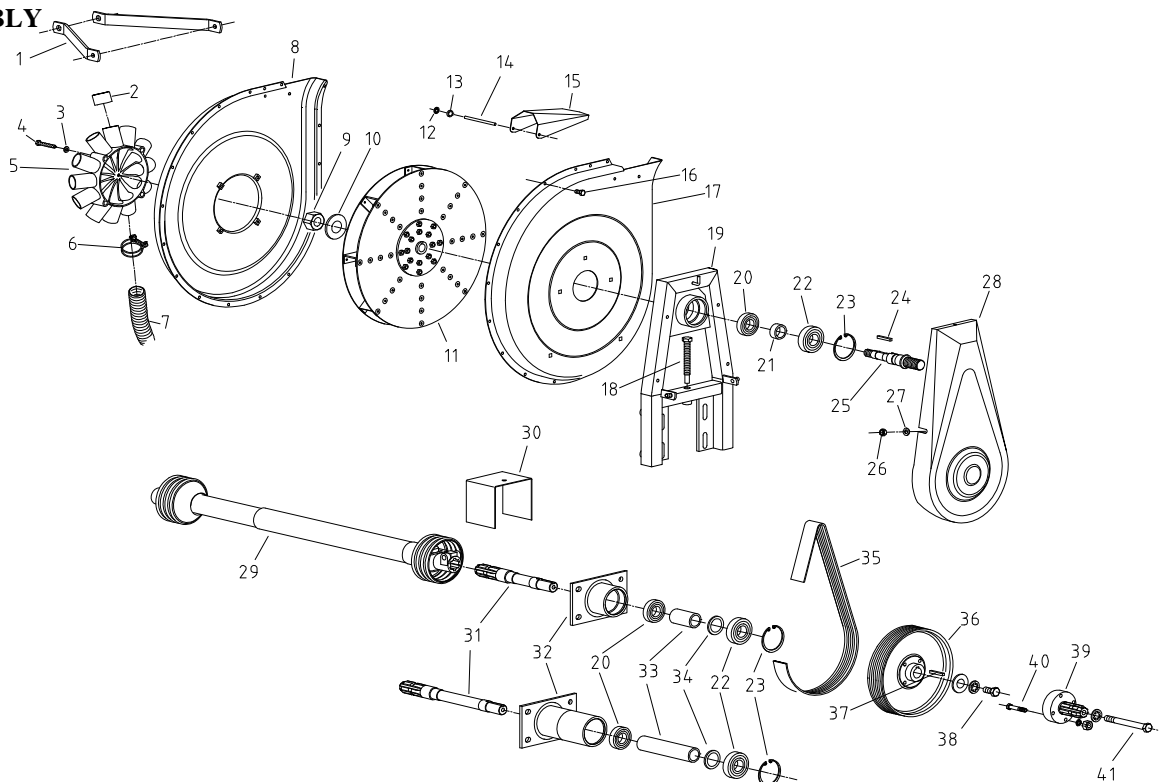
ITEM	PART No.	DESCRIPTION
1	4532	Support strap - 565mm long (22 1/4")
	4532.1	Support strap - 340mm long (13 3/8")
	4532.2	Support strap - 480mm long (18 7/8")
2	4451	Plastic cap
3	10620064	Washer 8.5x16x2mm
4	10511062	Bolt, 8x55mm (to secure manifold)
5	4450	12-Hole manifold
6	4453	Hose clamp
7	4454	Vacuum hose 40mm (specify length req.d)
8	4402.B	Fan housing manifold side
9	NM-72005	Nylon lock nut 20mm (to secure fan blade)
10	10623042	Washer 22.5x48x3mm (on upper shaft)
11	4403.B	Fan blade (plastic, 16 1/8" dia.)
12	6090	Snap ring 6mm
13	6089	Rubber ring
14	4455	Pin for outlet shield
15	4429.A	Outlet shield
16	10500091	Hex bolt 6x12mm
17	4401.B	Fan housing (support frame side)
18	4400.1	Support frame
19	4440	Special bolt tension adjustment
20	4407	Bearing 62mm (62062RS)
21	4410.A	Spacer upper shaft
22	4408	Bearing 72mm (63062RS)
23	4409	Snap ring internal 72mm
24	4452	Upper shaft, 540 & 1000 rpm (1 1/8" dia. pulley)
	4452.1	Upper shaft, 450 rpm (7/8" dia. pulley)
25	4439.A	Key upper shaft (6x6x45mm)
26	NM-21015	Lock nut 10mm
27	10620089	Washer 10.5x20x2mm
28	4414.2	Cover shield for belt

ITEM	PART No.	DESCRIPTION
28	4414.2	Cover shield (with optional pump pulley)
29	4428.B	PTO drive shaft 540rpm 24"
	4428.B21	PTO drive shaft 1000rpm 24"
	4431.B	PTO drive shaft 540rpm 36"
	4431.B21	PTO drive shaft 1000rpm 36"
	4432.B	PTO drive shaft 540rpm 54" - Pull-Type only
	4432.B21	PTO drive shaft 1000rpm 54" - Pull-Type only
	900058	PTO drive shaft pull type with 20 splines 54" - Pull-Type only
30	4434.4	Safety shield
31	4405.A	Lower shaft (1 3/8" 6 spline adapter)
	4405.A2	Lower shaft extended 7X7 PTO
32	4404	Shaft housing (lower drive shaft)
	4404.3	Shaft housing extended 7X7 PTO
33	4411	Spacer lower shaft
	4411.2	Spacer extended 7X7 PTO
34	10624018	Washer 31x41x3mm
35	4413	Belt, 450 & 540 rpm (PJ1168/460J or 460J19)
	4413.1	Belt 1000 rpm (PJ955/376J)
36	4412.2	Pulley, 450 & 540rpm (9 13/16" dia.)
	4412.3	Pulley, 1000 rpm (5 5/16" dia.)
37	4437	Key lower shaft (8x7x40mm)
38	HM-61230	Bolt, 12x30mm (to secure pulley)
	10621061	Washer 13x40x4mm (to secure pulley)
39	4426	Pump pulley (6 spline stub shaft)
40	HM-2850	Bolt, 8x50mm
	10629009	Lock washer 8x14mm
41	HM-65110	Bolt, 12x110mm
	10101012	Lock washer 12x20mm
42	CB-3322	Carriage bolt 7/16-14 x 2"
	W-3610	Lock washer 7/16"
5. 3	N-3000	Hex nut 7/16-14

**DRIVE**

**High Output Turbofan 500 1000 rpm  
With PTO drive**

**ASSEMBLY**



**ITEM PART No. DESCRIPTION**

1	4532	Support strap – 565mm long (22 1/4")
	4532.1	Support strap – 340mm long (13 3/8")
	4532.2	Support strap – 480mm long (18 7/8")
2	4451	Plastic cap
3	10620064	Washer 8.5x16x2mm
4	10511062	Bolt, M8x55 (to secure manifold)
5	4450	12-hole manifold
6	4453	Hose clamp
7	4454	Vacuum hose 40mm ID (specify length)
8	4402.C	Fan Housing, (manifold Side)
9	NM-72005	Lock nut, M20 (to secure fan blade)
10	10623042	Washer, 22.5x48x3mm
11	4403.D	Fan Blade (aluminum, 17 3/4" Dia.)
12	6090	Snap ring (6mm)
13	6089	Rubber ring
14	4455	Pin for outlet shield
15	4429.A	Outlet shield
16	10500091	Hex bolt M6x12
17	4401.B	Fan Housing, (support frame side)
18	4440	Belt tension adjustment bolt
19	4400.1A	Support Frame
20	4407	Bearing 62mm (62062RS)
21	4410.A	Spacer bushing (upper shaft)
22	4408	Bearing 72mm (63062RS)
23	4409	Snap ring, internal (72mm)
24	4439.A	Key stock for upper shaft (6x6x45mm)
25	4452.B	Upper shaft (1 1/8" Dia. Pulley)
26	NM-21015	Lock nut M10
27	10620089	Washer 10.5x20x2mm

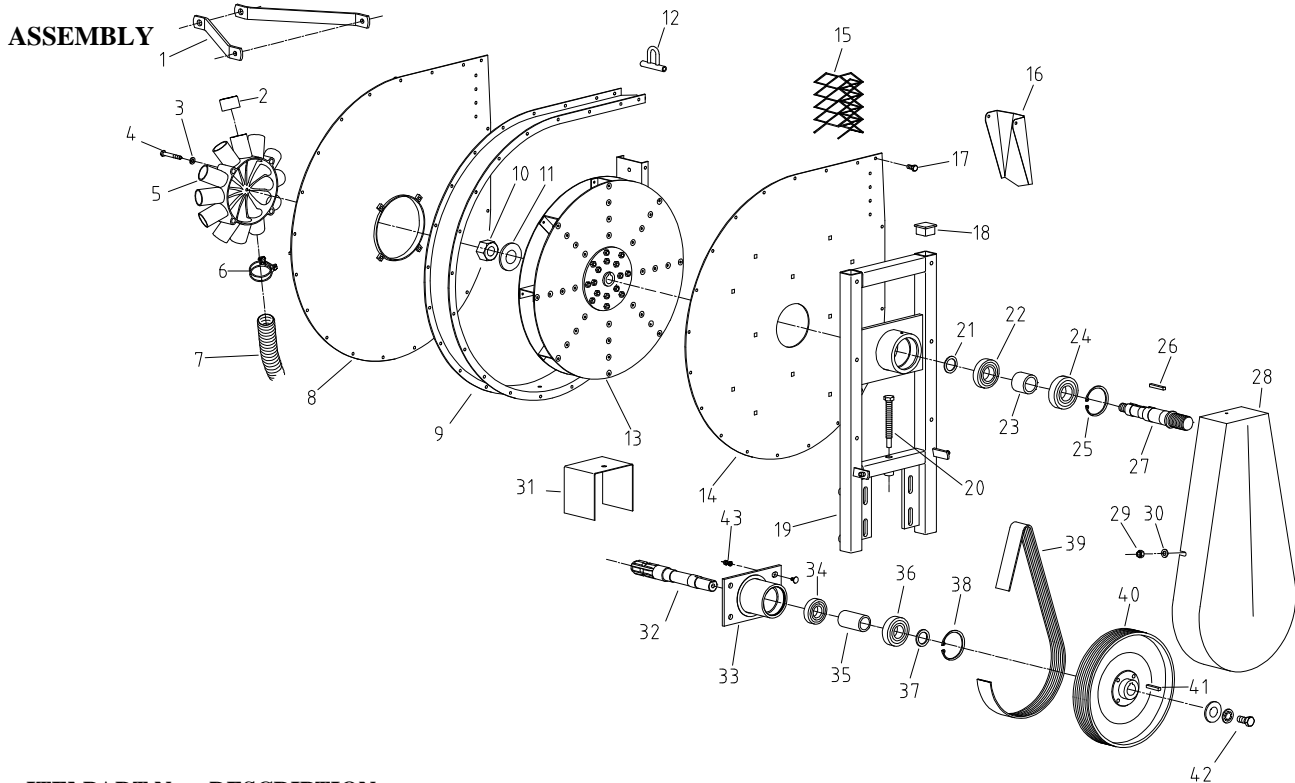
**ITEM PART No. DESCRIPTION**

28	4414.1A	Cover shield for belt
29	4428.B	PTO drive shaft 540 rpm, 24" long
	4431.B	PTO drive shaft 540 rpm, 36" long
	900057	PTO drive shaft HD 1000 rpm 20 spline
30	4434.3	Safety shield
31	4405.A	Lower shaft (1 3/8" 6-spline)
	4405.A2	Extended shaft 7X7 toolbar w/PTO
32	4404.A	Shaft Housing (lower drive shaft)
	4404.3	Extended housing 7X7 toolbar w/PTO
33	4411	Spacer bushing (lower shaft)
	4411.2	Long bushing 7X7 toolbar w/PTO
34	10624018	Washer, 31x41x3mm
35	4413.B	Belt, 500 rpm (1244J25)
	4413.1B	Belt, 1000 rpm (991J25)
36	4412.B	Pulley, 500 rpm (11 3/8" Dia.)
	4412.1B	Pulley, 1000 rpm (5 7/8" Dia.)
37	4437	Key stock for lower shaft (8x7x40mm)
38	HM-61230	Bolt, M12x30 (to secure pulley)
	10621061	Washer, 13x40x4mm (to secure pulley)
	10101012	External tooth lock washer (12x20mm)
39	4426	Pump pulley (6 spline stub shaft)
40	HM-2850	Bolt M8x50
	10629009	External tooth lock washer (8x14mm)
41	HM-65110	Bolt, M12x110
	10101012	External tooth lock washer (12x20mm)



**DRIVE**

**Extra High Output Turbofan 540 & 1000 RPM  
With PTO Drive**



**ITEMPART No. DESCRIPTION**

1	4532.2	Turbofan support strap - 480mm long (18 7/8")
2	4451	Plastic cap, 40mm
3	10620064	Washer 8.5x16x2mm
4	10511062	Hex bolt M8x55
5	4450	12 hole manifold
6	4453	Hose clamp
7	4454	Vacuum hose (40mm ID, specify length)
8	4242	Fan housing (manifold side)
9	4243	Fan housing sidewall
10	NM-72005	Nylon locknut, 20mm (to secure fan blade)
11	10623042	Washer 22.5x48x3mm
12	4253	Support eye
13	4244.co	Fan blade, aluminium 19 5/8" dia.
14	4241	Fan housing (support frame side)
15	4254	Screen
16	4429.a	Outlet shield
17	10500091	Hex bolt M6x12
18	9525	End cap
19	4240	Support frame
20	4440	Bolt to adjust belt tension
21	10624016	Washer, 31x41x2mm (on upper shaft)
22	4251	Bearing upper shaft (62072RS1)
23	4247	Spacer bushing (upper shaft)
24	4252	Bearing upper shaft (63072RS1)

**ITEMPART No. DESCRIPTION**

25	4246	Snapping, internal (80mm)
26	4439.A	Key stock for upper shaft (6x6x45mm)
27	4248.1	Upper shaft, 25 grooves (35mm O.D.)
28	4250	Cover shield for belt
29	NM-21015	Lock nut M10
30	1062089	Washer 10.5x20x2mm
31	4434.3	Safety shield
32	4405.a	Lower shaft (w/1 3/8" 6 spline adapter)
33	4404.a	Shaft housing (lower drive shaft)
34	4407	Bearing 62mm (62062RS)
35	4411	Spacer bushing (lower shaft)
36	4408	Bearing 72mm (63062RS)
37	10624018	Washer, 31x41x3mm (on lower shaft)
38	4409	Snapping, internal (72mm)
39	4249.2	Belt, 540 rpm 25 grooves (1335J25)
	4249.3	Belt, 1000 rpm 25 grooves
40	4412.B	Lower pulley, 540 rpm 25 grooves (290mm)
	4412.1B	Lower pulley, 1000 rpm 25 grooves (150mm)
41	4437	Key stock for lower shaft (8x7x40mm)
42	HM-61230	Hex bolt M12x30
	10621061	Washer 13x40x4mm
	10101012	Lock washer 12x20mm

**DRIVE**

**Vacuum Gauge - Standard for Hydraulic Drive, Optional for PTO Drive**

**VACUUM GAUGE SETTINGS**

The hydraulic drive is equipped with a vacuum gauge that allows you to read the vacuum level of the turbofan. The vacuum level should be set depending on the weight and size of the seed to be planted. Vacuum gauge settings for the hydraulic drive are shown below in inches of water column. This is a guideline for small, medium and large seed.

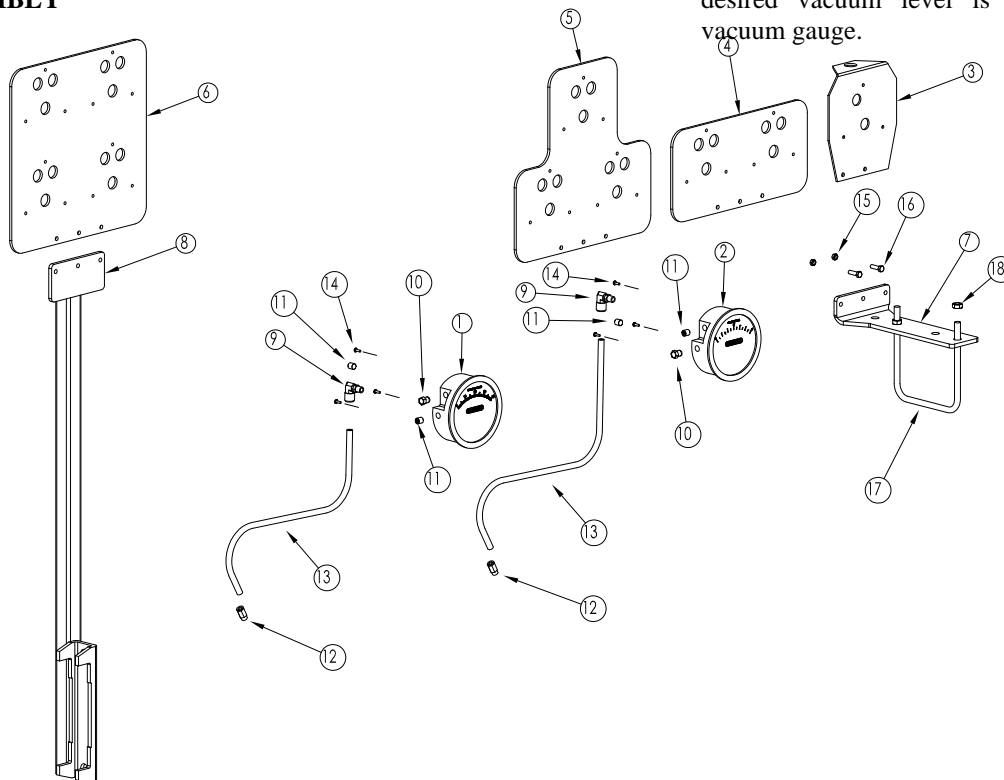
Small (Sugarbeet/Pickle)	15"-20"
Medium (Corn)	20"-25"
Large (Beans/Peanut)	25"-30"

**To set the vacuum level:**

It is not necessary to have to reset vacuum levels daily. Vacuum levels will be slightly lower during tractor and pump start-up.

1. Use the recommended vacuum settings above, or consult your dealer.
2. Push tractor lever/switch to start oil flow to hydraulically driven turbofan and let oil warm up.
3. With some seed in the hoppers, turn drive wheels by hand or lower planter to engage drive wheels and drive forward a short distance to fill cells on seed discs with seed. This will result in a more accurate setting of the vacuum.
4. Re-adjust the oil flow, if necessary, until the desired vacuum level is obtained on the vacuum gauge.

**ASSEMBLY**



ITEM No.	PART No.	DESCRIPTION
1	D2040	Vacuum gauge
2	900389	Pressure gauge
3	M30050070	Mounting plate single
4	800187	Mounting plate double
5	800148	Mounting plate triple
6	800149	Mounting plate quadruple
7	800311	Panel mount mounted pltr.
8	80036	Panel mount pull type pltr.
9	J69PPS-4-2	Swivel elbow fitting
10	D200108-00	Filter vent plug

ITEM No.	PART No.	DESCRIPTION
11	A-330	Pipe plug 1/8" NPT
12	J68PP-4-2	Swivel fitting
13	JPT04	Tubing 1/4"
14	F27295	Screw 6-32 x 3/8"
15	NM-0605	Nylon lock nut, 6mm
16	HM-0620	Bolt 6 x 20 mm
17	4647.SS	U-bolt 5"x5"x3/8"-16
	4647.S	U-bolt 7"x7"x3/8"-16
	900240	U-bolt 5"x7"x3/8"-16
18	N-2100	Nylon lock nut 3/8 -16

**DRIVE**

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**Hydraulic Drive**

**Optional for 450 Standard, 500 High Output, or 540 Extra High Output Turbofans**

The hydraulic drive is optional for the 450 Standard turbofan, the 500 High Output turbofan and the 540 Extra High Output turbofan. The hydraulic drive attaches to the turbofan to produce and maintain the vacuum level.

The desired vacuum is dependent on the correct amount of oil flow to the hydraulic motor.

**Starving the motor of oil will cause the vacuum to drop.**

**An excessive amount of oil flowing into the motor can result in damage to the motor or the fan blade.**

When attempting to shut off the turbofan, the blade must be allowed to "wind down" slowly. If the flow of oil stops abruptly, the bypass block on the motor will recirculate the oil already in the motor helping to prevent damage to the blade and motor. Still, you should not allow the flow of oil to stop suddenly. This is accomplished with the tractor hydraulic controls. Refer to your tractor operator manual for further information.

**You can control oil flow to the motor in one of two ways:**

1. With a flow control valve that is optional for the hydraulic motor
2. With the tractor hydraulic system controls.

If your tractor has flow control capabilities, then it is recommended that you use this method and remove the in-line flow control valve. Failure to do this will cause the hydraulic oil to overheat, damaging the motor.

**Oil requirements are as follows:**

**Regular & high output turbofans: 6-7 gal/ minute**

**Extra high output turbofans: 7-8 gal/minute**

NOTE: Check the labeling on your turbofan to determine if you have a standard, high output or extra high output turbofan. As a general rule, planters with 8-15 rows have a high output turbofan, 16-rows and larger use an extra high output turbofan.



**HYDRAULIC SYSTEM SAFETY**

**DANGER. Before applying pressure to the hydraulic system, check that all connections are tight and that the hoses and fittings have not been damaged. Hydraulic fluid escaping under pressure can penetrate the skin causing serious injury. If injured by escaping hydraulic fluid see a doctor at once. Gangrene can result.**

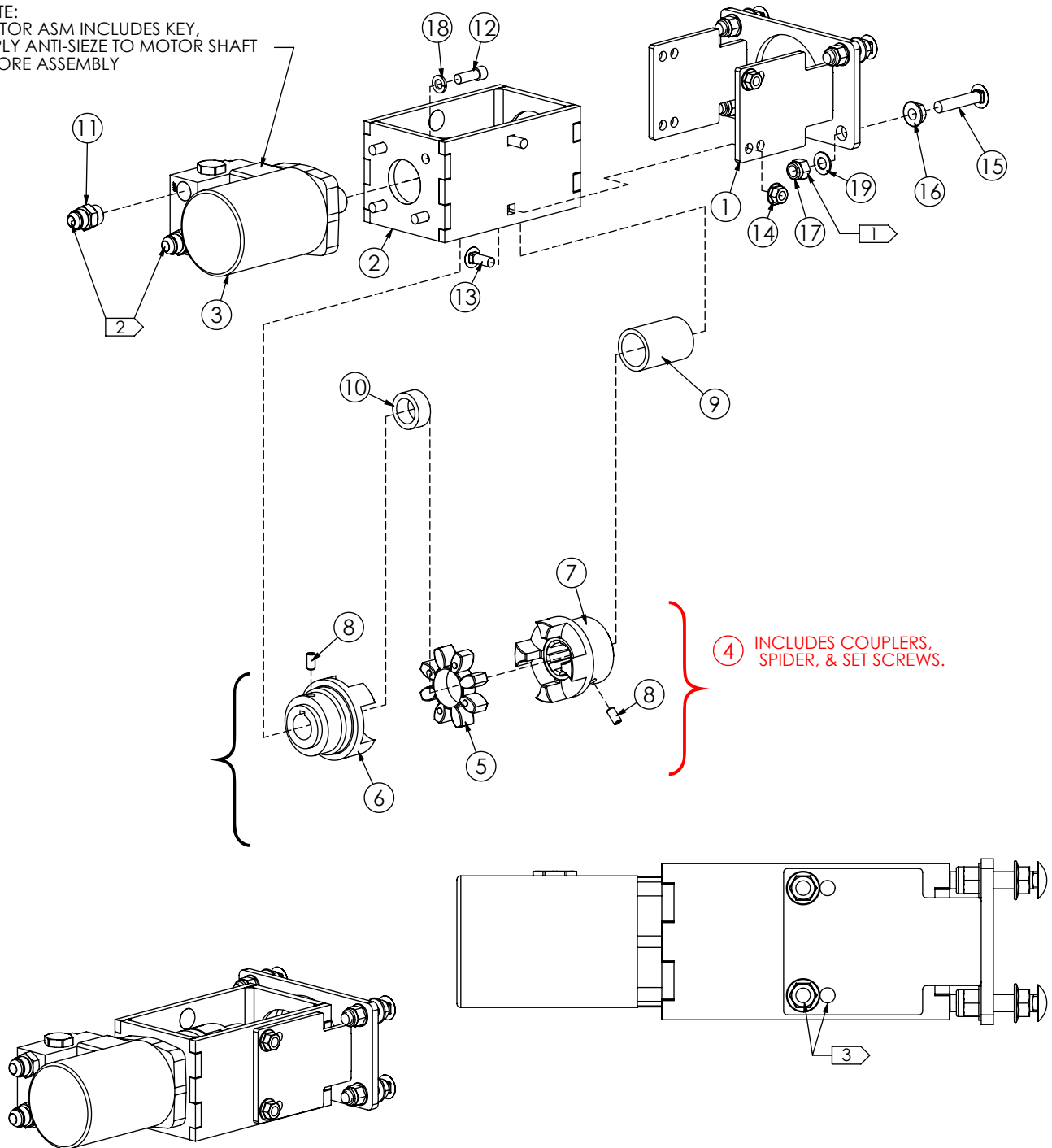


- **Relieve pressure on system before repairing, adjusting or disconnecting.**

# MOTOR BRACKET ASM, STD TURBO

This is a non-patented version of the original. The manual or parts download may contain all pertinent information. Make Sure to read Chapter 1, Safety!  
 Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.

NOTE:  
 MOTOR ASM INCLUDES KEY,  
 APPLY ANTI-SIEZE TO MOTOR SHAFT  
 BEFORE ASSEMBLY



STANDARD

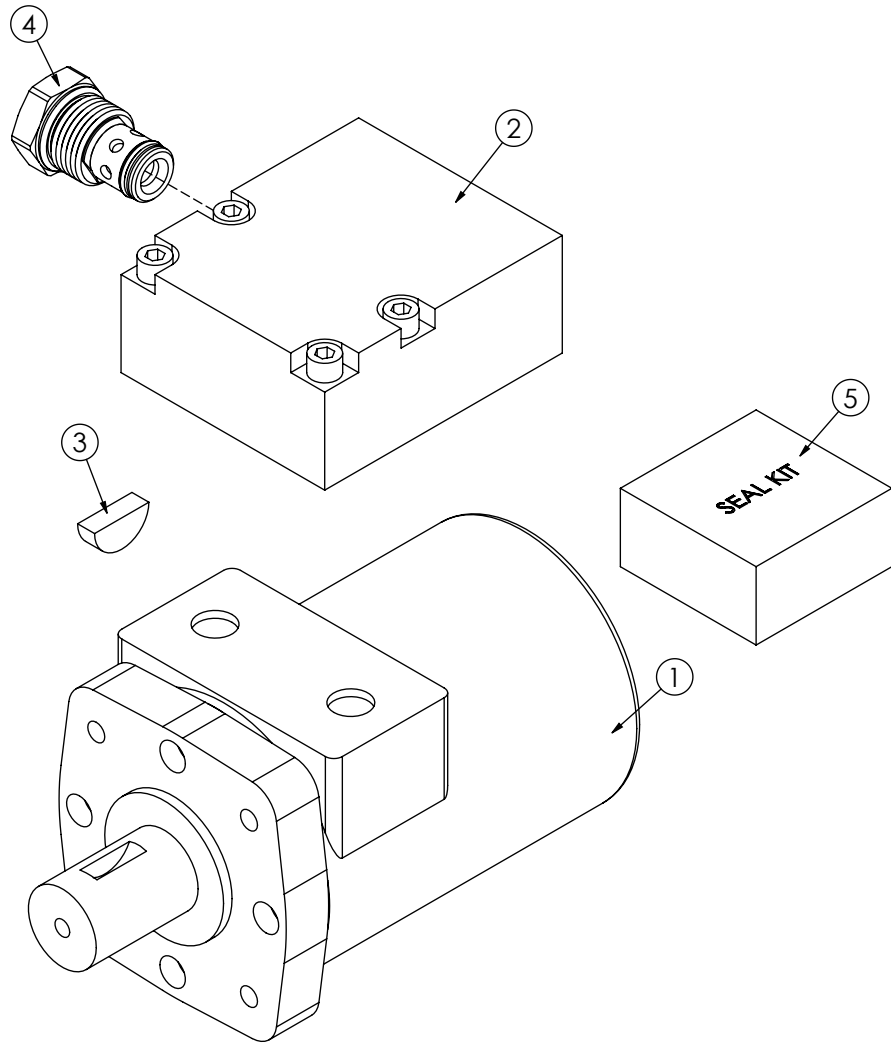
NOTE:

- 1 TORQUE N-3101 TO 35 FT.-LBS. ± 5 FT.-LBS.
- 2 1/2" HYDRAULIC HOSE LINES.
- 3 USE FRONT HOLE FOR STANDARD TURBO FAN,  
 USE BACK HOLE FOR HIGH OUTPUT TURBO FAN.

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	200266	MOTOR MOUNT END WA
2	1	200161	BRACKET WA
3	1	FTA0232-1	STD & HIGH OUTPUT TURBO MOTOR
4	1	640925	COUPLING
5	1	5041	ELASTIC SHOCK ABSORBER
6	1	5042	COUPLING, MOTOR SIDE, 1" KEYED
7	1	5040	COUPLING, TURBOFAN END, 6 SPLI
8	2	10591915	SCREW, SOCKET SET , M8 x 16
9	1	5039	COUPLING SPACER, 62MM LONG
10	1	800436	SPIDER RING
11	2	TA6400-8-8	1/2 MALE JIC-1/2 MALE O-RING
12	4	F23305	SCREW, SCKT HD CAP , 3/8"-16 X 1"
13	4	CB-2210	BOLT, CARRIAGE, 3/8"-16 X 1" G5
14	4	N-2301	NUT, FLANGE, SERRATED, 3/8"-16
15	4	CB-3323	BOLT, CARRIAGE, 7/16"-14 X 2-1/4" FULL THRD G5
16	4	N-3103	NUT, FLANGE, SERRATED, 7/16"-14
17	4	N-3101	NUT, NYLOCK 7/16"-14 G5
18	4	W-2610	WASHER, SPLIT, 3/8" G8 YZ
19	4	W-3410	WASHER, FLAT, 7/16" SAE G8 YZ

# STD & HIGH OUTPUT TURBO MOTOR

This is not the latest version of the manual. An extra download may not contain all pertinent information. Make Sure to read Chapter 1, Safety!  
Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.



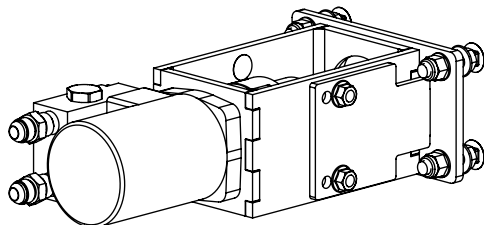
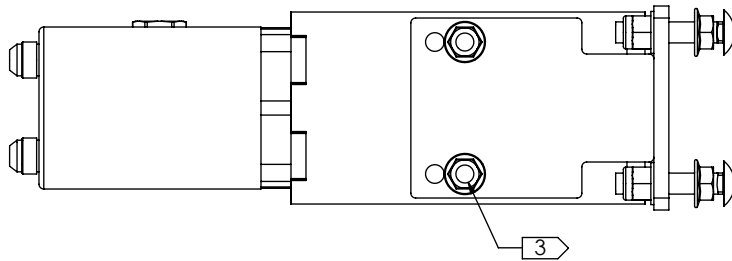
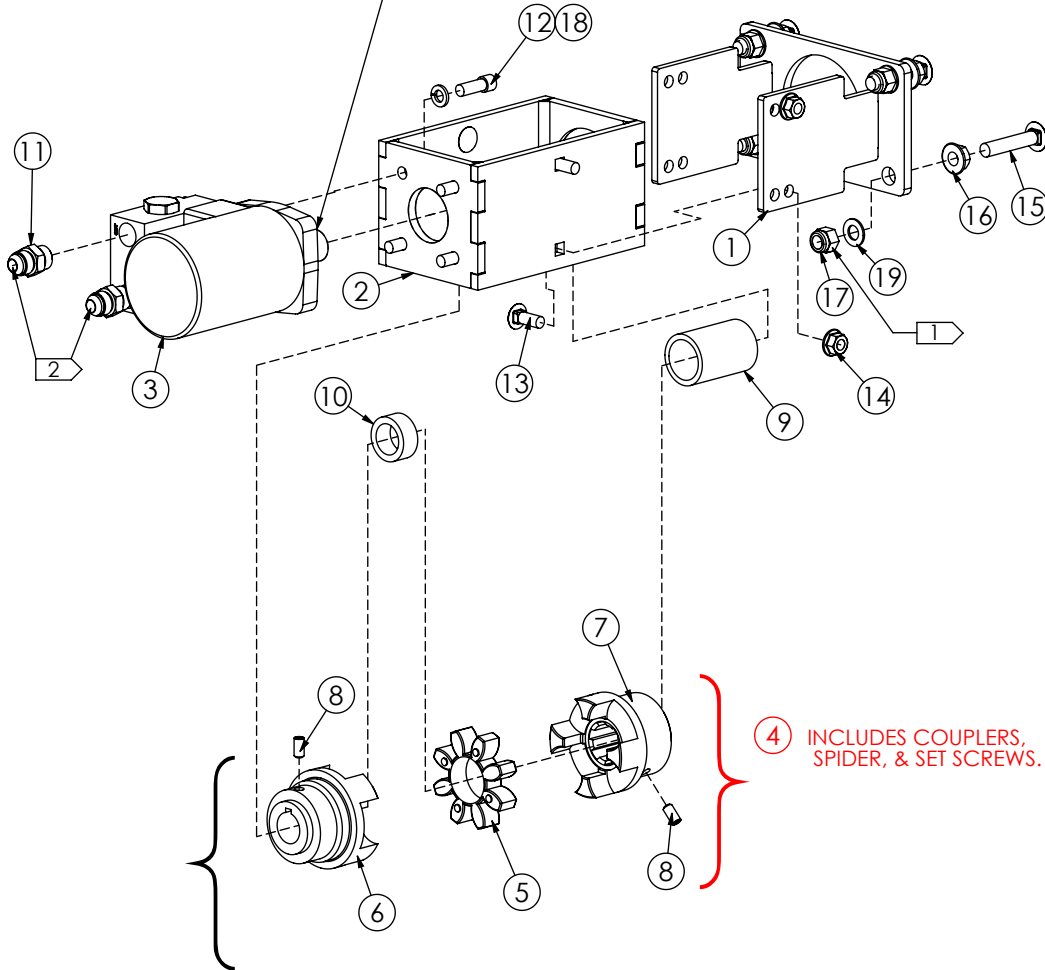
# STD & HIGH OUTPUT TURBO MOTOR

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	F101-017	HYDRAULIC MOTOR
2	1	FP10270-2	BYPASS BLOCK w/ HARDWARE
3	1	F14193	WOODRUFF KEY
4	1	900022	CHECK VALVE CARTRIDGE
5	1	F60540	SEAL KIT

# MOTOR BRACKET ASM, EXTRA HIGH OUTPUT TURBO

This is a non-optional item for the motor. A part is shown with a key. All pertinent information. Make Sure to read Chapter 1, Safety!  
 Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.

NOTE:  
 MOTOR ASM INCLUDES KEY,  
 APPLY ANTI-SIEZE TO MOTOR SHAFT  
 BEFORE ASSEMBLY



NOTE:

- 1 TORQUE N-3101 TO 35 FT.-LBS. ± 5 FT.-LBS.
- 2 1/2" HYDRAULIC HOSE LINES.
- 3 USE BACK HOLE FOR EXTRA HIGH OUTPUT TURBO FAN.

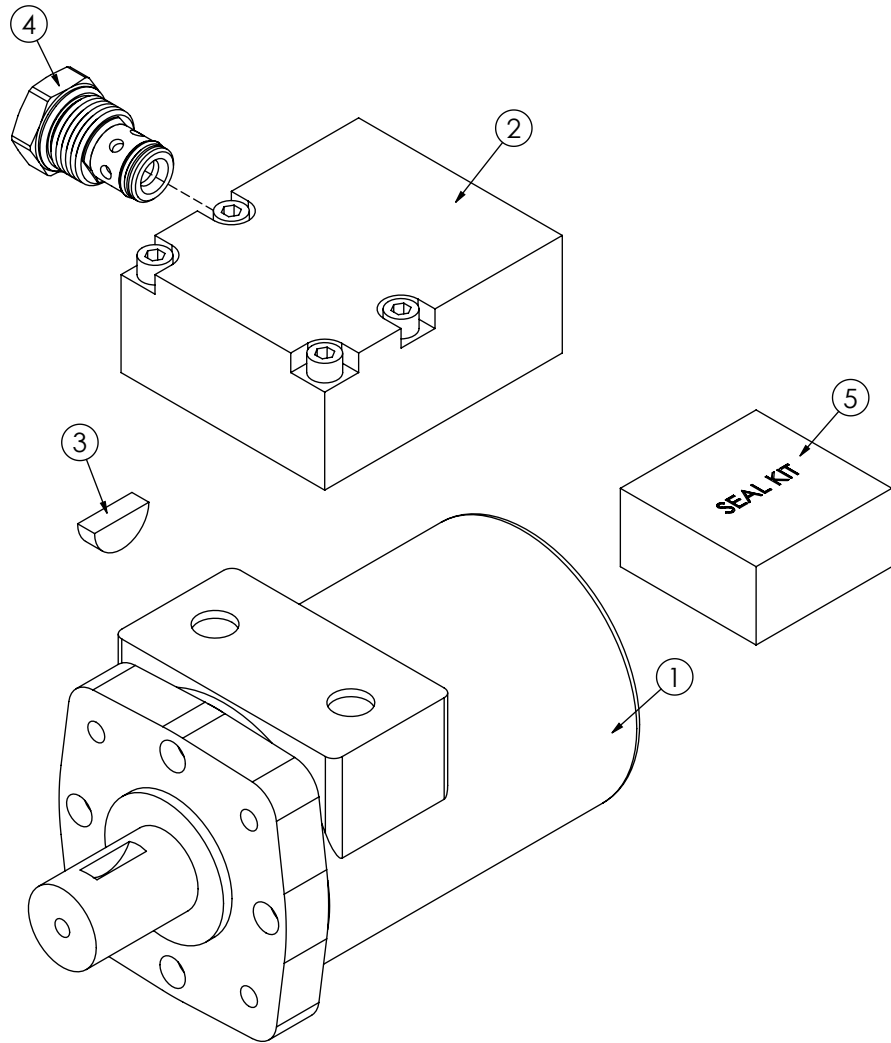


# MOTOR BRACKET ASM, EXTRA HIGH OUTPUT TURBO

ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	200266	MOTOR MOUNT END WA
2	1	200161	BRACKET WA
3	1	FTA0425	XHO TURBO MOTOR
4	1	640925	COUPLING
5	1	5041	ELASTIC SHOCK ABSORBER
6	1	5042	COUPLING, MOTOR SIDE, 1" KEYED
7	1	5040	COUPLING, TURBOFAN END, 6 SPLI
8	2	10591915	SCREW, SOCKET SET , M8 x 16
9	1	5039	COUPLING SPACER, 62MM LONG
10	1	800436	SPIDER RING
11	2	TA6400-8-8	1/2 MALE JIC-1/2 MALE O-RING
12	4	F23305	SCREW, SCKT HD CAP , 3/8"-16 X 1"
13	4	CB-2210	BOLT, CARRIAGE, 3/8"-16 X 1" G5
14	4	N-2301	NUT, FLANGE, SERRATED, 3/8"-16
15	4	CB-3323	BOLT, CARRIAGE, 7/16"-14 X 2-1/4" FULL THRD G5
16	4	N-3103	NUT, FLANGE, SERRATED, 7/16"-14
17	4	N-3101	NUT, NYLOCK 7/16"-14 G5
18	4	W-2610	WASHER, SPLIT, 3/8" G8 YZ
19	4	W-3410	WASHER, FLAT, 7/16" SAE G8 YZ

# EXTRA HIGH OUTPUT TURBO MOTOR

This is a download version of the manual. If the download may not contain all pertinent information. Make Sure to read Chapter 1, Safety!  
Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.



ITEM NO.	QTY.	PART NUMBER	DESCRIPTION
1	1	F101-018	HYDRAULIC MOTOR
2	1	FP10270-2	BYPASS BLOCK w/ HARDWARE
3	1	F14193	WOODRUFF KEY
4	1	900022	CHECK VALVE CARTRIDGE
5	1	F60540	SEAL KIT

This is a downloadable version of the manual. A partial download may not contain all pertinent information. Make Sure to read Chapter 1, Safety!  
Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.

**TABLE OF CONTENTS**

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**1. SAFETY**

---

**2. PREPARATION**

---

**3. FRAME**

---

**4. TRANSMISSION**

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**5. DRIVE**

---

**6. ROW UNIT**

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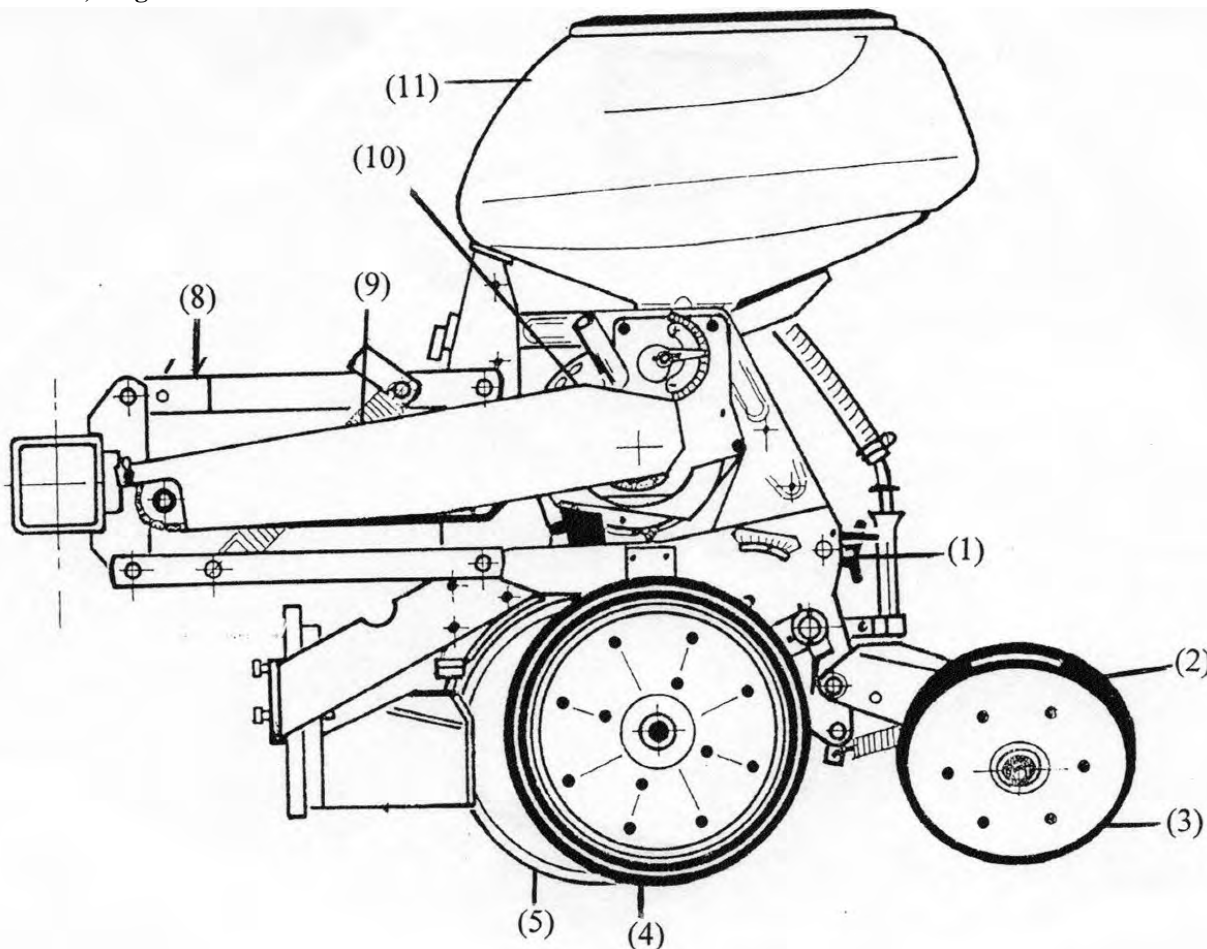
**7. OPTIONAL EQUIPMENT**

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**ROW UNIT**

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**NG Plus 4, Single Row**



The NG Plus 4 row unit is shown above with standard features. Other options are available for specific conditions or uses.

- (1) – Depth Adjustment Hand wheel**
- (2) – Hand wheel for Closing Wheel**
- (3) – Adjustable V Press Wheels**
- (4) – Independent Gauge Wheels**
- (5) – Heavy-Duty Disc Openers**
- (8) – Parallel Linkage**
- (9) – Stabilizing Springs**
- (10) – Metering Box**
- (11) – Heavy-Duty Plastic Hopper**

**ROW UNIT**

---

**NG Plus 4, Single Row**

**SEED DEPTH**

Adjust the seed depth by turning the hand wheel (1). Turning the wheel changes the height of the depth gauge wheels (4) in relation to the disc openers (5). A marker close to the hand wheel (6), indicating a gradual scale, ensures the uniformity of the depth control on all row units of the planter. Be sure that you set all of the row units on the planter at the same adjustment.

The disc openers and ground adjustment system guarantees an accurate and regular seed depth in all types of soil and conditions because the depth wheels are positioned perpendicular to the falling point of seeds.

**V PRESS WHEELS**

The two adjustable rear press wheels (3) affect only the closing of the seed furrow. They float independently and therefore do not have any effect on the ground engaging of the unit. Regulate the soil pressure by turning the hand wheel (2). This adjustment allows for shallow (beet), medium (corn) or deep (bean) planting. Choose this pressure carefully with relationship to the type and humidity of the soil, in order to assure proper seed to soil contact. Optional disc closing systems with flat or V press wheels are available.

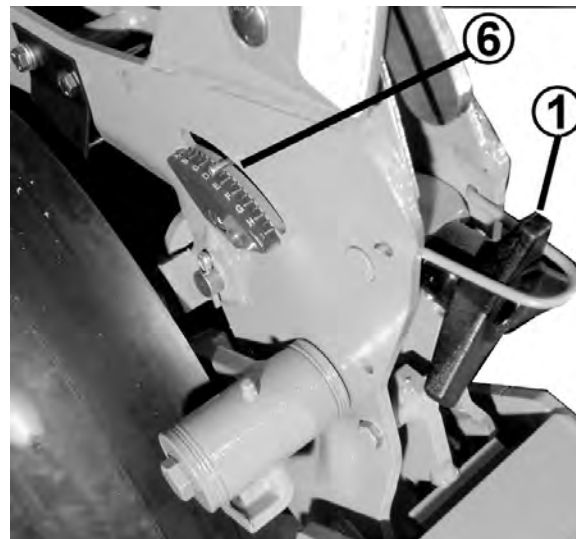
**DEPTH GAUGE WHEELS**

The depth gauge wheels (4) are engineered with an equalizing rocker bar to assure uniform depth control of the disc openers, even in clods or rocky conditions. The gauge wheels are independent of each other for a smoother ride through the field

In order for the disc openers to remain properly clean and free of soil build-up, make sure the flange of the gauge wheel is just touching the disc. To double-check this, raise the unit (using the unit lock up) and manually rotate the gauge wheels; the disc openers should also rotate freely without restriction.

After starting up the planter, the factory assembly may need readjustment. Adjust gauge wheel spacing by putting the washers from one side of the articulating arm to the other. Using an SAE multipurpose grease in a clean grease gun, lubricate the gauge wheel arms as needed.

**SEED DEPTH ADJUSTMENT**



**ROW UNIT**

---

**NG Plus 4, Single Row**

**DOUBLE DISC OPENERS**

The heavy-duty double disc openers (5) are very durable and mounted on watertight roller bearings. Their function is to slice the soil, and open a straight seed trench. An interchangeable firming point attached to the frame and positioned ahead of the seed tube also acts as a disc scraper. The flange of the gauge wheel should be just touching the disc openers, without restricting their movement.

A disc scraper is mounted to the side of each disc. You can adjust the pressure of the scrapers by tightening or loosening the bolts.

**DRIVE CHAIN**

The drive chains are spring loaded and therefore, self tightening. You may need to shorten the chain if wear stretches the chain and reduces spring tension. Periodically check the pivot point of the chain idlers to ensure they rotate freely. Use a chain lubricant spray daily, or as needed. Dry moly is the recommended chain lubricant.

**SEED HOPPER**

A 52, 60, or 90 liter plastic hopper with lid (11) is standard on the NG+ 4 unit.

**DOWN PRESSURE SPRINGS**

The Down Pressure springs (9) located within the parallel linkage absorbs shock and helps to stabilize the unit in rough terrain. Optional quick adjust and heavy duty down pressure springs available.

Optional quick adjust for down pressure springs is pictured here.

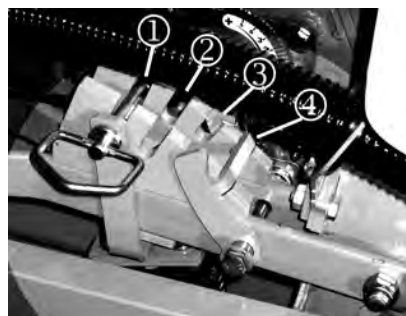
For normal level field conditions, the apx. down pressure settings are

- (1) 100 lb
- (2) 190 lb
- (3) 280 lb
- (4) 375 lb

**DOWN PRESSURE SPRINGS**



**QUICK ADJUST DOWN PRESSURE SETTINGS**



Down Pressure Settings:

- (1) 100 lb
- (2) 190 lb
- (3) 280 lb
- (4) 375 lb

**ROW UNIT**

---

**NG Plus 4, Single Row**

**SEED METERING SYSTEM**

The seed metering system (10) is made of cast aluminum and consists of two parts, the non-removable **main housing**, and a removable **cover**. The metering box is equipped with a stainless steel seed disc that delivers the seed to a curved seed tube.

The metering box is located below the seed hopper and is engineered for accuracy and long life. The special shape allows for planting even when a minimum of seed remains in the hopper. The metering box contains sealed bearings for durability.

**METERBOX MAIN HOUSING**

The main housing is mounted in the planter unit frame. Components in the main housing are the plastic wear gasket, cap, seed disc and seed scraper. The seed disc rotates on the plastic wear gasket, so make sure the gasket is smooth and in good condition. Under normal operating conditions, replace the gasket when the wear indicator is less than .5 mm.

**REPLACING THE WEAR GASKET**

To replace the gasket, position the metal brace with its tab notched in the hole of the housing. Rotate the outer edge of the plastic wear gasket into the groove. It will lock into place when the stub fits into the hole of the housing; the cap and three bolts hold the gasket in position.

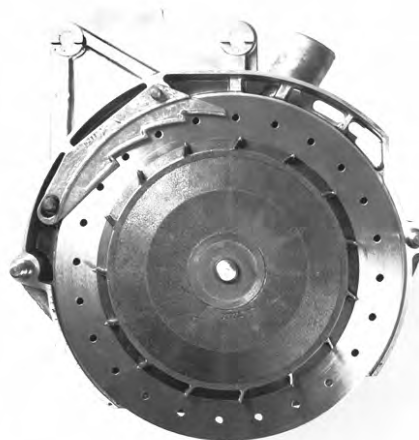
**NOTE:** Thoroughly clean the metering box housing before installing a new wear gasket. Any residue left from previous use will not allow the gasket to fit in the proper position.

On the outside of the main housing is the lever for adjusting the air suction in relation to the weight of the seed. This lever also sets the height of the seed scraper. See **OUTSIDE LEVER ADJUSTMENT** for specifics on this setting.

**MAIN HOUSING EXTERIOR**



**MAIN HOUSING INTERIOR**



**MAIN HOUSING INTERIOR, DISSECTED**





**ROW UNIT**

**NG Plus 4, Single Row**

**OUTSIDE LEVER on Meterbox ①**

The outside lever on the metering box cover is unique. It makes two adjustments at the same time. These two factors influence the degree of singulation of the seed.

By turning the outside lever, ①, two adjustments are made at the same time.

**ADJUSTMENT one**

The lever adjusts the height of the scraper in relationship to the holes in the seed disc (h),

**ADJUSTMENT two,**

at the same time it adjusts the air suction ② (from the turbofan) to the weight of the seed.

**For LARGER SEED, to INCREASE SUCTION +0 to +5**

When the indicator ① is positioned toward plus, "+" The scraper raises over the holes of the seed disc (h) and closes the size of the hole on the meterbox ②. This increases the suction, and may cause doubles if the indicator is raised too high.

**For SMALLER SEED, to DECREASE SUCTION -0 to -5**

When the indicator ① is positioned toward minus, "-" The scraper lowers over the holes of the seed disc (h) and opens the hole on the meterbox ②. This decreases the suction, and may cause skipping if the indicator is too low.

The clear plastic control window on the cover allows you to monitor the results.

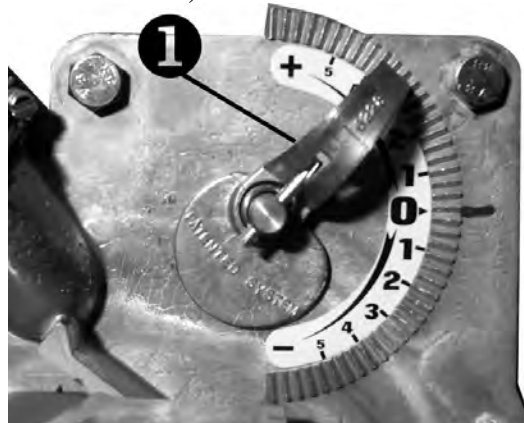
See "5. Drive" for Turbofan vacuum settings.

**Recommended setting for the indicator:**

<b>Kidney Bean</b>	+5
<b>Peanuts</b>	+4 1/2 (+4 to+5)
<b>Beans</b>	+4 to +5
<b>Sorghum/Milo</b>	+3
<b>Soybeans/Peas</b>	+2 to +4
<b>Cabbage</b>	+2
<b>Coated Sugarbeet</b>	+2
<b>Corn</b>	+1 (0 to +2)
<b>Sunflowers</b>	+1 (0 to +2)
<b>Cotton</b>	+1
<b>Uncoated Sugarbeet</b>	0 (-2 to +1)
<b>Pickle / Melon</b>	-1 1/2 (-1 to-2)

**NOTE: The above settings are theoretical, so checking before and during planting is essential.**

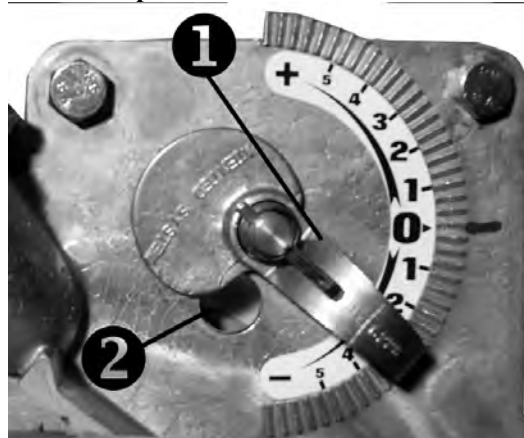
**SETTING FOR LARGER SEED the hole on meterbox closes, which increases suction.**



and the SCRAPER RAISES over the seed disc hole.



**SETTING FOR SMALLER SEED, the hole on meterbox opens which reduces suction.**



and the SCRAPER lowers over the seed disc hole.



**ROW UNIT**

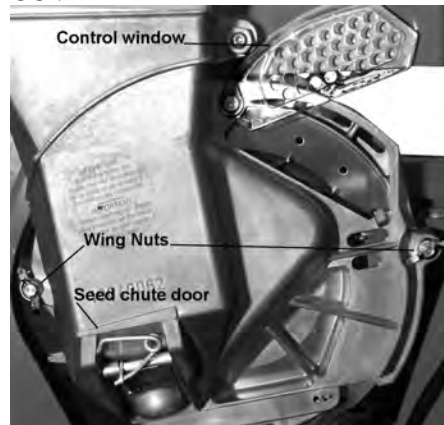
**NG Plus 4, Single Row**

**METERBOX COVER**

The cover is the removable part of the metering box. Two wing nuts secure the cover to the main housing. The components on the outside of the cover are a control window and trap door. The components on the inside of the cover are a metal shutter and ejector block. Use a special cover for extra large seed such as peanuts and kidney beans. See **EXTRA LARGE SEED** for more information.

The control window is made of clear plastic and allows you to view the seed against the seed disc. For a closer inspection of the seed against the disc, you can raise the window.

**COVER**

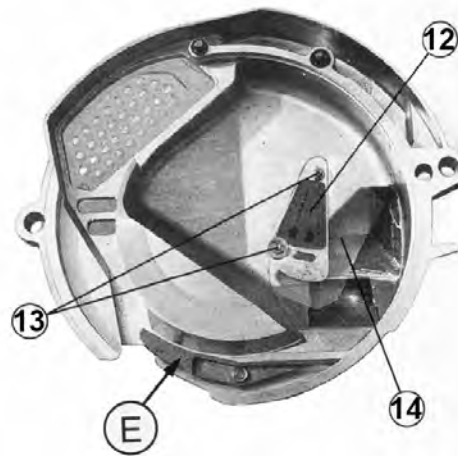


**INTERIOR SHUTTER ADJUSTMENT Meterbox**

The metal shutter inside the cover regulates the flow of seeds coming from the hopper and provides a constant and sufficient level of seed in front of the disc. According to the seed used, check and adjust the shutter before planting.

Adjust the interior shutter by loosening two bolts (13) and then lowering the shutter (12). A small plastic sheet (14) is located under the shutter. The shutter limits the level of seeds in front of the disc.

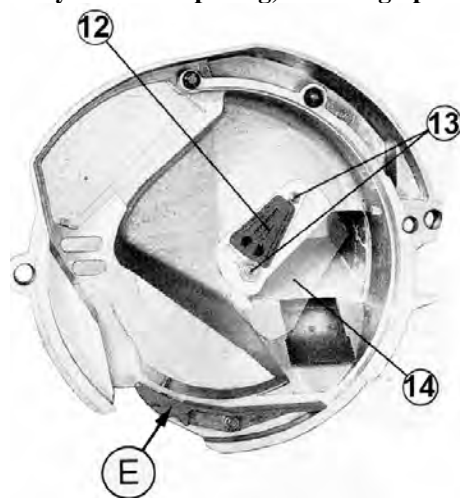
**SETTING FOR SMALLER SEED** the restrictor is closer to the opening, in the low position



**High Position: For large seeds**, such as corn, soybean, edible beans, cotton, etc. The high position moves the shutter away from the opening.

**Low Position: For small seeds**, such as sorghum and milo. The low position moves the shutter over part of the opening

**SETTING FOR LARGER SEED** the restrictor is away from the opening, in the high position.



The brass ejector block (E) assures that the seed is dropped at a consistent angle to reduce seed bounce inside the seed tube, for more accurate seed placement. Because of the important function of the ejector block, periodically check that it is in good condition.

**ROW UNIT** \_\_\_\_\_

**NG Plus 4, Single Row**

**METERING BOX TROUBLESHOOTING**

**Problem: Excessive Skipping**

**Possible Reason:**

- Seed scraper is too low.
- The indicator is on the wrong setting.
- Seed scraper is bent. (not flat)
- The seed disc is bent or worn.
- Seed scraper is dirty with chemical product.
- Plastic wear surface gasket is warped or used up.
- Holes of the seed disc are clogged (sugarbeets, rapeseed, cabbage.) Double-check from time to time.
- The planter is working at an excessive speed.
- Defective vacuum hoses.
- The vacuum suction is insufficient.
- Turbofan speed is too low.
- Foreign material mixed with seed.
- Seed blockage in the hopper, seed treatment product may be too moist.
- Fan belt is too loose.

**Problem: Excessive Doubling**

**Possible Reason:**

- Seed scraper is too high. Incorrect indicator setting
- Seed scraper is worn.
- The holes of the seed disc are too large for seed.
- The planters working speed is excessive.
- Seed level too high in the metering box.

**Problem: Skipping and Doubles**

**Possible Reason:**

- Seed is bridging in the meterbox cover.
- The planters working speed is excessive.
- Holes of the seed disc are too large. (Cut off seeds.)
- Fields are too steep.
- The shutter is adjusted incorrectly.
- Vacuum setting is too high

**Problem: Irregular Spacing**

**Possible Reason:**

- The planters working speed is excessive.
- The soil is sticking to the tires because it is too wet.
- Incorrect tire pressure.
- Shutter is adjusted incorrectly.
- Ejector is damaged.
- Toolbar is not level.

**NOTE: Toolbar must run level or slightly back.**

For 3pt Mounted Planters, make sure tractor is in “float” mode.

**ROW UNIT**

**NG Plus 4, Single Row**

**EXTRA LARGE SEED**

A special metering box cover should be used for seeds such as peanuts, and kidney beans. This special metering box cover is designed with a larger opening (to improve the seed flow into the seed chamber), a larger discharge channel (to avoid blockage), and a special less aggressive seed scraper (to avoid skips). The metal shutter should be in the “**high position**” for these large seeds.

**NOTE:** If you ordered your planter specifically to plant extra large seed and it has the special metering box cover installed, you can also use this cover for smaller seed as corn or beans. To use the large seed cover with small seed, adjust the metal shutter to a low position and add a special bolt-on plastic restrictor.

**DISENGAGING THE METERING BOX**

The individual disengaging of a metering unit is possible by removing the lynch pin in the sprocket on the main housing, **(1)** or by disconnecting the vacuum hose from the meterbox.

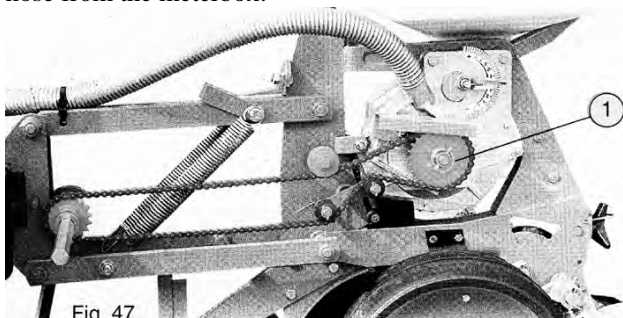


Fig. 47

**SEED TUBE**

The seed tube is the last point of contact the seed has in the metering system. After the seed passes by the brass ejector block, (which ejects the seed at a consistent angle to reduce seed bounce in the seed tube) it is guided through the curved seed tube into the seed trench.

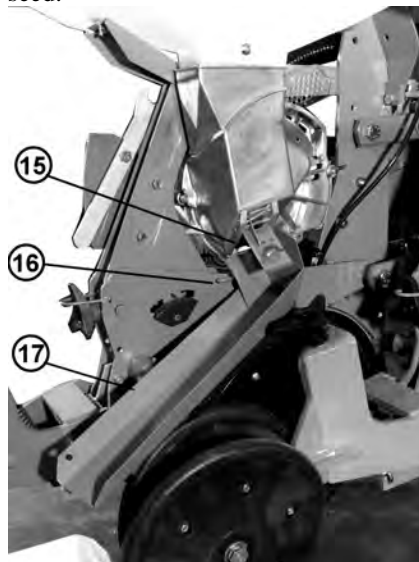
Before and during each new planting season, make sure your seed tubes are in good condition. Your seed tubes must be in good condition to ensure consistent and regular seeding.

**To replace the seed tube,** remove the metering box cover and seed disc to remove the top pin holding the tube in place OR remove the metering box cover and the seed disc.

Electronic seed monitors are optional. They monitor the flow of seed through the seed tube. For accurate reading of the monitors, periodically clean the inside of the seed tubes by running a brush up through the tube to clean the sensor eye.

**SEED CHUTE**

The seed chute simplifies the job of emptying the hoppers. Attach the chute **(17)** to the Row Unit at point **(16)**. Place a bucket at the bottom of the chute, lift the seed chute door **(15)** and collect the left over seed.



**SEED DISC**

Use the proper seed disc for different seeds. Check your type of seed, and use the **Seed Disc Recommendations** chart to determine the correct disc for your crop.

It is important to use seed discs that are clean and in good condition. Customized seed discs are not shown, but are available upon special request. It is not recommended to drill out your own seed discs. Any slight burrs or imperfections in drilling will alter your metering. The precision of your seed discs must be maintained to have proper metering.

The brass agitator is set onto the seed disc with 6 special screws.

If you remove your seed discs from the metering box to clean them or to use a different disc, use a permanent marker to identify which seed disc came from which metering box. When you put the discs back into the unit place the seed discs back into their original metering box.

**ROW UNIT**

**NG Plus 4, Single Row**

**SEED DISC IDENTIFICATION**

The size of the seed disc is engraved into the back of the seed disc. When ordering seed discs, the prefix DN indicates the disc only. The prefix DC indicates the complete disc with brass agitator (6212.a). The first 2 numbers of a 4 number series indicates the number of holes in the seed disc. The second two numbers indicates the size (diameter) of the holes.

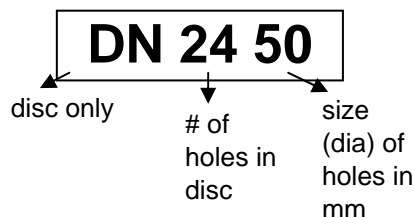
**Example:**

**Seed Disc # DN 2450**

DN indicates disc only (no agitator)

24 indicates 24 holes

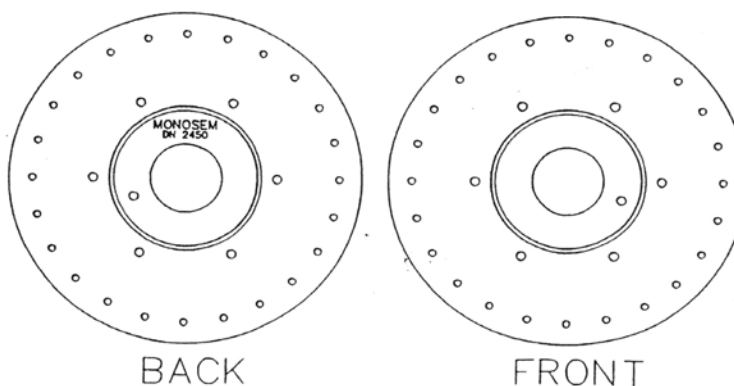
50 indicates the holes are diameter 5.0 mm.



**HOLE SIZE**

**EXAMPLES**

- 08 = .8 mm
- 10 = 1.0 mm
- 12 = 1.2 mm
- 20 = 2.0 mm
- 35 = 3.5 mm
- 45 = 4.5 mm
- 50 = 5.0 mm
- 60 = 6.0 mm
- 65 = 6.5 mm



**SEED DISC RECOMMENDATIONS**

<b>CROP</b>	<b>SEED DISC</b>		<b>SEED SPACING</b>
Beans	DC3665	Large, Kidney	2 3/8 - 7"
	DC4850	Large, Pinto, Romano, Lima, Chicapee	1 3/4 - 5 1/2"
	DC6045	Medium, Snap, Baby Limas, Soybeans	1 3/8 - 4 3/8"
	DC6035	Small, Navy, Peas	1 3/8 - 4 3/8"
Broccoli and Cabbage	DC3612 (low population)		2 3/8 - 7"
	DC7212 (high population)		1 3/16 - 3 1/2"
Canola	DC7212		1 3/16 - 3 1/2"
Cauliflower	DC3612 (low population)		2 3/8 - 7"
	DC7212 (high population)		1 3/16 - 3 1/2"
Collard Greens	DC7208, DC7210		1 3/16 - 3 1/2"
Corn	DC0950	Field	9 1/2 - 28"
	DC1250		7 - 21"
	DC1850 (low population)		4 3/4 - 14"
	DC2450 (medium population)		3 1/2 - 10 1/2"
	DC3050 (high population)		2 3/4 - 8 1/2"
	DC2437, small, 2700-5000 seeds/lb. Sweet		3 1/2 - 10 1/2"
	DC2445, large, 1700-2700 seeds/lb.		3 1/2 - 10 1/2"
Cotton	DC2425	Ornamental	3 1/2 - 10 1/2"
	DC3635 (low population)	Single seed drop	2 3/8 - 7"
	DC6035 (high population)	Single seed drop	1 3/8 - 4 3/8"
	DC0930D (double seed drop)	Hill drop(seeds 3/4 - 2" apart)	9 1/2 - 28"
	DC0930T (triple seed drop)	Hill drop(seeds 3/4 - 2" apart)	9 1/2 - 28"
	DC1230D (double seed drop)	Hill drop(seeds 3/4 - 2" apart)	7 1/8 - 21"
	DC1230T (triple seed drop)	Hill drop(seeds 3/4 - 2" apart)	7 1/8 - 21"

**ROW UNIT**

**NG Plus 4, Single Row**

Cotton	DC1830D (double seed drop)	Hill drop(seeds 3/4 - 2" apart)	4 3/4 - 14"	
	DC1830T (triple seed drop)	Hill drop(seeds 3/4 - 2" apart)	4 3/4 - 14"	
Cucumbers/ Pickles	DC1820	Hand harvest	4 3/4 - 14"	
	DC3020	Machine harvest	2 3/4 - 8 1/2"	
Kale	DC7208		1 3/16 - 3 1/2"	
Melons	DC0620 (low population)	Watermelon, small seed, Cantaloupe	14 1/4 - 42"	
	DC0920 (medium population)		9 1/2 - 28"	
	DC1820 (high population)		4 3/4 - 14"	
	DC0325 (low population)	Watermelon, large seed	28 1/2 - 84"	
	DC0325D (hill drop )		Drop two seeds, 1-3/8 - 4-3/8" apart	28 1/2 - 84"
	DC0625 (medium population)		14 1/4 - 42"	
	DC0625D (hill drop)		Drop two seeds, 1-3/8 - 4-3/8" apart	14 1/4 - 42"
DC0925 (high population)		9 1/2 - 28"		
Okra, Artichoke	DC3622		2 3/8 - 7"	
	DC7222		1 3/16 - 3 1/2"	
Onions	DC3610 (low population)	Raw	2 3/8 - 7"	
	DC7210 (high population)		1 3/16 - 3 1/2"	
	DC3622 (low population)	Pelleted	2 3/8 - 7"	
	DC7222 (high population)		1 3/16 - 3 1/2"	
Parsley	DC7208		1 3/16 - 3 1/2"	
Peanuts	DC3665	Jumbo seed	2 3/8 - 7"	
	DC3060 (twin row)	Small to medium seed	2 3/4 - 8 1/2"	
	DC4060	Small to medium seed	2 1/8 - 6 1/2"	
	DC4860(not recommended)	Small to medium seed, (High pop.)	1 3/4 - 5 1/2"	
Peppers	DC3612 (low population)		2 3/8 - 7"	
	DC7212 (high population)		1 3/16 - 3 1/2"	
Pumpkins	DC0335 (low population)		28 1/2 - 84"	
	DC0335D (hill drop)	Drop two seeds, 1-3/8 - 4-3/8" apart	28 1/2 - 84"	
	DC0635 (medium population)		14 1/4 - 42"	
	DC0635D (hill drop)	Drop two seeds, 1-3/8 - 4-3/8" apart	14 1/4 - 42"	
	DC0935 (high population)		9 1/2 - 28"	
Radish	DC6015		1 3/8 - 4 3/8"	
Rice	DC9016		15/16 - 2 3/4"	
Sesame	DC7208		1 3/16 - 3 1/2"	
Sorghum	DC3622 (low population)		2 3/8 - 7"	
	DC7222 (high population)		1 3/16 - 3 1/2"	
Spinach	DC6015	Small seed	1 3/8 - 4 3/8"	
	DC6020	Large seed	1 3/8 - 4 3/8"	
	DC12020	Large seed(high populations)	11/16 - 2 1/16"	
Squash	DC0625 (medium population)	Summer	14 1/4 - 42"	
	DC0925 (high population)		9 1/2 - 28"	
	DC0635 (medium population)	Winter	14 1/4 - 42"	
	DC0935 (high population)		9 1/2 - 28"	
Sugarbeets	DC4016 (medium population)	Small, Medium, Large & Pelleted seed	2 1/8 - 6 1/2"	
	DC4020 (medium population)		Medium, Large and Pelleted seed	2 1/8 - 6 1/2"
	DC6020 (high population)		Medium, Large and Pelleted seed	1 3/8 - 4 3/8"
	DC12015 (seed production)	Small, Medium, Large & Pelleted seed	11/16 - 2 1/16"	
	DC12020 (seed production)		Medium, Large and Pelleted seed	11/16 - 2 1/16"
Sunflowers	DC1225 (low population)	Oil & Confection	7 1/8 - 21"	
	DC1825 (high population)		4 3/4 - 14"	
Tomatoes	DC7212		1 3/16 - 3 1/2"	
	DC1212T(hill drop 12 x 3 x 1.2)		7 - 21"	
Turnips	DC7208		1 3/16 - 3 1/2"	

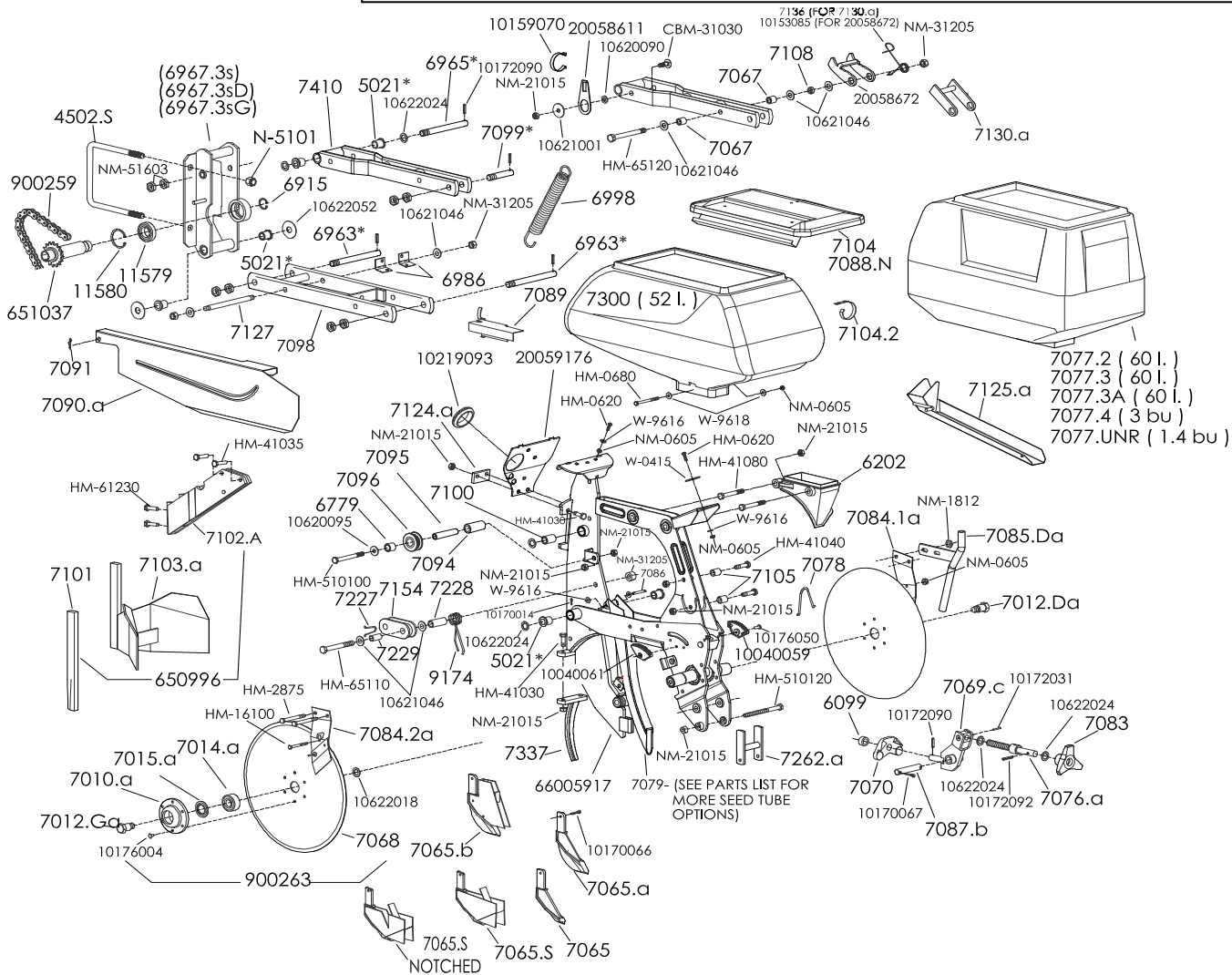
This is a downloadable version of the manual. A partial download may not contain all pertinent information. Make Sure to read Chapter 1, Safety! Due to ongoing upgrades specifications may change without notice, contact a Monosem Rep for current information.

**ROW UNIT**

**NG Plus 4 Assembly**  
**7" x 7"**

SELECT CORRECT SERVICE PART NUMBER FROM TABLE:				
	6963*	6965*	7099*	5021*
PIN STYLE PIVOT PIN:	6963	6965	7099	5021
BOLT STYLE PIVOT PIN (9A & EARLIER S/N):	6963.B	6965.B	7099.B	5021.1
BOLT STYLE PIVOT PIN (10A & LATER S/N):	6963.C	6965.C	7099.C	5021.2

**NOTE: CORRECT BUSHING (5021\*) SHOULD BE USED WITH CORRESPONDING PIN / BOLT**



PART No.	DESCRIPTION
4502.S	U bolt, for 7" x 7" x 5/8-11
5021*	SEE TABLE ABOVE, Bushing
5021.1	Bushing. S/N 9A & EARLIER
5022.2	Bushing. S/N 10A & LATER
6099	Collar with 6x25 roll pin
6202	Collar brace
6779	Bushing, self lubricated
6915	Snapping, 30mm
6963 *	SEE TABLE ABOVE, Pivot Pin.
6963.B	Pivot Bolt, Lower Linkage. S/N 9A & EARLIER
6963.C	Pivot Bolt, Lower Linkage. S/N 10A & LATER
6965 *	SEE TABLE ABOVE, Pivot Pin.
6965.B	Pivot Bolt, Upper Linkage Front. S/N 9A & EARLIER
6965.C	Pivot Bolt, Upper Linkage Front. S/N 10A & LATER
6967.3	Clamp facing, 5x5 toolbar
6967.3S	Clamp facing, 7x7 toolbar
6967.3SD	Clamp facing, 7x7 toolbar R.H.

PART No.	DESCRIPTION
6967.3SG	Clamp facing, 7x7 toolbar L.H.
6968.1	T-bolt W/ Nut for 5x5 toolbar, 16mm
6969	Clamp Plate 5x5 toolbar
6986	Spring Clip Stainless
6998	Spring
7010.A	Cast hub, uses 6x22 rivets
7012.DA	Removable spindle, righthand
7012.GA	Removable spingle, lefthand
7014.A	Bearing double disc opener (52042RS)
7015.A	Sealing washer
7065	Cast point
7065.A	Cast V slice insert
7065.B	V slice insert
7065.S	V shoe insert for small seed
7067	Spacers for Unit Lock-up bracket
7068	Opening disc only
7069.C	Bracket for wheel stop/depth control rod, NG+4

**ROW UNIT**

**NG Plus 4 Assembly**

7" x 7"

<b>PART No.</b>	<b>DESCRIPTION</b>
7065.B	V slice insert
7065.S	V shoe insert for small seed
7067	Spacers for Unit Lock-up bracket
7068	Opening disc only
7069.C	Bracket for wheel stop/depth control rod, NG+4
7070	Swing bracket
7076.A	Threaded for depth adjustment
7077.2	Seed hopper, standard, 60 ltr
7077.3	Seed hopper, Twin row, 60 ltr
7077.3A	Seed hopper, TwinRow/reversed, 60 ltr
7077.4	Seed hopper, 3 bu.
7077.UNR	Seed hopper, 50 ltr (1.4 bu, uses7088.n lid)
7078	Wire stop for depth control rod
7079	Seed tube, blank
7079.1	Seed tube, w/ hole, no sensor
7079.2S	Seed tube, w/ sensitive sensor
7079.3	Seed tube, Peanut, no sensor
7079.3S	Seed tube, Peanut, w/ sensor
7079.4	Seed tube, Beet, no sensor
7086	Seed tube, Pin
VA598003	Seed tube, w/ sensor
VA598503	Seed tube, w/ hole, no sensor
7083	Handwheel for depth control, uses 6x30 roll pin
7084.1A	Right outside scraper
7084.2A	Left outside scraper
7085.DA	Insecticide drop tube, right
7085.GA	Insecticide drop tube, left
7086	Pin for seed tube attachment
7087.B	Pin, uses 2-5x40 cotter pins
7088.N	Lid for 7077.UNR hopper
7089	Small chain guard
7090.A	Drive chain guard
7091	Clip pin
7094	Spacer bushing
7095	Pivot pin, takes 10x100 bolt
7096	Chain roller (cast iron)
7098	Lower parallel linkage arm
7099 *	SEE TABLE ON PREVIOUS PAGE, Pivot Pin
7099.B	Pivot Bolt, Upper Linkage Rear, S/N 9A & EARLIER
7099.C	Pivot Bolt, Upper Linkage Rear, S/N 10A & LATER
7100	Bushing, self lubricated
7101	Front point, clod remover
7102.A	Mounting bracket, clod remover
7103.A	Clod remover
7104	Lid w/o spring clip
7104.CO	Lid complete w/spring clip
7104.2	Spring clip
7105	Spacer
7108	Bushing, self lubricated, Unit Lock-up
7124.A	Unit Stop
7125.A	Seed Emptying chute
7127	Threaded rod
7130.A	Unit lock up bracket NG+3 & Quick Adjust
7136	Spring for lock-up 7130.A
7154	Idler (7154.CO = Complete assembly)
7227	Spring Stop for Idler
7228	Spacer for Idler
7229	Carrier Bushing for Idler
7262.A	Spring support bracket

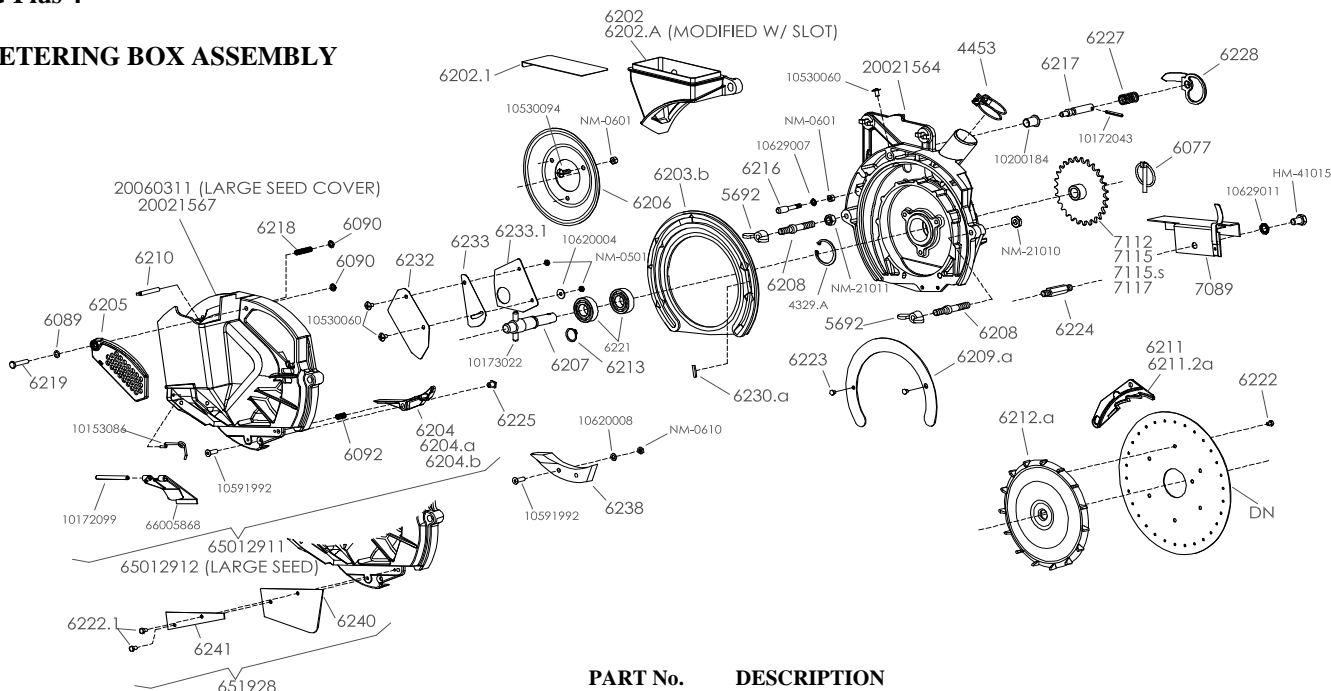
<b>PART No.</b>	<b>DESCRIPTION</b>
7300	Seed hopper, 52 ltr.
7337	Protection point, double disc openers
7410	Upper parallel linkage arm
9174	Spring, chain tightener
11579	Bearing, safety clutch (60062RS)
11580	Snapping, 55mm
650996	Clod remover, complete
651037	Sprocket 18T #41 Chain
900259	Drive chain, #41, 124 links w conn. Link
900263	Opening disc complete w/bearing
10040059	Depth Gauge Indicator, Right
10040061	Depth Gauge Indicator, Left
10159070	Vacuum Hose Spring Clip
10153085	Spring for lock-up 20058672
10170014	Split Pin, 2.5 x 20mm
10170066	Split Pin, 5 x 35mm
10170067	Split Pin, 5 x 40mm
10172031	Roll Pin, 3.5 x 25mm
10172090	Roll Pin, 6 x 25mm
10172092	Roll Pin, 6 x 35mm
10176004	Rivet, 6 x 22mm
10176050	Rivet, 6 x 16mm
10219093	Rubber Grommet
CBM-31030	Carrage Bolt, M10 x 30mm
HM-0620	Bolt, M6 x 20mm
HM-0680	Bolt, M6 x 80mm
HM-16100	Bolt, M6 x 100mm
HM-2875	Bolt, M8 x 75mm
HM-41030	Bolt, M10 x 30mm
HM-41040	Bolt, M10 x 40mm
HM-41080	Bolt, M10 x 80mm
HM-510100	Bolt, M10 x 100mm
HM-510120	Bolt, M10 x 120mm
HM-61230	Bolt, M12 x 30mm
HM-65110	Bolt, M12 x 110mm
HM-65120	Bolt, M12 x 120mm
N-5101	Nylock 5/8"
NM-0605	Nylock 6mm
NM-1812	Nylock 8mm
NM-21015	Nylock 10mm
NM-21205	Nylock 12mm
NM-51603	Jam Nut 16mm
NM-51605	Nylock 16mm
W-0415	Washer, 1/4" x 1-1/2" Stainless for Hopper
W-9616	Washer, 6.5 x 16 x 1mm
W-9618	Washer, 6.5 x 18 x 1.5mm
10620090	Washer, 10.5 x 20 x 2.5mm
10620095	Washer, 10.5 x 27 x 2mm
10621001	Washer, 10.5 x 40 x 2mm
10621046	Washer, 13 x 27 x 2mm
10622018	Washer, 16.5 x 21 x 1mm
10622024	Washer, 6 x 18 x 1mm
10622052	Washer, 17 x 50 x 1mm
20058611	Support for Vacuum Hose Spring Clip
20058672	Unit lock up bracket NG+4
20059176	Removable FacePlate NG+4
66005917	NG+4 Unit Frame



**ROW UNIT**

**NG Plus 4**

**METERING BOX ASSEMBLY**



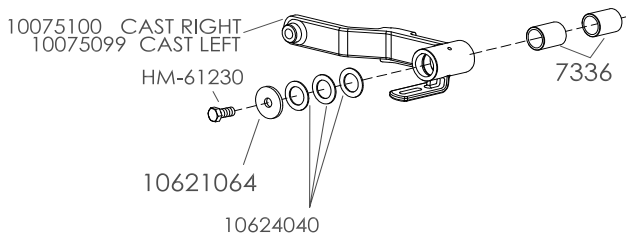
PART No.	DESCRIPTION
4329.a	Snapping, internal, 57mm
4453	Vac Hose Clamp
5692	Wing nut, 10mm
6077	Lynch pin, 6mm dia.
6089	Rubber ring
6090	Snapping, 6mm
6092	Spring
6202	Collar brace
6202.A	Collar Brace with slot
6202.1	Slide Plate for slotted Meter box collar
6203.b	Plastic insert
6204	Plastic Ejector
6204.a	Bronze ejector block assembly
6204.b	Bronze ejector, extended point
6205	Control window
6206	Tightening cap
6207	Shaft, meter box, uses 8x50 roll pin
6208	Threaded tightening rod for cover
6209.a	Brace for plastic insert
6210	Pressure pin scraper
6211	Seed scraper, standard
6211.2a	Seed scraper, extra large seed
6212.a	Agitator, brass
6213	Snapping, external, 20mm
6216	Fixed pin for seed scraper
6217	Adjustable pin for seed scraper, uses 4x35 roll pin
6218	Spring for selector
6219	Pin for control window
6221	Bearing 42mm, (ref. 60042RS)
6222	Screw, used for agitator and wind flap
6222.1	Screw used for wind flap
6223	Screw, 5x6 to secure brace 6209.a
6224	Connector Pin Chainshield
6225	Nut, to secure ejector block
6227	Spring for selector handle
6228	Selector handle
6230.a	Removable Plug
6232	Gasket for inside meter box cover

PART No.	DESCRIPTION
6233.3S	Restrictor plate for peanut cover, medium seed
6233.2	Shutter for medium to small seed, standard cover
6233.2s	Shutter for small seed, large seed cover only (turnip)
6233.3s	Shutter for medium seed, large seed cover only
6238	Aluminum ejector block (for large seed covers)
6240	Rubber shield
6241	Metal tightener plate
7089	Fixed Chain housing
<b>If using Sync-Row System, See Sync-Row Supplement in Back</b>	
7115.s	Sprocket, 26 tooth, standard drive sprocket
800373	Sleeve with Hex with groove for timing plate
800408	Dial selector with weldment
800409	Timing plate with 18 tooth sprocket
10153086	Spring for trap door
10172043	Roll pin, 4x35 for 6217 pin
10172099	Roll pin, 6x70 to secure trap door
10173022	Roll pin, 8x50 for 6207 shaft
10200184	Plastic insert for seed scraper
10530060	Screw, 5x10 Phillips head
10530094	Phillips screw, 6x20
10591992	Screw, 6x16 for ejector block assembly
10620004	Washer, 5.5x16x1mm
10620008	Washer, 6.5x12x.6mm
10629007	Lockwasher, External tooth 6mm
10629011	Lockwasher, External tooth 10mm
20000529	Agitator brass with only 5 fins
20021564	Housing only for meter box
20021567	Meter box cover only
HM-41015	Hex Bolt 10-1.5x16mm
NM-0501	Hex Nut 5mm
NM-0601	Hex Nut 6mm
NM-0610	Jam Nut 6mm
NM-21010	Jam Nut 10mm
NM-21011	Hex Nut 10mm
651928	Protection kit
66005868	Trap door NG+4
65012911	Standard cover complete
65012912	Large seed cover complete
<b>METERING BOX COMPLETE</b>	
641097	Complete meter box, w/26T sprocket & collar
641090	Complete meter box, w/21T sprocket & collar
65032073	Large seed complete meter box assem. w/ 26T sprocket & collar

**ROW UNIT**

**NG Plus 4**

**GAUGE WHEEL ARM ASSEMBLY**



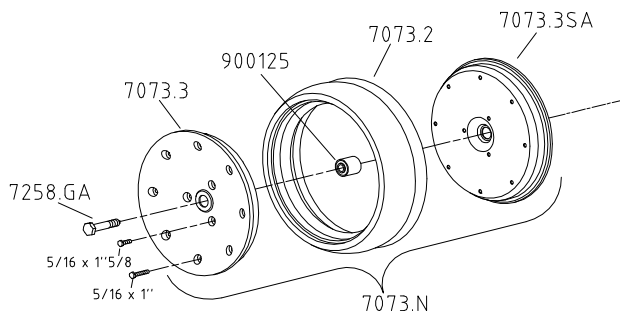
PART No.	DESCRIPTION
7336	Two piece bushing
10075100	Cast Gauge wheel arm RH
10075099	Cast Gauge wheel arm LH

PART No.	DESCRIPTION
10621064	Washer M13 x 45 x 5
10624040	Washer M33 x 45 x 1.5
HM-61230	Hex bolt M12 x 30

**GAUGE WHEEL ASSEMBLY**

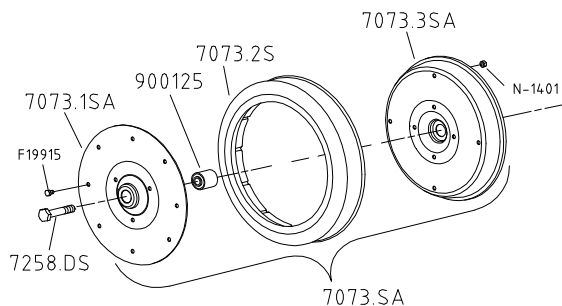
**7073.N Gauge wheel complete (black nylon rim)**

900125	Bearing, 40mm (DAC1640442RSL)
7073.2	Tire only, standard
7073.3	Outer rim (black nylon)
7073.3SA	Inner rim (black steel)
7258.DA	RH Hex head bolt 16 x 80
7258.GA	LH Hex head bolt 16 x 80



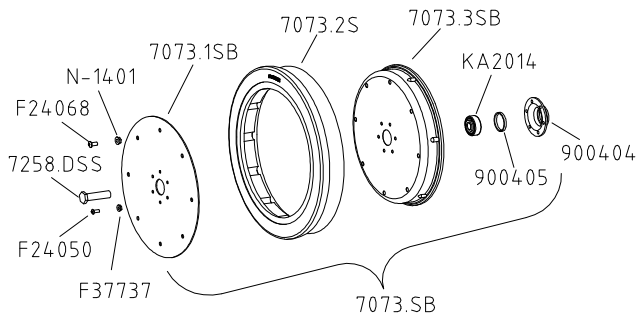
**7073.SA Narrow gauge wheel, complete**

900125	Bearing, 40mm (DAC1640442RSL)
7073.1SA	Outer rim (steel)
7073.2S	Tire only, narrow
7073.3SA	Inner rim (black steel)
7258.DS	RH Hex bolt 16 x 80, W/ 7/32" thick bolt head
7258.GS	LH Hex bolt 16 x 80, W/ 7/32" thick bolt head
F19915	Flange head bolt, 5/16-18 x 5/8"
N-1401	5/16 -18 Flange lock nut



**7073.SB Flat narrow gauge wheel**

900404	Bearing housing
900405	Spacer
7073.1SB	Outer rim (steel)
7073.2S	Tire only, narrow
7073.3SB	Inner rim (black steel)
7258.DSS	RH Bolt 16 x 60, W/ 7/32" thick bolt head
7258.GSS	LH Bolt 16 x 60, W/ 7/32" thick bolt head
F24050	1/4" -20 x 5/8 Button head socket screw
F24068	5/16" -18 x 5/8" Button head socket screw
F37337	1/4 -20 Flange lock nut
N-1401	5/16 -18 Flange lock nut
KA2014	Bearing



**ROW UNIT**

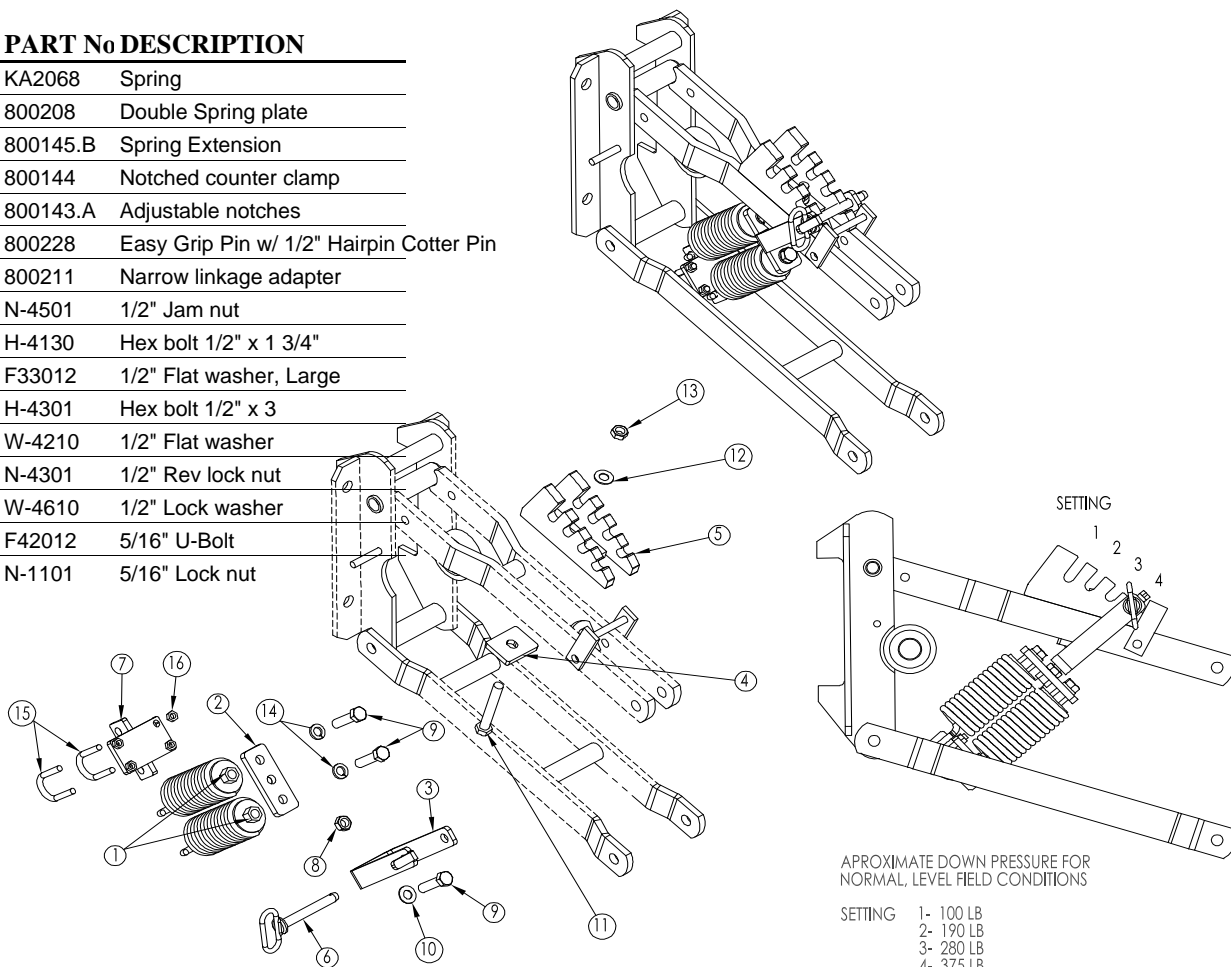
**NG Plus 4**

**UP / DOWN PRESSURE SPRING**

Quick Change Down Pressure, For Use with Narrow Bottom Linkage Sub-Assembly #KA2068QT

**ITEM PART No DESCRIPTION**

1	KA2068	Spring
2	800208	Double Spring plate
3	800145.B	Spring Extension
4	800144	Notched counter clamp
5	800143.A	Adjustable notches
6	800228	Easy Grip Pin w/ 1/2" Hairpin Cotter Pin
7	800211	Narrow linkage adapter
8	N-4501	1/2" Jam nut
9	H-4130	Hex bolt 1/2" x 1 3/4"
10	F33012	1/2" Flat washer, Large
11	H-4301	Hex bolt 1/2" x 3
12	W-4210	1/2" Flat washer
13	N-4301	1/2" Rev lock nut
14	W-4610	1/2" Lock washer
15	F42012	5/16" U-Bolt
16	N-1101	5/16" Lock nut

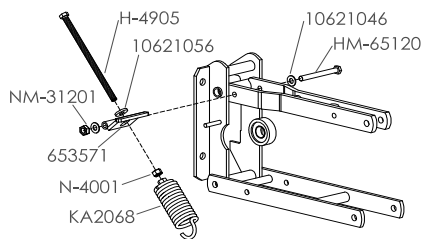


APPROXIMATE DOWN PRESSURE FOR NORMAL, LEVEL FIELD CONDITIONS

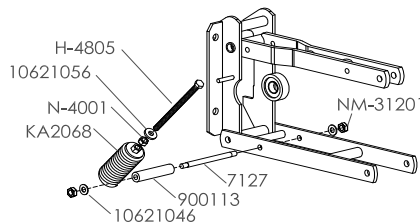
- SETTING 1- 100 LB
- 2- 190 LB
- 3- 280 LB
- 4- 375 LB

**Up / Down Pressure Spring Assembly**

H-4805	Bolt, all thread, 1/2-13x8"
H-4905	Bolt, all thread, 1/2-13x10"
HM-65120	Bolt, metric M12-1.75 x120mm
KA2068	Spring
N-4001	Nut, 1/2-13
NM-31201	Nut, Metric M12
653571	Up Pressure Spring plate
7127	Treaded rod M12
900113	Down pressure Spacer bushing
10621046	Washer, 13x27x2
10621056	Washer, 13x30x6



UP PRESSURE SPRING ASSEMBLY



DOWN PRESSURE SPRING ASSEMBLY

**ROW UNIT**

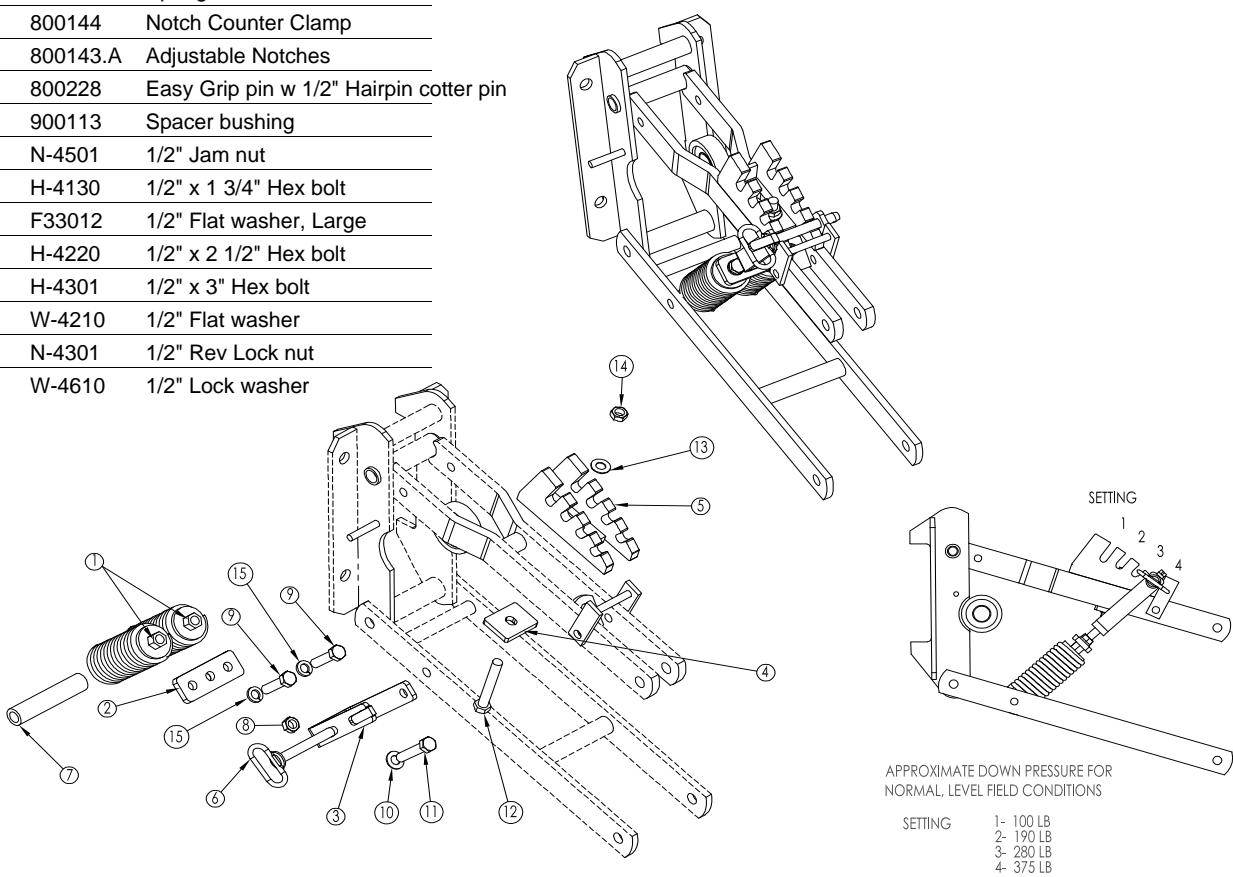
**NG Plus 4**

**UP / DOWN PRESSURE SPRING**

Quick Change Down Pressure, For Use with Standard Linkage Sub-Assembly #KA2068Q

**ITEM PART No DESCRIPTION**

1	KA2068	Spring
2	800208	Double Spring Plate
3	800145.B	Spring Extension
4	800144	Notch Counter Clamp
5	800143.A	Adjustable Notches
6	800228	Easy Grip pin w 1/2" Hairpin cotter pin
7	900113	Spacer bushing
8	N-4501	1/2" Jam nut
9	H-4130	1/2" x 1 3/4" Hex bolt
10	F33012	1/2" Flat washer, Large
11	H-4220	1/2" x 2 1/2" Hex bolt
12	H-4301	1/2" x 3" Hex bolt
13	W-4210	1/2" Flat washer
14	N-4301	1/2" Rev Lock nut
15	W-4610	1/2" Lock washer



APPROXIMATE DOWN PRESSURE FOR NORMAL LEVEL FIELD CONDITIONS

SETTING	1- 100 LB
	2- 190 LB
	3- 280 LB
	4- 375 LB

**ROW UNIT**

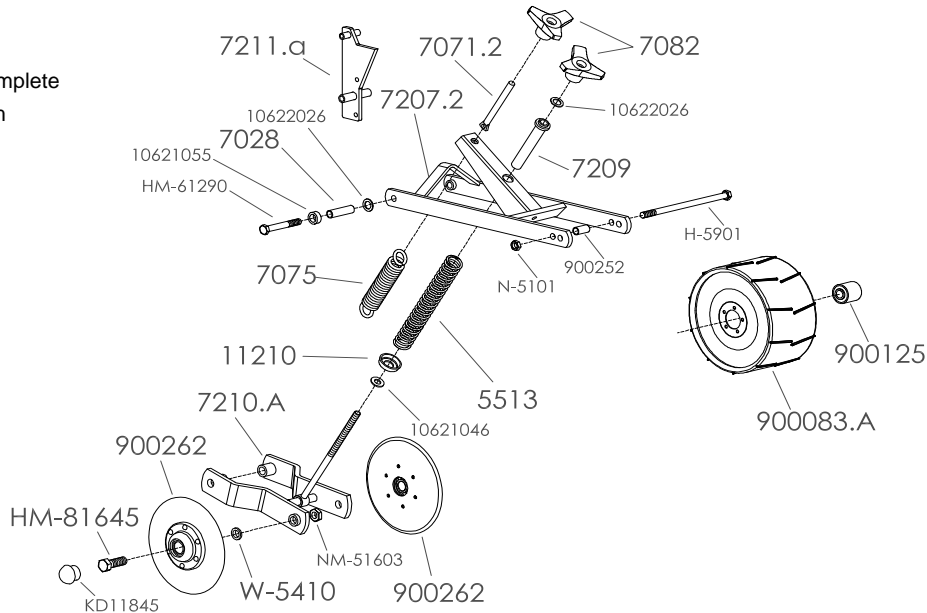
**NG Plus 4**

**900052.A- HILLER DISC w/ FLAT PRESS WHEEL**

The flat press wheel with disc closing system is used for cotton or other shallow planted crops. It has an adjustable down pressure spring and an independent spring for discs.

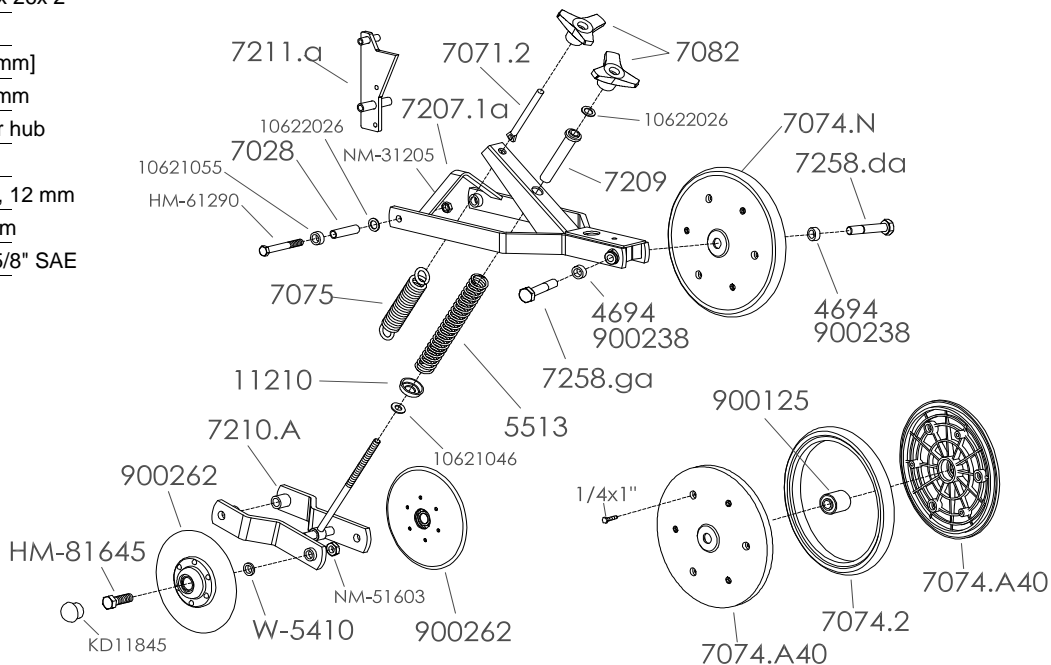
**PART No. DESCRIPTION**

4694	Bushing Closing wheel 10mm
5513	Pressure spring
7028	Bushing spacer, 59mm
7074.A40	Rim Half
7074.N	Adjustable closing wheel complete
7071.2	Adjustment rod 12 x 130 mm
7074.2	Tire only, 1 x 12
7075	Spring
7082	Handwheel knob
7207.1A	Frame for hiller disc
7207.2	Frame for hiller disc
7209	Sleeve for spring
7210.a	Bracket for mounting discs
7211.a	Frame wheel stop
7258.GA	Bolt, 16x 80 RH
7258.DA	Bolt, 16x 80 LH
11210	Cap to support spring
90052.a	Complete v press wheel
900083.1	Rim half flat press wheel
900083.2	Tire only flat press wheel. (6.5" x 12")
900083.a	Complete flat press wheel
900125	Bearing 40mm
900238	Bushing spacer, Narrow, 5/16" wide
900252	Bushing spacer, 2 13/16"
900262	Disc complete w/ hub & bearing
10621046	Washer, 13x 27x 2
10621055	Washer, 13x 30x 5
10622026	Washer, 16.5x 26x 2
H-5901	Bolt, 5/8 x 9
HM-61290	Bolt, 12 x 90 mm]
HM-81645	Bolt, 16 x 45 mm
KD11845	Plastic cap for hub
N-5101	Locknut, 5/8"
NM-31205	Nylon locknut, 12 mm
NM-51603	Jam nut, 16mm
W-5410	Flat washer, 5/8" SAE



**900052.1- HILLER DISC w/ V PRESS WHEEL**

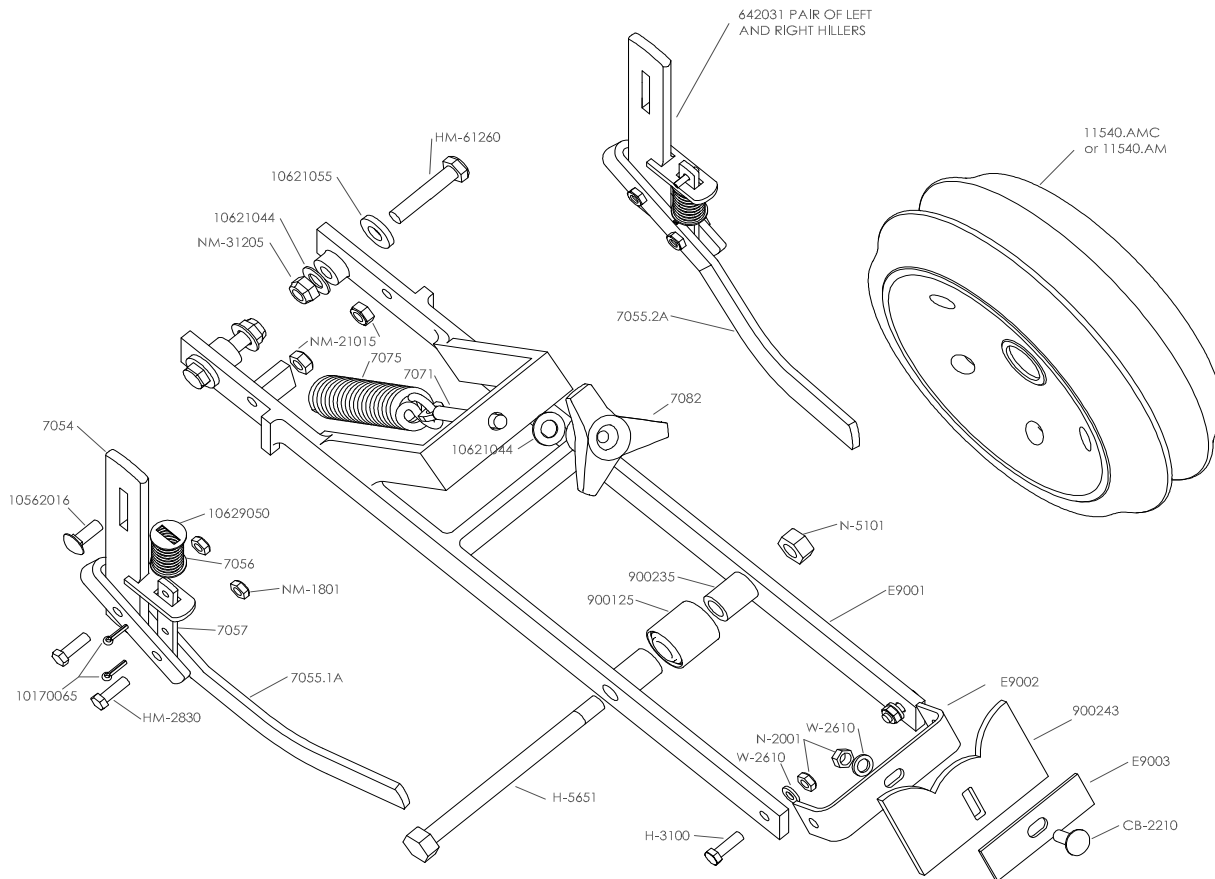
The V press wheel closing system features twin off-set discs and a V press wheel with an adjustable down pressure spring. There is an independent spring-loaded adjustment for discs.



**ROW UNIT**

**NG Plus 4**

**CONCAVE PRESS WHEEL/ HILLER ASSEMBLY**



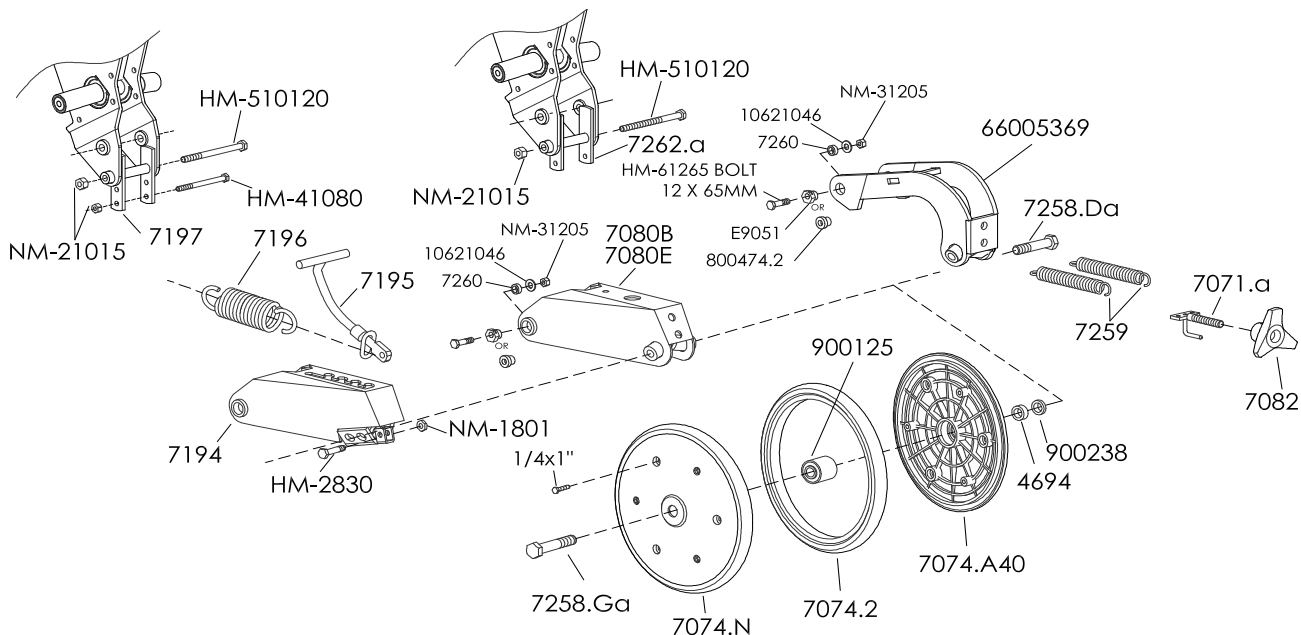
<b>PART No.</b>	<b>DESCRIPTION</b>
642031	Pair of hillers complete
7054	Scraper support bracket
7055.1A	Lefthand scraper
7055.2A	Righthand scraper
7056	Spring
7057	Spring support
7071	Tension rod
7075	Spring closing wheel
7082	Handwheel pressure control
11540.AMC	Wheel complete concave
11540.AM	Wheel complete crowned
900125	Bearing
900235	Bushing
900243	Mud scraper
10170066	Cotter pin, 5x 30

<b>PART No.</b>	<b>DESCRIPTION</b>
10562016	Carriage bolt, 10x 25
10621044	Washer, 13x 27x 1
10621055	Washer, 13x 30x 5
10629050	Washer, 18x 7x 27x 2
CB-2210	Carriage bolt, 3/8 -16x 1
H-3100	Bolt, 3/8 -16x 1
H-5651	Bolt, 5/8 -11x 6 1/2
HM-2830	Bolt, 8x 30 mm
HM-61260	Bolt, 12x 60 mm
N-2001	Nut, 3/8 -16 z
N-5101	Nylock, 5/8 -11
NM-1801	Nut, 8mm
NM-21015	Nylock, 10mm
NM-31205	Nylock, 12mm
W-2610	Lock washer, 3/8 z

**ROW UNIT**

**NG Plus 4, Single Row**

**SINGLE ROW CLOSING WHEEL ASSEMBLY**



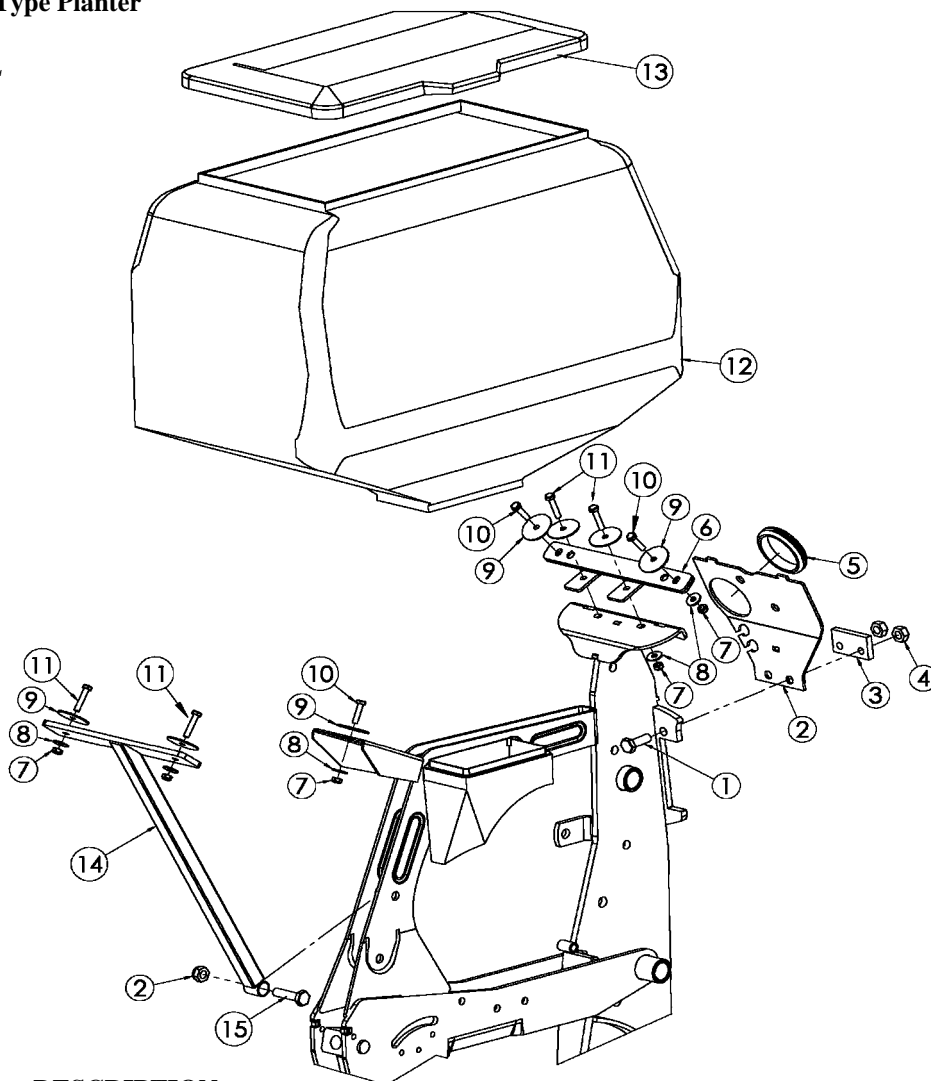
<b>PART No.</b>	<b>DESCRIPTION</b>
4694	Bushing 10mm
7071.A	Adjustment Rod 12mm
7074.2	Tire Only 1" x 12"
7074.A40	Nylon rim half
7074.N	Closing Whl Complete 1" x 12"
7080.E	Bracket for narrow and twin rows
7082	Handwheel
7194	Bracket for adj. closing wheel,
7195	T-Handle, Rear Closing Bracket
7196	Rear Unit Spring, T-Handle assy
7197	Spring support, T-Handle spring
7258.DA	M16 x 80 R.H.
7258.GA	M16 x 80 L.H.
7259	Spring
7260	Spacer bushing

<b>PART No.</b>	<b>DESCRIPTION</b>
7262.A	Spring support
800474.2	STRAIGHT BUSHING FOR 7 1/2 WHL
900125	Bearing 40mm
900238	Bushing 8mm
10621046	Washer M13 x 27 x 2
66005369	Bracket, adj closing wheel, open frame
E9051	Eccentric bushing
HM-2830	Bolt, 8-1.25 x 30 G8.8
HM-41080	Bolt, 10-1.5 x 80 G8.8
HM-510120	Bolt M10 x 120
HM-61245	Bolt M12 x 45
HM-61265	Bolt M12 x 65
NM-1801	Hex Nut, 8 x 1.25 G8.8
NM-21015	Nylock 10mm
NM-31203	Jam nut M12
NM-31205	12MM NYLON LOCK NUT G8.8

**ROW UNIT**

**NG Plus 4  
7" x 7" Mounted and 24-Row Pull-Type Planter**

**HOPPER ASSEMBLY- 3 BUSHEL**



ITEM	PART No.	DESCRIPTION
1	HM-41030	Hex Head Bolt M10-1.5 x 30
2	20059176	Removable Faceplate NG+4
3	7124.A	Removable Stop NG+4
4	NM-21015	Nylock M10
5	10219093	Grommet for Vacuum Hose
6	900384	3 Bushel Hopper Front Brace
7	NM-0605	Nylock M6
8	10620041	Washer, 6.5x18x1.5mm
9	W-0415	Washer, 1/4" x 1.5" Stainless
10	HM-0620	Hex Head Bolt M6-1 x 20
11	HM-0630	Hex Head Bolt M6-1 x 30
12	7077.4	Seed Hopper 3 Bushel
13	7104.CO	Hopper Lid W/ Spring
14	900383	3 Bushel Hopper Rear Brace
15	HM-41040	Hex Head Bolt M10-1.5 x 40



**TABLE OF CONTENTS**

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1. SAFETY

2. PREPARATION

3. FRAME

4. TRANSMISSION

5. DRIVE

6. ROW UNIT

**7. OPTIONAL EQUIPMENT**



## ROW MARKERS

### Pull-Type

#### HYDRAULIC ROW MARKER OPERATION

The planters are equipped with a single valve hydraulic system or an optional dual valve hydraulic system. The single valve system requires the planter to be raised in order to lift the markers. Each time the planter is lowered, the row markers will alternately be lowered. If the planter is raised to cross a waterway, the opposite marker will be lowered when the planter is lowered back into the ground. Therefore, it will be necessary to stop and again raise and lower the planter to restore correct marker operation.

If planting in this type of situation, dual valve hydraulics are highly recommend. The optional dual hydraulic system allows the markers to be operated independently of the planter lift cylinders. Each time a marker is raised, the sequencing valve will direct flow to lower the opposite marker.

Both markers can be used at the same time if desired. To do this, lower the planter and the marker that has been selected. Move the tractor control lever to the raise position and immediately return it to the lower position. This will shift the marker control valve and the remaining marker will be lowered. This is useful in planting contours and terraces.



**WARNING** Stand clear and keep others away when raising or lowering the row markers. Lock row markers for transport using the locking pin.

#### MARKER LENGTH ADJUSTMENT

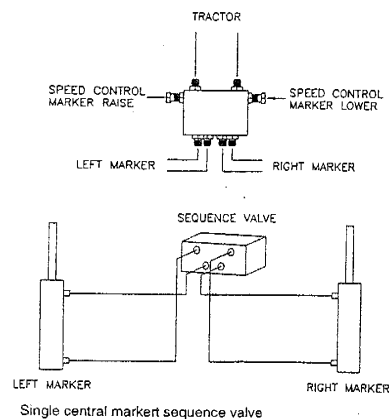
To determine the correct length to set the marker assemblies, multiply the number of rows by the average row spacing in inches. This provides the total planting width. Adjust the marker extension so the distance from the marker shovel to the center line of the planter is equal to the total planting width previously obtained. Both the planter and marker assembly should be lowered to the ground when measurements are taken. The measurement should be taken from the point where the shovel contacts the ground. Adjust right and left marker assemblies equally and securely tighten clamping bolts. An example of marker length adjustments follows:

Number of rows x Row spacing inches = Dimension between planter center line and marker shovel.

**IMPORTANT:** A field test is recommended to ensure the markers are properly adjusted. After the field test is made, make any minor adjustments necessary.

#### MARKER SPEED ADJUSTMENT

Markers come standard with automatic sequence valves. A flow control valve controls the lowering and raising speed of the markers. To adjust the marker speed, loosen the jam nut and turn the control clockwise or 'in' to slow the travel speed and counter clockwise or 'out' to increase the travel speed. The adjusting bolt determines the amount of oil flow restriction through the flow control valve, therefore determining travel speed of the markers.



**DANGER** The flow controls should be properly adjusted before the marker assembly is first put into use. Excessive travel speed of the markers can be dangerous and/or damage the marker assembly.

**NOTE:** When oil is cold, hydraulics operate slowly. Make sure all adjustments are made with warm oil.

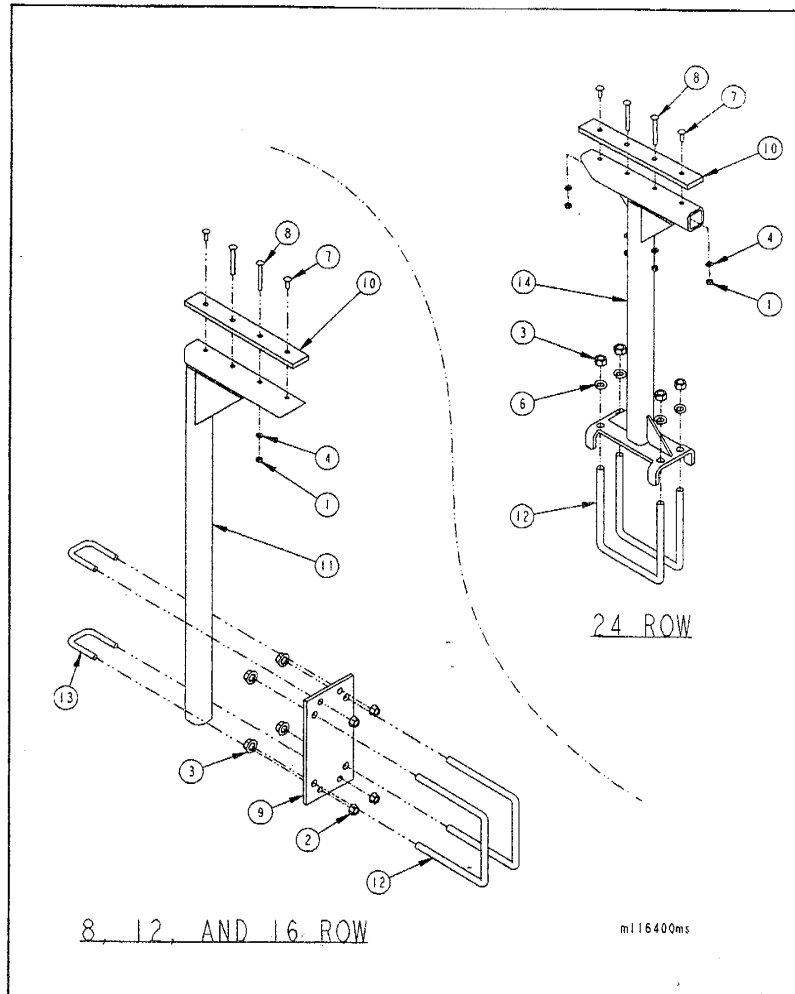
**NOTE:** On a tractor where the oil flow can not be controlled, the rate of flow of oil from the tractor may be greater than the rate at which the marker cylinder can accept it. The tractor hydraulic control lever will have to be held until the cylinder reaches the end of its stroke. This occurs most often on tractors with an open center hydraulic system.

On tractors with a closed center hydraulic system, the tractor's hydraulic flow control can be set so the tractor's detent will function properly.

# ROW MARKERS

## Pull-Type

### ROW MARKER SUPPORT ASSEMBLY

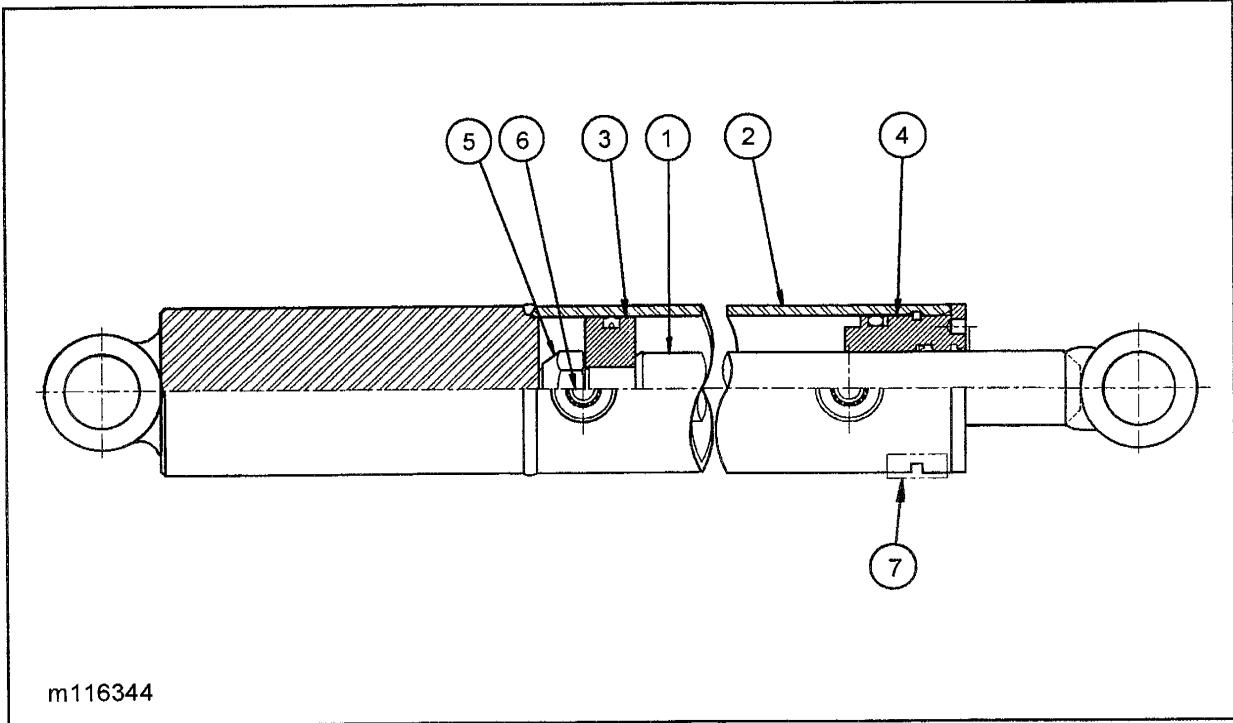


ITEM	PART No.	DESCRIPTION	QTY
1	F36104	Nut, Hex 5/16-18	8
2	F36110	Nut, Hex 1/2-13 (8row 30 & 16-row)	8
3	F36114	Nut, Hex 5/8-11	8
4	33620	Washer, split lock 5/16	8
5	F33626	Washer, split lock 1/2 (16-row)	8
6	F33630	Washer, split lock 5/8	8
7	F21811	Screw, rd head sq neck 5/16-18 x 1 GR5	4
8	F21863	Screw, rd head sq neck 5/16-18 x 3 GR5	4
9	L117184	Plate, marker brace (16-row)	2
10	L117186	Rubber block	2
11	L117185	Brace assembly (16-row)	2
12	4502.S	U-bolt	4
13	KD2721	U-bolt scraper (16-row)	4
14	L125952	Bracket weldment, marker rest (24-row)	2

**ROW MARKERS**

**Pull-Type**

**ROW MARKER CYLINDER ASSEMBLY**

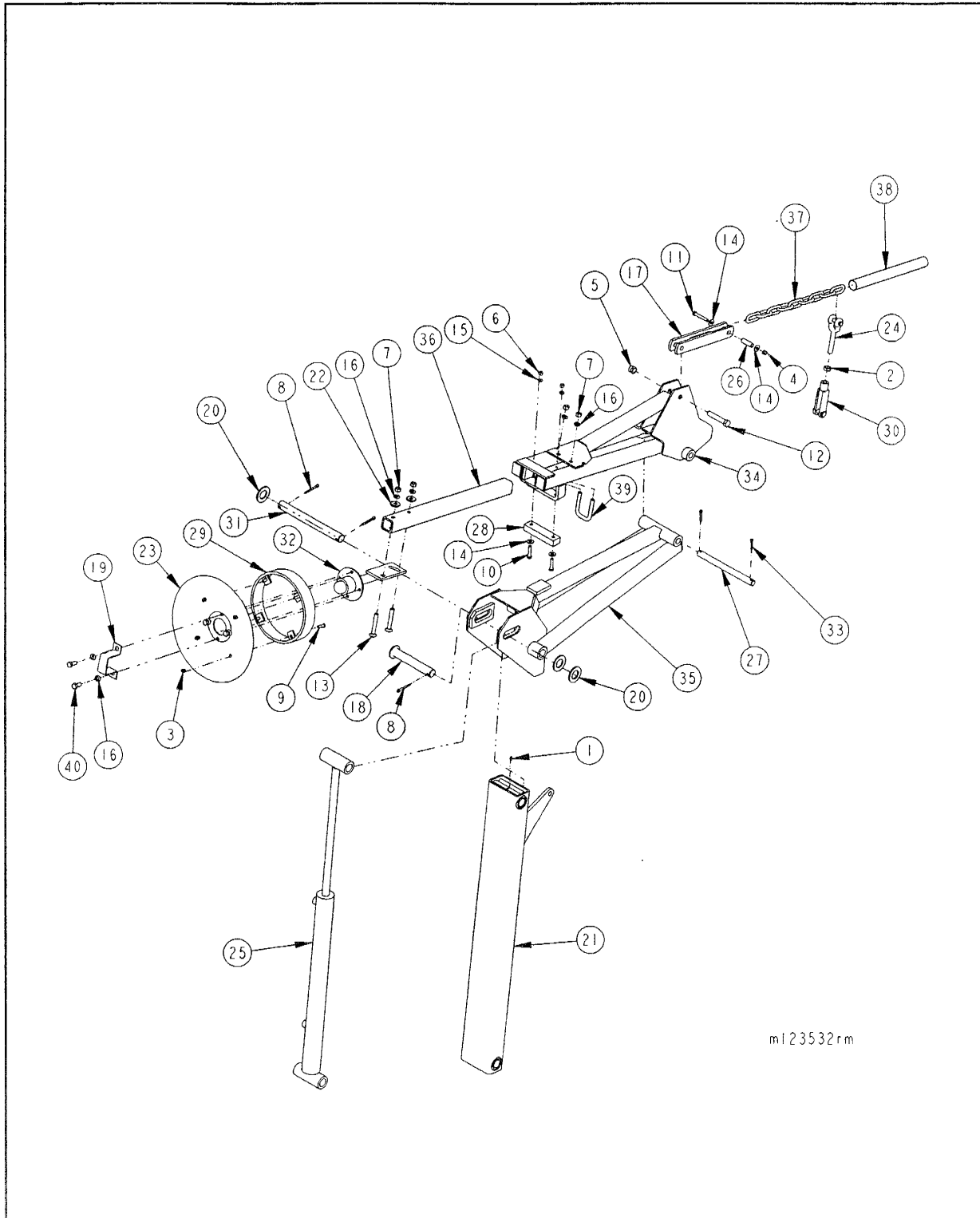


ITEM	PART No.	DESCRIPTION
	L116344	Cylinder, marker 2- 1/2 x 20
1	L120802	Piston rod
2		Butt and tube assembly
3	L117512	Piston
4	L120803	Gland
5	L220000208	Locknut
6	L200300040	Shipping plug
7	L125563	Square wire tape
	L117514	Seal kit, Includes all O-rings and seals

ROW MARKER

8-Row 30" Pull Type

ASSEMBLY



m123532rm

**ROW MARKER**

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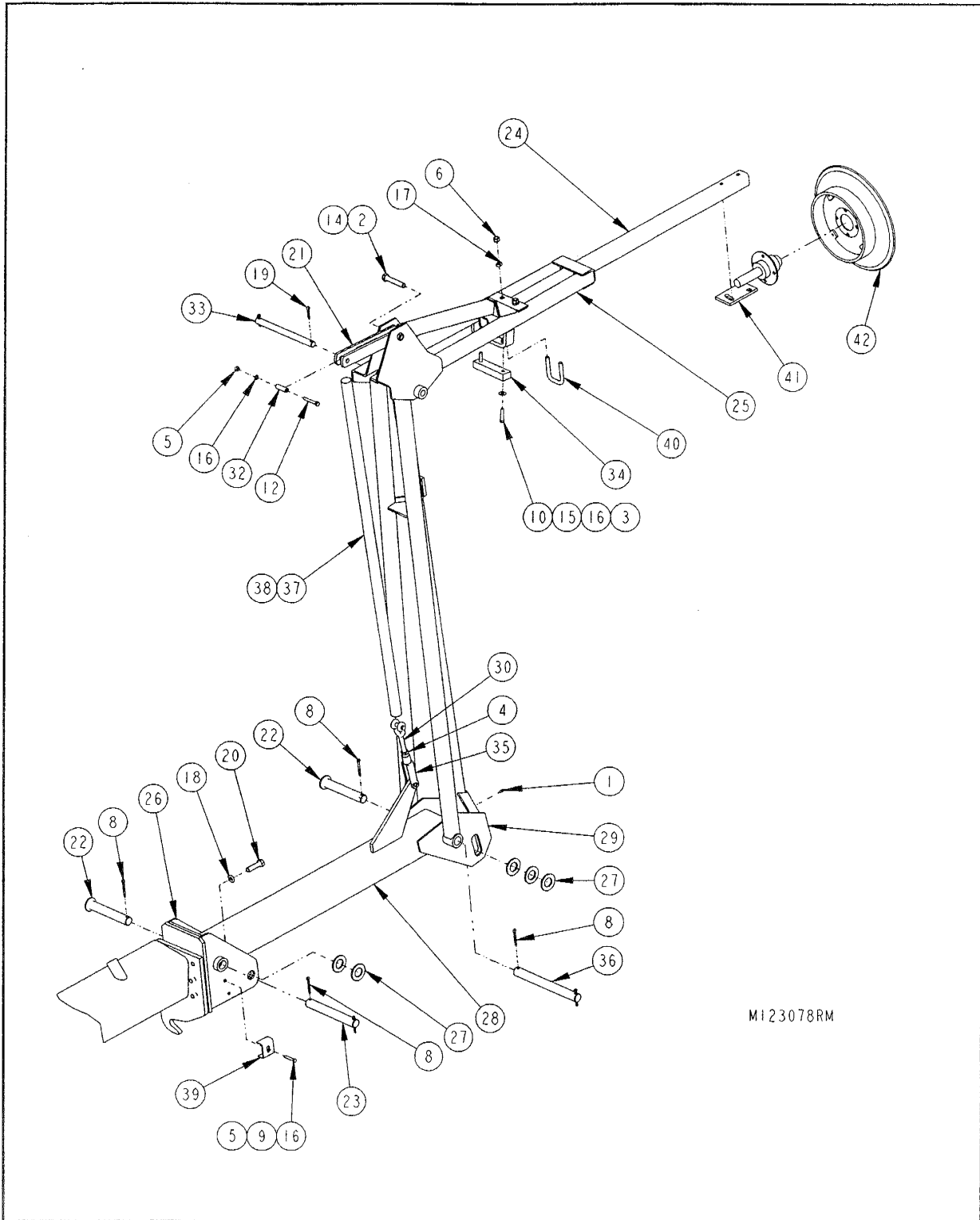
**8-Row 30" Pull Type****ASSEMBLY**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	F58805	GREASE FITTING, 1/4-28
2	F36214	HEX JAM NUT, 5/8-11
3	F37211	REV LOCK NUT, 5/16-18
4	F37212	REV LOCK NUT, 3/8-16
5	F37216	REV LOCK NUT, 5/8-11
6	F36106	HEX NUT, 3/8-16
7	F36110	HEX NUT, 1/2-13
8	F65147	COTTER PIN, 1/4 X 2
9	F13055	SCREW, HEX HEAD CAP, 5-16/18 X 1 GR5
10	F13110	SCREW, HEX HEAD CAP, 3/8-16 X 1-3/4 GR5
11	F13113	SCREW, HEX HEAD CAP, 3/8-16 X 2-1/2 GR5
12	F13317	SCREW, HEX HEAD CAP, 5/8-11 X 3-1/2 GR5
13	F21887	CARRIAGE BOLT, 1/2-13 X 3-1/2 GR5
14	F33008	WASHER, FLAT, 3/8 USS
15	F33622	WASHER, SPLIT LOCK, 3/8
16	F33626	WASHER, SPLIT LOCK, 1/2
17	L116029	LINKAGE WELDMENT
18	L116032	PIN, W/WASHER WELDMENT, 1-1/4 X 7-1/2
19	L116038	RETAINER
20	F33100	WASHER, FLAT, 1-1/4 SAE
21	L116176	ROW MARKER, FIRST ARM WELDMENT
22	L116254	MACHINE BUSHING
23	L116337	BLADE, SMOOTH, 16" DIA.
24	L116339	CLEVIS W/EXTERNAL THREAD, 5/8-11
25	L116344	CYLINDER, 2-1/2 X 20 (NOT SHOWN)
26	L116354	TUBE, 5/8 X 1-7/8
27	L116355	PIN, W/DOUBLE HOLES, 7/8 X 11
28	L116366	RUBBER SPACER, OUTER ARM
29	L116390	DEPTH BAND WELDMENT
30	L116405	CLEVIS W/INTERNAL THREAD 5/8-11
31	L116438	PIN, W/DOUBLE HOLES, 1-1/4 X 12-1/4
32	L116446	LH SPINDLE AND HUB ASSEMBLY
	L116447	RH SPINDLE AND HUB ASSEMBLY
33	F65145	COTTER PIN, 1/4 X 1-1/2
34	L123337	ROW MARKER, OUTER ARM WELDMENT
35	L123338	ROW MARKER, MID ARM WELDMENT
36	L123340	EXTENSION TUBE, 2" SQ
37	L123342	CHAIN
38	L123343	CHAIN COVER
39	KD2721	U BOLT, 2 X 2, 1/2-13
40	K10722	SCREW, HEX HEAD CAP, 1/2-20 X 1

**ROW MARKER**

**8-Row 38, 12-Row, 16-Row Pull Type**

**ASSEMBLY**





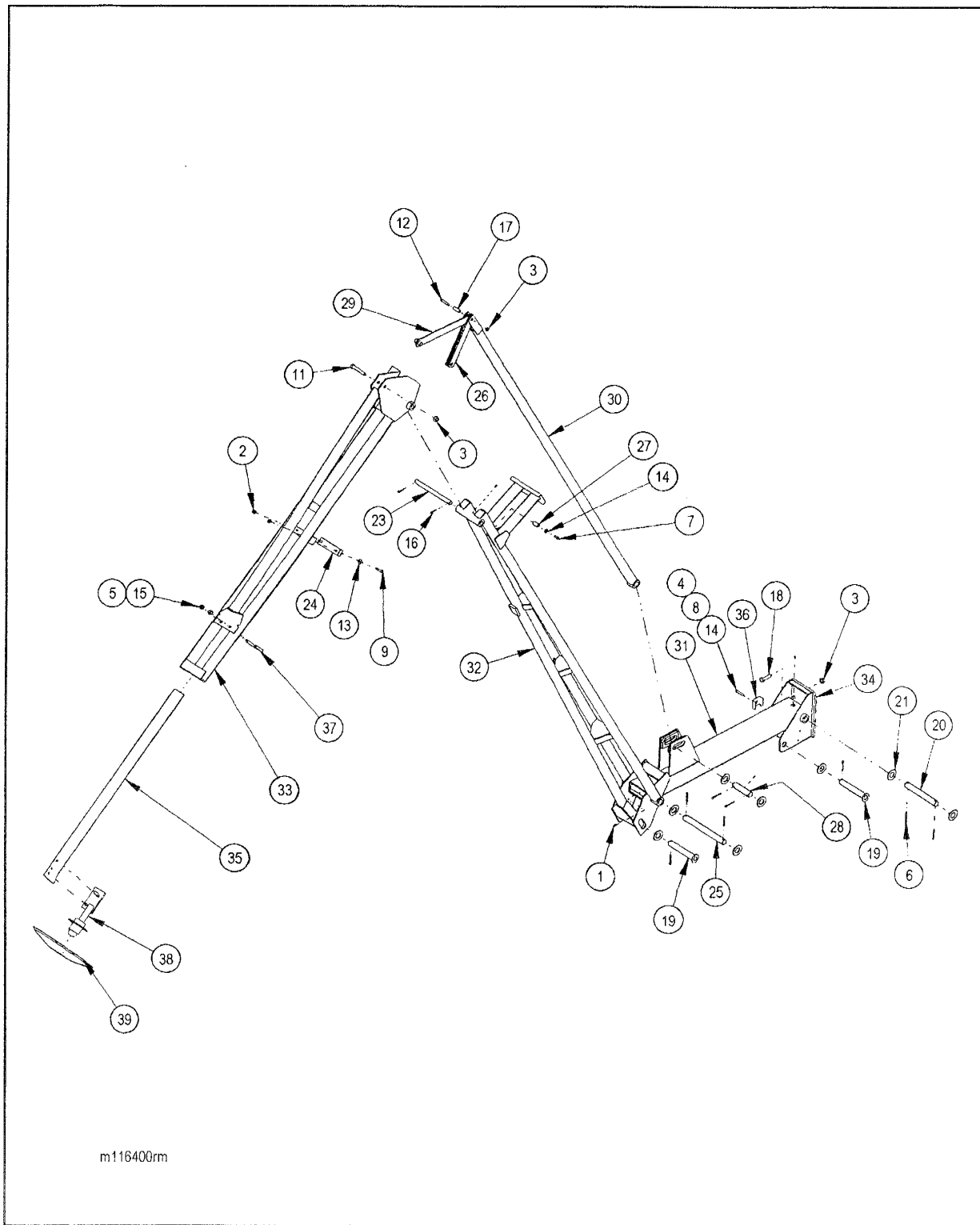
**ROW MARKER****8-Row 38, 12-Row, 16-Row Pull Type****ASSEMBLY**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	F58805	GREASE FITTING, 1/4-28
2	F36214	HEX JAM NUT, 5/8-11
3	F37212	REV LOCK NUT, 3/8-16
4	F37216	REV LOCK NUT, 5/8-11
5	F36106	HEX NUT, 3/8-16
6	F36110	HEX NUT, 1/2-13
8	F65147	COTTER PIN, 1/4 X 2
9	F13111	SCREW, HEX HEAD CAP, 3/8-16 X 2 GR5
10	F13110	SCREW, HEX HEAD CAP, 3/8-16 X 1-3/4 GR5
12	F13113	SCREW, HEX HEAD CAP, 3/8-16 X 2-1/2 GR5
14	F13317	SCREW, HEX HEAD CAP, 5/8-11 X 3-1/2 GR5
15	F33008	WASHER, FLAT, 3/8 USS
16	F33622	WASHER, SPLIT LOCK, 3/8
17	F33626	WASHER, SPLIT LOCK, 1/2
18	F33630	WASHER, SPLIT LOCK, 5/8
19	F65145	COTTER PIN, 1/4 X 1-1/2
20	F15312	SCREW, HEX HEAD CAP, 5/8-11 X 2-1/4 GR8
21	L116029	LINKAGE WELDMENT
22	L116032	PIN, W/WASHER WELDMENT, 1-1/4 X 7-1/2
23	L116034	PIN, W/DOUBLE HOLES, 1-1/4 X 9-1/2
24	L116035	EXTENSTION TUBE, 2" SQ X 50"
25	L116045	ROW MARKER, OUTER ARM WELDMENT (8 ROW 38 & 12 ROW)
	L116454	ROW MARKER, OUTER ARM WELDMENT (16 ROW)
26	L116070	ROW MARKER PIVOT WELDMENT
27	F33100	WASHER, FLAT, 1-1/4 SAE
28	L116176	ROW MARKER, FIRST ARM WELDMENT
29	L123329	ROW MARKER, MID ARM WELDMENT (8 ROW 38)
	L116199	ROW MARKER, MID ARM WELDMENT (12 ROW)
	L116452	ROW MARKER, MID ARM WELDMENT (16 ROW)
30	L116339	CLEVIS W/EXTERNAL THREAD, 5/8-11
31	L116344	CYLINDER, 2-1/2 X 20 (NOT SHOWN)
32	L116354	TUBE, 5/8 X 1-7/8
33	L116355	PIN, W/DOUBLE HOLES, 7/8 X 11
34	L116366	RUBBER SPACER, OUTER ARM
35	L116405	CLEVIS W/INTERNAL THREAD 5/8-11
36	L116438	PIN, W/DOUBLE HOLES, 1-1/4 X 12-1/4
37	L124456	CHAIN (8 ROW 38)
	L120368	CHAIN (12 ROW)
	L120369	CHAIN (16 ROW)
38	L124455	CHAIN COVER (8 ROW 38)
	L120399	CHAIN COVER (12 ROW)
	L120400	CHAIN COVER (16 ROW)
39	L2-181-010001	HOSE CLAMP
40	KD2721	U BOLT, 2 X 2, 1/2-13
41	L116446	LH SPINDLE & HUB
	L116447	RH SPINDLE & HUB
42	L116337	BLADE, SMOOTH

ROW MARKER \_\_\_\_\_

24-Row Pull Type

ASSEMBLY



m116400rm

**ROW MARKER**

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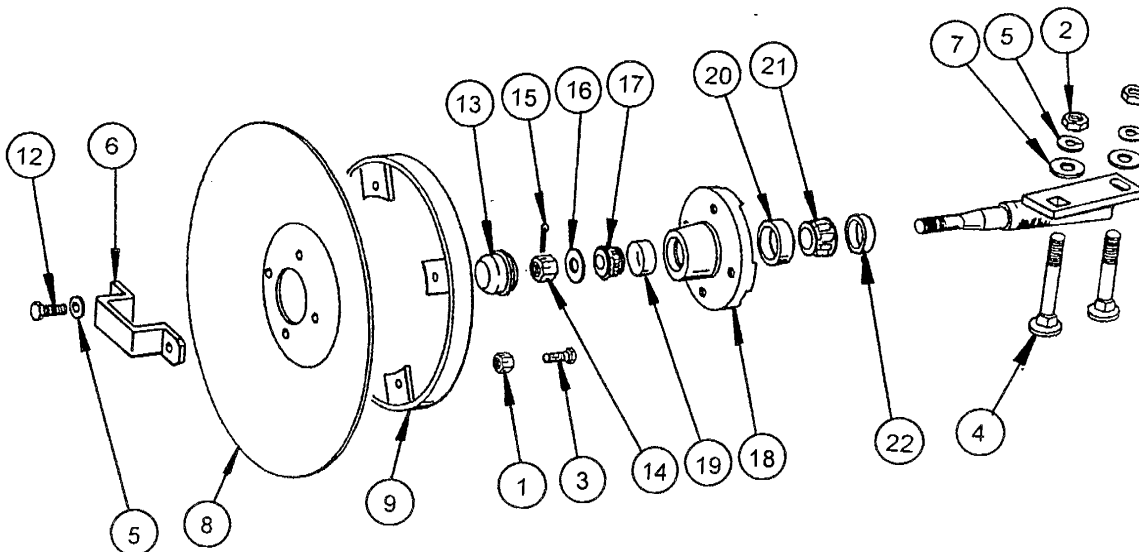
**24-Row Pull Type****ASSEMBLY**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	F58805	GREASE FITTING, 1/4-28
2	F37212	REV LOCK NUT, 3/8-16
3	F37216	REV LOCK NUT, 5/8-11
4	F36106	HEX NUT, 3/8-16
5	F36110	HEX NUT, 1/2-13
6	F65147	COTTER PIN, 1/4 X 2
7	F13103	SCREW, HEX HEAD CAP, 3/8-16 X 3/4 GR5
8	F13111	SCREW, HEX HEAD CAP, 3/8-16 X 2 GR5
9	F13110	SCREW, HEX HEAD CAP, 3/8-16 X 1-3/4 GR5
11	F13315	SCREW, HEX HEAD CAP, 5/8-11 X 3 GR5
12	F13113	SCREW, HEX HEAD CAP, 3/8-16 X 2-1/2 GR5
13	F33008	WASHER, FLAT, 3/8 USS
14	F33622	WASHER, SPLIT LOCK, 3/8
15	F33626	WASHER, SPLIT LOCK, 1/2
16	F65145	COTTER PIN, 1/4 X 1-1/2
17	L107389	TUBE, 5/8 X 1-3/4 X 11GA
18	F15312	SCREW, HEX HEAD CAP, 5/8-11 X 2-1/4 GR8
19	L116032	PIN, W/WASHER WELDMENT, 1-1/4 X 7-1/2
20	L116034	PIN, W/DOUBLE HOLES, 1-1/4 X 9-1/2
21	F33100	WASHER, FLAT, 1-1/4 SAE
22	L116344	CYLINDER, 2-1/2 X 20 (NOT SHOWN)
23	L116355	PIN, W/DOUBLE HOLES, 7/8 X 11
24	L116366	RUBBER SPACER, OUTER ARM
25	L116438	PIN, W/DOUBLE HOLES, 1-1/4 X 12-1/4
26	L117275	BAR, LINKAGE 12-1/2
27	L117278	BUSHING, LINKAGE, THREADED 3/8-16
28	L117289	PIN, W/DOUBLE HOLES, 1-1/4 X 5
29	L117292	LINKAGE WELDMENT
30	L117293	LINKAGE TUBE WELDMENT
31	L117294	ROW MARKER FIRST ARM
32	L117295	ROW MARKER MID ARM WELDMENT
33	L117296	ROW MARKER OUTER ARM WELDMENT
34	L117297	ROW MARKER BASE, PIVOT ASSEMBLY
35	L117298	TUBE EXTENSION, 2" SQ X 50"
36	L2-181-010001	HOSE CLAMP
37	KD2721	U BOLT, 2 X 2, 1/2-13

# ROW MARKER

## Pull Type

### MARKER SPINDLE / HUB / BLADE ASSEMBLY



ITEM	PART NO.	DESCRIPTION
1	F37211	REV LOCK NUT, 5/16-18
2	F36110	HEX NUT, 1/2-13
3	F13055	SCREW, HEX HEAD CAP, 5-16/18 X 1 GR5
4	F21887	CARRIAGE BOLT, 1/2-13 X 3-1/2 GR5
5	F33626	WASHER, SPLIT LOCK, 1/2
6	L116038	RETAINER
7	L116254	MACHINE BUSHING
8	L116337	BLADE, SMOOTH, 16" DIA.
9	L116390	DEPTH BAND WELDMENT
10	L116446	LH SPINDLE AND HUB ASSEMBLY (ITEMS 13-22)
11	L116447	RH SPINDLE AND HUB ASSEMBLY (ITEMS 13-22)
12	K10722	SCREW, HEX HEAD CAP, 1/2-20 X 1
13	L125612	HUB CAP
14	K10725	HEX NUT SLOTTED, 5/8-18
15	F65105	COTTER PIN, 5/32 X 1-1/2
16	L125617	WASHER, FLAT, 5/8
17	L70336915	OUTER CONE (P752231)
18	L125614	HUB WITH CUPS (ITEMS 19-20)
19	L70336914	OUTER CUP (P702218)
20	L70336916	INNER CUP (P702215)
21	L125613	INNER CONE (P752316)
22	L125611	GREASE SEAL (P602123)

## ROW MARKERS

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### TROUBLE SHOOTING

<b>Problem</b>	<b>Possible Cause</b>
----------------	-----------------------

PROBLEM: If both markers are lowering, but only one is raising at a time,

- The hoses from the cylinders to the valve may be connected backwards. Check the hose diagram in manual to correct.

PROBLEM: If the same marker is always operating,

- The spool in sequencing valve may not be shifting. Remove spool and inspect for foreign material to make sure all ports in the spool are open. Clean spool and reinstall.

PROBLEM: If both markers lower and raise at the same time,

- There may be foreign material under the check ball in the sequencing valve. Remove and clean the hose fitting, spring and balls. Remove and clean the spool as well.
- Make sure there is not a ball missing or incorrectly installed in the sequencing valve. Disassemble and correct if this is the case.

PROBLEM: If the marker is setting down while in the raised position,

- The O-ring in the marker cylinder may be damaged or the piston may be cracked. Disassemble the cylinder to inspect for damage, repair any damage.
- The spool in sequencing valve may not be shifting completely because of a defective ball or because the spring is missing. Check the valve assembly and install parts as needed.
- The spool in sequencing valve may be shifting back towards the center position. Restrict the flow of hydraulic oil from the tractor to the sequencing valve.

PROBLEM: If neither marker will move,

- The flow control may be closed too much. Loosen the locking nut and turn the flow control adjustment bolt out, or counterclockwise, until the desired speed is set.

PROBLEM: If the markers are moving too fast,

- The flow control may be open too much. Loosen the locking nut and turn the flow control adjustment bolt in, or clockwise, until the desired speed is set.

PROBLEM: If the marker operation speed is sporadically changing,

- The needle may be sticking open in the flow control valve. Remove the flow control, inspect and repair or replace.



## AIR INSECTICIDE SYSTEM

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### 6200 Series for 12-row 22-24" Mounted, or 12-row 30" & 24-row 22" Pull-Type

#### CONSOLE MOUNT

Mount the console in a convenient location in vehicle cab using hardware provided. Connect 4-contact and 2-contact connectors of console wiring to 12' 4-contact and 2-contact wire assemblies and route to the tractor hitch.

Wrap the wiring in the flex guard loom. Place the rings of power and ground wires for console on the corresponding positive and negative terminals of battery.

#### MONITOR

When the shaft is turning, the green light should be blinking. When the planter is lifted and the shaft is not turning, the light should stay a constant green.

The yellow light indicates air pressure and will stay a constant yellow when you have air pressure. Due to the small amount of pressure used, however, the yellow light may be erratic.

#### AIR PRESSURE

Air pressure is regulated by opening or closing the spring loaded shutter located on the turbofan manifold.

When not using insecticide, for example: when planting large seeds such as edible beans, it is recommended to remove the chain going to the Gandy drive. **Have the turbofan manifold in a raised position with the shutter completely open.** This will allow maximum vacuum pressure.

When using insecticide, it is recommended to run approximately 2-5 oz<sup>2</sup> of air pressure on the Gandy gauge. Too little air pressure may cause the hoses to plug with chemical. Too much air pressure tends to over-spread the chemical on the ground.

It is recommended to run air through the hoses each morning for a couple of minutes before use. This will help dry any moisture which may have condensed in the hoses overnight.

#### FIELD CALIBRATION

1. Fill the hopper and set up a test course using two stakes placed 436 feet apart.
2. Read the label and cautionary statements of the agricultural chemical, fertilizer or recommended rates for seed you are using. Determine the rate you need to apply in pounds per acre.
3. Look up the rate chart for the chemical and deflector/tube spacing. Caution: Be sure the correct rate chart and the correct metering wheels are used for your application. Set the speed-control on the applicator for your rate according to the rate chart. Be sure you align the marks by viewing gauge at eye level. (If no chart is available for your material, estimate the speed-control setting for a trial run.) Set the speed control on the applicator for your rate according to rate chart. Note: The 62 Series implemented mounted Orbit-Air models' rate control units have a scale range of increments. Each printed number refers to 10 increments. Example: If a setting of 20 is suggested on the rate chart, align the speed control marker with number 2 by running the adjustment crank.
4. Place a plastic bag around each deflector or tube end, securing it around the plastic tube, leaving one-half of the top open to allow air to escape. Note: take precaution so bags are not dragged or torn while making calibration run.
5. Adjust the manifold to produce 2-5oz/in<sup>2</sup> of air pressure if applying granular chemicals or light seeds, 14-20 oz/in if applying fertilizer. With heavier materials the higher air pressures may be needed. Check to see that all the bags are still in place.
6. Travel the 436 foot course at normal speed.
7. Weigh the total contents of all the bags in pounds.
8. Divide weight collected in pounds by the width of the implement in feet and multiply by 100 to get pounds per broadcast acre.

9. Adjust speed control if needed and repeat steps 4 through 8. Example: Collecting from 12 outlets with 22" tube spacing, you collect 2 pounds.

$$2 \text{ lb} \div 48 \text{ ft. implement) } \times 100 = 9.1 \text{ lb/acre}$$

Note: If you wish to collect from fewer deflectors, follow the above procedures until you get to Step 8, then divide pounds collected by acres covered to get pounds per broadcast acre. To calculate acres covered: (Collected width in feet) x 436 ft  $\div$  43,560 ft<sup>2</sup> = acres covered.

Example: By using 3 tubes with 22 inch spacing you collect .5 lb. Therefore, total width collected is 5.5 feet.

1.  $(5.5 \text{ ft} \times 436 \text{ ft}) \div 43,560 \text{ ft}^2 = .055 \text{ acres}$
2.  $.5 \text{ lb} \div .055 \text{ acres} = 9.1 \text{ lb/acre}$

### **INTERCHANGING METERING WHEELS**

Each unit is furnished with one set of metering wheels as ordered. However additional sets may be ordered to apply other materials. They may be interchanged according to the following procedure:

1. Detach nylon spur gear from drive end of metering wheel shaft by removing cotter pin. Loosen the two hex bolts on the flangette bearing at each end. Lift out shaft and wheel assembly. Loosen and remove locking collar on drive end.
2. Remove wheels and slide on new set of wheels, aligning them in metering cups. Re-install flangettes and locking collar on outside of mounting plate tab. Tighten hex bolts on each flangette bearing, then lock collar by tapping with punch to run collar on shaft, and secure with set screws.

Note; If your operation demands metering wheels be interchanged often, additional wheel sets and shafts can be ordered, or complete bottom metering wheels and mounting plate assemblies can be ordered for quick interchange using 'j' bolts.



## AIR INSECTICIDE SYSTEM

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### CONVERSION FOR METRIC RATES (KG/HECTARE)

1. Determine ground speed in miles per hour.

2 miles per hour =	3.2 km per hour
3 miles per hour =	4.8 km per hour
4 miles per hour =	6.4 km per hour
5 miles per hour =	8.0 km per hour
6 miles per hour =	9.7 km per hour
7 miles per hour =	11.3 km per hour
8 miles per hour =	12.9 km per hour
9 miles per hour =	14.5 km per hour
10 miles per hour =	16.1 km per hour

2. Determine rate in pounds per acre.

Multiply your rate in kilograms per hectare by .89 to obtain rate in pounds per acre. Use this number when following the instructions on the front cover.

### LEGAL EQUIVALENTS ADOPTED BY ACT OF CONGRESS JULY 28, 1886

#### Length

1 centimeter =	.3937 in
1 meter =	39.7 inches= 3.28 feet
1 kilometer =	.621 statute miles
1 inch =	2.540 centimeters
1 foot =	30.48 centimeters
1 yard =	0.914 meters
1 rod (16.5 ft) =	5.029 meters
1 statute mile (5280 ft) =	1.61 kilometers

#### Area

1 hectare (10,000 sq m) =	2.471 acres
1 acre =	0.405 hectars

#### Weight

1 gram =	0.035 ounces
1 kilogram =	2.205 pounds
1 ounce =	28.35 grams
1 pound =	0.4536 kilograms

#### Weight per Area

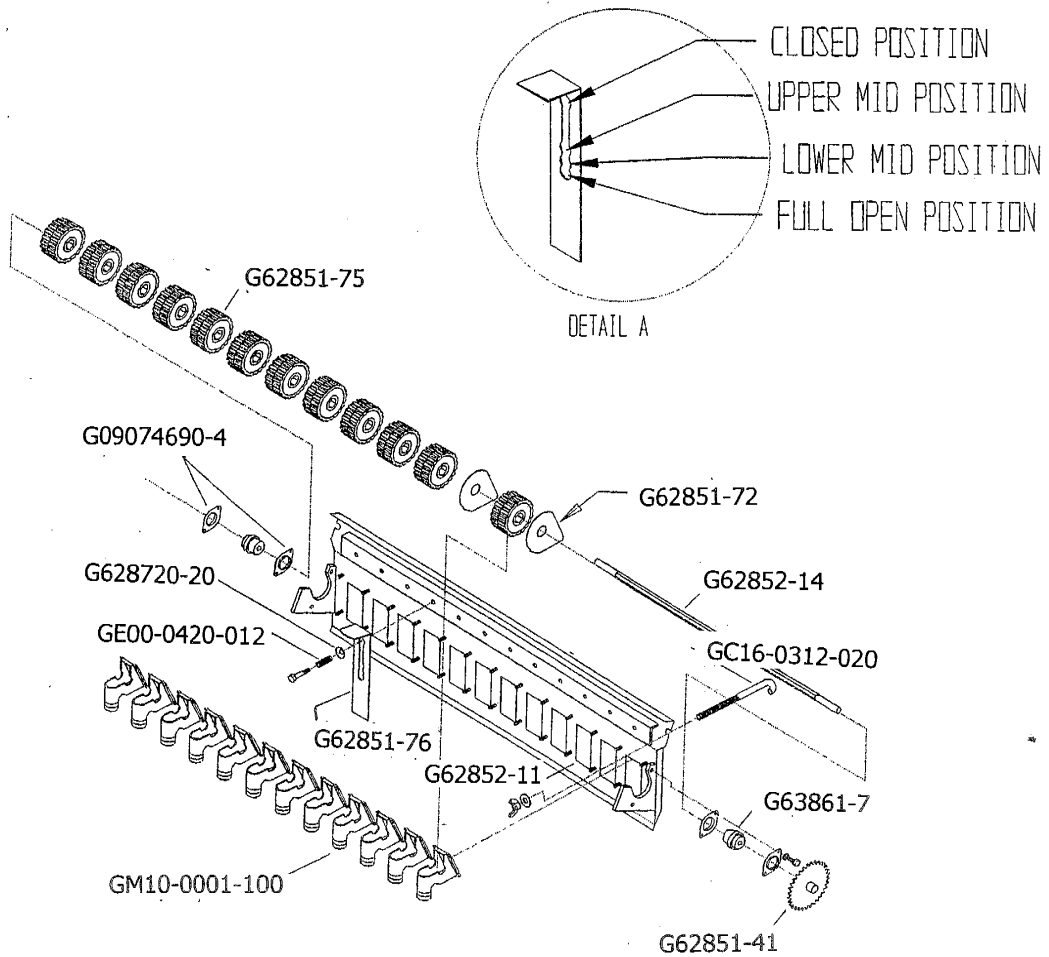
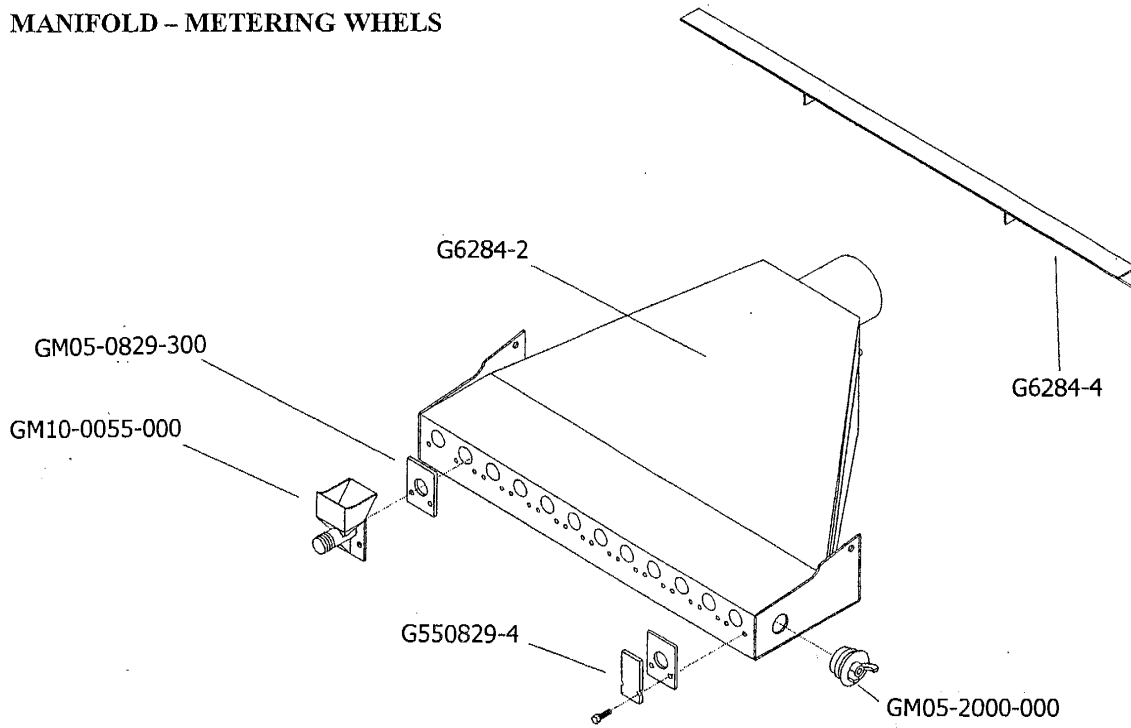
1 pound per acre =	1.120 kilograms per hectare
1 kilogram per Hectare =	0.892 pounds per acre
1 ounce per 1000 ft =	9.30 grams per 100 meters

#### Weight per Area with speed change

1 ounce per 1000 feet @ 1 mph = 14.88 g/100 meters 1 kph

AIR INSECTICIDE SYSTEM

MANIFOLD - METERING WHEELS



## AIR INSECTICIDE SYSTEM

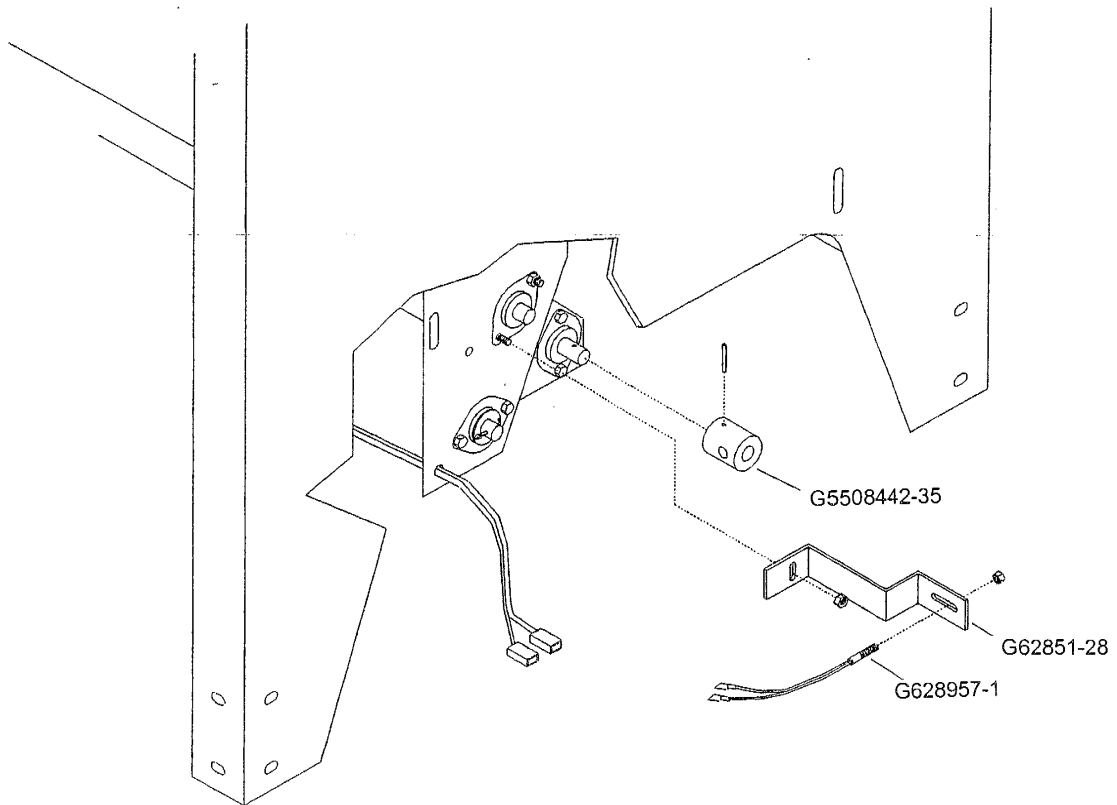
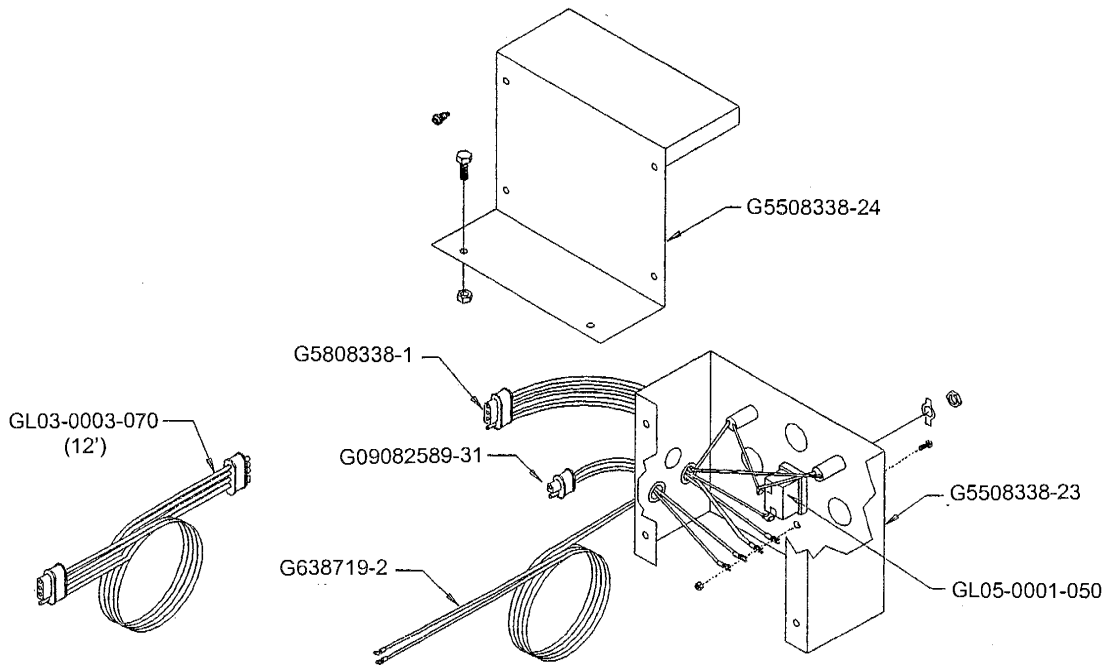
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### MANIFOLD - METERING WHEELS

<b>PART No.</b>	<b>DESCRIPTION</b>
G6284-2	Air Chamber 4 Hex bolt (3/8x3/4) 2 Lock washer (3/8) 2 Hex nut (3/8) 2 Whiz lock flange nut (3/8)
G6284-4	Angle support, manifold 2 Hex bolt (3/8x1) 2 Whiz lock flange nut
G62851-75	Metering wheels, chemical, black with insert
G62851-76	Hole closure, slotted 12 Lock washer (5/16) 12 Spring 12 Hex bolt (5/16x 1 3/4)
G62852-14	Hex shaft, 31-9/16"
G62851-41	Sprocket, 21 tooth, 5/8 bore 1 Cotter pin 3/16x 1 1/4
G62851-72	Wear plate, stainless
G62852-11	Mounting plate, metering cups, 12 openings 2 'J' bolt 2 SAE washer (5/16) 2 Wing nut (5/16)
G628720-20	Washer, extruded
G63861-7	Bearing, plastic
G550829-4	Air Chamber cover plate
G09074690-4	Flangette, bearing 4 Hex bolt (1/4x1/2) 4 Lock washer (1/4)
GC16-0312-020	Washer
GE00-0420-012	Spring
GM05-0829-300	Gasket, mixing chambers
GM05-2000-000	Plub
GM10-0001-100	Metering cup, 1 1/4" 26 Small flange nut 1024 (3/16)
GM10-0055-000	Mixing chambers 24 Hex hd TC screw (5/16x3/4)

AIR INSECTICIDE SYSTEM

CONSOLE - SHAFT SENSOR - DRIVE SPROCKET LISTING



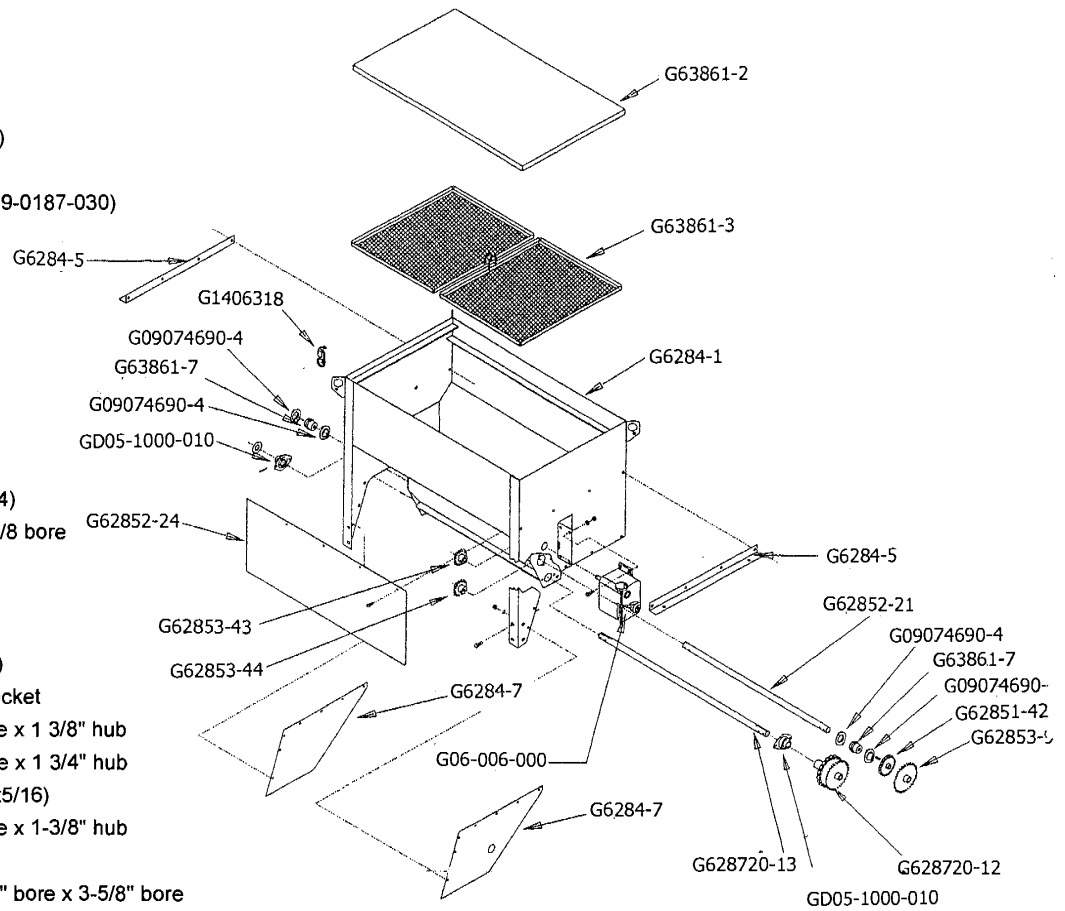
CONSOLE - SHAFT SENSOR - DRIVE SPROCKET LISTING

<u>PART No.</u>	<u>DESCRIPTION</u>
G62851-28	Mounting bracket, sensor
G628957-1	Sensor with tabs installed
G638719-2	Power and ground wire, 16 ga.x11'
G09082589-31	Moulded connector, 16 ga.x8"
G5508338-23	Enclosed console, front 3 Rubbger grommet 3/8" ID
G5508338-24	Enclosed console, back 2 Hex bolt (1/4x3/4) 2 Small flange nut (1/4) 4 Phillips sheet metal screw (#10-16x5/16)
G5508442-35	Magnetic hub 1 Spring pin (3/16x1)
G5808338-1	Molded connector, female 8" with terminal
GL03-003-070	Molded connector, 4 contact M & F 144" wire
GL05-0001-050	Toggle switch #90-0001
GL05-0008-000	Amber indicator light
GL05-0008-020	Green indicator light
<u>Drive Sprocket Listing - 24-Row</u>	
G00104040	40 tooth sprocket
G00104035	35 tooth sprocket
KA5105	15 tooth sprocket
<u>Drive Sprocket Listing - 7 x 7 Mounted</u>	
G00104040	40 tooth sprocket
G00104036	36 tooth sprocket
KA5105	15 tooth sprocket
<u>Drive Sprocket Listing - Stacking Toolbar</u>	
G0104042	42 tooth sprocket
G00104040	40 tooth sprocket
KA5105	15 tooth sprocket
<u>Drive Sprocket Listing- 5 x 5 Mounted</u>	
G00104040	40 tooth sprocket
G00104038	38 tooth sprocket
KA5105	15 tooth sprocket
K3310-80	No. 40 chain / 80 pitch w/link
G04017E08	Idler sprocket 17t #40 1/2"

# AIR INSECTICIDE SYSTEM

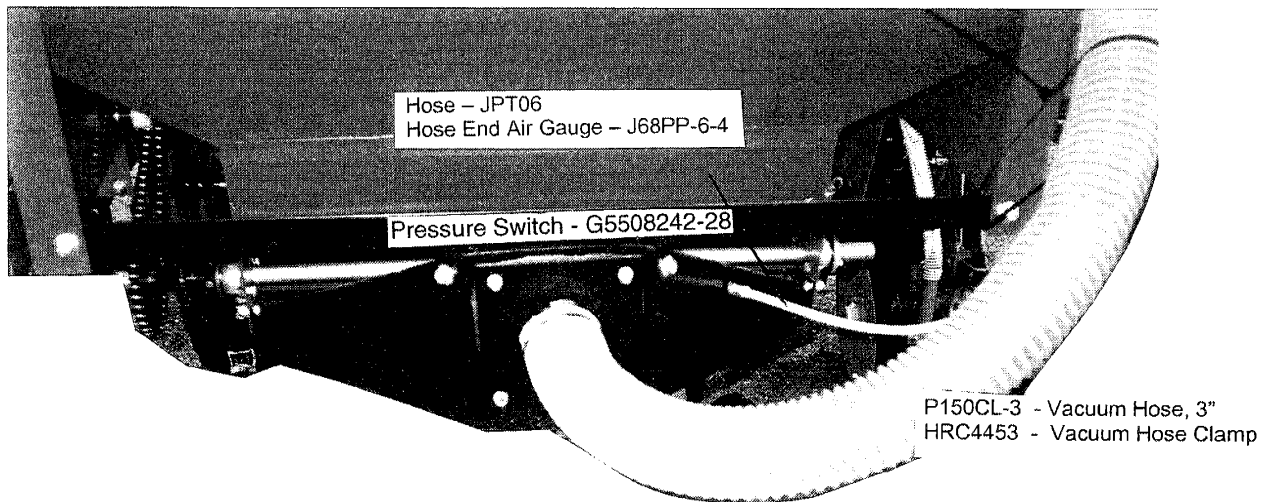
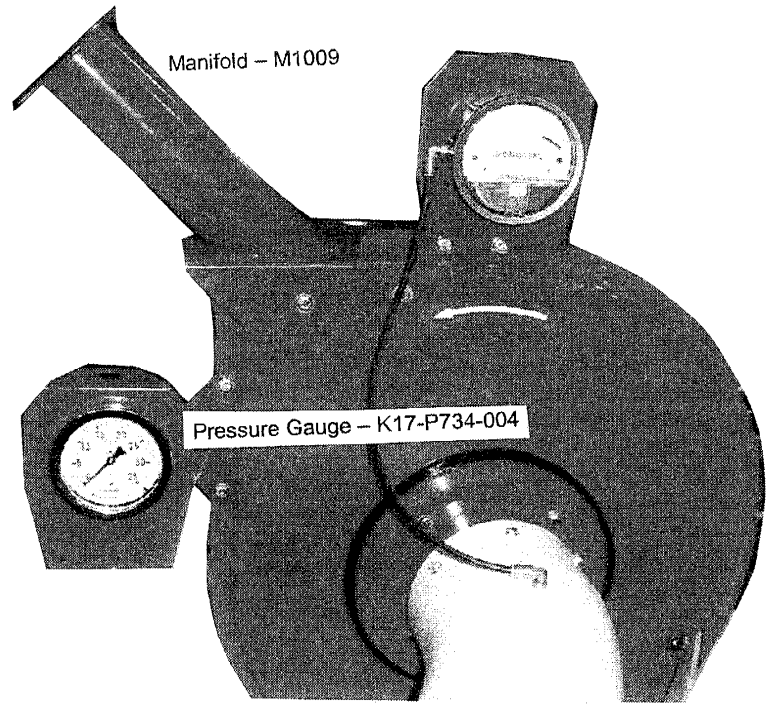
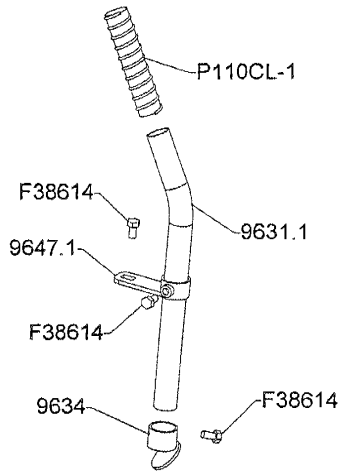
## HOPPER ASSEMBLY

PART No.	DESCRIPTION
G6284-1	Hopper, 10 cu.ft. 2 Hex bolt (3/8x1) 2 Whiz lock flange nut (3/8) 2 Site window (610851/26) 12 Pop rivet (3/16x3/8) (C19-0187-030) 4 Rails (610851/27)
G6284-5	Mounting angle 4 Hex bolt (5/16x3/4) 4 Lock washer (5/16) 4 Hex nut (5/16)
G6284-7	End windshield 13 Wrought washer (1/4) 13 Hex bolt (1/4x1/2) 13 Whiz lock flange nut (1/4)
G62851-42	Chain sprocket, 21 tooth, 5/8 bore
G62852-24	Clear windshield 5 Hex bolt (1/4x1/2) 5 Wrought washer (5/16) 5 Whiz lock flange nut (1/4)
G62852-21	Shaft, gear and driven sprocket
G62853-9	Sprocket, 24 tooth, 5/8 bore x 1 3/8" hub
G62853-43	Sprocket, 16-tooth, 5/8 bore x 1 3/4" hub 2 Socket set screw (10-24x5/16)
G62853-44	Sprocket, 16 tooth, 1/2 bore x 1-3/8" hub
G628720-7	Coupler
G628720-12	Chain sprocket, 35 tooth, 1" bore x 3-5/8" bore 1 Clevis pin (1/4x1-1/2) 1 Cotter pin (3/32x3/4)
G628720-13	Shaft, 1"x3/8
G63861-2	Cover 2 Clevis pin (1/4x2x5/8) 2 Cotter pin (3/32x3/4)
G63861-3	Screen
G63861-7	Bearing, plastic
G06-0060-000	Speed control 4 Hex bolt (3/8x1) 4 Lock washer (3/8) 4 Hex nut (3/8)
G09074690-4	Flangette, bearing 4 Hex bolt (1/4x1/2) 4 Lock washer (1/4)
G1406318	Cover Lock 2 Cotter pin (3/32x3/4)
GD05-1000-010	Bearing 4 Hex bolt (1/4x3/4) 4 Lock washer (1/4) 4 Hex nut (1/4)



AIR INSECTICIDE SYSTEM

HOSES, INSECTICIDE SPREADER TUBE, PRESSURE GAUGE, MANIFOLD







**AIR INSECTICIDE SYSTEM**

Gandy Rate Chart  
Orbit Air Applicators for MONOSEM Planters

**DIPEL 10G  
ABBOTT LAB.**

TUBE SPACING IN INCHES									STANDARD ZERO-MAX SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									
1.7	1.8	1.9	2.3	2.7	2.9	3.0	3.2	3.9	3.5
2.8	3.0	3.1	3.8	4.3	4.7	4.9	5.1	6.3	5.5
3.5	3.7	3.9	4.7	5.4	5.9	6.2	6.4	7.9	7.5
4.6	4.8	5.1	6.1	7.0	7.6	7.9	8.3	10.1	9.0
5.3	5.6	5.9	7.1	8.2	8.9	9.3	9.7	11.9	11.0
6.2	6.6	6.9	8.3	9.6	10.4	10.9	11.3	13.9	12.5
7.1	7.5	7.9	9.4	10.9	11.8	12.3	12.9	15.7	14.0
8.5	9.0	9.5	11.4	13.1	14.2	14.8	15.5	18.9	16.5
10.3	10.8	11.4	13.7	15.8	17.1	17.8	18.7	22.8	19.0
10.9	11.5	12.1	14.6	16.8	18.2	19.0	19.9	24.3	20.0
12.0	12.6	13.3	16.0	18.5	20.0	20.9	21.8	26.7	21.5
13.7	14.4	15.2	18.2	21.0	22.8	23.8	24.9	30.4	23.5
18.6	19.6	20.7	24.8	28.6	31.0	32.3	33.8	41.3	25.5
19.9	20.9	22.1	26.5	30.6	33.1	34.5	36.1	44.1	27.5
21.8	23.0	24.3	29.1	33.6	36.4	38.0	39.7	48.5	29.0
23.3	24.6	25.9	31.1	35.9	38.9	40.6	42.4	51.9	30.0

**DYFONATE 20G  
ZYNECA**

TUBE SPACING IN INCHES									STANDARD ZERO-MAX SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									
1.9	2.0	2.1	2.6	3.0	3.2	3.3	3.5	4.3	3.5
2.9	3.0	3.2	3.8	4.4	4.8	5.0	5.2	6.4	5.5
3.8	4.0	4.3	5.1	5.9	6.4	6.7	7.0	8.5	7.5
4.5	4.7	5.0	6.0	6.9	7.5	7.8	8.2	10.0	9.0
5.0	5.2	5.5	6.6	7.7	8.3	8.7	9.1	11.1	10.0
7.5	7.9	8.3	10.0	11.5	12.5	13.0	13.6	16.7	12.5
8.5	9.0	9.5	11.4	13.1	14.2	14.8	15.5	18.9	14.0
10.1	10.6	11.2	13.4	15.5	16.8	17.5	18.3	22.4	16.5
12.1	12.8	13.5	16.2	18.6	20.2	21.1	22.0	26.9	19.0
12.9	13.6	14.3	17.2	19.8	21.5	22.4	23.5	28.7	20.0
14.2	14.9	15.7	18.9	21.8	23.6	24.6	25.7	31.5	21.5
16.1	17.0	17.9	21.5	24.8	26.9	28.1	29.3	35.9	23.5
18.2	19.1	20.2	24.2	28.0	30.3	31.6	33.1	40.4	25.5
19.9	20.9	22.1	26.5	30.6	33.1	34.5	36.1	44.1	27.5
21.8	23.0	24.3	29.1	33.6	36.4	38.0	39.7	48.5	29.0
23.5	24.7	26.1	31.3	36.1	39.1	40.8	42.7	52.1	30.0

**AIR INSECTICIDE SYSTEM**

**Counter 15 G  
AMERICAN CYANAMID**

TUBE SPACING IN INCHES								STANDARD ZERO-MAX SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX	
38	36	30	26	24	23	22	18	Y-41	
<b>RATE IN POUNDS PER ACRE</b>									
2.1	2.3	2.7	3.1	3.4	3.5	3.7	4.5	3.5	
3.2	3.4	4.1	4.7	5.1	5.3	5.6	6.8	5.5	
4.3	4.5	5.4	6.3	6.8	7.1	7.4	9.1	7.5	
5.6	5.9	7.0	8.1	8.8	9.2	9.6	11.7	10.0	
6.4	6.7	8.1	9.3	10.1	10.5	11.0	13.5	11.0	
7.5	7.9	9.4	10.9	11.8	12.3	12.9	15.7	12.5	
8.5	9.0	10.8	12.5	13.5	14.1	14.7	18.0	14.0	
11.1	11.7	14.0	16.2	17.5	18.3	19.1	23.3	16.5	
13.3	14.0	16.8	19.4	21.0	21.9	22.9	28.0	19.0	

**COUNTER CR  
AMERICAN CYANAMID**

TUBE SPACING IN INCHES								STANDARD ZERO-MAX SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX		
40	38	36	30	26	24	23	22	18	Y-41	
<b>RATE IN POUNDS PER ACRE</b>										
3.8	4.0	4.3	5.1	5.9	6.4	6.7	7.0	8.5	5.0	
4.6	4.8	5.1	6.1	7.0	7.6	7.9	8.3	10.1	6.0	
5.3	5.5	5.9	7.0	8.1	8.8	9.2	9.6	11.7	7.0	
6.0	6.3	6.7	8.0	9.2	10.0	10.4	10.9	13.3	8.0	
6.9	7.2	7.6	9.2	10.6	11.5	12.0	12.5	15.3	9.0	
7.6	8.0	8.5	10.2	11.7	12.7	13.2	13.9	16.9	10.0	
8.5	9.0	9.5	11.4	13.1	14.2	14.9	15.5	19.0	11.0	
9.5	10.0	10.5	12.6	14.6	15.8	16.5	17.2	21.0	12.0	
10.4	10.9	11.5	13.9	16.0	17.3	18.1	18.9	23.1	13.0	
11.2	11.8	12.5	14.9	17.2	18.7	19.5	20.4	24.9	14.0	
12.1	12.8	13.5	16.2	18.7	20.2	21.1	22.1	27.0	15.0	
13.0	13.7	14.5	17.4	20.1	21.7	22.7	23.7	29.0	16.0	
14.0	14.7	15.5	18.6	21.5	23.3	24.3	25.4	31.0	17.0	
14.9	15.7	16.5	19.8	22.9	24.8	25.9	27.0	33.1	18.0	
15.9	16.8	17.7	21.3	24.5	26.6	27.7	29.0	35.4	19.0	
16.9	17.8	18.7	22.5	26.0	28.1	29.3	30.7	37.5	20.0	
18.0	18.9	20.0	23.9	27.6	29.9	31.2	32.7	39.9	21	
19.1	20.1	21.2	25.4	29.3	31.8	33.1	34.6	42.3	22	
20.1	21.2	22.4	26.9	31.0	33.6	35.0	36.6	44.8	23	
21.2	22.3	23.5	28.2	32.6	35.3	36.8	38.5	47.1	24	
22.3	23.4	24.7	29.7	34.3	37.1	38.7	40.5	49.5	25	
23.3	24.6	25.9	31.1	35.9	38.9	40.6	42.5	51.9	26	
24.4	25.7	27.1	32.6	37.6	40.7	42.5	44.4	54.3	27	
25.5	26.9	28.3	34.0	39.2	42.5	44.4	46.4	56.7	28	
26.6	28	29.5	35.4	40.9	44.3	46.2	48.3	59.0	29	
27.6	29.1	30.7	36.9	42.5	46.1	48.1	50.3	61.4	30	

**AIR INSECTICIDE SYSTEM**

**FORCE 1.5 G  
ZENECA**

TUBE SPACING IN INCHES									STANDARD ZERO-MAX SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									
3.5	3.7	3.9	4.7	5.4	5.9	6.2	6.4	7.9	7.5
4.5	4.7	5.0	6.0	6.9	7.5	7.8	8.2	10.0	9.0
5.3	5.6	5.9	7.0	8.1	8.8	9.2	9.6	11.7	11.0
6.2	6.5	6.9	8.2	9.5	10.3	10.7	11.2	13.7	12.5
7.0	7.4	7.8	9.4	10.8	11.7	12.2	12.8	15.6	14.0
9.6	10.1	10.7	12.8	14.8	16.0	16.7	17.5	21.3	16.5
11.5	12.1	12.8	15.4	17.7	19.2	20.0	20.9	25.6	19.0
12.2	12.9	13.6	16.3	18.8	20.4	21.3	22.3	27.2	20.0
13.0	13.6	14.4	17.3	19.9	21.6	22.5	23.6	28.8	21.5
13.7	14.4	15.2	18.2	21.0	22.8	23.8	24.9	30.4	23.5
18.6	19.6	20.7	24.8	28.6	31.0	32.3	33.8	41.3	25.5
19.9	20.9	22.1	26.5	30.6	33.1	34.5	36.1	44.1	27.5
21.8	23.0	24.3	29.1	33.6	36.4	38.0	39.7	48.5	29.0
23.3	24.6	25.9	31.1	35.9	38.9	40.6	42.4	51.9	30.0
23.8	25.1	26.5	31.8	36.6	39.7	41.4	43.3	52.9	30.5
25.8	27.2	28.7	34.4	39.7	43.0	44.9	46.9	57.3	32.0

**FULL-BACK**

TUBE SPACING IN INCHES									STANDARD ZERO-MAX SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									
2.8	3.0	3.1	3.8	4.3	4.7	4.9	5.1	6.3	7.0
3.1	3.2	3.4	4.1	4.7	5.1	5.3	5.6	6.8	8.0
4.6	4.9	5.1	6.2	7.1	7.7	8.0	8.4	10.3	9.0
5.0	5.2	5.5	6.6	7.7	8.3	8.7	9.1	11.1	10.0
5.6	5.9	6.3	7.5	8.7	9.4	9.8	10.3	12.5	11.0
6.2	6.6	6.9	8.3	9.6	10.4	10.9	11.3	13.9	12.0
6.8	7.2	7.6	9.1	10.5	11.4	11.9	12.4	15.2	13.0
7.4	7.8	8.3	9.9	11.4	12.4	12.9	13.5	16.5	14.0
8.0	8.5	8.9	10.7	12.4	13.4	14.0	14.6	17.9	15.0
8.8	9.2	9.7	11.7	13.5	14.6	15.2	15.9	19.5	16.0
9.5	10.0	10.5	12.6	14.6	15.8	16.5	17.2	21.1	17.0
10.1	10.7	11.3	13.5	15.6	16.9	17.6	18.4	22.5	18.0
10.9	11.4	12.1	14.5	16.7	18.1	18.9	19.7	24.1	19.0
11.6	12.2	12.9	15.4	17.8	19.3	20.1	21.1	25.7	20.0
23.8	25.1	26.5	31.8	36.6	39.7	41.4	43.3	52.9	30.5
25.8	27.2	28.7	34.4	39.7	43.0	44.9	46.9	57.3	32.0

**AIR INSECTICIDE SYSTEM**

**LORSBAN  
DOWELANCO**

TUBE SPACING IN INCHES								STANDARD ZERO-MAX SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX	
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									
1.3	1.3	1.4	1.7	1.9	2.1	2.2	2.3	2.8	3.5
1.9	2.0	2.1	2.6	3.0	3.2	3.3	3.5	4.3	5.5
2.5	2.7	2.8	3.4	3.9	4.2	4.4	4.6	5.6	7.5
3.2	3.4	3.6	4.3	5.0	5.4	5.6	5.9	7.2	9.0
3.8	4.0	4.3	5.1	5.9	6.4	6.7	7.0	8.5	11.0
4.5	4.7	5.0	6.0	6.9	7.5	7.8	8.2	10.0	12.5
5.1	5.4	5.7	6.8	7.8	8.5	8.9	9.3	11.3	14.0
6.7	7.1	7.5	9.0	10.3	11.2	11.7	12.2	14.9	16.5
8.0	8.5	8.9	10.7	12.4	13.4	14.0	14.6	17.9	19.0
8.6	9.0	9.5	11.4	13.2	14.3	14.9	15.6	19.1	20.0
9.4	9.9	10.4	12.5	14.4	15.6	16.3	17.0	20.8	21.5
13.7	14.4	15.2	18.2	21.0	22.8	23.8	24.9	30.4	23.5
18.6	19.6	20.7	24.8	28.6	31.0	32.3	33.8	41.3	25.5
19.9	20.9	22.1	26.5	30.6	33.1	34.5	36.1	44.1	27.5
21.8	23.0	24.3	29.1	33.6	36.4	38.0	39.7	48.5	29.0
23.3	24.6	25.9	31.1	35.9	38.9	40.6	42.4	51.9	30.0

**MOCAP 15G RHONE-POULENC**

TUBE SPACING IN INCHES								SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX	
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									
1.4	1.5	1.5	1.8	2.1	2.3	2.4	2.5	3.1	3.5
2.1	2.2	2.3	2.8	3.2	3.5	3.7	3.8	4.7	5.5
2.8	2.9	3.1	3.7	4.2	4.6	4.8	5.0	6.1	7.5
3.5	3.7	3.9	4.6	5.4	5.8	6.1	6.3	7.7	9.0
4.2	4.4	4.7	5.6	6.5	7.0	7.3	7.6	9.3	11.0
4.9	5.2	5.5	6.6	7.6	8.2	8.6	8.9	10.9	12.5
5.6	5.9	6.2	7.4	8.6	9.3	9.7	10.1	12.4	14.0
7.0	7.4	7.8	9.4	10.8	11.7	12.2	12.8	15.6	16.5
8.4	8.8	9.3	11.2	12.9	14.0	14.6	15.3	18.7	19.0
9.0	9.5	10.0	12.0	13.8	15.0	15.7	16.4	20.0	20.0
9.8	10.4	10.9	13.1	15.1	16.4	17.1	17.9	21.9	21.5
11.3	11.9	12.5	15.0	17.4	18.8	19.6	20.5	25.1	23.5
12.7	13.3	14.1	16.9	19.5	21.1	22.0	23.0	28.1	25.5
13.2	13.9	14.7	17.6	20.3	22.0	23.0	24.0	29.3	27.5
14.5	15.3	16.1	19.4	22.3	24.2	25.3	26.4	32.3	29.0
15.6	16.4	17.3	20.8	24.0	26.0	27.1	28.4	34.7	30.0
15.8	16.7	17.6	21.1	24.4	26.4	27.5	28.8	35.2	30.5
17.2	18.1	19.1	22.9	26.4	28.6	29.8	31.2	38.1	32
18.5	19.5	20.6	24.7	28.5	30.9	32.2	33.7	41.2	33.5
19.9	20.9	22.1	26.5	30.6	33.1	34.5	36.1	44.1	35
20.2	21.3	22.5	27	31.1	33.7	35.2	36.8	44.9	36
20.9	22	23.2	27.8	32.1	34.8	36.3	38.0	46.4	37

**AIR INSECTICIDE SYSTEM**

**M-PERIL  
MYCOGEN**

TUBE SPACING IN INCHES									SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									
5.9	6.2	6.5	7.8	9.0	9.8	10.2	10.7	13.1	5.0
7.3	7.7	8.1	9.8	11.3	12.2	12.7	13.3	16.3	6.0
8.7	9.2	9.7	11.6	13.4	14.5	15.1	15.8	19.3	7.0
10.1	10.7	11.3	13.5	15.6	16.9	17.6	18.4	22.5	8.0
11.6	12.3	12.9	15.5	17.9	19.4	20.2	21.2	25.9	9.0
13.1	13.8	14.5	17.4	20.1	21.8	22.7	23.8	29.1	10.1
14.6	15.3	16.2	19.4	22.4	24.3	25.4	26.5	32.4	11.0
16.1	16.9	17.9	21.4	24.7	26.8	28.0	29.2	35.7	12.0
17.6	18.5	19.5	23.4	27.0	29.3	30.6	32.0	39.1	13.0
19.4	20.4	21.5	25.8	29.8	32.3	33.7	35.2	43.1	14.0
20.9	22.0	23.2	27.8	32.1	34.8	36.3	38.0	46.4	15.0
22.8	24.0	25.3	30.4	35.1	38.0	39.7	41.5	50.7	16.0

**POUNCE  
FMC**

TUBE SPACING IN INCHES									SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
4.1	4.3	4.5	5.4	6.3	6.8	7.1	7.4	9.1	6.0
4.9	5.1	5.4	6.5	7.5	8.1	8.5	8.8	10.8	7.0
5.7	6.0	6.3	7.6	8.8	9.5	9.9	10.4	12.7	8.0
6.5	6.8	7.2	8.6	10.0	10.8	11.3	11.8	14.4	9.0
7.3	7.7	8.1	9.8	11.3	12.2	12.7	13.3	16.3	10.0
8.2	8.7	9.1	11.0	12.6	13.7	14.3	14.9	18.3	11.0
9.1	9.5	10.1	12.1	13.9	15.1	15.8	16.5	20.1	12.0
10.0	10.5	11.1	13.3	15.3	16.6	17.3	18.1	22.1	13.0
10.9	11.4	12.1	14.5	16.7	18.1	18.9	19.7	24.1	14.0
11.8	12.4	13.1	15.8	18.2	19.7	20.6	21.5	26.3	15.0
12.1	12.8	13.5	16.2	18.6	20.2	21.1	22.0	26.9	16.0
13.1	13.8	14.5	17.4	20.1	21.8	22.7	23.8	29.1	19.0
13.9	14.7	15.5	18.6	21.4	23.2	24.2	25.3	30.9	20.0

**AIR INSECTICIDE SYSTEM**

**TEMIK 15G  
RHONE-POULENC**

TUBE SPACING IN INCHES									SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									<b>Y-41</b>
1.9	2.0	2.1	2.5	2.9	3.1	3.2	3.4	4.1	3.5
2.8	2.9	3.1	3.7	4.2	4.6	4.8	5.0	6.1	5.5
3.7	3.9	4.1	4.9	5.6	6.1	6.4	6.7	8.1	7.5
4.3	4.5	4.7	5.7	6.6	7.1	7.4	7.7	9.5	9.0
5.6	5.9	6.2	7.4	8.6	9.3	9.7	10.1	12.4	11.0
6.5	6.8	7.2	8.6	10.0	10.8	11.3	11.8	14.4	12.5
7.4	7.8	8.2	9.8	11.4	12.3	12.8	13.4	16.4	14.0
10.3	10.9	11.5	13.8	15.9	17.2	17.9	18.8	22.9	16.5
12.4	13.0	13.7	16.5	19.0	20.6	21.5	22.5	27.5	19.0
13.2	13.9	14.7	17.6	20.3	22.0	23.0	24.0	29.3	20.0
14.4	15.2	16.0	19.2	22.2	24.0	25.0	26.2	32.0	21.5
16.5	17.0	18.3	22.0	25.4	27.5	28.7	30.0	36.7	23.5
18.6	19.6	20.7	24.8	28.6	31.0	32.3	33.8	41.3	25.5
19.9	20.9	22.1	26.5	30.6	33.1	34.5	36.1	44.1	27.5
21.8	23.0	24.3	29.1	33.6	36.4	38.0	39.7	48.5	29
23.3	24.6	25.9	31.1	35.9	38.9	40.6	42.4	51.9	30

**THEMIT 15G & 20G  
AMERICAN CYNAMID**

TUBE SPACING IN INCHES									SETTINGS FOR MONOSEM APPLICATORS WITH ZERO-MAX
40	38	36	30	26	24	23	22	18	Y-41
<b>RATE IN POUNDS PER ACRE</b>									<b>Y-41</b>
2.2	2.3	2.4	2.9	3.3	3.6	3.8	3.9	4.8	3.5
3.2	3.4	3.6	4.3	5.0	5.4	5.6	5.9	7.2	5.5
4.3	4.5	4.8	5.8	6.6	7.2	7.5	7.9	9.6	7.5
5.6	5.9	6.2	7.4	8.6	9.3	9.7	10.1	12.4	10.0
6.5	6.8	7.2	8.6	10.0	10.8	11.3	11.8	14.4	11.0
7.5	7.9	8.3	10.0	11.5	12.5	13.0	13.6	16.7	12.5
8.5	9.0	9.5	11.4	13.1	14.2	14.8	15.5	18.9	14.0
10.1	10.6	11.2	13.4	15.5	16.8	17.5	18.3	22.4	16.5
12.1	12.8	13.5	16.2	18.6	20.2	21.1	22.0	26.9	19.0
12.9	13.6	14.3	17.2	19.8	21.5	22.4	23.5	28.7	20.0
14.2	14.9	15.7	18.9	21.8	23.6	24.6	25.7	31.5	21.5
16.1	17.0	17.9	21.5	24.8	26.9	28.1	29.3	35.9	23.5
18.2	19.1	20.2	24.2	28.0	30.3	31.6	33.1	40.4	25.5
19.9	20.9	22.1	26.5	30.6	33.1	34.5	36.1	44.1	27.5
21.8	23.0	24.8	29.1	33.6	36.4	38.0	39.7	48.5	29
23.5	24.7	26.1	31.3	36.1	39.1	40.8	42.4	52.1	30

**AIR INSECTICIDE SYSTEM**

**DENSITY RATE CHART FOR BLACK METERING WHEELS**

**18" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	15	16	17	18	19	20	20	21	22	23	24	25
12	20	21	22	24	25	26	27	28	29	31	32	33
14	25	26	28	29	31	32	34	35	37	38	40	41
16	31	33	35	36	38	40	42	44	46	47	49	51
18	36	38	40	42	44	46	49	51	53	55	57	59
20	41	43	46	48	50	53	55	58	60	62	65	67
22	49	52	54	57	59	62	64	67	69	72	74	77
24	57	60	62	65	68	71	73	76	79	82	84	87
26	65	68	71	74	77	80	82	85	88	91	94	97
28	73	76	79	82	85	88	92	95	98	101	104	107
30	81	84	88	91	94	97	101	104	107	110	114	117
32	91	94	98	101	105	108	112	115	119	122	126	129
34	100	104	107	111	115	118	122	125	129	133	136	140
36	109	113	117	121	125	129	132	136	140	144	148	152
38	119	123	127	131	135	139	143	147	151	155	159	163
40	128	132	137	141	145	149	154	158	162	166	171	175

**DENSITY RATE CHART FOR RED 1 1/4" METERING WHEELS**

**18" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	27	29	30	32	34	35	37	38	40	42	43	45
12	37	39	41	43	45	47	50	52	54	56	58	60
14.0	47	50	52	55	57	60	62	65	67	70	72	75
16.0	55	58	61	64	67	70	73	76	79	82	85	88
18.0	65	68	72	75	79	82	86	89	93	96	100	103
20.0	75	79	83	87	91	95	98	102	106	110	114	118
22.0	88	93	97	102	106	111	115	120	124	129	133	138
24.0	102	107	112	117	122	127	133	138	143	148	153	158
26.0	117	122	128	133	139	144	150	155	161	166	172	177
28.0	130	136	142	148	154	160	167	173	179	185	191	197
30.0	143	150	156	163	170	177	183	190	197	204	210	217
32.0	162	169	177	184	191	198	206	213	220	227	235	242
34.0	180	188	195	203	211	219	226	234	242	250	257	265
36.0	198	206	215	223	231	240	248	257	265	273	282	290
38	217	226	234	243	252	261	269	278	287	296	304	313
40	235	244	254	263	272	282	291	301	310	319	329	338

**AIR INSECTICIDE SYSTEM**

**DENSITY RATE CHART FOR BLACK METERING WHEELS**

24" Tube Spacing

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	11	12	12	13	14	15	15	16	17	18	18	19
12	15	16	17	18	19	20	20	21	22	23	24	25
14	19	20	21	22	23	24	26	27	28	29	30	31
16	23	24	26	27	28	30	31	33	34	35	37	38
18	27	29	30	32	33	35	36	38	39	41	42	44
20	31	33	34	36	38	40	41	43	45	47	48	50
22	37	39	41	43	45	47	48	50	52	54	56	58
24	43	45	47	49	51	53	55	57	59	61	63	65
26	49	51	53	56	58	60	62	64	66	69	71	73
28	55	57	60	62	64	66	69	71	73	75	78	80
30	61	63	66	68	71	73	76	78	81	83	86	88
32	68	71	73	76	79	81	84	86	89	92	94	97
34	75	78	80	83	86	89	91	94	97	100	102	105
36	82	85	88	91	94	97	99	102	105	108	111	114
38	89	92	95	98	101	104	107	110	113	116	119	122
40	96	99	102	106	109	112	115	118	121	125	128	131

**DENSITY RATE CHART FOR RED 1 1/4" METERING WHEELS**

24" Tube Spacing

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	20	21	23	24	25	26	28	29	30	31	33	34
12	27	29	30	32	34	35	37	38	40	42	43	45
14	34	36	38	40	42	44	46	48	50	52	54	56
16	42	44	47	49	51	53	56	58	60	62	65	67
18	49	52	54	57	60	62	65	67	70	73	75	78
20	56	59	62	65	68	71	74	77	80	83	86	89
22	66	69	73	76	80	83	87	90	94	97	101	104
24	77	81	84	88	92	96	99	103	107	111	114	118
26	87	91	95	100	104	108	112	116	120	125	129	133
28	98	102	107	111	116	120	125	129	134	138	143	147
30	108	113	118	123	128	133	137	142	147	152	157	162
32	122	127	133	138	143	148	154	159	164	169	175	180
34	135	141	147	152	158	164	170	176	182	187	193	199
36	149	155	161	168	174	180	186	192	198	205	211	217
38	162	169	175	182	189	196	202	209	216	223	229	236
40	176	183	190	197	204	211	219	226	233	240	247	254



**AIR INSECTICIDE SYSTEM**

**DENSITY RATE CHART FOR BLACK METERING WHEELS**

**30" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	9	10	10	11	11	12	12	13	13	14	14	15
12	12	13	13	14	15	16	16	17	18	19	19	20
14	15	16	17	18	19	20	20	21	22	23	24	25
16	18	19	20	21	22	23	25	26	27	28	29	30
18	22	23	24	26	27	28	29	30	31	33	34	35
20	25	26	28	29	30	32	33	35	36	37	39	40
22	30	31	33	34	36	37	39	40	42	43	45	46
24	34	36	37	39	41	42	44	45	47	49	50	52
26	39	41	42	44	46	48	49	51	53	55	56	58
28	44	46	48	49	51	53	55	57	59	60	62	64
30	49	51	53	55	57	59	60	62	64	66	68	70
32	54	56	58	61	63	65	67	69	71	74	76	78
34	60	62	64	67	69	71	73	75	77	80	82	84
36	86	68	71	73	75	77	80	82	84	86	89	91
38	71	73	76	78	81	83	86	88	91	93	96	98
40	77	80	82	85	87	90	92	95	97	100	102	105

**DENSITY RATE CHART FOR RED 1 1/4" METERING WHEELS**

**30" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	16	17	18	19	20	21	22	23	24	25	26	27
12	22	23	25	26	27	28	30	31	32	33	35	36
14	28	30	31	33	34	36	37	39	40	42	43	45
16	33	35	37	38	40	42	44	46	48	49	51	53
18	39	41	43	45	47	49	52	54	56	58	60	62
20	45	47	50	52	54	57	59	62	64	66	69	71
22	53	56	58	61	64	67	69	72	75	78	80	83
24	61	64	67	70	73	76	80	83	86	89	92	95
26	70	73	77	80	83	86	90	93	96	99	103	106
28	78	82	85	89	93	96	100	103	107	111	114	118
30	86	90	94	98	102	106	110	114	118	122	126	130
32	97	101	106	110	114	119	123	128	132	136	141	145
34	108	113	117	122	127	131	136	140	145	150	154	159
36	119	124	129	134	139	144	149	154	159	164	169	174
38	130	135	141	146	151	156	162	167	172	177	183	188
40	141	147	152	158	164	169	175	180	186	192	197	203

**AIR INSECTICIDE SYSTEM**

**DENSITY RATE CHART FOR BLACK METERING WHEELS**

**36" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	7	12	12	13	14	15	15	16	17	18	18	13
12	10	16	17	18	19	20	20	21	22	23	24	17
14	13	20	21	22	23	24	26	27	28	29	30	21
16	15	24	26	27	28	30	31	33	34	35	37	25
18	18	29	30	32	33	35	36	38	39	41	42	29
20	21	33	34	36	38	40	41	43	45	47	48	33
22	25	39	41	43	45	47	48	50	52	54	56	39
24	29	45	47	49	51	53	55	57	59	61	63	43
26	33	51	53	56	58	60	62	64	66	69	71	49
28	37	57	60	62	64	66	69	71	73	75	78	53
30	41	63	66	68	71	73	76	78	81	83	86	59
32	45	71	73	76	79	81	84	86	89	92	94	65
34	50	78	80	83	86	89	91	94	97	100	102	70
36	55	85	88	91	94	97	99	102	105	108	111	76
38	59	92	95	98	101	104	107	110	113	116	119	81
40	64	99	102	106	109	112	115	118	121	125	128	87

**DENSITY RATE CHART FOR RED 1 1/4" METERING WHEELS**

**36" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	14	15	16	16	17	18	19	20	21	21	22	23
12	19	20	21	22	23	24	25	26	27	28	29	30
14	24	25	27	28	29	30	32	33	34	35	37	38
16	28	29	31	32	34	35	37	38	40	41	43	44
18	33	35	36	38	40	42	43	45	47	49	50	52
20	38	40	42	44	46	48	49	51	53	55	57	59
22	44	46	49	51	53	55	58	60	62	64	67	69
24	51	54	56	59	61	64	66	69	71	74	76	79
26	59	62	64	67	70	73	75	78	81	84	86	89
28	65	68	71	74	77	80	84	87	90	93	96	99
30	72	75	79	82	85	89	92	96	99	102	106	109
32	81	85	88	92	96	99	103	106	110	114	117	121
34	90	94	98	102	106	110	113	117	121	125	129	133
36	99	103	107	112	116	120	124	128	132	137	141	145
38	109	113	118	122	126	131	135	140	144	148	153	157
40	118	123	127	132	137	141	146	150	155	160	164	169

**AIR INSECTICIDE SYSTEM**

**DENSITY RATE CHART FOR BLACK METERING WHEELS**

**40" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	7	7	8	8	8	9	9	10	10	10	11	11
12	9	10	10	11	11	12	12	13	13	14	14	15
14	11	12	12	13	14	15	15	16	17	18	18	19
16	14	15	16	16	17	18	19	20	21	21	22	23
18	16	17	18	18	19	20	21	22	23	23	24	25
20	19	20	21	22	23	24	25	26	27	28	29	30
22	22	23	24	26	27	28	29	30	31	33	34	35
24	26	27	28	30	31	32	33	34	35	37	38	39
26	29	30	32	33	34	36	37	39	40	41	43	44
28	33	34	36	37	38	40	41	43	44	45	47	48
30	37	38	40	41	43	44	46	47	49	50	52	53
32	41	43	44	46	47	49	50	52	53	55	56	58
34	45	47	48	50	52	53	55	56	58	60	61	63
36	49	51	52	54	56	58	59	61	63	65	66	68
38	53	55	57	58	60	62	64	66	68	69	71	73
40	58	60	62	64	66	68	69	71	73	75	77	79

**DENSITY RATE CHART FOR RED 1 1/4" METERING WHEELS**

**40" Tube Spacing**

FERTILIZER DENSITY IN POUNDS PER CUBIC FOOT

ZERO-MAX SETTING	48	50	52	54	56	58	60	62	64	66	68	70
10	13	14	14	15	16	17	17	18	19	20	20	21
12	17	18	19	20	21	22	22	23	24	25	26	27
14.0	22	23	24	25	26	27	29	30	31	32	33	34
16.0	25	26	28	29	30	32	33	35	36	37	39	40
18.0	30	32	33	35	36	38	39	41	42	44	45	47
20.0	34	36	37	39	41	43	44	46	48	50	51	53
22.0	40	42	44	46	48	50	52	54	56	58	60	62
24.0	46	48	51	53	55	57	60	62	64	66	69	71
26.0	53	55	58	60	63	65	68	70	73	75	78	80
28.0	59	62	64	67	70	73	75	78	81	84	86	89
30.0	65	68	71	74	77	80	83	86	89	92	95	98
32.0	73	76	80	83	86	89	93	96	99	102	106	109
34.0	81	85	88	92	95	99	102	106	109	113	116	120
36.0	89	93	97	100	104	108	112	116	120	123	127	131
38	98	102	106	110	114	118	121	125	129	133	137	141
40	106	110	114	119	123	127	131	135	139	144	148	152

