

WARRANTY REGISTRATION FORMS AND PROCEDURES

Javelin Pull-Type

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, faxed to: 706-778-2787,
or mailed to: BBI Spreaders P.O. Box 630 Cornelia, GA 30531.

DELIVERY INSPECTION - DEALER COPY

Javelin 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: _____

Signature of Set-Up Person

Dealer Name

Date

CUSTOMER'S WARRANTY REGISTRATION - DEALER COPY

Javelin Pull-Type

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

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

Javelin 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

Javelin Pull-Type

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Javelin Pull-Type

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TRACTOR-SUPPLIED HYDRAULICS - **BBI COPY**

Javelin Pull-Type

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Signature of Dealer

Dealer Name

Date

Signature of Customer

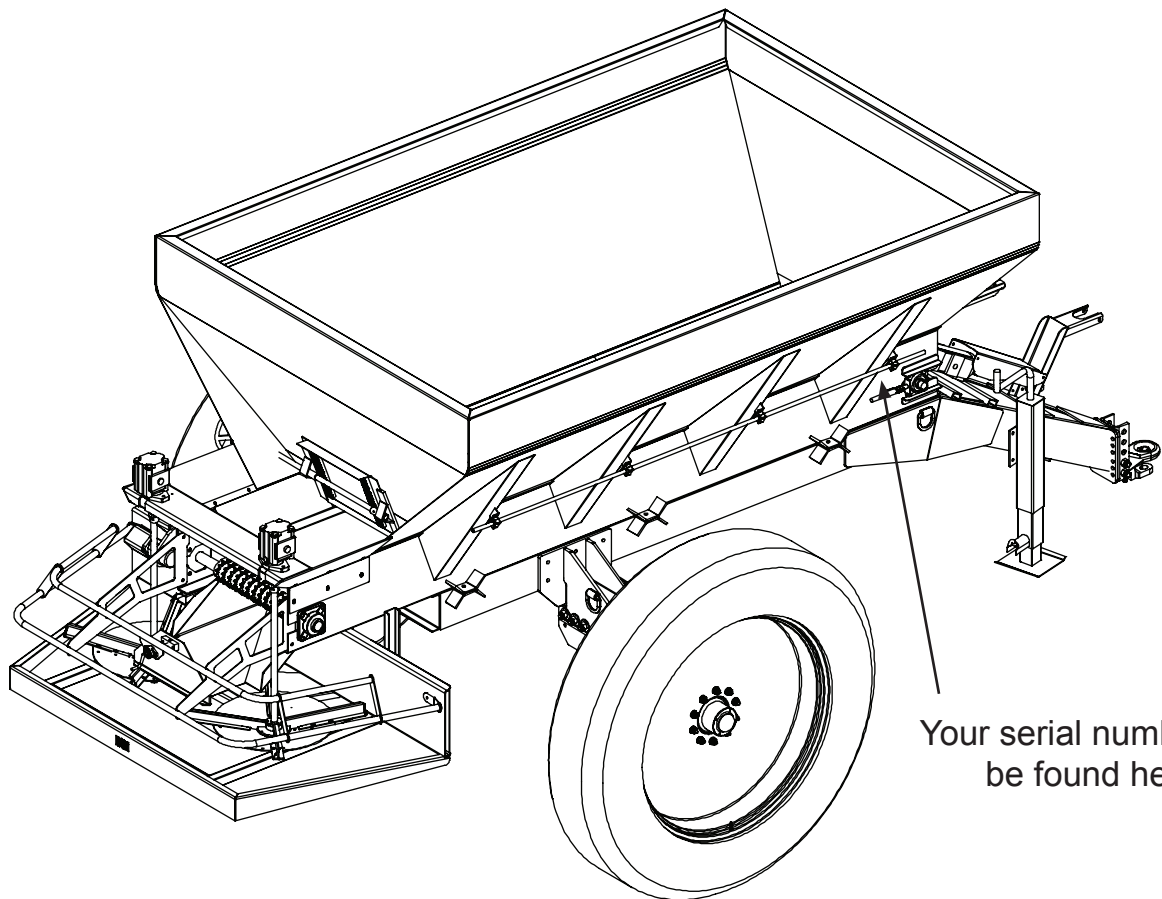
Customer Name

Date



OPERATOR MANUAL

This manual is valid for all Javelin Pull-Type configurations



Your serial number can
be found here:



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Javelin 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.

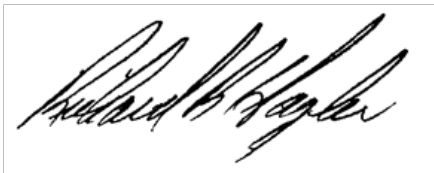
Our parts department stands ready to serve you with replacement parts at affordable prices. We stock a large inventory to assure support for our customers, and take pride in offering “same day service” for those orders received before mid-afternoon.

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

Javelin Pull-Type

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Javelin Pull-Type

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Signature of Customer

Customer Name

Date

TRACTOR-SUPPLIED HYDRAULICS - CUSTOMER COPY

Javelin 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

Javelin Pull-Type

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

Javelin Pull-Type

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

Javelin 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.

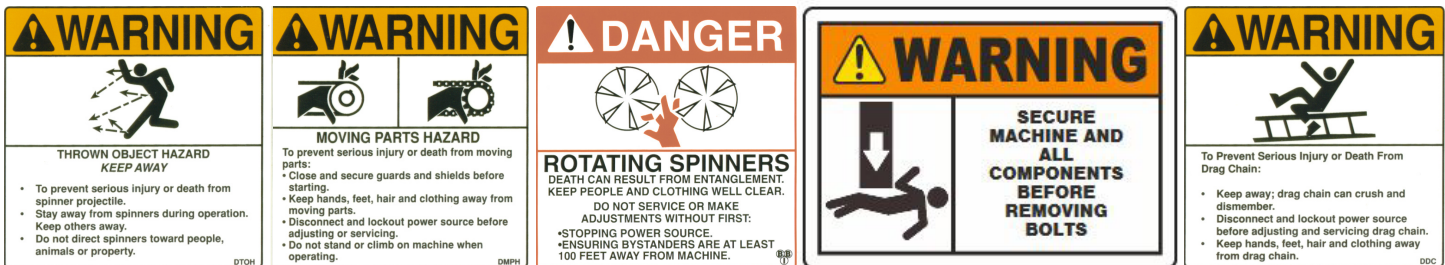
- National Safety Council

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

Javelin Pull-Type

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

Javelin Pull-Type

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

Javelin 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!

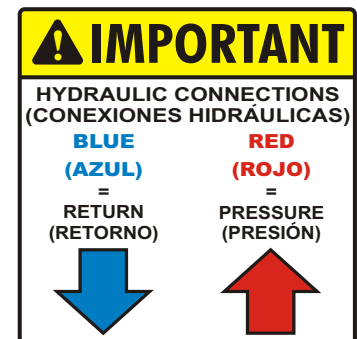
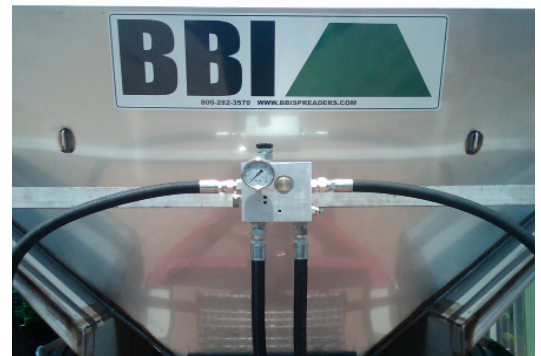


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2. SELF-CONTAINED HYDRAULIC SYSTEM

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

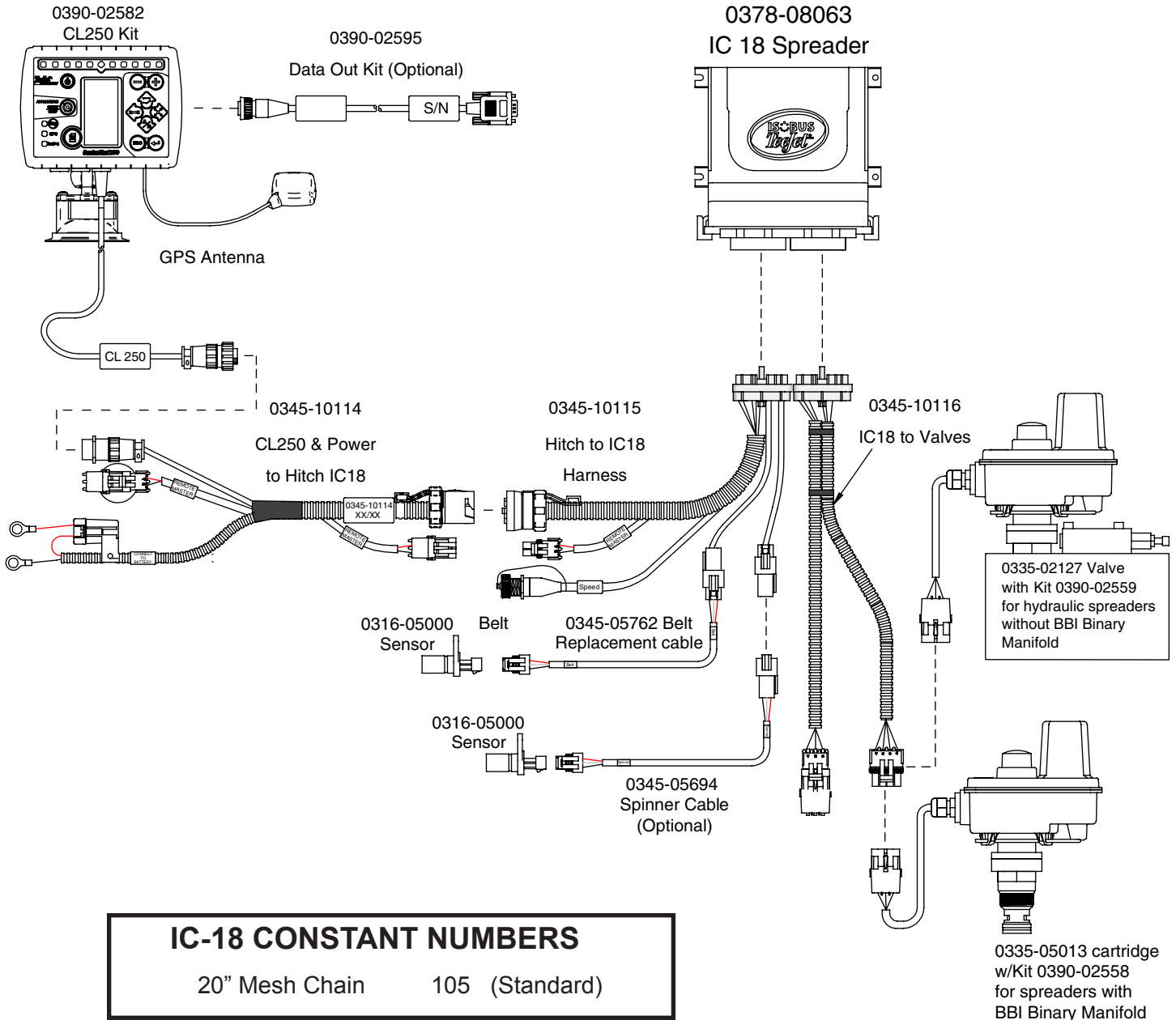
Never attempt to work on or repair this piece of equipment while it is running. The PTO and/or any other power source must be completely disengaged while working on this unit.

IDENTIFYING COMPONENTS

Javelin Pull-Type

COMPONENTS OF THE STANDARD CL 250 STRAIGHT-RATE CONTROLLER

The CenterLine 250 - IC18 Electronic Control platform comes standard with the Javelin 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.

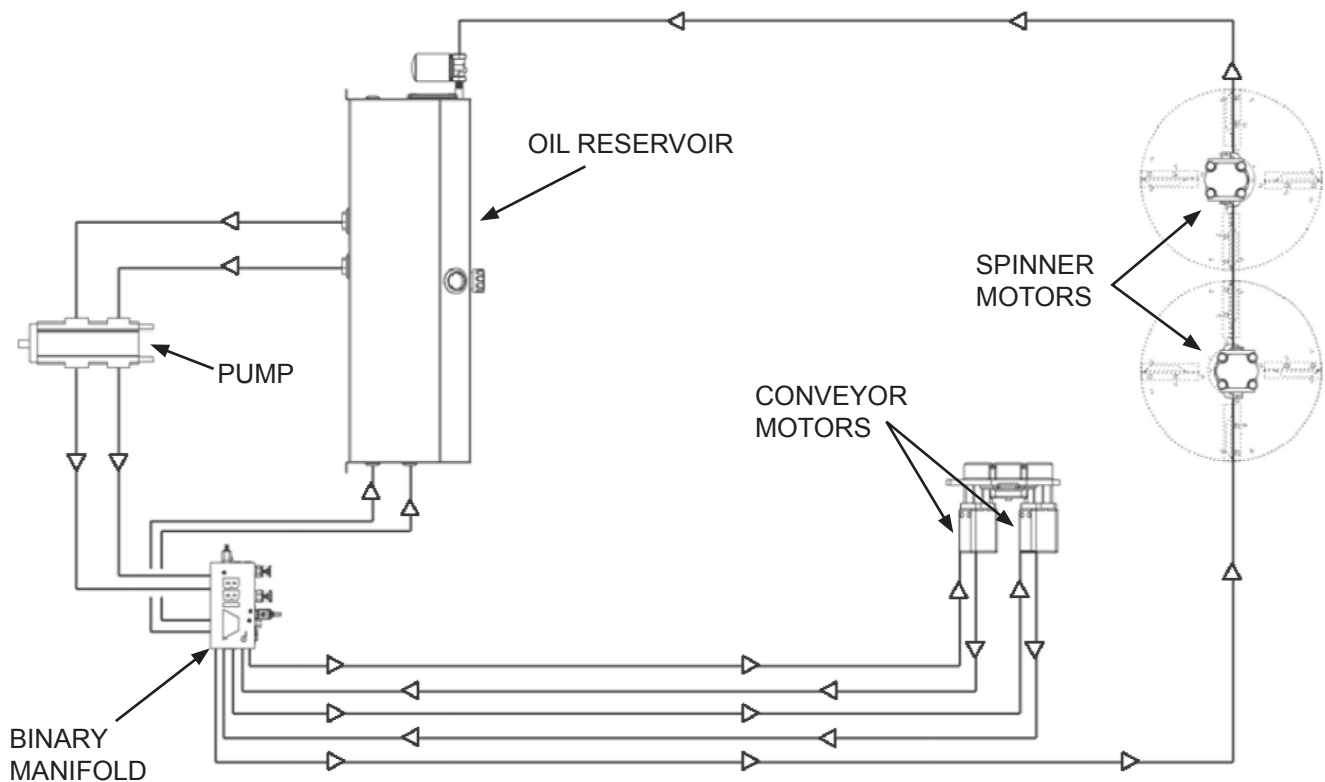
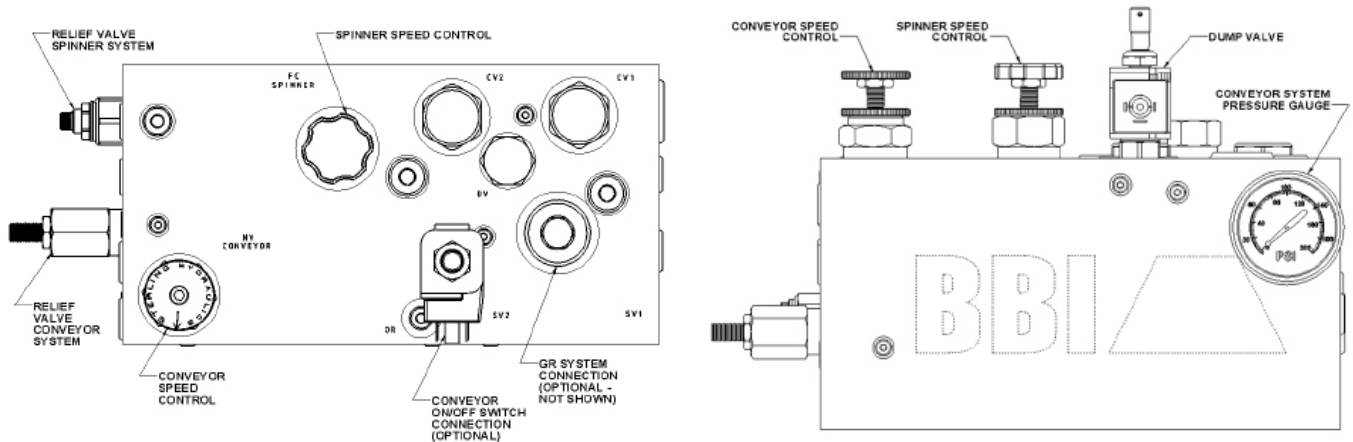


IDENTIFYING COMPONENTS

Javelin 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.

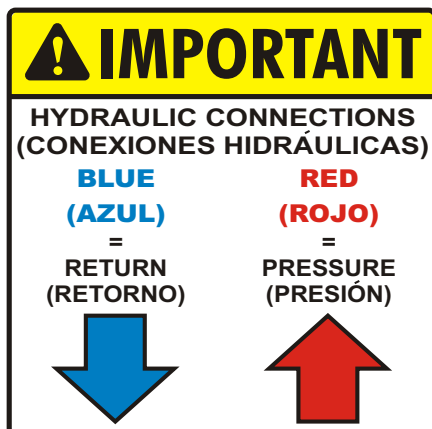
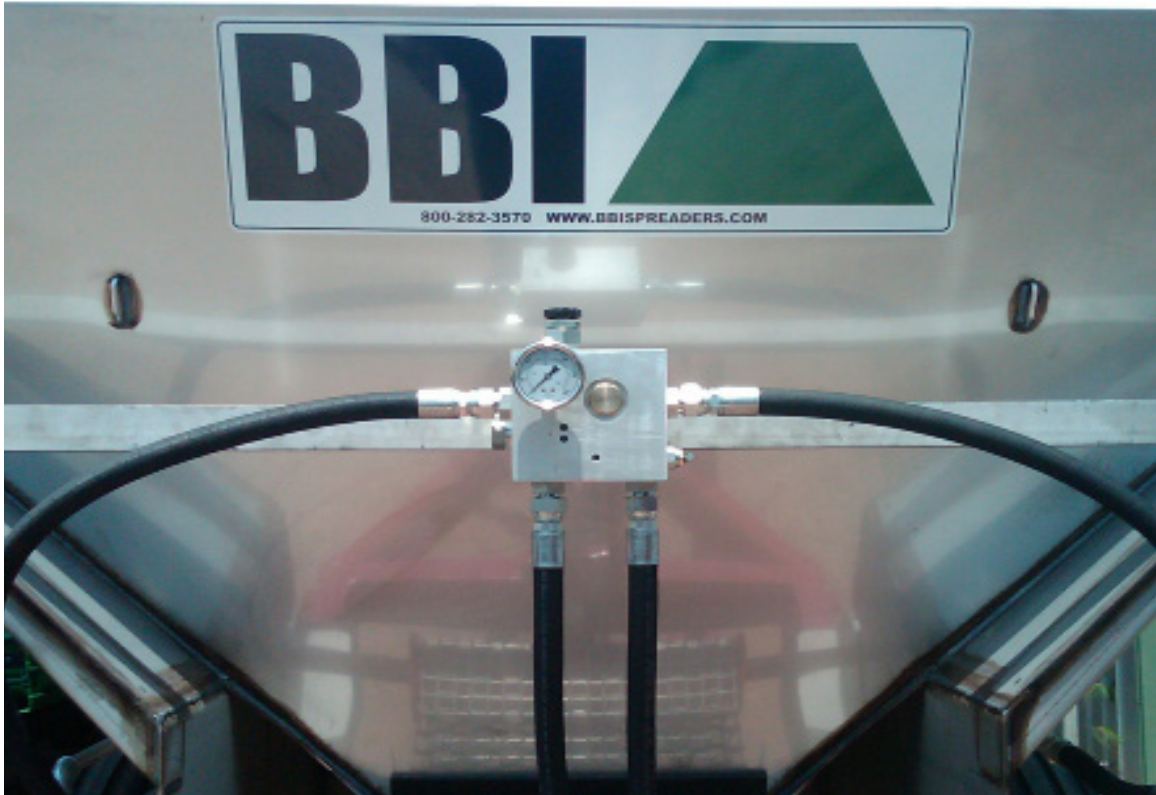


IDENTIFYING COMPONENTS

Javelin 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.



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.

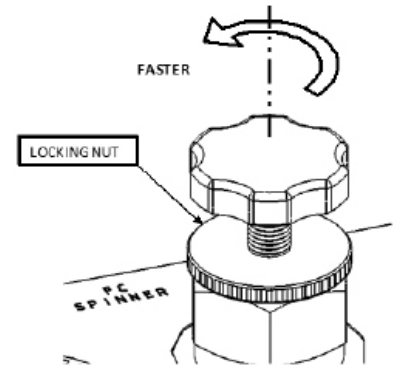
IDENTIFYING COMPONENTS - MANUAL CONTROLS

Javelin 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.

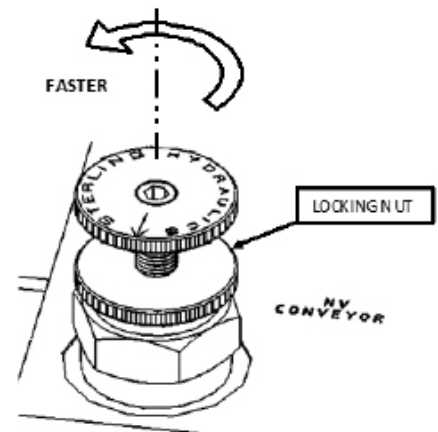


CONVEYOR SPEED - MANUAL FLOW CONTROL

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.

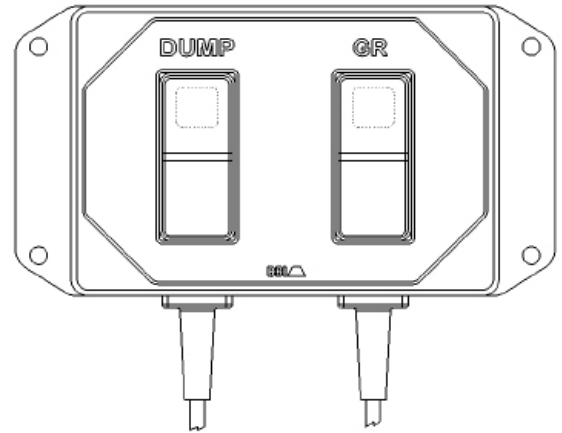


IDENTIFYING COMPONENTS - ADDITIONAL PERFORMANCE

Javelin Pull-Type

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.

FIELD TESTING

Javelin Pull-Type

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

Javelin spreaders are capable of accurately broadcasting a consistent, flat pattern of material up to 120 feet wide. *The equipment may throw material at much greater distances, but the most effective patterns are most likely at distances between 100-120 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 120 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

Javelin 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 100 to 120 feet will be sufficient to check most spreaders.

SWATH WIDTH	NUMBER OF PANS NEEDED	INCHES BETWEEN EACH PAN (center to center)
100'	17	75"
120'	17	90"

SPREAD TEST

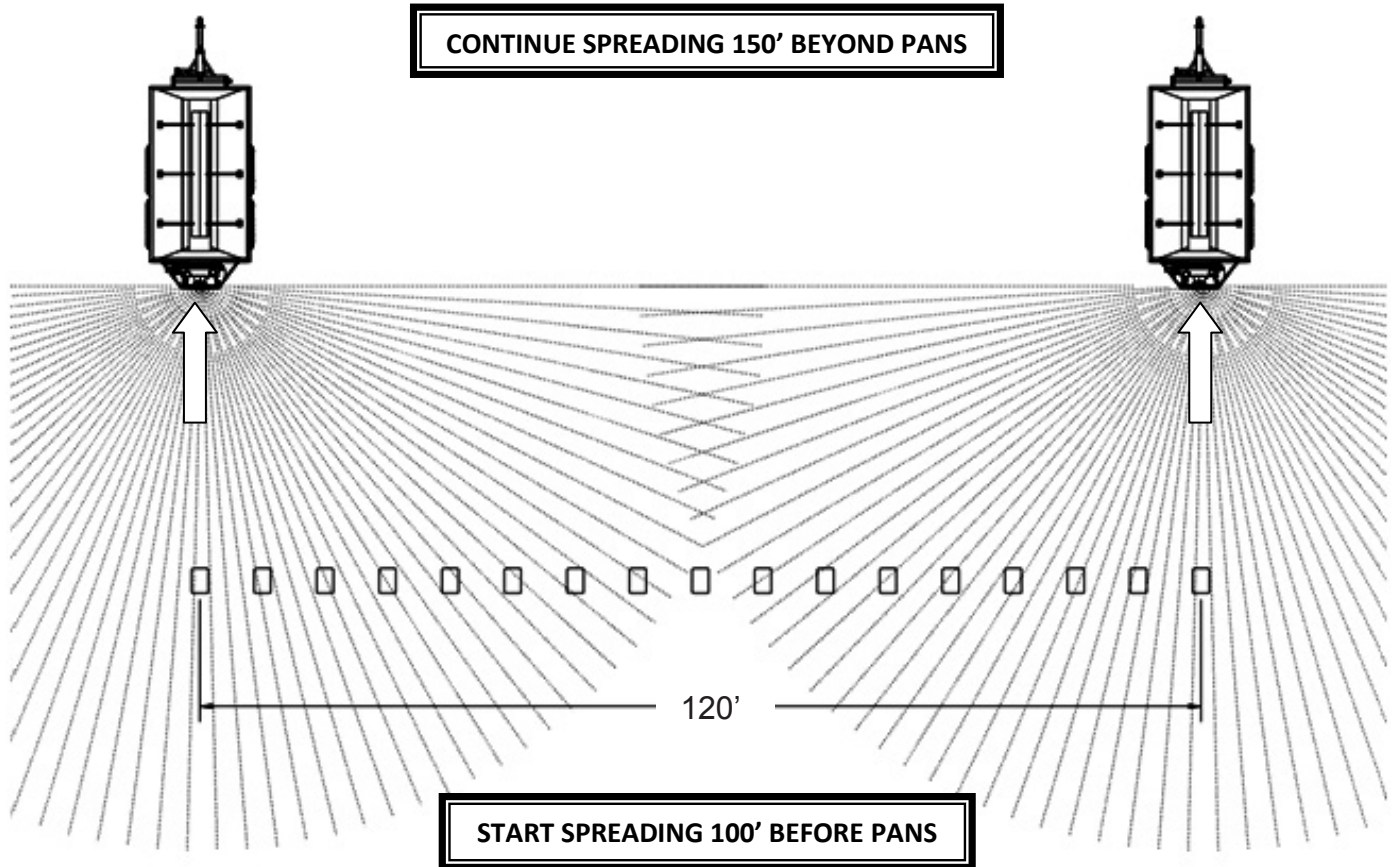
To get a true representation of the spread pattern, you'll need two passes across the pans. On the first pass, line up the spreader with one of the pans on the end. Start spreading material at least 100 feet before the pans and continue at least 150 feet beyond the pans. Repeat the process for the second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

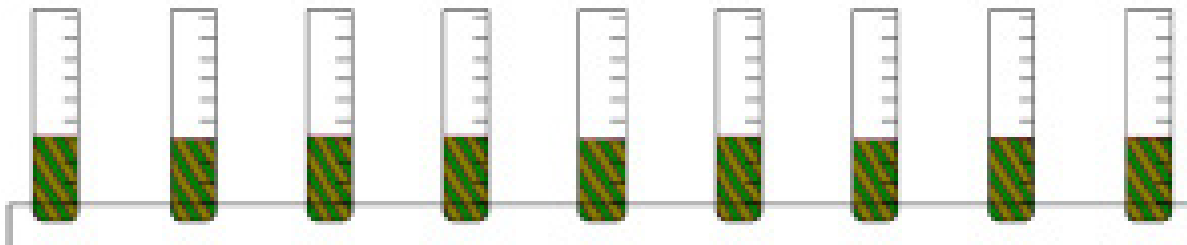
Javelin Pull-Type



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.

Javelin 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

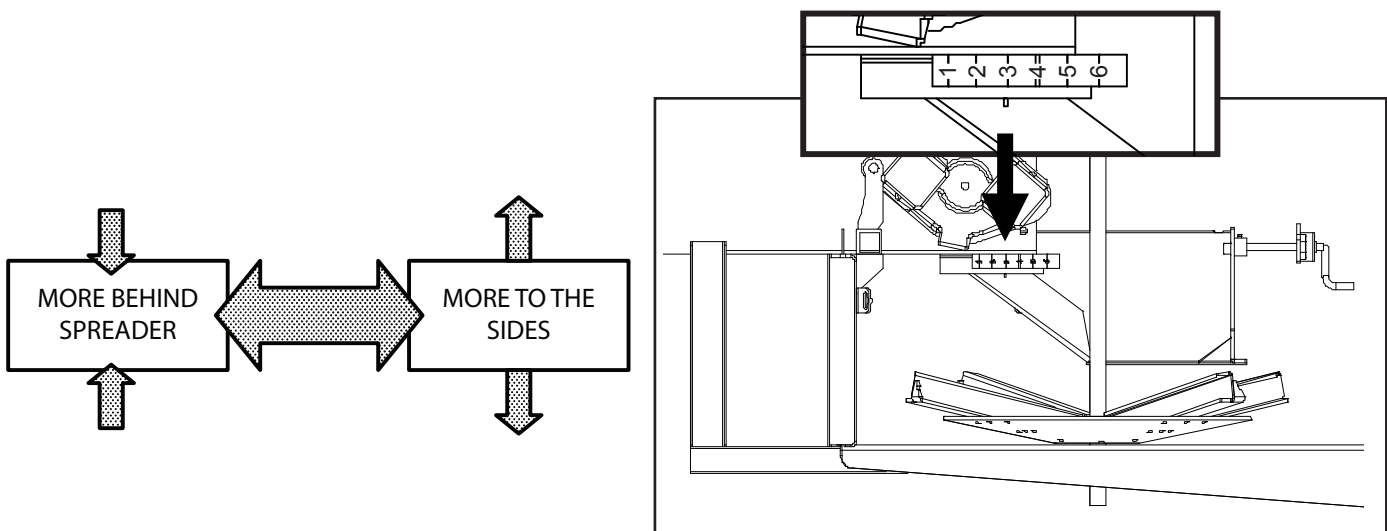
Javelin Pull-Type

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.



As a starting point, set the flow divider on 3 when spreading fertilizer

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:

Fertilizer = 3

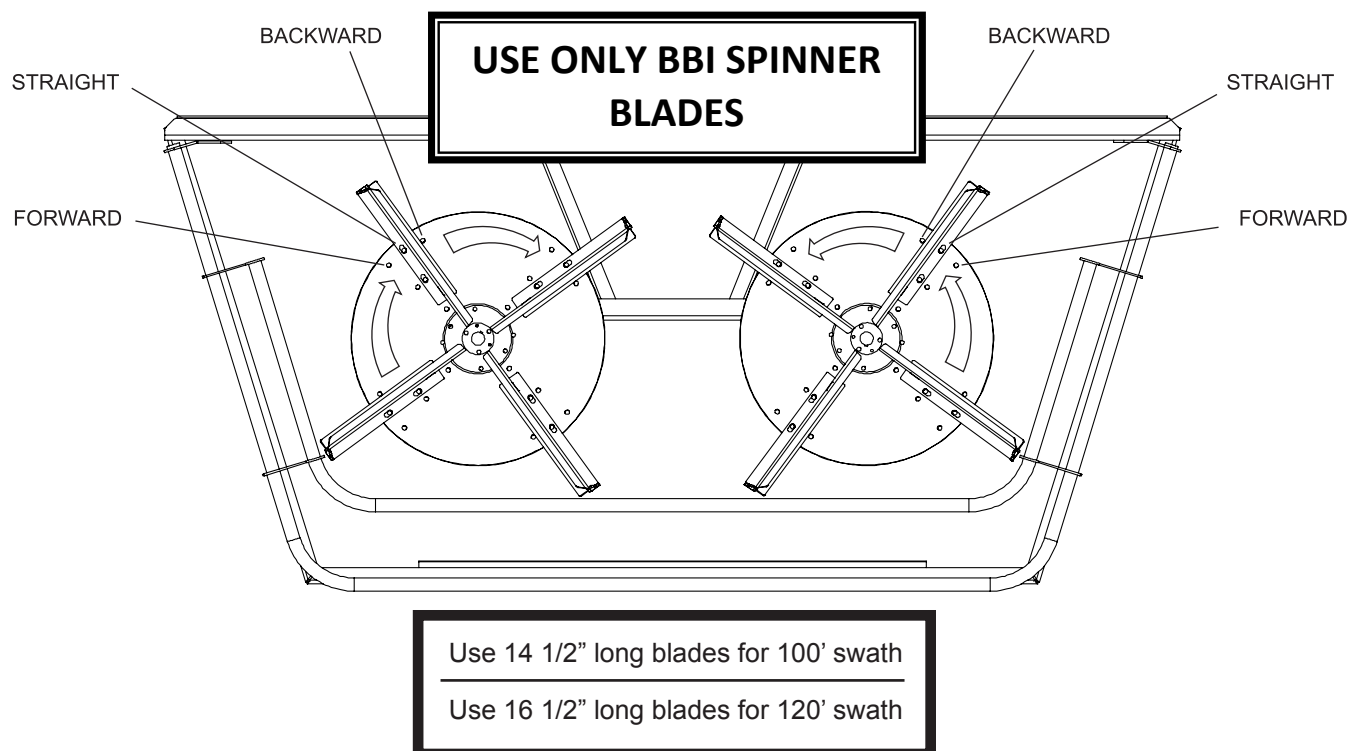
Materials need customer-specific adaptation to suit regional variations. Please be sure to adjust your flow divider when changing materials to optimize the spread pattern.

MACHINE OPERATION

Javelin Pull-Type

SPINNER BLADES

The Javelin is equipped with two sets of spinner blades. 14" Blades for spreading 100' wide and 16" Blades for 120' wide. 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

14 1/2" Spinner Blades

Fertilizer (100 ft Wide) = 900 RPM

16 1/2" Spinner Blades

Fertilizer (120 ft Wide) = 1000 RPM

MACHINE OPERATION

Javelin 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:

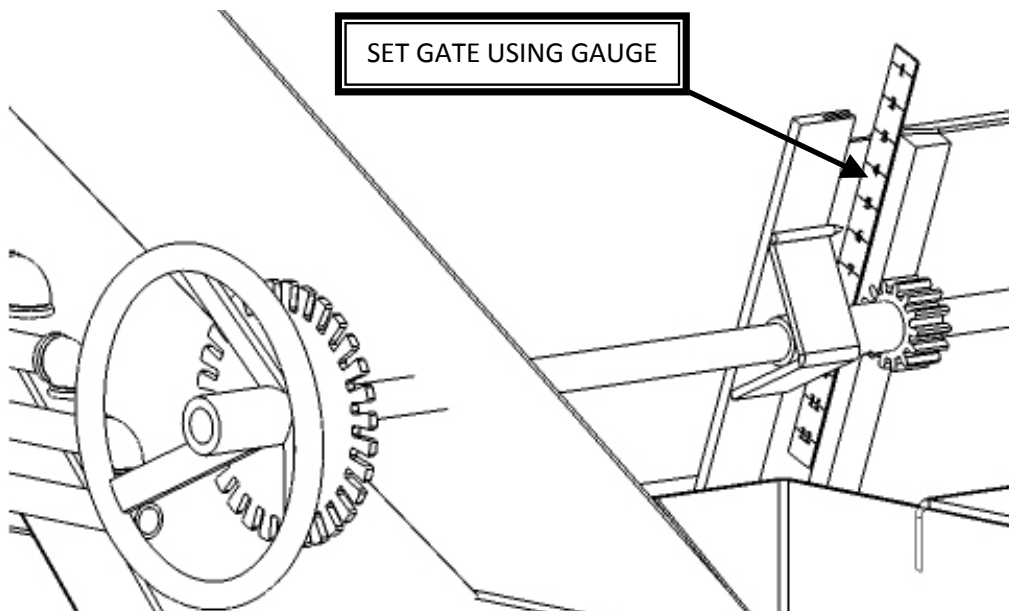
<http://bbispreadernews.com/faq/>

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

Javelin Pull-Type

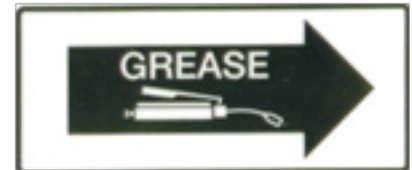
MAINTENANCE

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).

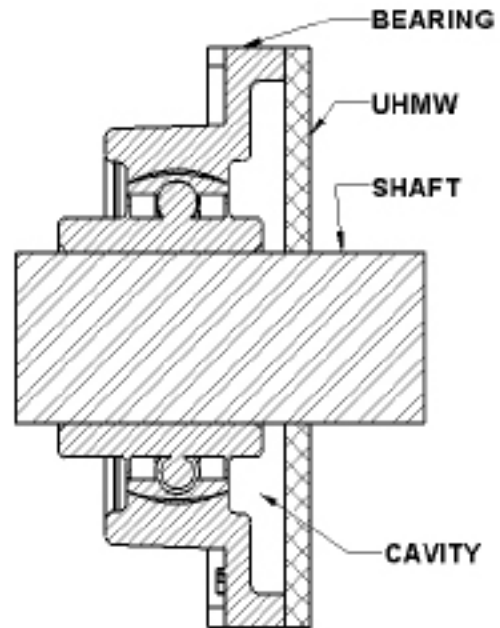
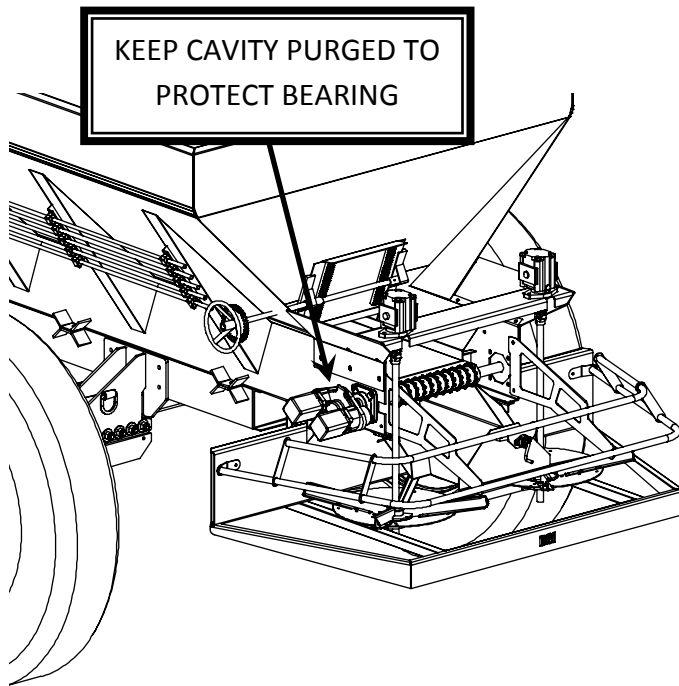
Note: BBI has filled Gearboxes with 90-weight oil at the factory. You should replace the factory oil after the first 50 hours of break-in time. Thereafter, you should drain and refill the oil after every season.

LUBRICATION AND MAINTENANCE

Javelin 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.

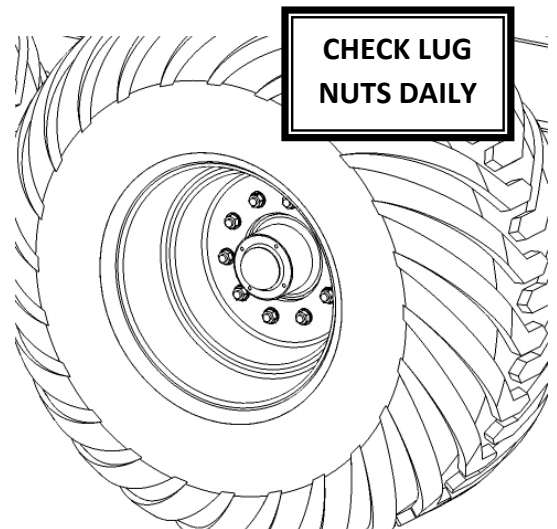


FASTENERS

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.



IMPORTANT!

Tightening lug nuts more than recommended can damage wheels.



MESH CHAIN TENSION AND ADJUSTMENT

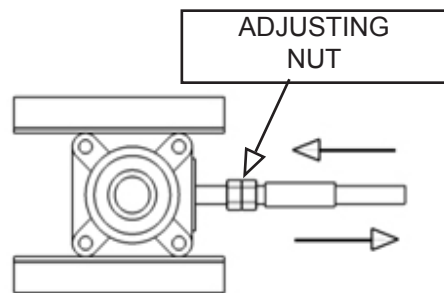
Javelin Pull-Type

MESH CHAIN TENSION

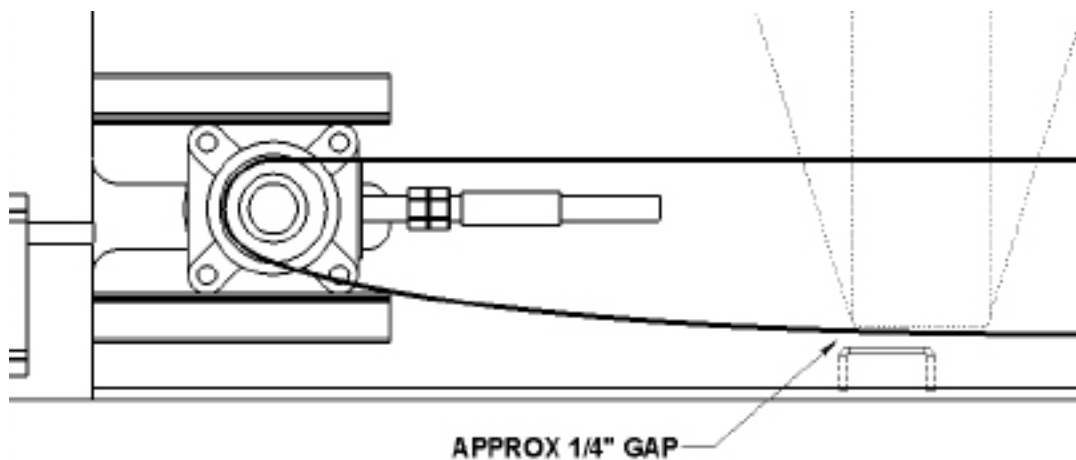
It is very important to monitor and adjust a mesh chain during the first couple of applications. This is particularly important with heavy product like lime. During the first few applications check the chain after each load and adjust accordingly.

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.*

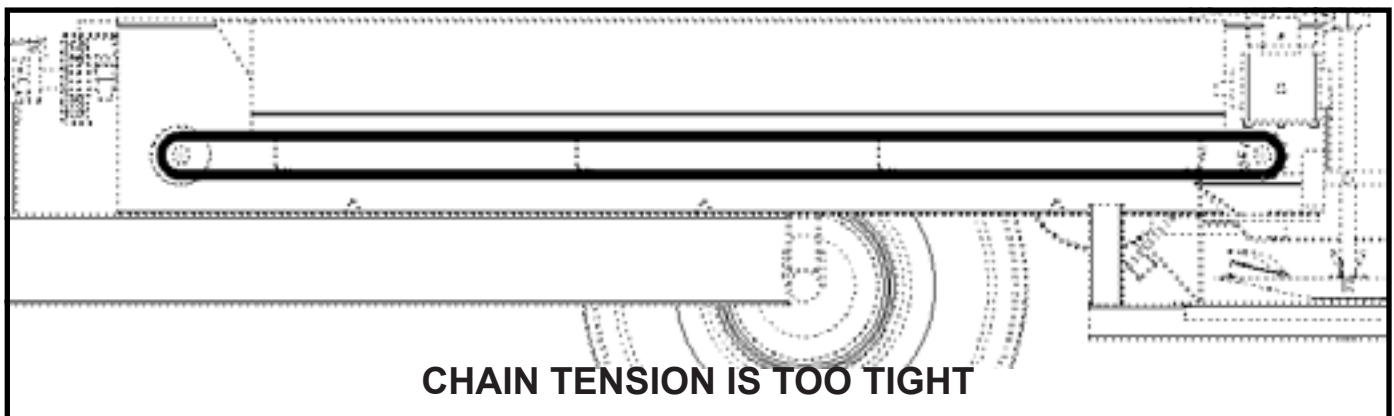
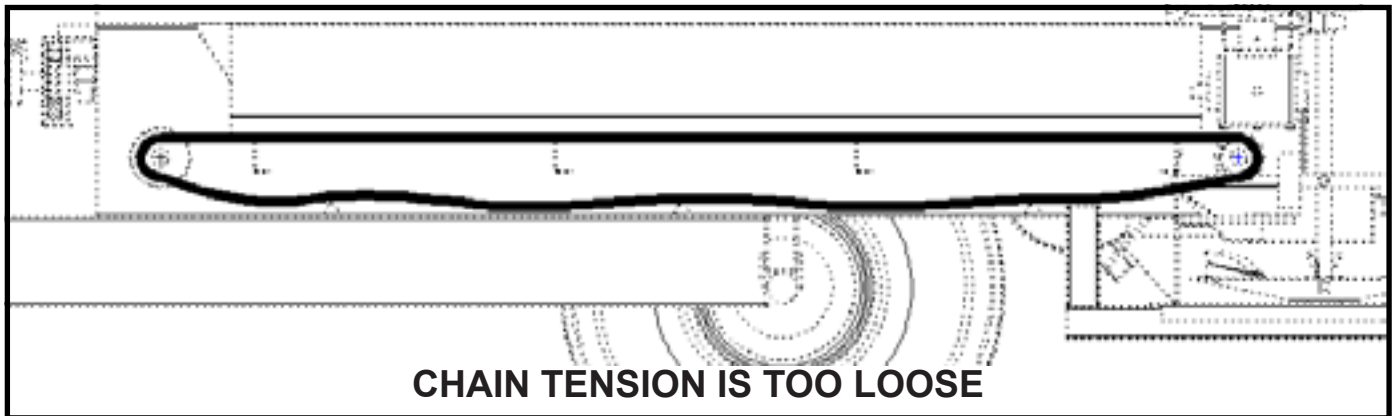
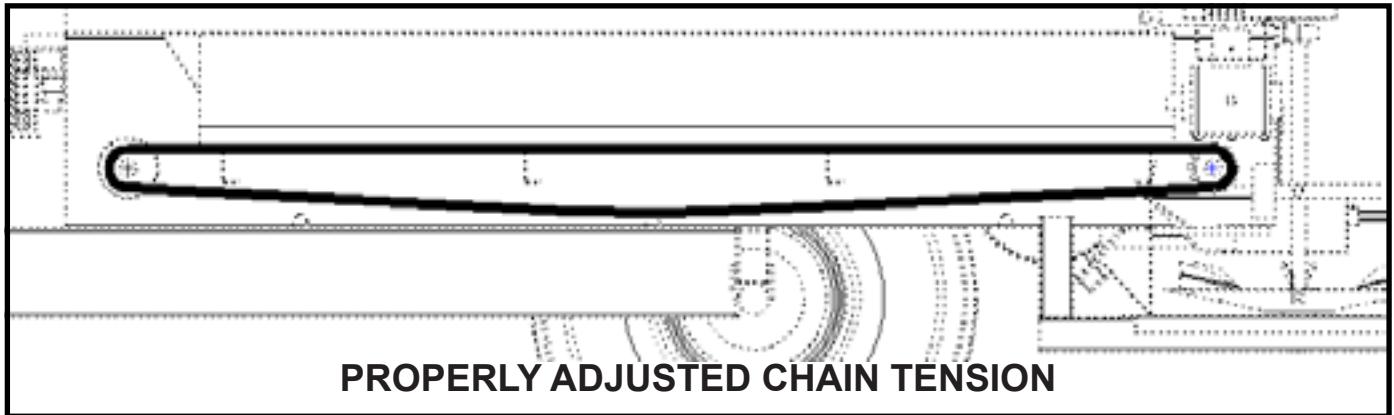
MESH CHAIN TENSION AND ADJUSTMENT

Javelin 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

Javelin Pull-Type

HYDRAULIC SYSTEM

WARNING!



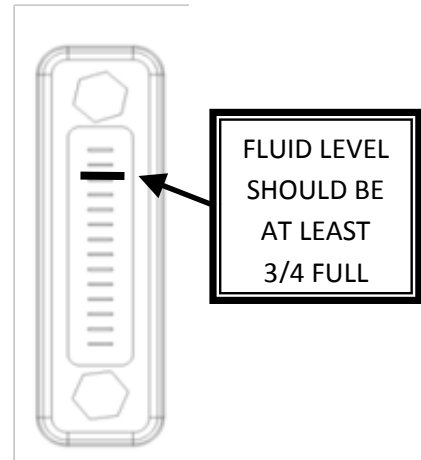
DO NOT check for leaks while system is operating, as high-pressure oil leaks can be dangerous!

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.

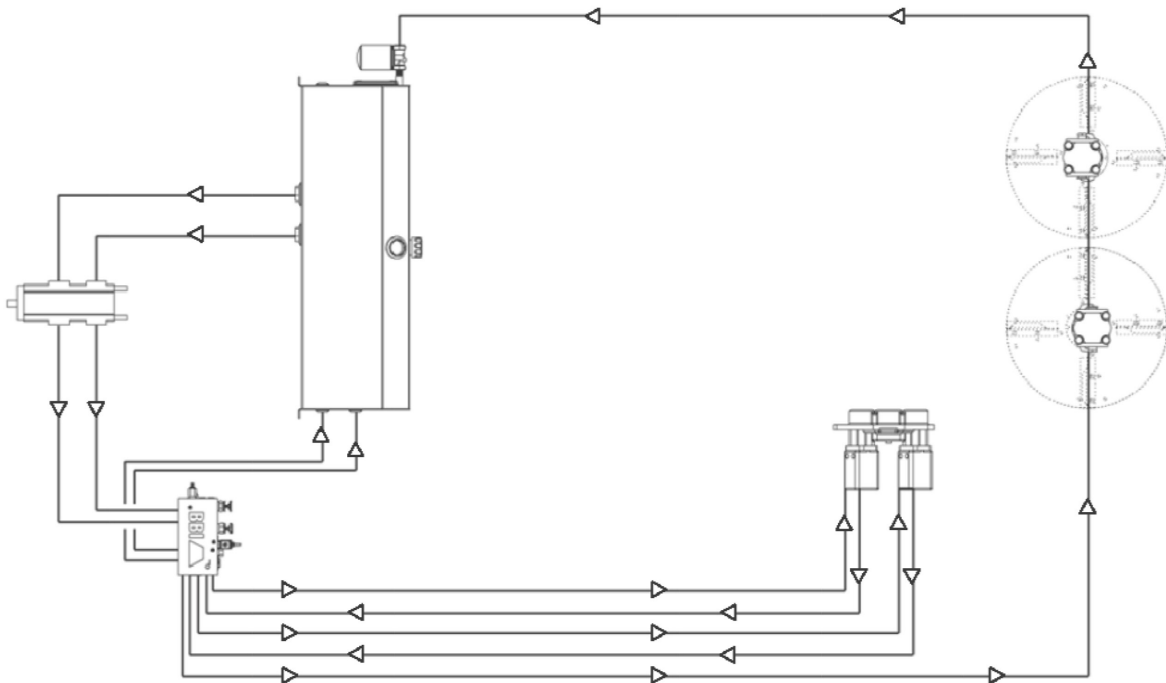
Check the hydraulic fluid level before every use. The system holds approximately 35-40 gallons of fluid. A sight gauge located on the reservoir will indicate the fluid level. Fluid should fill at least three-quarters of the way up the gauge.



FILTERS

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

HYDRAULIC DIAGRAM



TIPS & TRICKS

Javelin Pull-Type

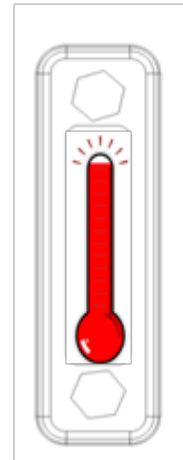
TIPS & TRICKS

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!



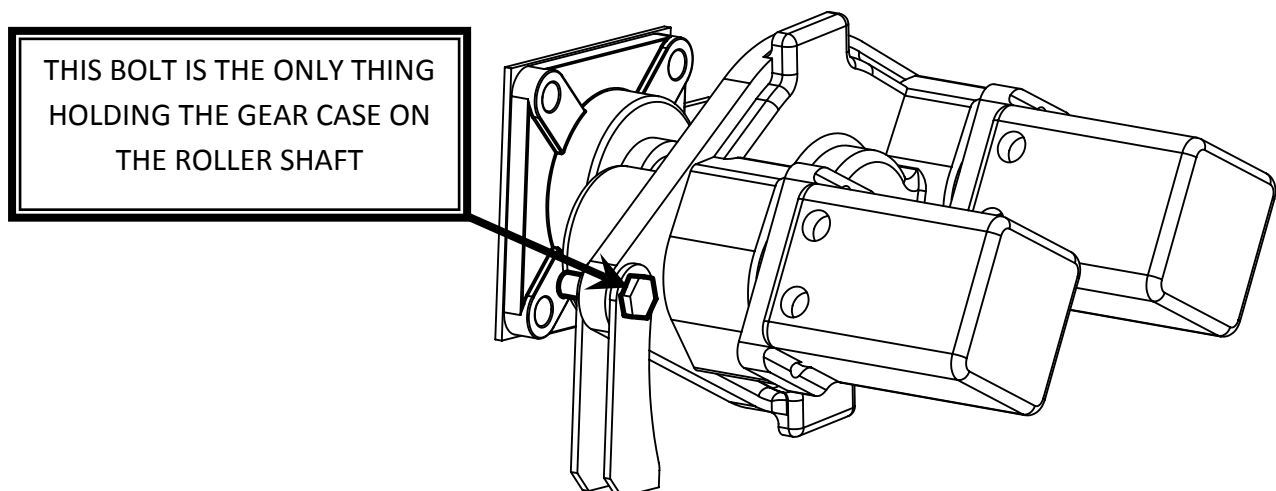
Be aware of the capacity of the hopper compared to the hydraulic system and suspension. It is possible to overload the spreader with a heavy material. Overloading can cause many different problems with the spreader such as suspension damage, overheated hydraulic fluid, excessive conveyor chain stretching,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

Javelin Pull-Type

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:	_____

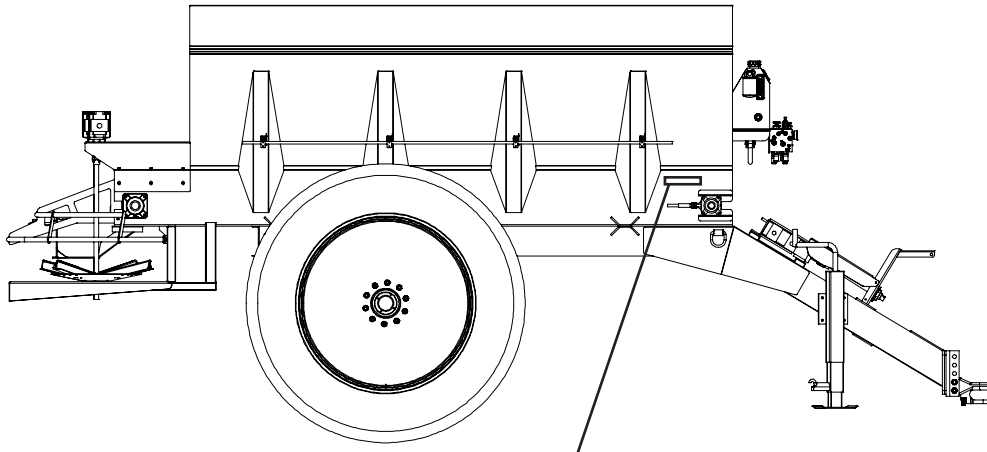
SHIPPING DAMAGE

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

Javelin Pull-Type



Serial number is located here - it is comprised of 4 digits. Please have this number available when ordering replacement parts.

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:

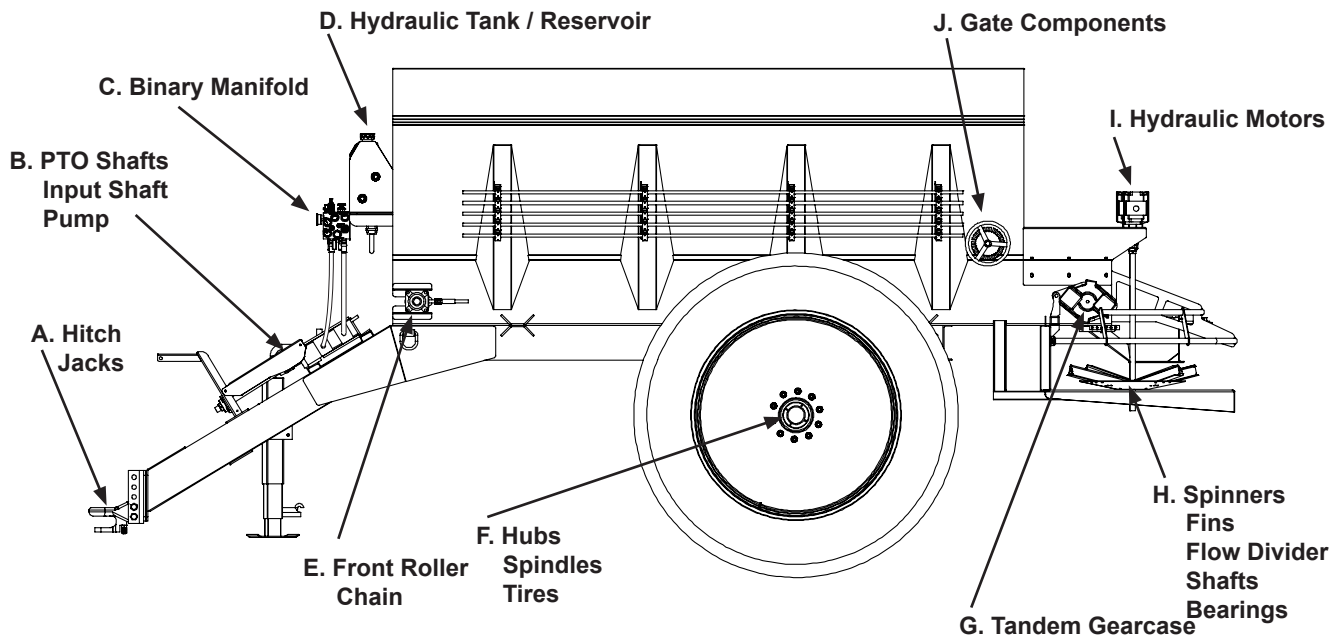
You have several options when ordering replacement parts:

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

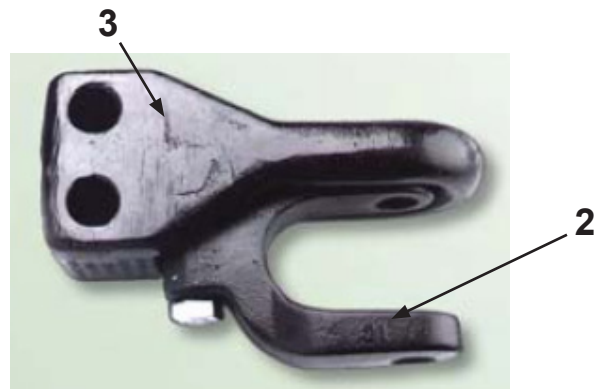
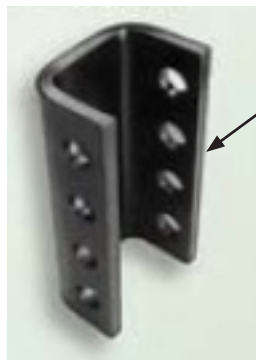
ASSEMBLY IDENTIFICATION

Javelin Pull-Type

COMPONENT / ASSEMBLY IDENTIFICATION:



A: HITCH COMPONENTS



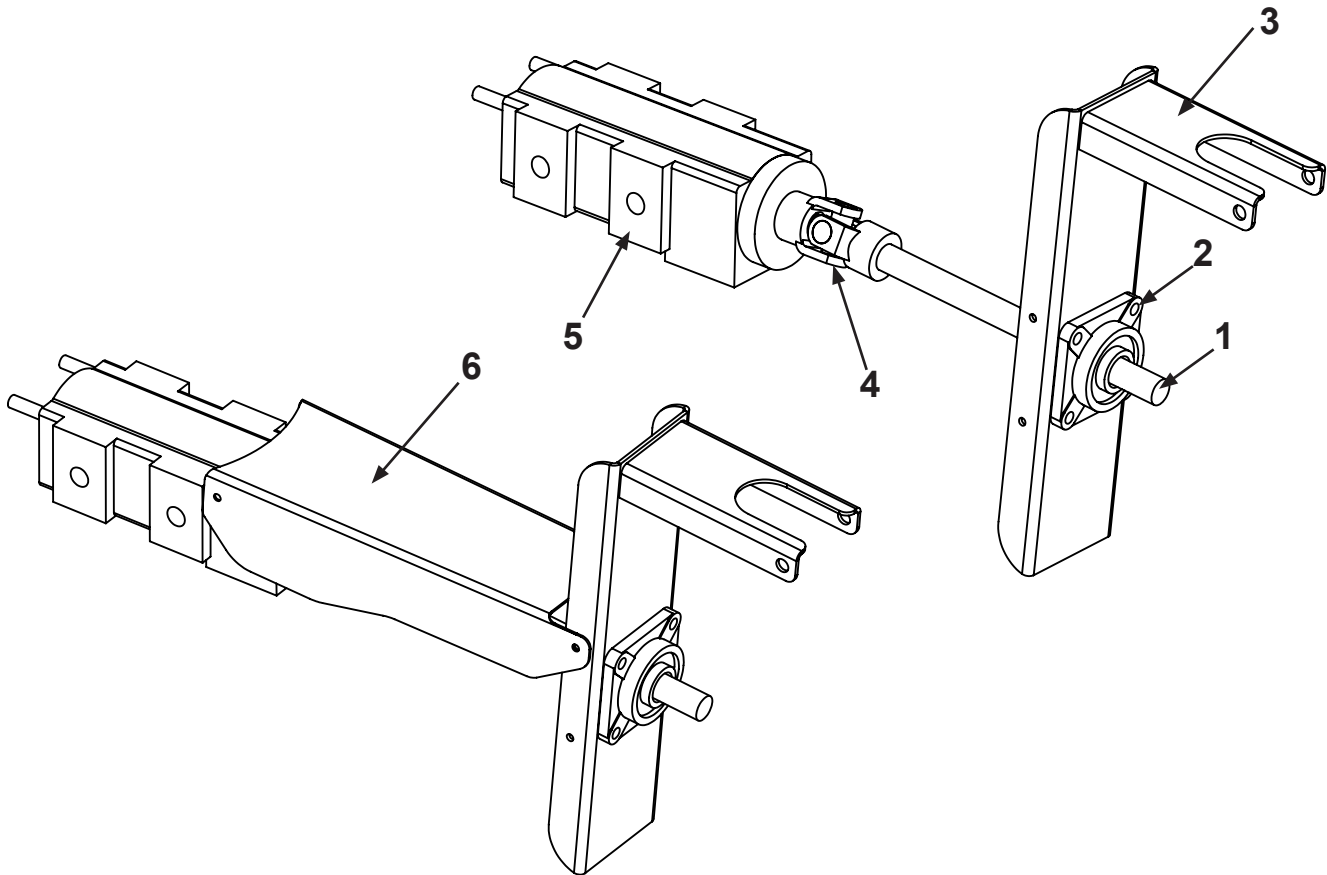
ITEM	PART NO.	DESCRIPTION	QTY
1.	24PPHB305	Hitch Bracket	1
2.	24PPI208VR	Perfect Hitch Clevis	1
3.	24PPI401V3	Perfect Hitch Pintle	1
4.	24P Hitchbolt	Grade 8 Bolt	2
5.	24PPI401V3A	Perfect Hitch Assembly	1
6.	24H20078	Heavy Duty Hitch	1

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

ASSEMBLY IDENTIFICATION

Javelin Pull-Type

B: PTO SHAFTS, INPUT COMPONENTS, PUMP



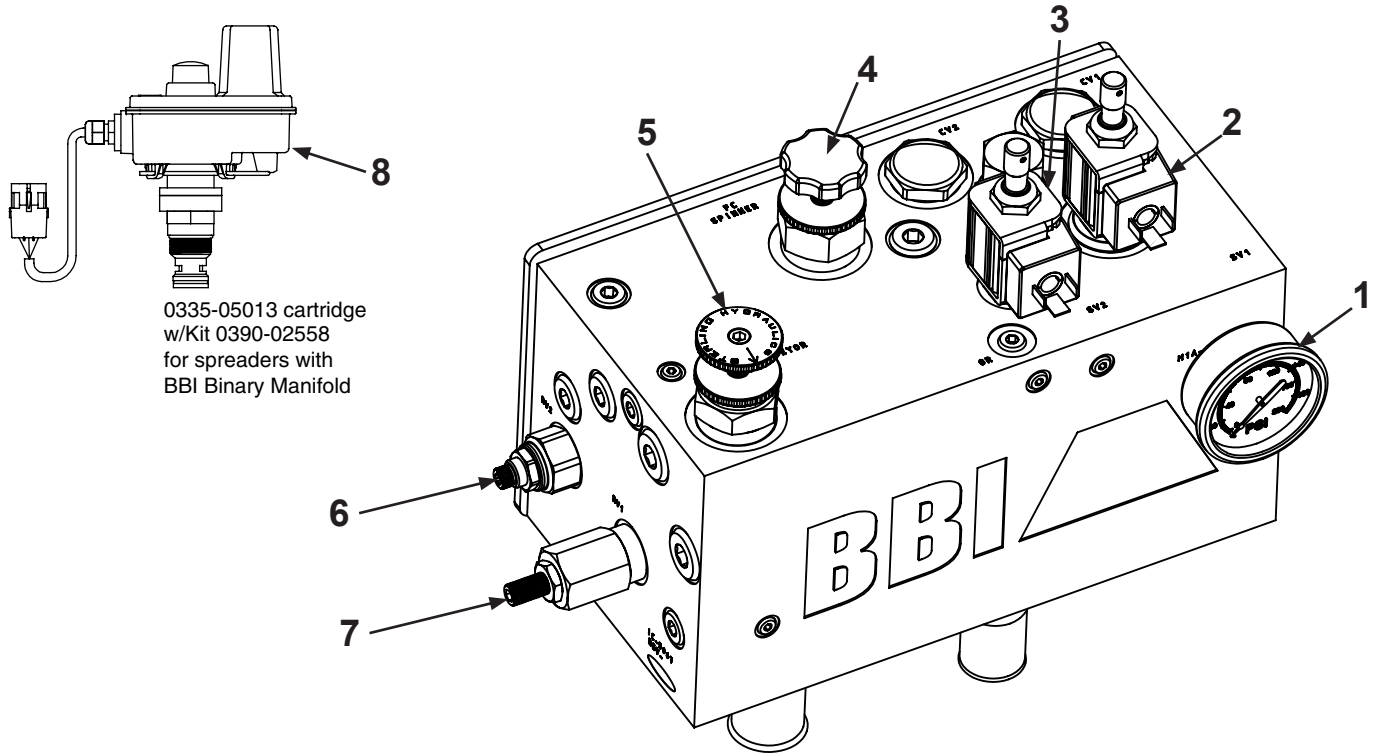
ITEM	PART NO.	DESCRIPTION	QTY
1.	45HS18	18" Hydraulic Input Shaft 1/4 Key	1
2.	60HCFS206-20	1 1/4" Eccentric Roller Bearing	1
3.	15PTO-1-13	PTO Tower	1
4.	616400101500	U-Joint 1 1/4" Round x 1/4" Key x 5/16" Key	1
5.	3025RM2525	Remote Mount Pump *See separate diagram for seals, keys, and gear sets.	1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

Javelin Pull-Type

C: BINARY MANIFOLD COMPONENTS



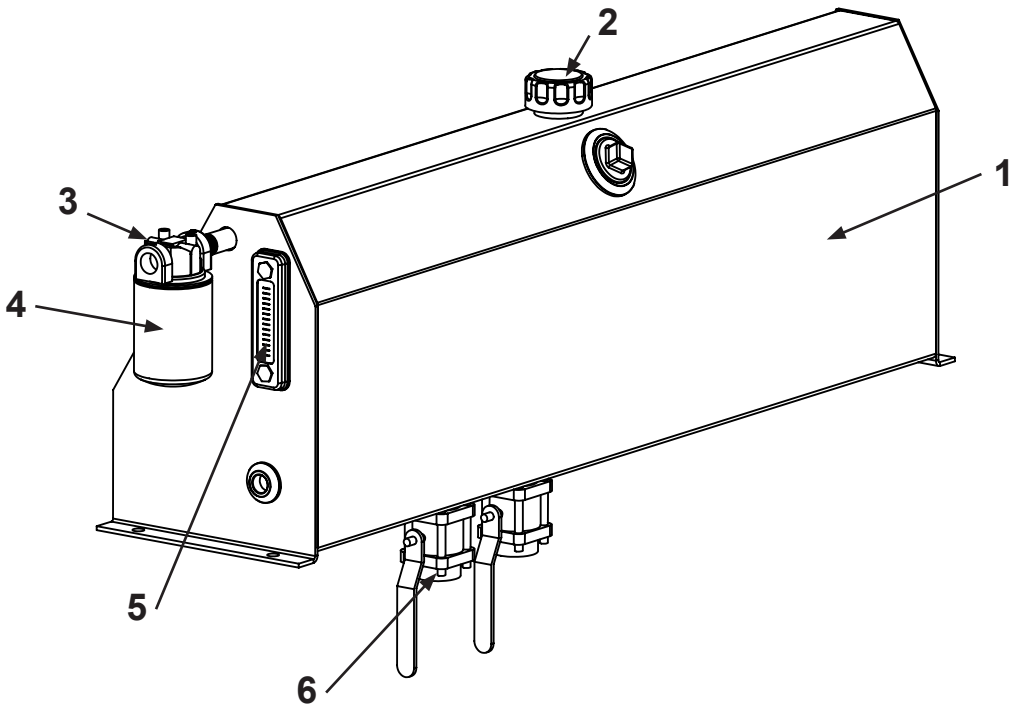
0335-05013 cartridge
w/Kit 0390-02558
for spreaders with
BBI Binary Manifold

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

Javelin Pull-Type

D: HYDRAULIC RESERVOIR COMPONENTS

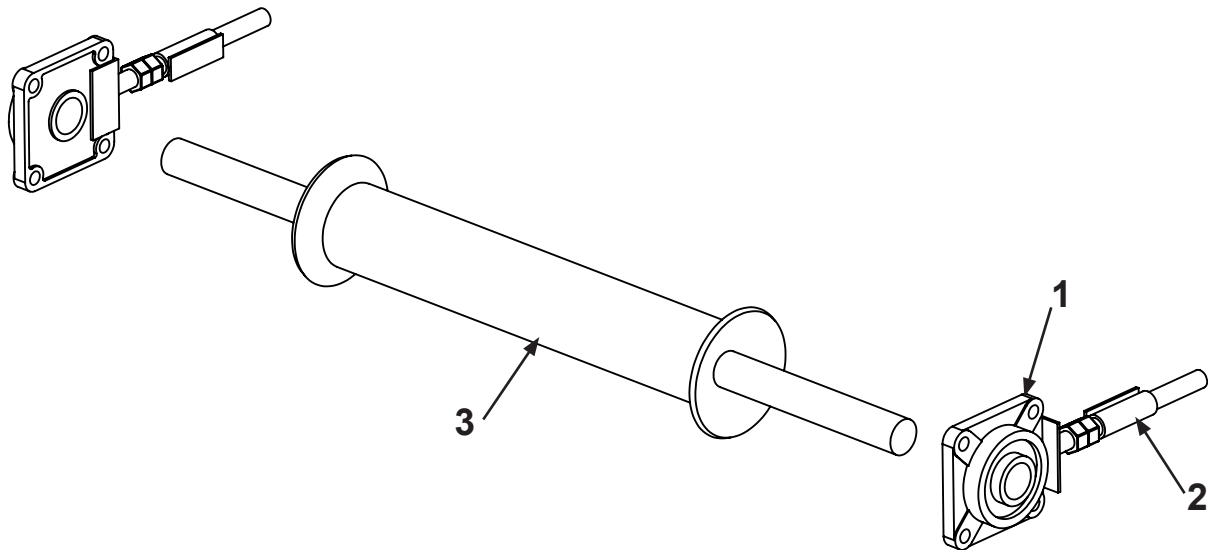


ITEM	PART NO.	DESCRIPTION	QTY
1.	37HTP40	Tank	1
2.	34HC12012A	Breather Cap	1
3.	34707782A	Filter Head	1
4.	34702784A	Filter	1
5.	34HSG-55	Sight Gauge	1
6.	32BV-125	Ball Valve	2

ASSEMBLY IDENTIFICATION

Javelin Pull-Type

E1: FRONT ROLLER COMPONENTS

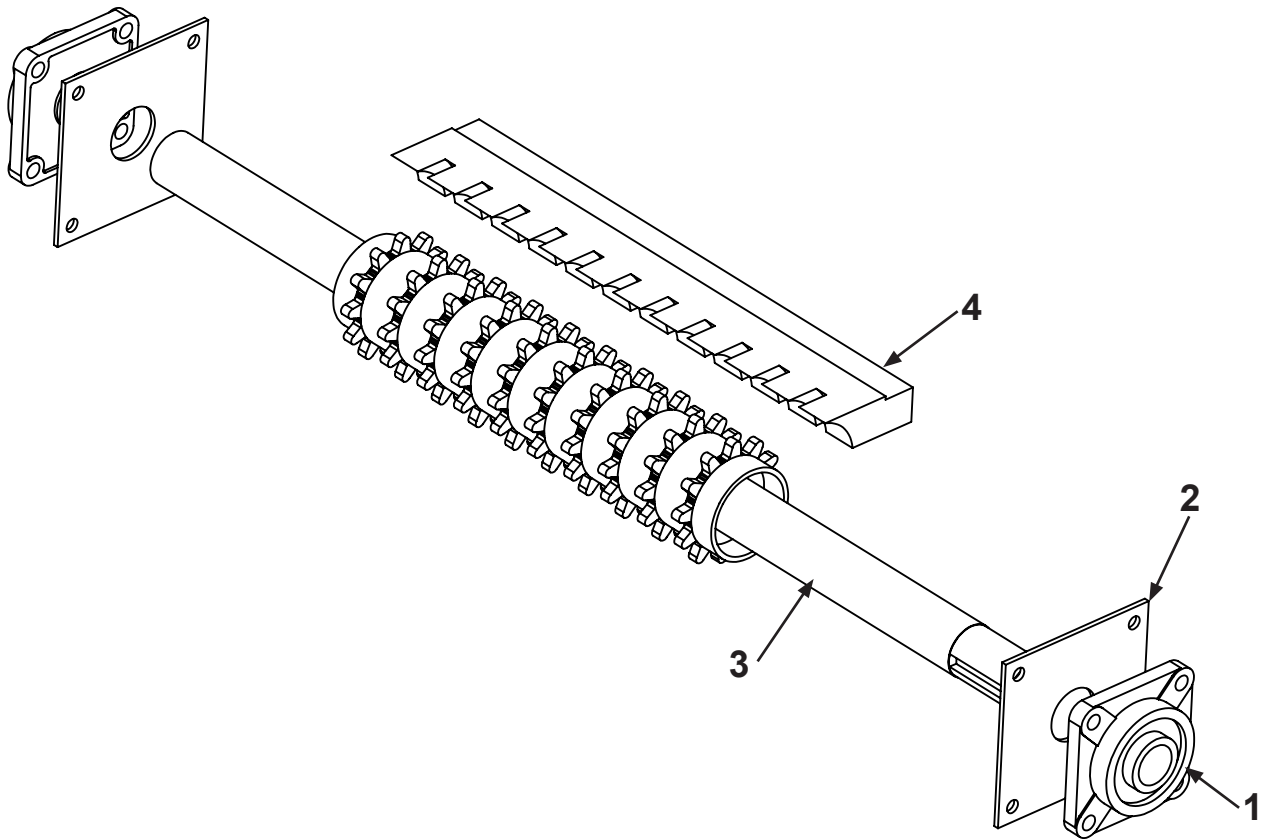


ITEM	PART NO.	DESCRIPTION	QTY
1.	60UCF208-24	1 1/2" 4-Bolt Flange	2
2A.	42 FRAZSS	Adjusting Screw (Stainless)	2
2B.	42 FRAZ	Adjusting Screw (Zinc)	2
3.	42 FRM20	Front Roller	1

ASSEMBLY IDENTIFICATION

Javelin 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

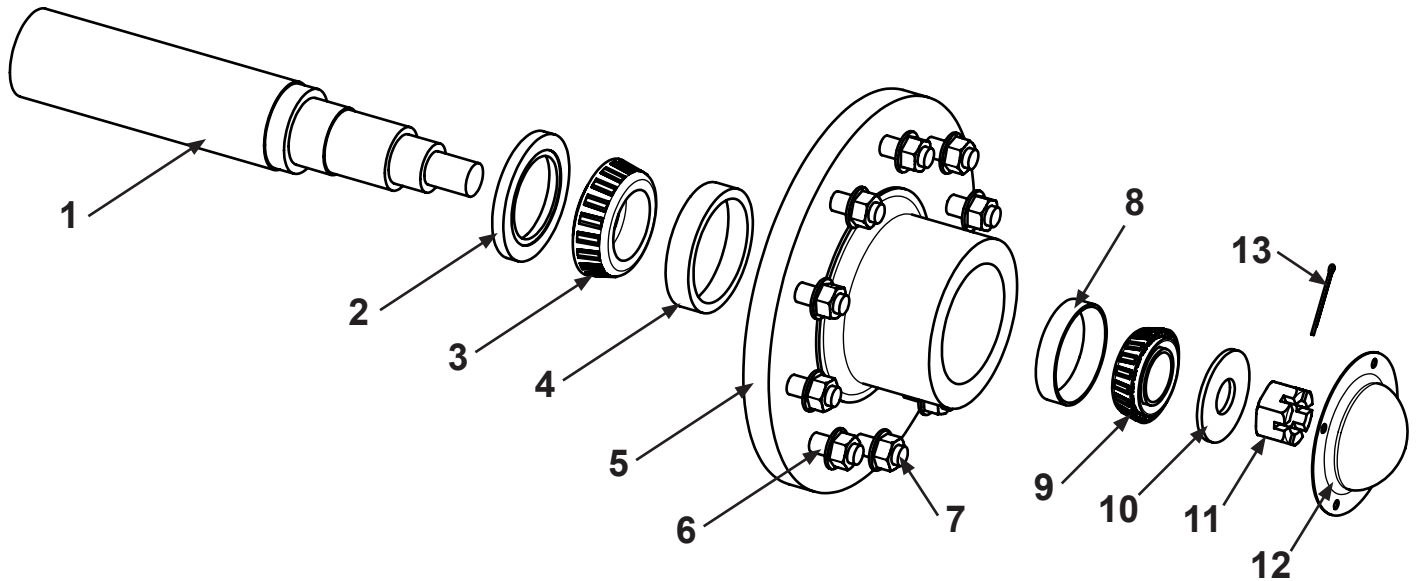
*Note: When ordering chain, please have serial number available.

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

ASSEMBLY IDENTIFICATION

Javelin Pull-Type

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

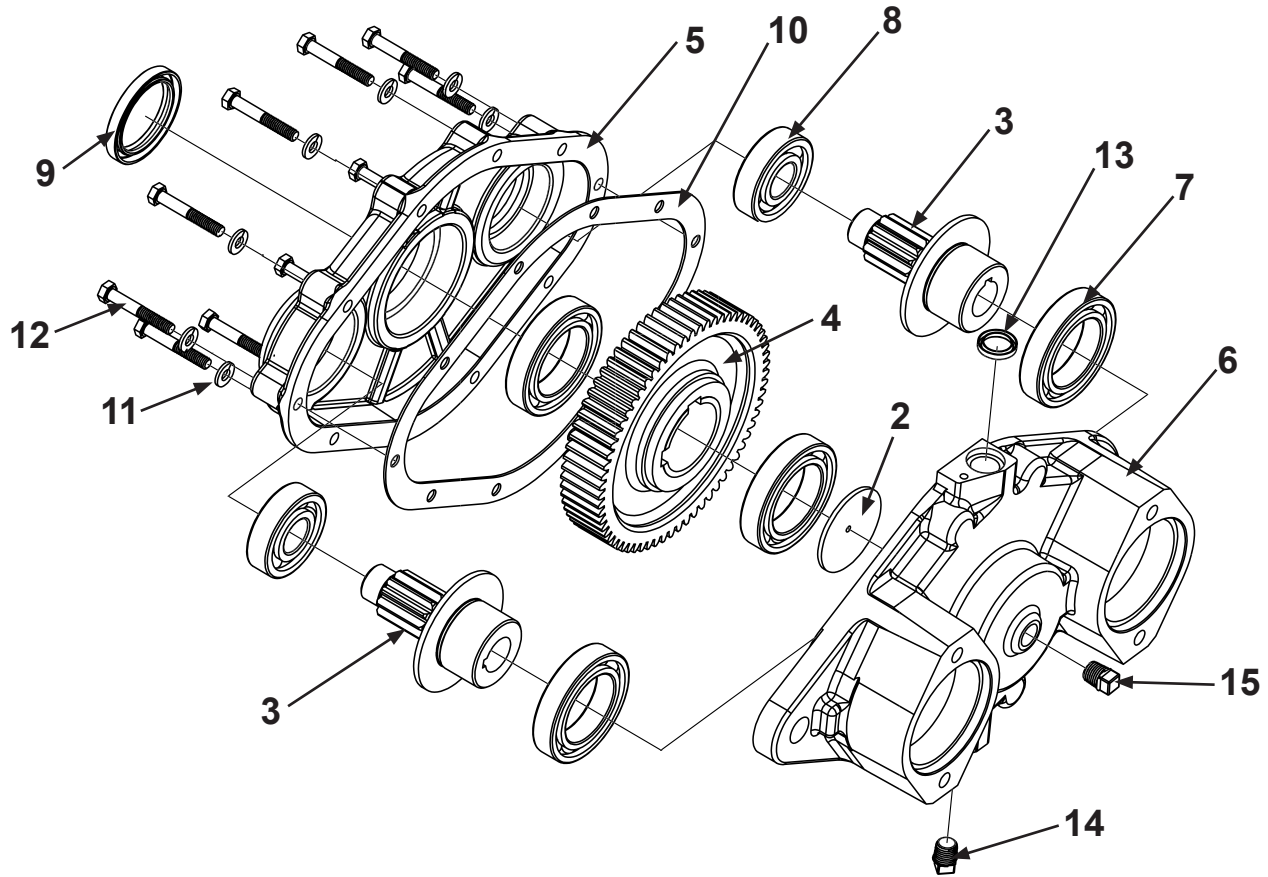


ITEM	PART NO.	DESCRIPTION	QTY
1.	22AXBB281309	12K Spindle Shaft	1
2.	22AXBB906497	12K Oil Seal 2	1
3.	22AXBB910333	12K Inner Bearing	1
4.	22AXBB910331	12K Inner Race	1
5.	22AXBF2891300	12K 10 Lug Hub Only	1
6.	22AXBB13564	12K Press in Stud	1
7.	22AXBB913571	12K Flanged Nut	1
8.	22AXBB910332	12K Outer 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

Javelin Pull-Type

G: TANDEM GEARCASE WITH AND WITHOUT SENSOR

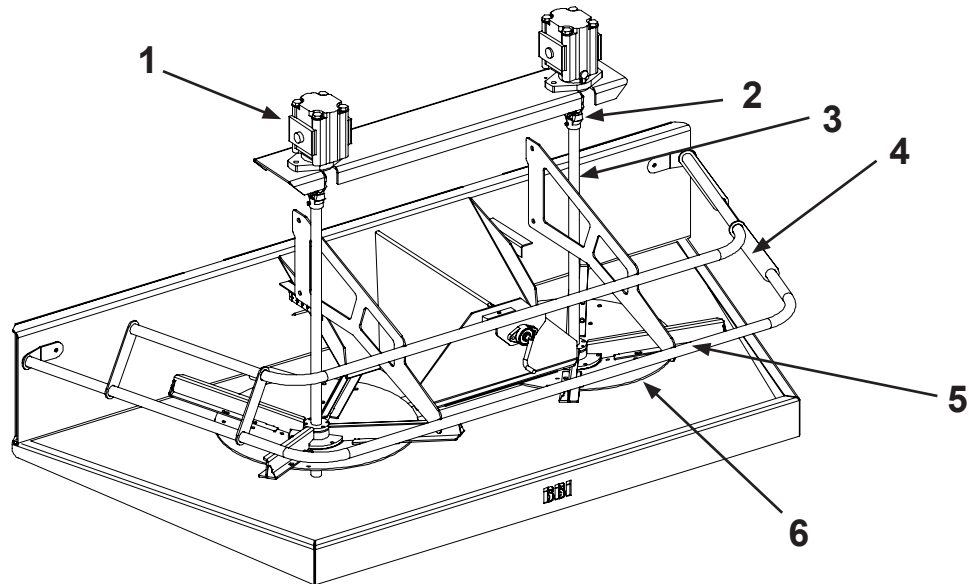


ITEM	PART NO.	DESCRIPTION	QTY
1.	70301505	Key and Plug Kit (Key and 3 Plugs)	1
2.	70311062	Washer	1
3.	70313077	Pinion Gear	2
4.	70313084	Drive Gear (67 teeth)	1
5.	70315052	Tandem Inboard Housing	1
6.	70315090	Tandem Outboard Housing with Sensor (LH)	1
	70315082	Tandem Outboard Housing without Sensor	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

Javelin 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

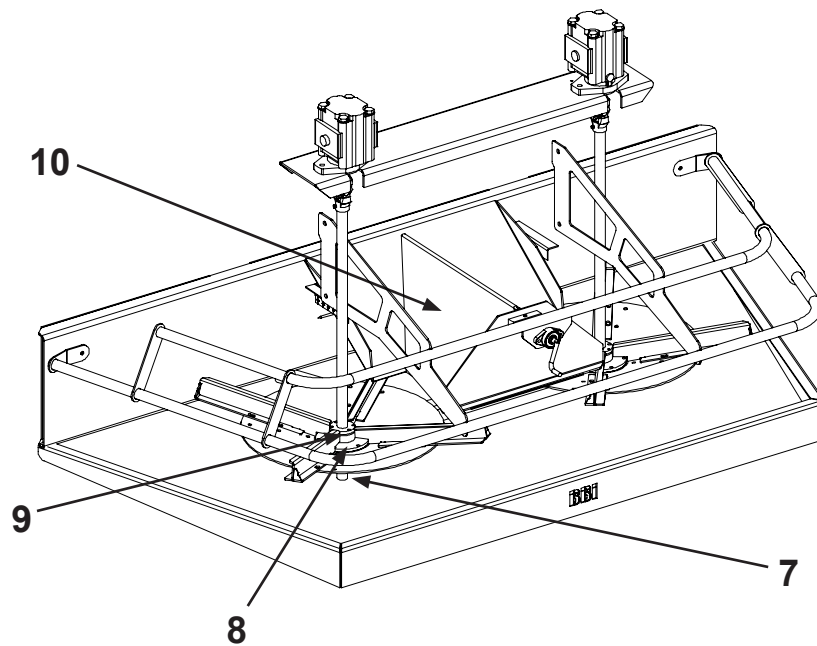
5. FINS	
51FT14JS-LH	Fertilizer Fin Javelin 14" SS Left
51FT14JS-RH	Fertilizer Fin Javelin 14" SS Right
51FT16JS-LH	Fertilizer Fin Javelin 16" SS Left
51FT16JS-RH	Fertilizer Fin Javelin 16" SS Right

6. DISC ASSEMBLIES	
50JV24SSALH	Fertilizer 24" Javelin Stainless Steel Spinner Assembly Left
50JV24SSARH	Fertilizer 24" Javelin Stainless Steel Spinner Assembly Right

ASSEMBLY IDENTIFICATION

Javelin Pull-Type

H: SPINNER SYSTEM COMPONENTS (2 OF 2)



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

ITEM	PART NO.	DESCRIPTION	QTY
10.	52FFD300	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

Javelin Pull-Type

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

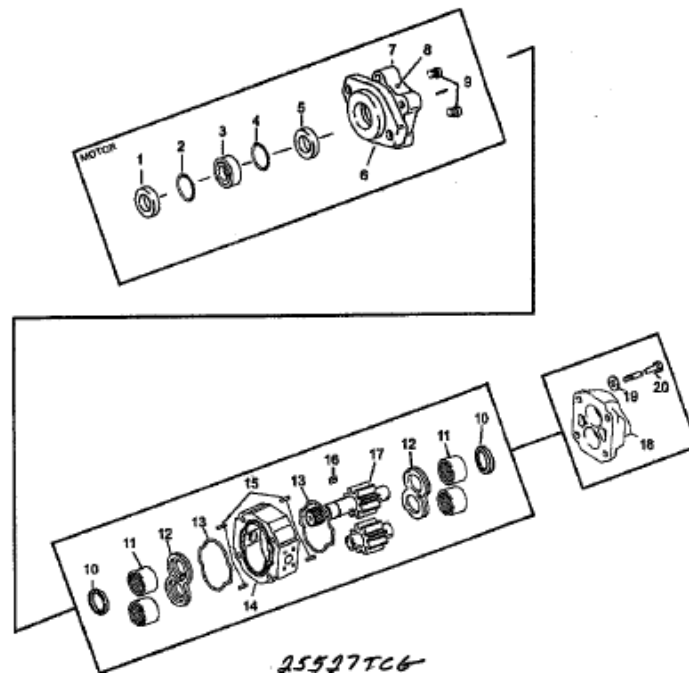
HOSES

You can find hydraulic hoses locally

ASSEMBLY IDENTIFICATION

Javelin Pull-Type

SPINNER MOTOR

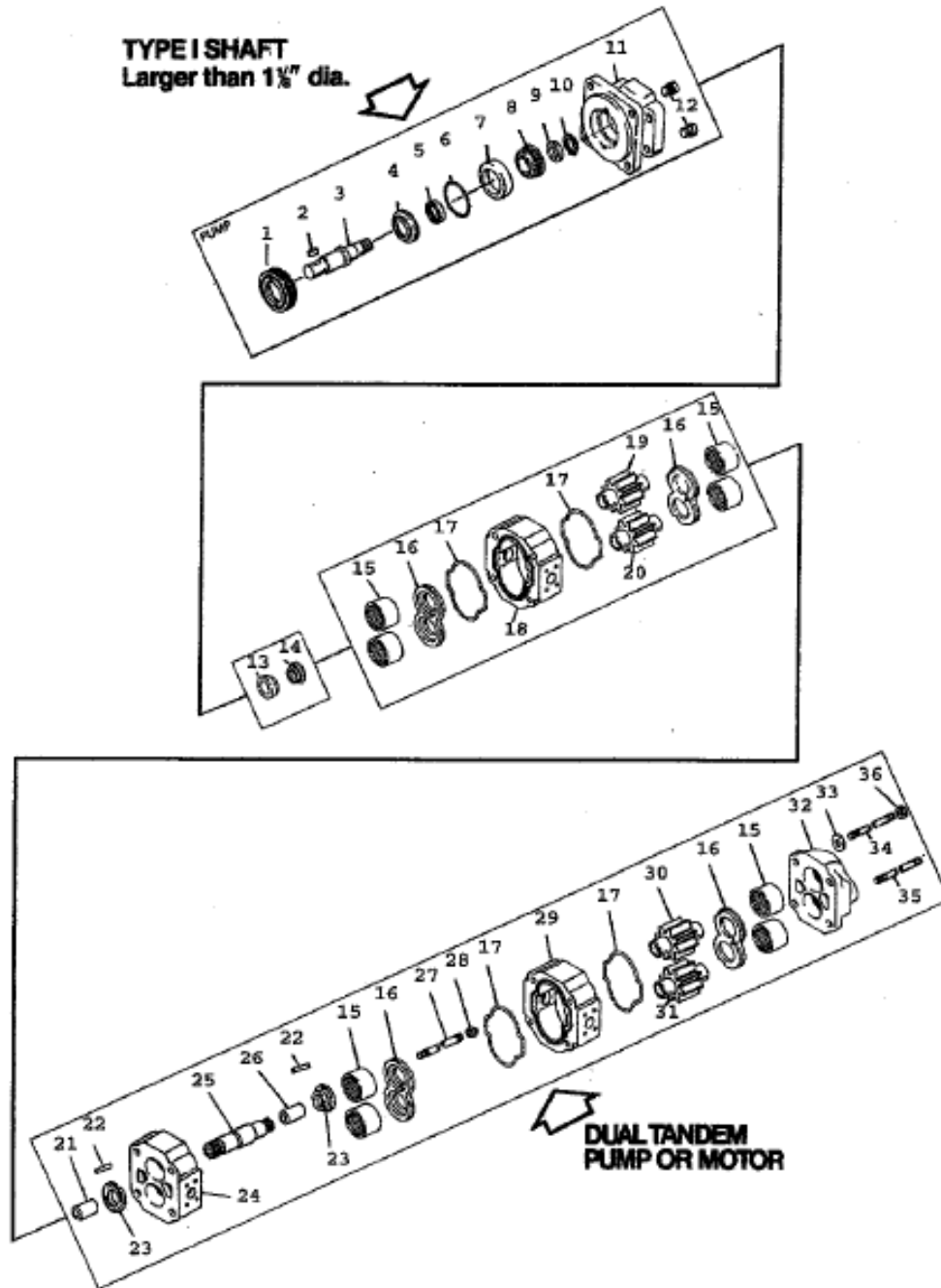


ITEM	PART NO.	DESCRIPTION	QTY
1.	25527TCG	Grease Seal	1
2.	W023-206	Snap Ring	1
3.	MZ-0961	Tell-Tale Seal Retainer	1
4.	K-2995-109	Seal Retainer O-Ring	1
5.	W62-49-9	Shaft Seal	1
6.		1/8" NPT Grease Fitting Hole	
7.		2-Bolt-B Shaft End Cover (SEC)	1
8.	W0-17	Pipe Plug 1/4" NPT for (SEC)	1
9.	L-0280-K	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

Javelin Pull-Type

REMOTE MOUNT PUMP (1 OF 2)



ASSEMBLY IDENTIFICATION

Javelin Pull-Type

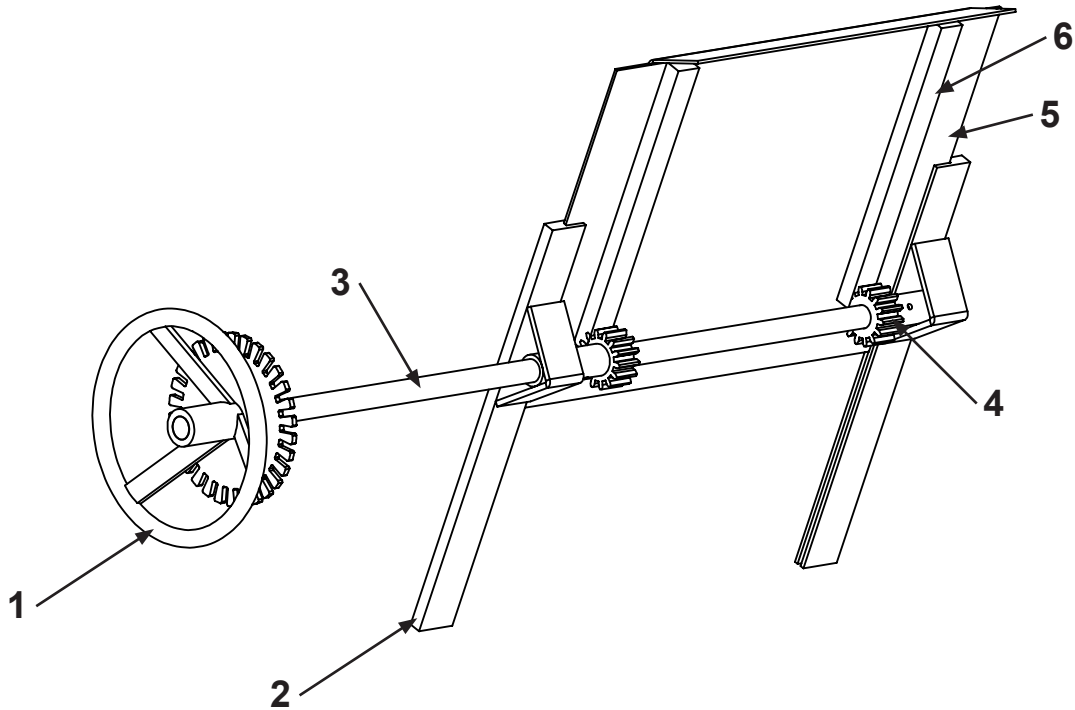
REMOTE MOUNT PUMP (2 OF 2)

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

Javelin 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-1S	Gate with Gear Rack	1

ASSEMBLY IDENTIFICATION

Javelin Pull-Type

K. ADJUSTABLE TRACK AXLE

The adjustable rigid axle allows the wheel track to be modified by sliding the axle ends in or out in 6" increments up to 30". Depending on the option chosen, the axle can be adjusted from 90-120" or 80-110".

To prevent injury, caution must be taken when adjusting the axle. The following steps are recommended for changing the wheel track.

1. Fully support spreader and all axle components before working on axle.
2. Remove 2 middle bolts from axle end.
3. Remove 2 bolts from slotted holes leaving one bolt in each slotted hole. (Figure 1)
4. Slide axle end 3" in desired direction. (Figure 2)
5. Re-insert bolts in slotted holes so that each slot has 2 bolts. (Figure 3)
6. If needed, repeat steps 3-5 to get desired wheel track.
7. Re-insert middle bolts.

WARNING! Keep a minimum of 2 bolts in each end at all times to prevent ends from falling.



Figure 1

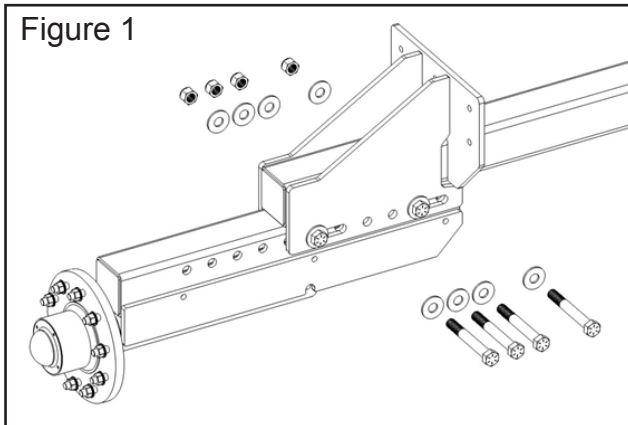


Figure 2

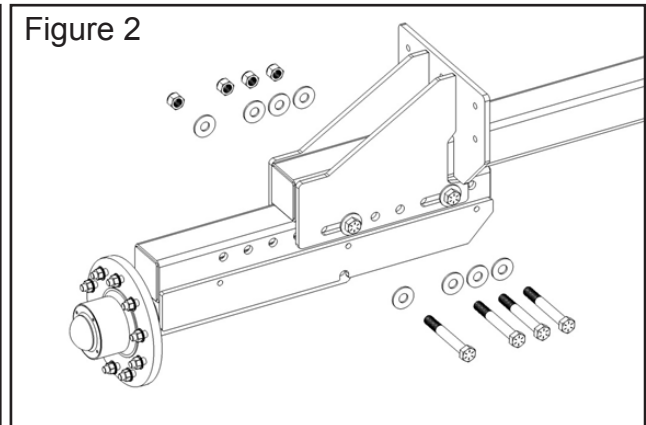
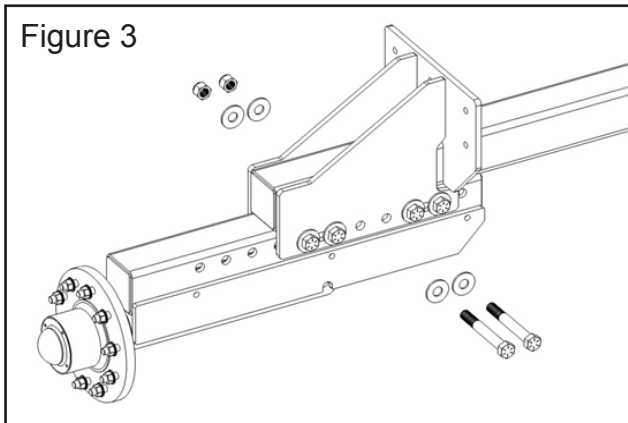


Figure 3



NOTES