

# WARRANTY REGISTRATION FORMS AND PROCEDURES

## MagnaSpread Pull-Type

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### WARRANTY REGISTRATION & DEALER INSPECTION FORM

The following section contains the necessary documents used to register a new BBI unit for warranty. In order to activate the new equipment warranty, these forms should be returned to BBI no later than 30 (thirty) days from the date of sale to the end user.

These forms are in triplicate and distributed as follows:

1. Dealer retains one set for his / her records
2. One set returned to BBI
3. One set remains in operator's manual and given to end user at time of delivery

These documents are as follows:

#### Dealer Inspection Form

This form is completed when the dealer is preparing to deliver the new unit to the end user. It certifies the dealer has inspected the equipment, it operates correctly and all safety signs and guards are in place. Any modifications made to the equipment by the dealer should also be noted.

#### Customer's Warranty Registration

This form certifies that the customer was instructed on safe and proper use, the equipment operates correctly, warranty was explained and a copy of the owner's manual was delivered. This form also certifies that if electronic rate control is installed, the customer has been given proper instruction as to the operation of the system. Furthermore, a dealer service contact name and number has been provided.

#### Important Tractor-Supplied Hydraulic Systems Information

This form certifies that if the unit is equipped with Tractor Supplied Hydraulics, proper return requirements were discussed.

**Please return the executed copies to BBI within 30 days to activate the warranty.**  
**The copies can be sent via email to: [service@bbispreaders.com](mailto:service@bbispreaders.com), faxed to: 706-778-2787,**  
**or mailed to: BBI Spreaders P.O. Box 630 Cornelia, GA 30531.**



## DELIVERY INSPECTION - DEALER COPY

MagnaSpread Pull-Type

### WARRANTY REGISTRATION & DEALER INSPECTION FORM

To have a fully-executed warranty, the dealer must fill this form out at time of delivery. There is no warranty without a fully-executed warranty registration and dealer inspection form.

Model & Serial Number: \_\_\_\_\_

### DEALER EQUIPMENT AND SAFETY INSPECTION REPORT

- ☐ Equipment is properly assembled
- ☐ Equipment configured as ordered
- ☐ Equipment is functional and operates properly
- ☐ All guards are in place
- ☐ All warning signs and safety signs are in place
- ☐ Modifications to equipment (write details below)
- ☐ Conveyor chain tension is properly adjusted

Comments / equipment modifications: \_\_\_\_\_

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Signature of Set-Up Person

Dealer Name

Date



## CUSTOMER'S WARRANTY REGISTRATION - DEALER COPY

MagnaSpread Pull-Type

Dealer name: _____	Customer name: _____
Address: _____	Address: _____
City, State, Zip: _____	City, State, Zip: _____
Model & Serial Number: _____	
Date of Delivery: _____	

### CUSTOMER'S WARRANTY REGISTRATION

Customer's warranty protection on this equipment is only valid when this certification form is completed and signed by both the customer and dealer at the time of delivery of the equipment and registered with the manufacturer.

### DEALER'S SIGNATURE INDICATES:

- ☐ Equipment operates properly and customer was instructed in safe and proper operation
- ☐ Customer received a copy of the operator's manual
- ☐ Warranty was explained to the customer
- ☐ Electronic Rate control programmed and operates correctly
- ☐ Chain tension and adjustment section reviewed and discussed

\_\_\_\_\_  
Signature of Dealer

\_\_\_\_\_  
Dealer Name

\_\_\_\_\_  
Date

### CUSTOMER'S SIGNATURE INDICATES:

- ☐ Acceptance of equipment
- ☐ Receipt of owners manual and clear understanding of warranty
- ☐ All systems were explained and understood
- ☐ Receipt of instructions on safe and proper use
- ☐ If equipped with Electronic Rate control, this system was explained and owner's manual was received
- ☐ A dealer parts/service representative contact has been provided
- ☐ Clear understanding of chain tension and adjustment

\_\_\_\_\_  
Signature of Customer

\_\_\_\_\_  
Customer Name

\_\_\_\_\_  
Date



## TRACTOR-SUPPLIED HYDRAULICS - DEALER COPY

MagnaSpread Pull-Type

### IMPORTANT TRACTOR-SUPPLIED HYDRAULIC SYSTEMS INFORMATION

#### IMPORTANT!



On units equipped with tractor-supplied hydraulics the return must be connected to a 0 (zero) pressure return. Gear motor systems require no pressure return.

DO NOT connect the system unless 0 (zero) pressure can be verified on return or damage to the motors will result! Connecting to a pressurized return will VOID THE WARRANTY.

Various tractor manufacturers use different language for their brand to identify a 0 (zero) pressure return. Please consult your manufacturer to insure the proper 0 (zero) pressure return is identified.

To maintain maximum operational efficiency, your tractor needs to have 42 GPM (Gallons Per Minute) overall, with 2 remotes each at 21 GPM and 2,000 PSI (Pounds per Square Inch) in order to operate the tractor-supplied hydraulic system.

\_\_\_\_\_  
Signature of Dealer

\_\_\_\_\_  
Dealer Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Customer

\_\_\_\_\_  
Customer Name

\_\_\_\_\_  
Date



**DEALER INSPECTION - BBI COPY**

MagnaSpread Pull-Type

**WARRANTY REGISTRATION & DEALER INSPECTION FORM**

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- ☐ Conveyor chain tension is properly adjusted

Comments / equipment modifications: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature of Set-Up Person

Dealer Name

Date



## CUSTOMER'S WARRANTY REGISTRATION - **BBI COPY**

MagnaSpread Pull-Type

Dealer name: _____	Customer name: _____
Address: _____	Address: _____
_____	_____
City, State, Zip: _____	City, State, Zip: _____
_____	_____
Model & Serial Number: _____	
Date of Delivery: _____	

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Signature of Dealer

\_\_\_\_\_  
Dealer Name

\_\_\_\_\_  
Date

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\_\_\_\_\_  
Signature of Customer

\_\_\_\_\_  
Customer Name

\_\_\_\_\_  
Date



## TRACTOR-SUPPLIED HYDRAULICS - **BBI COPY**

MagnaSpread Pull-Type

### IMPORTANT TRACTOR-SUPPLIED HYDRAULIC SYSTEMS INFORMATION

#### IMPORTANT!



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\_\_\_\_\_  
Signature of Dealer

\_\_\_\_\_  
Dealer Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Customer

\_\_\_\_\_  
Customer Name

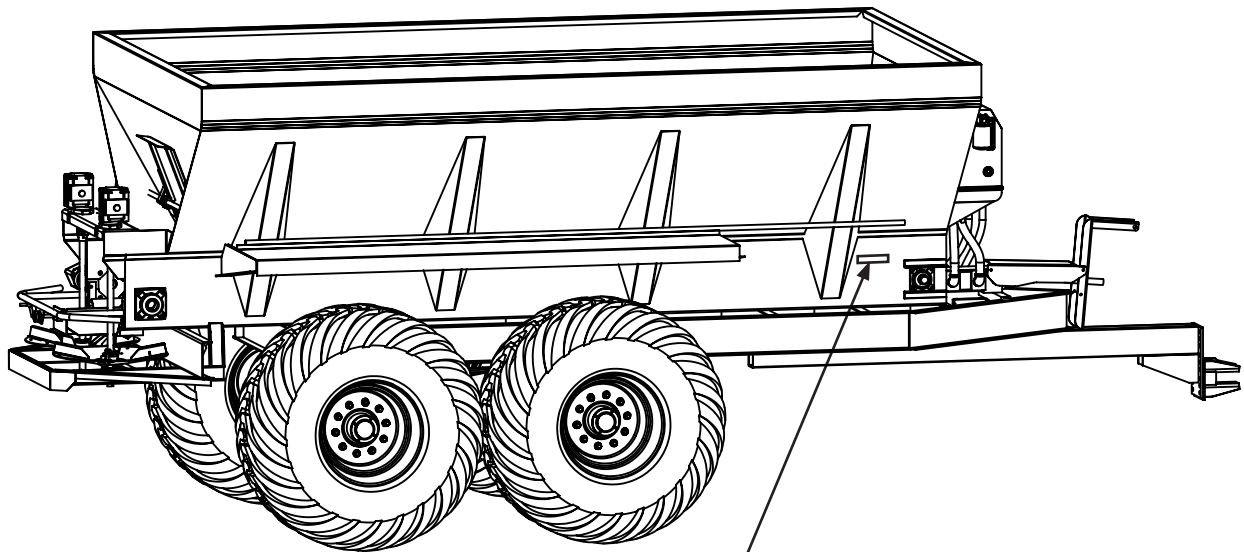
\_\_\_\_\_  
Date





## OPERATOR MANUAL

This manual is valid for all MagnaSpread  
Pull-Type configurations



Your serial number can be found here:

### **MagnaSpread Options:**

8', 10' Single-axle

10', 12', 14', 16' Tandem-axle

Tractor-supplied or self-contained  
hydraulic systems

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MagnaSpread Pull-Type

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### A MESSAGE FROM BBI

The BBI team takes pride in producing superior spreaders that will provide many years of service. In bringing the best spreaders to the industries of agriculture, poultry, and construction, we carefully select components with a proven performance record and availability. Our skilled employees give special attention to detail in design and assembly to make certain our equipment will meet or exceed your expectations in the field.

Our parts department stands ready to serve you with replacement parts at affordable prices. We stock a large inventory to assure support for our customers, and take pride in offering “same day service” for those orders received before mid-afternoon.

At BBI, we provide quality service with a friendly atmosphere. BBI stands hand-in-hand with our dealers in the field. Our local dealers are your first point of contact and empowered to solve your problems. If that fails, we are prepared to serve you at any time. We strive to quickly provide solutions for your needs in order to minimize any downtime or delays.

Our company takes safety very seriously, and we give great concern to our products in an ongoing effort to reduce any potential safety issues, whether with equipment or in the workplace. We design our equipment intentionally to minimize pinch points and provide guards where they do exist. BBI places decals on our equipment to identify and caution against areas containing pinch points and hazardous moving parts.

Please be sure that those who operate BBI equipment receive proper training. *Never conduct maintenance or repairs unless the equipment is fully disabled with the power source turned off. Never stand inside the unit while in operation or moving. Since we design our spreaders to project materials in patterns ranging from 30 to 90 feet, depending on the specific equipment, standing too close to equipment can result in injury. Please use extreme caution when operating all equipment.*

Thank you for choosing BBI spreading equipment. You will be glad you did.



Richard B. Hagler

President

***“Driving Value”***

## DELIVERY INSPECTION - CUSTOMER COPY

MagnaSpread Pull-Type

### WARRANTY REGISTRATION & DEALER INSPECTION FORM

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- ☐ Conveyor chain tension is properly adjusted

Comments / equipment modifications: \_\_\_\_\_

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Signature of Set-Up Person

Dealer Name

Date

## CUSTOMER'S WARRANTY REGISTRATION - CUSTOMER COPY

MagnaSpread Pull-Type

Dealer name: _____	Customer name: _____
Address: _____	Address: _____
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Dealer Name

Date

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- ☐ Clear understanding of chain tension and adjustment

Signature of Customer

Customer Name

Date



## TRACTOR-SUPPLIED HYDRAULICS - CUSTOMER COPY

MagnaSpread Pull-Type

### IMPORTANT TRACTOR-SUPPLIED HYDRAULIC SYSTEMS INFORMATION

#### IMPORTANT!



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\_\_\_\_\_  
Signature of Dealer

\_\_\_\_\_  
Dealer Name

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Customer

\_\_\_\_\_  
Customer Name

\_\_\_\_\_  
Date

## WARRANTY

### MagnaSpread Pull-Type

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#### WARRANTY

BBI warrants, to the original user, that each product of its manufacture is free from defects in material and workmanship if serviced and operated under normal conditions for 180 days from the date of the customer's bill of sale.

BBI's obligation under this warranty is limited to the correcting of the defect(s) without charge at its factory or one of its authorized dealers. Transportation charges will be pre-paid. BBI requires the opportunity to examine all parts in question in order to determine the original cause of defect. Correction of such defects by repair to or supplying of replacements for defective parts shall constitute fulfillment of all obligations to the original user.

This warranty shall not apply to any BBI product which must be replaced because of normal wear, misuse, negligence or accident.

This warranty shall not apply to products which have been repaired or altered outside of the BBI factory without written factory authorization.

BBI shall not under any circumstances be liable for any incidental or consequential damages arising from the loss of property or other damages or losses owing to the failure or use of BBI products beyond the cost of repair or replacement of any defective product. The repair or replacement of defective product shall be the sole and only obligation of BBI.

EXCEPT AS SPECIFICALLY SET FORTH HEREIN, BBI MAKES NO WARRANTY ON ITS PRODUCTS (EXPRESSED, IMPLIED OR STATUTORY) INCLUDING, WITHOUT LIMITATION, NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY.

No person, agent or dealer is authorized to give any warranties or make representations on behalf of BBI or assume for BBI any other liability in connection with any of its products unless made in writing by an officer of BBI.

Any warranty provision outside of these bounds needs to be negotiated before service commences. The warranty does not include transportation. Warranty service is provided by the dealer. It is the customer's responsibility to seek warranty from your dealer.

#### DEALER'S WARRANTY SERVICE CONTACT INFORMATION:

Dealer Service Representative:	_____
Phone number:	_____
Email:	_____

# SAFETY INSTRUCTIONS

## MagnaSpread Pull-Type

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### SAFETY WARNINGS

Please read and understand the safety warnings contained in this manual before operation.



TAKE NOTE: THIS SAFETY ALERT SYMBOL, FOUND THROUGHOUT THIS MANUAL, IS USED TO CALL YOUR ATTENTION TO INSTRUCTIONS INVOLVING YOUR PERSONAL SAFETY AND THAT OF OTHERS; FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN INJURY OR DEATH.

In this manual and on safety signs placed on your spreader, the words “DANGER”, “WARNING,” “CAUTION,” and “IMPORTANT” are used to indicate the following:

#### **DANGER!**



Indicates an imminently hazardous situation that, if not avoided, WILL result in death or serious injury. This signal word is to be limited to the most extreme situations and typically for machine components that, for functional purposes, cannot be guarded.

#### **WARNING!**



Indicates a potentially hazardous situation that, if not avoided, COULD result in death or serious injury. This includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

#### **CAUTION!**



Indicates a potentially hazardous situation that, if not avoided, MAY result in moderate or minor injury. It may also be used to alert against unsafe practices.

#### **IMPORTANT!**



Indicates critical information regarding potential damage or deterioration of equipment if not heeded. Generally would not involve personal injury.

We cannot stress enough the need for personal safety. BBI strongly urges you to make safety your top priority when operating any equipment. Anyone allowed to operate our equipment must be thoroughly trained and tested to prove that they understand the fundamentals for safe operation.

Our intention is that the following guidelines cover general usage of BBI equipment and assist you in avoiding accidents. There will be times when you will run into situations that are not covered in this section. At those times, the best standard to use is caution guided by your own common sense. If, at any time, you have a question concerning these guidelines, please call your authorized BBI dealer or the BBI factory at (800) 282-3570.

# SAFETY INSTRUCTIONS

## MagnaSpread Pull-Type

### AVOID ACCIDENTS

Most accidents, whether they occur in industry, on the farm, at home, or on the highway, have causes stemming from the failure of individuals to follow simple and fundamental safety rules and precautions. For this reason, people can prevent most accidents by recognizing their real, potential causes and rectifying these causes before they ever allow accidents to occur.

Regardless of the care used in the design and construction of any type of equipment, there are many conditions that we cannot completely safeguard against without interfering with reasonable accessibility and efficient operation.

A CAREFUL OPERATOR IS THE BEST INSURANCE AGAINST AN ACCIDENT. THE COMPLETE OBSERVANCE OF ONE SIMPLE RULE WOULD PREVENT THOUSANDS OF SERIOUS INJURIES EACH YEAR.

THAT RULE IS:

**NEVER CLEAN, OIL, OR ADJUST A MACHINE WHILE IT IS UNDER POWER.**

**- National Safety Council**

### CAUTION!



If you use your spreader to transport chemicals, check with your chemical supplier regarding the applicable DOT (Department of Transportation) regulations.

### SAFETY DECALS



### DECAL MAINTENANCE INSTRUCTIONS

1. Keep safety decals and signs clean and legible at all times.
2. Replace safety decals and signs that are missing or have become illegible.
3. Replaced parts that displayed a safety sign should also display the current safety sign.
4. Safety Decals are available from your local BBI dealer's Parts Department or our factory at BBI.

## SAFETY INSTRUCTIONS

### MagnaSpread Pull-Type

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#### HAZARDS

1. Refrain from wearing loose fitting clothing on or around this piece of machinery. There are many places that loose clothing may become wrapped or pulled into devices.
2. Be aware of any moving parts on this machinery. Make sure that any person or persons on or around this piece of machinery are aware of the dangers as well. There are many places where injury may occur. Learn about your unit and the dangers of it. Always use caution in the operation of this piece of machinery.
3. Be sure that any individuals operating this equipment are trained and are aware of the dangers of this equipment.
4. Check for rocks, sticks, or anything that may cause bodily harm to you or damage your unit.
5. Never attempt to work on or repair this piece of equipment while it is running. The PTO and/or any other power source must be completely disengaged while working on this unit.
6. Those working around this unit should remain at least 100 feet from it while it is in operation. The fans are able to propel objects at a high speed up to this distance.
7. Be aware of the dangers of hydraulic systems. Hydraulic fluid is under very high pressure, and may cause serious injury if it hits the facial area, especially the eyes.
8. Shut down the entire system before checking hydraulic fluid level or adding fluid to the system.



# TRACTOR PREPARATION AND HOOK-UP

## MagnaSpread Pull-Type

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### PRIOR TO START-UP

Look over the entire unit, checking that all guards and fasteners are in place and fasteners are properly tightened, including lug nuts.

#### IMPORTANT!



**NOTE:** Do not load spreader with material until after completing initial start-up steps.

### TRACTOR PREPARATION AND HOOK-UP

1. Adjust tractor hitch and drawbar as close to horizontal as you can. Adjust drawbar so hitch pin hole is directly below center line of PTO shaft. Make sure drawbar is in a stationary position.
2. Back tractor to spreader and connect with a minimum  $\frac{3}{4}$ " diameter hitch pin. Secure with a locking or cotter pin.

#### WARNING!



Pressurized hydraulic fluid can penetrate body tissue and result in death, serious infection, or other injuries. Fluid injected under skin must be IMMEDIATELY removed by a surgeon familiar with this type of injury. Make sure connections are tight and hoses and fittings are not damaged before applying system pressure. Leaks can be invisible. Keep away from suspected leaks. Relieve pressure before searching for leaks or performing any system maintenance.

#### IMPORTANT!



Ensure that you always keep your hose ends clean using a cloth. Never use a dirty coupling. If it does drop in the dirt, clean it up before you apply or damage to your tractor can occur.

3. Attach the safety chains.
4. Raise jack stand.
5. Either connect hydraulic hoses (as discussed in the Tractor-supplied Hydraulic Section), or connect PTO shaft to tractor PTO in the case of a Self-contained Hydraulic System. Be cautious of pinch points.
6. Install and connect Dual Switch Control Box and any other electronic controls needed.
7. Check to be sure that no loose parts or other material are in the hopper, on the conveyor or on the spinners. Be sure to remove any loose pieces and ensure all guards are in place.

# HYDRAULIC CONFIGURATION

## MagnaSpread Pull-Type

### PRIOR TO INITIAL START-UP - CHOOSE YOUR CONTROLS

This unit is configured for an electronic rate control system. You should be able to interface your BBI applicator to any type of controller commercially available today. The unit may be operated manually. The decision for which configuration to apply needs to be made and implemented before starting up the unit.

### 1. TRACTOR-SUPPLIED HYDRAULIC SYSTEM

For spreaders powered by the tractor's hydraulic system, you will need to connect two sets of remote hydraulic ports, one set for the conveyor system and one for the spinners. Make sure that you match and properly connect the pressure and return hoses with each set of remote ports. *Mismatched hoses or return hoses that are not properly connected will cause damage to hydraulic components on the spreader.*

#### IMPORTANT!

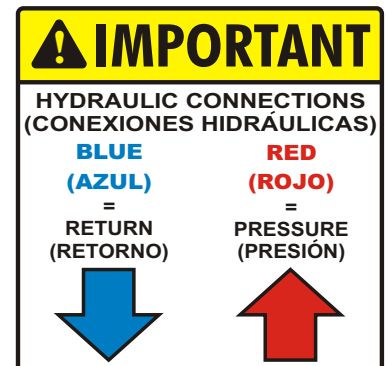
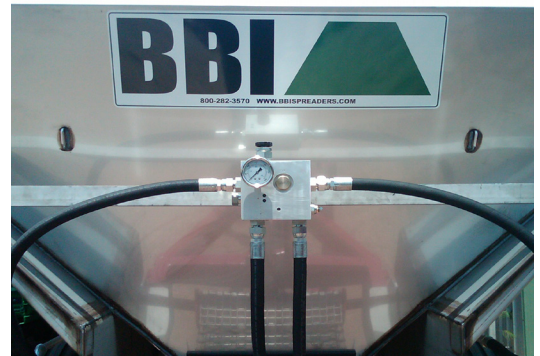


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### 2. SELF-CONTAINED HYDRAULIC SYSTEM

If your spreader is self-contained, simply connect your PTO shaft which will turn the pump to make the hydraulic fluid flow.

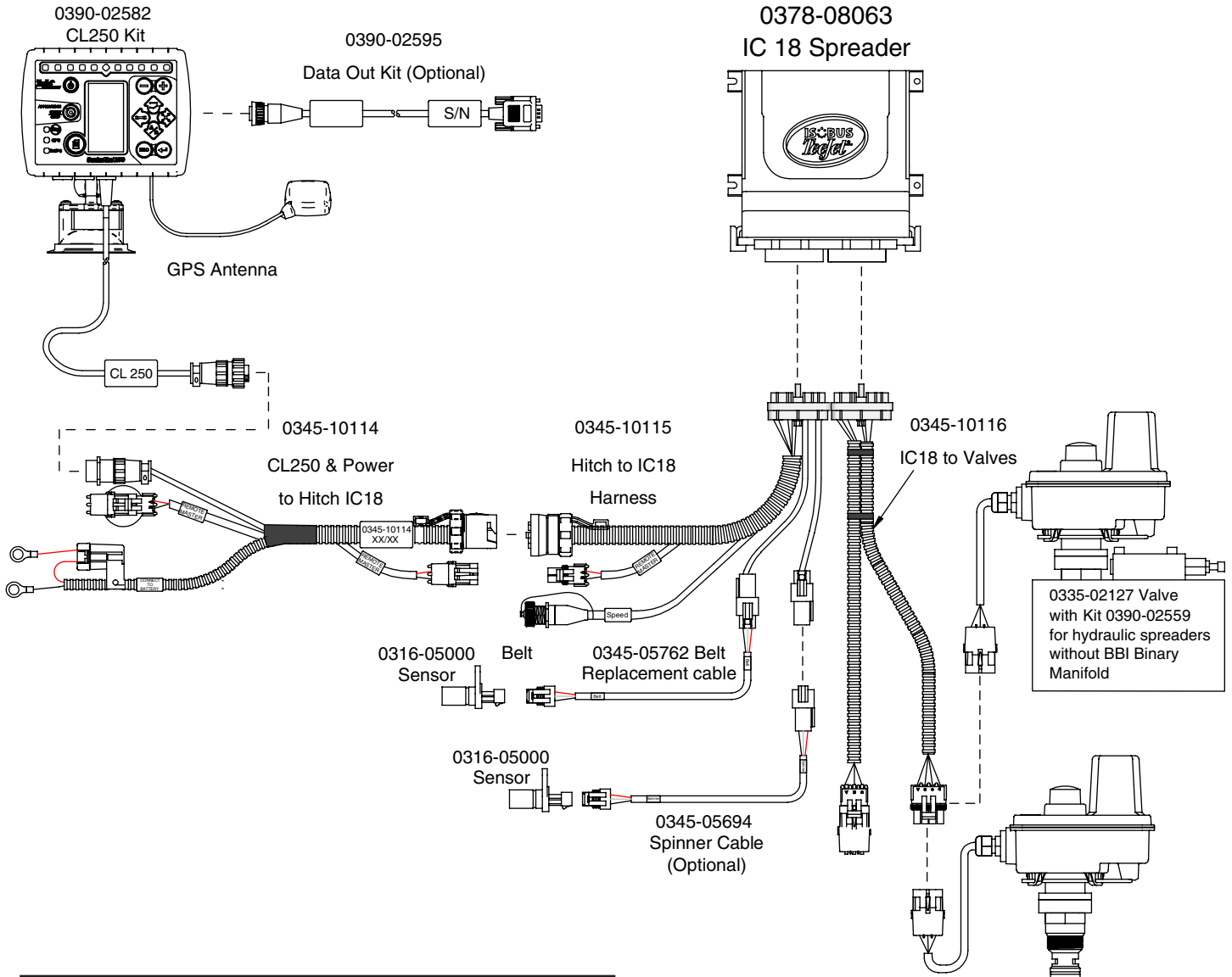
Never attempt to work on or repair this piece of equipment while it is running. The PTO and/or any other power source must be completely disengaged while working on this unit.

## IDENTIFYING COMPONENTS

### MagnaSpread Pull-Type

#### COMPONENTS OF THE STANDARD CL 250 STRAIGHT-RATE CONTROLLER

The CenterLine 250 - IC18 Electronic Control platform comes standard with the MagnaSpread line of dry broadcast applicators, but the system can be adapted to multiple electronic configurations for dry rate controllers. The IC18 is also available for variable-rate applications as an ISOBUS 11783-compliant ECU and can plug up to any ISOBUS 11783 compliant Virtual Terminal with Task Control capabilities.



#### IC-18 CONSTANT NUMBERS

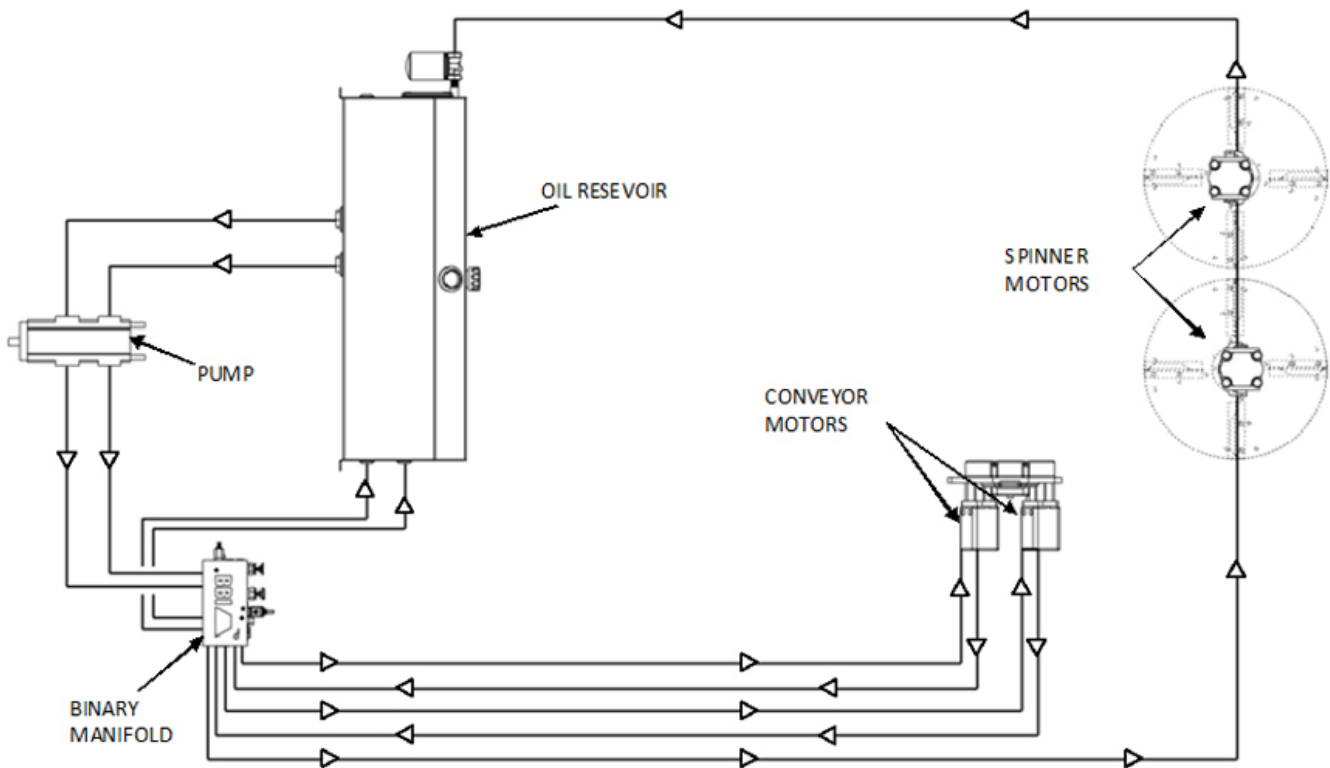
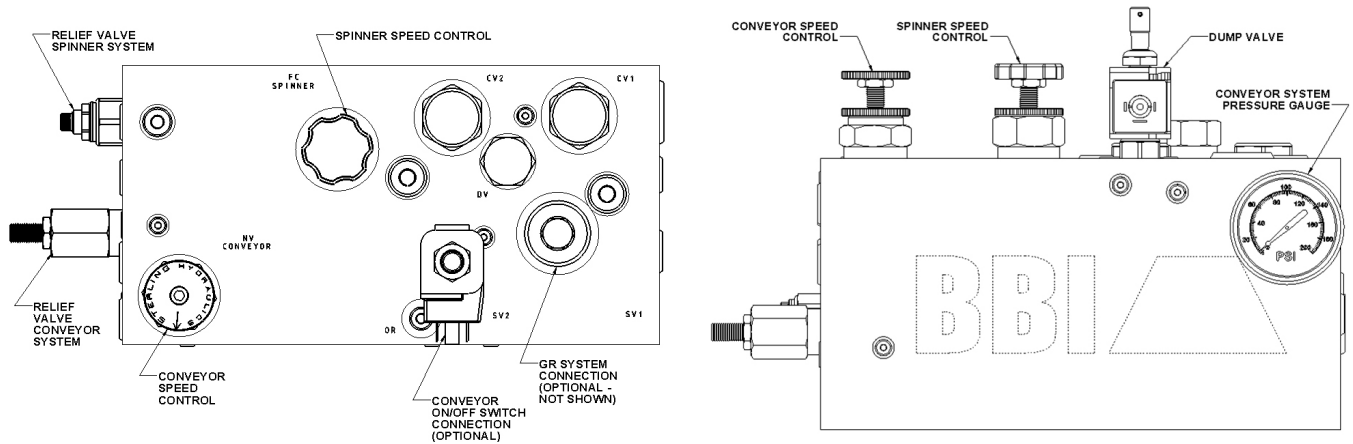
20" Mesh Chain	105 (Standard)
18" Mesh Chain	120
16" Mesh Chain	130

## IDENTIFYING COMPONENTS

### MagnaSpread Pull-Type

#### CONTROLS - BINARY MANIFOLD™

BBI's proprietary Binary Manifold™ controls the hydraulic functions of your spreader. The Binary Manifold™ includes modular components for flow control, relief, and monitoring for both spinners and conveyors. A conveyor system pressure gauge has been installed at the factory. This gauge monitors working pressure. Working pressure is the pressure required to do the work and provides no indication of available pressure. The working gauge simply displays the pressure required to do the work. A spinner system pressure gauge may be added. The port is located on the bottom of the manifold.

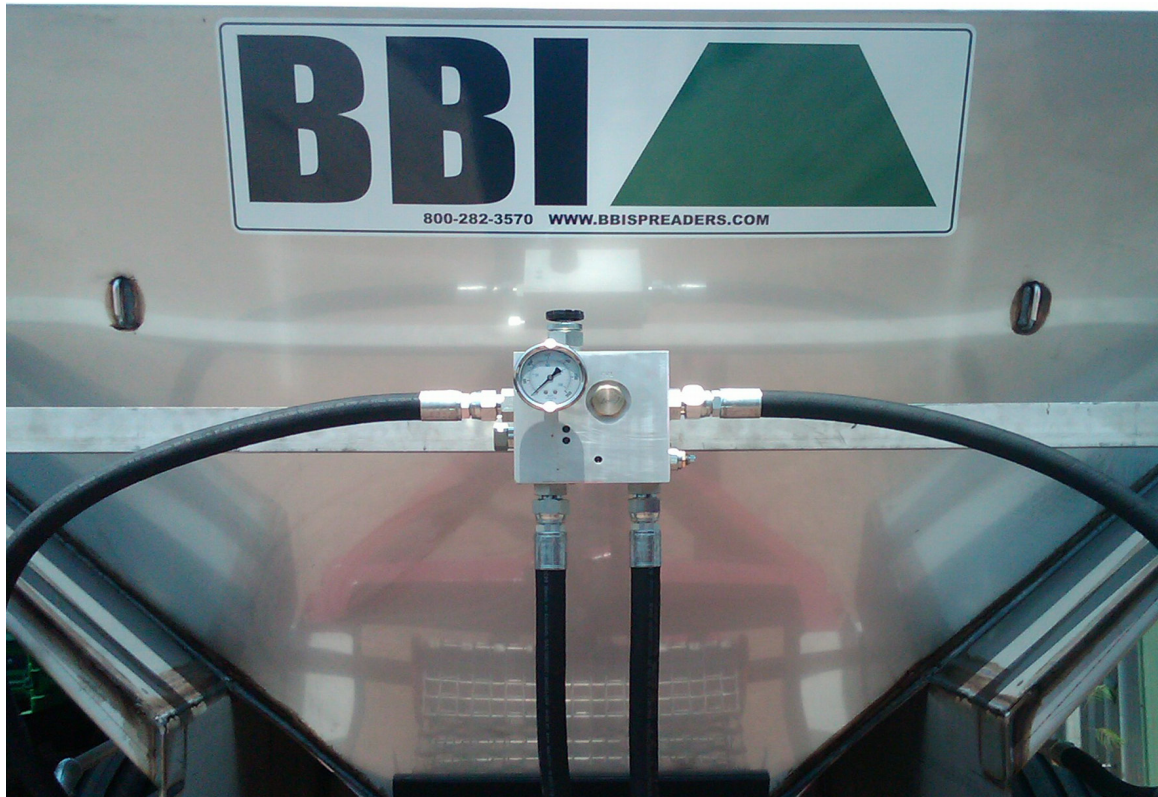


## IDENTIFYING COMPONENTS

### MagnaSpread Pull-Type



#### ELIMINATOR MANIFOLD

The Eliminator Manifold is designed to protect your hydraulic spreader components from harm. It alleviates deadhead, cross hook-up, and over-pressure situations. The hoses can be hooked up backwards, or the return not plugged in, and the Eliminator will protect the motor from harm. It contains flow control, pressure relief, and a spinner system pressure gauge. This gauge monitors working pressure. Working pressure is the pressure required to do the work and provides no indication of available pressure.



**! IMPORTANT**

**HYDRAULIC CONNECTIONS**  
**(CONEXIONES HIDRÁULICAS)**

<b>BLUE</b> <b>(AZUL)</b>	<b>RED</b> <b>(ROJO)</b>
=	=
<b>RETURN</b> <b>(RETORNO)</b>	<b>PRESSURE</b> <b>(PRESIÓN)</b>
	

All Tractor-Supplied Hydraulic Systems include the Hydraulic Connections label. This indicates that the blue hose is for Return and the red hose is for Pressure.

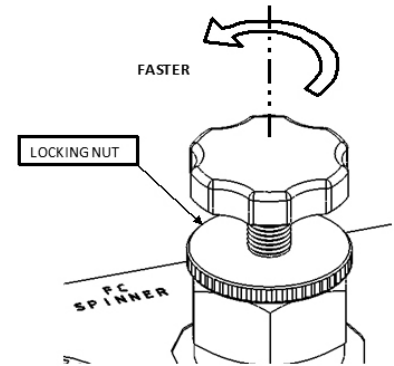
## IDENTIFYING COMPONENTS - MANUAL CONTROLS

### MagnaSpread Pull-Type

#### SPINNER SPEED - MANUAL FLOW CONTROL

The spinner speed control has a manually adjustable knob with a locking nut. Use the dial to set the speed of the spinners and the locking nut to secure it in place.

To learn more about spinner speed during an application please refer to the Adjustments section of this manual.



#### HY-TORQUE MANIFOLD

The Hy-Torque Manifold provides twice the torque capability for the spinner system.

In situations where the pattern for swath is adversely affected by high speed, rate and weight combinations, engage the Hy-Torque Manifold to produce consistent results.

You can engage the Hy-Torque Manifold manually by turning the handle at the top of the manifold. As shown in the picture, when the handle is facing to the rear of the unit, the unit will be in Hy-Torque mode at high-torque medium-speed.

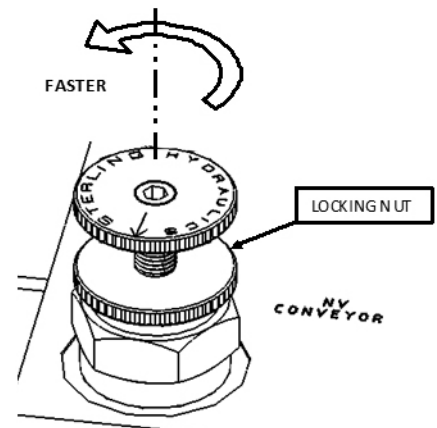


#### CONVEYOR SPEED - MANUAL FLOW CONTROL

The conveyor speed control has a manually adjustable knob with a locking nut. Use the dial to set the speed of the conveyor and the locking nut to secure it in place.

To learn more about spinner speed during an application please refer to the Adjustments section of this manual.

If your system is electronically controlled, both the spinner and conveyor controls will be replaced with a servo.



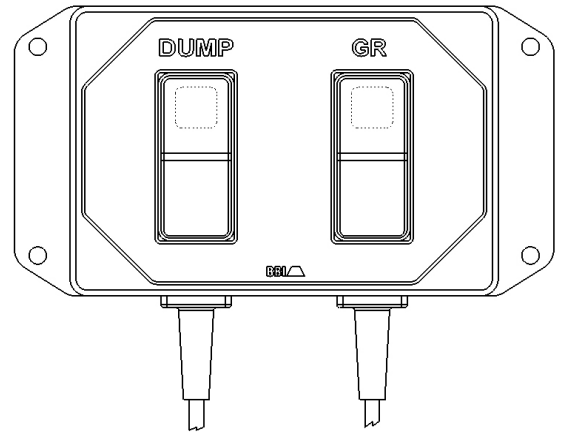
## IDENTIFYING COMPONENTS - ADDITIONAL PERFORMANCE

### MagnaSpread Pull-Type

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#### DUAL SWITCH BOX

A dual switch box with lighted rocker switches is included with your new spreader. These switches are used to control the Dump Valve and GR System.



#### ON / OFF DUMP VALVE

You should use the dump valve switch to temporarily turn the conveyor ON/OFF while the spreader is loaded and in operation.

The dump valve switch sends power (12V) to the solenoid valve, causing the conveyor to stop.

***If you have installed an electronic controller for rate control, you will use the rate controller, and not the dump valve, to stop the conveyor.***

***Note: Even with the Dump Valve ON, the conveyor could still slowly creep when not loaded with material. Disengage the PTO to completely shut off power to the conveyor.***

#### GR VALVE

The GR valve is a valve designed to double the available conveyor chain speed. A GR valve can be used in either manual or electronically controlled system. The GR valve operates independently of the electronic controller. The rate controller modulates the chain speed.

The GR valve allows a much wider range of speed and torque options controlled by the operator.

It is generally better to start application in the Normal setting, then use the High setting to achieve desired rates when needed while in progress. When your controller alerts that you are unable to achieve the desired rate, that is the optimal time to switch into the High setting, which allows greater chain speed, settling the conveyor. The GR valve always doubles the available chain speed.

#### MANUAL OPERATION SYSTEM

You will want to install the Dual Switch System to manually control the GR and Dump Valves. You will use the manual flow control valves that are located in the Binary Manifold to control the bed chain speed and spinner speed. There is no precision without electronic controls however. Please reference the rate charts included in the appendix for additional manual rate setting guidance.

## FIELD TESTING

### MagnaSpread Pull-Type

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#### FIELD TEST

Prior to first use of the machine for each spreading season, as well as following any major repair or overhaul, you should field test your machine to verify that all systems and components are functioning properly. You should execute field testing on any suitable course that will allow the spreader to be driven at similar speeds used during spreading.

#### CAUTION!



To observe conveyor and spinners while the vehicle is in motion, you must take proper safety precautions. These safety precautions may include use of mirrors clamped to permit safe observation, following the spreader in another vehicle at a safe distance, or other suitable means. *DO NOT stand in the hopper or on any part of the spreader, as there is danger of falling off the vehicle or into moving machinery. Use great care while performing this test.*

#### SPREAD PATTERN

MagnaSpread spreaders are capable of accurately broadcasting a consistent, flat pattern of material up to 80 feet wide. *The equipment may throw material at much greater distances, but the most effective patterns are most likely at distances up to 80 feet wide. The driving interval should equal the swath.*

#### FACTORS AFFECTING THE SPREAD PATTERN

Many of the following conditions may affect your equipment's spread pattern performance:

1. Flow divider position
2. Spinner blade position
3. Spinner speed
4. The condition of the spinner blades on the spinner discs
5. Physical properties of material
  - a. Density
  - b. Size
6. Rate of delivery of material
7. Balance between deliveries to both spinners
8. Wind

Because most of these characteristics will change with each material spread, a certain amount of your own experience with both equipment and material, along with some testing on your part, will determine the adjustments needed to obtain the desired swath width and spread rate.

#### MATERIAL SIZE AND DENSITY

The particle size is one aspect that determines the maximum spread pattern width. The spread pattern can vary anywhere from 25 feet for powder-type materials, such as lime, or up to 80 feet for fertilizer pellets.

The density of the material also affects the pattern. The spreader will throw large, dense particles farther than finer materials with lower density.

## FIELD TESTING

### MagnaSpread Pull-Type

#### SPREAD PATTERN TESTING

##### TEST KIT

*Not included; available for purchase separately from BBI.*

A spread pattern test kit should contain the following items:

- 17 plastic pans (14" x 18")
- 17 plastic test tubes with  $\frac{3}{4}$ " opening
- 1 test tube rack
- 1 tape measure
- 1 funnel
- 1 density cup to determine weight per cubic foot or five gallon bucket

##### SET UP

The test area should be at least 250 feet in length and as wide as necessary, depending on the swath width of the material to be checked.

Lay out test pans on a level area so the spreader can be driven into or with the wind. If the wind is greater than ten miles per hour, you should not attempt a spread pattern check.

Position the pans so the spreader can be running at least 100 feet before it reaches them and can continue spreading 150 feet beyond the pans. Place a marker at the beginning and end of the test area as guides for the operator.

Level the pans and place them at essentially the same height. Place a marker at the center of each pan so after the pans have been picked up they can be placed back in their original position without measuring.

Use the chart below to determine the interval that the pans should be placed. A swath width from 30 to 80 feet will be sufficient to check most spreaders.

SWATH WIDTH	NUMBER OF PANS NEEDED	INCHES BETWEEN EACH PAN (center to center)
30'	7	60"
40'	9	60"
50'	10	60"
60'	11	60"
70'	13	60"
80'	17	60"

##### SPREAD TEST

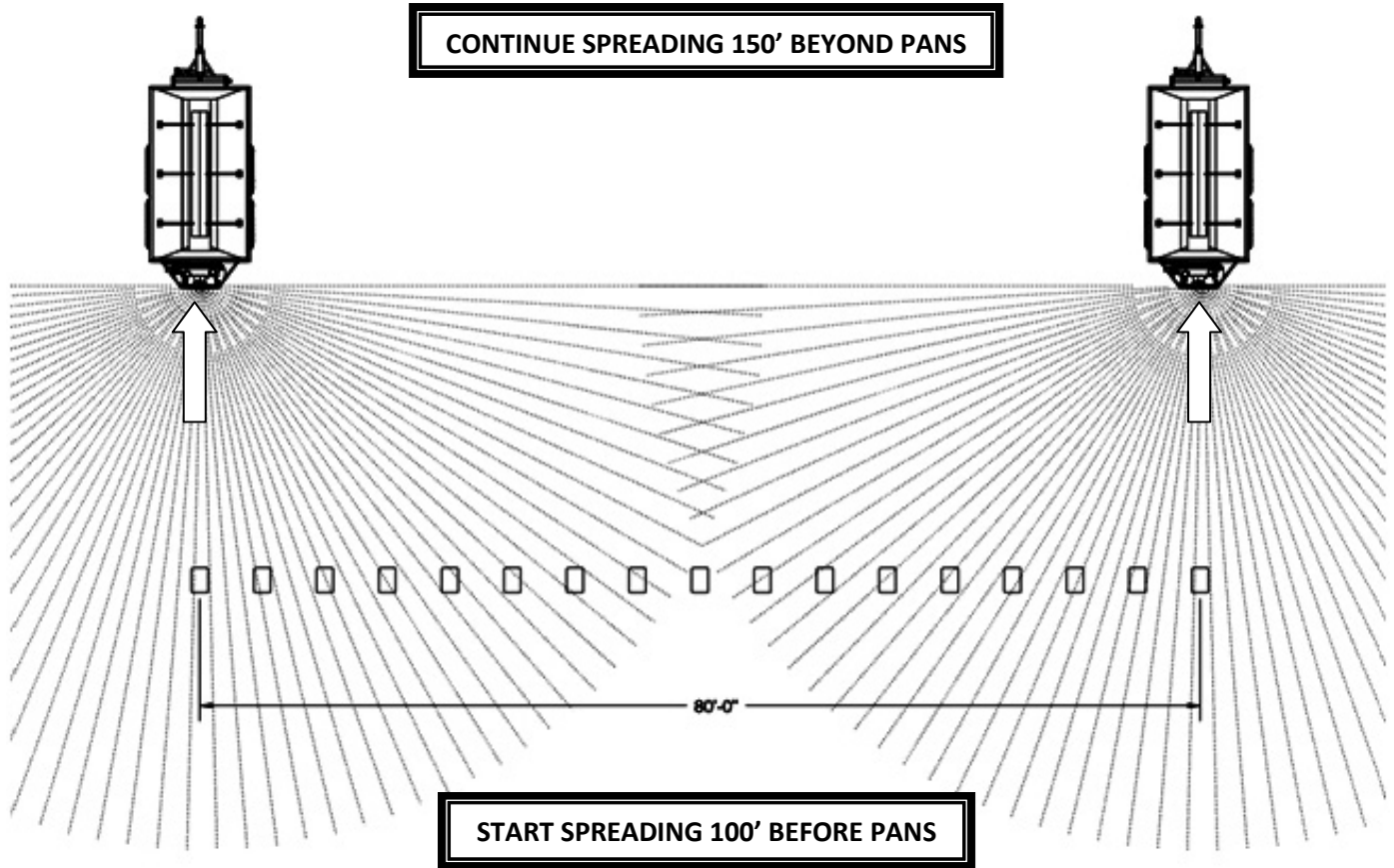
To get a true representation of the spread pattern, you'll need two passes across the pans. On the first pass, line up the spreader with one of the pans on the end. Start spreading material at least 100 feet before the pans and continue at least 150 feet beyond the pans. Repeat the process for the second pass on the opposite end of the line of pans.

***Make sure to run both passes in the same direction so that you get a sample from both spinners.***

Collect the material from each pan into corresponding test tubes to view the pattern. Depending on the pattern, adjustments to the spreader may be necessary.

## FIELD TESTING

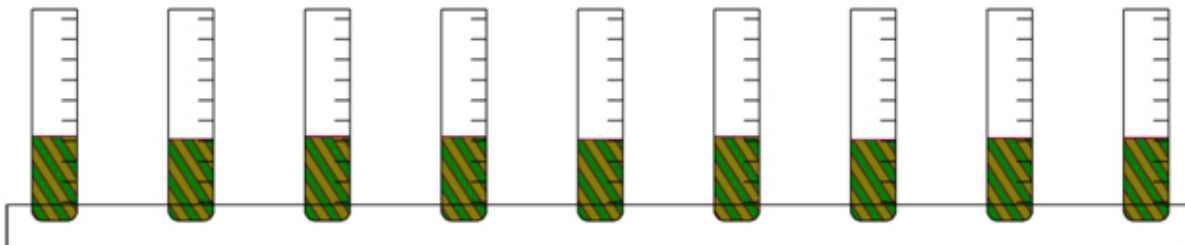
### MagnaSpread Pull-Type



## EVALUATION

By running in the same direction across both ends of the pans, you should be able to see an even distribution of material in the test tubes.

MagnaSpread spreaders are capable of producing a flat pattern, but you may see slight variances in the pattern, due to the terrain used for testing, irregular materials, and/or other abnormalities.



## FIELD TESTING

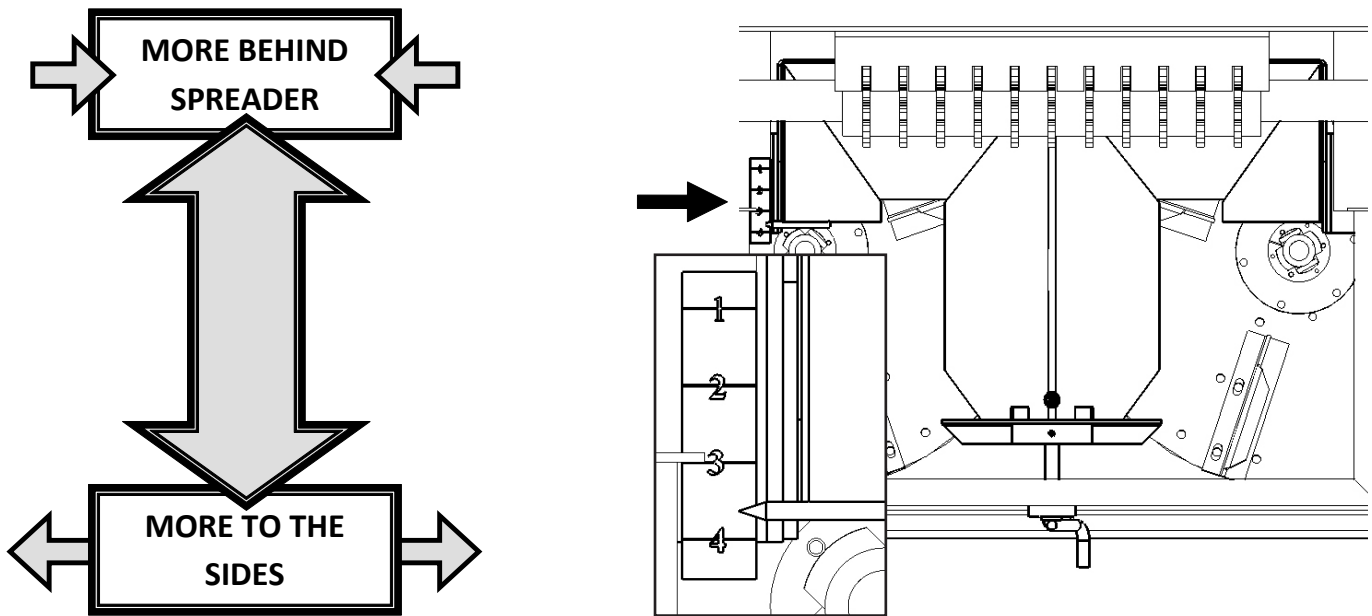
### MagnaSpread Pull-Type

#### ADJUSTMENTS

You can change the spread pattern by adjusting the flow divider, spinner blades, and spinner speed. For initial calibration, adjust the flow divider and check the pattern. If the flow divider adjustments do not produce the desired spread pattern, then you may need to adjust the spinner speed or blades.

##### FLOW DIVIDER

Adjust the flow divider forward using the handle to increase the amount of material being applied directly behind the spreader. Adjust the flow divider toward the rear to throw more material to the sides of the spreader. Moving the flow divider will not make the spread pattern wider—it will only change the distribution of material within the pattern. You can reference a gauge located on the left side of the flow divider.



In the center of the flow divider, you'll see a removable insert. You'll use this insert for spreading fertilizer, and you'll remove it when spreading lime.

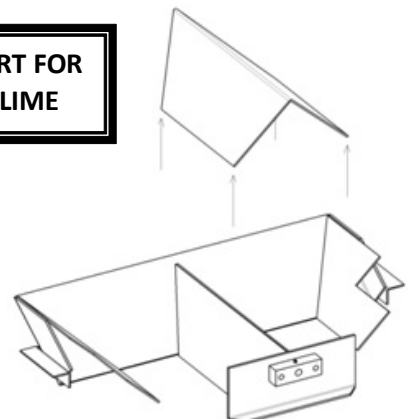
As a starting point, set the flow divider on 3-1/2 when spreading fertilizer, and set it on 1 when spreading lime. ***Always TEST and CALIBRATE the spreader properly prior to operating in the field.***

##### FLOW DIVIDER SETTINGS

As a starting point, set the flow divider on the following:

<b>Fertilizer</b>	<b>=</b>	<b>3-1/2 (USE INSERT)</b>
<b>Lime</b>	<b>=</b>	<b>1 (REMOVE INSERT)</b>

**REMOVE INSERT FOR  
SPREADING LIME**



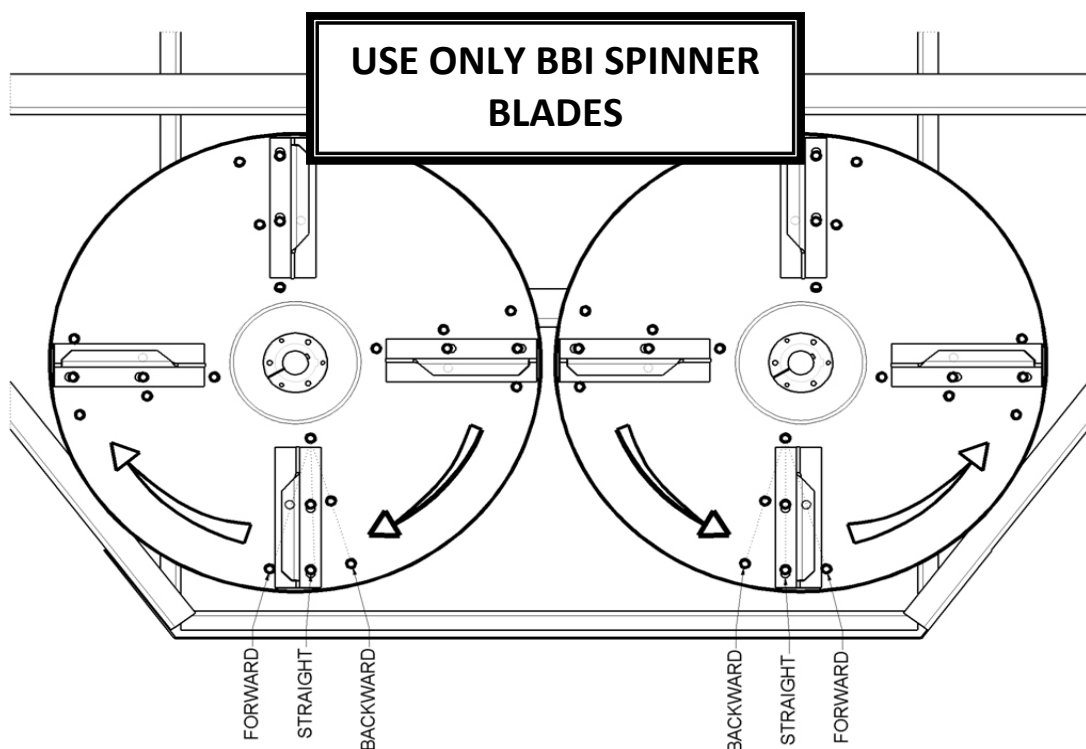
Materials need customer-specific adaptation to suit regional variations. Please be sure to adjust your flow divider when changing materials to optimize the spread pattern.

## MACHINE OPERATION

### MagnaSpread Pull-Type

#### SPINNER BLADES

You can adjust the spinner blades to three different positions: straight, forward, and backward. Moving the blades **FORWARD** causes more material to be thrown to the sides of the spreader. Placing the blades in the **BACK** position causes more material to be thrown directly behind the spreader. Standard factory installation for the fins is in the straight position. Use only genuine BBI parts. Spinner blades are designed to be replaced periodically.



Spinner blades will wear and disfigure from the abrasiveness of the materials. Excessive wear can cause an uneven spread pattern. You should replace worn fins before they affect the spread pattern (fins are available for purchase from your nearest BBI dealer or through the parts department at BBI)

#### SPINNER SPEED

Predicting how an increase or decrease in spinner speed will affect the spread pattern is difficult. You should make this particular adjustment only after other methods of adjustment fail to give a satisfactory pattern. Increasing spinner speed may increase or decrease the material directly behind the spreader, depending on the material being spread, the original spinner RPM, and type of blade setting. *You will have to use trial and error to make adjustments with spinner speed, due to the lack of predictability with this type of adjustment.*

##### SPINNER SPEED RECOMMENDATIONS

Fertilizer (80 ft Wide)	=	900 RPM
Fertilizer (60 ft Wide)	=	650 RPM
Lime (60 ft Wide)	=	650 RPM

## MACHINE OPERATION

### MagnaSpread Pull-Type

#### APPLICATION RATE

***Always TEST and CALIBRATE the spreader properly prior to operating in the field.***

The speed of the conveyor and the height of the gate opening combine to determine the amount of material being applied at a given time (the application rate). Elements that also affect the application rate include the material density, swath width, and ground speed.

When adjusting application rates, keep these principles in mind:

- Bed chain increases = Rate increases
- Gate height increases = Rate increases
- Travel speed increases = Rate decreases
- Material density increases = Rate increases
- Swath width increases = Rate decreases

#### ELECTRONIC CONTROLS

An electronic control system with guidance is the only way to achieve precision application rates. Refer to the controller manual in the appendix for more information. You can get additional support through your authorized BBI dealer and video tutorials are available on the FAQ section of the website:

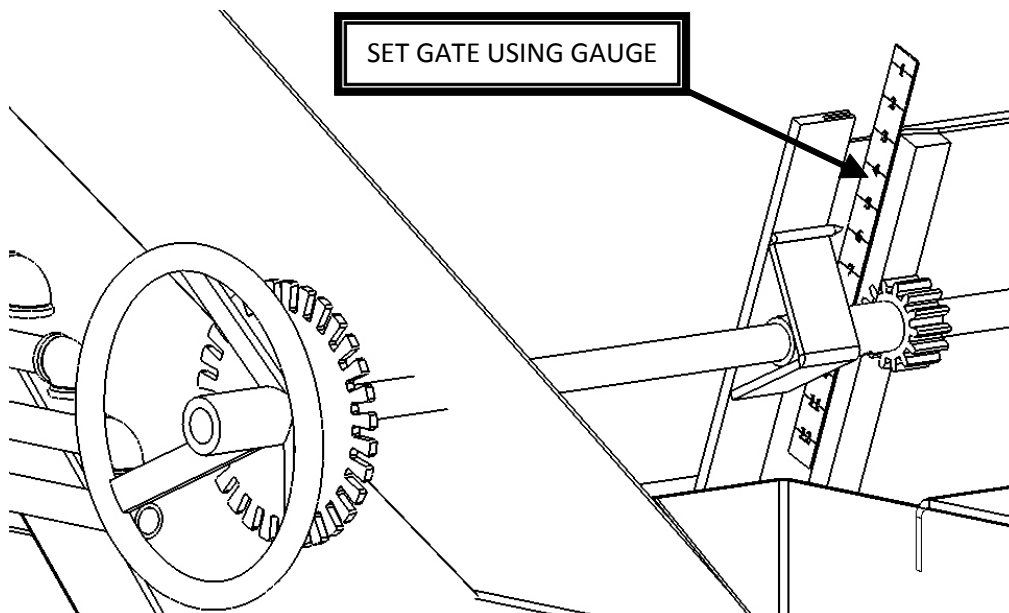
<http://bbispreadernews.com/faq/>

#### MANUAL CONTROLS

With some limitations, you can achieve accurate application rates using the manual controls. You must maintain a constant ground speed, because no direct relation exists between the conveyor speed and the ground speed.

The speed of the conveyor chain will not vary with ground speed unless you use an electronic rate controller. Therefore, if ground speed changes, then the application rate also changes.

You can calculate the application rate by setting the rear roller RPMs and driving a constant speed. Set rear roller RPMs according to the Ground Speed Table and use the correct Rate Chart. Refer to the table and charts in the appendix.



## LUBRICATION AND MAINTENANCE

### MagnaSpread Pull-Type

#### MAINTENANCE

The chemical agents in commercial fertilizers are very corrosive. Without an established preventative maintenance program, your spreader will decay in a relatively short time. The cleaning, lubrication, and maintenance practices that you follow will affect the life, service, and overall cost-of-use of the spreader.

#### LUBRICATION

Frequently lubricate all bearings and other grease points to extend the life of the components. When lubricating, it is important to also inspect the components to ensure satisfactory operation.

The required interval of lubricating will depend on the operating environment. Conditions such as dust, moisture, speed, and temperature will affect how often to lubricate. Refer to the chart below for a guideline.



LUBRICATION SCHEDULE	
ITEM	FREQUENCY
Input Shaft U-Joint	40 hours
Input Shaft Bearing	40 hours
Front Roller Bearings	120 hours
Rear Roller Bearings	40 hours
Spinner Bearings	40 hours
Spinner U-Joints	80 hours
Gate Rod	500 hours
Flow Divider Bushing	500 hours
Wheel Hubs	40 hours
Walking Beam Suspension	**

\*\*Walking Beam Suspensions have grease points in the bushings along the pivot pin. Due to the suspension's design, you do not have to lubricate the bushings (BBI has included fittings on these bushings for additional lubrication).

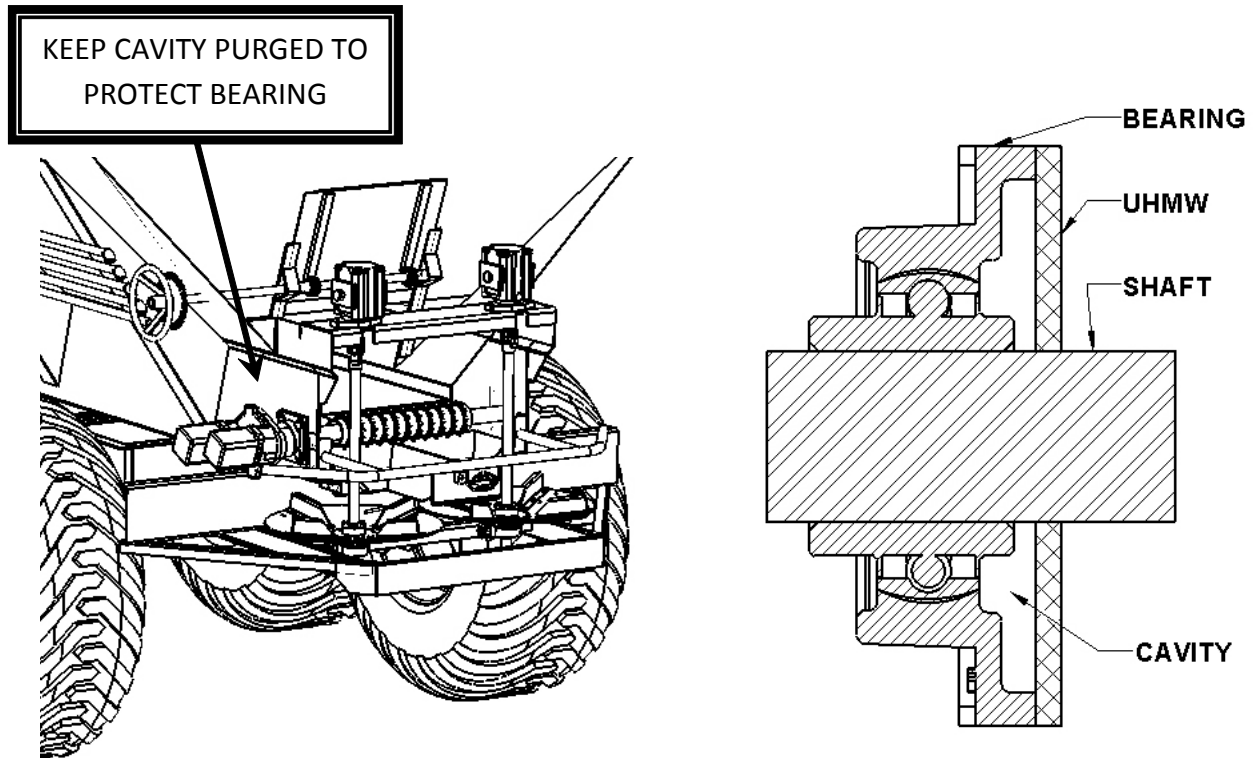
Note: BBI has filled Gearboxes with 90-weight oil at the factory. You should replace the factory oil after the first 50 hours of break-in time. Thereafter, you should drain and refill the oil after every season.

## LUBRICATION AND MAINTENANCE

### MagnaSpread Pull-Type

#### REAR ROLLER BEARING PLATES

You will find the UHMW plates located behind the rear roller bearings. BBI has designed this innovation in order for grease to fill and purge any debris that might cause damage or corrosion. Grease these bearings every 40 hours of operation for protection.

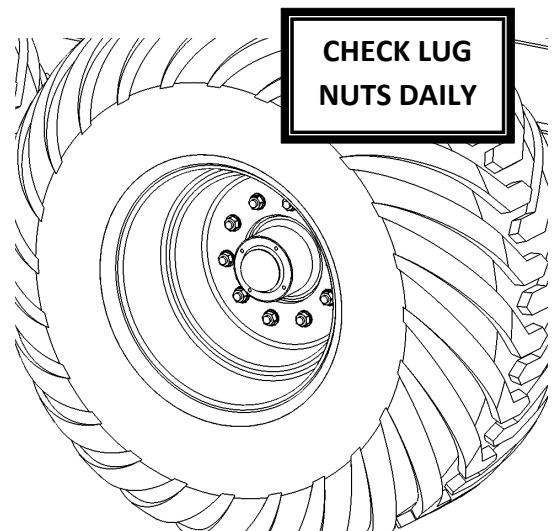


#### FASTENERS

Tighten all screw fasteners after the first week of operation and annually thereafter. Replace any lost or damaged fasteners or other parts immediately upon finding such damage or loss.

#### LUG NUTS

Check lug nuts each time before using. Ensure lug nuts are tightened to the appropriate torque specification. For 10 bolt wheels, tighten lug nuts to 250 ft/ lbs. For 8 bolt wheels, tighten lug nuts to 120 ft/ lbs.



**IMPORTANT!** Tightening lug nuts more than recommended can damage wheels.



## MESH CHAIN TENSION AND ADJUSTMENT

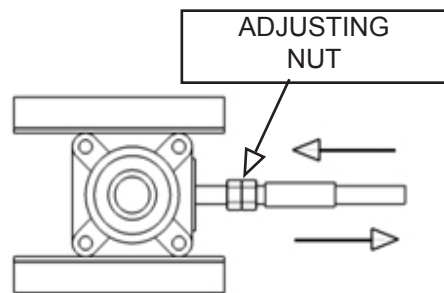
### MagnaSpread Pull-Type

#### MESH CHAIN TENSION

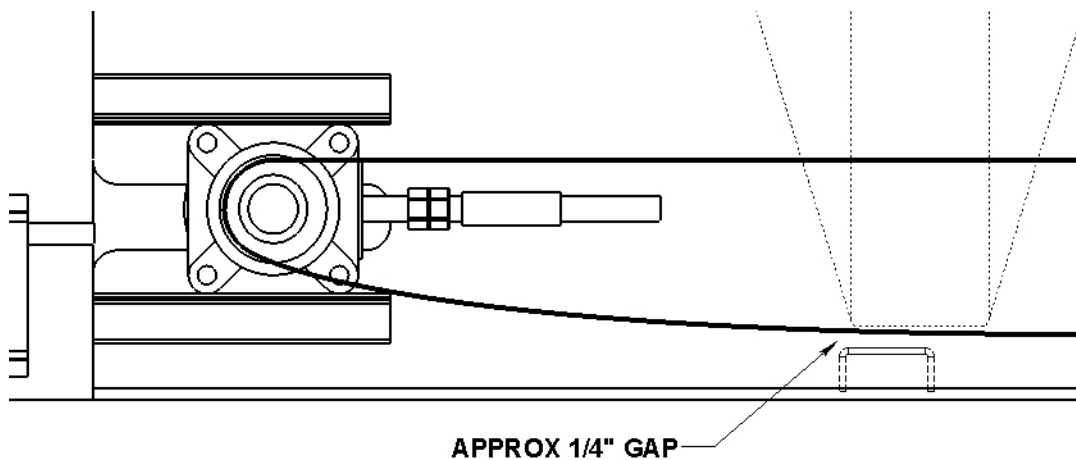
It is very important to monitor and adjust a mesh chain during the first couple of applications. This is particularly important with heavy product like lime. During the first few applications check the chain after each load and adjust accordingly.

After the initial break in period with proper adjustment initially, stretching should be minimal.

- MAKE SURE THE CHAIN IS ADJUSTED EQUALLY ON BOTH SIDES
- A CHAIN TOO LOOSE WILL WRAP AND CATCH OBJECTS
- A CHAIN TOO TIGHT WILL STRETCH THE CHAIN BEYOND OPERATING TENSION



Front Roller Adjustment used to change chain tension.



#### IMPORTANT!



**Note:** Stainless steel mesh chain will stretch when first used. *You must check the chain for appropriate tension and properly adjust it to avoid damaging unit. After initial break-in period, stretching should be minimal.*

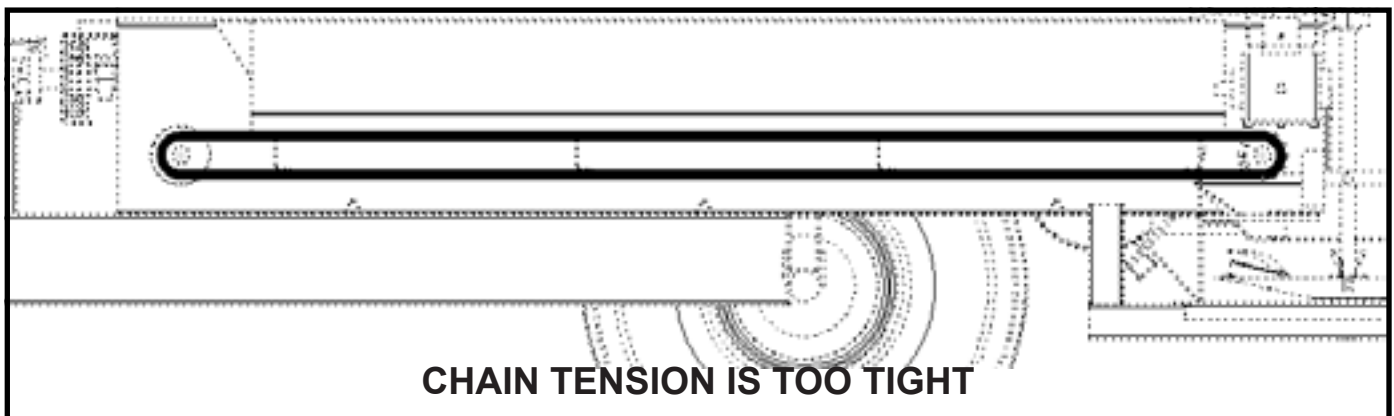
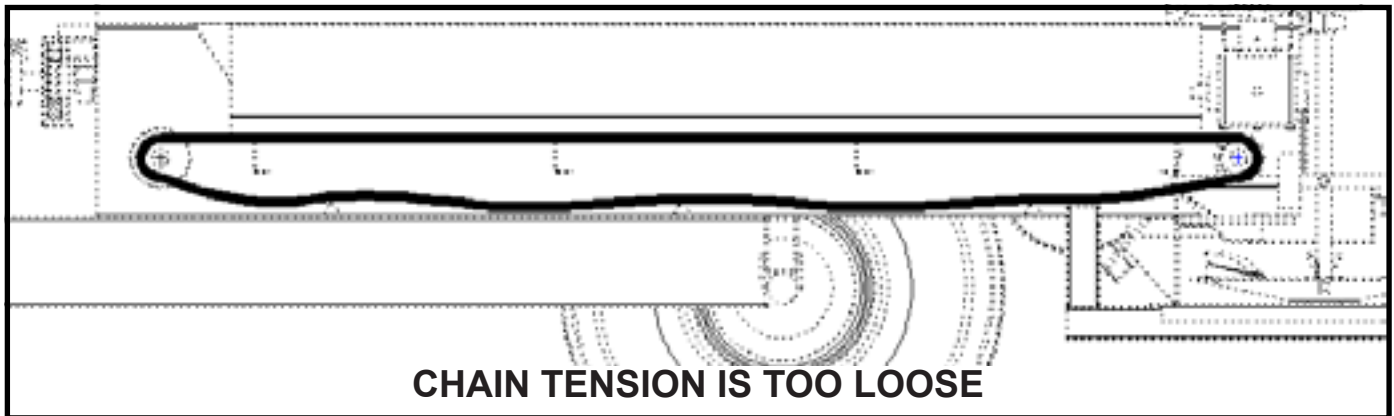
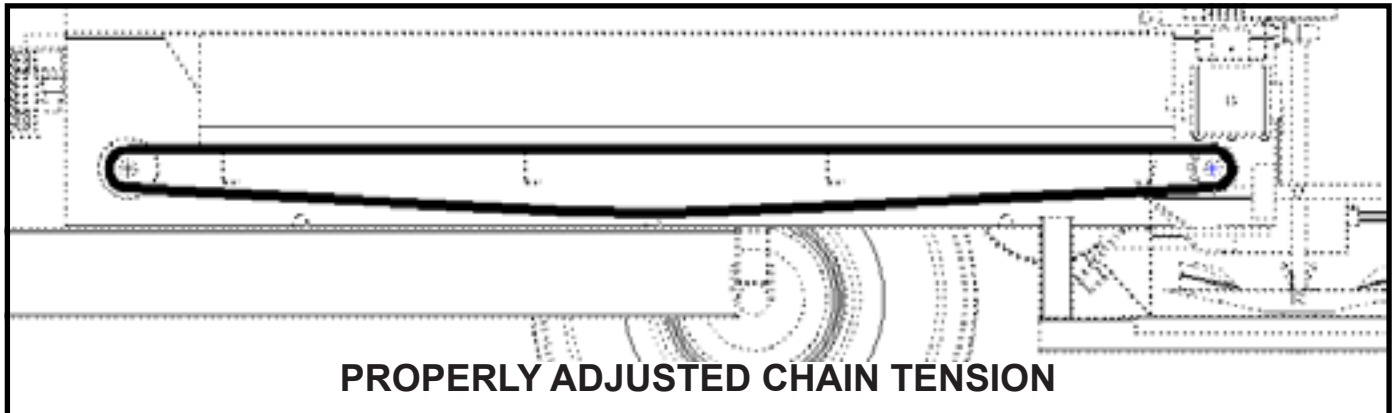
## MESH CHAIN TENSION AND ADJUSTMENT

### MagnaSpread Pull-Type

#### CONVEYOR TENSION ADJUSTMENT - ADDITIONAL INFORMATION

When adjusting the conveyor chain, allow the bottom side of the conveyor to touch the cross members of the chassis inside the conveyor return tunnel.

NOTE: Conveyor Chain will stretch when first used. Chain must be checked for appropriate tension and properly adjusted to avoid damaging unit. After initial break in period stretching should be minimal.



## LUBRICATION AND MAINTENANCE

### MagnaSpread Pull-Type

#### HYDRAULIC SYSTEM

##### WARNING!



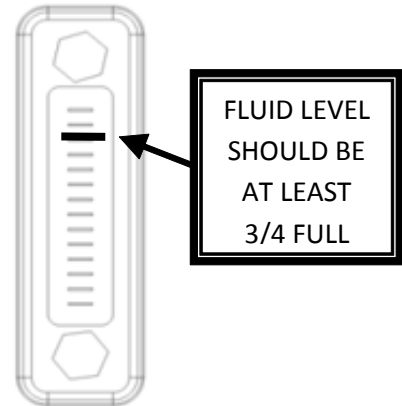
DO NOT check for leaks while system is operating, as high-pressure oil leaks can be dangerous!

DO NOT check for leaks adjacent to moving parts while system is operating, as there may be danger of entanglement.

#### HYDRAULIC FLUID

In general, use any good-quality 30-weight hydraulic oil. More specifically, you should use premium-quality hydraulic oil with a viscosity range of 150-300 SUS at 100°F. Normal operating viscosity range is between 80-1000 SUS. Maximum start up viscosity should not exceed 4000 SUS. Oil should have maximum anti-wear properties, rust and oxidation inhibitors.

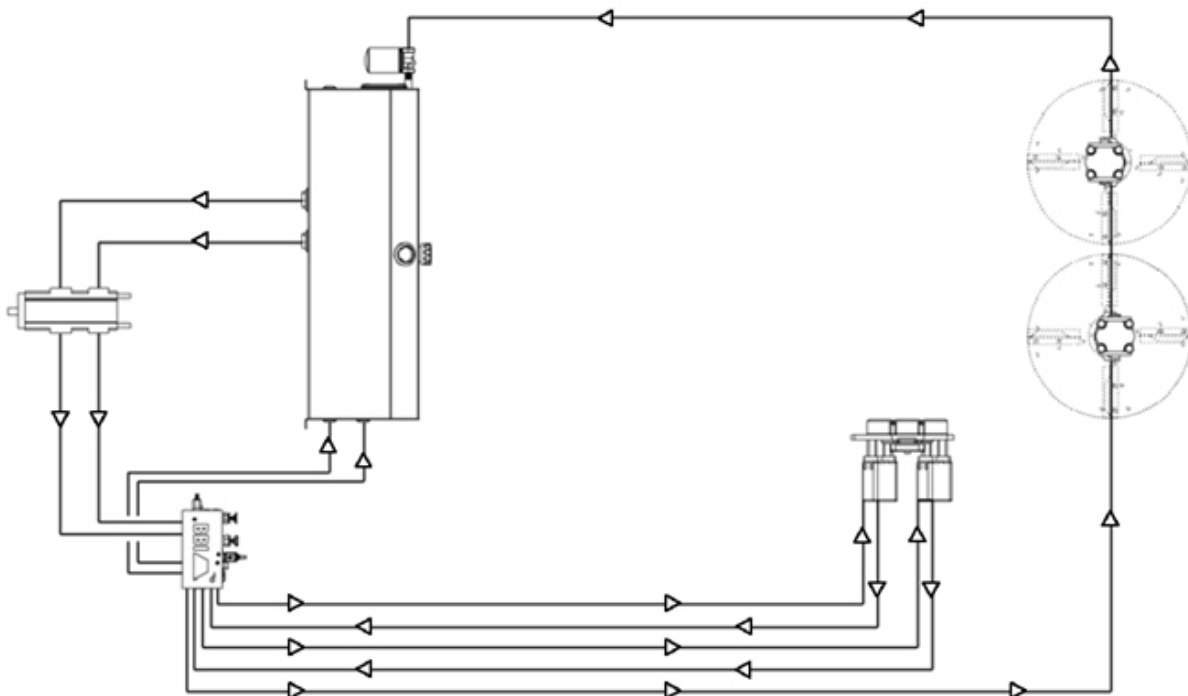
Check the hydraulic fluid level before every use. The system holds approximately 35-40 gallons of fluid. A sight gauge located on the reservoir will indicate the fluid level. Fluid should fill at least three-quarters of the way up the gauge.



#### FILTERS

Change the filter after the first 50 hours of initial use, and then every 500 operating hours.

#### HYDRAULIC DIAGRAM



## TIPS & TRICKS

### MagnaSpread Pull-Type

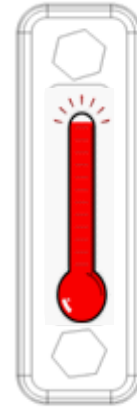
## TIPS & TRICKS

### FLUID TEMPERATURE

Under normal operating conditions, the temperature of the hydraulic oil should be approximately 135-165°F.

For no reason should the oil temperature be above 185°F.

Overheated oil can cause damage to the hydraulic system, shortening the life of pumps, motors, and other components.



### OVERLOADING

#### IMPORTANT!



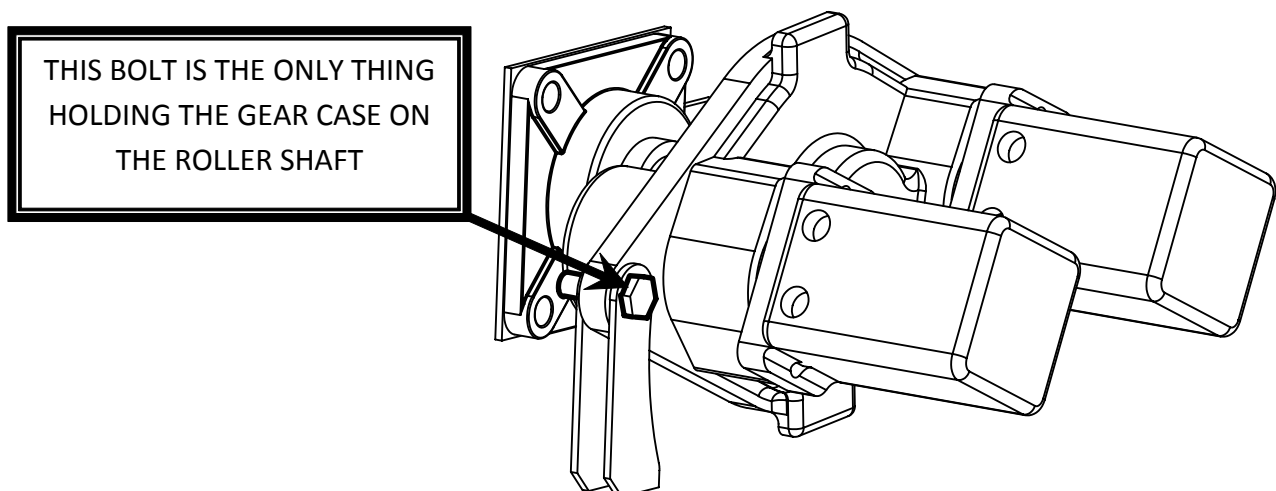
Be aware of the capacity of the hopper compared to the hydraulic system and suspension. It is possible to overload the spreader with a heavy material. Overloading can cause many different problems with the spreader such as suspension damage, overheated hydraulic fluid, excessive conveyor chain stretching, and structural damage to the hopper.

### REMOVING THE CONVEYOR GEAR CASE

You must remove a bolt keeping the gear case from moving prior to taking the gear case off the rear roller shaft. There is nothing else holding the gear case to the shaft except for this single bolt.

If the gear case is difficult to remove, then the key inside the gear case may have deformed due to excessive torque. You can split the gear case housing to access the inside.

The seal (part #70601350) is easily damaged by this procedure. Remove and replace with caution.



## PARTS AND SHIPPING

### MagnaSpread Pull-Type

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#### REPLACEMENT PARTS

Use only genuine BBI Parts.

Order parts from the authorized BBI dealer in your area.

When placing an order, please have available:

1. The model and serial number of the spreader.
2. The part name, part number, and the quantity required.
3. The correct street address for parts delivery, and your preferred carrier (if necessary)

#### DEALER'S PARTS DEPARTMENT INFORMATION:

Dealer Parts Representative:	_____
Phone number:	_____
Email:	_____

#### SHIPPING DAMAGE

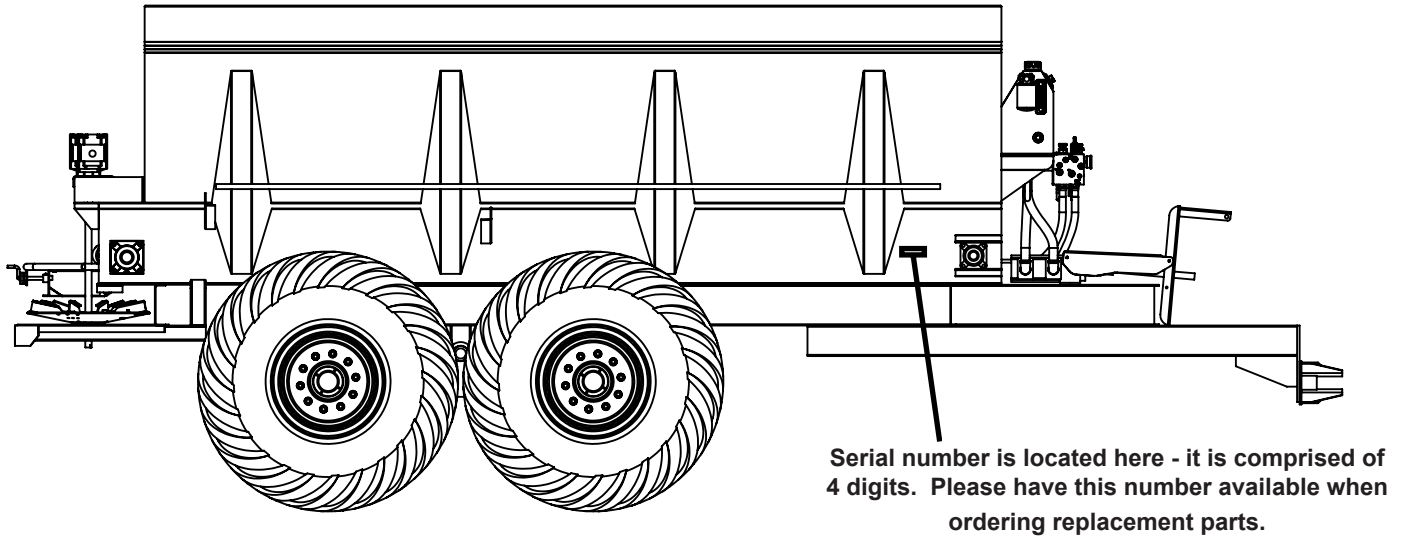
You must make claims for shortages and/or errors immediately upon receipt of goods from BBI. When you receive broken or damaged goods, you must make a full description of the damage to the carrier agent on the freight bill. If insisted upon, you can always collect full damage from the transportation company. Please contact BBI as soon as possible after you have notified the carrier.

If the transportation company is not handling your claims to your full satisfaction, please contact BBI's Customer Service Department at 1-800-282-3570 for assistance.

## PARTS IDENTIFICATION AND ORDERING

### MagnaSpread Pull-Type

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## PARTS INFORMATION

Information contained in this section is provided for identification and reference purposes when ordering replacement parts.

- 1). Identify the part or component that needs to be replaced.
- 2). Locate the appropriate section on the following pages where the part is located.
- 3). Reference the appropriate page to gather necessary part number and pertinent information.

## REPLACEMENT PARTS ORDERING:

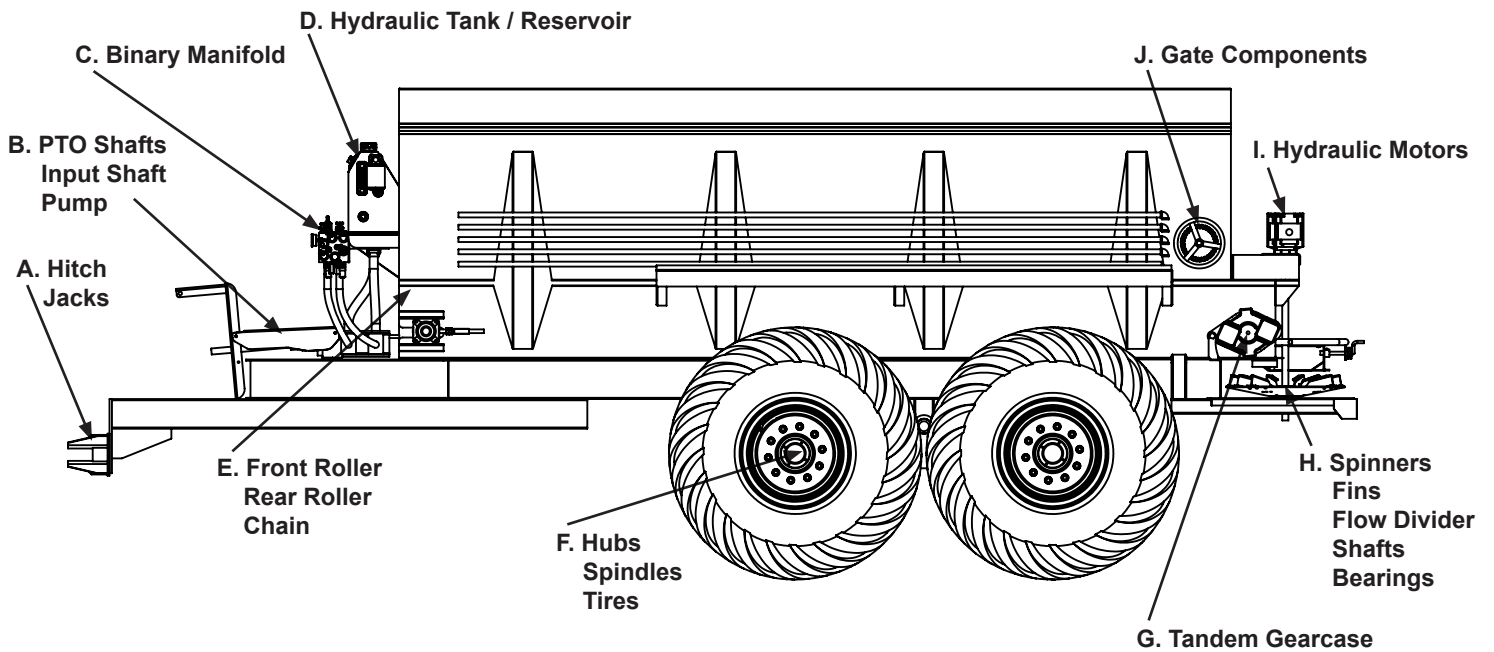
You have several options when ordering replacement parts:

- 1) Call your service dealer
- 2) Order through BBI's parts website: [www.bbispreaders.com](http://www.bbispreaders.com)

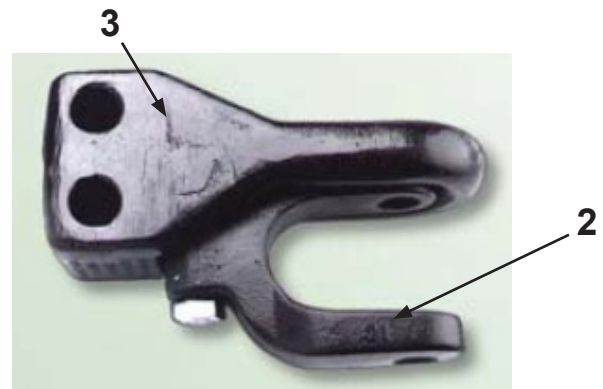
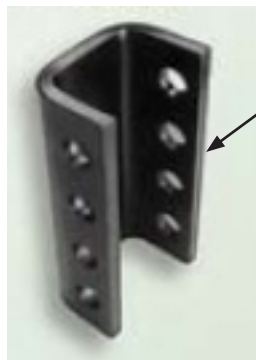
## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### COMPONENT / ASSEMBLY IDENTIFICATION:



#### A: HITCH COMPONENTS



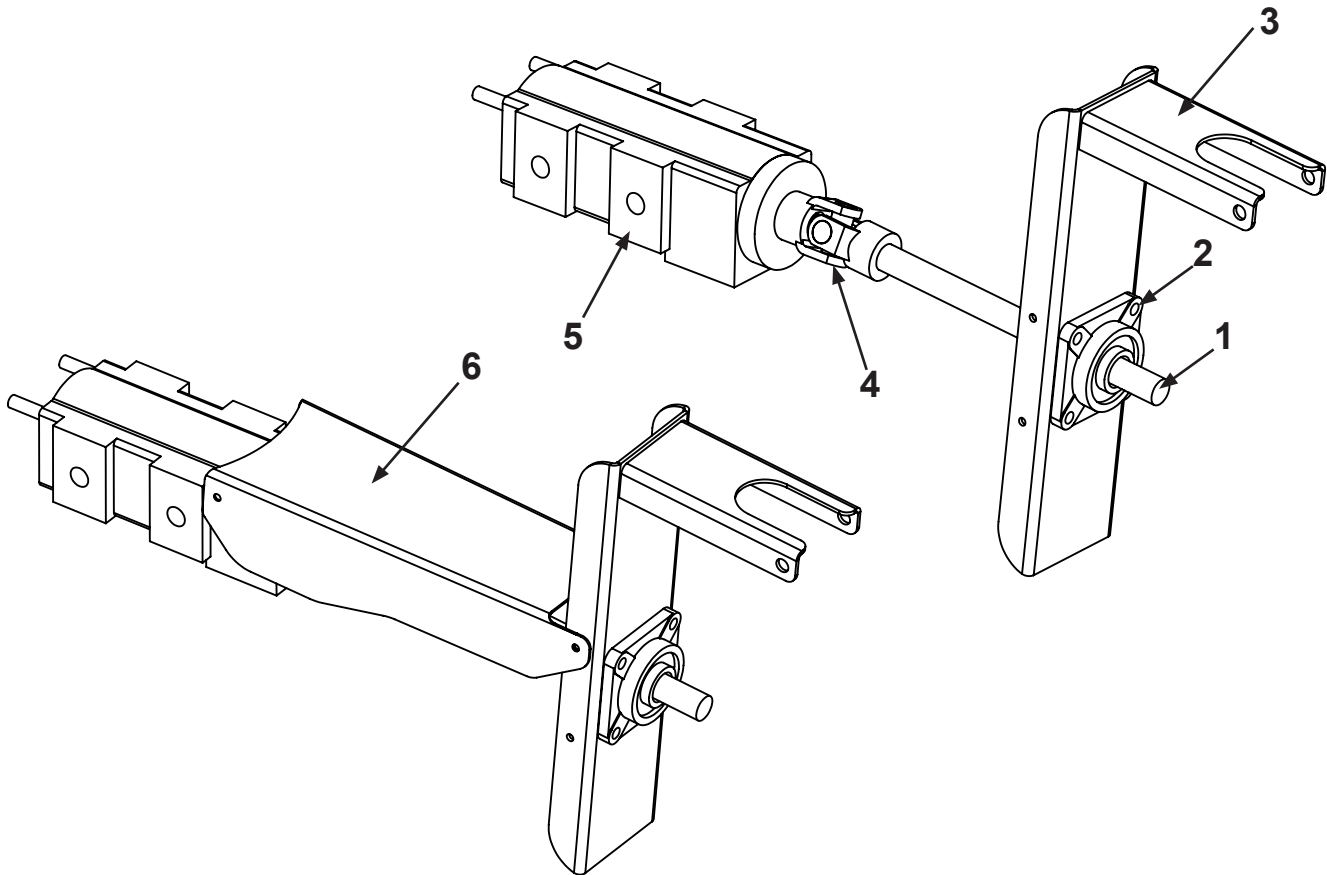
ITEM	PART NO.	DESCRIPTION	QTY
1.	24PPHB305	Hitch Bracket	1
2.	24PPI208VR	Perfect Hitch Clevis	1
3.	24PPI401V3	Perfect Hitch Pintle	1
4.	24P Hitchbolt	Grade 8 Bolt	2
5.	24PPI401V3A	Perfect Hitch Assembly	1
6.	24H20078	Heavy Duty Hitch	1

ITEM	PART NO.	DESCRIPTION	QTY
1.	24SWL190DL	7K Jack	1
2.	24182304	10K Jack	1

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### B: PTO SHAFTS, INPUT COMPONENTS, PUMP



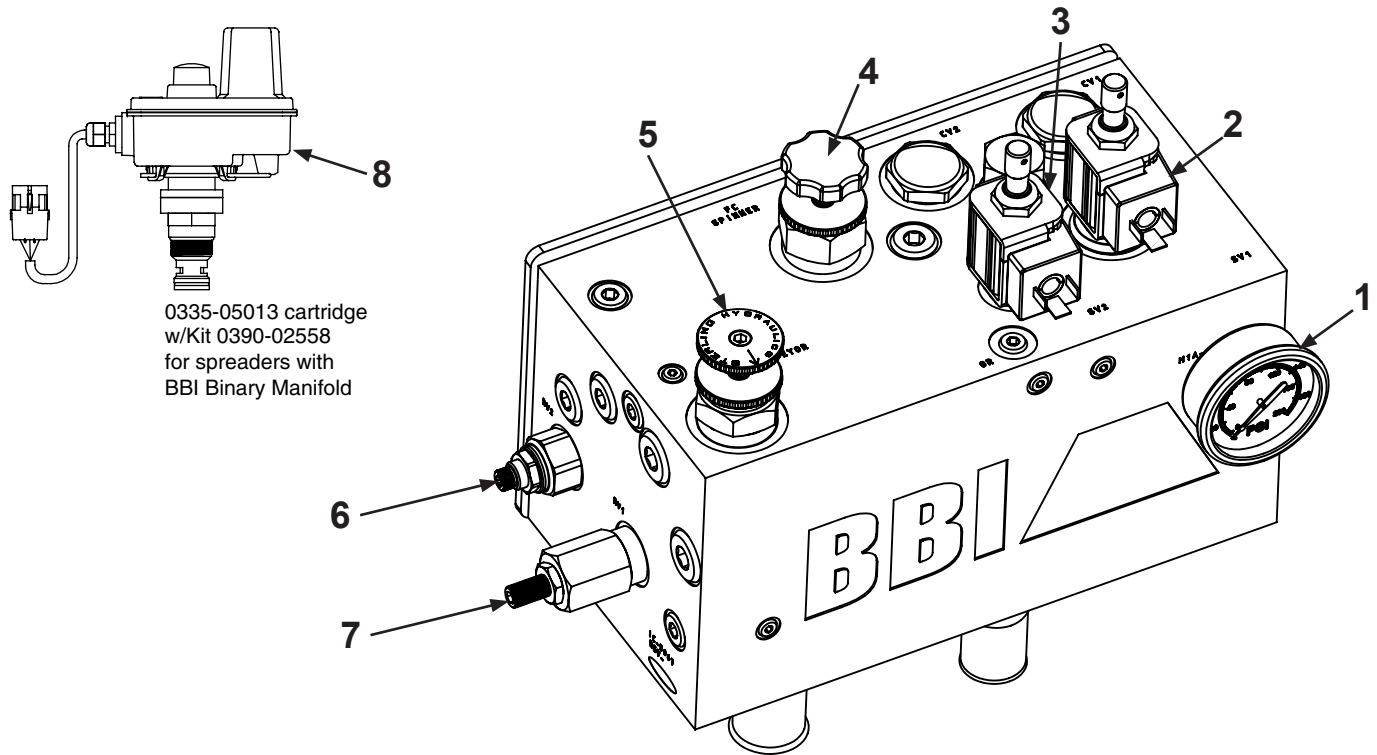
ITEM	PART NO.	DESCRIPTION	QTY
1.	45HS18	18" Hydraulic Input Shaft 1/4 Key	1
2.	60HCFS206-20	1 1/4" Eccentric Roller Bearing	1
3.	15PTO-1-13	PTO Tower	1
4.	616400101500	U-Joint 1 1/4" Round x 1/4" Key x 5/16" Key	1
5.	3025RM2525	Remote Mount Pump *See separate diagram for seals, keys, and gear sets.	1
6.	15PTO-H2A	Shaft Guard	1

ITEM	PART NO.	DESCRIPTION	QTY
7.	64PTOS61000CV20	(Big 1000) 1 3/4" 20 Spline constant velocity PTO shaft	1
8.	64PTOS61000CV21	(Small 1000) 1 3/8" 21 Spline constant velocity PTO shaft	1

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### C: BINARY MANIFOLD COMPONENTS

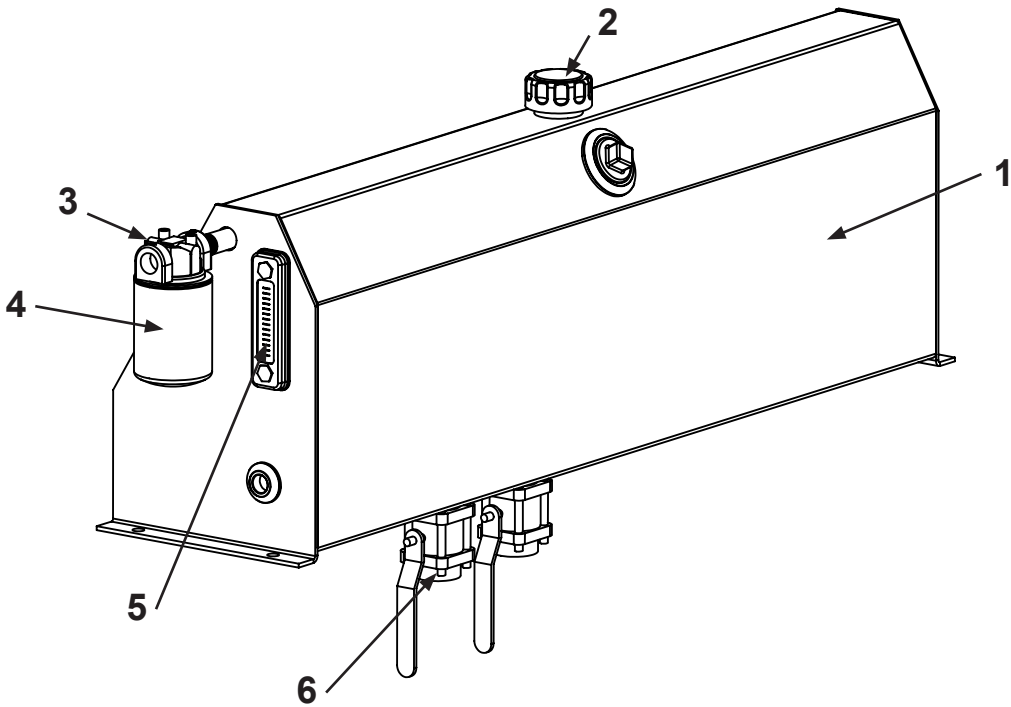


ITEM	PART NO.	DESCRIPTION	QTY
1.	34PDSSIP210B	Pressure Gauge	1
2A.	32GRVCOIL	32 GRV Coil	1
2B.	32GRVCARTRIDGE	32 GRV Cartridge	1
3A.	32ICBVPVS	Dump Coil	1
3B.	32ICBVDVC	Cartridge	1
4.	32JIAI25WN	Spinner Flow Control	1
5.	32J06A2WN	Chain Flow Control	1
6.	32RAH101530	Spinner Relief Valve	1
7.	32A04H3H2N	Conveyor Relief Valve	1
8.	033505013	Servo Valve	1

# ASSEMBLY IDENTIFICATION

MagnaSpread Pull-Type

## D: HYDRAULIC RESERVOIR COMPONENTS

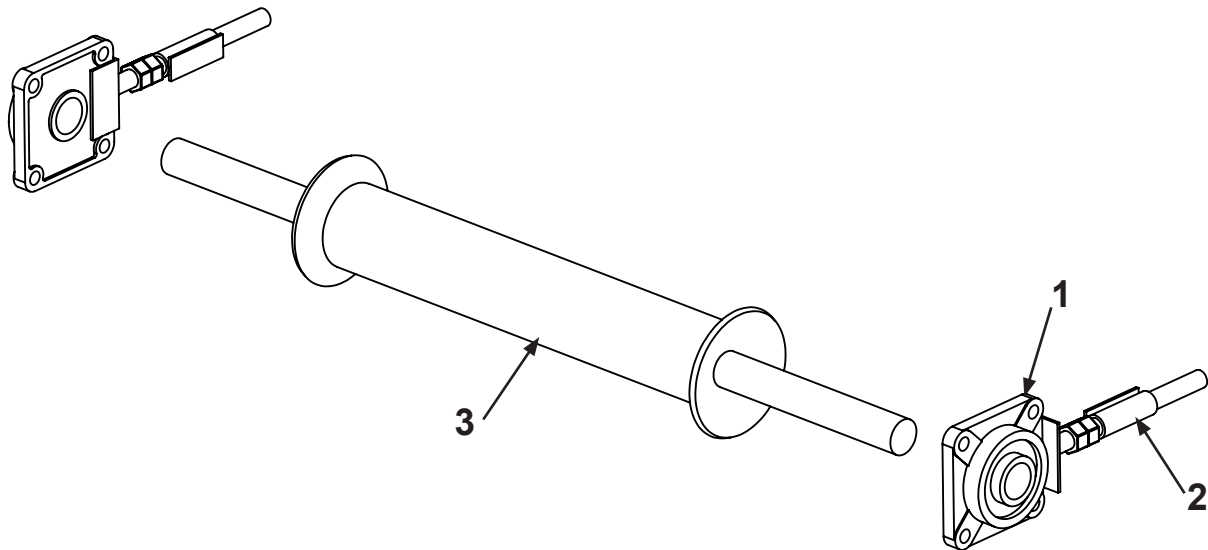


ITEM	PART NO.	DESCRIPTION	QTY
1.	37HTP40	Tank	1
2.	34HC12012A	Breather Cap	1
3.	34707782A	Filter Head	1
4.	34702784A	Filter	1
5.	34HSG-55	Sight Gauge	1
6.	32BV-125	Ball Valve	2

# ASSEMBLY IDENTIFICATION

MagnaSpread Pull-Type

## E1: FRONT ROLLER COMPONENTS

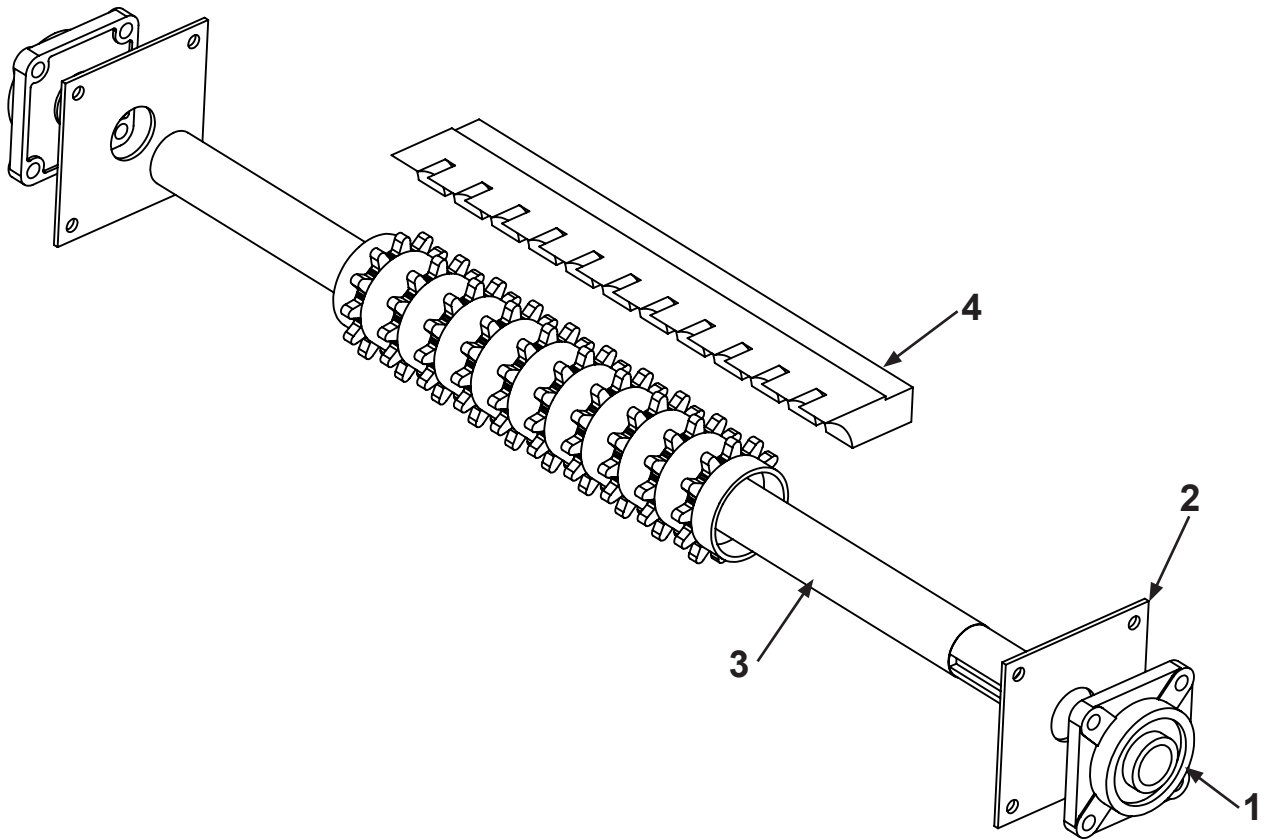


ITEM	PART NO.	DESCRIPTION	QTY
1.	60UCF208-24	1 1/2" 4-Bolt Flange	2
2A.	42 FRAZ	Adjusting Screw (Stainless)	2
2B.	42 FRAZ	Adjusting Screw (Zinc)	2
3.	42 FRM20	Front Roller	1

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### E2: REAR ROLLER COMPONENTS



ITEM	PART NO.	DESCRIPTION	QTY
1.	60UCF211-32	2" Flange Bearing	2
2.	89 POLYSQUARES	Poly Squares 6.5 x 6.5	2
3.	42 RRM20HP	Rear Roller	1
4.	42 C20	UHMW Comb 20"	1

#### CHAIN

41 MC 1120 - 20" Stainless Mesh Chain

41 MC 20SP - 20" Connector Pin

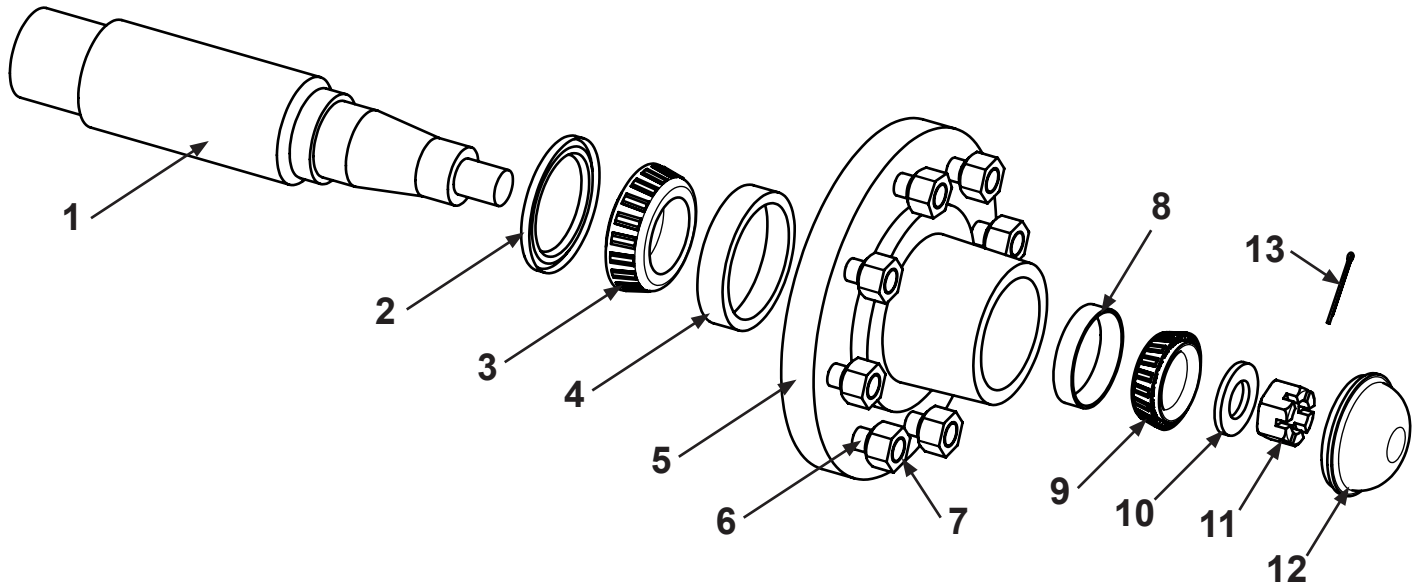
\*Note: When ordering chain, please have serial number available.

To calculate the required length, multiply hopper length by two, then add two feet.

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### F: 10,000 LB (10K) HUB ASSEMBLY 22AX3160424A (8 BOLT)

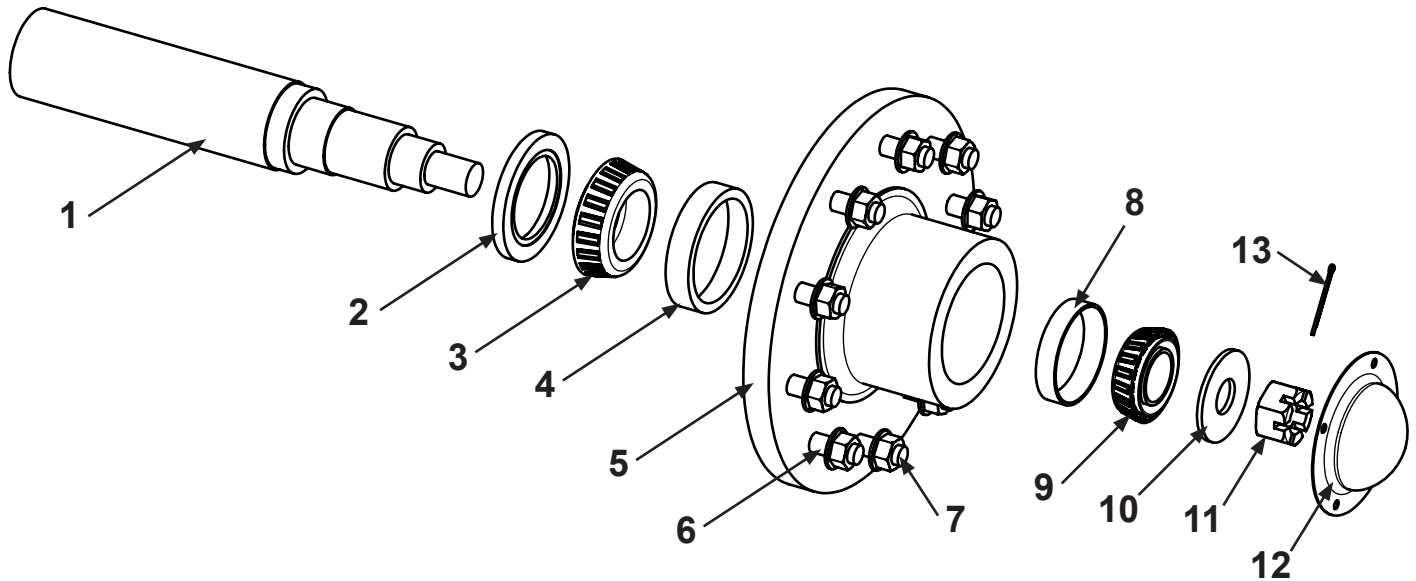


ITEM	PART NO.	DESCRIPTION	QTY
1.	22AXS-6000F	10K Spindle Shaft	1
2.	22AXSL-275	10K Oil Seal (CR27394)	1
3.	22AX506849	10K Inner Bearing	1
4.	22AX506810X	10K Inner Race	1
5.	22AX3160424	10K 8 Lug Hub Only	1
6.	22AXST-625	5/8" x 18-90 Press-in Stud	1
7.	22AXSTN-629	5/8" x 18-90 Lug Nut	1
8.	22AX501310	10K Outer Race	1
9.	22AX501349	10K Outer Bearing	1
10.	22AXSW-1001	10K Axle Washer	1
11.	22AXSN-1001	10K Axle Nut	1
12.	22AX1609	10K Dust Cap	1
13.	22AXSCP-102	10K Cotter Pin	1

## ASSEMBLY IDENTIFICATION

MagnaSpread Pull-Type

### F: 12,000 LB (12K) HUB ASSEMBLY 22AXBF2891300A (10 BOLT)



ITEM	PART NO.	DESCRIPTION	QTY
1.	22AXBB281309	12K Spindle Shaft	1
2.	22AXBB906497	12K Oil Seal 2	1
3.	22AXBB910333	12K Inner Bearing	1
4.	22AXBB910331	12K Inner Race	1
5.	22AXBF2891300	12K 10 Lug Hub Only	1
6.	22AXBB13564	12K Press in Stud	1
7.	22AXBB913571	12K Flanged Nut	1
8.	22AXBB910332	12K Outer Race	1
9.	22AXBB910334	12K Outer Bearing	1
10.	22AXBB913632	12K Axle Washer	1
11.	22AXBB913571	12K Axle Nut	1
12.	22AXBB909983	12K Dust Cap	1
13.	22AXSCP-103	12K Cotter Pin	1

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

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#### F: TIRES

MagnaSpread Tires	16.5" 8 Bolt	21.5" 8 Bolt	21.5" 10 Bolt	560	710	11.25"	18.4"
Suspension	Rigid Axle (RA) / 9 Ton	9 Ton / 10 Ton	RA / 10T / 14T	14 Ton	20 Ton	RA	RA
8' Single Axle	Standard						
10' Single Axle						Option	Option
10' - 12' Tandem Axle	Standard	Option	Option	Option			
14' - 16' Tandem Axle			Standard	Option	Standard		

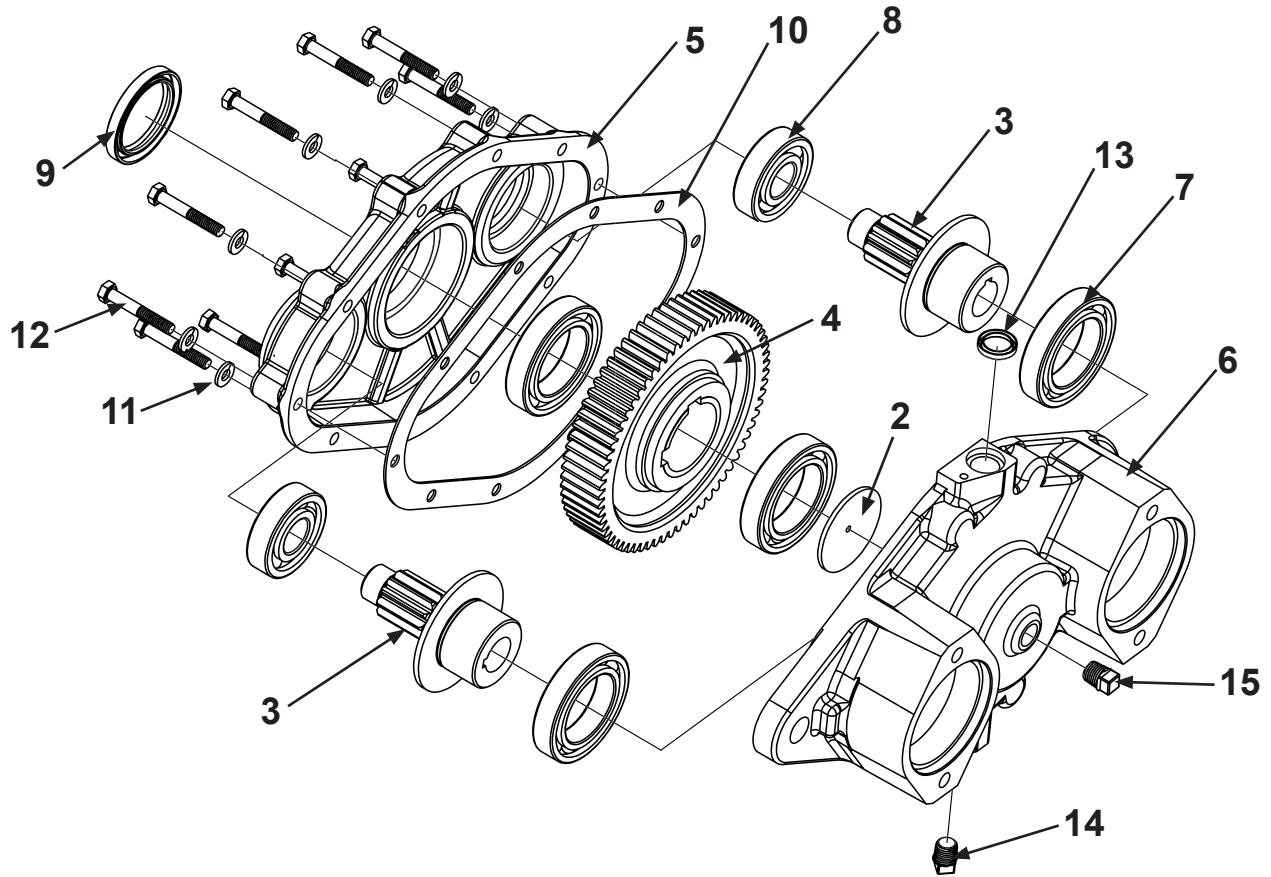
\*Most common packages are listed above

\*Proper identification can be made through calling the factory with your product serial number

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### G: TANDEM GEARCASE WITH AND WITHOUT SENSOR

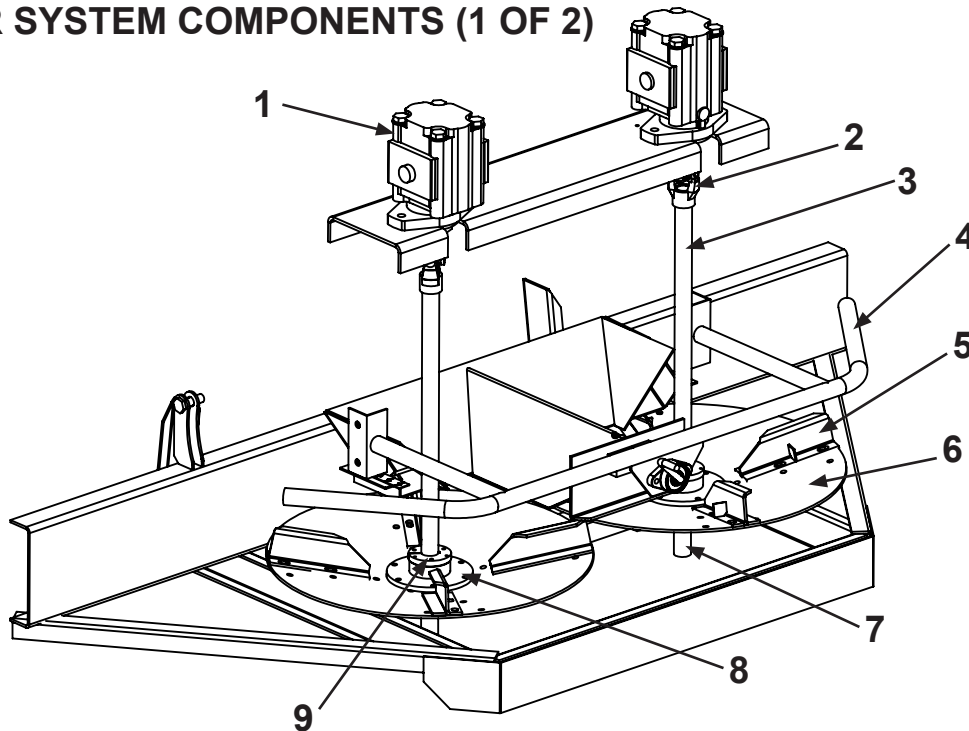


ITEM	PART NO.	DESCRIPTION	QTY
1.	70301505	Key and Plug Kit (Key and 3 Plugs)	1
2.	70311062	Washer	1
3.	70313077	Pinion Gear	2
4.	70313084	Drive Gear (67 teeth)	1
5.	70315052	Tandem Inboard Housing	1
6.	70315090	Tandem Outboard Housing with Sensor (LH)	1
	70315082	Tandem Outboard Housing without Sensor	1
7.	70601151	Bearing (Large 50 x 80 x 16mm)	4
8.	70601173	Small Output Bearing	2
9.	70601350	Oil Seal	1
10.	70611952	Tandem Gearcase Gasket	1
11.	70617006	Lock Washer	10
12.	70620041	Capscrew	10
13.	70601360	Seal for Sensor	1
14.		Plug (Purchase in Key and Plug Kit)	1
15.		Center Fill Plug (Purchase in Key Kit)	1

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### H: SPINNER SYSTEM COMPONENTS (1 OF 2)



ITEM	PART NO.	DESCRIPTION	QTY
1.	3121SDM25	2.5" Motor	2
	31M2100SK152025	Seal Kit	1
	30Q1956-4	Seal Installation Tool. Required to properly install new motor pressure seal.	1
2.	61U183010293	U-Joint	2
3.	45FHMS28	Shaft	2
4A.	51SG-C	Guard Rail (Carbon)	1
4B.	51SG-S	Guard Rail (Stainless)	1

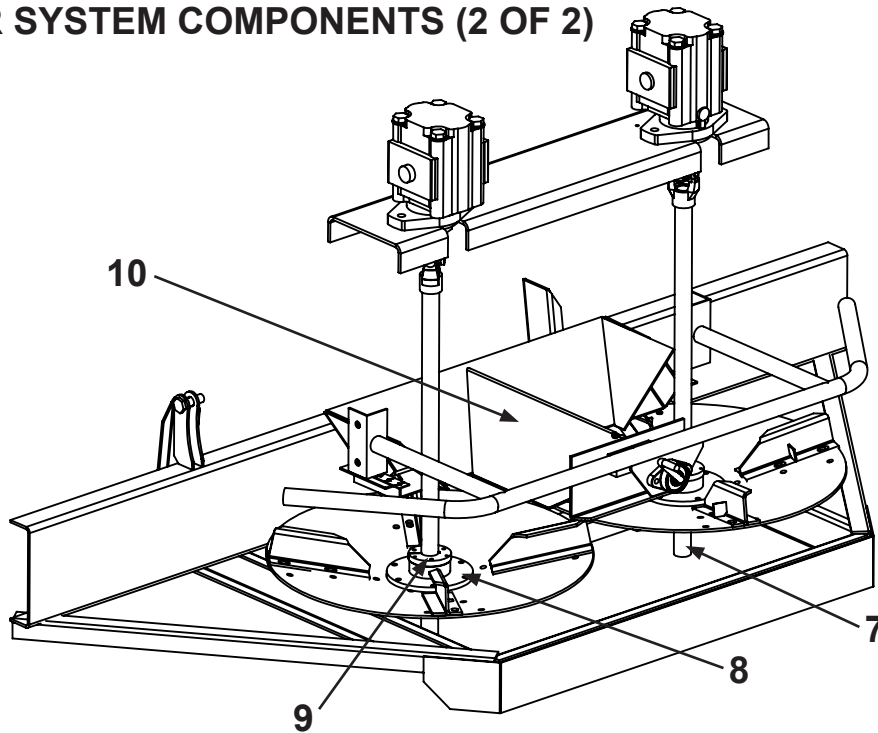
5. FINS			
Carbon		Stainless	
51FT75MC-R	Carbon 7.5" Right	51FT75MS-R	Stainless 7.5" Right
51FT75MC-L	Carbon 7.5" Left	51FT75MS-L	Stainless 7.5" Left
51FT9MC-R	Carbon 9" Right	51FT9MS-R	Stainless 9" Right
51FT9MC-L	Carbon 9" Left	51FT9MS-L	Stainless 9" Left

6. DISC ASSEMBLIES			
Carbon		Stainless	
50MS24CSA-RH	Carbon 24" Right	50MS24SSA-RH	Stainless 24" Right
50MS24CSA-LH	Carbon 24" Left	50MS24SSA-LH	Stainless 24" Left

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### H: SPINNER SYSTEM COMPONENTS (2 OF 2)



ITEM	PART NO.	DESCRIPTION	QTY
7.	60UCP207-20	1 1/4" Pillow Block	2
8.	58HP1B-FT	Hub	2
9.	50P1125	1 1/4" Locking Hub	2

ITEM	PART NO.	DESCRIPTION	QTY
10.	52FFD200MS	Flow Divider	1
FLOW DIVIDER COMPONENTS			
	18FD-MSI-C	Insert	1
	52TFD-1	Teflon Block	1
	60UCFL202-10	5/8" Bearing	1
	52FDH	Flow Divider Handle	1

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

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## I: HYDRAULIC MOTORS

### SPINNER MOTORS

Motor            Part# 3121SDM25

Seal Kit        Part# 31M2100SK152025

Seal Installation Tool Part# 30Q1956-4 *\*\*This tool is required to properly install the double lip, high-pressure seal included with the motor seal kit.*

Please note that a complete exploded view diagram of the spinner motor is included in this section as well. It should be referenced for proper assembly / disassembly of the spinner motors and used to order other components..

### CONVEYOR / BED CHAIN DRIVE MOTORS

Motor            Part# 31BMRS200H2KS

Seal Kit        Part# 31BMRS Seal Kit

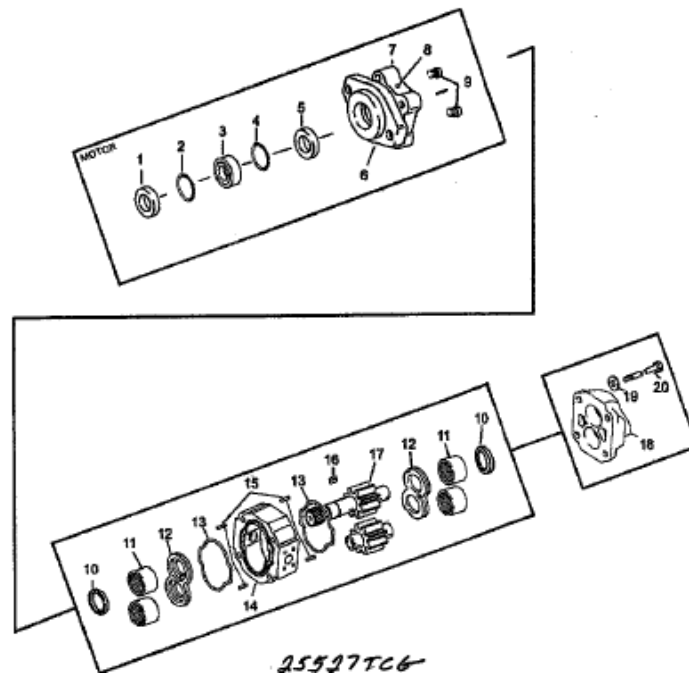
### HOSES

You can find hydraulic hoses locally

## ASSEMBLY IDENTIFICATION

MagnaSpread Pull-Type

### SPINNER MOTOR

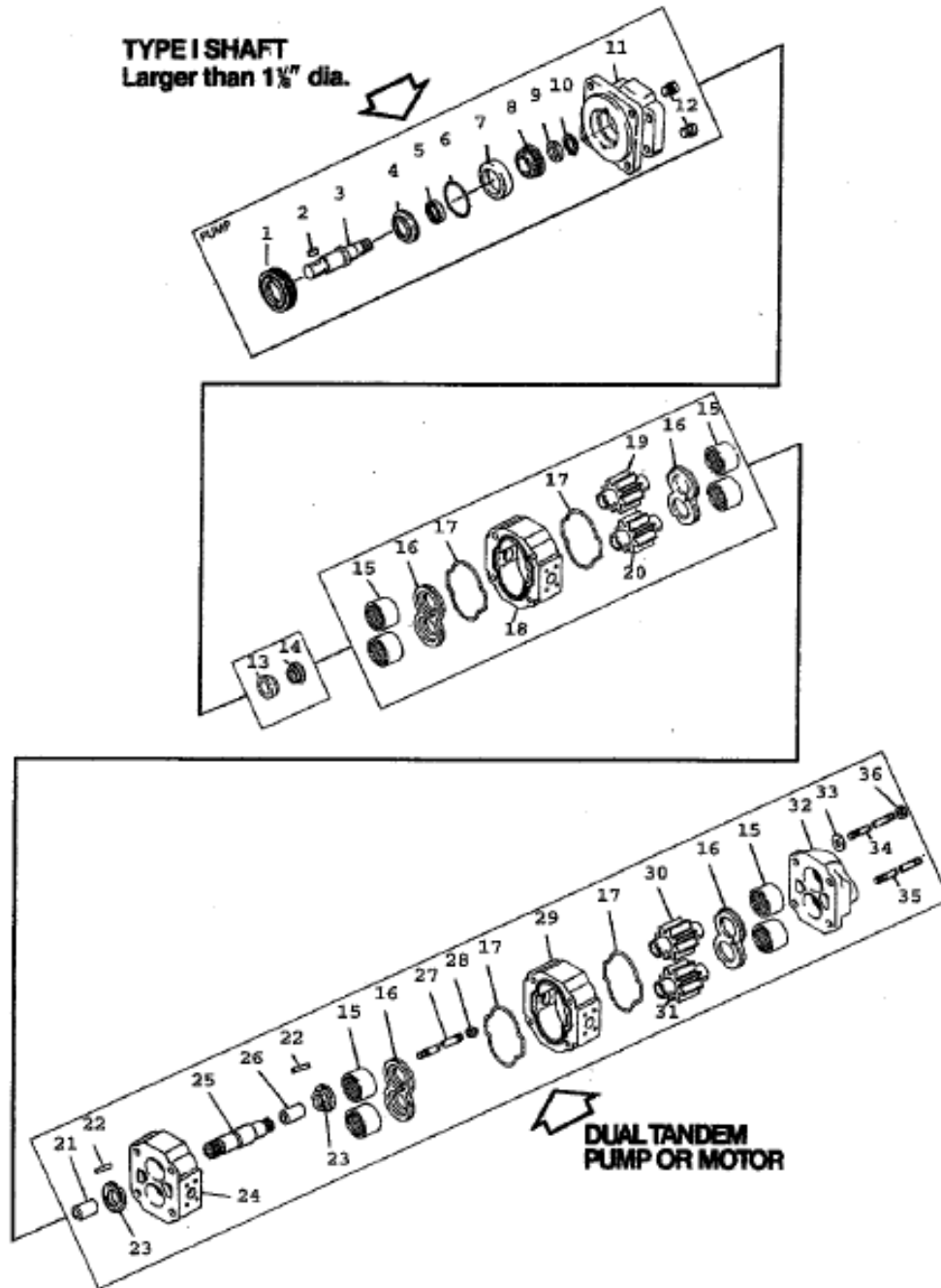


ITEM	PART NO.	DESCRIPTION	QTY
1.	25527TCG	Grease Seal	1
2.	W023-206	Snap Ring	1
3.	MZ-0961	Tell-Tale Seal Retainer	1
4.	K-2995-109	Seal Retainer O-Ring	1
5.	W62-49-9	Shaft Seal	1
6.		1/8" NPT Grease Fitting Hole	
7.		2-Bolt-B Shaft End Cover (SEC)	1
8.	W0-17	Pipe Plug 1/4" NPT for (SEC)	1
9.	L-0280-K	Check Valve Assembly	2
10.	KA-0558-1XS	Ring Seal	2
11.	X-0921	Roller Bearing	4
12.	ZZ-0947-TC	Thrust Plate	2
13.	K-2995-240	Gear Housing Gasket Seal	2
14.		Gear Housing	1
15.	280-1971-031	Dowel Pin	4
16.	W09-02	Shaft Key	1
17.		Gear Set	1
18.	592-00662	Port End Cover (PEC)	1
19.	W033-3	Washer 9/16"	4
20.		Hex Head Bolt	4

## ASSEMBLY IDENTIFICATION

MagnaSpread Pull-Type

### REMOTE MOUNT PUMP (1 OF 2)



## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

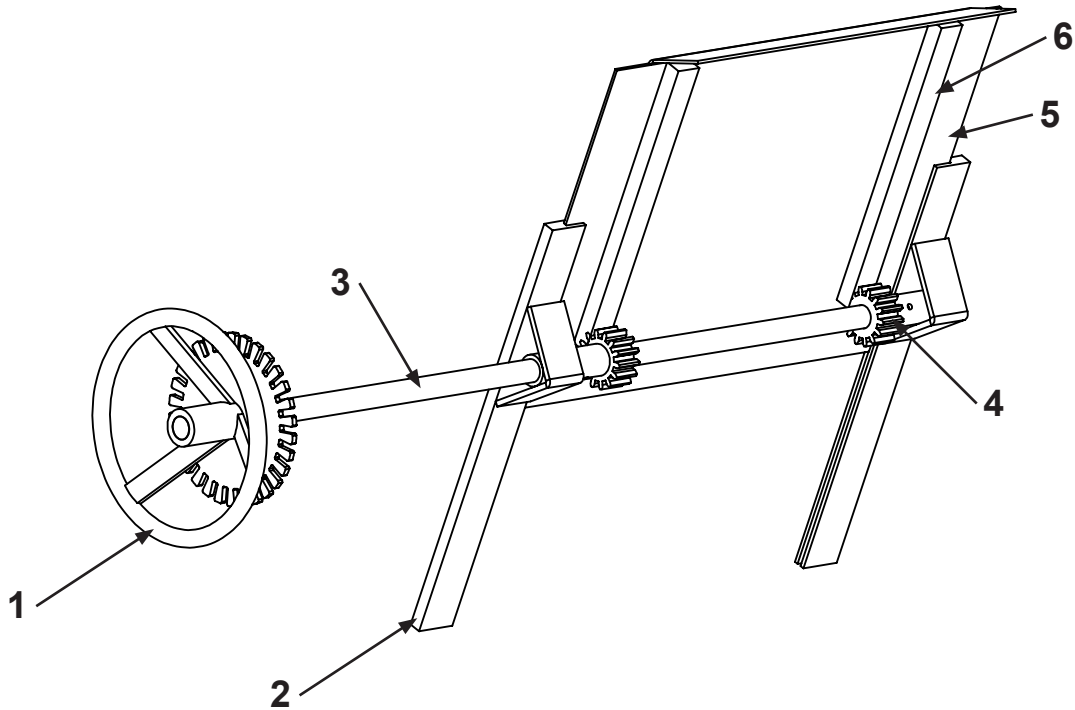
#### REMOTE MOUNT PUMP (2 OF 2)

ITEM	PART NO.	DESCRIPTION	QTY
1.	V-0961	Retainer Ring	1
2.	W09-27	Shaft Key	1
3.	QA-0024	Shaft 1 1/4" Dia. Keyed	1
4.	RZ-0558	Seal Retainer	1
5.	W62-26-13	Pump Shaft Seal	1
6.	K-2995-26	O-Ring	1
7 & 8.	W015-7	Taper Bearing	1
9.	XZ-0558-1	Shaft Spacer	1
10.	W86-100	Snap Ring	1
11.	RZ-0575-3	Type 1 Pad Mount (SEC)	1
12.	L-0280-K	Check Valve	2
13.	ZG-1909	Shaft Bushing	1
14.	Z-0216-182	Spring	1
15.	R-0921	Roller Bearing	8
16.	X-0947-TC	Thrust Plate	4
17.	TA-2995-244	Gear Housing Gasket Seal	4
18.	LZ-0577-25-5	Gear Housing 2 1/2"	1
19 & 20.	JZ-0996L-25	Gear Set 2 1/2"	1
21.	SZ-0408-9	Gear Spacer 2 1/8"	1
22.	W004-19	Roll Pin	2
23.	ZQ-1909	Shaft Bushing Slotted	2
24.	JA-0576	Bearing Carrier (BC)	1
25.	SZ-0022	Connecting Shaft	1
26.	SZ-0408-9	Gear Spacer 2 1/8"	1
27.	3/8"-16	Threaded Rod	1
28.	W78-05	Lock Nut	1
29.	LZ-0577-25-5	Gear Housing 2 1/2"	1
30 & 31.	JZ-0996L-25	Gear Set 2 1/2"	1
32.	QZ-0592	Port End Cover (PEC)	1
33.	W033-2	Washer 5/8"	4
34.	ZD-0391-125	Tie Bolt 12 1/2"	2
35.	ZD-0391-142	Tie Bolt 14 1/4"	2
36.	W3-65	Hex Nut 5/8" - 11	4

## ASSEMBLY IDENTIFICATION

### MagnaSpread Pull-Type

#### J. GATE COMPONENTS



ITEM	PART NO.	DESCRIPTION	QTY
1.	53GWB-7	Gate Wheel	1
2.	53GS	Gate Slide (Stainless)	2
3.	53GSS	Gate Shaft (Stainless)	1
4.	53GWS-2	Spur Gear	1
5.	53RG-2	Gate (Stainless)	1
6.	53GWS-3	Gear Rack	2
7.	53GGFT	Gate Gauge	1
8.	53RG-15	Gate with Gear Rack	1

## GROUND SPEED TABLES AND RATE CHARTS

### MagnaSpread Pull-Type

#### GROUND SPEED TABLES

To use the tables and charts follow these steps.

1. Choose the Ground Speed Table that corresponds to the preferred Rate Chart. (Low or High Application)
2. Make sure the Rate Chart corresponds to the swath width; And size and type of conveyor chain, i.e. 20" Mesh.
3. Determine ground speed for spreading.
4. Set Rear Roller RPM's according to the Ground Speed Table by adjusting the conveyor speed.
5. Set Gate Height according to Rate Chart.

##### LOW APPLICATION

Rear Roller RPM = Ground Speed

Speed (MPH)		Rear Roller RPM
4	=	4
5	=	5
6	=	6
7	=	7
8	=	8
9	=	9
10	=	10
11	=	11
12	=	12
13	=	13
14	=	14

##### HIGH APPLICATION

Rear Roller RPM = Ground Speed X 5

Speed (MPH)		Rear Roller RPM
4	=	20
5	=	25
6	=	30
7	=	35
8	=	40
9	=	45
10	=	50
11	=	55
12	=	60
13	=	65
14	=	70

# GROUND SPEED TABLES AND RATE CHARTS

## MagnaSpread Pull-Type

### 18" MESH CHAIN RATE CHART



#### MagnaSpread Pull-Type 18" Mesh Chain

470 S. Wayside St.  
Cornelia, GA 30531  
Ph: (706) 778-2767  
Fax: (706) 778-2787

#### LOW APPLICATION RATE

Spread Swath **80 ft**

Rear Roller RPM = Ground Speed (MPH)

GATE SETTING	12	11.5	11	10.5	10	9.5	9	8.5	8	7.5	7	6.5	6	5.5	5	4.5	4	3.5	3	2.5	2	1.5	1
MATERIAL DENSITY (PER CU. FT.)	418	400	383	366	348	331	313	296	279	261	244	226	209	192	174	157	139	122	104	87	70	52	35
45	470	451	431	411	392	372	353	333	313	294	274	255	235	215	196	176	157	137	118	98	78	59	39
50	522	501	479	457	435	414	392	370	348	326	305	283	261	239	218	196	174	152	131	109	87	65	44
55	575	551	527	503	479	455	431	407	383	359	335	311	287	263	239	215	192	168	144	120	96	72	48
60	627	601	575	548	522	496	470	444	418	392	366	340	313	287	261	235	209	183	157	131	104	78	52
65	679	651	622	594	566	538	509	481	453	424	396	368	340	311	283	255	226	199	170	141	113	85	57
70	731	701	670	640	609	579	548	518	488	457	427	396	366	335	305	274	244	213	183	152	122	91	61
75	783	751	718	686	653	620	588	555	522	490	458	424	392	359	326	294	261	229	196	163	131	98	65
80	836	801	766	731	696	662	627	592	557	522	488	453	418	383	348	313	279	244	209	174	141	104	74
85	888	851	814	777	740	703	666	629	592	555	518	481	444	407	370	333	296	259	222	185	148	111	78
90	940	901	862	823	783	744	705	666	627	588	548	509	469	429	389	349	309	269	229	189	149	109	79
95	992	951	910	868	827	786	744	703	662	621	580	539	498	457	416	375	334	293	252	211	170	129	88
100	1045	1001	958	914	871	827	783	740	696	653	609	566	522	479	435	392	348	305	261	218	174	131	87

#### HIGH APPLICATION RATE

Spread Swath **60 ft**

Rear Roller RPM = Ground Speed (MPH) x 5

GATE SETTING	12	11.5	11	10.5	10	9.5	9	8.5	8	7.5	7	6.5	6	5.5	5	4.5	4	3.5	3	2.5	2	1.5	1
MATERIAL DENSITY (PER CU. FT.)	2767	2652	2536	2421	2306	2191	2075	1960	1845	1729	1614	1499	1384	1268	1153	1038	922	807	692	576	461	346	231
45	3113	2983	2853	2724	2594	2464	2335	2205	2075	1946	1816	1686	1556	1427	1297	1167	1038	908	778	649	519	389	259
50	3459	3315	3171	3026	2882	2738	2594	2450	2306	2162	2018	1874	1729	1585	1441	1297	1153	1009	865	721	576	432	288
55	3805	3646	3488	3329	3171	3012	2853	2695	2536	2378	2219	2061	1902	1744	1585	1427	1268	1109	951	793	634	476	317
60	4151	3978	3805	3632	3459	3286	3113	2940	2767	2594	2421	2248	2075	1902	1729	1556	1384	1211	1038	865	692	519	346
65	4496	4309	4122	3934	3747	3560	3372	3185	2998	2810	2623	2436	2248	2061	1874	1686	1499	1311	1124	937	749	562	375
70	4842	4641	4439	4237	4035	3833	3632	3430	3228	3026	2825	2623	2421	2219	2018	1816	1614	1412	1211	1009	807	605	404
75	5188	5003	4756	4540	4323	4107	3891	3675	3459	3243	3026	2810	2594	2378	2162	1946	1729	1513	1297	1081	865	649	432
80	5534	5303	5073	4842	4612	4381	4151	3920	3689	3459	3228	2998	2767	2536	2306	2075	1845	1614	1384	1153	922	692	461
85	5880	5635	5390	5145	4900	4655	4410	4165	3920	3675	3430	3185	2940	2695	2450	2205	1960	1715	1470	1225	980	735	490
90	6226	5966	5707	5448	5188	4929	4669	4410	4151	3891	3632	3372	3113	2853	2594	2335	2075	1816	1556	1297	1038	778	519
95	6572	6298	6024	5750	5476	5203	4929	4655	4381	4107	3833	3560	3286	3012	2738	2464	2191	1917	1643	1369	1095	821	548
100	6918	6629	6341	6053	5765	5476	5188	4900	4612	4323	4035	3747	3459	3171	2882	2594	2306	2018	1729	1441	1153	865	576

1) Locate Material Weight per Cubic Foot at the bottom of the desired chart.

NOTE: If the weight per cubic foot is not known, weigh one gallon of material and multiply by 7.5. This will give your approximate material weight per cubic foot.

(5 gal. X 1.5 = Approx. 1 cubic foot)

2) Look up the column vertically to find the amount of Material you want to Spread per Acre.

3) Move left across the row to locate the Gate Setting required for your application.

**CAUTION:** This Chart is CORRECT only for the specific type of spreader noted at the top of this chart, and for the application rate (High or Low) and swath as noted.



# GROUND SPEED TABLES AND RATE CHARTS

## MagnaSpread Pull-Type

### 20" MESH CHAIN RATE CHART

**BBI**  
BARRON & BROTHERS INTERNATIONAL

**MagnaSpread Pull-Type**  
20" Mesh Chain

470 S. Wayside St.  
Cornelia, GA 30531  
Ph: (706) 778-2767  
Fax: (706) 778-2787

**LOW APPLICATION RATE**

Rear Roller RPM = Ground Speed (MPH)

Spread Swath **80 ft**

**HIGH APPLICATION RATE**

Rear Roller RPM = Ground Speed (MPH) x 5

Spread Swath **60 ft**

GATE SETTING	12	474	534	593	652	711	771	830	889	949	1008	1067	1127	1186
	11.5	455	511	568	625	682	739	795	852	909	966	1023	1080	1136
	11	435	489	543	598	652	707	761	815	870	924	978	1033	1087
	10.5	415	467	519	571	623	674	726	778	830	882	934	986	1038
	10	395	445	494	543	593	642	692	741	791	840	889	939	988
	9.5	376	422	469	516	563	610	657	704	751	798	845	892	939
	9	356	400	445	489	534	578	623	667	711	756	800	845	889
	8.5	336	378	420	462	504	546	588	630	672	714	756	798	840
	8	316	356	395	435	474	514	553	593	632	672	711	751	791
	7.5	296	334	371	408	445	482	519	556	593	630	667	704	741
	7	277	311	346	380	415	450	484	519	553	588	623	657	692
	6.5	257	289	321	353	385	418	450	482	514	546	578	610	642
	6	237	267	296	326	356	385	415	445	474	504	534	563	593
	5.5	217	245	272	299	326	353	380	408	435	462	489	516	543
	5	198	222	247	272	296	321	346	371	395	420	445	469	494

40 45 50 55 60 65 70 75 80 85 90 95 100

MATERIAL DENSITY (PER CU. FT.)

GATE SETTING	12	3141	3534	3926	4319	4711	5104	5497	5889	6282	6674	7067	7460	7852
	11.5	3010	3386	3763	4139	4515	4891	5268	5644	6020	6396	6773	7149	7525
	11	2879	3239	3599	3959	4319	4679	5039	5398	5758	6118	6478	6838	7198
	10.5	2748	3092	3435	3779	4122	4466	4810	5153	5497	5840	6184	6527	6871
	10	2617	2945	3272	3599	3926	4253	4581	4908	5235	5562	5889	6216	6544
	9.5	2487	2797	3108	3419	3730	4041	4352	4662	4973	5284	5595	5906	6216
	9	2356	2650	2945	3239	3534	3828	4122	4417	4711	5006	5300	5595	5889
	8.5	2225	2503	2781	3059	3337	3615	3893	4172	4450	4728	5006	5284	5562
	8	2094	2356	2617	2879	3141	3403	3664	3926	4188	4450	4711	4973	5235
	7.5	1963	2208	2454	2699	2945	3190	3435	3681	3926	4172	4417	4662	4908
	7	1832	2061	2290	2519	2748	2977	3206	3435	3664	3893	4122	4352	4581
	6.5	1701	1914	2127	2339	2552	2765	2977	3190	3403	3615	3828	4041	4253
	6	1570	1767	1963	2159	2356	2552	2748	2945	3141	3337	3534	3730	3926
	5.5	1440	1620	1799	1979	2159	2339	2519	2699	2879	3059	3239	3419	3599
	5	1309	1472	1636	1799	1963	2127	2290	2454	2617	2781	2945	3108	3272

40 45 50 55 60 65 70 75 80 85 90 95 100

MATERIAL DENSITY (PER CU. FT.)

1) Locate Material Weight per Cubic Foot at the bottom of the desired chart.

NOTE: If the weight per cubic foot is not known, weigh one gallon of material and multiply by 7.5. This will give your approximate material weight per cubic foot.

(5 gal. X 1.5 = Approx. 1 cubic foot)

2) Look up the column vertically to find the amount of Material you want to Spread per Acre.

3) Move left across the row to locate the Gate Setting required for your application.

**CAUTION:** This Chart is CORRECT only for the specific type of spreader noted at the top of this chart, and for the application rate (High or Low) and swath as noted.

# GROUND SPEED TABLES AND RATE CHARTS

## MagnaSpread Pull-Type

### 20" BAR CHAIN RATE CHART

**BBI**  
BARRON & BROTHERS INTERNATIONAL

**MagnaSpread Pull-Type**  
20" BAR Chain - 7-Tooth Cog

470 S. Wayside St.  
Cornelia, GA 30531  
Ph: (706) 778-2767  
Fax: (706) 778-2787

LOW APPLICATION RATE															Spread Swath 80 ft														
Rear Roller RPM = Ground Speed (MPH)																													
GATE SETTING	12	631	710	789	868	947	1026	1105	1184	1263	1341	1420	1499	1578															
	11.5	605	681	756	832	907	983	1059	1134	1210	1286	1361	1437	1512															
	11	579	651	723	796	868	940	1013	1085	1157	1230	1302	1374	1447															
	10.5	552	621	690	759	829	898	967	1036	1105	1174	1243	1312	1381															
	10	526	592	658	723	789	855	921	986	1052	1118	1184	1249	1315															
	9.5	500	562	625	687	750	812	875	937	999	1062	1124	1187	1249															
	9	473	533	592	651	710	769	829	888	947	1006	1065	1124	1184															
	8.5	447	503	559	615	671	727	782	838	894	950	1006	1062	1118															
	8	421	473	526	579	631	684	736	789	842	894	947	999	1052															
	7.5	395	444	493	542	592	641	690	740	789	838	888	937	986															
	7	368	414	460	506	552	598	644	690	736	782	829	875	921															
	6.5	342	385	427	470	513	556	598	641	684	727	769	812	855															
	6	316	355	395	434	473	513	552	592	631	671	710	750	789															
	5.5	289	325	362	398	434	470	506	542	579	615	651	687	723															
	5	263	296	329	362	395	427	460	493	526	559	592	625	658															
4.5	237	266	296	325	355	385	414	444	473	503	533	562	592																
4	210	237	263	289	316	342	368	395	421	447	473	500	526																
3.5	184	207	230	253	276	299	322	345	368	391	414	437	460																
3	158	178	197	217	237	256	276	296	316	335	355	375	395																
2.5	132	148	164	181	197	214	230	247	263	279	296	312	329																
2	105	118	132	145	158	171	184	197	210	224	237	250	263																
1.5	79	89	99	108	118	128	138	148	158	168	178	187	197																
1	53	59	66	72	79	85	92	99	105	112	118	125	132																
MATERIAL DENSITY (PER CU. FT.)																													
40 45 50 55 60 65 70 75 80 85 90 95 100																													


HIGH APPLICATION RATE															Spread Swath 60 ft														
Rear Roller RPM = Ground Speed (MPH) x 5																													
GATE SETTING	12	4180	4703	5225	5748	6270	6793	7315	7838	8360	8883	9405	9928	10450															
	11.5	4006	4507	5007	5508	6009	6510	7010	7511	8012	8513	9013	9514	10015															
	11	3832	4311	4790	5269	5748	6227	6706	7185	7664	8143	8622	9100	9579															
	10.5	3658	4115	4572	5029	5486	5944	6401	6858	7315	7772	8230	8687	9144															
	10	3483	3919	4354	4790	5225	5661	6096	6531	6967	7402	7838	8273	8709															
	9.5	3309	3723	4137	4550	4964	5378	5791	6205	6619	7032	7446	7860	8273															
	9	3135	3527	3919	4311	4703	5095	5486	5878	6270	6662	7054	7446	7838															
	8.5	2961	3331	3701	4071	4441	4812	5182	5552	5922	6292	6662	7032	7402															
	8	2787	3135	3483	3832	4180	4528	4877	5225	5574	5922	6270	6619	6967															
	7.5	2613	2939	3266	3592	3919	4245	4572	4899	5225	5552	5878	6205	6531															
	7	2438	2743	3048	3353	3658	3962	4267	4572	4877	5182	5486	5791	6096															
	6.5	2264	2547	2830	3113	3396	3679	3962	4245	4528	4812	5095	5378	5661															
	6	2090	2351	2613	2874	3135	3396	3658	3919	4180	4441	4703	4964	5225															
	5.5	1916	2155	2395	2634	2874	3113	3353	3592	3832	4071	4311	4550	4790															
	5	1742	1959	2177	2395	2613	2830	3048	3266	3483	3701	3919	4137	4354															
4.5	1568	1763	1959	2155	2351	2547	2743	2939	3135	3331	3527	3723	3919																
4	1393	1568	1742	1916	2090	2264	2438	2613	2787	2961	3135	3309	3483																
3.5	1219	1372	1524	1676	1829	1981	2134	2286	2438	2591	2743	2896	3048																
3	1045	1176	1306	1437	1568	1698	1829	1959	2090	2221	2351	2482	2613																
2.5	871	980	1089	1197	1306	1415	1524	1633	1742	1851	1959	2068	2177																
2	697	784	871	958	1045	1132	1219	1306	1393	1480	1568	1655	1742																
1.5	523	588	653	718	784	849	914	980	1045	1110	1176	1241	1306																
1	348	392	435	479	523	566	610	653	697	740	784	827	871																
MATERIAL DENSITY (PER CU. FT.)																													
40 45 50 55 60 65 70 75 80 85 90 95 100																													

1) Locate Material Weight per Cubic Foot at the bottom of the desired chart.  
NOTE: If the weight per cubic foot is not known, weigh one gallon of material and multiply by 7.5. This will give your approximate material weight per cubic foot.  
(5 gal. X 1.5 = Approx. 1 cubic foot)  
2) Look up the column vertically to find the amount of Material you want to Spread per Acre.  
3) Move left across the row to locate the Gate Setting required for your application.  
**CAUTION:** This Chart is CORRECT only for the specific type of spreader noted at the top of this chart, and for the application rate (High or Low) and swath as noted.

# GROUND SPEED TABLES AND RATE CHARTS

## MagnaSpread Pull-Type

### 24" BAR CHAIN RATE CHART



**BBI**  
BARRON & BROTHERS INTERNATIONAL

# MagnaSpread Pull-Type

24" BAR Chain - 7-Tooth Cog

470 S. Wayside St.  
Cornelia, GA 30531  
Ph: (706) 778-2767  
Fax: (706) 778-2787

## LOW APPLICATION RATE

Rear Roller RPM = Ground Speed (MPH)

Spread Swath **80 ft**

## HIGH APPLICATION RATE

Rear Roller RPM = Ground Speed (MPH) x 5

Spread Swath **60 ft**

GATE SETTING

12	789	888	986	1085	1184	1282	1381	1480	1578	1677	1775	1874	1973
11.5	756	851	945	1040	1134	1229	1323	1418	1512	1607	1701	1796	1890
11	723	814	904	995	1085	1175	1266	1356	1447	1537	1627	1718	1808
10.5	690	777	863	949	1036	1122	1208	1295	1381	1467	1553	1640	1726
10	658	740	822	904	986	1069	1151	1233	1315	1397	1480	1562	1644
9.5	625	703	781	859	937	1015	1093	1171	1249	1327	1406	1484	1562
9	592	666	740	814	888	962	1036	1110	1184	1258	1332	1406	1480
8.5	559	629	699	769	838	908	978	1048	1118	1188	1258	1327	1397
8	526	592	658	723	789	855	921	986	1052	1118	1184	1249	1315
7.5	493	555	616	678	740	801	863	925	986	1048	1110	1171	1233
7	460	518	575	633	690	748	806	863	921	978	1036	1093	1151
6.5	427	481	534	588	641	695	748	801	855	908	962	1015	1069
6	395	444	493	542	592	641	690	740	789	838	888	937	986
5.5	362	407	452	497	542	588	633	678	723	769	814	859	904
5	329	370	411	452	493	534	575	616	658	699	740	781	822
4.5	296	333	370	407	444	481	518	555	592	629	666	703	740
4	263	296	329	362	395	427	460	493	526	559	592	625	658
3.5	230	259	288	316	345	374	403	432	460	489	518	547	575
3	197	222	247	271	296	321	345	370	395	419	444	469	493
2.5	164	185	205	226	247	267	288	308	329	349	370	390	411
2	132	148	164	181	197	214	230	247	263	279	296	312	329
1.5	99	111	123	136	148	160	173	185	197	210	222	234	247
1	66	74	82	90	99	107	115	123	132	140	148	156	164

MATERIAL DENSITY (PER CU. FT.)

GATE SETTING

12	5225	5878	6531	7185	7838	8491	9144	9797	10450	11103	11757	12410	13063
11.5	5007	5633	6259	6885	7511	8137	8763	9389	10015	10641	11267	11893	12519
11	4790	5388	5987	6586	7185	7783	8382	8981	9579	10178	10777	11376	11974
10.5	4572	5144	5715	6287	6858	7430	8001	8573	9144	9716	10287	10859	11430
10	4354	4899	5443	5987	6531	7076	7620	8164	8709	9253	9797	10341	10886
9.5	4137	4654	5171	5688	6205	6722	7239	7756	8273	8790	9307	9824	10341
9	3919	4409	4899	5388	5878	6368	6858	7348	7838	8328	8817	9307	9797
8.5	3701	4164	4626	5089	5552	6014	6477	6940	7402	7865	8328	8790	9253
8	3483	3919	4354	4790	5225	5661	6096	6531	6967	7402	7838	8273	8709
7.5	3266	3674	4082	4490	4899	5307	5715	6123	6531	6940	7348	7756	8164
7	3048	3429	3810	4191	4572	4953	5334	5715	6096	6477	6858	7239	7620
6.5	2830	3184	3538	3892	4245	4599	4953	5307	5661	6014	6368	6722	7076
6	2613	2939	3266	3592	3919	4245	4572	4899	5225	5552	5878	6205	6531
5.5	2395	2694	2994	3293	3592	3892	4191	4490	4790	5089	5388	5688	5987
5	2177	2449	2721	2994	3266	3538	3810	4082	4354	4626	4899	5171	5443
4.5	1959	2204	2449	2694	2939	3184	3429	3674	3919	4164	4409	4654	4899
4	1742	1959	2177	2395	2613	2830	3048	3266	3483	3701	3919	4137	4354
3.5	1524	1715	1905	2096	2286	2477	2667	2858	3048	3239	3429	3620	3810
3	1306	1470	1633	1796	1959	2123	2286	2449	2613	2776	2939	3102	3266
2.5	1089	1225	1361	1497	1633	1769	1905	2041	2177	2313	2449	2585	2721
2	871	980	1089	1197	1306	1415	1524	1633	1742	1851	1959	2068	2177
1.5	653	735	816	898	980	1061	1143	1225	1306	1388	1470	1551	1633
1	435	490	544	599	653	708	762	816	871	925	980	1034	1089

MATERIAL DENSITY (PER CU. FT.)

1) Locate Material Weight per Cubic Foot at the bottom of the desired chart.

NOTE: If the weight per cubic foot is not known, weigh one gallon of material and multiply by 7.5. This will give your approximate material weight per cubic foot.

(5 gal. X 1.5 = Approx. 1 cubic foot)

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**NOTES**