

Farm King

OPERATOR AND PARTS MANUAL

Vertical Tillage

Model VT3290, VT3320, VT3345, VT3375



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Manufacturer’s Statement: For technical reasons, Farm King reserves the right to modify machinery design and specifications provided herein without any preliminary notice. Information provided herein is of descriptive nature. Performance quality may depend on soil fertility, applied agricultural techniques, weather conditions, and other factors.

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WARRANTY REGISTRATION FORM

This form must be filled out by the dealer and signed by both the dealer and the customer at the time of delivery.

Customer Name:

Dealer Name:

Customer Address:

Dealer Address:

City: Prov / State:

City: Prov / State:

Postal / Zip Code: Phone:

Postal / Zip Code: Phone:

Equipment Model:

Serial Number:

Delivery Date:

I have thoroughly instructed the buyer on the above described equipment which review included the Operator and Parts Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Dealer Inspection Report

- Scrapers Adjusted Properly
- Lubricate Machine
- Hydraulic Lockout Valves Function Properly
- Correct # Of Depth Stops
- Wheel Bolt / Lug Nut Torque
- Fasteners Tight
- Front And Rear Gangs Set At Medium Angle
- Adjust Mounted Harrows As Required (if equipped)
- Check Overlap Measurement Of Front Gangs
- Check Opening Measurement Between Two Inner Blades Of Rear Main Frame Gangs
- Hydraulic Cylinders / Hoses
- Electrical Harness
- Tire Pressure

Safety

- All Lights And Reflectors Installed
- All Lights And Reflectors Cleaned And Working
- Safety Chain On Hitch
- All Decals Installed
- Guards And Shields Installed And Secure
- Review Operating And Safety Instructions
- General Adjustment And Set-up Procedures
- Transportation Requirements And Regulations

Date:

Dealer Rep. Signature:

The above equipment and Operator And Parts Manual have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date:

Customer / Owner Signature:

Remove this Warranty Registration Form from the Operator And Parts Manual. Make two copies of the form. Send original Warranty Registration Form to Farm King. Give one copy to the customer and the dealer will keep one copy.

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INTRODUCTION

This Operator And Parts Manual was written to give the owner / operator instructions on the safe operation, maintenance and part identification of the Farm King equipment. **READ AND UNDERSTAND THIS OPERATOR AND PARTS MANUAL BEFORE OPERATING YOUR FARM KING EQUIPMENT.** If you have any questions, see your Farm King dealer. This manual may illustrate options and accessories not installed on your Farm King equipment.

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OWNER'S INFORMATION

Thank you for your decision to purchase a Farm King VT3000. To ensure maximum performance of your equipment, it is mandatory that you thoroughly study the Operator And Parts Manual and follow all recommendations. Proper operation and maintenance are essential to maximize equipment life and prevent personal injury.

Operate and maintain this equipment in a safe manner and in accordance with all applicable local, state, and federal codes, regulations and / or laws. Follow all on-product labeling and instructions.

All personnel shall read this manual and understand the proper operation, installation and maintenance procedures before being allowed to work with it.

Farm King is continually working to improve its products. Farm King reserves the right to make any improvements or changes as deemed practical and possible without incurring any responsibility or obligation to make any changes or additions to equipment sold previously.

This publication has been professionally created ensuring its accuracy, Farm King makes no warranty or guarantee of any kind, written or expressed, implied or otherwise with regard to the information contained within this manual. Farm King assumes no responsibility for any errors that may appear in this manual and shall not be liable under any circumstances for incidental, consequential or punitive damages in connection with, or arising from the use of this manual.

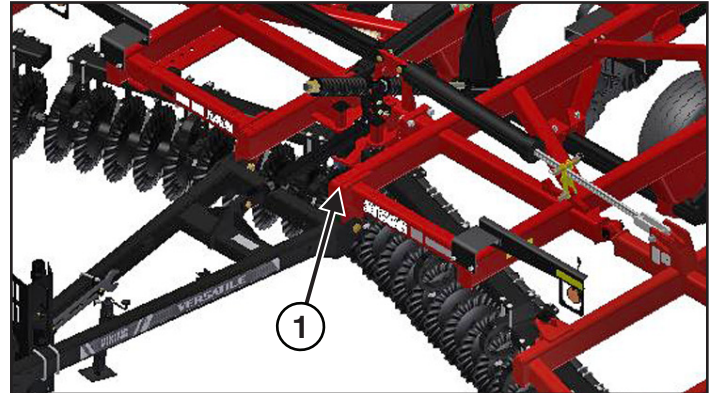
Keep this manual available for frequent reference. All new operators or owners must review the manual before using the equipment and annually thereafter. Contact your Farm King Dealer if you need assistance, information, or additional copies of the manual. Visit our website at www.farm-king.com for a complete list of dealers in your area.

The directions left, right, front and rear, as mentioned throughout this manual, are as seen facing in the direction of travel of the implement.

Serial Number Location

Please enter the model and serial number in the space provided for easy reference.

Figure 1



Model Number: _____

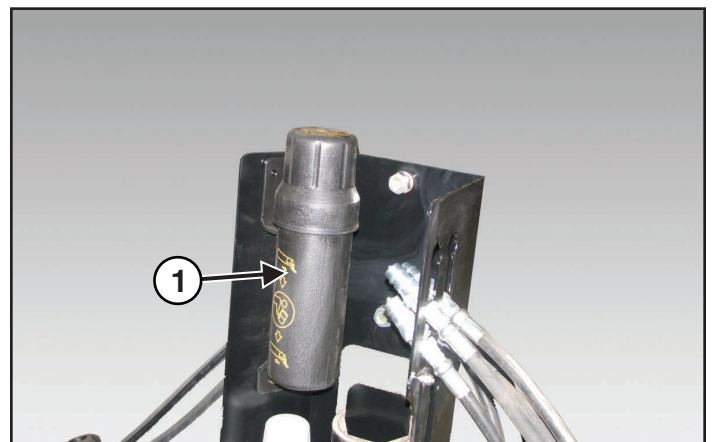
Serial Number: _____

The serial number plate (Item 1) [Figure 1] is located at the front of main frame.

Always use your serial number when requesting information or when ordering parts.

Manual Storage

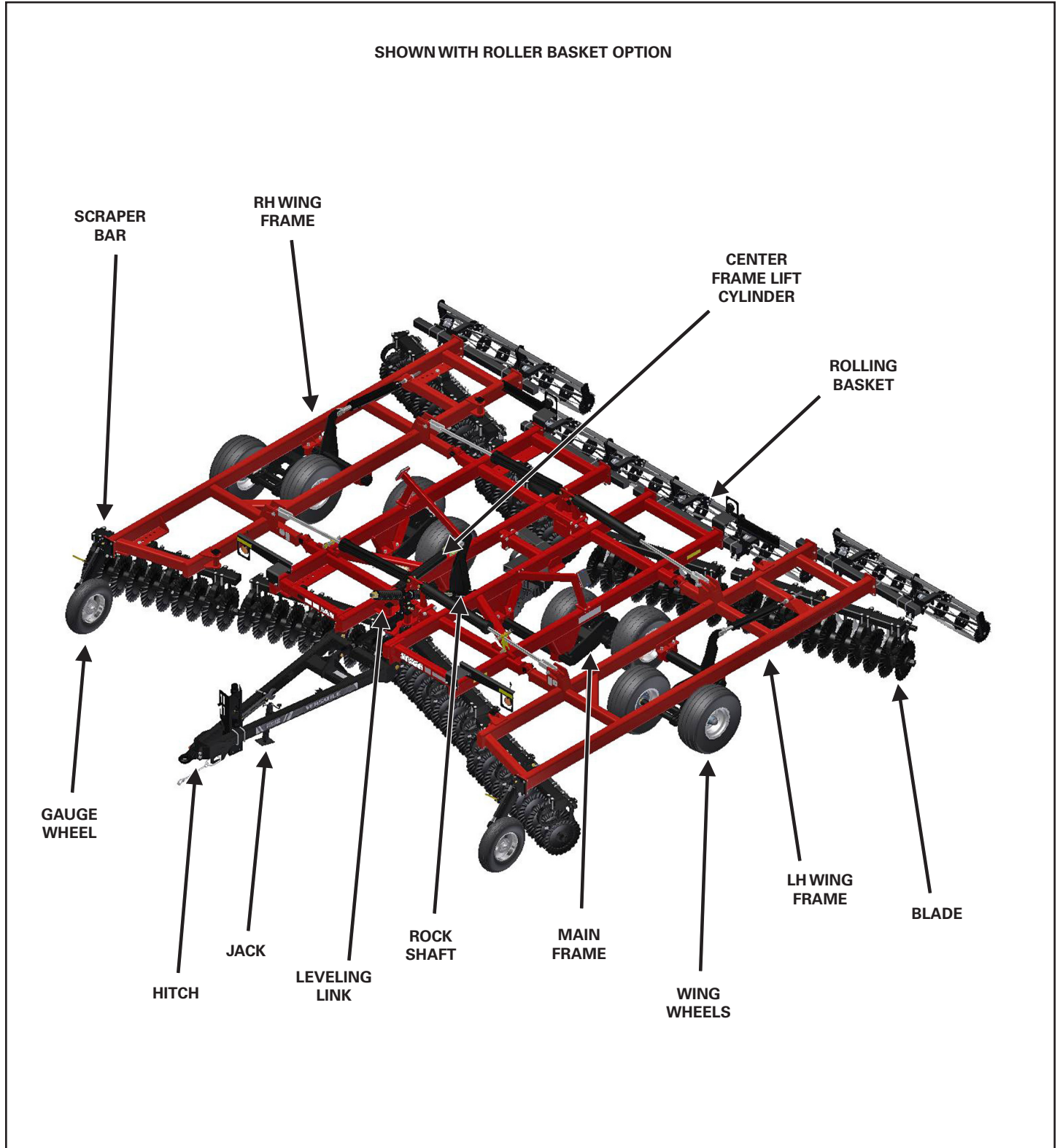
Figure 2



The Operator And Parts Manual and other documents can be stored in the canister (Item 1) [Figure 2] located on the hitch.

EQUIPMENT IDENTIFICATION

Component Location



SAFETY

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SAFETY INSTRUCTIONS

Safe Operation is The Operator’s Responsibility

	<p>Safety Alert Symbol</p>
<p>This symbol with a warning statement means: “Warning, be alert! Your safety is involved!” Carefully read the message that follows.</p>	



CAUTION

The signal word **CAUTION** on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



DANGER

The signal word **DANGER** on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING

The signal word **WARNING** on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



IMPORTANT

This notice identifies procedures which must be followed to avoid damage to the machine.

Safe Operation Needs A Qualified Operator



WARNING

Operators must have instructions before operating the machine. Untrained operators can cause injury or death.

For an operator to be qualified, he or she must not use drugs or alcohol which impair alertness or coordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine and the equipment.

A Qualified Operator Must Do The Following:

Understand the written instructions, rules and regulations:

- The written instructions from Farm King include the Warranty Registration, Dealer Inspection Report, Operator And Parts Manual and decals.
- Check the rules and regulations at your location. The rules may include an employer’s work safety requirements. Regulations may apply to local driving requirements or use of a Slow Moving Vehicle (SMV) emblem. Regulations may identify a hazard such as a utility line.

Have training with actual operation:

- Operator training must consist of a demonstration and verbal instruction. This training is given by the machine owner prior to operation.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine safely under all conditions of the work area. Always fasten seat belt before operating.

Know the work conditions:

- Clear working area of all bystanders, especially small children and all obstacles that might be hooked or snagged, causing injury or damage.
- Know the location of any overhead or underground power lines. Call local utilities and have all underground power lines marked prior to operation.
- Wear tight fitting clothing. Always wear safety glasses when doing maintenance or service.

Use Safety Rules

- Read and follow instructions in this manual and the tractor's Operators Manual before operating.
- Under no circumstances should young children be allowed to work with this equipment.
- This equipment is dangerous to children and persons unfamiliar with its operation.
- If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.
- Stay clear of overhead power lines when raising or lowering the wings. Electrocutation can occur without direct contact.
- Check for overhead and / or underground lines before operating equipment (if applicable).
- In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.
- Check that the equipment is securely fastened to the tractor.
- Make sure all the machine controls are in the NEUTRAL position before starting the machine.
- Operate the equipment only from the operator's position.
- Operate the equipment according to the Operator's Manual.
- When learning to operate the equipment, does it at a slow rate in an area clear of bystanders, especially small children.
- DO NOT permit personnel to be in the work area when operating the equipment.
- The equipment must be used ONLY on approved tractors.
- DO NOT modify the equipment in any way. Unauthorized modification may impair the function and / or safety and could affect the life of the equipment.
- DO NOT make any adjustments or repairs on the equipment while the machine is running.
- Keep shields and guards in place. Replace if damaged.
- Always relieve the pressure in hydraulic system and close both hydraulic lockup valves when not in operation.
- Always stay clear of the folding wing when it is being raised, lowered or placed in the folded position.
- When operating on hillsides, use extreme care. The tractor may tip over if it strikes a hole, ditch or other irregularity.

Transport Safety

- Do not exceed 10 mph (16 kph). Reduce speed on rough roads and surfaces.
- Comply with state and local laws governing highway safety and movement of machinery on public roads.
- Use the SMV emblem and warning light. Local laws should be checked for all highway lighting and marking requirements.
- Check all reflectors for visibility and cleanliness before transport.
- Always place both hydraulic lock up valves in “closed” position before transporting.
- Always install the complete package of depth control stops (17 in. long) on shaft of main frame cylinder for long distances and also lock the wings manually as shown in fig. 91.
- Always attach a safety chain to the tractor drawbar and the equipment hitch before transport.
- Always yield to oncoming traffic in all situations and move to the side of the road so any following traffic may pass.
- Always enter curves or drive up or down hills at a low speed and at a gradual steering angle.
- Never allow riders on either tractor or equipment.
- Keep tractor in a lower gear at all times when traveling down steep grades.
- Maintain proper brake settings at all times (if equipped).
- Stay clear of overhead power lines when raising or lowering the wings. Electrocutation can occur without direct contact.

Machine Requirements And Capabilities

- Fasten seat belt securely. If equipped with a foldable Roll-Over Protective Structure (ROPS), only fasten seat belt when ROPS is up and locked. DO NOT wear seat belt if ROPS is down.
- Stop the machine and engage the parking brake. Install blocks in front of and behind the rear tires of the machine. Install blocks underneath and support the equipment securely before working under raised equipment.
- Keep bystanders clear of moving parts and the work area. Keep children away.
- Use increased caution on slopes and near banks and ditches to prevent overturn.
- Make certain that the Slow Moving Vehicle (SMV) emblem is installed so that it is visible and legible. When transporting the equipment, use the flashing warning lights (if equipped) and follow all local regulations.
- Operate this equipment with a machine equipped with an approved Roll-Over Protective Structure (ROPS). Always wear seat belt when the ROPS is up. Serious injury or death could result from falling off the machine.
- Before leaving the operator’s position:
 1. Always park on a flat level surface.
 2. Place all controls in neutral.
 3. Engage the parking brake.
 4. Stop engine.
 5. Wait for all moving parts to stop.
- Carry passengers only in designated seating areas. Never allow riders on the machine or equipment. Falling off can result in serious injury or death.
- Start the equipment only when properly seated in the operator’s seat. Starting a machine in gear can result in serious injury or death.
- Operate the machine and equipment from the operator’s position only.
- The parking brake must be engaged before leaving the operator’s seat. Rollaway can occur because the transmission may not prevent machine movement.

FIRE PREVENTION



Maintenance

- The machine and some equipment have components that are at high temperatures under normal operating conditions. The primary source of high temperatures is the engine and exhaust system. The electrical system, if damaged or incorrectly maintained, can be a source of arcs or sparks.
- Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it can cause a fire hazard. Clean often to avoid this accumulation. Flammable debris in the engine compartment is a potential fire hazard.
- The operator's area, engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent fire hazards and overheating.
- All fuels, most lubricants and some coolant mixtures are flammable. Flammable fluids that are leaking or spilled onto hot surfaces or onto electrical components can cause a fire.

Operation

- The Farm King machine must be in good operating condition before use.
- Check all of the items listed on the service schedule under the 8 hour column (see "Maintenance" section).
- Do not use the machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.

Starting

- Do not use ether or starting fluids on any engine that has glow plugs. These starting aids can cause explosion and injure you or bystanders.
- Use the procedure in the tractor's operator's manual for connecting the battery and for jump starting.

Electrical



- Check all electrical wiring and connections for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part or wires that are loose or frayed.
- Battery gas can explode and cause serious injury. Do not jump start or charge a frozen or damaged battery. Keep any open flames or sparks away from batteries. Do not smoke in battery charging area.

Hydraulic System

- Check hydraulic tubes, hoses and fittings for damage and leakage. Never use open flame or bare skin to check for leaks. Hydraulic tubes and hoses must be properly routed and have adequate support and secure clamps. Tighten or replace any parts that show leakage.
- Always clean fluid spills. Do not use gasoline or diesel fuel for cleaning parts. Use commercial nonflammable solvents.

Fueling



- Stop the engine and let it cool before adding fuel. No smoking! Do not refuel a machine near open flames or sparks. Fill the fuel tank outdoors.

Welding And Grinding

- Always clean the machine and equipment, disconnect the battery, and disconnect the wiring from the machine controls before welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the machine when welding.
- Have good ventilation when grinding or welding painted parts. Wear dust mask when grinding painted parts. Toxic dust or gas can be produced.
- Dust generated from repairing nonmetallic parts such as hoods, fenders or covers can be flammable or explosive. Repair such components in a well ventilated area away from open flames or sparks.

Fire Extinguishers

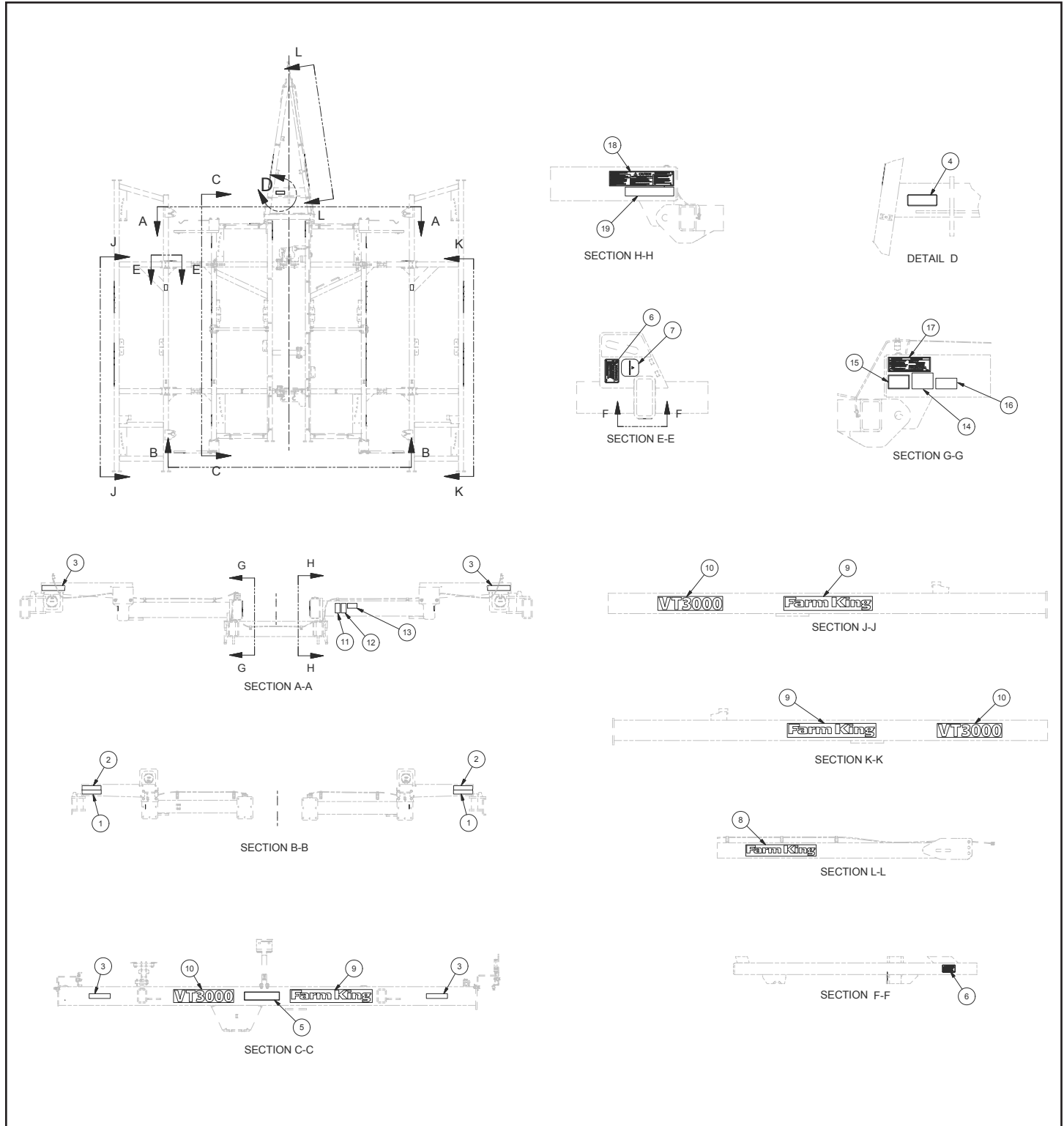


- Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

SAFETY AND EQUIPMENT SIGNS (DECALS)

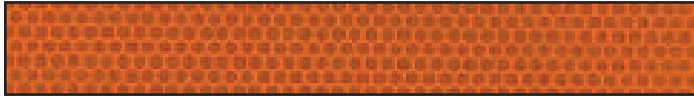
Follow the instructions on all the signs (decals) that are on the equipment. Replace any damaged signs (decals) and be sure they are in the correct locations. Equipment signs are available from your Farm King equipment dealer.

Figure 3

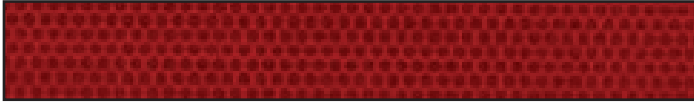


Decal Identification [Figure 3]

86026768 - FLOURESCENT TAPE (ITEM 1)



EZDF10060 - RED REFLECTOR 2 X 9 (ITEM 2)



EZDF10061 - YELLOW REFLECTOR 2 X 9 (ITEM 3)



EZDF13001 - WARNING HYDRUALIC (ITEM 4)

IMPORTANT	⚠ WARNING
<p>TRANSPORT LOCKUP VALVES</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>LIFT</p> <p>CLOSED (TRANSPORT OR PARK)</p> <p>OPEN (FIELD POSITION)</p> </div> <div style="text-align: center;"> <p>WINGS</p> <p>CLOSED (TRANSPORT OR PARK)</p> <p>OPEN (FIELD POSITION)</p> </div> </div>	<ul style="list-style-type: none"> * TO PREVENT ACCIDENTAL OPERATION OF HYDRAULIC SYSTEM WHILE TRANSPORTING MACHINE ALWAYS PLACE LOCKUP VALVES IN CLOSED POSITION. * ALWAYS RELEASE HYDRAULIC PRESSURE IN ALL CYLINDERS AND CLOSE HYDRAULIC LOCKUP VALVES BEFORE UNHITCHING FROM TRACTOR OR WHEN PARKING WITH TRACTOR. THIS WILL PREVENT WING(S) FROM UNFOLDING AND FALLING DUE TO THERMAL EXPANSION OF HYDRAULIC OIL CAUSING MACHINE DAMAGE, PROPERTY DAMAGE OR INJURY OR DEATH TO PERSONS NEARBY. * ALWAYS BLOCK UP FRAME OR LOWER MACHINE TO GROUND WHEN SERVICING OR REPAIRING MACHINE. DO NOT RELY ON LOCKUP VALVE AS A SAFETY DEVICE WHEN WORKING ON MACHINE. <p style="text-align: right; font-size: small;">EZDF13001</p>

EZDF9507 - DANGER (ITEM 5)

⚠ DANGER

TO AVOID PERSONAL INJURY OR DEATH, ALWAYS STAND CLEAR WHEN WINGS ARE BEING RAISED, LOWERED OR IN FOLDED POSITION. WINGS MAY FALL RAPIDLY, CAUSING BODILY INJURY IF HYDRAULIC SYSTEM FAILED OR IF HYDRAULIC LEVER IS ACCIDENTLY OPERATED. ALWAYS INSTALL WING LOCKUP DEVICES (IF PROVIDED) WHEN WINGS ARE IN FOLDED (UP) POSITION. ALWAYS CLOSE HYDRAULIC LOCKUP VALVES TO PREVENT ACCIDENTAL OPERATION OF HYDRAULIC SYSTEMS WHEN MACHINE IS FOLDED FOR TRANSPORT. MAKE SURE CYLINDERS ARE COMPLETELY FILLED WITH HYDRAULIC FLUID TO AVOID FREE-FALL OR SUDDEN MOVEMENT.

88715832 - WARNING SAFETY LOCK PIN (ITEM 6)

⚠ WARNING

STAY CLEAR OF WINGS

REMOVE SAFETY LOCK PIN AND PLACE IN STORAGE LOCATION BEFORE LOWERING WINGS.
REPLACE SAFETY LOCK PIN IN WING LOCK LOCATION AFTER RAISING WINGS.

xxx 88715832_0

88715891 - SAFETY YELLOW LOCK PIN (ITEM 7)



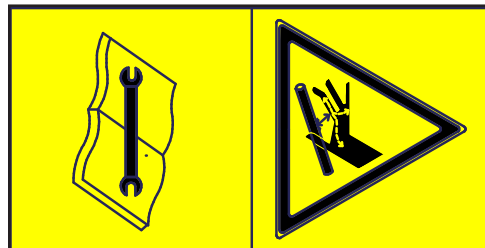
88719204 - FARMKING 4.50 X 27.75 (ITEM 8)



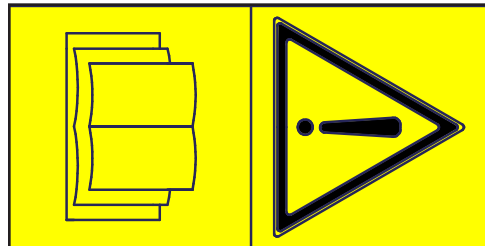
88719272 - FARMKING 5.5 X 35.0 (ITEM 9)



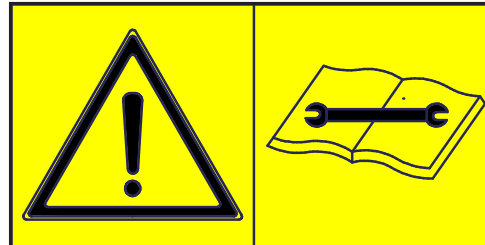
86058185 - HIGH PRESSURE FLUID (ITEM 11)



86054092 - OPERATOR'S MANUAL (ITEM 12)



86054197 - SERVICE PROCEDURES (ITEM 13)



EZDF13120 - WINGS TRANSPORT (ITEM 14)

⚠ IMPORTANT

NEVER OPERATE DISC WITH WINGS IN FOLDED (TRANSPORT) POSITION AS THIS WILL RESULT IN SEVERE DAMAGE TO FRAME AND/OR GANG COMPONENTS.

DAMAGE CAUSED BY DISCING WITH WINGS FOLDED WILL VOID WARRANTY.

810 DF13120

EZA75759 - IMPORTANT DECAL (ITEM 15)

IMPORTANT

CHECK WHEEL BOLTS AFTER:

1. FIRST 5 (FIVE) HOURS OF FIELD OPERATION.
2. FIRST 25 (TWENTY-FIVE) HOURS OF FIELD OPERATION.
3. FIRST 50 (FIFTY) HOURS OF FIELD OPERATION.
4. EVERY 200 (TWO HUNDRED) HOURS OF OPERATION.

REPEAT PROCEDURE IF A WHEEL IS REMOVED AND REINSTALLED

MG14 A75759

Decal information unavailable.

88719389 - VT3290 (ITEM 10)

88719390 - VT3320 (ITEM 10)

88719391 - VT3345 (ITEM 10)

88719392 - VT3375 (ITEM 10)

115793 - B.I.I. SERIAL# PLATE (ITEM 16)

B.I.I. FARGO INC.

FARGO NORTH DAKOTA

MODEL No.

SERIAL No.

MADE IN THE U.S.A. 115793

88718824 - LUBE MAINT VT (ITEM 17)

LUBRICATION	MAINTENANCE
<ul style="list-style-type: none"> GANG BEARINGS (IF APPLICABLE) - EVERY 20 HOURS OF OPERATION. WHEEL HUBS - EVERY 50 HOURS OF OPERATION. GANG PIVOTS - EVERY 50 HOURS OF OPERATION. WING HINGE POINTS (IF APPLICABLE) - EVERY 100 HOURS OF OPERATION. WALKING BEAMS (IF APPLICABLE) - EVERY 8 HOURS OF OPERATION. LEVELLING CRANK (BALL JOINT) - AT THE END AND BEGINNING OF EACH SEASON (WITH OIL). 	<ul style="list-style-type: none"> GANG BOLTS - 3200 ft-lbs TORQUE. (1-15/16" DIA.) WHEEL NUTS AND BOLTS - 130 ft-lbs TORQUE (9/16" DIA) - 150 ft-lbs TORQUE (5/8" DIA) - 265 ft-lbs TORQUE (3/4" DIA) MAXIMUM HYDRAULIC OPERATING PRESSURE - 3000 PSI TIRE PRESSURE AT RECOMMENDED P.S.I ON TIRE SIDEWALL. <p style="font-size: 0.8em; margin-top: 5px;">NOTE: Loose bolts/hardware may cause severe damage to machine.</p>
REFER TO OPERATOR'S MANUAL FOR ALL LUBRICATIONS/MAINTENANCE INSTRUCTIONS.	

EZDF9510 - CAUTION (ITEM 18)

<p style="font-size: 0.8em; margin: 0;">OBSERVE SAFETY RECOMMENDATIONS IN OPERATOR'S MANUAL.</p> <p style="font-size: 0.7em; margin: 0;">WHEN TRANSPORTING THIS MACHINE, LOCK TOCKERS BY ENGAGING LOCK-UP DEVICES.</p> <p style="font-size: 0.7em; margin: 0;">WHEN TRANSPORTING THIS MACHINE OVER PUBLIC ROADS, USE THE 5 MPH FANLIER RED SIGNAL LIGHTS FOR PROTECTION OF TRACTOR AND OTHER MOTOR VEHICLE OPERATORS. CHECK LOCAL LAWS FOR WIDTH AND HEIGHT RESTRICTIONS.</p> <p style="font-size: 0.7em; margin: 0;">TRANSPORT THIS MACHINE WITH A TRACTOR CHOCK.</p> <p style="font-size: 0.7em; margin: 0;">NEVER ALLOW ANYONE TO RIDE ON DRAW BAR OF TRACTOR OR ON THIS MACHINE.</p> <p style="font-size: 0.7em; margin: 0;">DO NOT SERVICE OR ADJUST THIS MACHINE WHILE IT IS IN MOTION.</p>	<p style="font-size: 1.5em; font-weight: bold; margin: 0;">⚠ CAUTION</p> <p style="font-size: 0.8em; margin: 0;">FAILING TO OBSERVE SAFETY RECOMMENDATIONS MAY RESULT IN SERIOUS INJURY OR DEATH.</p> <p style="font-size: 0.7em; margin: 0;">NEVER STAND BETWEEN TRACTOR AND THE MACHINE WHEN HITCHING UNLESS ALL CONTROLS ARE IN NEUTRAL AND BRAKES LOCKED.</p> <p style="font-size: 0.7em; margin: 0;">PARK OR BLOCK THIS MACHINE SO IT WILL NOT ROLL WHEN DISCONNECTED FROM TRACTOR.</p> <p style="font-size: 0.7em; margin: 0;">DO NOT EXCEED 10 MPH (16KPH) WHEN TRANSPORTING THIS MACHINE ON SMOOTH SURFACES. REDUCE SPEED ON ROUGH SURFACES.</p>	<p style="font-size: 0.8em; margin: 0;">READ AND UNDERSTAND OPERATOR'S MANUAL BEFORE OPERATING.</p> <p style="font-size: 0.7em; margin: 0;">WHEN WORKING ON, UNDER OR AROUND THIS MACHINE, ALWAYS PLACE SAFETY SUPPORTS UNDER FRAME, IF SUPPORTS ARE NOT AVAILABLE, SHUT OFF WINGS AND CHISEL MACHINE TO DOCKS.</p> <p style="font-size: 0.7em; margin: 0;">DO NOT DISASSEMBLE OR LOOSEN HYDRAULIC COMPONENTS WHEN THERE IS PRESSURE WITHIN THOSE COMPONENTS.</p> <p style="font-size: 0.7em; margin: 0;">CHECK HYDRAULIC HOSES PERIODICALLY FOR SIGNS OF RUPTURE AND LEAKS. USE A CARBURETOR AS BACKSTOP TO CHECK FOR ESCAPING HIGH PRESSURE OR HOT FLUID.</p> <p style="font-size: 0.7em; margin: 0;">WHEN TRANSPORTING THIS MACHINE, USE A HITCH SAFETY CHAIN.</p>
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EZDF9506 - DANGER CAUTION (ITEM 19)

<p style="font-size: 1.5em; font-weight: bold; margin: 0;">⚠ DANGER</p> <p style="font-size: 0.7em; margin: 0;">SERIOUS INJURY OR DEATH CAN RESULT FROM CONTACT WITH ELECTRICAL LINES. USE CARE TO AVOID CONTACT WITH ELECTRICAL LINES WHEN MOVING OR OPERATING THIS MACHINE.</p>	<p style="font-size: 1.5em; font-weight: bold; margin: 0;">⚠ CAUTION</p> <p style="font-size: 0.8em; margin: 0;">WATCH FOR OVERHEAD OBSTRUCTIONS WHEN TRANSPORTING THIS MACHINE.</p> <p style="font-size: 0.7em; margin: 0;">WHEN TRANSPORTING THIS MACHINE WITH WINGS FOLDED (UP), BE SURE THERE IS SUFFICIENT CLEARANCE UNDER ALL POWER LINES AND OTHER OVERHEAD OBSTRUCTIONS.</p>
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GENERAL ASSEMBLY INFORMATION

Component Unloading And Identification



ELECTROCUTION HAZARD

To prevent serious injury or death from electrocution:

- Be aware of overhead power lines.
- Keep away from power lines when unloading and assembling the auger.
- Electrocution can occur without direct contact.



DO NOT permit bystanders to be in the work area when unloading and assembling components.

DO NOT work under suspended parts.

Keep away from moving parts.

Always use lifting devices / vehicles, chains or straps of adequate size and strength when unloading and assembling components.

Unload the crate(s) and components on a flat level area of adequate size to assemble the equipment.



Unload crate(s) and other components carefully to prevent damage to any of the components.

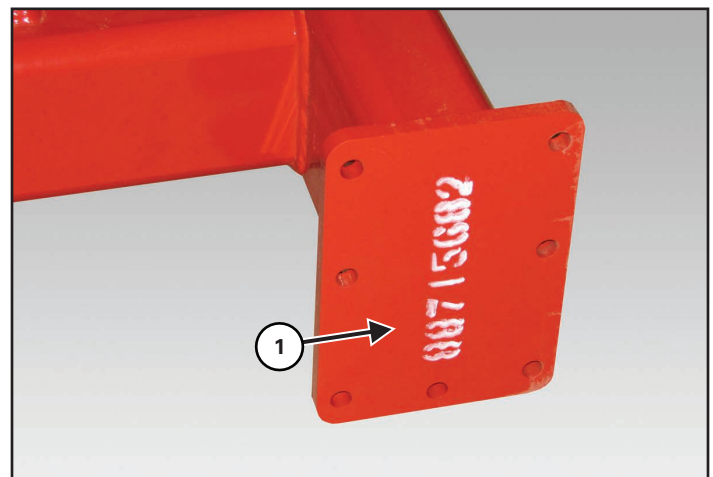
NOTE: If any components are damaged, missing or replacement parts are required, contact your Farm King Dealer.

Assemble the VT3000 in the following order:

Using the packing list, locate and place all components and hardware in one area. Count the individual components and verify that you have received the correct number of components to fully assemble the VT3000.

1. Main Frame (page 24)
2. Wings (page 35)
3. Hydraulics (page 39)
4. Gang Beams (page 58)
5. Gang Sections (page 70)
6. Center Blade Assembly (page 74)

Figure 4



Larger components (Item 1) [Figure 4] are marked for identification.

BASE GROUP

Main Frame Assembly

Assemble the main frame on a flat level surface.



DO NOT permit bystanders to be in the work area when unloading and assembling components.

DO NOT work under suspended parts.

Keep away from moving parts.

Always use lifting devices / vehicles, chains or straps of adequate size and strength when unloading and assembling components.



AVOID INJURY OR DEATH

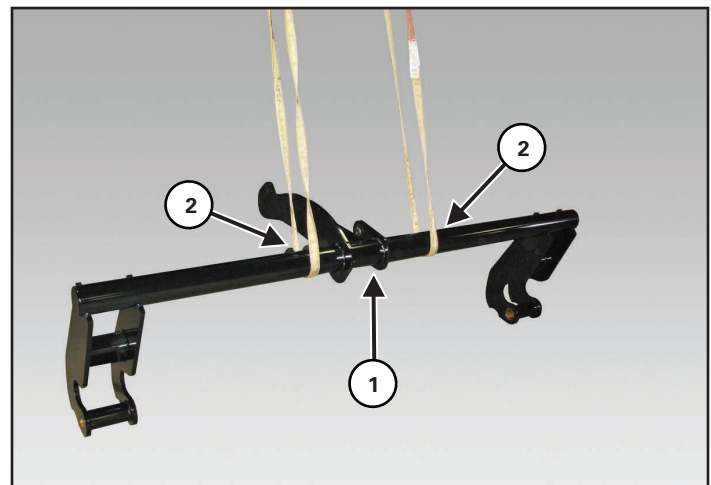
Keep fingers and hands out of pinch points when assembling the equipment.

NOTE: The following images throughout the assembly section of this manual may not show the exact components as they appear but the procedure is correct for all VT3000 series units.



Always use chains, straps and lifting devices that are in good condition and of adequate size to lift the equipment components.

Figure 5



NOTE: The main frame rockshaft is shown without the walking beams installed. Walking beams will be factory installed prior to shipping.

Locate the main frame rockshaft (Item 1). Install straps (Item 2) [Figure 5] around the RH main frame section.

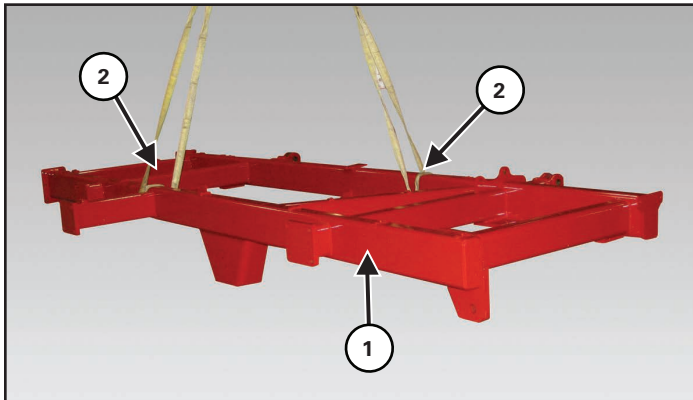
Connect the straps to an approved lifting device.

Raise and move the main frame rockshaft to the assembly area.

Lower the main frame rockshaft to the ground with the leveling crank mount up.

NOTE: Support stands approximately 36 inches (914.4 mm) high equipped with rotating casters / wheels are recommended when assembling the main frame of the VT3000.

Figure 6



Locate LH main frame section (Item 1). Install straps (Item 2) [Figure 6] around the LH main frame section.

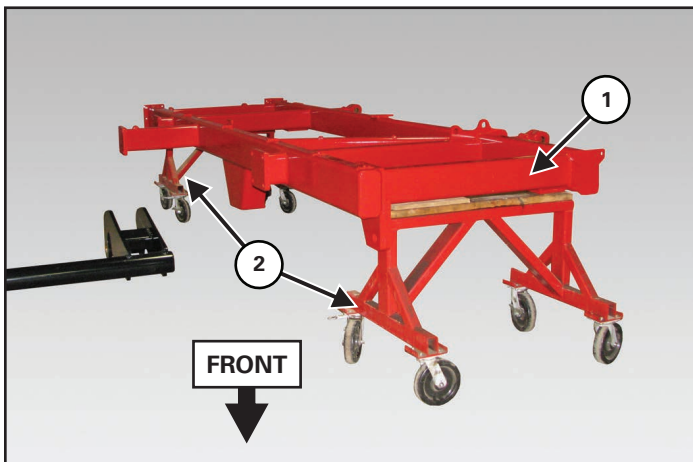
Connect the straps to an approved lifting device.

Raise and move the LH main frame section to the assembly area.

Lower the LH main frame section onto support stands and remove straps.

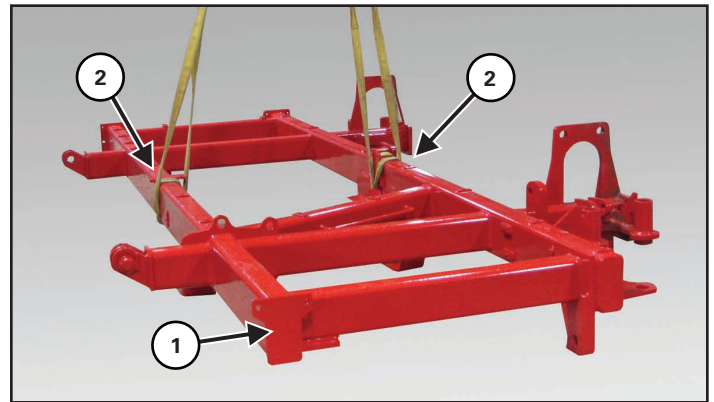
Repeat procedure for RH main frame section.

Figure 7



Lower the LH main frame section (Item 1) onto the support stands (Item 2) [Figure 7] and remove straps.

Figure 8



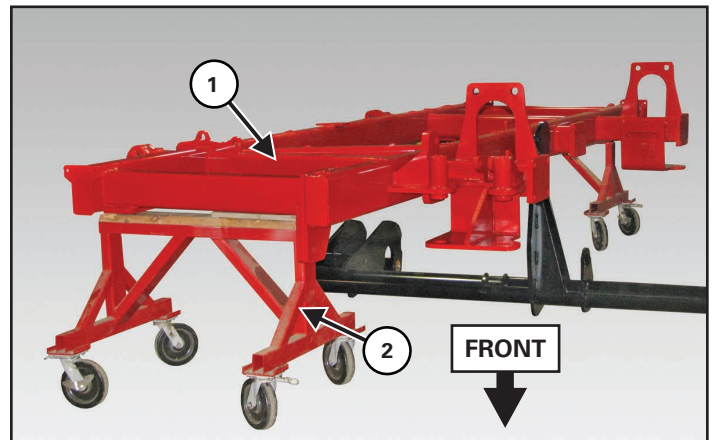
Locate RH main frame section (Item 1). Install straps (Item 2) [Figure 8] around the RH main frame section.

Connect the straps to an approved lifting device.

Raise and move the RH main frame section to the assembly area.

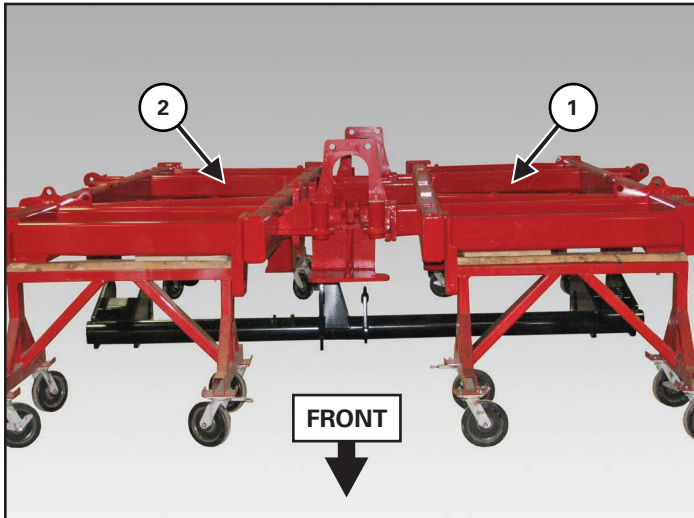
Lower the RH main frame section onto support stands and remove straps.

Figure 9



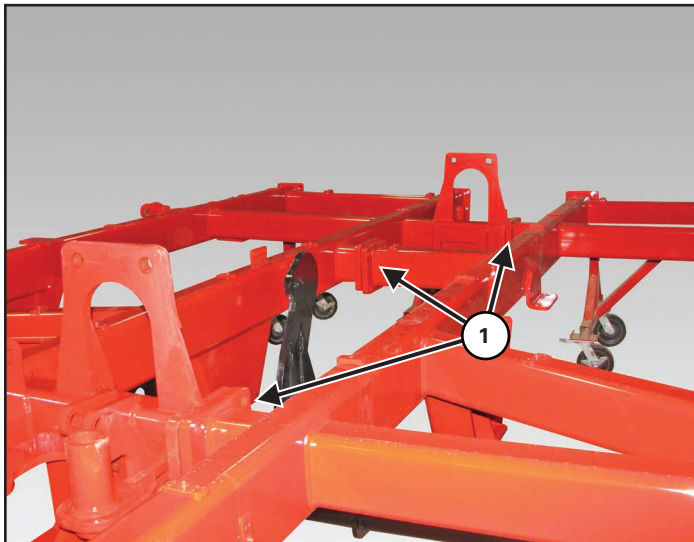
Lower the RH main frame section (Item 1) onto the support stands (Item 2) [Figure 9] and remove straps.

Figure 10



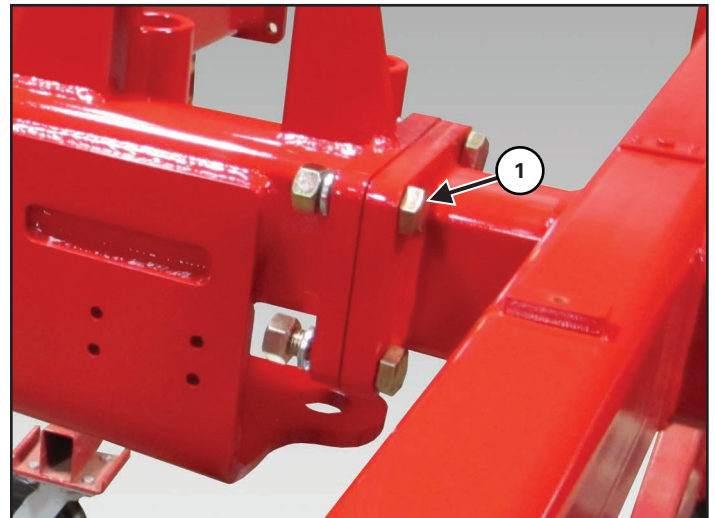
Position the LH (Item 1) and RH (Item 2) [Figure 10] main frame sections over the main frame rockshaft.

Figure 11



Align the three center connecting flanges (Item 1) [Figure 11] of the RH & LH main frame sections.

Figure 12



Install four 1" x 3-1/2" bolts (Item 1) [Figure 12] through the RH & LH main frames rear connecting flanges.

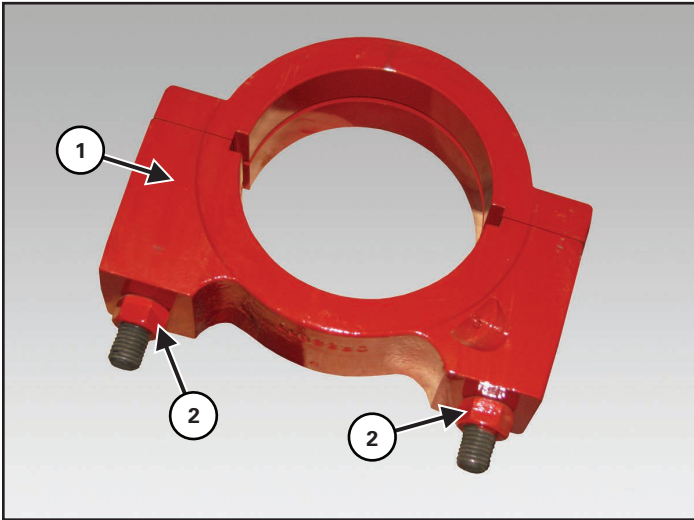
Install one 1" lock washer and 1" nut onto each bolt. Do not tighten at this time.

Repeat for remaining two flanges.

Tighten the twelve connecting flange bolts.

Main Frame Rockshaft Assembly

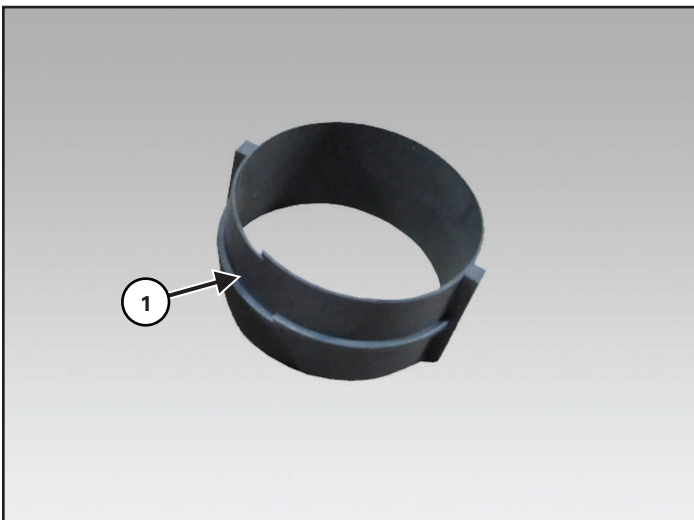
Figure 13



Locate the rockshaft casting assemblies (Item 1) [Figure 13].

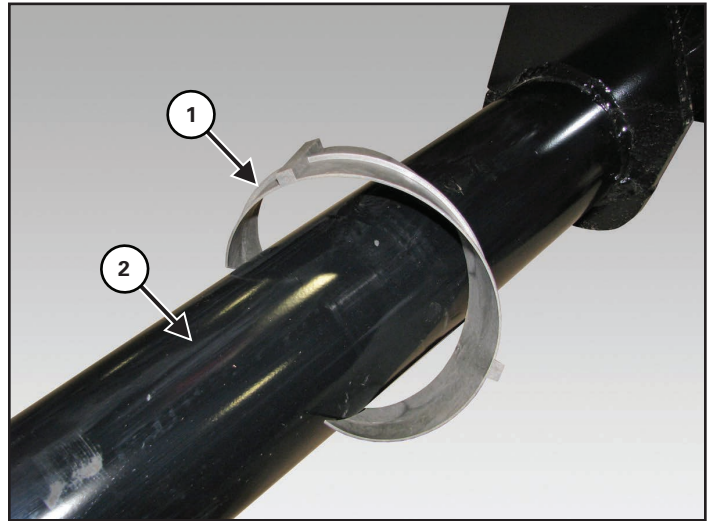
Remove nuts, lock washers and bolts (Item 2) [Figure 13].

Figure 14



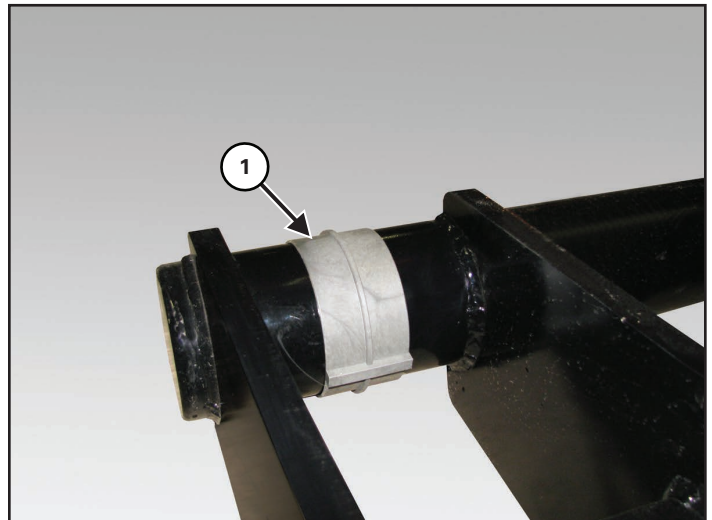
Locate four rockshaft bearings [Figure 14] [Figure 13].

Figure 15



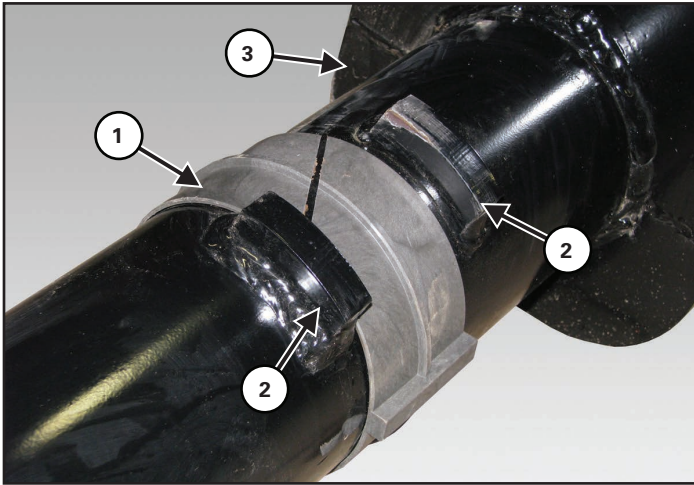
Twist rockshaft bearing (Item 1) and install around the main frame rockshaft (Item 2) [Figure 15].

Figure 16



Install one rockshaft bearing (Item 1) [Figure 16] on each end of the main frame rockshaft.

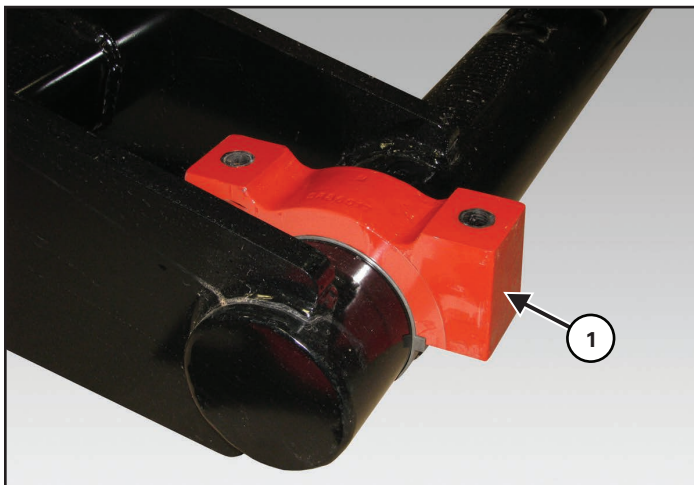
Figure 17



Install one rockshaft bearing (Item 1) between the two tabs (Item 2) next to the rockshaft cylinder arm (Item 3) [Figure 17].

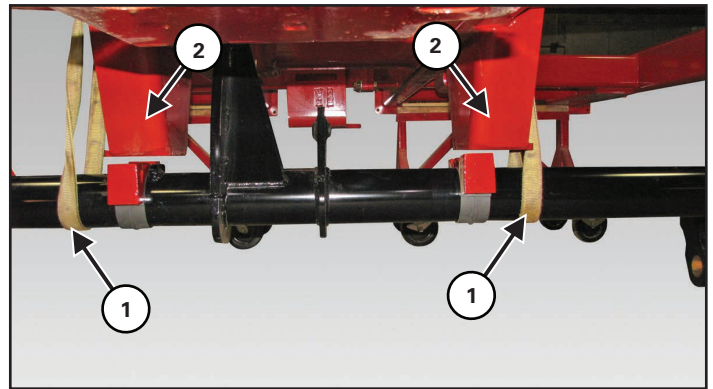
Install one rockshaft bearing on the opposite side of the rockshaft cylinder arm.

Figure 18



Place large half of rockshaft bearing casting (Item 1) [Figure 18] onto the rockshaft bearing (all three locations).

Figure 19

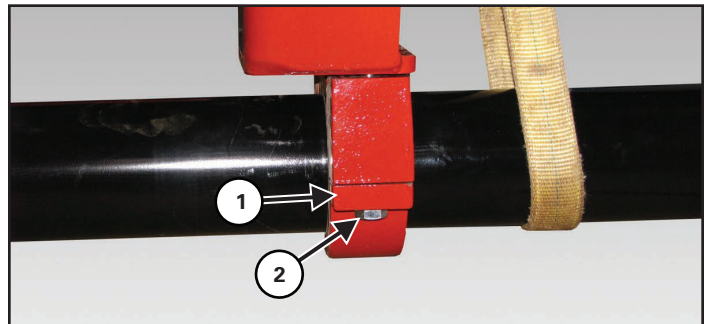


Install straps (Item 1) [Figure 19] around the main rockshaft.

Connect the straps to an approved lifting device.

Raise rockshaft slowly, align rockshaft bearing castings with the mounts (Item 2) [Figure 19] on the main frame (all four locations).

Figure 20



Place small half of rockshaft bearing casting (Item 1) onto the rockshaft, aligning with the larger rockshaft bearing casing. Install two 3/4" x 6-1/2" bolts (Item 2) [Figure 20] up through the rockshaft bearing casings and mount on the main frame. Install one 3/4" lock washer and 3/4" nut on each bolt.

Repeat for remaining three rockshaft bearing casings.

NOTE: Verify that center rockshaft bearing tabs are still in line with the center LH rockshaft bearing mount.

Tighten bolts (all three locations).

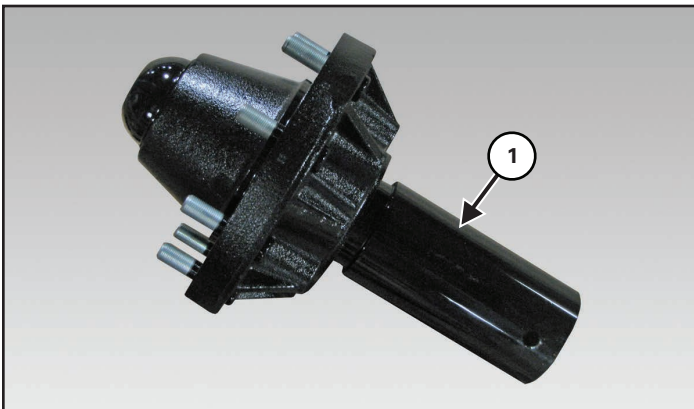
Slowly lower the main frame rockshaft.

NOTE: Rockshaft must move / rotate freely inside the rockshaft bearing casings.

Installing The Main Frame Spindles and Wheels

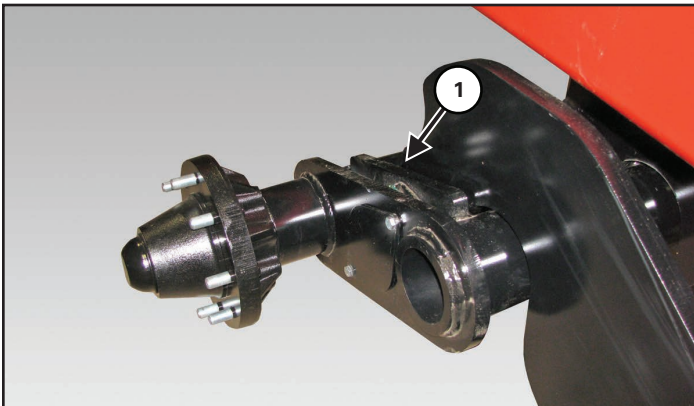
NOTE: The following procedure shows the spindles and wheels on the RH side of the main frame. The procedure is the same for the LH side of the main frame.

Figure 21



Locate four hub assemblies with (large) spindles (Item 1) [Figure 21].

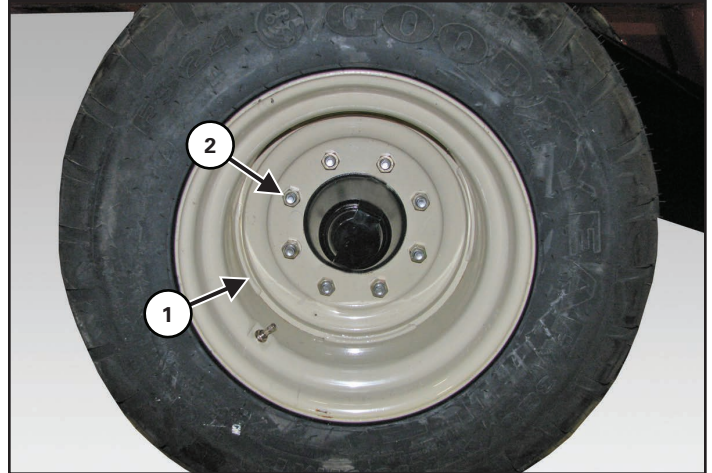
Figure 22



Align spindle mounting hole with the inner mounting hole (Item 1) [Figure 22] of the walking beam (both sides).

Install one 1/2" x 5-1/2" Grade 5 bolt through the walking beam and spindle (both sides). Install one 1/2" lock nut on the bolt and tighten (both sides).

Figure 23



VT3290 & VT3320 Models

Tire Size: FS24 - 380 / 55R 16.5

Align wheel (Item 1) with the spindle. Install the eight 5/8" wheel nuts (Item 2) [Figure 23] (both wheels).

Tighten wheel nuts in a criss-cross pattern to 240 ft.-lb. (325 N•m) torque.

Repeat on opposite side.

VT3345 & VT3375 Models

Tire Size: 440 / 55R 18

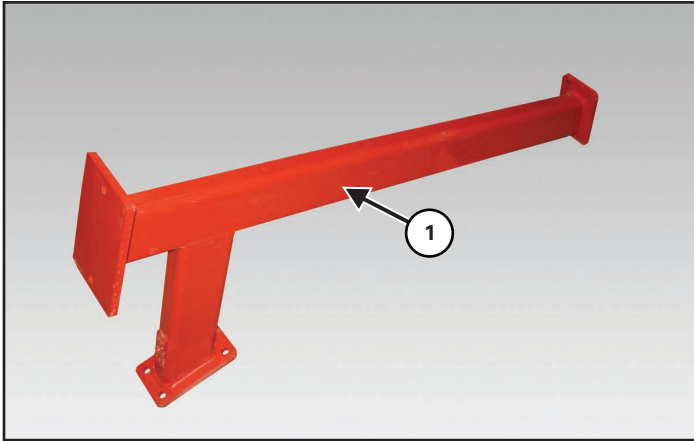
Align wheel (Item 1) with the spindle. Install the ten 3/4" wheel nuts (Item 2) [Figure 23] (both wheels).

Tighten wheel nuts in a criss-cross pattern to 240 ft.-lb. (325 N•m) torque.

Repeat on opposite side.

Wing Support Bracket Assembly

Figure 24

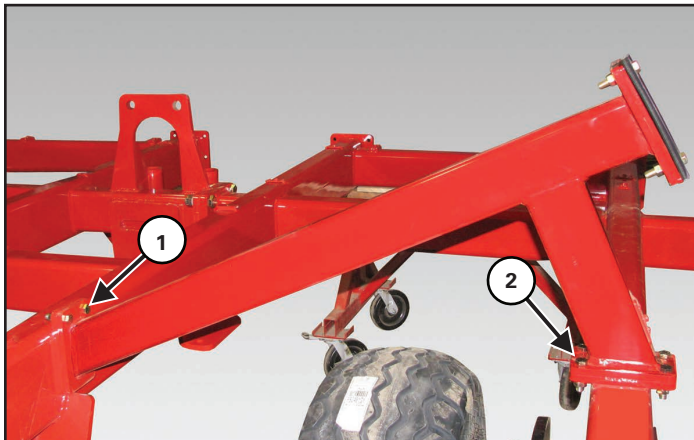


Locate the wing support brackets (Item 1) [Figure 24].

NOTE: The wing support bracket installation may require two people.

Move the wing support bracket to the assembly area.

Figure 25



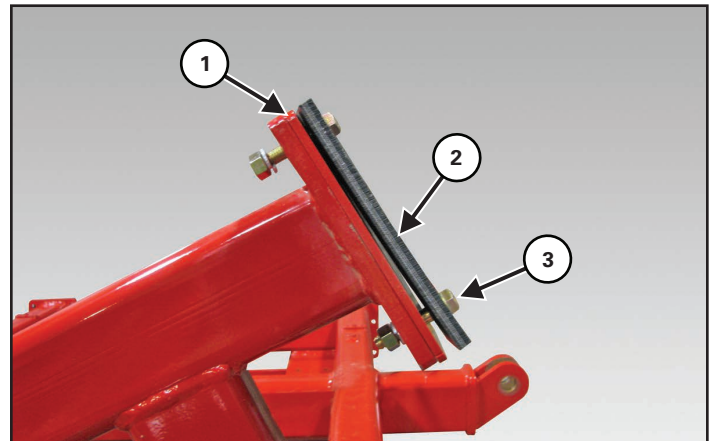
Align one wing support bracket with the two mounting plates on the main frame.

Install two 1/2" x 1-3/4" bolts (Item 1) [Figure 25] through the wing support bracket and mounting bracket on the main frame. Install one 1/2" lock washer and 1/2" nut on each bolt.

Install four 1/2" x 1-3/4" bolts (Item 2) [Figure 25] through the wing support bracket and mounting bracket on the main frame. Install one 1/2" lock washer and 1/2" nut on each bolt. Tighten the six 1/2" bolts.

Repeat for opposite wing support bracket.

Figure 26



Locate two wing stop spacers (Item 1) and two rubber wing stop bumpers (Item 2) [Figure 26].

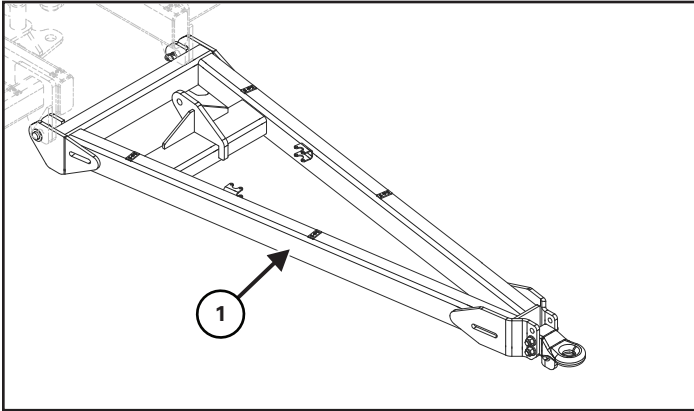
Align the wing stop spacer and wing stop bumper with the mounting plate on the outside end of the wing support bracket. Install four 1/2" x 2-1/12" bolts (Item 3) [Figure 26] through the wing stop bumper and wing stop spacer.

Install one 1/2" lock washer and 1/2" nut on each bolt. Tighten the six 1/2" bolts.

Repeat for opposite wing support bracket.

Hitch Assembly

Figure 27

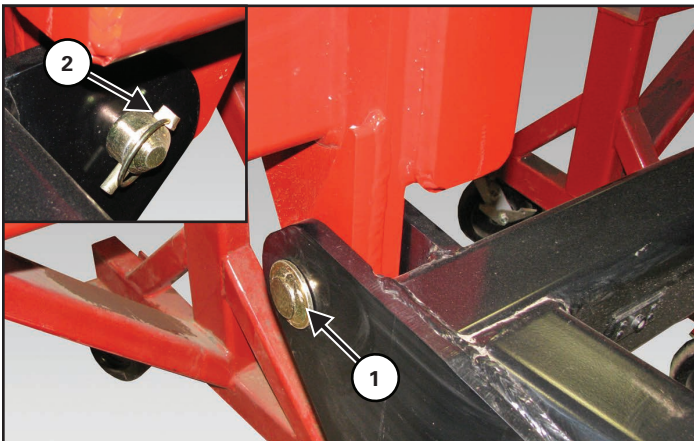


Locate the hitch assembly (Item 1) [Figure 27]. Install straps around the hitch assembly.

Connect the straps to an approved lifting device.

Raise and move the hitch assembly to the assembly area.

Figure 28



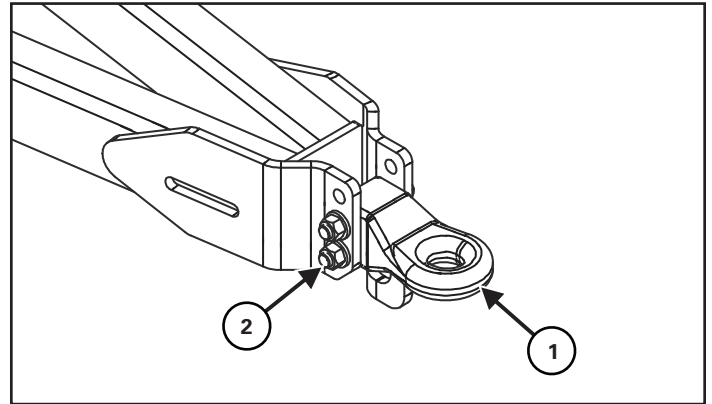
Raise the hitch assembly, aligning the hitch mounts with the mounting brackets on the main frame.

Locate the two hitch mounting pins (Item 1) [Figure 28].

Install the hitch mounting pin through the outer hitch mount, main frame mounting bracket and inner hitch mount (both sides).

Install one locking hitch pin (Item 2) [Figure 28] to secure the hitch to the main frame.

Figure 29



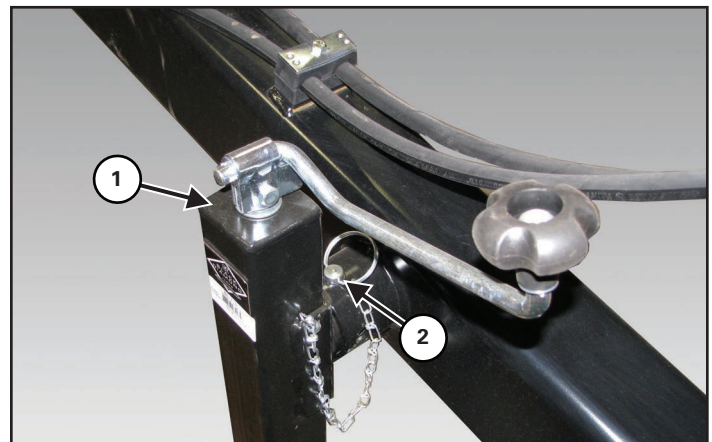
Locate the pintle hitch (Item 1) [Figure 29]. Category 4 pintle shown.

Align the pintle hitch with the mounting brackets on the end of the main hitch.

VT3290 & VT3320 Models: Narrow models are equipped with a Category 4 pintle hitch. Attach to the bottom two holes of the hitch using two 1" x 7" (GR 8) bolts, two 1" lock washers, and two 1" lock nuts (Item 2) [Figure 29].

VT3345 & VT3375 Models: Wide models are equipped with a Category 5 pintle hitch. Attach to all three holes of the hitch using three 1" x 7" (GR 8) bolts, three 1" lock washers, and three 1" lock nuts (Item 2) [Figure 29].

Figure 30

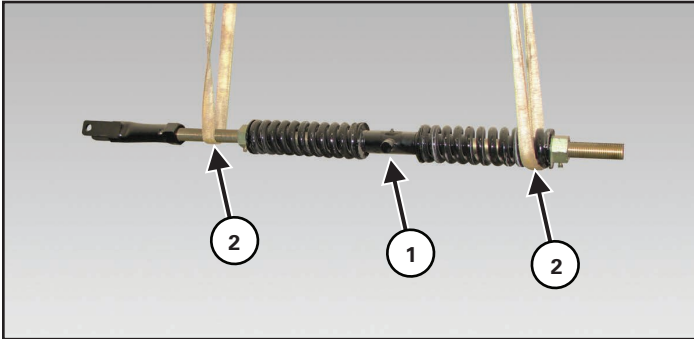


Locate the jack (Item 1). Install the jack (vertical position) onto the hitch using the retaining pin (Item 2) [Figure 30] attached to the jack.

Crank the handle until the foot of the jack is on the ground.

Leveling Link Assembly

Figure 31

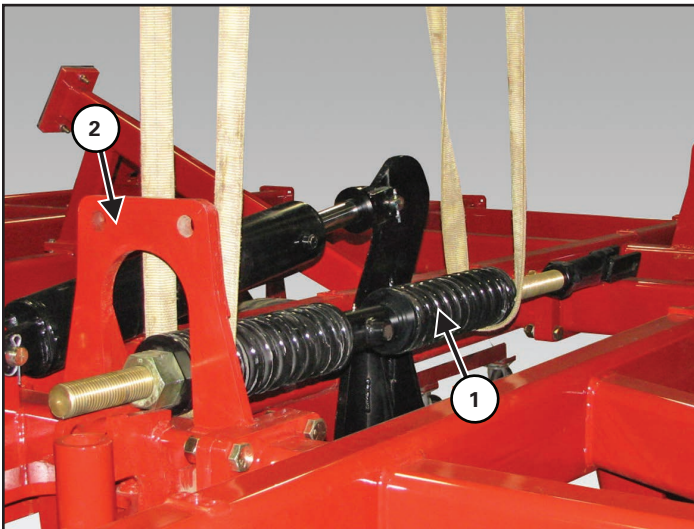


Locate the leveling crank assembly (Item 1). Install straps (Item 2) [Figure 31] around the leveling crank assembly.

Connect the straps to an approved lifting device.

Raise and move the leveling crank assembly to the assembly area.

Figure 32

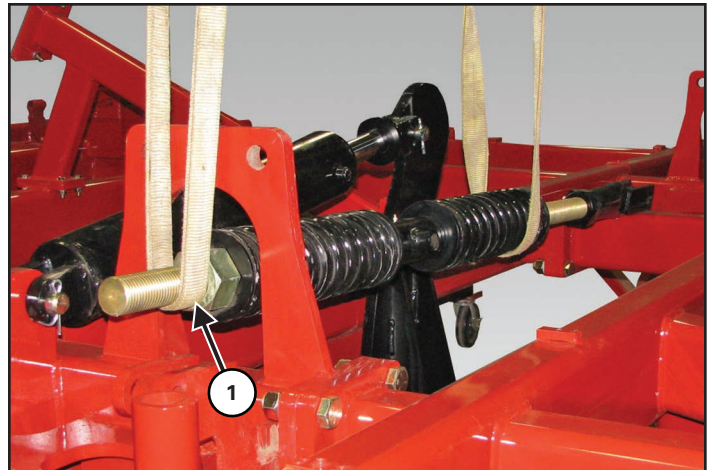


Lower the leveling crank assembly (Item 1), place the leveling crank assembly (jam nut forward) through the front mounting bracket (Item 2) on the main frame [Figure 32].

Lower the leveling crank assembly onto the main frame and remove front strap.

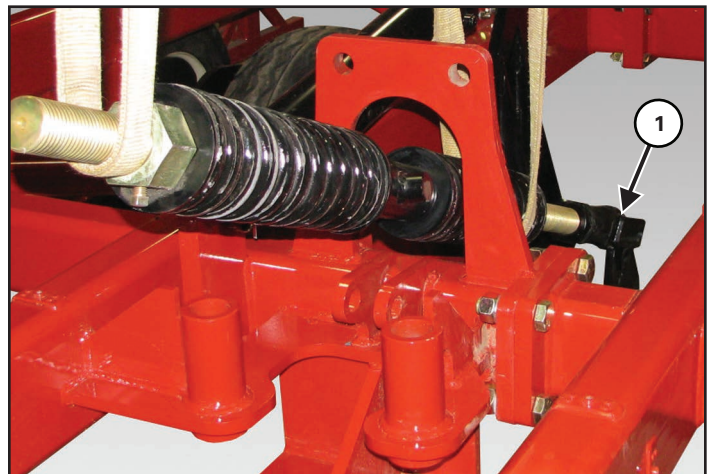
NOTE: Be sure grease fitting on trunion tube is facing up.

Figure 33



Place the front strap (Item 1) [Figure 33] over the leveling crank assembly (jam nut end).

Figure 34

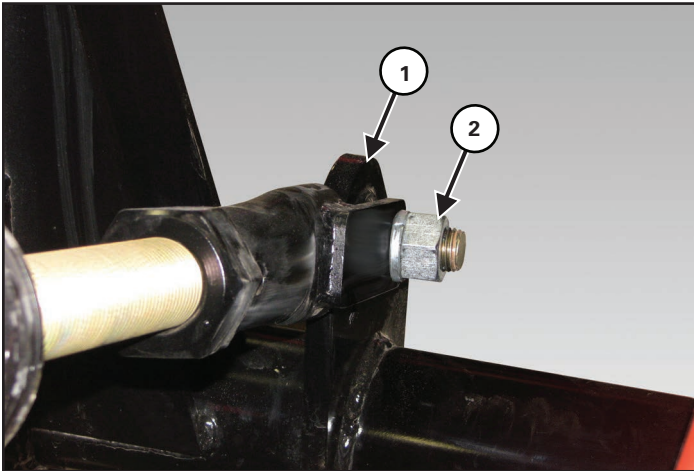


Raise the front of the leveling crank assembly (jam nut end) and align clevis end (Item 1) [Figure 34] with mounting bracket on the main rockshaft.



Do not alter the leveling crank assembly. Machine may become unlevel and damage components.

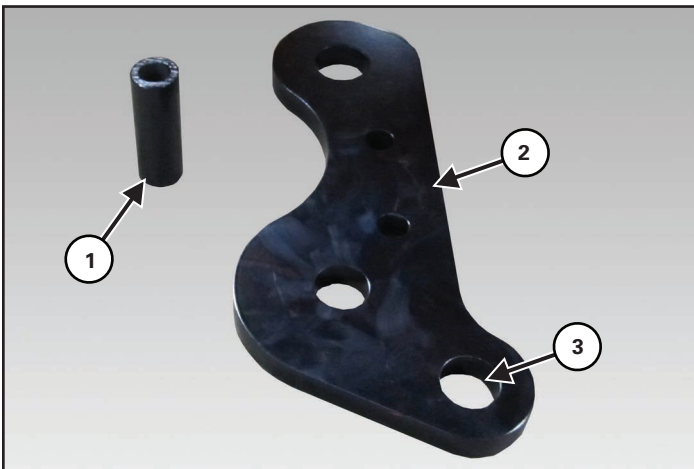
Figure 35



Install one 1-1/4" bolt through the clevis and mounting bracket (Item 1) [Figure 35] on the main rockshaft.

Install one 1-1/4" lock washer and 1-1/4" nut (Item 2) [Figure 35] onto the bolt. Tighten the bolt and nut to 840 ft.-lb. (1139 N•m) torque. Clevis must be drawn up tight to ball joint.

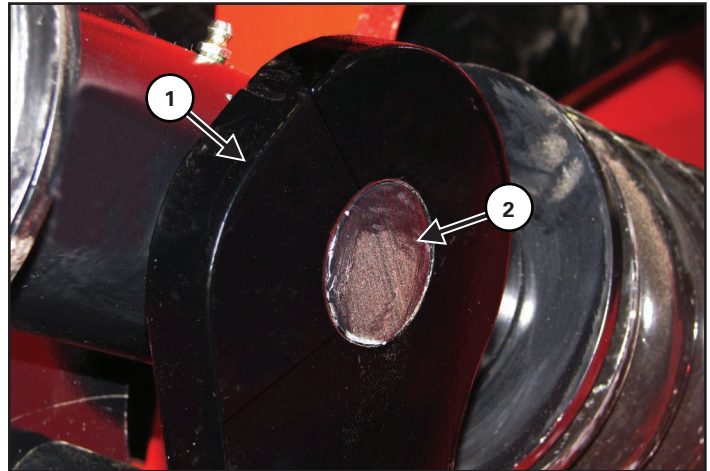
Figure 36



Locate the two crank tubes (Item 1) and two hitch lug leveling plates (Item 2) [Figure 36].

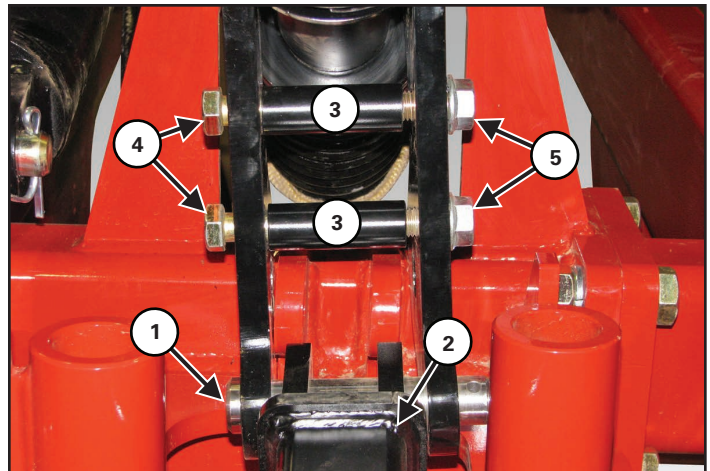
NOTE: When installing the two hitch lug leveling plates, verify that both plates are installed with the larger, 1-1/4" hole forward (Item 3) [Figure 36].

Figure 37



Install one hitch lug leveling plate (Item 1) onto the lugs (Item 2) [Figure 37] on the leveling link assembly (both sides).

Figure 38



Install one 1-1/4" x 6" pin (Item 1) through the two hitch lug leveling plates and base end of the lower hitch link (Item 2) [Figure 38].

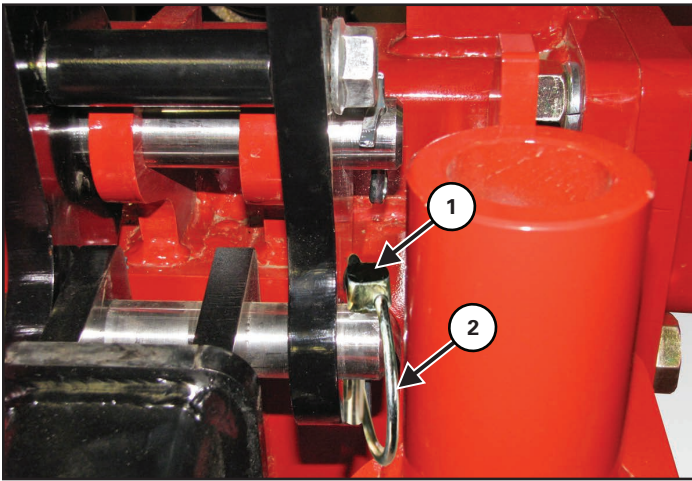
Place one crank tube (Item 3) between the two hitch lug leveling plates. Install one 3/4" x 6" (Grade 8) bolt (Item 4) [Figure 38] through the two hitch lug leveling plates and crank tube.

Install a 3/4" (Grade 8) nut (Item 5) [Figure 38] on the bolt.

Repeat for second crank tube.

Tighten both 3/4" bolts so hitch lug leveling plates are tightened securely against crank tubes.

Figure 39



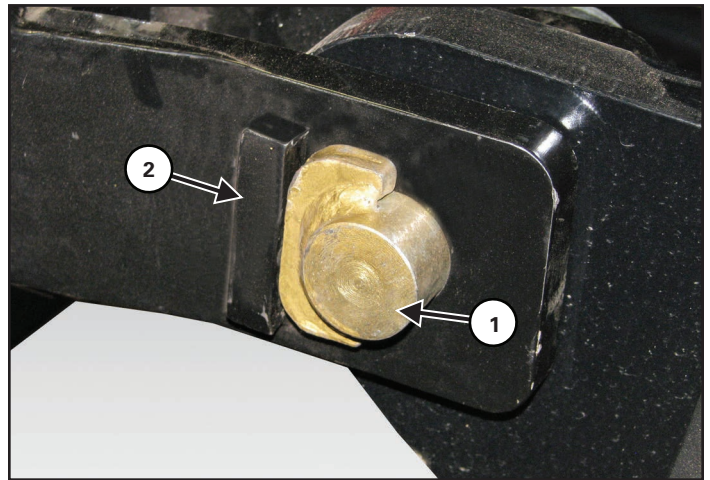
Install one lynch pin (Item 1) through the 1-1/4" x 6" pin (Item 2) [Figure 39] (both sides). Secure lynch pins.

Figure 40



Locate the 1-1/4" x 4-7/8" threaded pin shown in [Figure 40].

Figure 41

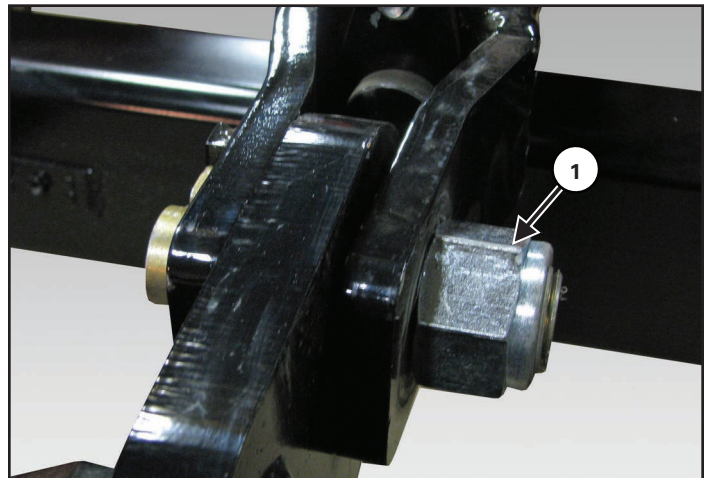


Raise / lower the main hitch to align the lower hitch link and mounting bracket on hitch.

Install the 1-1/4" x 4-7/8" threaded pin (Item 1) [Figure 41] through the lower hitch link (adjustment end) and mounting bracket on hitch.

Align flat side of the 1-1/4" x 4-7/8" threaded pin collar with the lock plate (Item 2) [Figure 41] on the clevis (adjustment end) of the lower hitch link.

Figure 42



Install one 1-1/4" lock nut (Item 1) [Figure 42] onto the 1-1/4" x 4-7/8" threaded pin. Tighten lock nut securely against the lower link clevis.

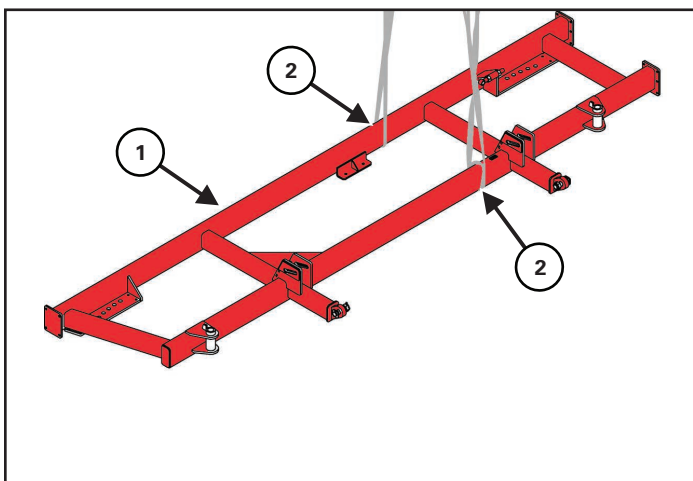
NOTE: Do not over tighten nut. Hitch mount bracket must be free to pivot inside clevis of lower hitch link.

Wing Frames Assembly

NOTE: Support stands approximately 36 inches (914.4 mm) high equipped with rotating casters / wheels are recommended when installing the wing frames onto the main frame.

NOTE: The following procedure shows the RH wing frame installation. The procedure is the same for the LH wing frame.

Figure 43



Locate RH wing frame (Item 1). Install straps (Item 2) [Figure 43] around the RH main frame section.

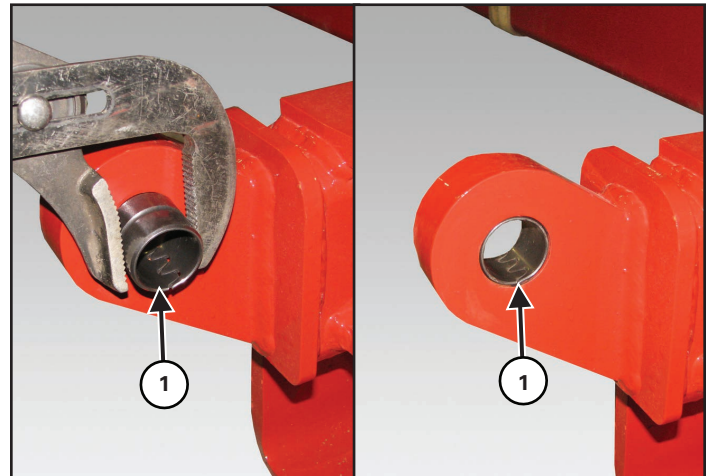
Connect the straps to an approved lifting device.

Raise and move the RH wing frame to the assembly area.

Lower the RH wing frame onto support stands and remove straps.

Repeat procedure for RH wing frame.

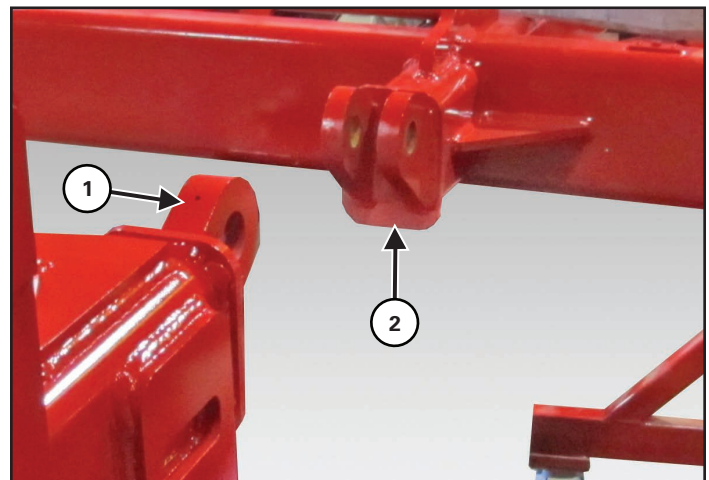
Figure 44



Locate two spring bushings (Item 1) [Figure 44]. Using an adjustable pliers, hold the spring bushing in line with the wing mount and using a hammer, tap the spring bushing into the wing mount. Repeat for other wing mount.

Apply thin layer of grease to inside of bushing.

Figure 45

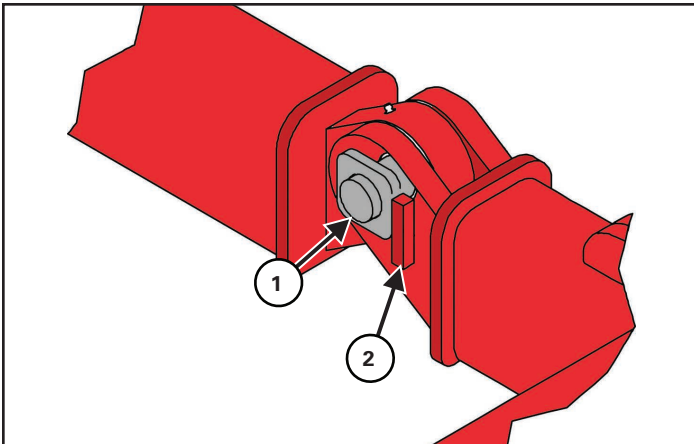


Move the LH wing frame towards the main frame.

Position the wing connecting link (Item 1) inside the main frame wing mounts (Item 2) [Figure 45].

Apply thin layer of grease to inside of bushing.

Figure 46

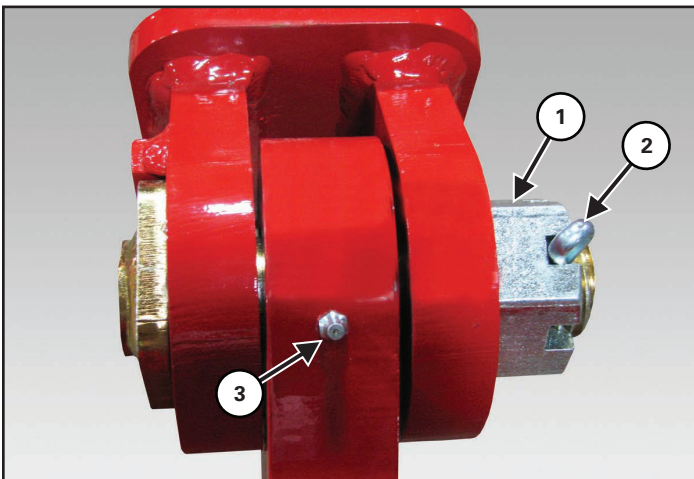


Locate two 1-1/2" wing hinge pins (Item 1) [Figure 46].

NOTE: Install the wing hinge pin with cotter pin hole up & down (both locations).

The square collar of the wing hinge pin (Item 1) shall be parallel with the tab (Item 2) to secure the wing hinge pin (Item 1) [Figure 46] in position (both locations).

Figure 47



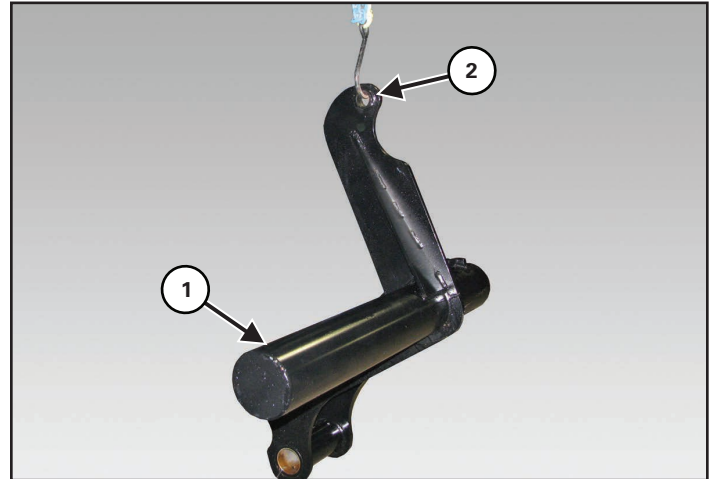
Install and tighten one 1-1/2" Grade 2 slotted nut (Item 1) against the main frame wing mount. Adjust slotted nut as needed to install the 5/16" x 2-1/4" cotter pin (Item 2) [Figure 47] (both locations).

Install grease zerck (Item 3) [Figure 47] (both locations).

Repeat procedure for LH wing frame.

Wing Rockshafts Assembly

Figure 48

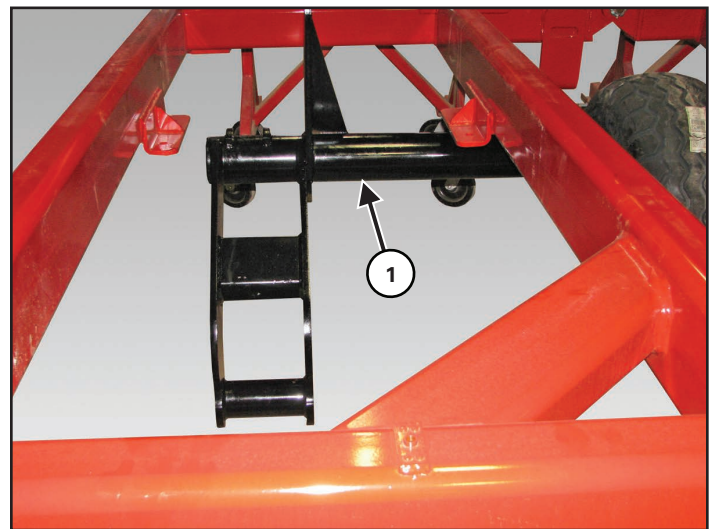


Locate RH wing rockshaft (Item 1). Install the hook / strap (Item 2) [Figure 48].

Connect the hook / strap to an approved lifting device.

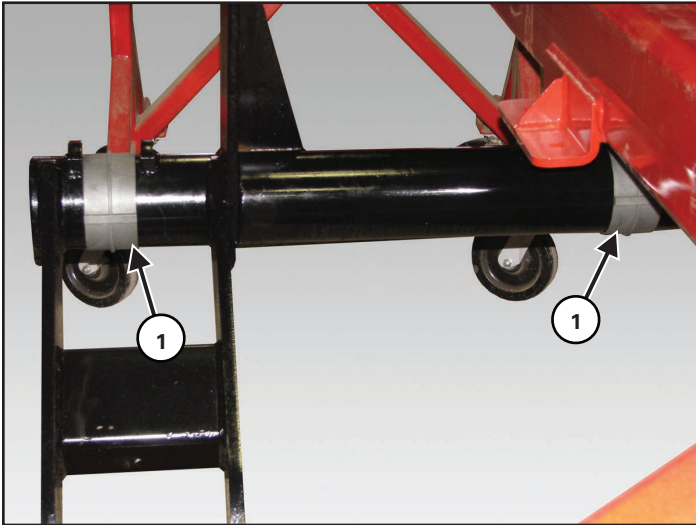
Raise and move the RH wing rockshaft to the assembly area.

Figure 49



Lower the RH wing rockshaft (Item 1) [Figure 49] down through the outer opening in the wing frame.

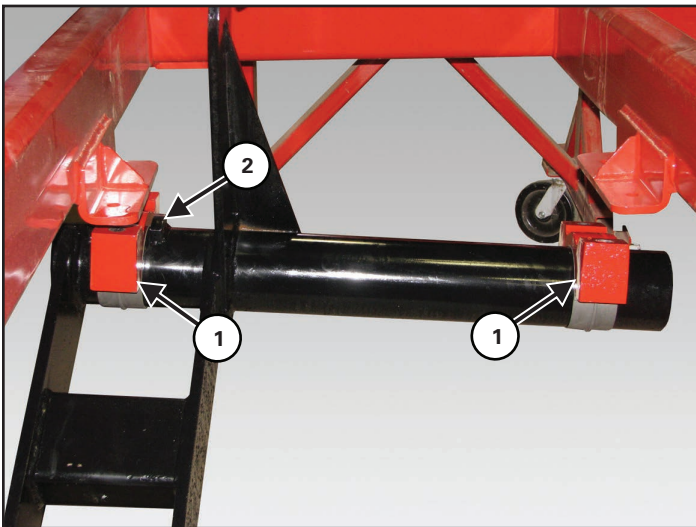
Figure 50



Rotate the RH wing rockshaft until the rockshaft legs are forward.

Install two rockshaft bearings (Item 1) [Figure 50] onto the rockshaft.

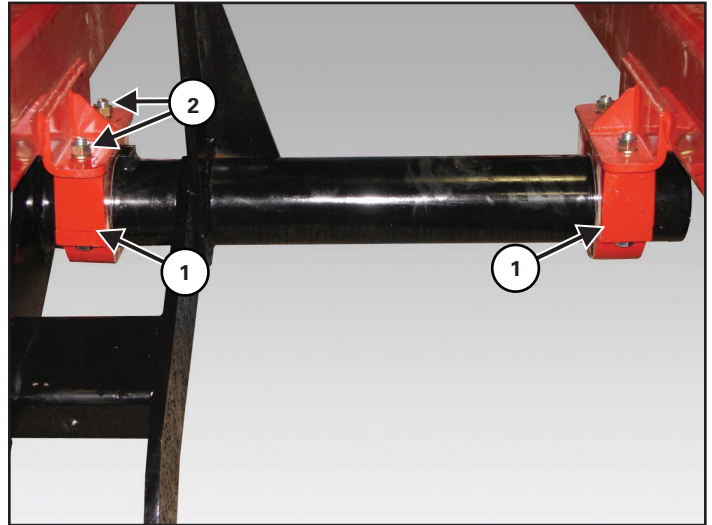
Figure 51



Place one upper rockshaft bearing (Item 1) [Figure 51] onto the rockshaft.

Raise the rockshaft, aligning the upper rockshaft bearing between the two tabs (Item 2) [Figure 51] on the rockshaft bearing mount. Continue raising the rockshaft until the upper bearing contacts the mount.

Figure 52



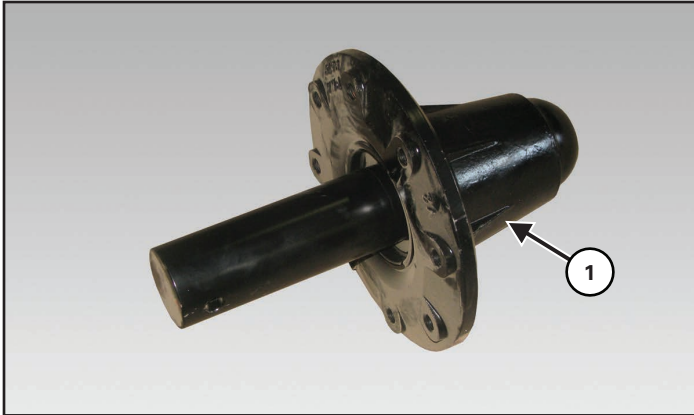
Align and install lower rockshaft bearing (Item 1) [Figure 52] (both bearings).

Install two 3/4" x 6-1/2" (Grade 5) bolts through the lower, upper rockshaft bearings and mount. Install one 3/4" lock washer and 3/4" nut (Item 2) [Figure 52] onto each bolt (both bearings). Do not tighten at this time.

Repeat for LH wing rockshaft.

Wing Spindles And Wheels Assembly

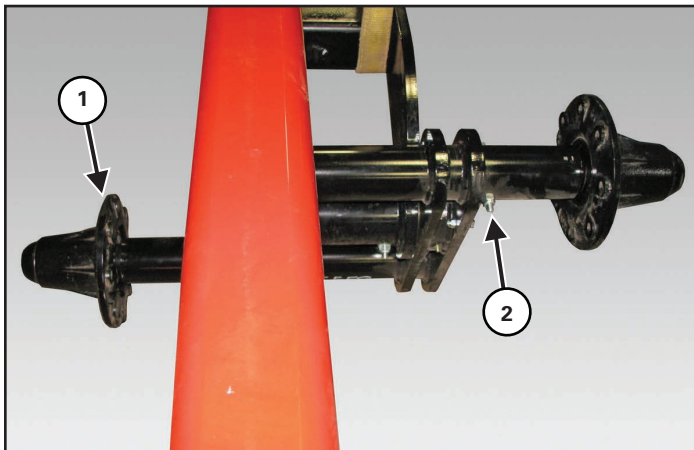
Figure 53



Locate two / four eight-bolt hub assemblies with (small) spindles (Item 1) [Figure 53].

NOTE: The following procedure shows the spindles and wheels on the RH wing frame. The procedure is the same for the LH wing frame.

Figure 54

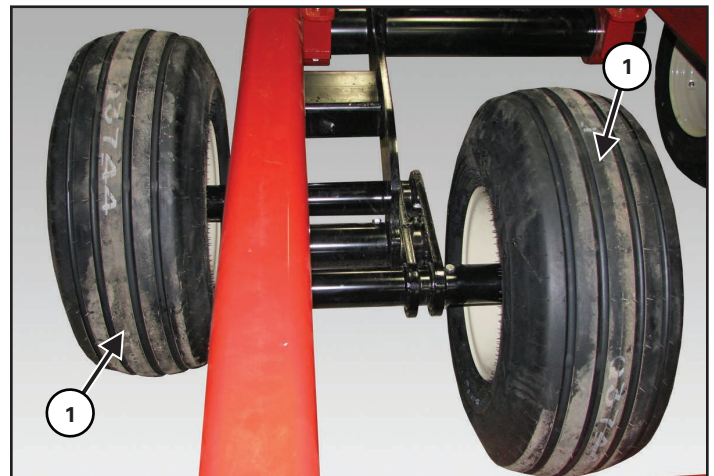


Insert the two hub assemblies into the inner / outer mount tubes at the bottom of the wing rockshaft.

Align spindle mounting hole with the outer mounting hole (Item 1) [Figure 54] of the mount tube (both sides).

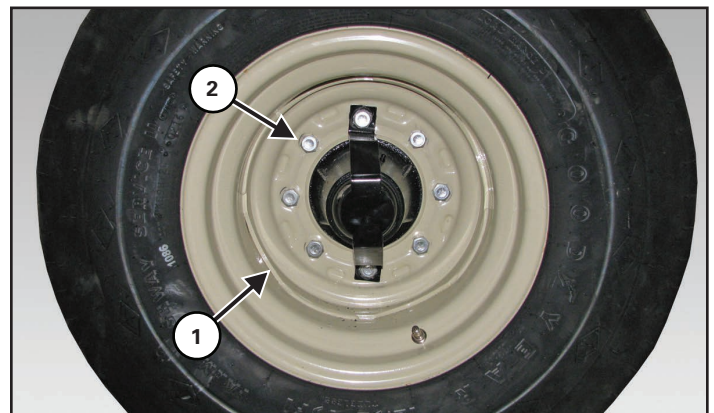
Install one 1/2" x 4-1/2" (Grade 5) bolt (Item 2) [Figure 54] through the mount tube and spindle. Install one 1/2" lock nut on the bolt and tighten (both sides).

Figure 55



Align and install the wing rockshaft tires (Item 1) [Figure 55] (both sides).

Figure 56



Tire Size 12.5L x 15

Align wheel (Item 1) with the spindle. Install the eight 9/16" X 1-1/4" wheel bolts (Item 2) [Figure 56] (both wheels).

Tighten wheel nuts in a criss-cross pattern to 150 ft.-lb. (203 N•m).

Repeat on opposite side.

HYDRAULICS

Main Frame Rockshaft Hydraulic Cylinder Assembly



WARNING

AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

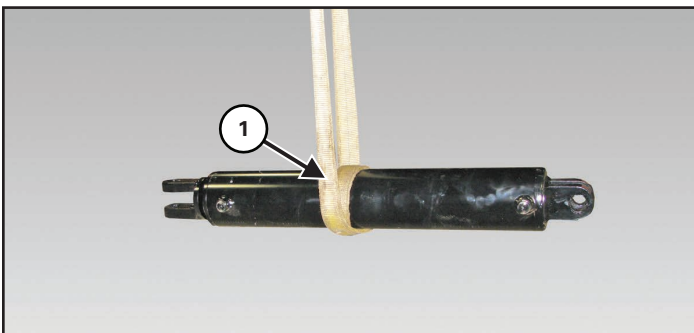
- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.



IMPORTANT

Fluid such as engine oil, hydraulic fluid, coolants, grease, etc. must be disposed of in an environmentally safe manner. Some regulations require that certain spills and leaks on the ground must be cleaned in a specific manner. See local, state and federal regulations for the correct disposal.

Figure 57



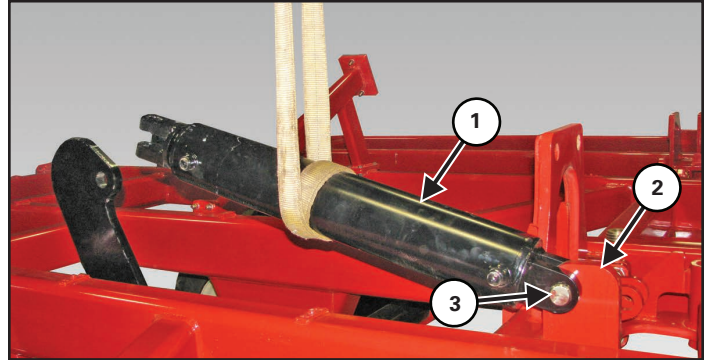
Locate one 4-1/2" x 24" hydraulic cylinder.

Install a strap (Item 1) [Figure 57] around the hydraulic cylinder.

Connect the strap to an approved lifting device.

Raise and move the hydraulic cylinder to the assembly area.

Figure 58



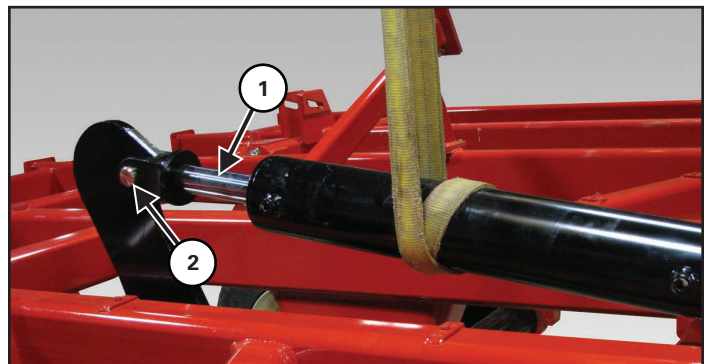
Align the 4-1/2" x 24" hydraulic cylinder (Item 1) with the mount (Item 2) [Figure 58] (ports facing left) at the front of the LH main frame.

Apply thin coat of grease to mount hole.

Locate and install one cylinder pin (Item 3) [Figure 58] through the wing lift hydraulic cylinder and mount. Install one 5/16" x 1-3/4" cotter pin.

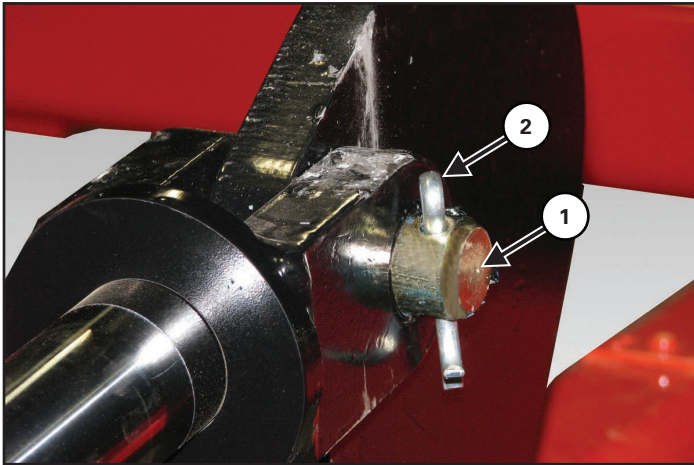
Loosen / remove port plugs to allow the cylinder rod to be extended.

Figure 59



Extend the 4-1/2" x 24" hydraulic cylinder rod (Item 1), align with the mounting hole (Item 2) [Figure 59] on the main rockshaft.

Figure 60

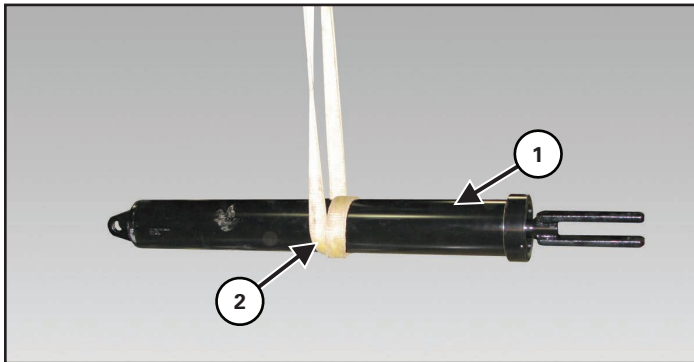


Install pin (Item 1). Install one 5/16" x 1-3/4" cotter pin (Item 2) **[Figure 60]**.

Remove the strap.

Installing Wing Lift Cylinders

Figure 61



Locate the four 5" x 36" wing lift hydraulic cylinders (Item 1) **[Figure 61]**.

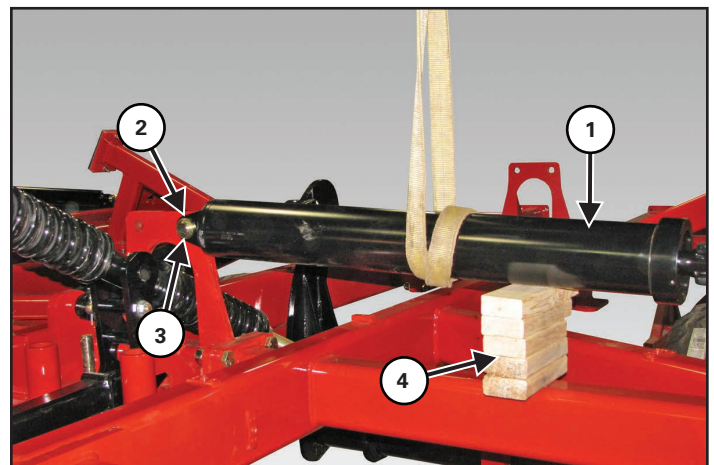
Install a strap (Item 2) **[Figure 61]** around one hydraulic cylinder.

Connect the strap to an approved lifting device.

Raise and move the hydraulic cylinder to the assembly area.

Repeat for remaining three cylinders.

Figure 62



Align LH front wing lift cylinder (Item 1) (ports facing back) with the left hole on the mounting plate (Item 2) **[Figure 62]** located at the rear of the LH main frame.

Install one cylinder pin (Item 3) **[Figure 62]** through the RH wing lift cylinder and mounting plate. Install one 5/16" x 1-3/4" cotter pin.

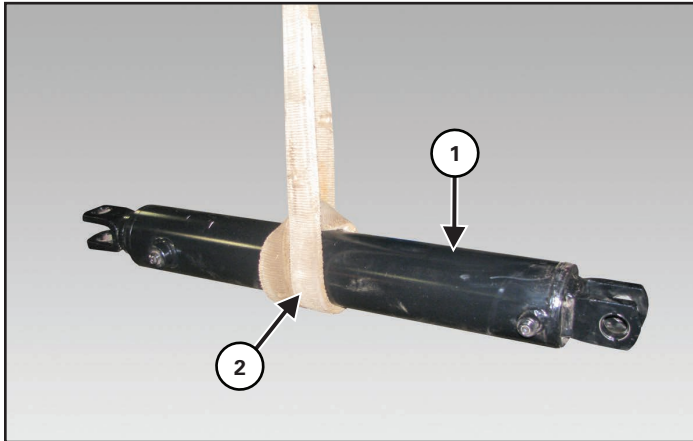
Place blocks (Item 4) under the LH wing lift cylinder (Item 1) **[Figure 62]**.

Lower LH wing lift cylinder onto the block and remove strap.

Repeat procedure for remaining wing lift cylinders.

Wing Rockshaft Hydraulic Cylinders Assembly

Figure 63



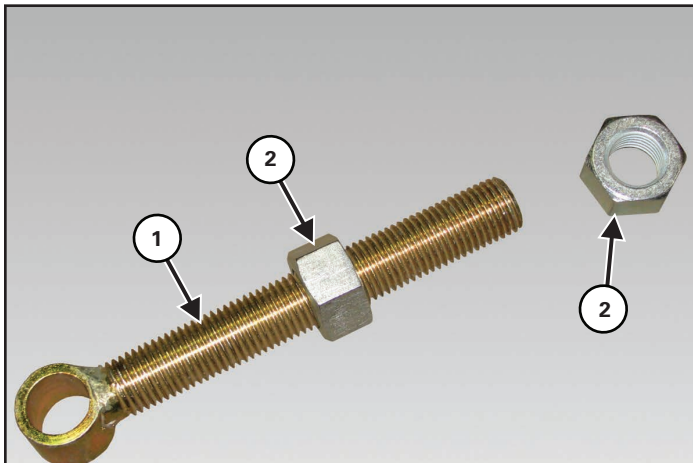
Locate the RH 4" x 24" hydraulic cylinder (Item 1) [Figure 63] and LH 3-1/2" x 24" hydraulic cylinder

Install a strap (Item 2) [Figure 63] around the hydraulic cylinder.

Connect the strap to an approved lifting device.

Raise and move the hydraulic cylinder to the assembly area.

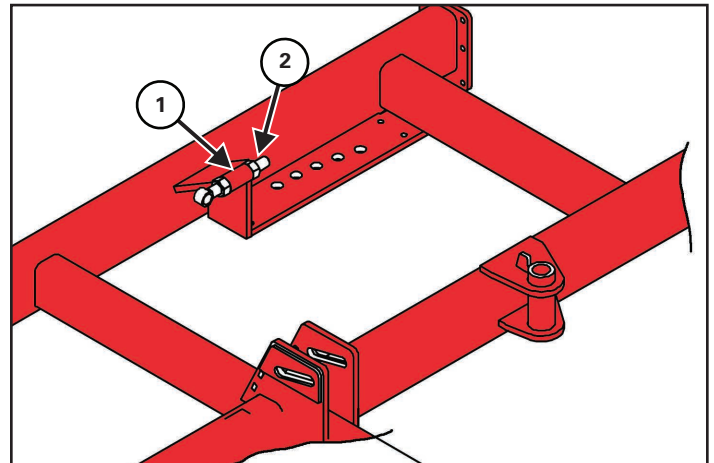
Figure 64



Locate the two eye bolt rods (Item 1) and four 1-1/4" (Grade 2) nuts (Item 2) [Figure 64].

Thread one 1-1/4" nut on the eye bolt rod. Thread the nut on approximately two inches from the eye.

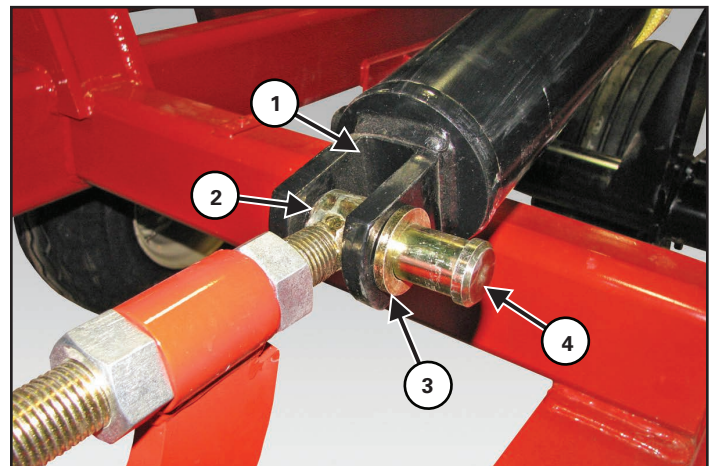
Figure 65



Install one eye bolt rod through the mount (Item 1) on the RH wing (rear). Install second 1-1/4" nut (Item 2) [Figure 65]. Do not tighten at this time.

Repeat for LH wing rockshaft cylinder.

Figure 66



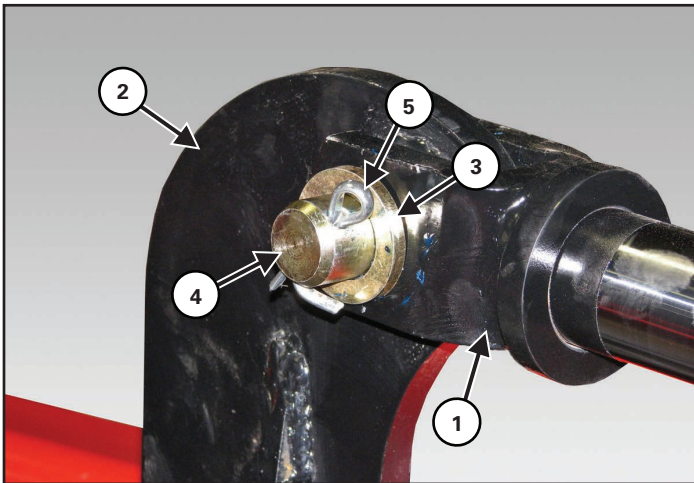
Align RH 4" x 24" wing rockshaft cylinder (Item 1) (ports facing up) with the RH wing mounting bracket & eye-bolt rod (Item 2) [Figure 66].

Install one washer (Item 3) and cylinder pin (Item 4) [Figure 66] through the RH wing lift cylinder and mounting plate. Install two 5/16" x 1-3/4" cotter pins.

Repeat for LH 3-1/2" x 24" wing rockshaft cylinder.

Loosen / remove port plugs to allow the cylinder rod to be extended.

Figure 67



Extend the RH 4" x 24" hydraulic cylinder rod (Item 1) towards the rockshaft mounting bracket (Item 2) [Figure 67].

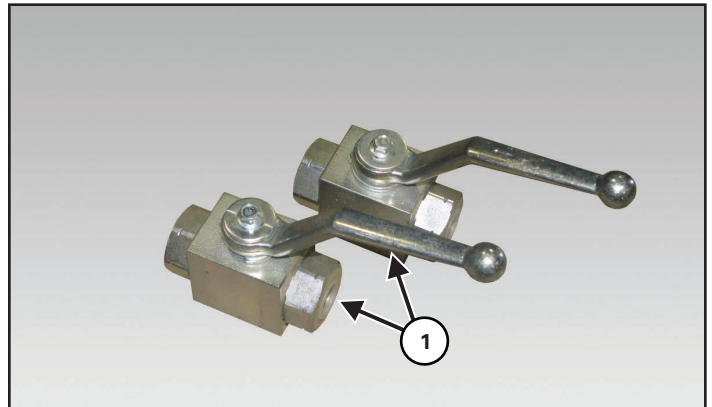
Apply thin layer of grease to spring bushing in rockshaft arm.

Align clevis with the hole in the rockshaft mounting bracket. Install washer (Item 3) and cylinder pin (Item 4) through the clevis and rockshaft mounting bracket. Install one 5/16" x 1-3/4" cotter pin (Item 5) [Figure 67].

Repeat procedure for LH 3-1/2" x 24" wing rockshaft hydraulic cylinder.

Hydraulic Control Valves Assembly

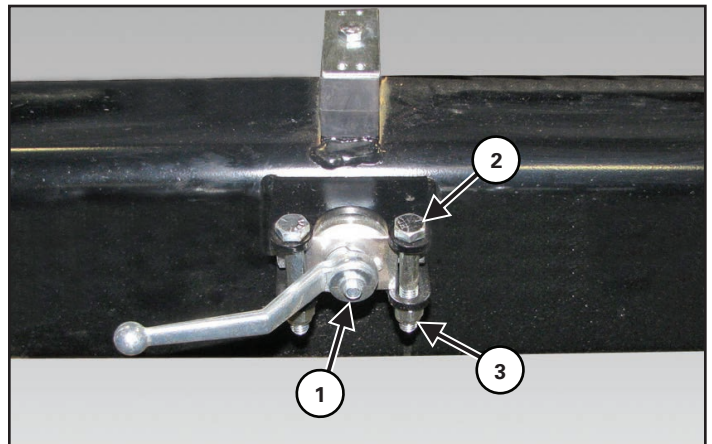
Figure 68



Locate the two 3/8" 2-way ball valves (Item 1) [Figure 68], two 5/16" x 4" Grade 5 bolts and two 5/16" lock nuts.

Rotate each ball valve lever 1/4 turn.

Figure 69



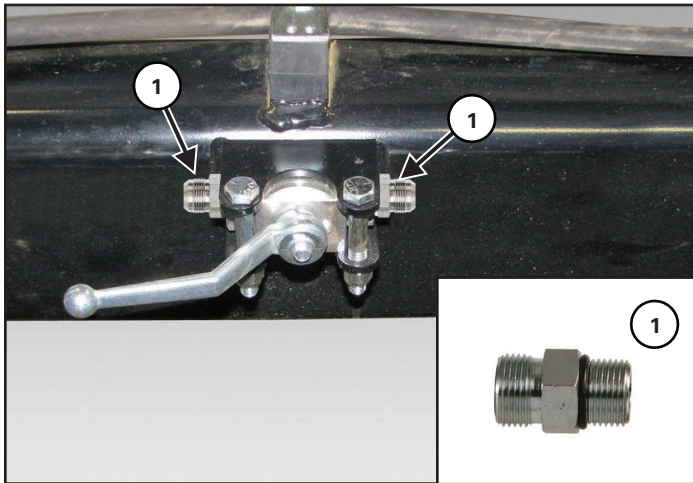
Position the one ball valve (Item 1) [Figure 69] (levers facing back) between the two mounting brackets inside LH and RH side of main hitch frame.

Install the two 5/16" x 2-1/2" Grade 5 bolts (Item 2) through the mounting brackets (over the ball valves). Install one 5/16" lock nut (Item 3) [Figure 69] on each bolt and tighten. Do not over tighten.

Hydraulic Fittings Assembly

Control Valve Fittings

Figure 70

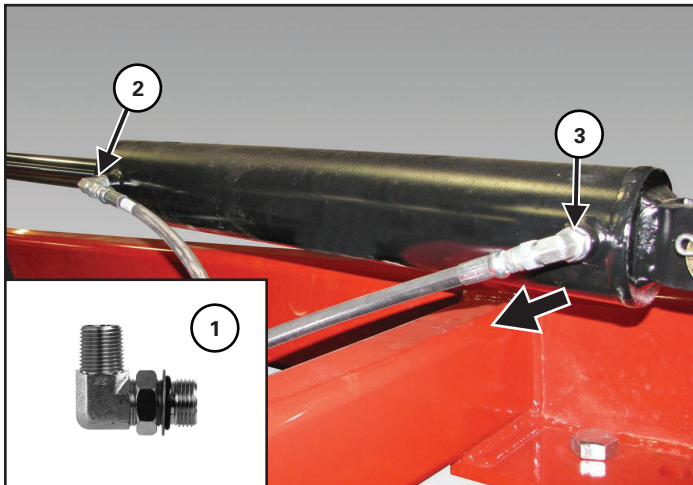


Locate two 3/4" MORB x male flat face straight fittings (Item 1) [Figure 70].

Install the two 3/4" MORB x male flat face straight fittings into the two ball valves.

RH Wing Rockshaft Cylinder Fittings

Figure 71

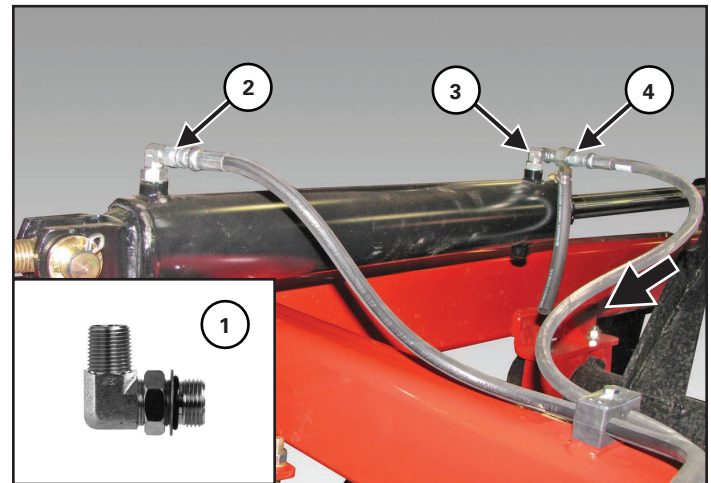


Locate two 3/4" MORB x flat face 90° elbows (Item 1) [Figure 71].

Install the front (Item 2) and rear fitting (Item 3) [Figure 71] at angle shown and tighten.

LH Wing Rockshaft Cylinder Fittings

Figure 72



Locate two 3/4" MORB x flat face 90° elbows (Item 1) [Figure 72] and one in-line test port adapter w / check valve.

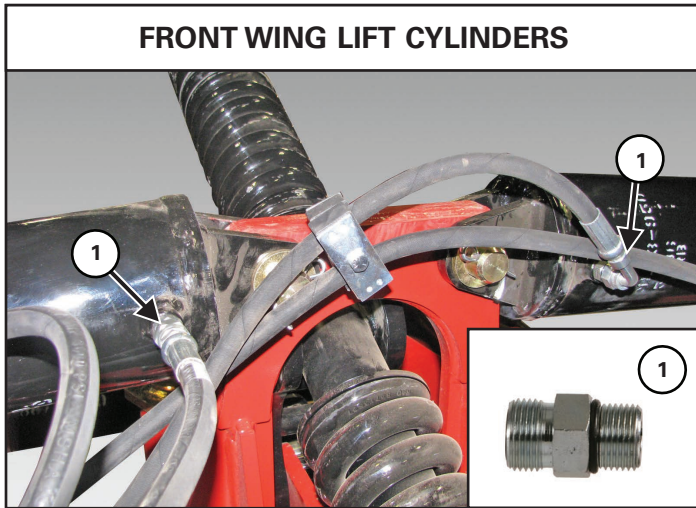
Install the rear fitting (Item 2) [Figure 72] at angle shown and tighten.

Install the front fitting (Item 3) [Figure 72] at angle shown and tighten.

Install one in-line test port adapter w / check valve (check valve facing down) (Item 4) [Figure 72] onto the front 90° fitting.

Wing Lift Cylinder Fittings

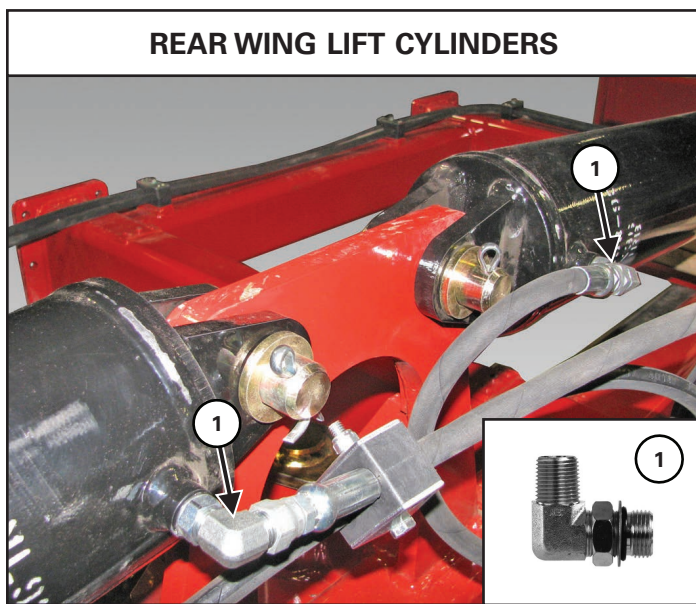
Figure 73



Locate two 9/16" MORB x flat face straight fittings (Item 1) [Figure 73].

Install both fittings and tighten.

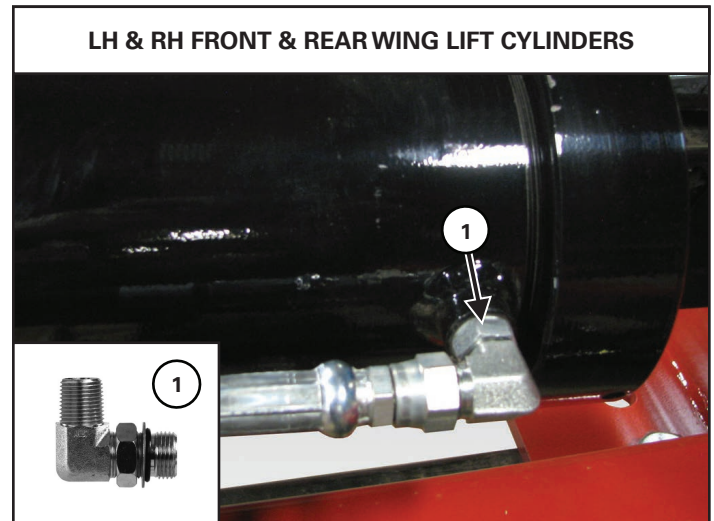
Figure 74



Locate two 9/16" MORB x flat face 90° elbows (Item 1) [Figure 74].

Install one 9/16" MORB x flat face 90° elbow (Item 1) [Figure 74] into the rod end of the four wing lift cylinders. Install so fitting faces center, then tighten.

Figure 75

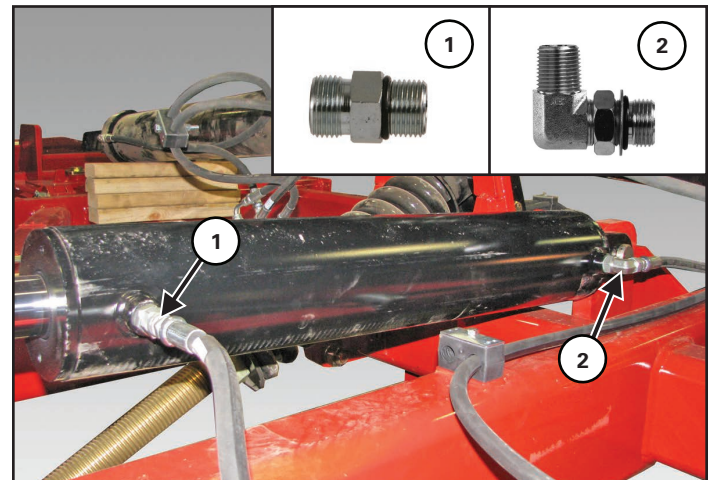


Locate two 90° elbows (Item 1) [Figure 75].

Install one 9/16" MORB x flat face 90° elbow (Item 1) [Figure 75] into the rod end of the four wing lift cylinders. Install so fitting faces center, then tighten.

Main Frame Rockshaft Lift Cylinder Fittings

Figure 76



Locate one 3/4" MORB x flat face straight fitting (Item 1) and one 90° elbow fitting (Item 2) [Figure 76].

Install the 3/4" MORB x flat face straight fitting (Item 1) into the rod end port and the 3/4" MORB x flat face 90° elbow fitting (Item 2) [Figure 76] into the base end of the main frame rockshaft lift cylinder, then tighten until the fitting is facing forward (slightly up).

Hydraulic Hose Assembly And Routing



AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

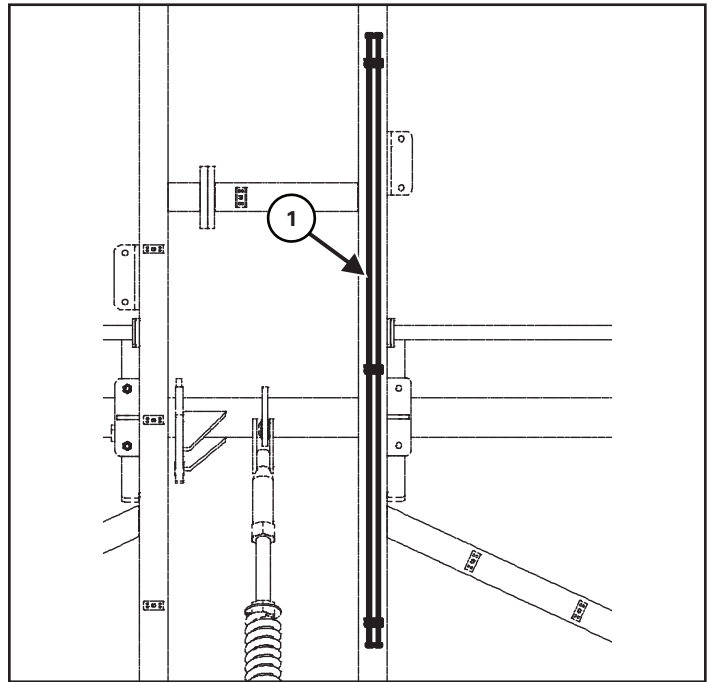


Fluid such as engine oil, hydraulic fluid, coolants, grease, etc. must be disposed of in an environmentally safe manner. Some regulations require that certain spills and leaks on the ground must be cleaned in a specific manner. See local, state and federal regulations for the correct disposal.



Apply thread sealant to the threads of all hydraulic hose fittings before installing.

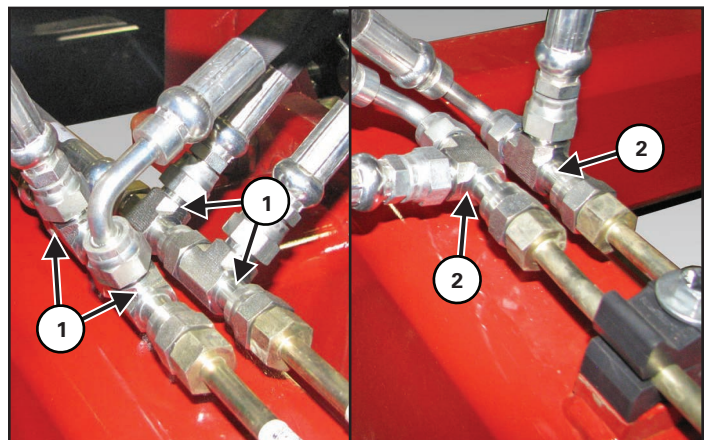
Figure 77



Locate the two hydraulic tubes (Item 1) [Figure 77].

Secure the hydraulic tubes to the LH main frame using three hold-down clamps, 3/8" x 1-3/4" bolts and 3/8" flat washers.

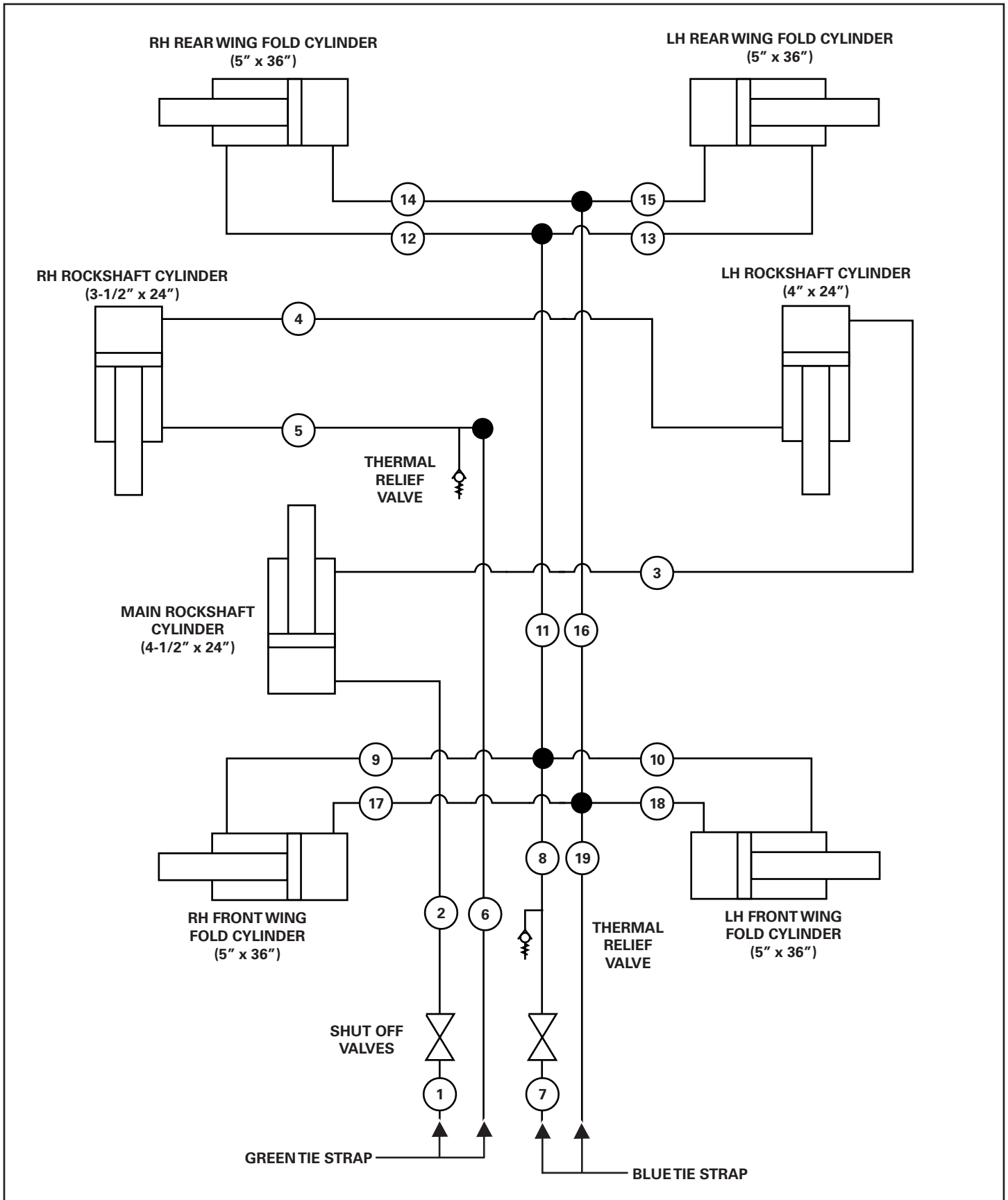
Figure 78



Install two 6ORFS tees (Item 1) [Figure 78] to the each of the front ends of the tubes.

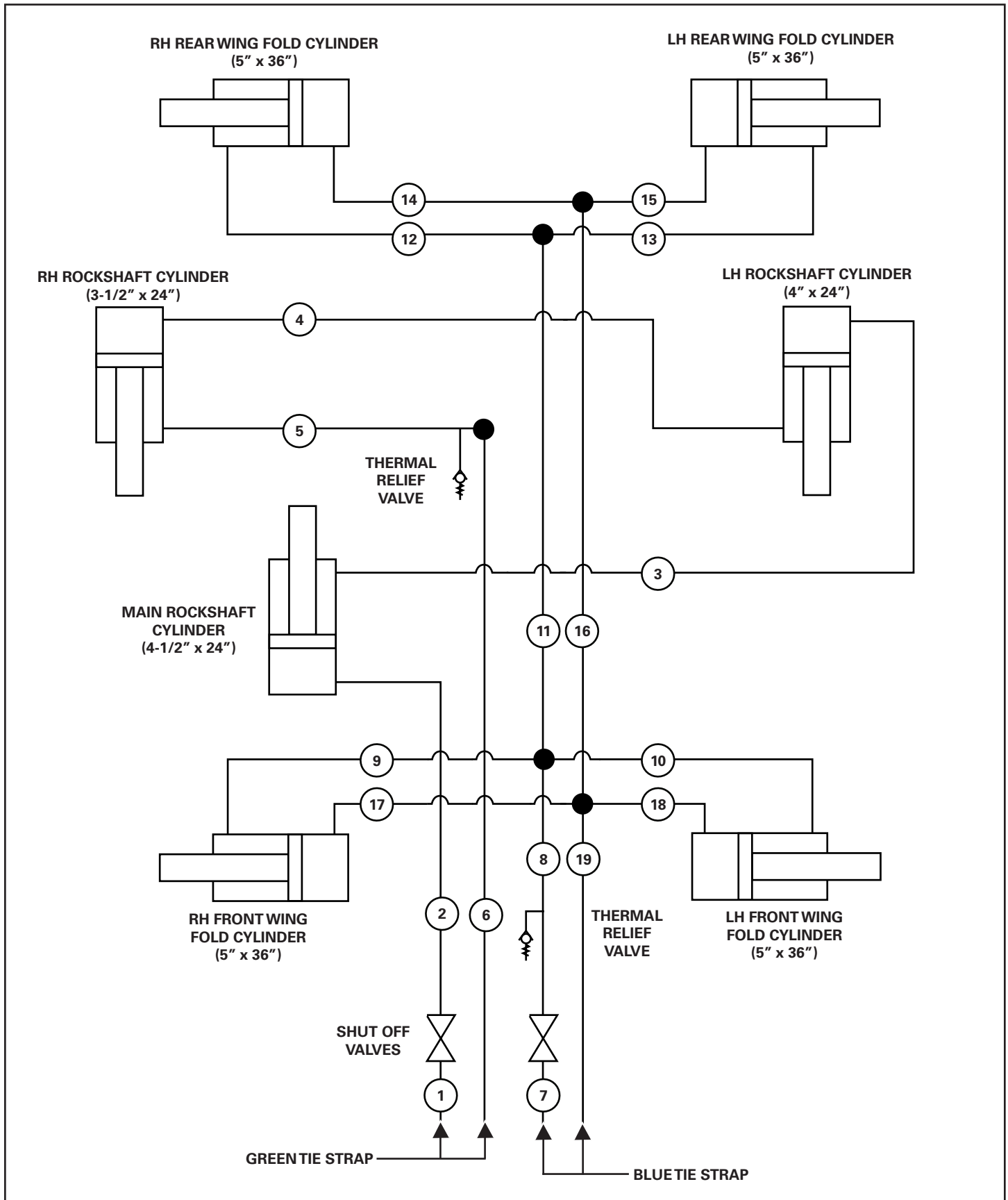
Install one 6ORFS tee (Item 2) [Figure 78] to each of the rear ends of the tubes.

Hydraulic Hose Identification - VT3290 & VT3320



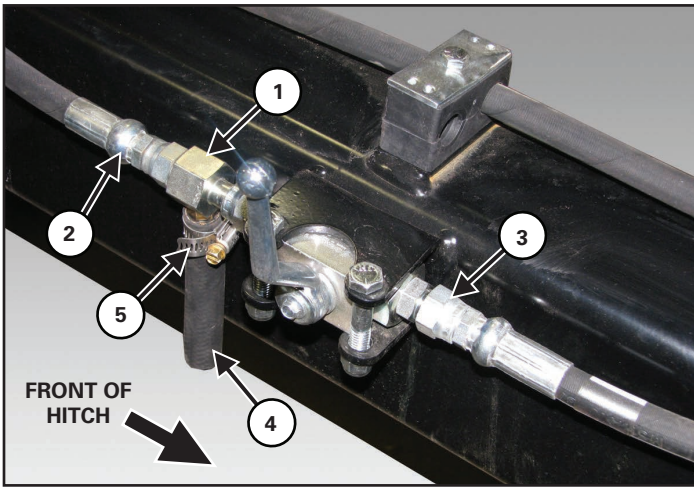
ITEM	DESCRIPTION	HOSE ROUTING	LENGTH (IN.)
ROCKSHAFT HYDRAULIC CIRCUIT			
1	HOSE (-06, 06-00, 06-00, 3480) PN: 88716584	FROM TRACTOR TO SHUT OFF VALVE	137
2	HOSE (-06, 06-00, 06-00, 78) PN: 88718068	FROM SHUT OFF VALVE TO MAIN ROCKSHAFT CYL (BASE)	78
3	HOSE (-06, 06-00, 06-00, 5700) PN: 88716583	FROM MAIN ROCKSHAFT CYL (ROD) TO LH ROCKSHAFT CYL (BASE)	224.4
4	HOSE (-06, 06-00, 06-00, 274) PN: 88718069	FROM LH ROCKSHAFT CYL (ROD) TO RH ROCKSHAFT CYL (BASE)	274
5	HOSE (-06, 06-00, 06-00, 118) PN: 88717981	FROM RH ROCKSHAFT CYL (ROD) TO REAR ELBOW FITTING	118
6	HOSE (-06, 6-00, 6-00 , 319) PN: 88717387	FROM REAR ELBOW FITTING TO TRACTOR	319
WING FOLD HYDRAULIC CIRCUIT			
7	HOSE (-06, 06-00, 06-00, 3480) PN: 88716584	FROM TRACTOR TO SHUT OFF VALVE	137
8	HOSE (-06, 06-00, 06-00, 2150) PN: 88716145	FROM SHUT OFF VALVE TO FRONT TEE FITTINGS	84.5
9	HOSE (-06, 06-00, 06-00, 1600) PN: 88716036	FROM FRONT TEE FITTINGS TO RH FRONT WING FOLD CYL (ROD)	63
10	HOSE (-06, 06-00, 06-00, 1600) PN: 88716036	FROM FRONT TEE FITTINGS TO RL FRONT WING FOLD CYL (ROD)	63
11	TUBE (-06, -06-00, -06-00, 2200) PN: 88715976	FROM FRONT TEE FITTINGS TO REAR TEE FITTINGS	86.5
12	HOSE [-06, 06-00, 06-90, 1650] PN: 88716038	FROM REAR TEE FITTINGS TO RH REAR WING FOLD CYL (ROD)	65
13	HOSE [-06, 06-00, 06-90, 1650] PN: 88716038	FROM REAR TEE FITTINGS TO LH REAR WING FOLD CYL (ROD)	65
14	HOSE [-06, 06-00, 06-90, 700] PN: 88716037	FROM RH REAR WING FOLD CYL (BASE) TO REAR TEE FITTINGS	27.6
15	HOSE [-06, 06-00, 06-90, 700] PN: 88716037	FROM LH REAR WING FOLD CYL (BASE) TO REAR TEE FITTINGS	27.6
16	TUBE (-06, -06-00, -06-00, 2200) PN: 88715976	FROM REAR TEE FITTINGS TO FRONT TEE FITTINGS	86.5
17	HOSE [-06, 06-00, 06-00, 700] PN: 88716035	FROM FRONT TEE FITTINGS TO RH FRONT WING FOLD CYL (BASE)	27.6
18	HOSE [-06, 06-00, 06-00, 700] PN: 88716035	FROM FRONT TEE FITTINGS TO LH FRONT WING FOLD CYL (BASE)	27.6
19	HOSE [-06, 06-00, 06-00, 5700] PN: 88716583	FROM FRONT TEE FITTINGS TO TRACTOR	224

Hydraulic Hose Identification - VT3345 & VT3375



ITEM	DESCRIPTION	HOSE ROUTING	LENGTH (IN.)
ROCKSHAFT HYDRAULIC CIRCUIT			
1	HOSE (-06, 06-00, 06-00, 3480) PN: 88716584	FROM TRACTOR TO SHUT OFF VALVE	137
2	HOSE [-06, 06-00, 06-00, 78] PN: 88718068	FROM SHUT OFF VALVE TO MAIN ROCKSHAFT CYL (BASE)	78
3	HOSE [-06, 06-00, 06-00, 258] PN: 88718108	FROM MAIN ROCKSHAFT CYL (ROD) TO LH ROCKSHAFT CYL (BASE)	258
4	HOSE [-06, 06-00, 06-00, 343] PN: 88718109	FROM LH ROCKSHAFT CYL (ROD) TO RH ROCKSHAFT CYL (BASE)	343
5	HOSE [-06, 06-00, 06-00, 152] PN: 88718110	FROM RH ROCKSHAFT CYL (ROD) TO REAR ELBOW FITTING	152
6	HOSE [-06, 6-00, 6-00, 319] PN: 88717387	FROM REAR ELBOW FITTING TO TRACTOR	319
WING FOLD HYDRAULIC CIRCUIT			
7	HOSE [-06, 06-00, 06-00, 3480] PN: 88716584	FROM TRACTOR TO SHUT OFF VALVE	137
8	HOSE [-06, 06-00, 06-45, 80] PN: 88718111	FROM SHUT OFF VALVE TO FRONT TEE FITTINGS	80
9	HOSE [-06, 06-00, 06-00, 72] PN: 88718113	FROM FRONT TEE FITTINGS TO RH FRONT WING FOLD CYL (ROD)	72
10	HOSE [-06, 06-00, 06-00, 43] PN: 88718114	FROM FRONT TEE FITTINGS TO RL FRONT WING FOLD CYL (ROD)	43
11	TUBE (-06, -06-00, -06-00, 2200) PN: 88715976	FROM FRONT TEE FITTINGS TO REAR TEE FITTINGS	86.5
12	HOSE [-06, 06-00, 06-90, 73] PN: 88718115	FROM REAR TEE FITTINGS TO RH REAR WING FOLD CYL (ROD)	73
13	HOSE [-06, 06-00, 06-90, 64] PN: 88717821	FROM REAR TEE FITTINGS TO LH REAR WING FOLD CYL (ROD)	64
14	HOSE [-06, 06-00, 06-90, 36] PN: 88718119	FROM RH REAR WING FOLD CYL (BASE) TO REAR TEE FITTINGS	36
15	HOSE [-06, 06-00, 06-90, 34] PN: 88718118	FROM LH REAR WING FOLD CYL (BASE) TO REAR TEE FITTINGS	34
16	TUBE (-06, -06-00, -06-00, 2200) PN: 88715976	FROM REAR TEE FITTINGS TO FRONT TEE FITTINGS	86.5
17	HOSE [-06, 06-00, 06-00, 35] PN: 88718116	FROM FRONT TEE FITTINGS TO RH FRONT WING FOLD CYL (BASE)	35
18	HOSE [-06, 06-00, 06-00, 40] PN: 88718117	FROM FRONT TEE FITTINGS TO LH FRONT WING FOLD CYL (BASE)	40
19	HOSE [-06, 06-00, 06-45, 219] PN: 88718112	FROM FRONT TEE FITTINGS TO TRACTOR	219

Figure 79



Install one in-line test port adapter (Item 1) [Figure 79] on the rear fitting of the LH shut-off valve.

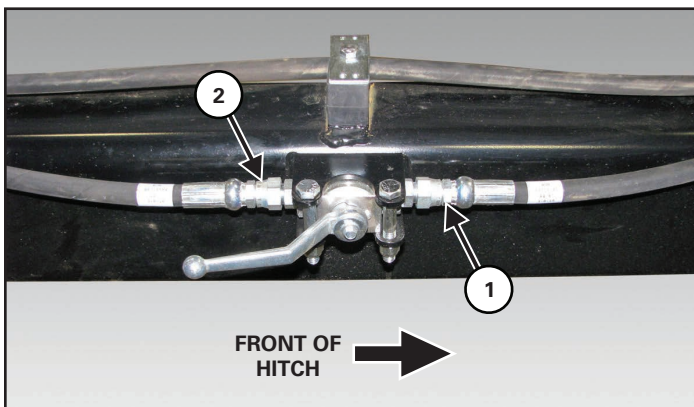
Install one 137" hydraulic hose (Item 3) [Figure 79] onto the front fitting of the LH shut-off valve. Route to front of hitch. Install one Blue tie strap onto the tractor end of the hydraulic hose.

Install one hydraulic hose (Item 2) onto the in-line test port adapter (Item 1) [Figure 79]:

- VT3290 & VT3320 - 84-1/2" hose
- VT3345 & VT3375 - 80" hose

Install drain hose (Item 4) onto the bottom of the in-line test port adapter and secure with hose clamp (Item 5) [Figure 79].

Figure 80



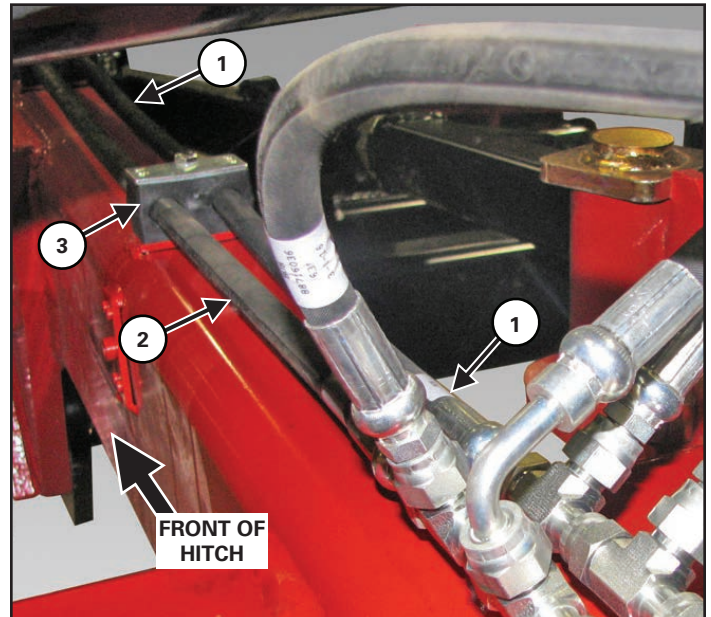
Install one hydraulic hose (Item 2) [Figure 80] onto the rear fitting of the RH shut-off valve:

- VT3290 & VT3320 - 84-1/2" hose
- VT3345 & VT3375 - 80" hose

Route the hydraulic hose from the RH shut-off valve [Figure 80] along the top of the hitch towards the main rockshaft cylinder.

Install one 137" hydraulic hose (Item 1) [Figure 80] onto the front fitting of the RH shut-off valve. Install one Green tie strap onto the tractor end of the hydraulic hose.

Figure 81



Route the hydraulic hose from the LH shut-off valve (Item 2) [Figure 80] to the front tee fittings. Connect the hydraulic hose (Item 1) [Figure 81] to the tee fitting.

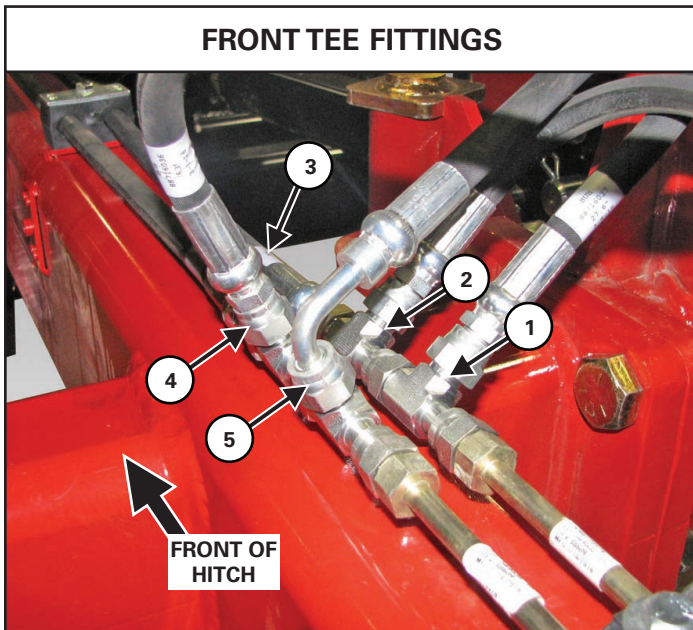
Connect one hydraulic hose (Item 2) [Figure 81] onto the tee fitting:

- VT3290 & VT3320 - 224" hose
- VT3345 & VT3375 - 219" hose

Route hose (Item 2) [Figure 81] to front of hitch. Install one Blue tie strap onto the tractor end of the hydraulic hose.

Secure hydraulic hoses to the main frame using hold down clamps (Item 3) [Figure 81]. For hydraulic hose routing and hold down clamp placement.

Figure 82



Connect hydraulic hoses (Item 1, 2) to the tee fitting on the LH shut-off valve circuit (Item 3) [Figure 82]:

- VT3290 & VT3320 - Two 63" hoses
- VT3345 & VT3375 - One 72" hose, one 43" hose

Connect the hoses (Item 1, 2) [Figure 82] to the rod ends of the front wing fold cylinders.

- VT3345 & VT3375 - 72" hose to the RH front wing fold cylinder, 43" hose to the LH front wing fold cylinder

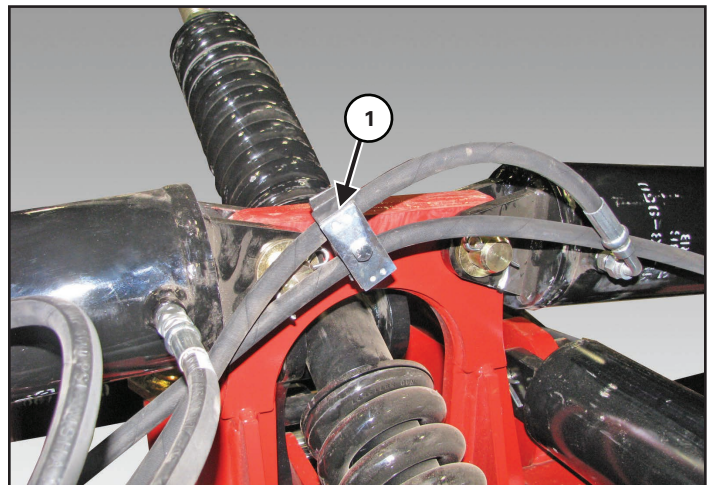
Connect hydraulic hoses (Item 4, 5) [Figure 82] to the opposite front tee fitting:

- VT3290 & VT3320 - Two 27-1/2" hoses (Item 4, 5)
- VT3345 & VT3375 - 40" hose (Item 4), 35" hose (Item 5)

Connect the two hoses (Item 4, 5) [Figure 82] to the base end of the front wing fold cylinders.

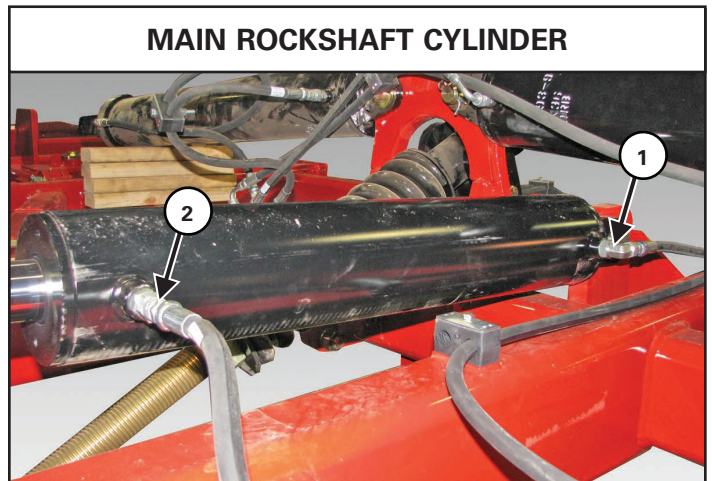
Tighten fittings and hydraulic hose connections.

Figure 83



Install one hose hold down clamp (Item 1) [Figure 83] onto the two hydraulic hoses of the RH front wing fold cylinder.

Figure 84



Install one 78" hydraulic hose (Item 1) [Figure 84] from the RH shut-off valve onto the 90° fitting at the base end of the main rockshaft cylinder.

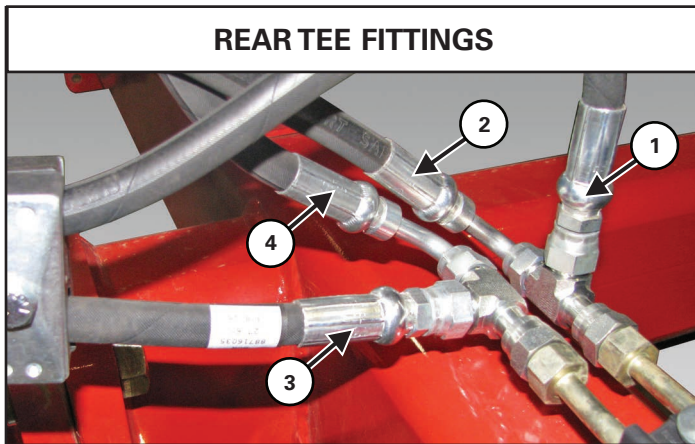
Install one hydraulic hose (Item 2) [Figure 84] onto the straight fitting at the rod end of the main rockshaft cylinder:

- VT3290 & VT3320 - 224-1/2" hose
- VT3345 & VT3375 - 258" hose

Route the hydraulic hose along the top of the main frame and RH wing frame to the base end of the RH rockshaft cylinder.

Secure hydraulic hoses to the main frame using hold down clamps.

Figure 85



Install two hydraulic hoses (Items 1, 2) [Figure 85] onto the tee on the LH shut-off valve circuit.

- VT3290 & VT3320 - Two 65" hoses (Item 1, 2)
- VT3345 & VT3375 - 64" hose (Item 1), 73" hose (Item 2)

Route the two hoses to the rod ends of the rear wing fold cylinders. Connect the two hoses (Item 1, 2) to the 90° fittings.

- VT3345 & VT3375 - 73" hose to the RH rear wing fold cylinder, 64" hose to the LH rear wing fold cylinder

Install two hydraulic hoses (Items 3, 4) [Figure 85] onto the opposite rear tee fitting.

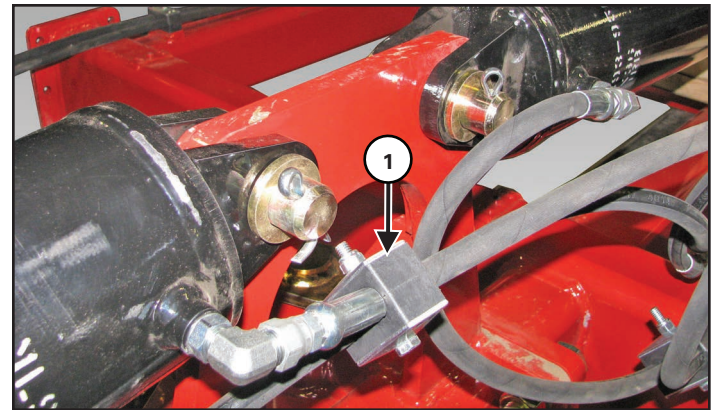
- VT3290 & VT3320 - Two 27-1/2" hoses (Item 3, 4)
- VT3345 & VT3375 - 36" hose (Item 3), 34" hose (Item 4)

Route the two hoses to the base ends of the rear wing fold cylinders. Connect the two hoses (Item 3, 4) to the 90° fittings.

- VT3345 & VT3375 - 36" hose to the RH rear wing fold cylinder, 34" hose to the LH rear wing fold cylinder

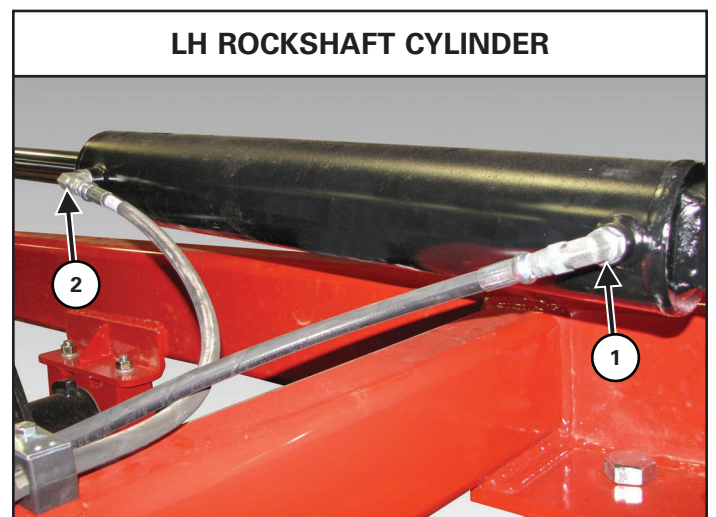
Tighten fittings and hydraulic hose connections.

Figure 86



Install one hose hold down clamp (Item 1) [Figure 86] onto the two hydraulic hoses of the RH rear wing fold cylinder.

Figure 87



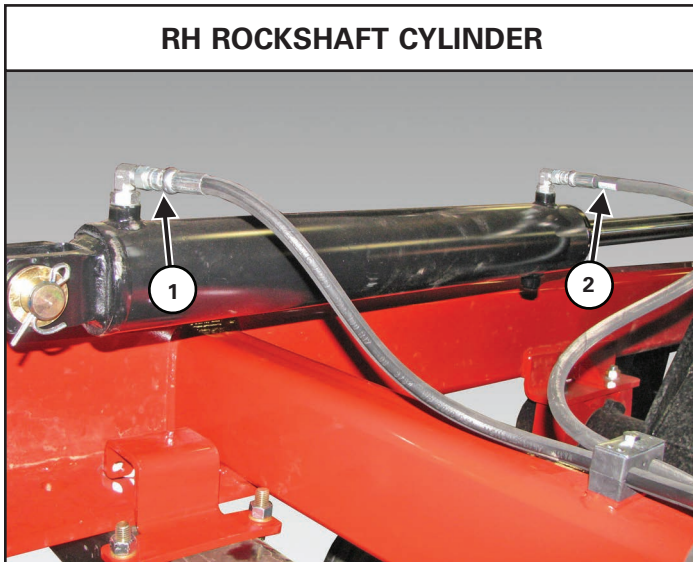
Install the hydraulic hose (Item 1) [Figure 87] from the rod end of the main rockshaft cylinder to elbow fitting at the base end of the LH rockshaft cylinder:

- VT3290 & VT3320 - 224-1/2" hose
- VT3345 & VT3375 - 258" hose

Install the hydraulic hose (Item 2) [Figure 87] onto elbow fitting at the rod end of the RH rockshaft cylinder.

- VT3290 & VT3320 - 274" hose
- VT3345 & VT3375 - 343" hose

Figure 88



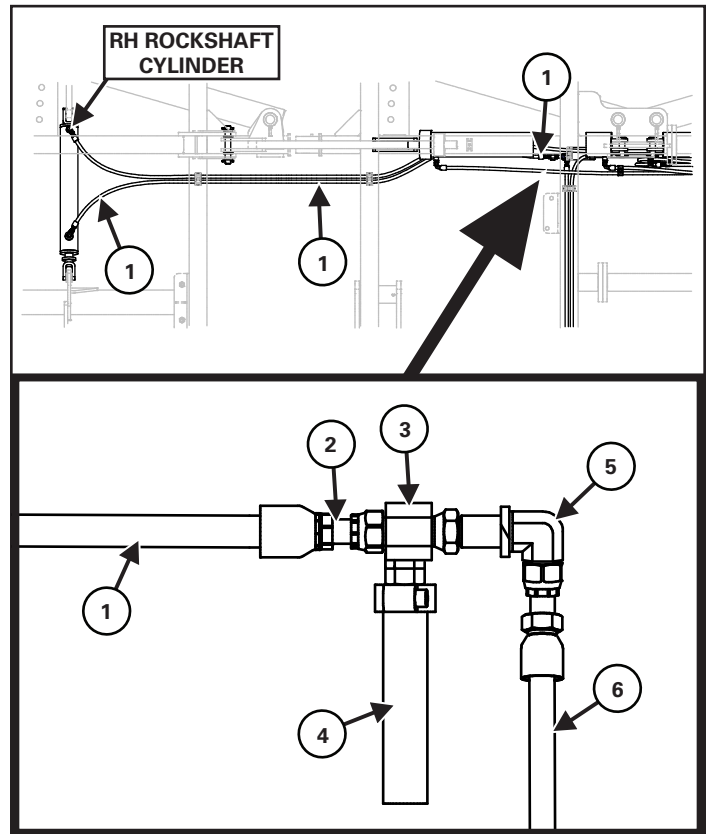
Route the hydraulic hose (Item 1) [Figure 88] from the rod end of the LH rockshaft. Connect the hose to the base end of the RH rockshaft cylinder.

Install the hydraulic hose (Item 2) [Figure 88] to the rod end of the RH rockshaft cylinder:

- VT3290 & VT3320 - 118" hose
- VT3345 & VT3375 - 152" hose

Route the hydraulic hose (Item 1) [Figure 89] to main frame. Secure using hold down clamps.

Figure 89



Install one in-line test port adapter (Item 2) onto the end of the hose (Item 1) [Figure 89] (with fitting facing down).

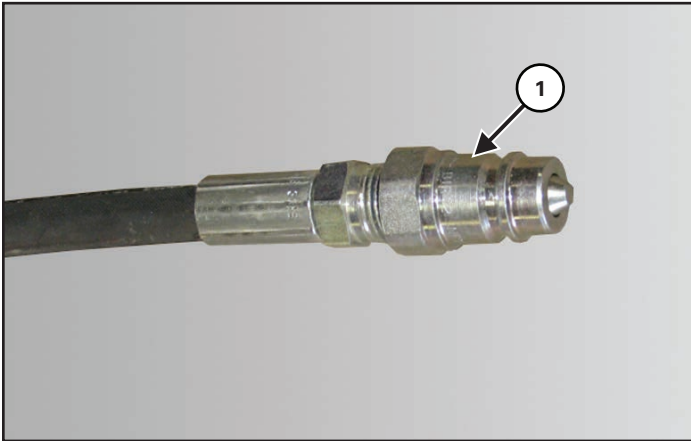
Install one 4500 psi check valve (Item 3) onto the bottom of the in-line test port adapter. Install the pressure relief hose (Item 4) [Figure 89] onto the 4500 psi check valve secure with hose clamp.

Install one 6MORF elbow fitting onto the in-line test port adapter (Item 5). Install one hydraulic hose (Item 6) [Figure 89] to the elbow fitting.

Route the hose (Item 6) [Figure 89] along the center of the main frame and to the hitch / tractor. Install one Green tie strap onto the tractor end of the hydraulic hose.

Pressure And Return Hose Fittings

Figure 90



Install and tighten the male quick coupler fitting (Item 1) [Figure 90] on each set of hydraulic hoses: wing fold hoses (Blue tie straps) and raise / lower hoses (Green tie straps).

Connect the hydraulic hoses to the tractor's auxiliary hydraulics.

Enter the tractor, start the engine and move the tractor in front of the VT3000 hitch.

Engage parking brake and exit the tractor.

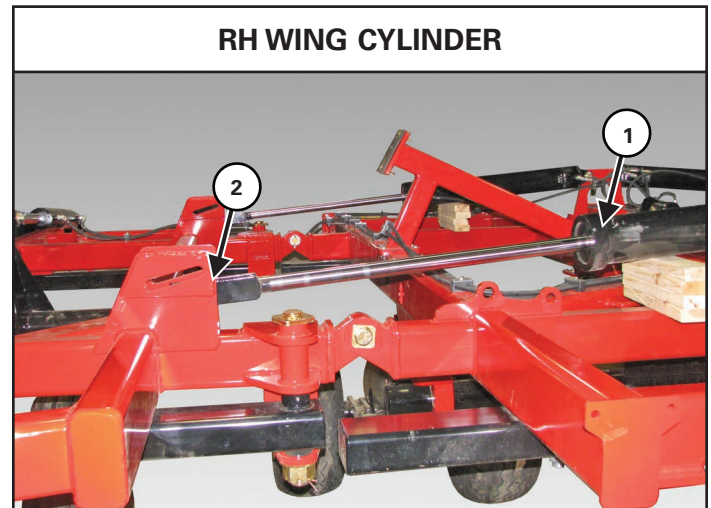
Open the two shut-off valves.

Enter the tractor and engage tractor auxiliary hydraulics. Using the tractor's auxiliary controls, cycle the hydraulic cylinders on the VT3000 to remove all air from the system.

! IMPORTANT

When cycling wing lift cylinders, be sure the ends of the cylinder rods do not contact any part of the frame. Cylinder rods will bend if they contact a frame component.

Figure 91

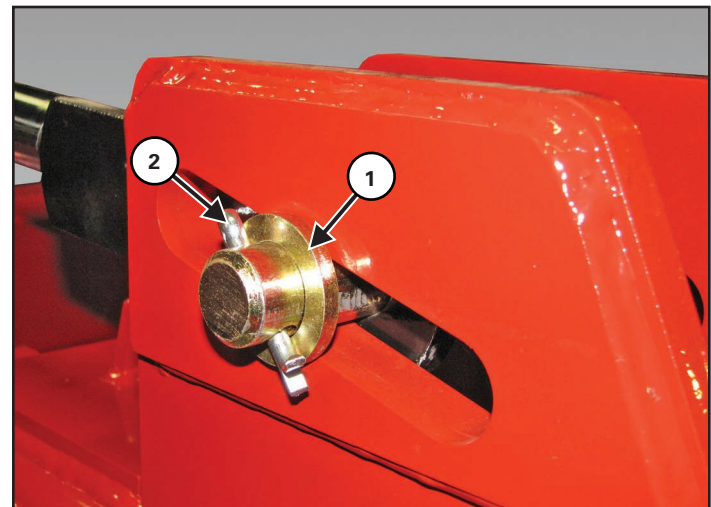


Fully extend the front and rear RH & LH wing cylinders.

Turn tractor engine off and exit the tractor.

Align the clevis (Item 1) with the mounting bracket (Item 2) [Figure 91] on the RH & LH wings.

Figure 92



Install one 1-9/32" ID x 2" OD x 1/4" washer onto the end of the cylinder pin.

Push the pin through the first bracket of the cylinder mount, install one 1-9/32" ID x 2" OD x 1/4" washer, then push pin through the cylinder clevis.

Install one 1-9/32" ID x 2" OD x 1/4" washer onto the pin, then push the cylinder pin through the second bracket of the cylinder mount.

Install another 1-9/32" ID x 2" OD x 1/4" washer (Item 1) on the end of the cylinder pin and secure with two cotter pins (Item 2) [Figure 92]. Then install the cylinder pin through the mounting bracket and clevis.

Repeat for three remaining wing cylinders.

Enter the tractor and start the engine.

Using the tractor's auxiliary controls, cycle the hydraulic cylinders on the VT3000 to test for correct operation.

Fully raise the VT3000 frame and fully unfold RH & LH wings.

Turn tractor engine off and exit the tractor.

Close shut-off valves.

Purging / Rephasing Hydraulic System



IMPORTANT

Failure to purge hydraulic system of air or rephase depth control cylinders, could result in uneven tilling depth across the width of the machine, as one or more cylinders may creep, "bounce" or move erratically.

Purging Hydraulic System

Following assembly and prior to placing the VT3000 into field service, it is important the series depth control cylinders be purged of air that has been trapped in the system.

Use the following procedure to purge trapped air from the hydraulic system:

1. Connect the VT3000 hydraulics to tractor and remove all depth control stops.
2. Raise VT3000 to extend lift cylinders fully and hold hydraulic lever in the UP position for (3) three minutes.
3. Lower VT3000 to retract lift cylinders fully.

NOTE: All lift cylinders may not fully retract.

4. Raise VT3000 again and hold hydraulic lever in the UP position for another (3) three minutes.

Rephasing Hydraulic System

Following the initial purging of the series hydraulic system, it is a recommended practice to rephase the depth cylinders several times each day by holding hydraulic lever in the UP position for five to ten seconds. This can be normally done when implement is raised to make a turn at the end of the field.



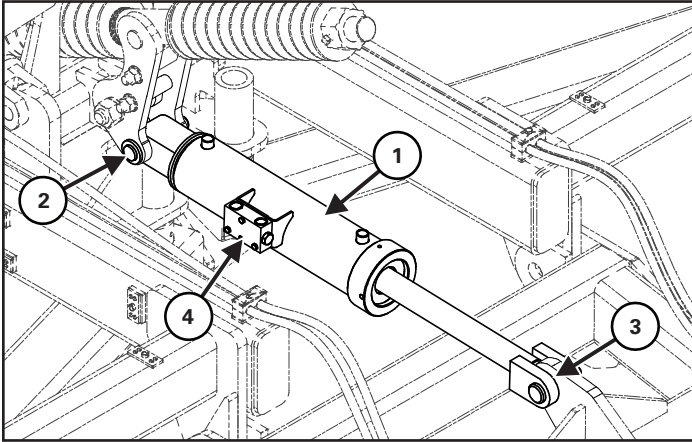
IMPORTANT

Hydraulic pressure must be relieved at the end of the day and prior to uncoupling from tractor.

HYDRAULIC LEVELING LINK (OPTIONAL)

Remove the manual leveling link (if applicable).

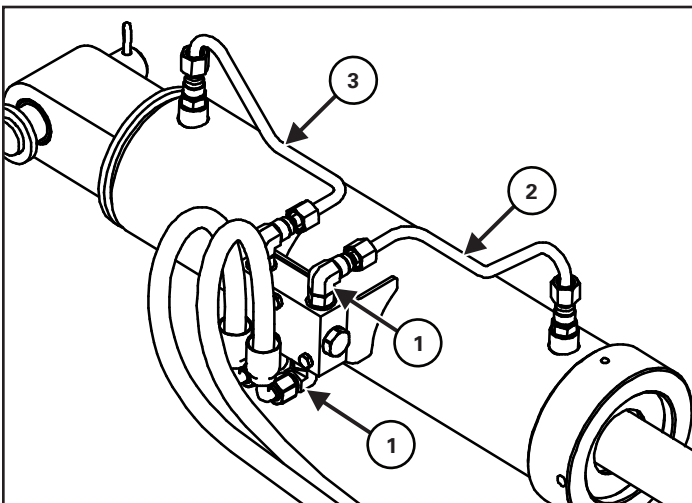
Figure 93



Install the hydraulic leveling link cylinder (Item 1). Attach the cylinder base to the rocker linkage (Item 2) and the the cylinder rod to the hitch weldment (Item 3) [Figure 93]. Attach using cylinder pins and cotter pins.

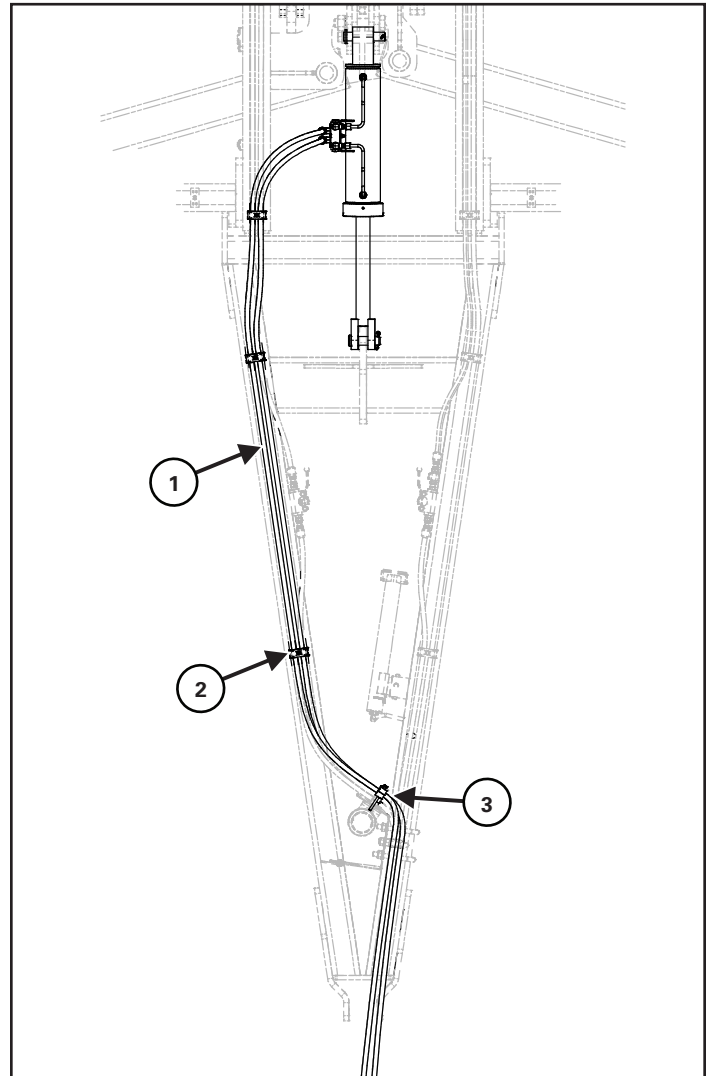
Install the hydraulic lock valve (Item 4) [Figure 93] to the hydraulic leveling link cylinder bracket. Attach using three 1/4" x 2" hex bolts.

Figure 94



Install four 90 degree elbow fittings (Item 1) to the lock valve. Install the cylinder rod feeder tube (Item 2) and cylinder base feeder tube (Item 3) [Figure 94].

Figure 95



Route the hydraulic hoses (Item 1) [Figure 95] down the right side of the hitch frame.

Attach the hoses to the frame using hose clamps (Item 2) and 5/16" x 3-1/4" hex bolts. Attach the hoses to the hydraulic hose bracket using one hose clamp (Item 3) [Figure 95] and one 5/16" x 4" hex bolt.

See Hydraulic Hose Bracket on **page 79**.

Purging Hydraulic Cylinder

Disconnect and fully retract the cylinder rod.

Cylinder pin to pin length should be approximately 42.38" when fully retracted.

Support the cylinder so that the rod can extend and retract freely.

Fill the cylinder rod side with hydraulic oil. Connect the hoses to tractor or hydraulic power unit.

Cycle the cylinder from maximum retract to maximum extend multiple times to purge air.

Continue until the cylinder moves smoothly in both directions. The cylinder is equipped with a flow orifice and should move slowly.

Extend the cylinder and align the rod and hitch mount. Reattach the cylinder rod to the hitch mount using cylinder pin and cotter pin.

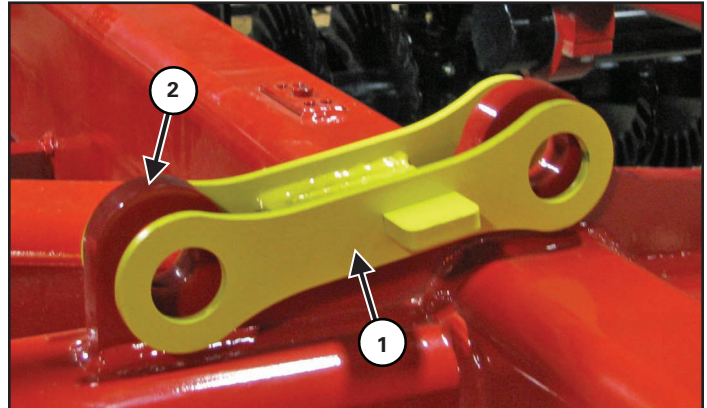


HIGH PRESSURE FLUID HAZARD

Leaking fluids under pressure can enter the skin and cause serious injury or death. Immediate medical attention is required. Wear goggles. Use cardboard to check for leaks.

WING STOP LINKS

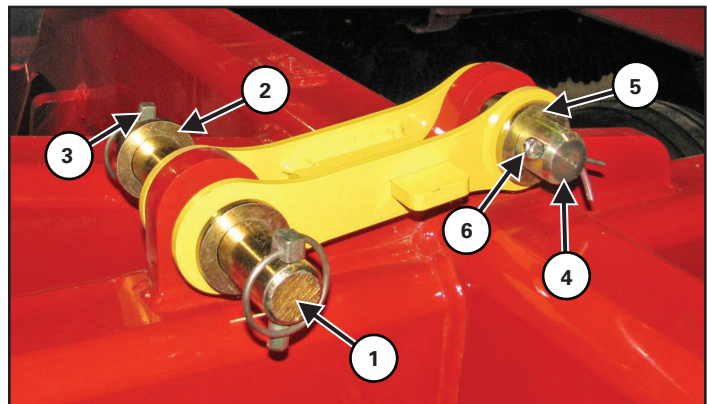
Figure 96



Locate the two wing stop links (Item 1) [Figure 96].

Align one wing stop link with the mounting brackets (Item 2) [Figure 96] on the main frame (both sides).

Figure 97



Locate one 1-1/4" x 8-5/8" pin, four 1-9/32 ID x 2" x 1/4" washers, two lynch pins, one caster pin and two 5/16" x 2" cotter pins.

Install the 1-1/4" x 8-5/8" pin (Item 1) through the wing stop link and mounting brackets (inside brackets) on the main frame. Place one 1-9/32 ID x 2" x 1/4" washer (Item 2) and one lynch pin (Item 3) [Figure 97] on each end of the 1-1/4" x 8-5/8" pin.

Install caster pin (Item 4) [Figure 97] through wing stop link and outside brackets on the main frame.

Install one 1-9/32 ID x 2" x 1/4" washer (Item 5) and one 5/16" x 2" cotter pin (Item 6) [Figure 97] on each end of the 1-1/4" x 8-5/8" pin.

GANG BEAMS

General Information



DO NOT permit bystanders to be in the work area when unloading and assembling the VT3000 components.

DO NOT work under suspended parts.

Keep away from moving parts.

Always use lifting devices / vehicles, chains or straps of adequate size and strength when unloading and assembling the VT3000 components.



AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.



AVOID INJURY OR DEATH

Keep fingers and hands out of pinch points when assembling the equipment.



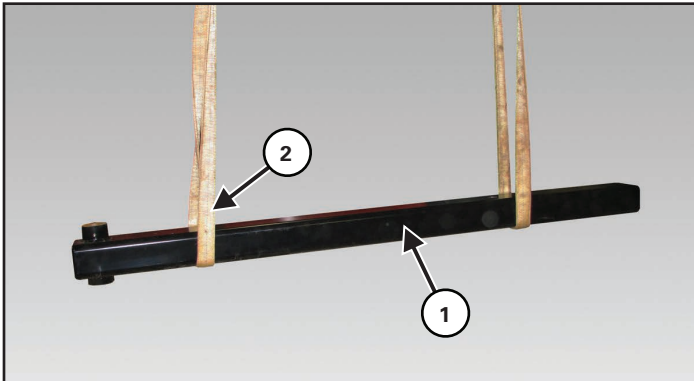
Always wear protective gloves when installing, removing or servicing gang sections to help prevent injury from cutting edges of blades.

Identify the front / rear and left / right gang sections.

For additional gang section information. (See "Installing The Gang Sections" on page 70)

Gang Beams Assembly

Figure 98

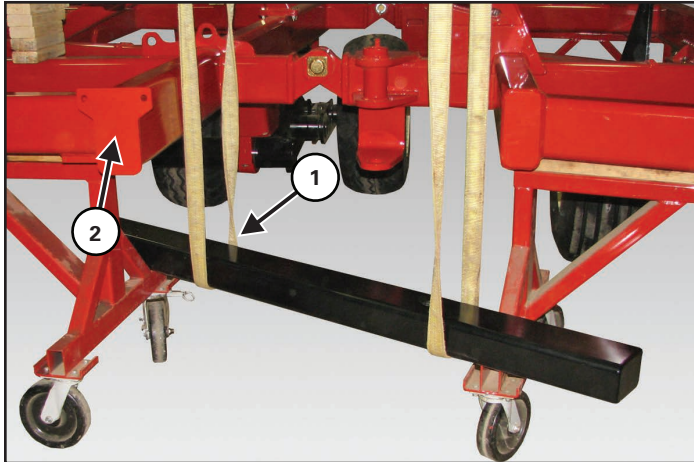


Locate LH inner front gang beam (Item 1) and install straps (Item 2) [Figure 98] around gang beam.

Connect the straps to an approved lifting device.

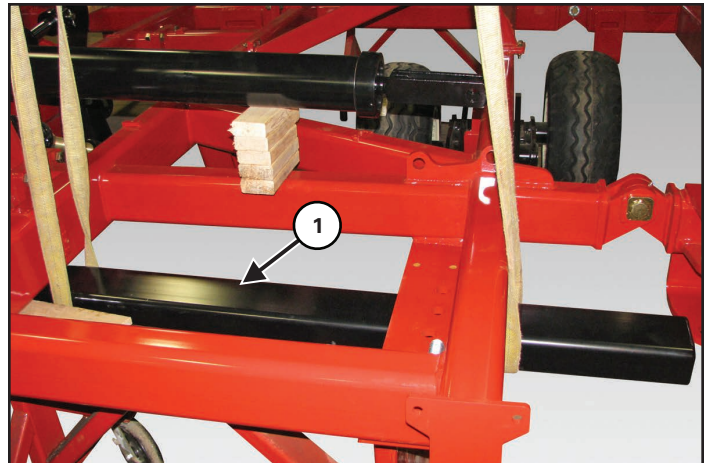
Raise and move the gang section to the assembly area.

Figure 99



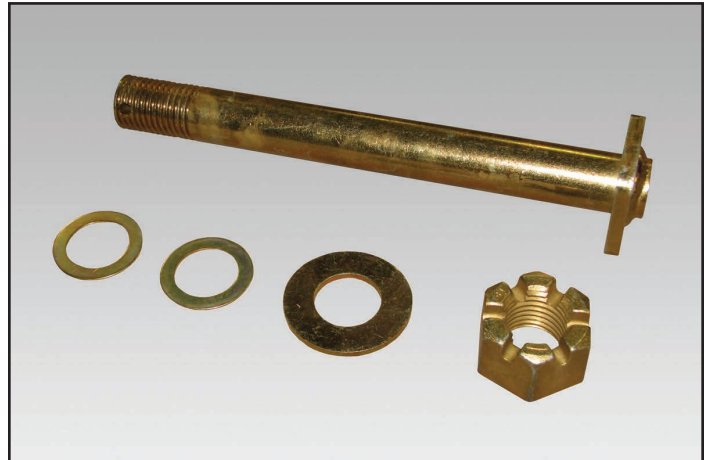
Lower and support the gang beam. Remove strap (Item 1) from lifting device, then route the strap inside the outer section (Item 2) [Figure 99] of the main frame. Reconnect the strap to the lifting device.

Figure 100



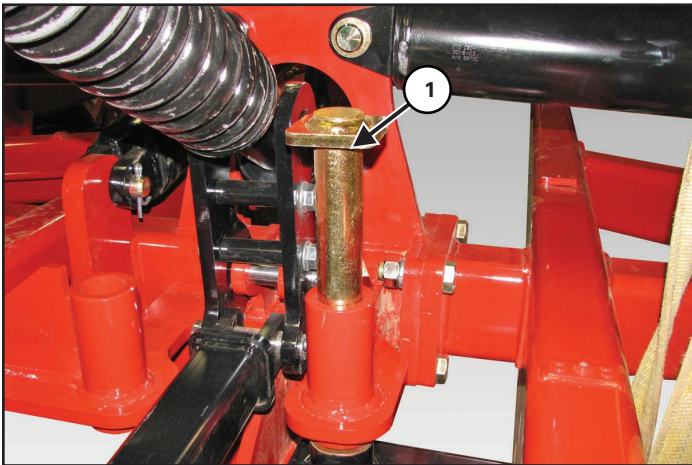
Raise the gang beam (Item 1) [Figure 100] and move to the front LH side of the main frame (with bushing end of gang beam to the inside).

Figure 101



Locate one gang pivot pin, one heavy slotted nut, one washer, two 14 gauge washers shown in [Figure 101] and one 3/8" x 3" coter pin (not shown).

Figure 102



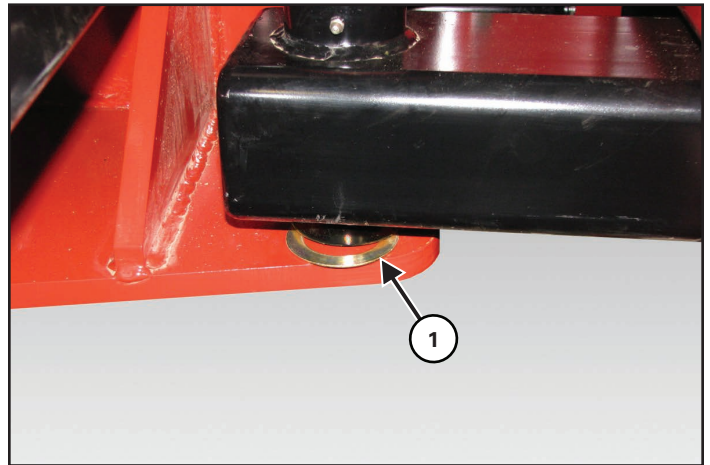
Install the pivot pin (Item 1) [Figure 102] down through the main frame, stopping just before the pivot pin enters the gang beam.

Figure 103



Place one 2" x 3" 14 gauge washer (Item 1) [Figure 103] between the main frame mount and gang beam (top).

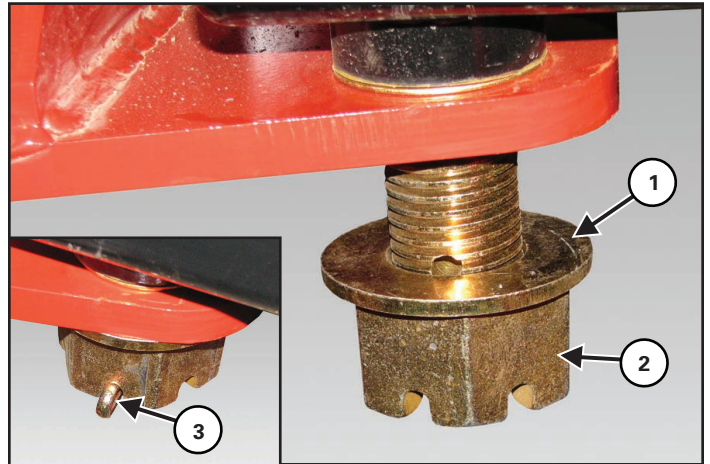
Figure 104



Install the pivot pin in the gang beam, stopping just before the pivot pin enters the lower mount on the main frame. Place one 2" x 3" 14 gauge washer (Item 1) [Figure 104].

Fully install the pivot pin.

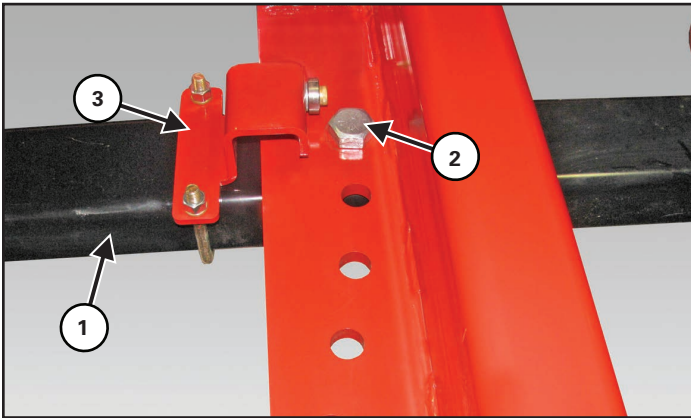
Figure 105



Place one shim washer (Item 1) and one heavy slotted nut (Item 2) [Figure 105] on the pivot pin.

Tighten heavy slotted nut until it contacts the main frame. Tighten or loosen the heavy slotted nut until the hole in the pivot pin is aligned with the closest slot of the nut. Install one 3/8" x 3" cotter pin (Item 3) [Figure 105].

Figure 106

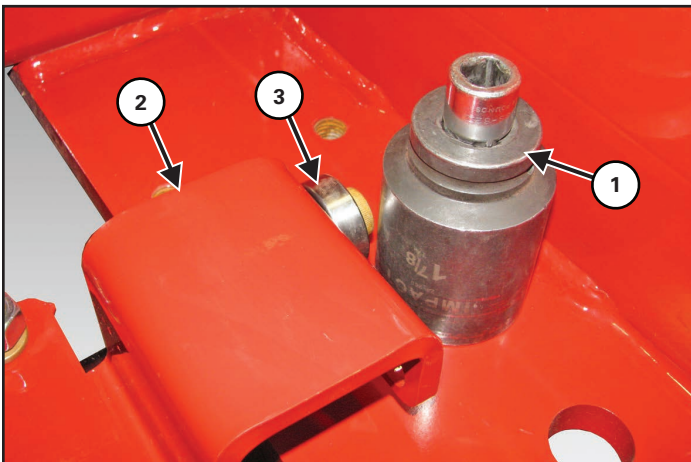


Rotate the gang beam (Item 1) to the desired gang beam angle. Install one 1-1/4" x 7-1/2" bolt (Item 2) [Figure 106] through the main frame and gang beam.

Install one 1-1/4" lock washer and one 1-1/4" nut on the bolt. Tighten bolt to secure the gang beam at the desired angle.

Install one LH gang roller (Item 3) [Figure 106] onto the gang beam using one 5/8" x 5-1/2" x 6" u-bolt, 5/8" lock washers and 5/8" nuts.

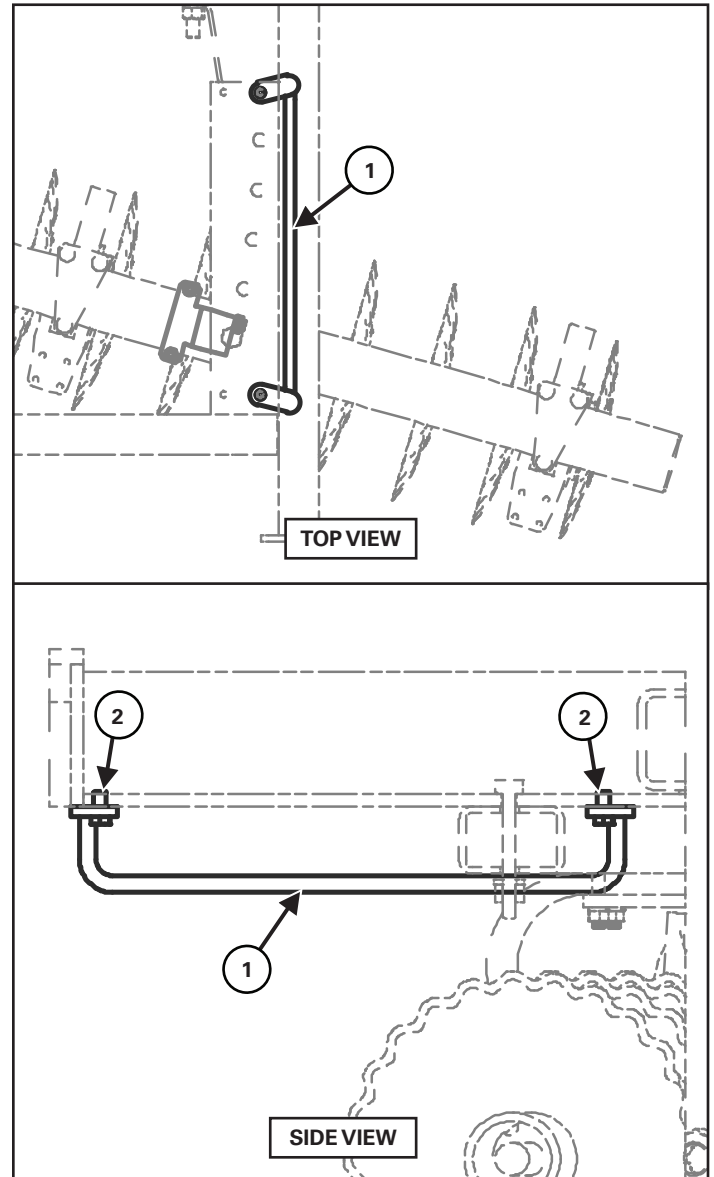
Figure 107



Place the socket (Item 1) used to tighten 1-1/4" x 7-1/2" bolt onto the bolt head. Adjust the LH gang roller (Item 2) until the roller bearing (Item 3) [Figure 107] is approximately 1/4" from the socket. Tighten u-bolt to secure the gang roller to the gang beam.

Repeat procedure for the remaining gang beams.

Figure 108



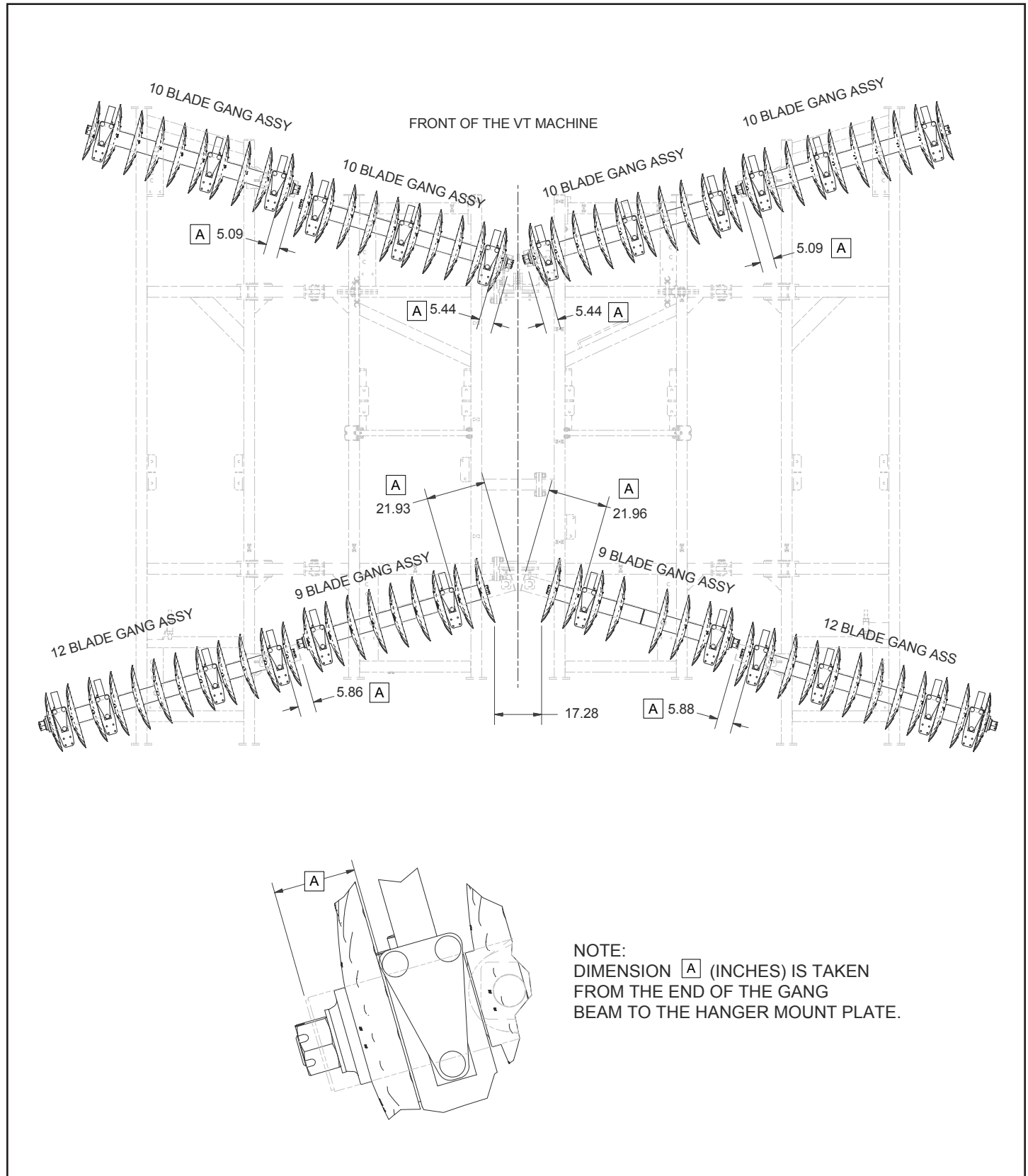
VT3345 & VT3374 Models

Install the gang support bar (Item 1) beneath the gang beam and gang roller assembly. Attach the gang support bar to the frame using two 3/4" X 1-1/2" hex bolts (Item 2) [Figure 108].

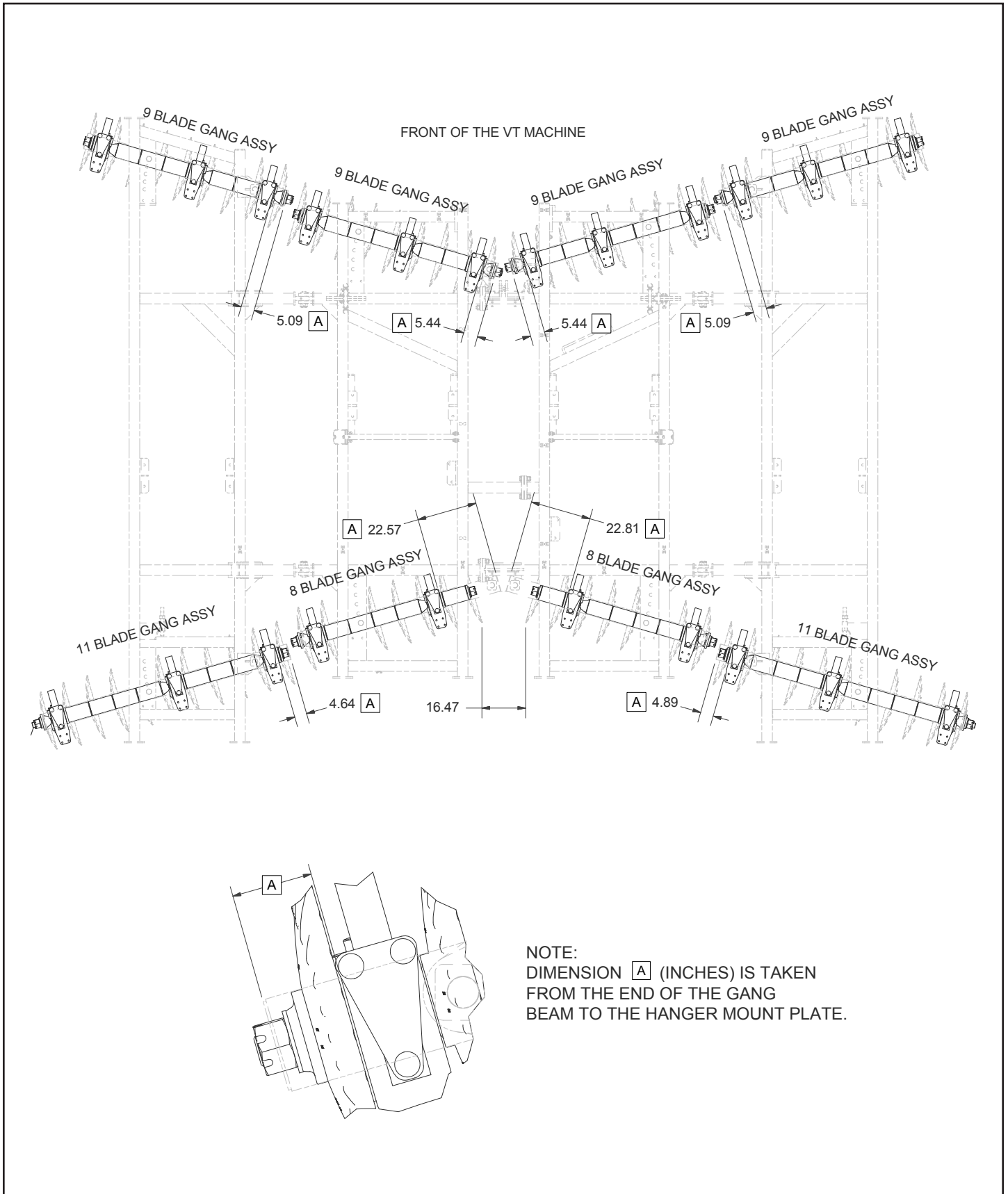
Repeat procedure for the remaining gang roller assemblies.

GANG SECTION DIAGRAMS

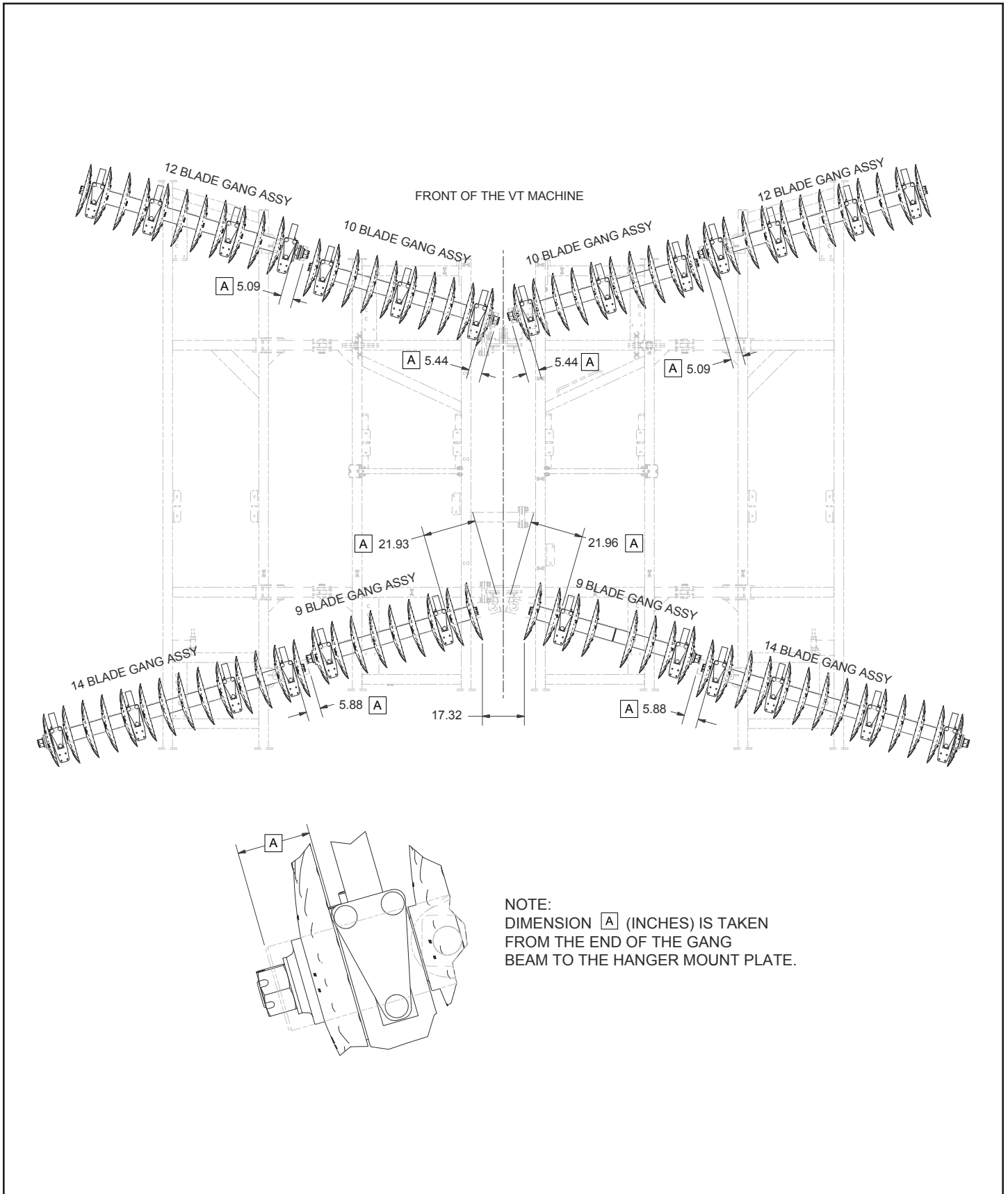
VT3290 Model - 28.5 Ft., 8 In Spacing



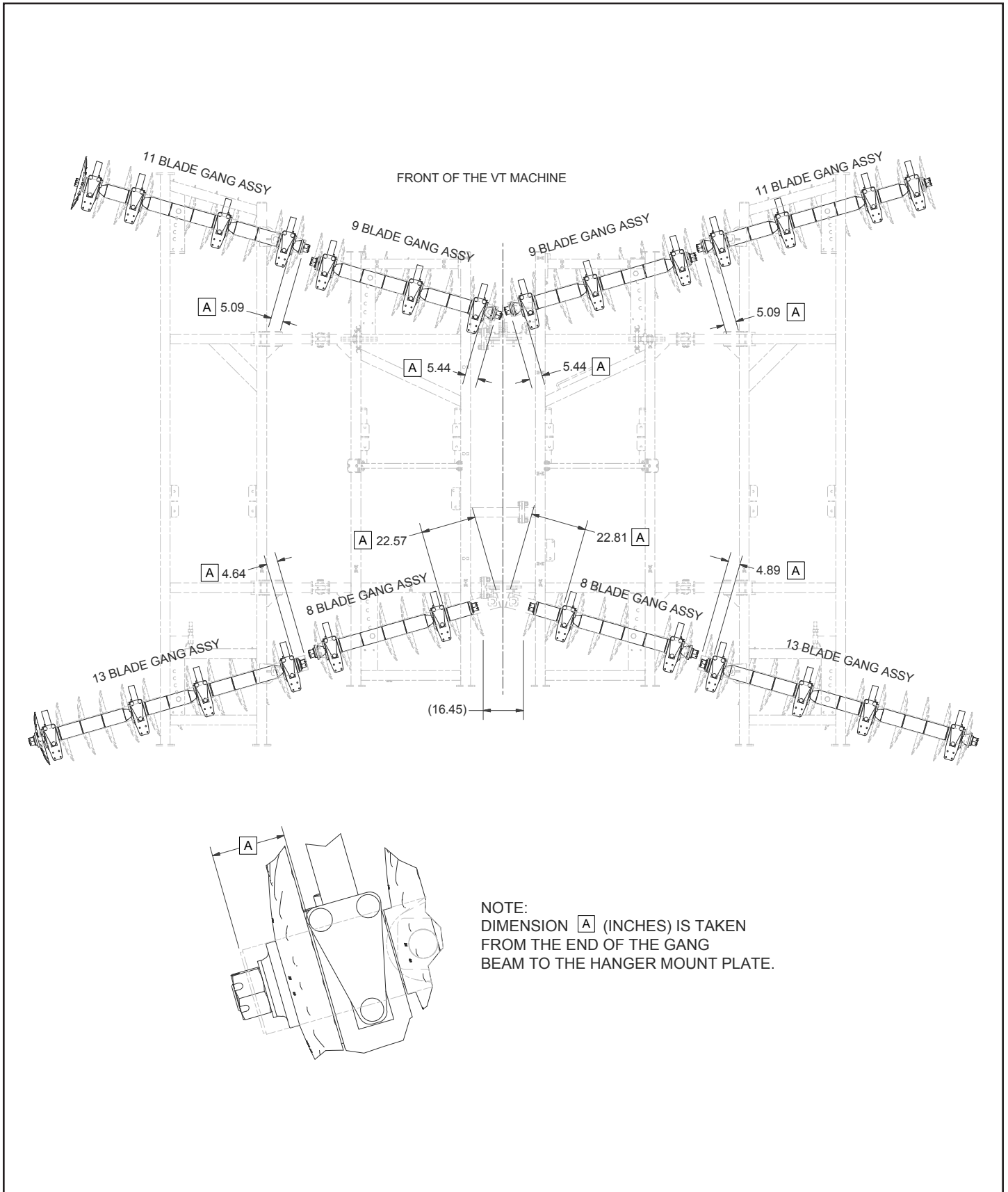
VT3290 Model - 28.5 Ft., 9 In Spacing



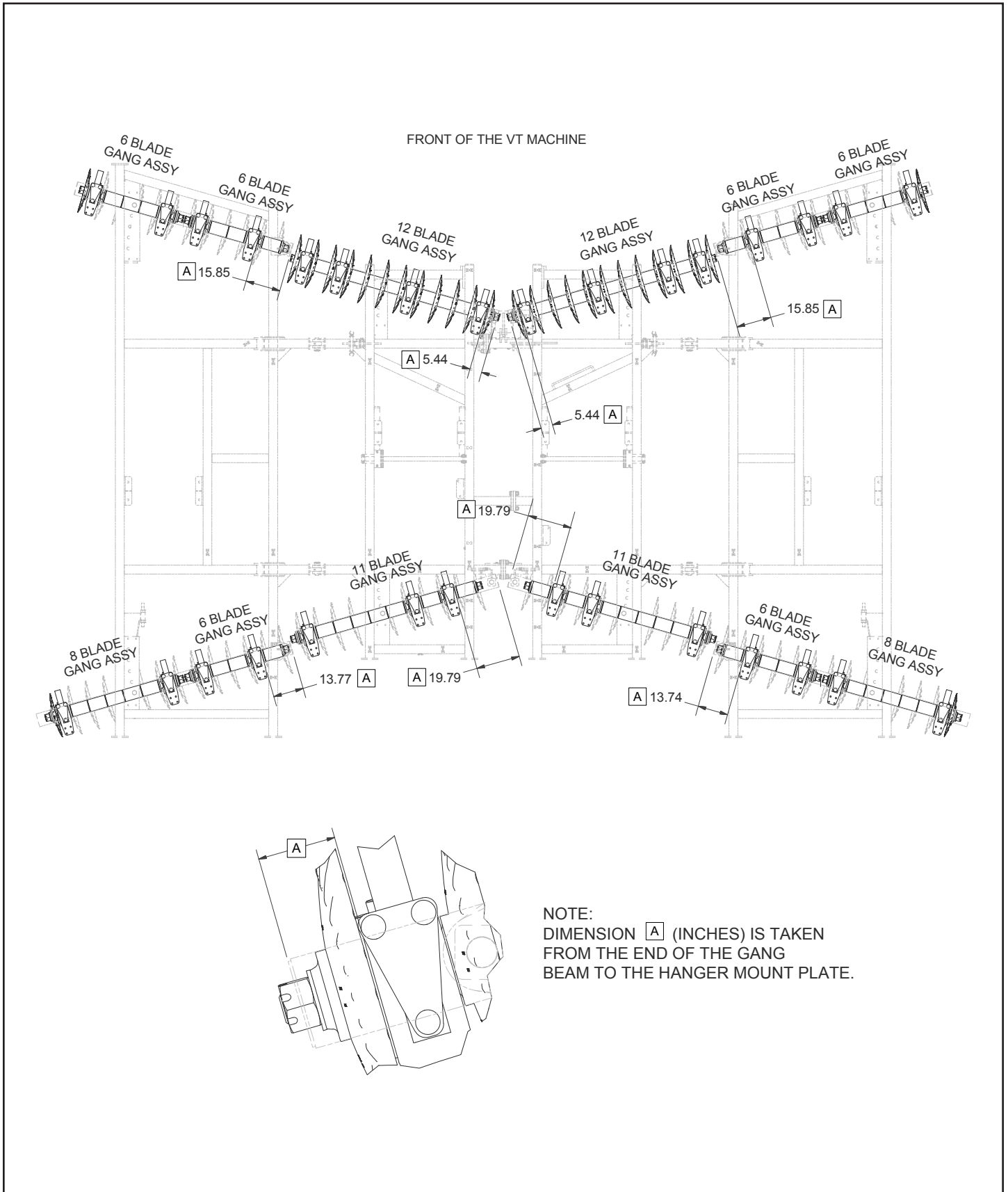
VT3320 Model - 32 Ft., 8 In Spacing



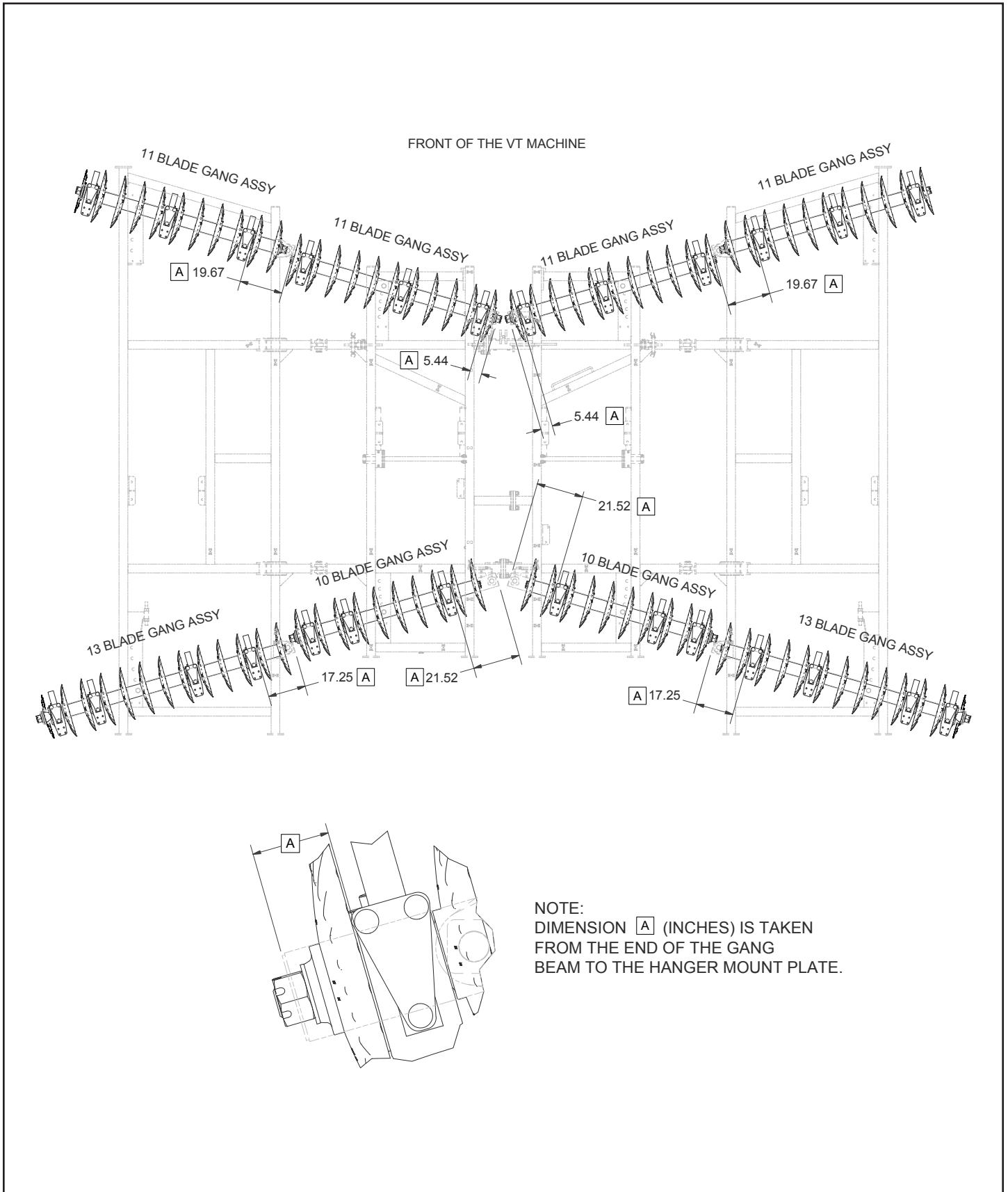
VT3320 Model - 32 Ft., 9 In Spacing



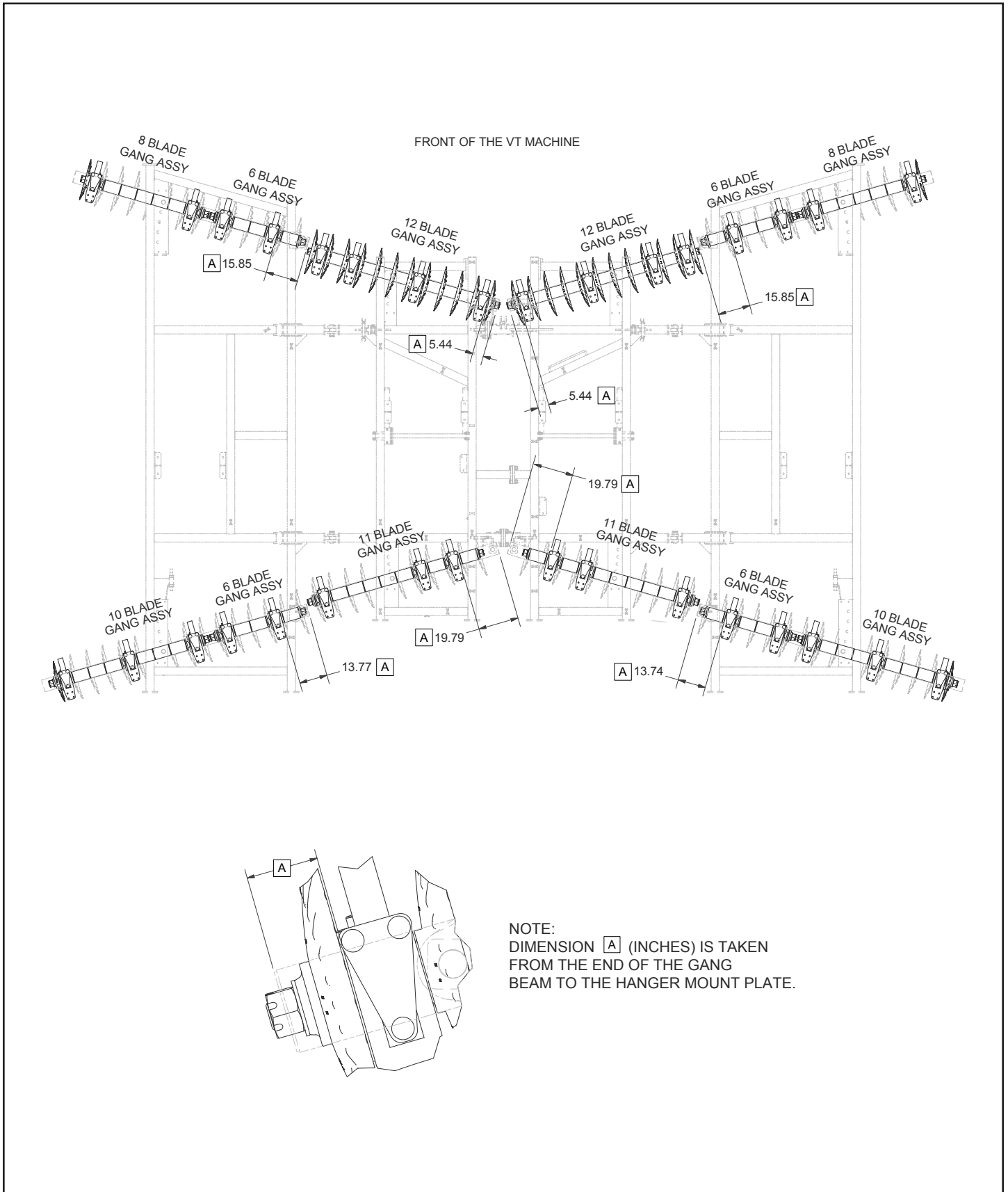
VT3345 Model - 34.5 Ft., 8 In Spacing



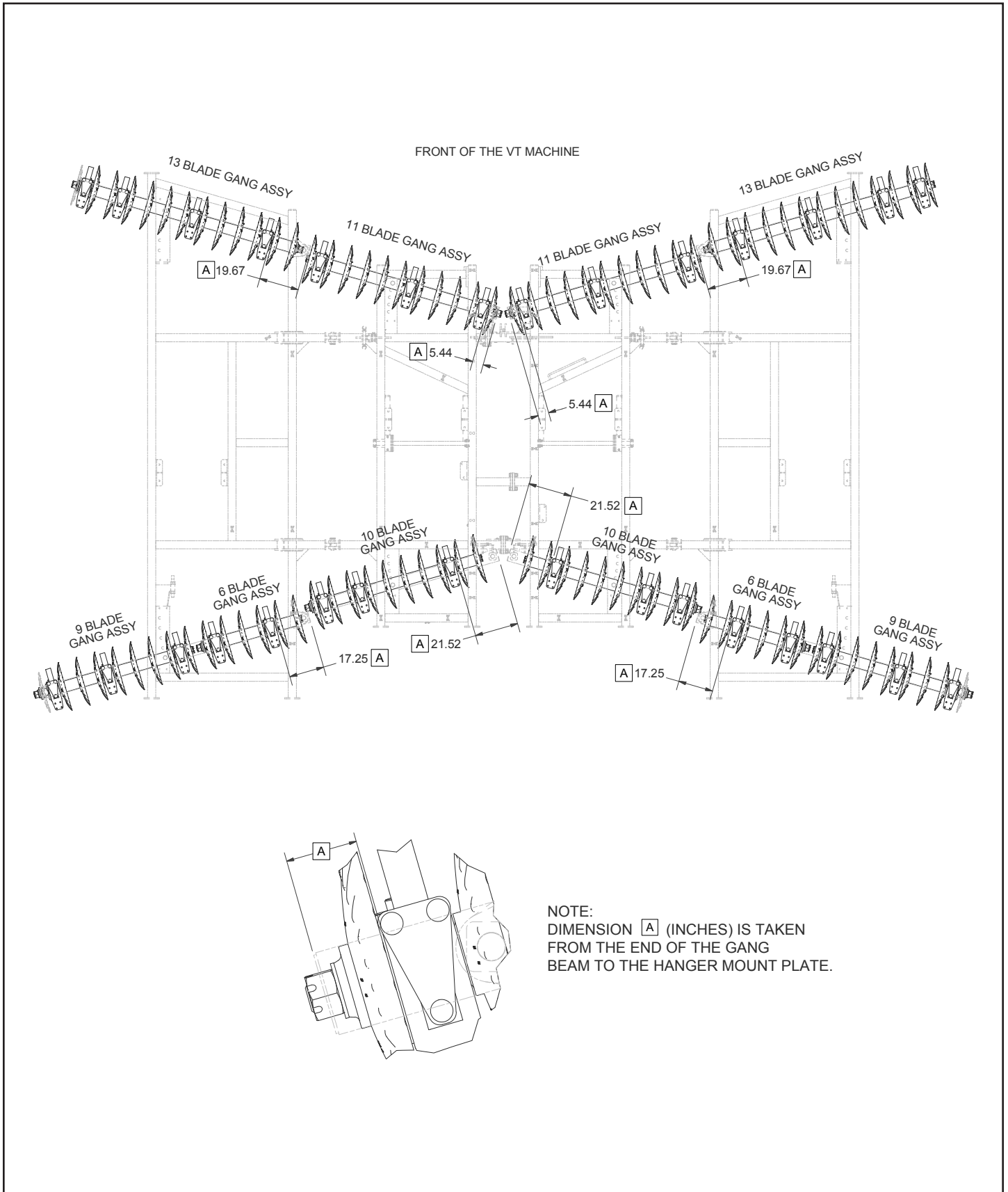
VT3345 Model - 34.5 Ft., 9 In Spacing



VT3375 Model - 36 Ft., 8 In Spacing



VT3375 Model - 36 Ft., 9 In Spacing



GANG SECTIONS

Inside Gang Sections Assembly

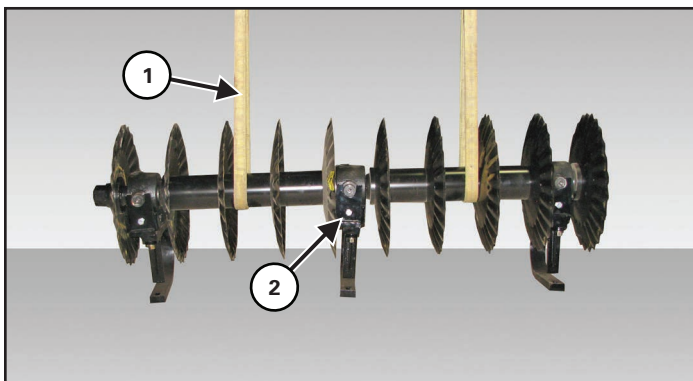
NOTE: The following procedure shows installing the left front gang sections. The procedure is correct for all gang sections.



AVOID SERIOUS INJURY OR DEATH

- Always install front gang sections first.
- When installing or removing gang sections, always securely block / support the main frame to avoid tipping.
- DO NOT work under suspended parts.
- Always use lifting devices / supports of adequate size and strength to securely support the VT3000.

Figure 109



Locate the front left, inside gang section. (Refer to the gang section diagram for the correct corresponding letter and orientation.)

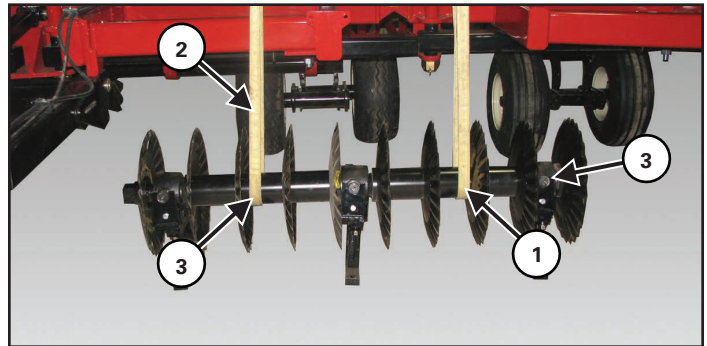
Install straps (Item 1) around the gang section (Item 2) [Figure 109].

Connect the straps to an approved lifting device.

Raise and move the gang section (Item 2) [Figure 109] to the assembly area.

NOTE: The background has been removed from some of the following images for picture clarity.

Figure 110

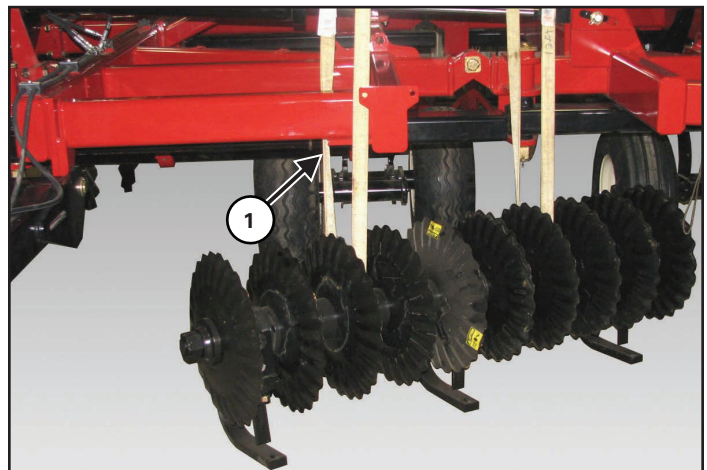


Lower the gang section (Item 1) [Figure 110] onto the ground in front of the left main frame.

Remove strap (Item 2) [Figure 110] from the lifting device.

NOTE: Do not remove straps (Item 3) from around the gang section (Item 1) [Figure 110].

Figure 111

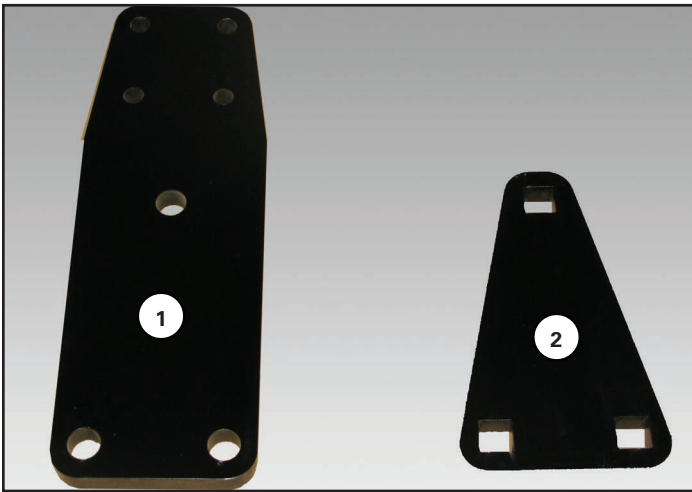


Route straps (Item 1) [Figure 111] in front and behind the gang beam, straddling in the gang beam.

Connect the straps to an approved lifting device.

Raise the gang section and move inner blade towards the center of the main frame. Lower gang section to the ground.

Figure 112



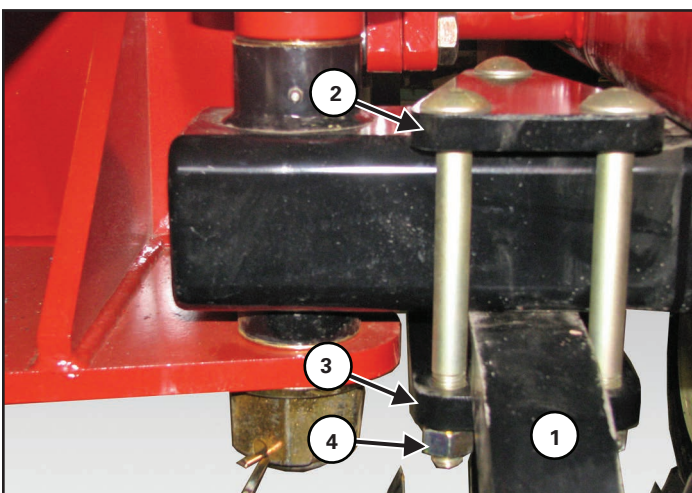
Locate hanger mounting plates (Item 1) and hanger / scraper bar mounting plates (Item 2) [Figure 112].

NOTE: The following image may not show your gang section exactly as it appears but the procedure is correct.



Hanger bracket must be sitting square with gang beam before tightening carriage bolts.

Figure 113



Locate three 3/4" x 8" carriage bolts, three 3/4" lock washers and three 3/4" nuts per bearing hanger (Item 1) [Figure 113] (each bearing hanger).

Raise the gang section just below the gang beam.

Position one hanger mounting plate (Item 2) on top of the gang beam (above bearing hanger). Install one hanger / scraper bar mounting plate (Item 3) [Figure 113] under the hanger bearing.

Install the three 3/4" x 8" carriage bolts down through the hanger mounting plate, stone flex and hanger / scraper bar mounting plate.

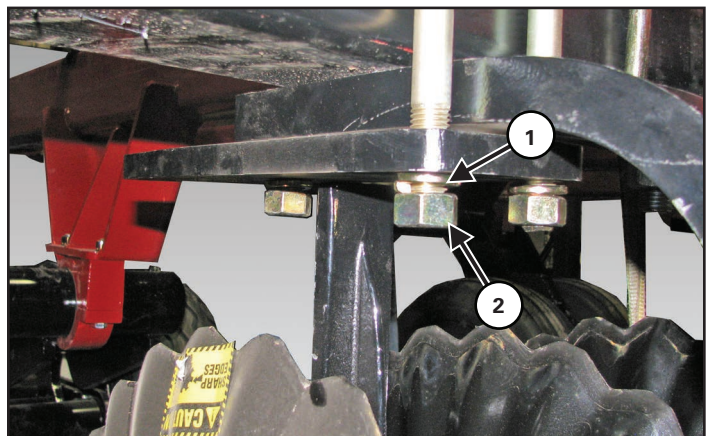
Install 3/4" lock washers and 3/4" nuts (Item 4) [Figure 113] onto the u-bolts. Do not tighten at this time.

Repeat for remaining hanger bearings on the gang section.



All bearing hangers must be positioned square under gang beam.

Figure 114

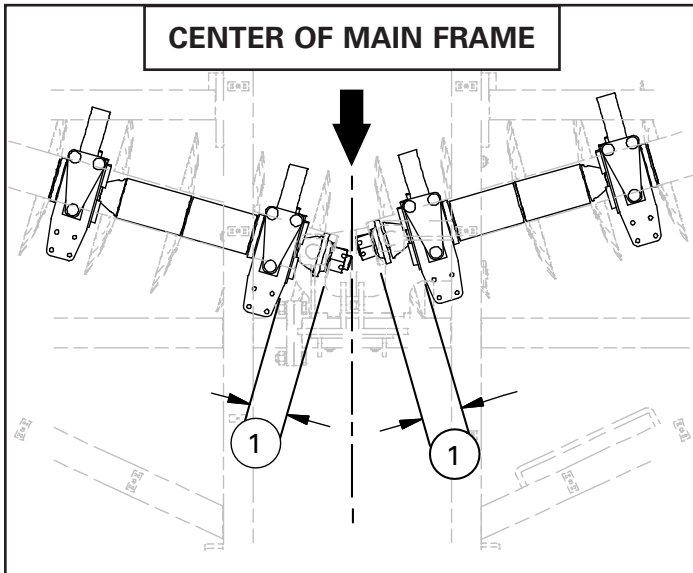


Install 3/4" lock washers (Item 1) and 3/4" nuts (Item 2) [Figure 114] onto the bolts. Do not tighten at this time.

Repeat previous steps [Figure 114] and [Figure 107] for installing hanger mounting plates, scraper / hanger bar mounting plates and hardware on the remaining hanger bearings on the gang section.

Positioning Front Left / Right Inside Gang Section

Figure 115



Locate and mark the center of the main frame.

Position the front inside gang section, so that the hanger mount at the correct distance (Item 1) [Figure 115] from the end of the gang beam.

NOTE: Reference diagrams on page 62 for correct distance (Item 1) [Figure 115].

! IMPORTANT

Position gang sections to specifications for your model VT3000.

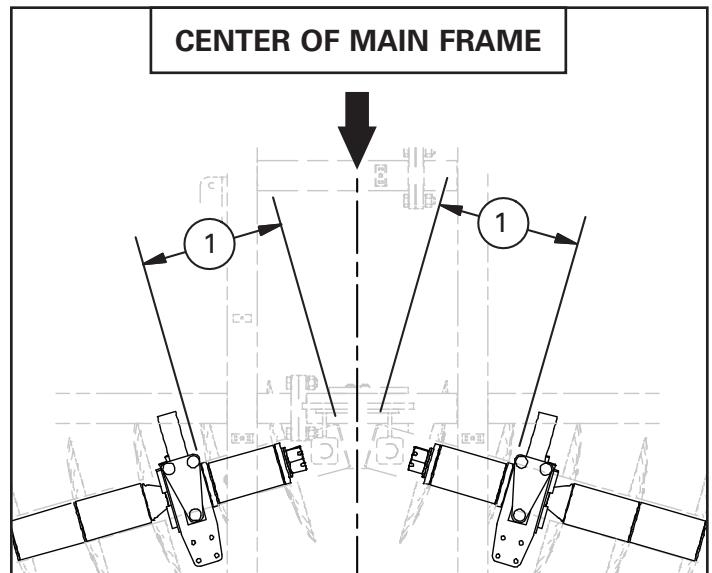
! IMPORTANT

Verify that all bearing hangers are positioned square under gang beam before tightening the bolts.

Tighten inside bearing hanger bolts / nuts (Item 2) [Figure 114], then tighten remaining bearing hanger bolts on gang section.

Positioning Inside Rear Gang Sections

Figure 116



Locate and mark the center of the main frame.

Center rear inside gang sections, so that the distance from the end of the gang beam to the hanger mount is at the correct distance (Item 1) [Figure 116].

NOTE: Reference diagrams on page 62 for correct distance (Item 1) [Figure 116].

! IMPORTANT

Position gang sections to specifications for your model VT3000.

! IMPORTANT

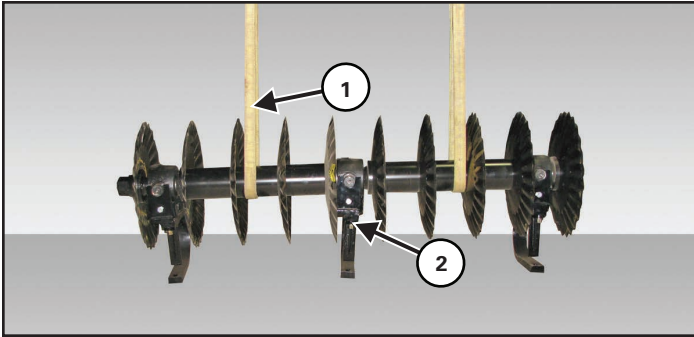
Verify that all bearing hangers are positioned square under gang beam before tightening the bolts.

Tighten inside bearing hanger bolts, then tighten remaining bearing hanger bolts on rear gang section.

Outside Gang Section Assembly

NOTE: The following procedure shows installing the left front outside gang section. The procedure is the same for all outside gang sections.

Figure 117



Locate the front left, outside gang section. (Refer to the gang section diagram for the correct corresponding letter and orientation.)

Install straps (Item 1) around the gang section (Item 2) [Figure 117].

Connect the straps to an approved lifting device.

Raise and move the gang section to the assembly area.

Lower the gang section onto the ground in front of the left wing frame.

Remove straps from the lifting device.

NOTE: Do not remove straps from around the gang section.

Route straps in front and behind the wing gang beam, straddling the wing gang beam.

Connect the straps to an approved lifting device.

NOTE: When adjusting / aligning gang sections, always maintain the designated blade spacing between gang sections.

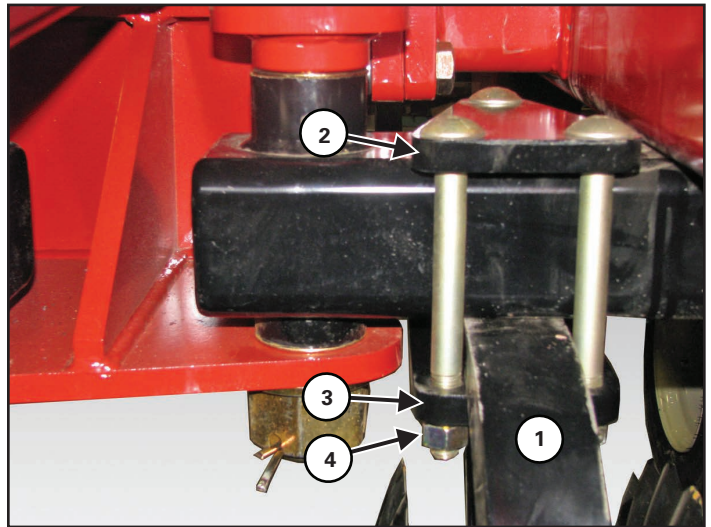
Raise the gang section and move inner blade towards the inside gang section (approximate blade spacing distance). Lower gang section to the ground.

NOTE: The following image may not show your gang section exactly as it appears but the procedure is correct.



Hanger bracket must be sitting square with gang beam before tightening carriage bolts.

Figure 118



Locate three 3/4" x 8" carriage bolts, three 3/4" lock washers and three 3/4" nuts per bearing hanger (Item 1) [Figure 118] (each hanger bracket).

Raise the gang section just below the gang beam.

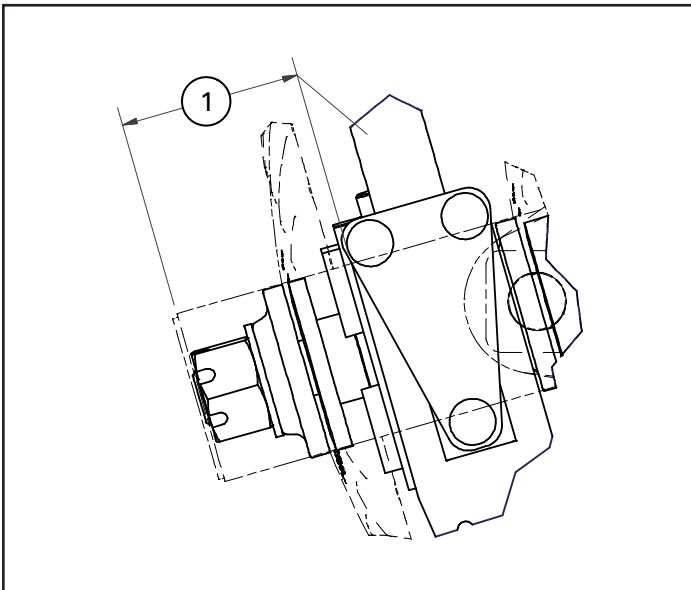
Position one hanger mounting plate (Item 2) on top of the gang beam (above hanger bearing). Install one hanger / scraper bar mounting plate (Item 3) [Figure 118] under the hanger bearing.

Install the three 3/4" x 8" carriage bolts down through the hanger mounting plate and hanger / scraper bar mounting plate.

Install 3/4" lock washers and 3/4" nuts (Item 4) [Figure 118] onto the carriage bolts. Do not tighten at this time.

Repeat for remaining hanger bearings on the gang section.

Figure 119



Position outside gang section, at correct distance (Item 1) [Figure 119] from the end of the gang beam.

NOTE: Reference diagrams on page 62 for correct distance (Item 1) [Figure 119].

! IMPORTANT

Always tighten inside hanger bearing bolts first, while maintaining designated blade spacing. Tighten all bearing hanger bolts to 430 ft.-lb. (583 N•m) torque.

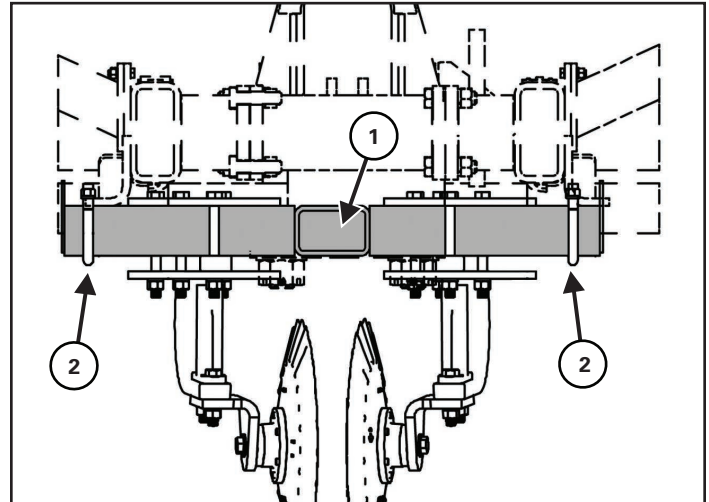
Verify that all bearing hangers are positioned square under gang beam before tightening the bolts.

Tighten inside hanger bearing bolts, then tighten remaining hanger bearing bolts on the front inside gang section.

Install remaining gang sections. (See "Installing The Gang Sections" on page 70.)

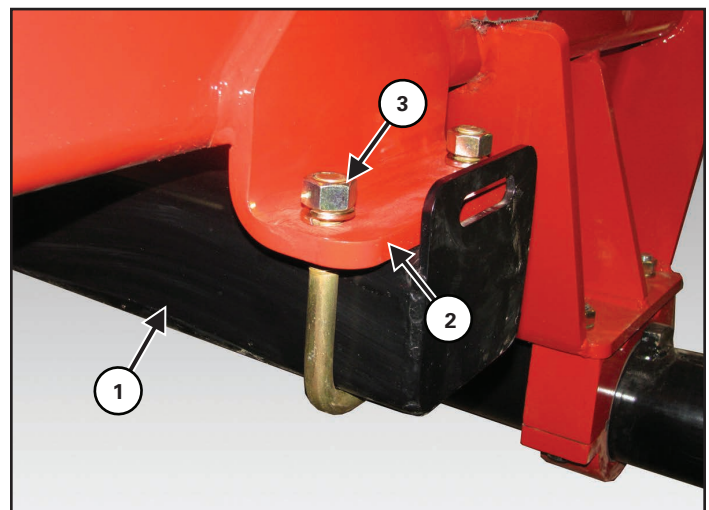
CENTER BLADE

Figure 120



Locate and install the center gang beam (Item 1) using two 3/4" x 6-7/8" u-bolts (Item 2) [Figure 120], 3/4" lock washers and 3/4" nuts.

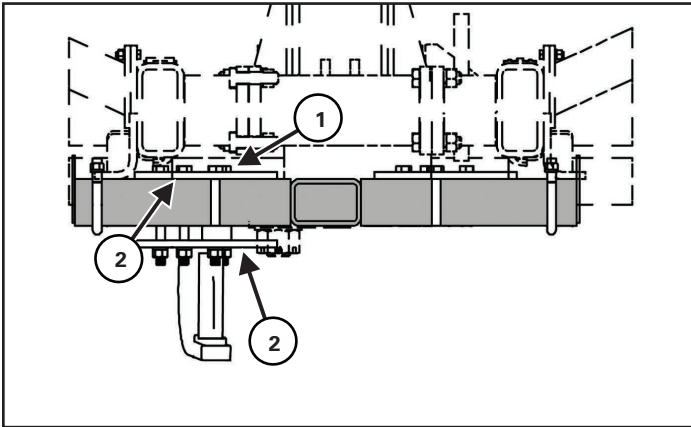
Figure 121



Align the center gang beam (Item 1) with the mounting flanges (Item 2) on the main frame. Install one 3/4" x 6-7/8" u-bolt (Item 3) [Figure 121] up over the center gang beam and into the main frame mounting flange (both sides).

Install 3/4" lock washers and 3/4" nuts onto the u-bolt (both sides). Tighten u-bolts to secure the center gang beam to the main frame.

Figure 122



Locate three 3/4" x 8" carriage bolts, three 3/4" lock washers and three 3/4" nuts per bearing hanger (Item 1) **[Figure 122]** (each bearing hanger).

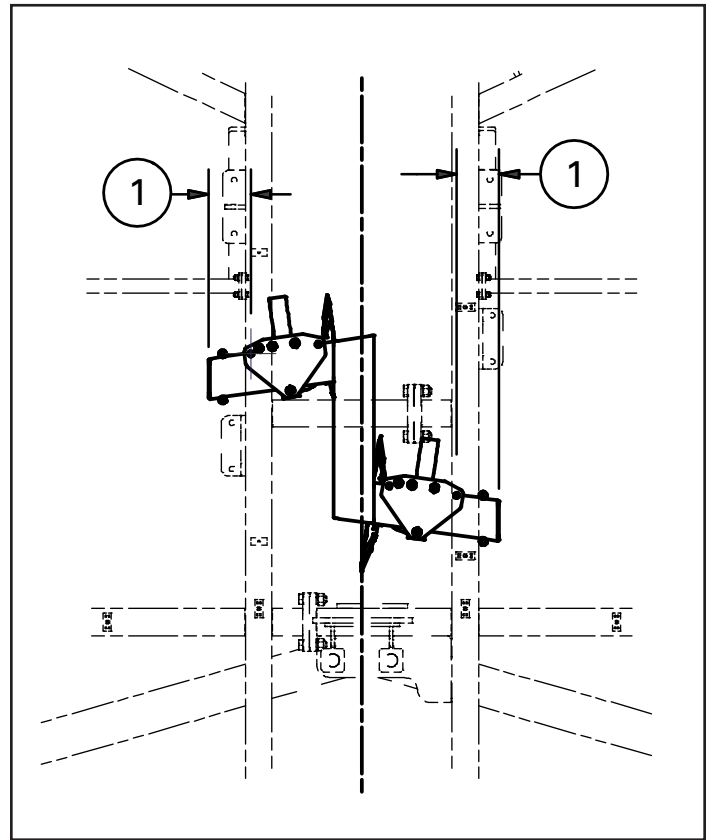
Position one hanger mounting plate (Item 2) on top of the gang beam (above bearing hanger). Install one hanger / scraper bar mounting plate (Item 3) **[Figure 122]** under the hanger bearing.

Install the three 3/4" x 8" carriage bolts down through the hanger mounting plate, stone flex and hanger / scraper bar mounting plate.

Install 3/4" lock washers and 3/4" nuts (Item 4) **[Figure 122]** onto the u-bolts. Do not tighten at this time.

Repeat for second center stone flex hanger.

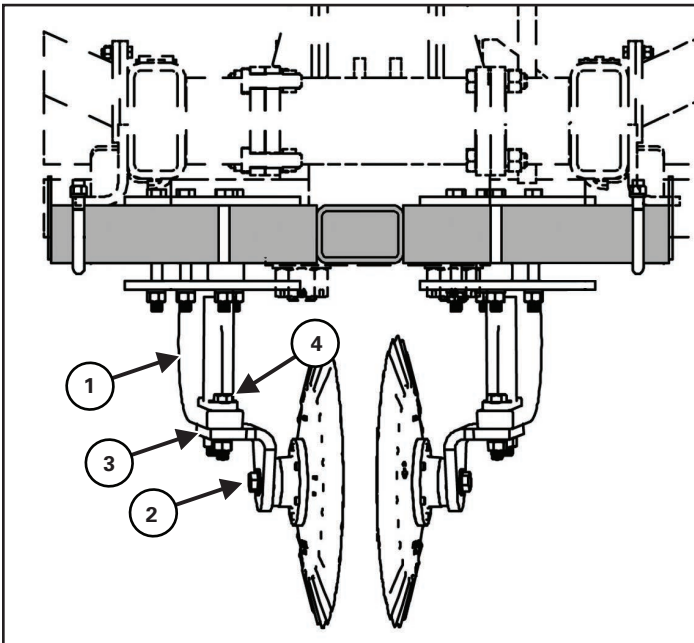
Figure 123



Adjust the two stone flex hanger mounts approximately 6-5/16" (Item 1) **[Figure 123]** from the outer edge of the center gang beam to the outer edge of the stone flex hanger mount.

Tighten stone flex hanger u-bolts.

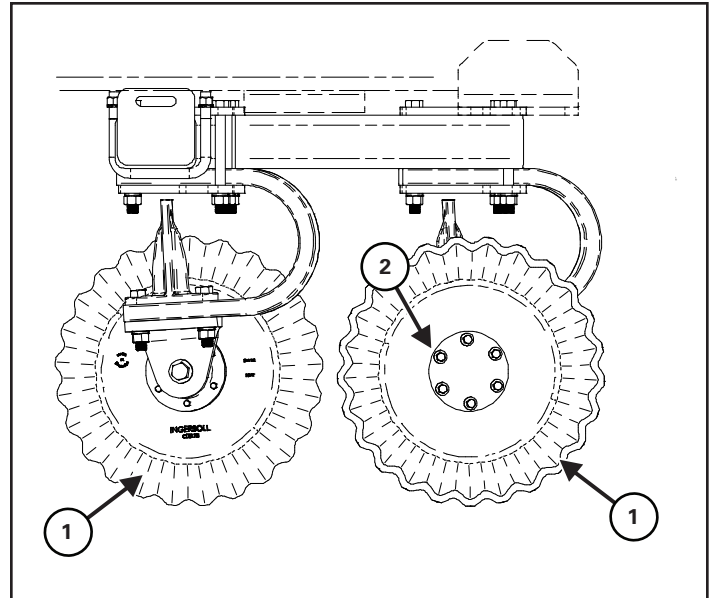
Figure 124



Align one stone flex hanger stop (Item 1) with mounting holes in the stone flex hanger. install one 3/4" x 4-1/2" bolt up through the hub assembly (Item 2) and stone flex hanger shim (Item 3). Install the 3/4" x 4-1/2" bolt (Item 4) [Figure 124] up through stone flex hanger and stone flex hanger stop. Install one 3/4" lock washer and 3/4" nut on the bolt. With hub assembly supported by the one bolt, install the second 3/4" x 4-1/2" bolt, 3/4" lock washer and 3/4" nut. Tighten the two bolts to secure the hub assembly to the stone flex hanger.

Repeat procedure for second hub assembly (with hub facing in).

Figure 125

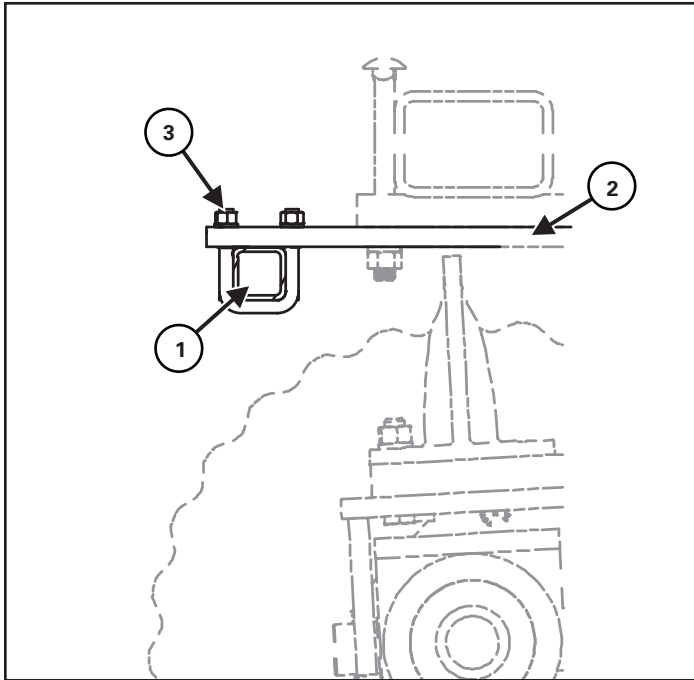


Install the two center blades (Item 1) using the eight 1/2" lug nuts (Item 2) [Figure 125]. Tighten lug nuts.

SCRAPER AND SCRAPER BAR

Standard Scraper Assembly

Figure 126



Align one scraper bar (Item 1) [Figure 126] of the correct length with the appropriate gang section.

Position the scraper bar underneath the mounting plates (Item 2) [Figure 126] at each hanger on the gang section.

Attach the scraper bar to the mounting plate using one 1/2" u-bolt, two 1/2" lock washers, and two 1/2" hex nuts (Item 3) [Figure 126].

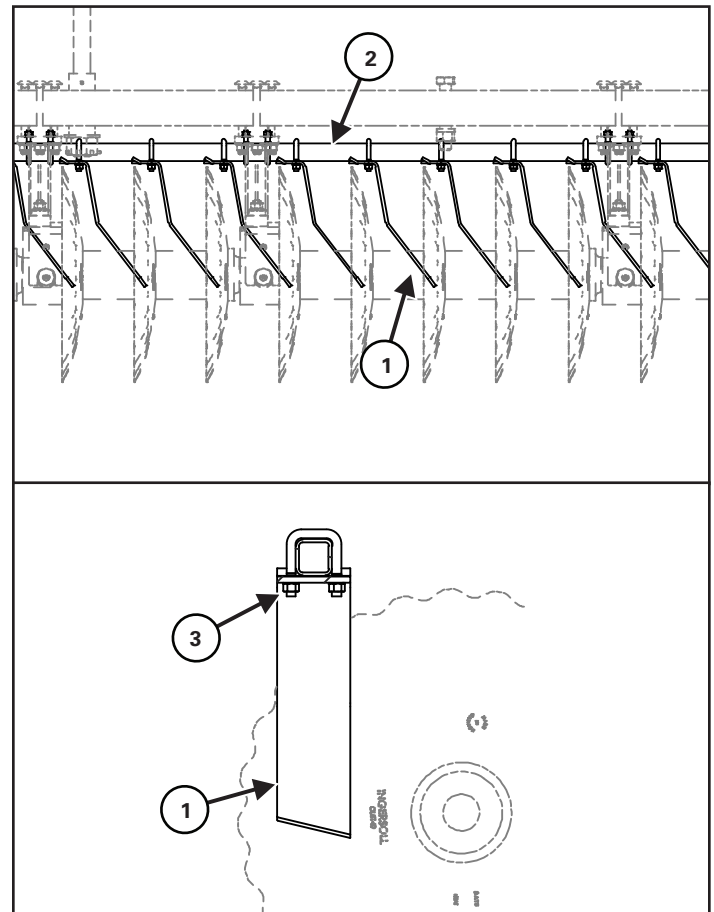
NOTE: Mount (Item 2) [Figure 126] is positioned so scraper bar is located at rear of gangs.

Continue installing the remaining scraper bars for each gang section. Do not tighten hardware at this time.



Scrapers are pre-installed on the scraper bars at the factory.

Figure 127



Position scrapers (Item 1) on the scraper bar (Item 2) [Figure 127].

Align one scraper behind each blade of the gang section. The scrapers should be almost touching the blades.

Attach each scraper using one 1/2" u-bolt, two 1/2" lock washers, and two 1/2" hex nuts (Item 3) [Figure 127]. Do not tighten at this time.

Make sure to use correct LH or RH scrapers for the gang sections. The scraper tip should angle down toward the center of the blade.

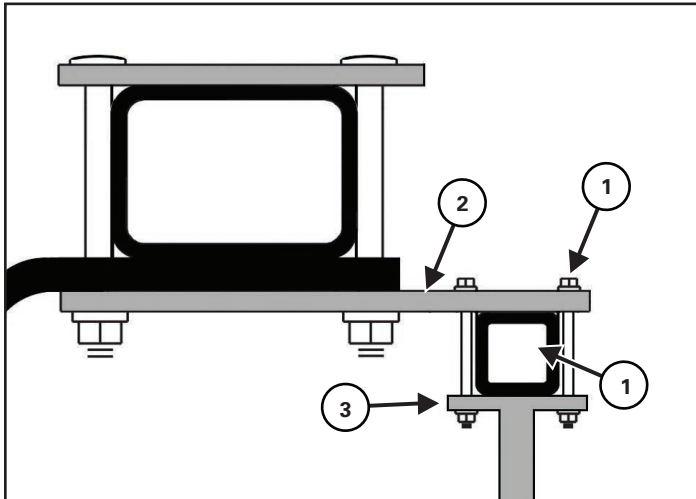
Continue installing the remaining scrapers.

Check that all scrapers are installed and positioned correctly.

Tighten all hardware.

Heavy Duty Scraper Assembly

Figure 128



Align one scraper bar (Item 1) [Figure 128] of the correct length with the appropriate gang section.

Position the scraper bar underneath the mounting plates (Item 2) [Figure 128] at each hanger on the gang section.

Position a scraper assembly (Item 3) [Figure 128] under each mount plate.

Install four 1/2" x 4" bolts (Item 1) down through the mount plate (Item 2) and the scraper assembly (Item 3) [Figure 128]. Install one 1/2" lock washer and one 1/2" hex nut on the four bolts.

Continue installing the remaining scraper bars for each gang section. Do not tighten hardware at this time.

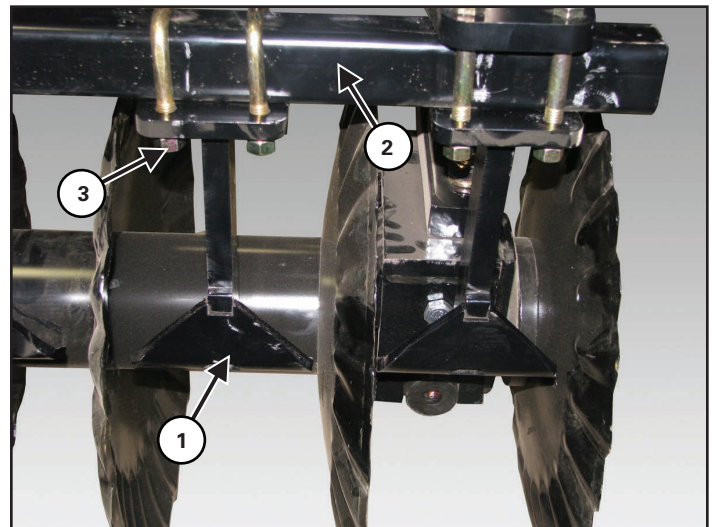
NOTE: Mount (Item 2) [Figure 128] is positioned so scraper bar is located at rear of gangs.

!

IMPORTANT

Scrapers are pre-installed on the scraper bars at the factory.

Figure 129



Position scrapers (Item 1) on the scraper bar (Item 2) [Figure 129].

Align a scraper between each of the blades of the gang section. The scrapers should be almost touching the blades.

Attach each scraper using two 1/2" u-bolts, four 1/2" lock washers, and four 1/2" hex nuts (Item 3) [Figure 129]. Do not tighten at this time.

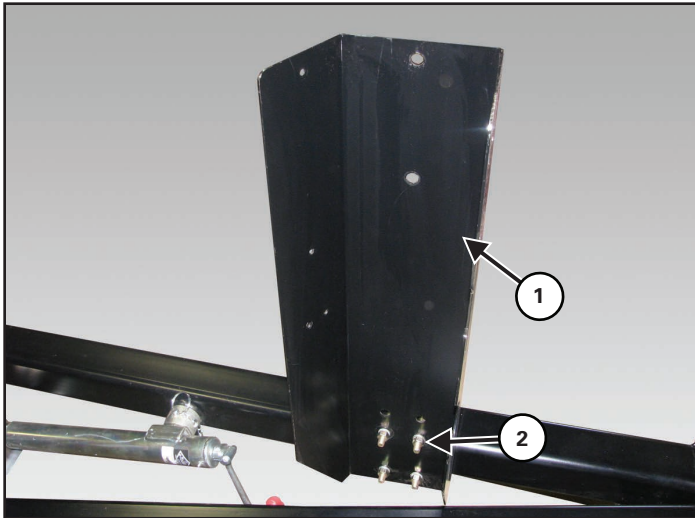
Continue installing the remaining scrapers.

Check that all scrapers are installed and positioned correctly.

Tighten all hardware.

HYDRAULIC HOSE BRACKET

Figure 130



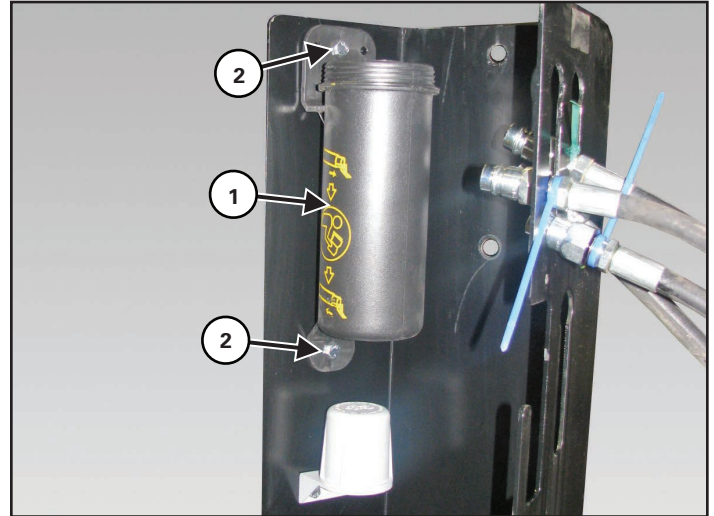
Locate the hydraulic hose bracket (Item 1) [Figure 130], two 1/2" x 4-9/16" u-bolts, four 1/2" lock washers and four 1/2" nuts.

Align the hydraulic hose bracket on the same side as the hitch jack. Position the bracket on tube approximately 16" from the end of the tube.

Install the two 1/2" x 4-9/16" u-bolts around the hitch and through the hydraulic hose bracket (Item 1). Install the four 1/2" lock washers and 1/2" nuts (Item 2) [Figure 130] on the u-bolts. Tighten nuts to secure the hydraulic hose bracket to the hitch.

Manual Storage Container Assembly

Figure 131



Locate the manual storage container (Item 1), two 5/16" x 3/4" bolts (Item 2) [Figure 131], two 5/16" lock washers and two 5/16" nuts.

Align the manual storage container with the mounting bracket on the hitch.

Install the two 5/16" x 3/4" bolts (Item 2) through the manual storage container (Item 1) [Figure 131] and mounting bracket. Install one 5/16" lock washer and 5/16" nut on each bolt. Tighten bolts and nut to secure the manual storage container to the mounting bracket.

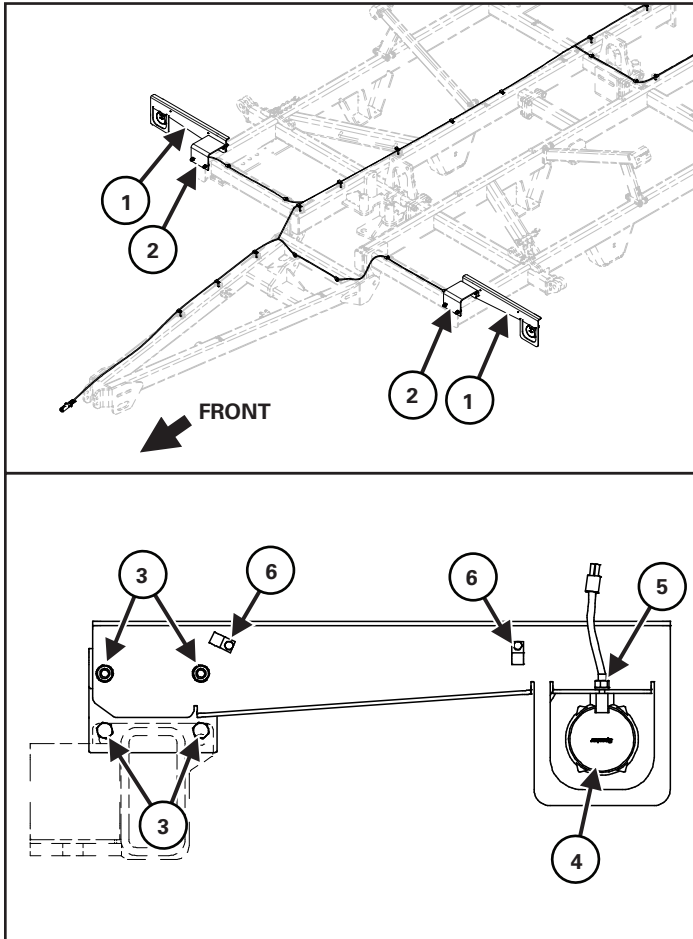
Install manual storage container cap (not shown).

LIGHT KIT

VT3290 & VT3320 Models

Front Light Bracket Assembly

Figure 132



Install the front LH / RH light brackets (Item 1) and two light adapter brackets (Item 2) [Figure 132].

Attach each light bracket and adaptor bracket using four 5/8" x 2" bolts, 5/8" lock washers and 5/8" nuts (Item 3) [Figure 132].

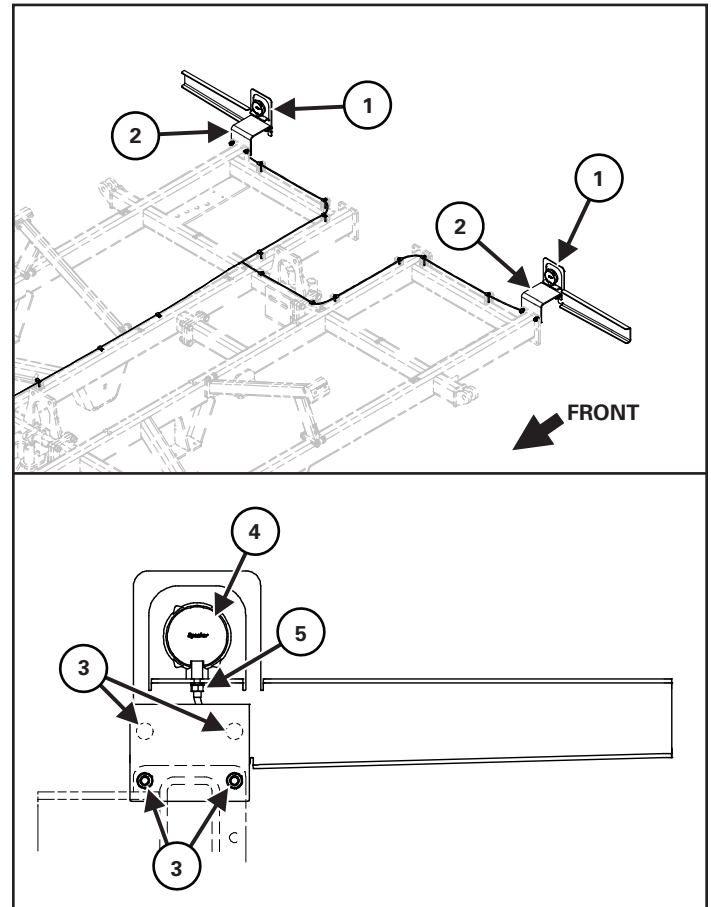
Install the amber light (Item 4) into the slot of the light bracket. Position the amber light facing the front of the machine. Tighten nut (Item 4) [Figure 132].

Route the amber light wire harness along the light bracket. Attach the wires using 5/16" x 1/2" hex bolts and clamps (Item 6) [Figure 132].

Repeat for opposite light assembly.

Rear Light Bracket Assembly

Figure 133



Install the rear LH / RH lights brackets (Item 1) and two light adapter brackets (Item 2) [Figure 133].

Attach each light bracket and adaptor bracket using four 5/8" x 2" bolts, 5/8" lock washers and 5/8" nuts (Item 3) [Figure 133].

Install the red light (Item 4) into the slot of the light bracket. Position the red light facing the rear of the machine. Tighten nut (Item 5) [Figure 133].

Route the red light wire harness toward the frame.

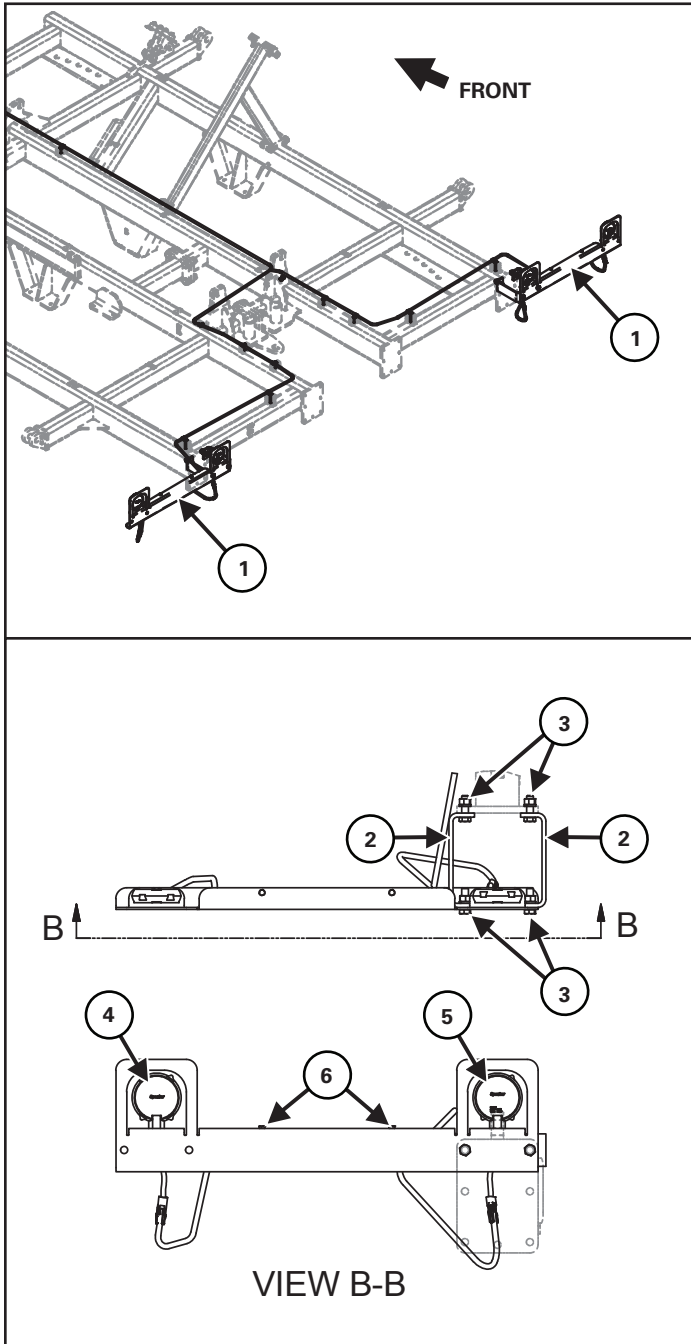
Repeat for opposite light assembly.

VT3345 & VT3375 Models

Rear Light Bracket Assembly

NOTE: Wide models (VT3345 & VT3375) are only equipped with rear light brackets.

Figure 134



Install each dual light bracket (Item 1) with two light adapter brackets (Item 2) [Figure 134].

Attach each dual light bracket and adaptor brackets using four 5/8" x 2" bolts, 5/8" lock washers and 5/8" nuts (Item 3) [Figure 134].

Install the red light (Item 4) in the inside slot of the light bracket. Position the red light facing the rear of the machine. Tighten nut (Item 5) [Figure 134].

Install the amber light (Item 6) in the outside slot of the light bracket. Position the amber light facing the front of the machine. Tighten nut (Item 7) [Figure 134].

Route the wire harness along the light bracket. Attach the wires using 5/16" x 1" hex bolts, 5/16" lock nuts, and clamps (Item 6) [Figure 134].

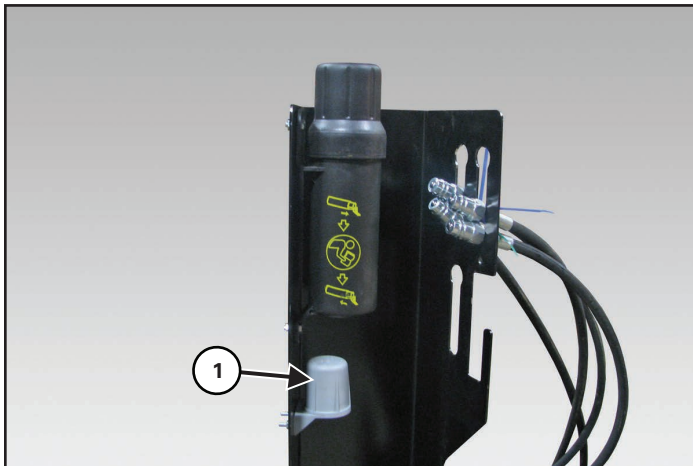
Repeat for opposite dual light assembly.

LIGHT KIT Routing

Route the wire harness down the center of the main frame (along hydraulic hoses) and the front of the hitch as shown [Figure 136].

Using cable ties, secure wire harness to the light brackets and hydraulic hoses.

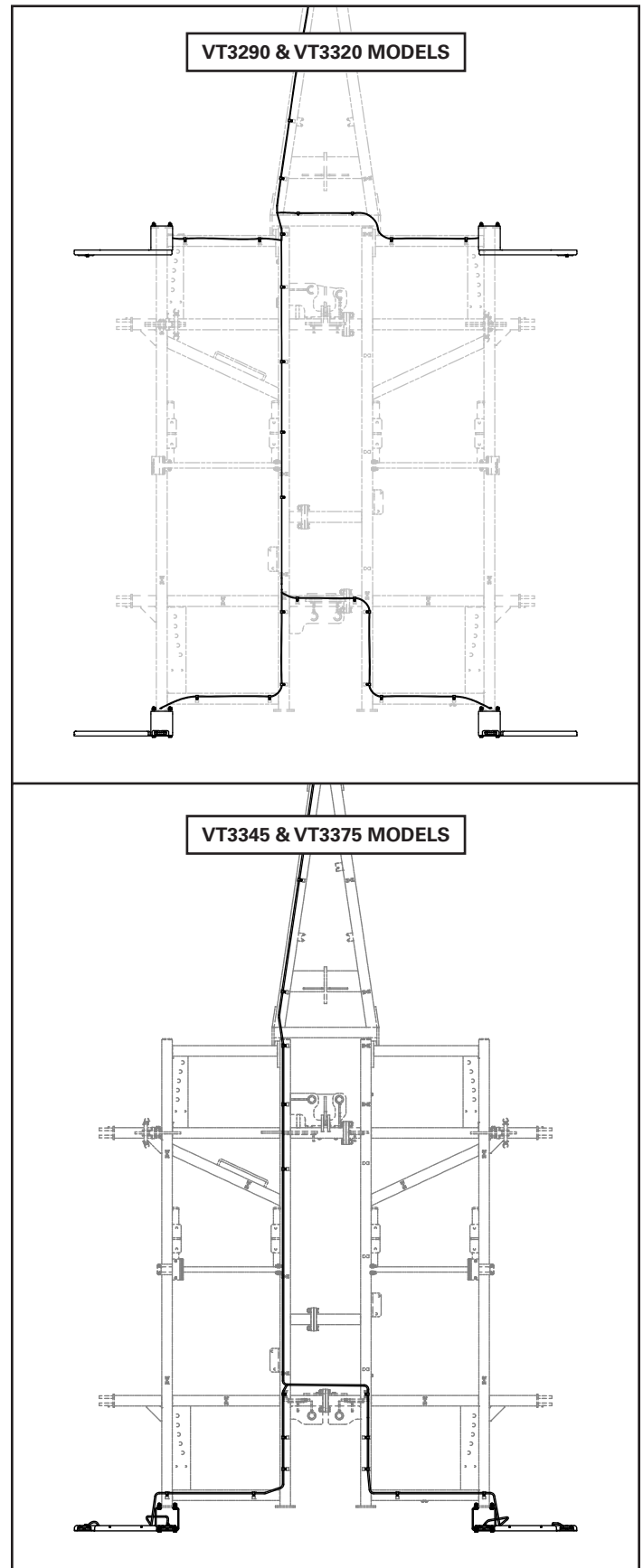
Figure 135



Install storage cup below manual holder using one 1/4" x 5/8" bolt, 1/4" lock washer, and 1/4" nut.

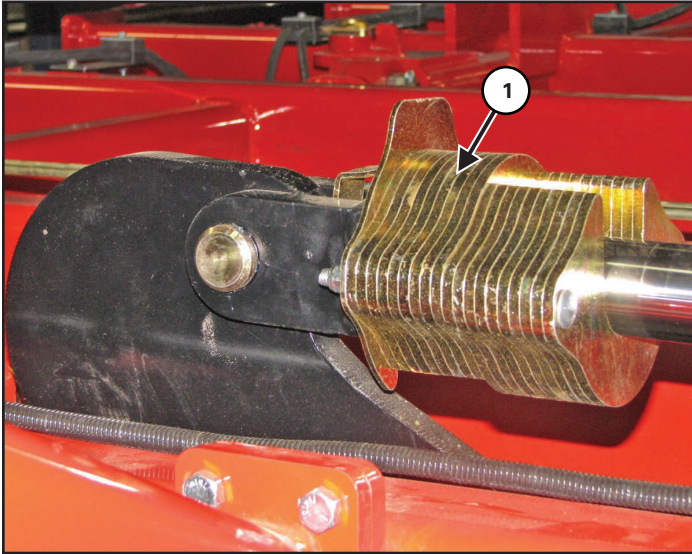
Install the wire harness 7-pin connector in the storage cup (Item 1) [Figure 135] on the hydraulic hose bracket.

Figure 136



DEPTH STOPS

Figure 137



Install the permanent depth stop (Item 1) [Figure 137] on the main rockshaft cylinder. The permanent depth stop allows for maximum penetrating depth of 5 in.

Use the correct permanent depth stop according to blade size:

VT3290 & VT3320 Models	
Blade Size	Permanent Depth Stop Size
20 in.	3.87 in. (98 mm)
22 in.	4.87 in. (123.6 mm)

VT3290 & VT3320 Models	
Blade Size	Permanent Depth Stop Size
20 in.	2.12 in. (54 mm)
22 in.	3.12 in. (79 mm)

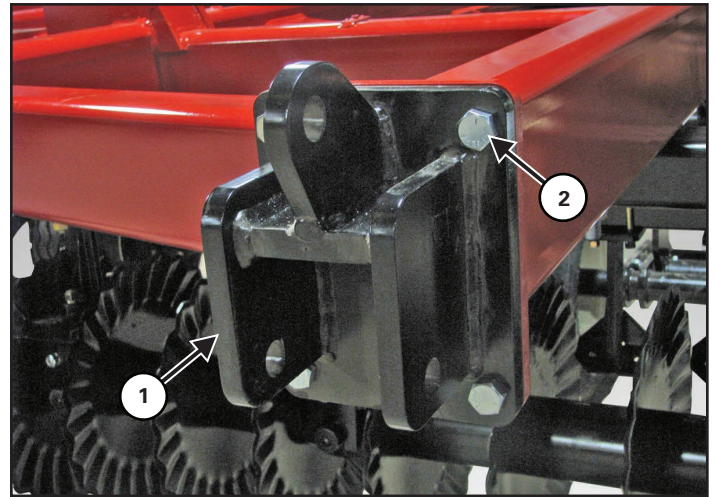


IMPORTANT

ALL depth stops must be installed on main frame rockshaft cylinder when transporting implement.

GAUGE WHEELS

Figure 138



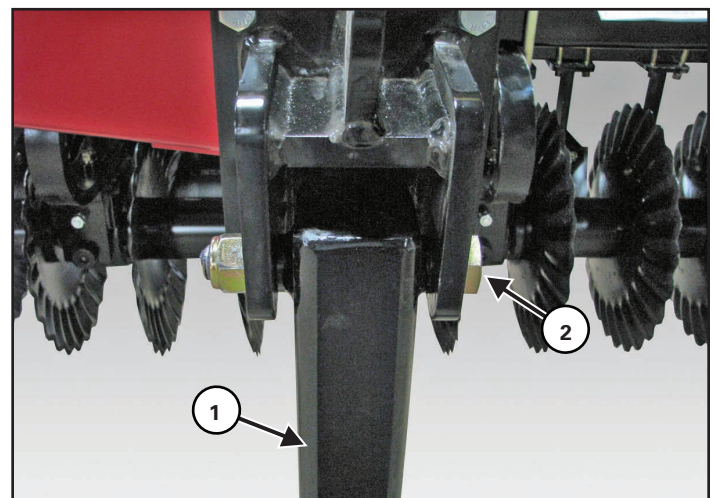
Locate the two gauge wheel mounting frame brackets (Item 1) [Figure 138].

Install gauge wheel mounting frame brackets on the front / outer mounting plate of the wing frame.

Install four 5/8" x 2-14" bolts (Item 2) [Figure 138] through the gauge wheel mounting frame bracket and wing frame mounting plate. Install one 5/8" lock washer and 5/8" nut on each bolt and tighten.

Repeat on opposite wing frame.

Figure 139



Locate the two caster wheel arms (Item 1) [Figure 139].

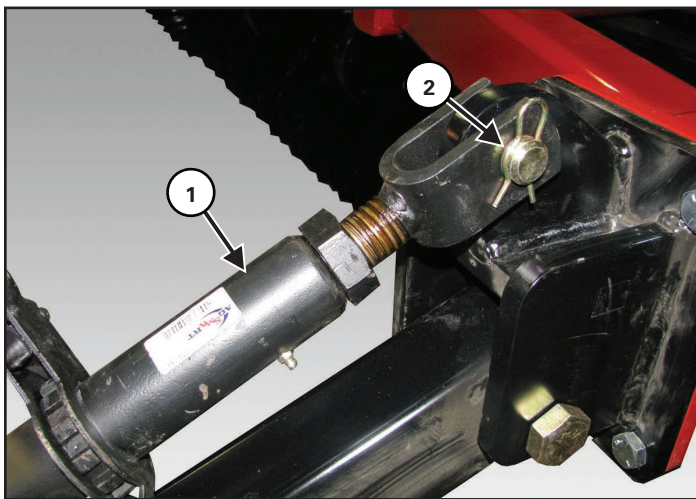
Position the caster wheel arm (Item 1) [Figure 139] into the lower section of the gauge wheel mounting bracket.

Install one 1" x 6-1/2" (Grade 5) bolt (Item 2) [Figure 139] through the gauge wheel mounting bracket and caster wheel arm.

Install one 1" lock nut on the bolt and tighten until the lock nut makes contact with the gauge wheel mounting bracket.

Repeat for opposite side.

Figure 140

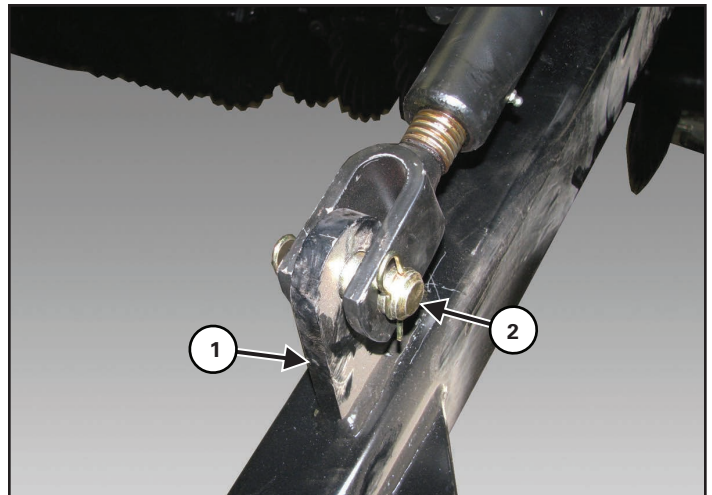


Locate the two caster ratchet jacks (Item 1) [Figure 140].

Install pin (Item 2) [Figure 140] and secure with retaining clip.

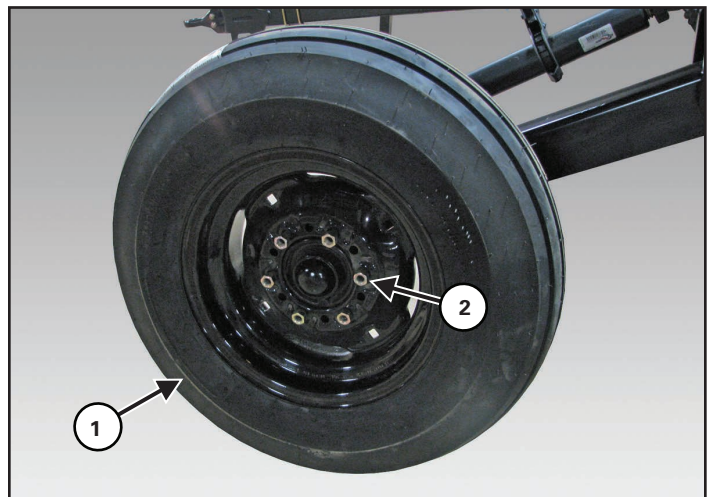
Repeat for opposite side.

Figure 141



Raise the caster wheel arm (Item 1) to the lower ratchet jack clevis. Install pin (Item 2) [Figure 141] and secure with retaining clip.

Figure 142



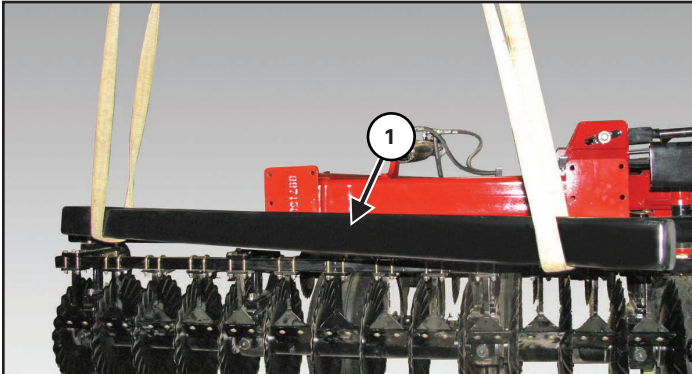
Tire And Wheel Assembly 7.6-15SL

Align gauge wheel with hub (Item 1). Install and tighten the six lug nuts (Item 2) [Figure 142].

Repeat for opposite gauge wheel.

BASKET ROLLERS (OPTIONAL)

Figure 143



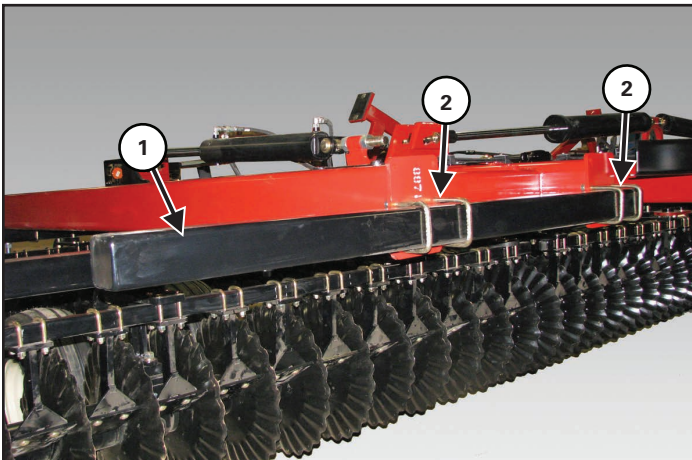
Locate one support tube (Item 1) [Figure 143].

Connect straps to an approved lifting device.

Raise and move the support tube to the rear of the frame.

Refer to the rolling basket diagrams for correct support tube length and type depending on model.

Figure 144

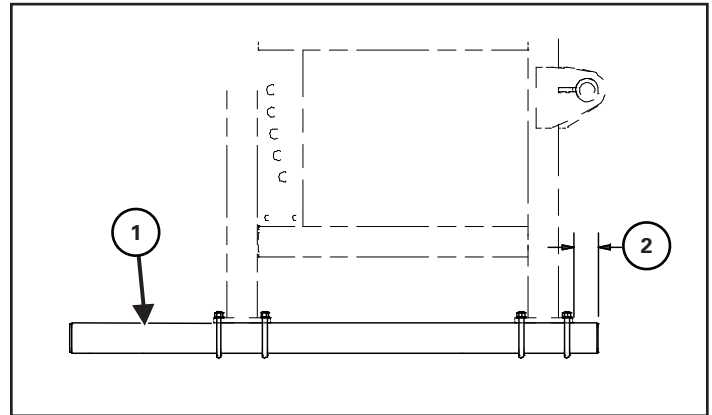


Align the support tube (Item 1) [Figure 144] with the mounting plates on the rear frame.

Install four 5/8" x 4-11/16" u-bolts (Item 2) [Figure 144] over the wing support tube and through the mounting plates on the rear frame. Install two 5/8" lock washer and 5/8" nut on each u-bolt.

Do not tighten at this time.

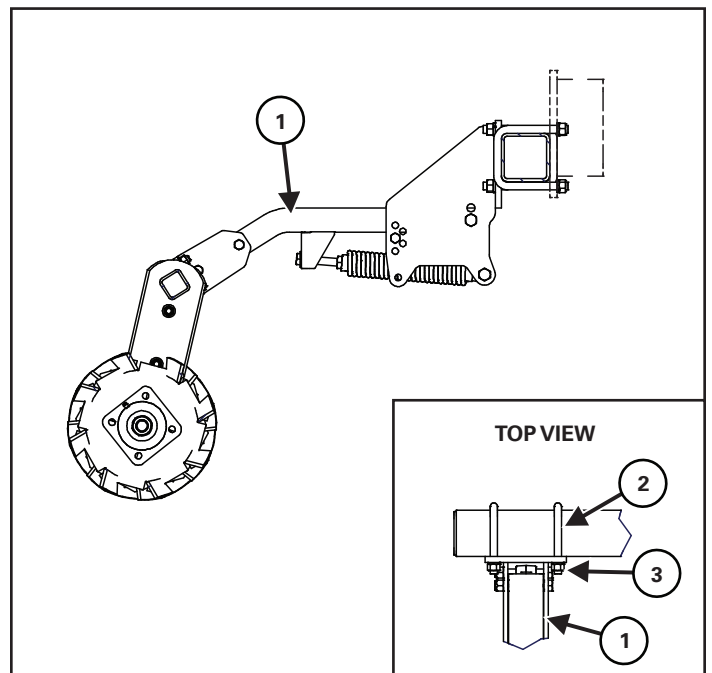
Figure 145



Adjust the support tube (Item 1) the correct distance past the edge of the frame (Item 2) [Figure 145].

Refer to the rolling basket diagrams for correct position depending on model.

Figure 146



Install the basket hitches (Item 1) onto the support tubes. Attach each basket hitch using two 5/8" x 4-11/16" square bend u-bolts (Item 2) and 5/8" lock nuts (Item 3) [Figure 146].

Refer to the rolling basket diagrams for correct position depending on model.

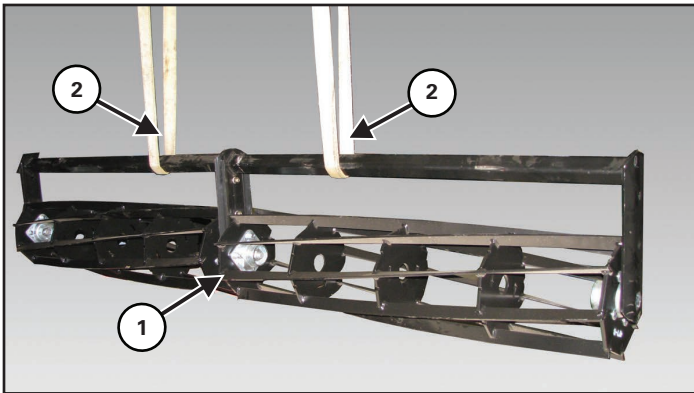
Do not tighten at this time.



IMPORTANT

Refer to the basket roller diagrams on page 88 for the correct installation and orientation.

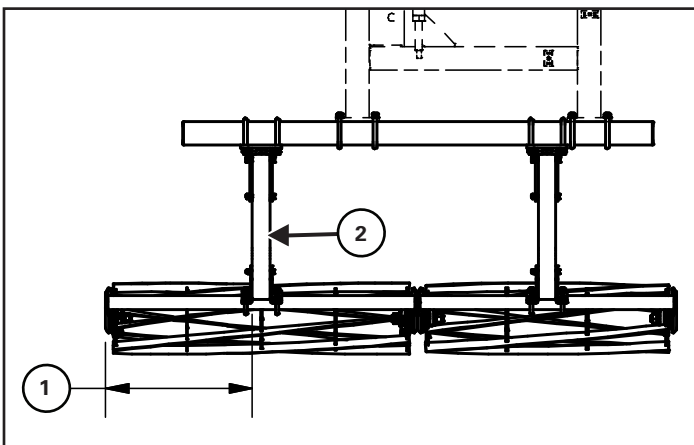
Figure 147



Locate the correct basket roller assembly (Item 1) and install straps (Item 2) [Figure 147] around the basket roller assembly.

Refer to the basket roller diagrams on page 88 for the correct identification.

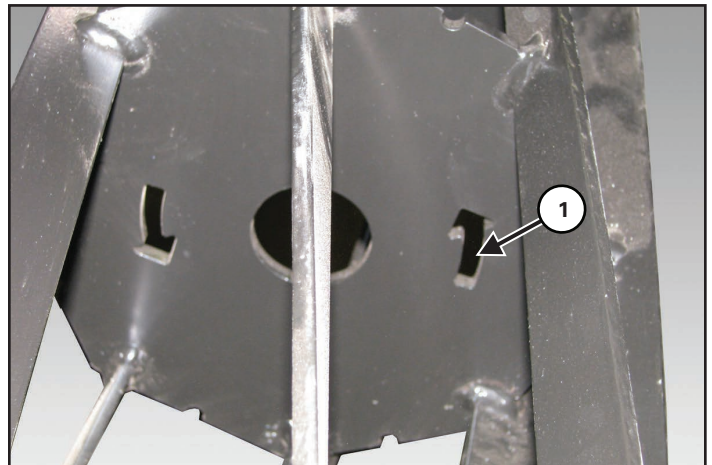
Figure 148



Position the basket roller assembly the correct distance (Item 1) from the edge of the basket hitch (Item 2) [Figure 148].

Refer to the basket roller diagrams for the correct installation and orientation

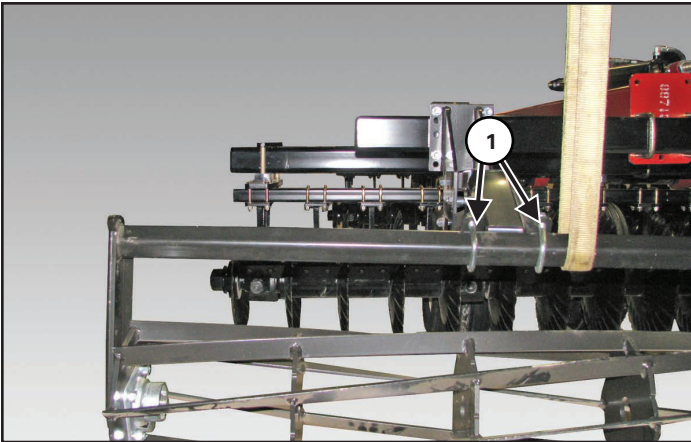
Figure 149



Verify that the basket roller assembly arrows (Item 1) [Figure 149] will rotate forward (face to front / hitch) once installed.

Do not tighten at this time.

Figure 150



Align basket roller assembly with the basket hitch.

Install u-bolts (Item 1) [Figure 150] over the basket roller assembly and through the mounting holes of the basket hitch. Install lock washers and nuts onto the u-bolts.

Refer to the basket roller diagram for the correct installation and orientation.



IMPORTANT

Check position and spacing of all basket roller components once installed.

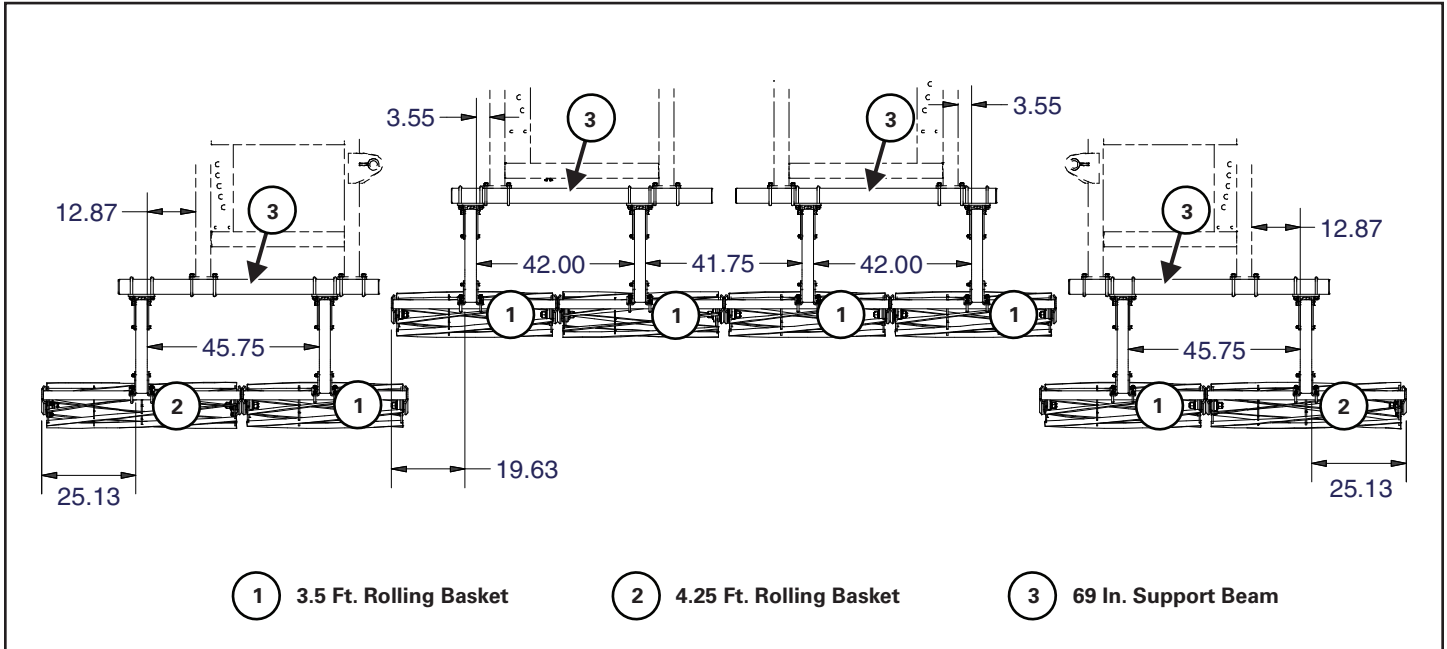
Refer to the basket roller diagrams on page 88 for correct position and spacing depending on model.

Tighten all hardware.

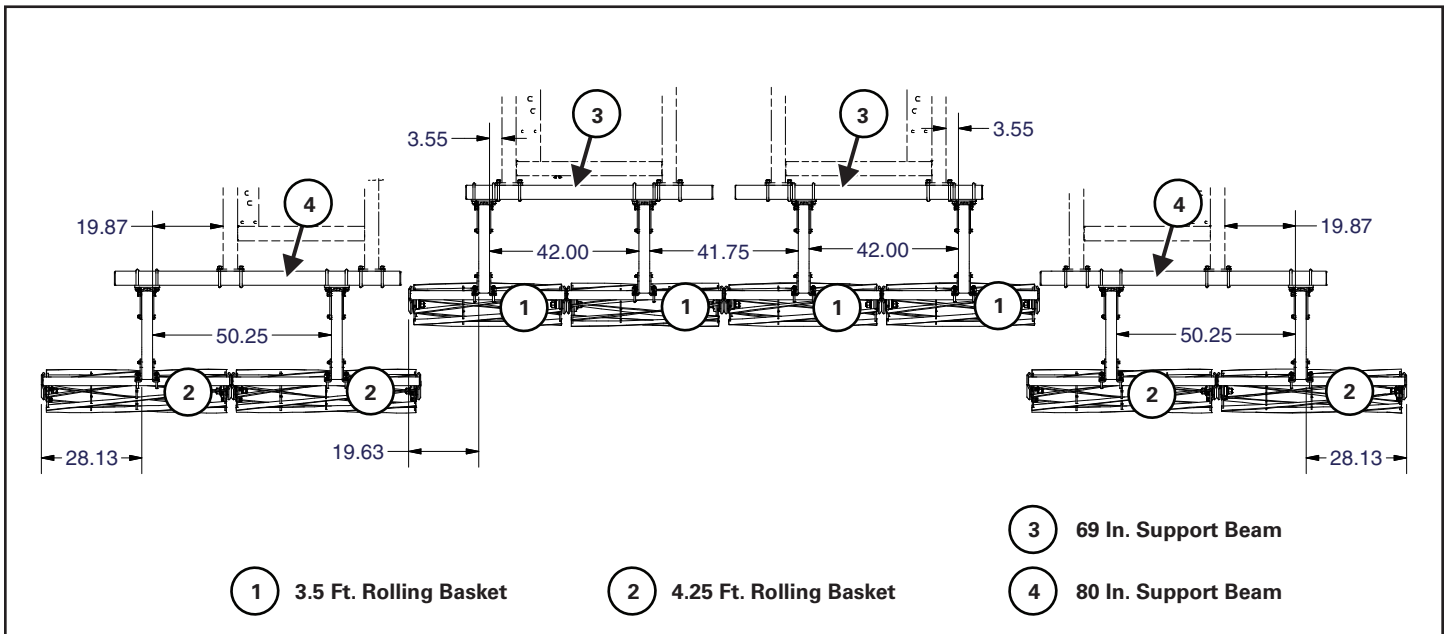
Basket Roller Diagrams

NOTE: Basket roller diagram dimensions are in inches.

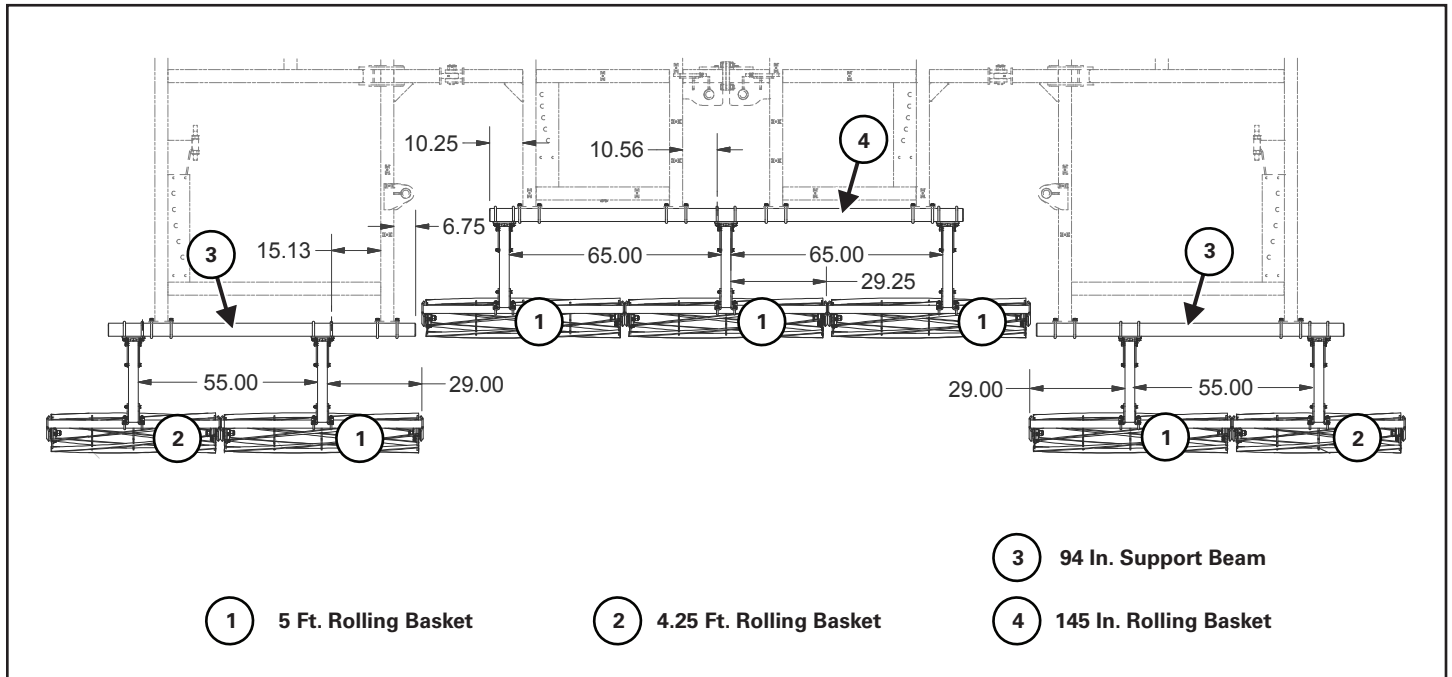
VT3290 Model - 8 In. & 9 In. Spacing



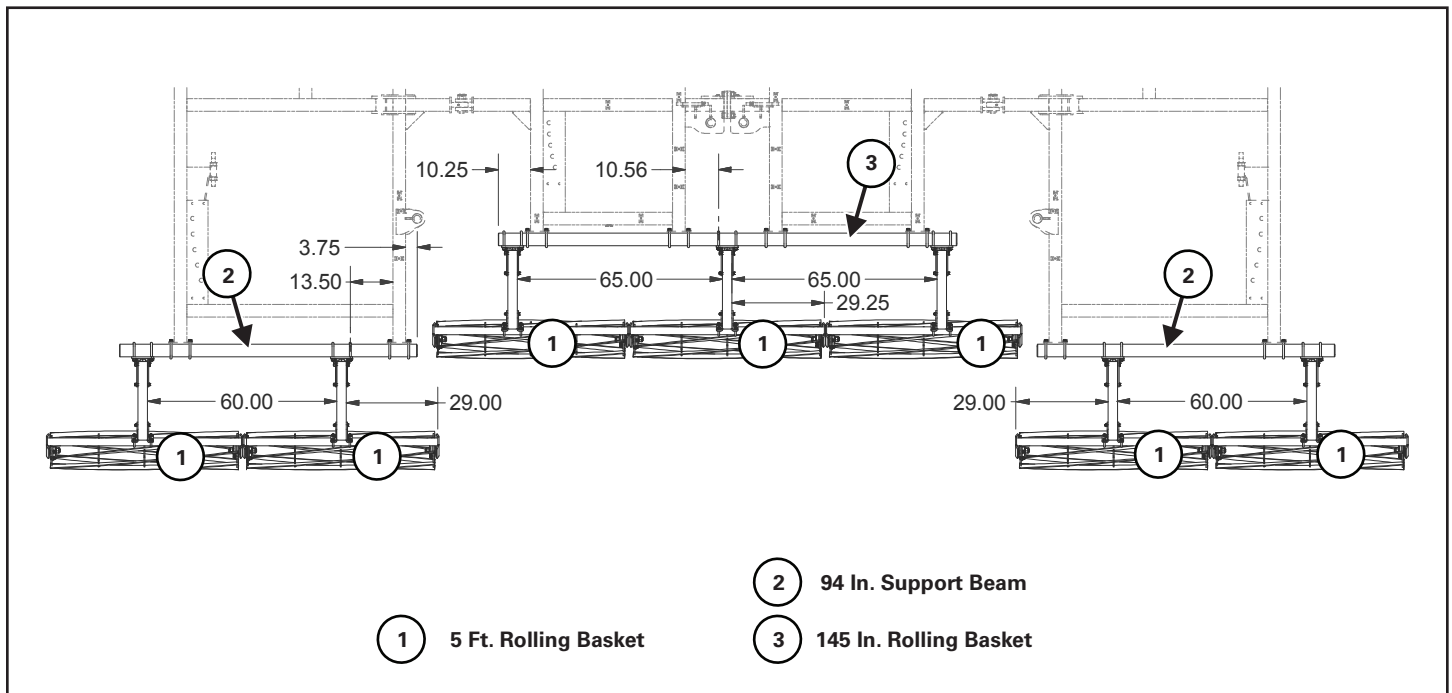
VT3320 Model - 8 In. & 9 In. Spacing



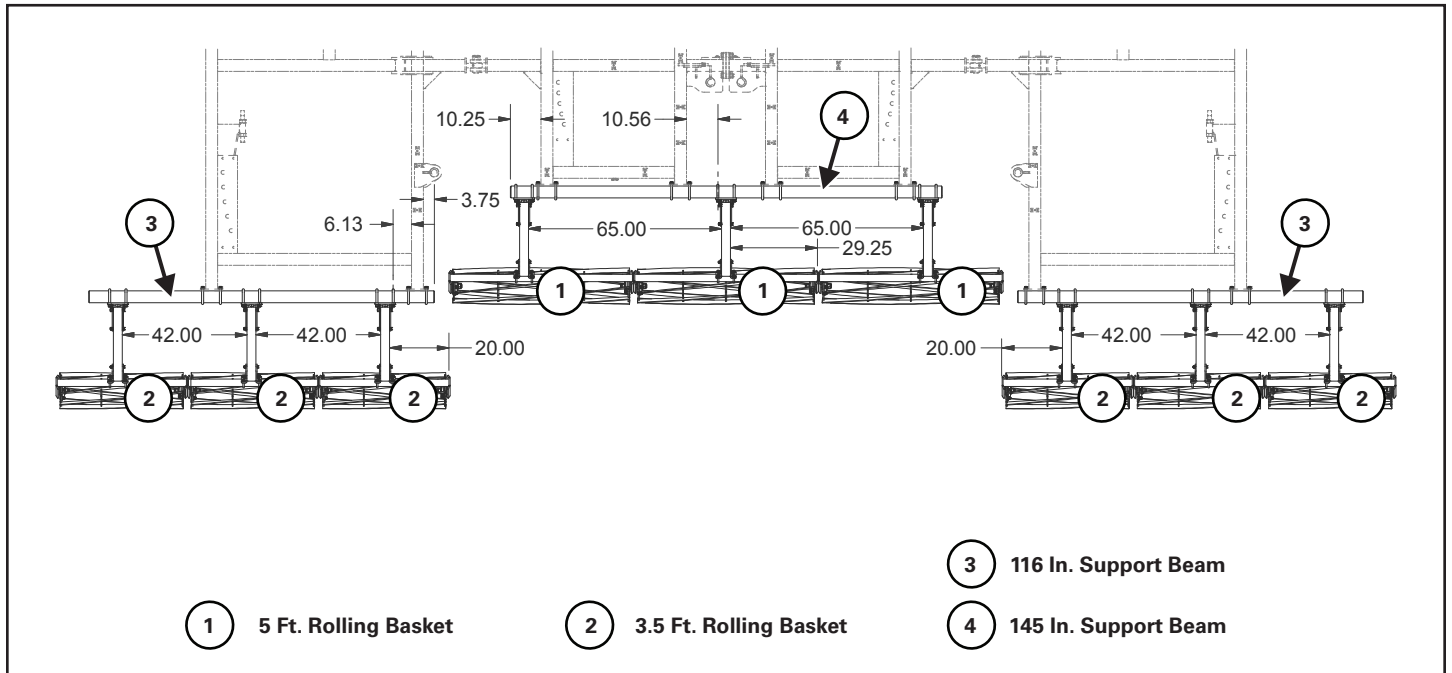
VT3345 - 8 In. Spacing



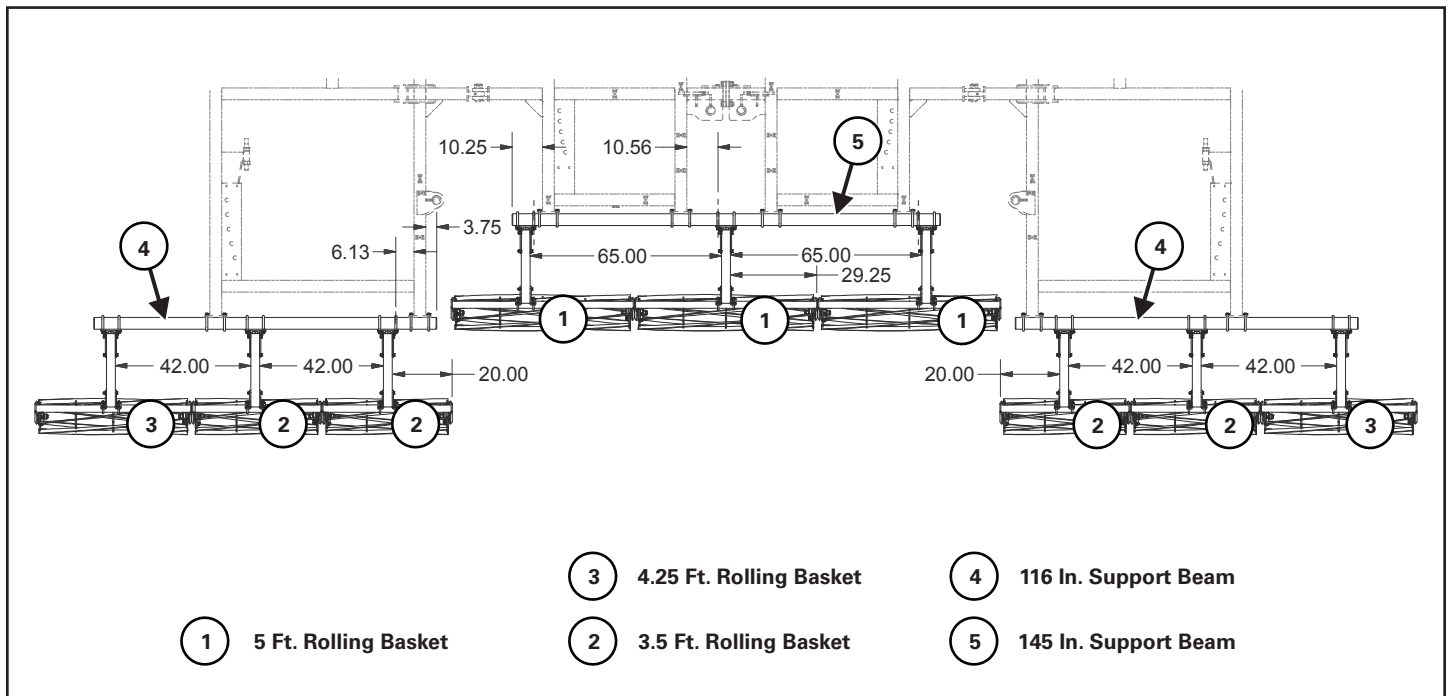
VT3345 - 9 In. Spacing



VT3375 - 8 In. Spacing



VT3375 - 9 In. Spacing



HARROW (OPTIONAL)

Locate one support tube.

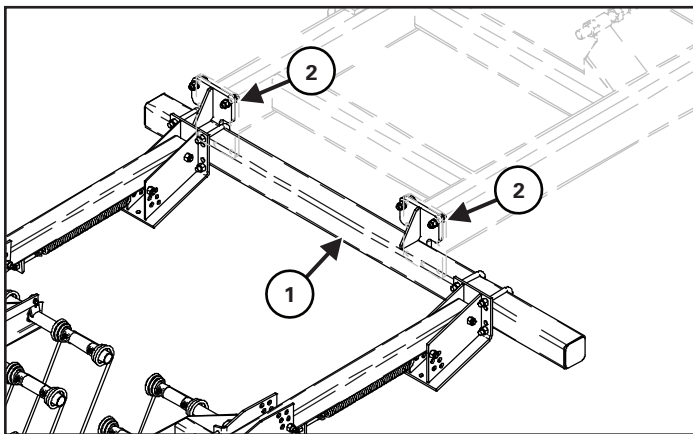
Connect the straps to an approved lifting device.

Raise and move the support tube to the rear of the frame.

Refer to the harrow diagrams for correct support tube length and type depending on model.

Bracketed Support Tubes

Figure 151



Align the bracketed support tube (Item 1) [Figure 151] with the mounting plates on the frame.

Attach using three 5/8" x 2-1/2" hex bolts, three 5/8" lock washers, and three 5/8" nuts (Item 2) [Figure 151].

Do not tighten at this time.

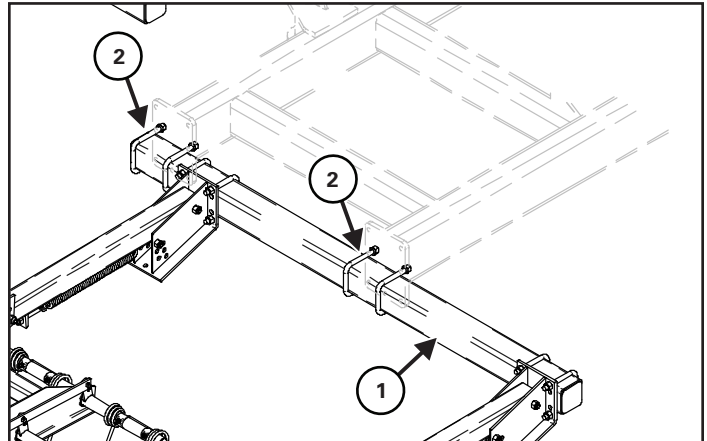
!

IMPORTANT

Refer to the harrow diagrams on page 93 for correct position and spacing depending on model.

Standard Support Tubes Assembly

Figure 152



Position the standard support tube (Item 1) [Figure 152] the correct distance from the frame.

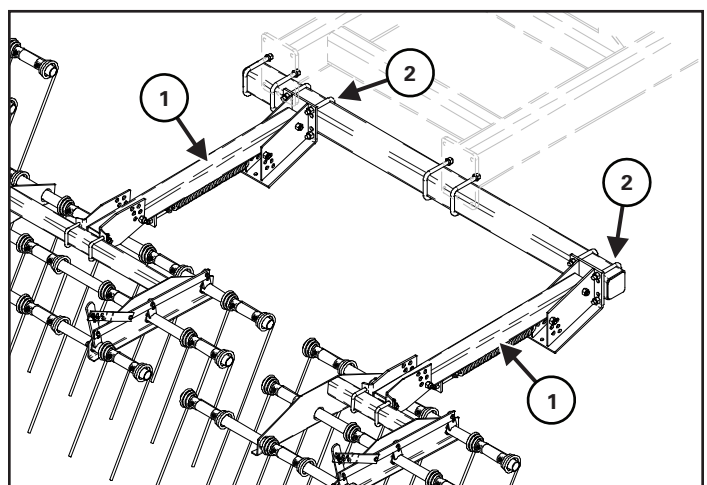
Refer to the harrow diagrams for correct position and spacing.

Install two 5/8" x 4-11/16" u-bolts over the support tube and through the mounting plates on the frame. Install two 5/8" lock washers and 5/8" nuts on each u-bolt (Item 2) [Figure 152].

Do not tighten at this time.

Harrow Hitches & Assemblies

Figure 153

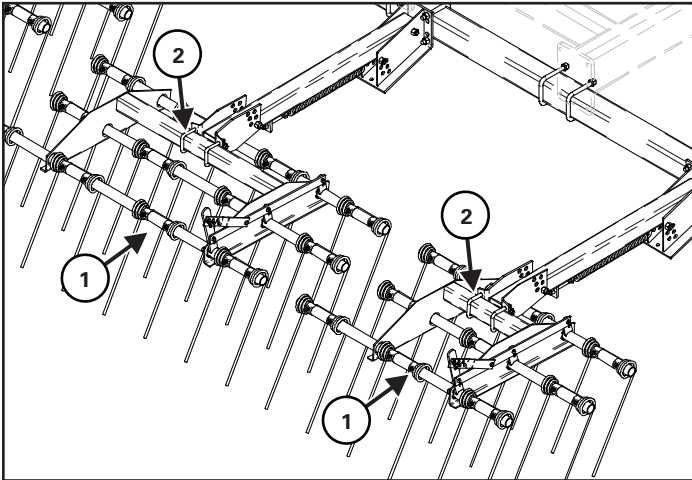


Position the harrow hitches (Item 1) [Figure 153] on the support tube with the correct spacing.

Refer to the harrow diagrams for correct position and spacing.

Install two 5/8" x 4-11/16" u-bolts over the support tube and through the mounting plates on each harrow hitch. Install two 5/8" lock washers and 5/8" nuts on each u-bolt (Item 2) [Figure 153].

Figure 154



Install the harrow assemblies (Item 1) [Figure 154] onto each harrow hitch.

Refer to the harrow diagrams for correct harrow type and position.

Center the harrow assemblies on the harrow hitches. Secure the harrow assemblies to the harrow hitches using 1/2" x 3-1/16" x 3-9/16" u-bolts and 1/2" lock nuts (Item 2) [Figure 153].

!

IMPORTANT

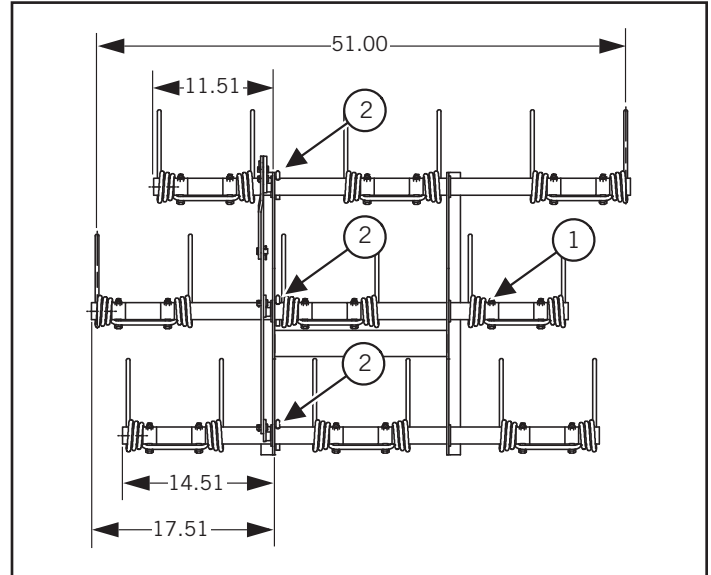
Check position and spacing of all harrow components once installed.

Refer to the harrow diagrams on page 93 for correct position and spacing depending on model.

Tighten all hardware.

51" Harrow Assembly

Figure 155

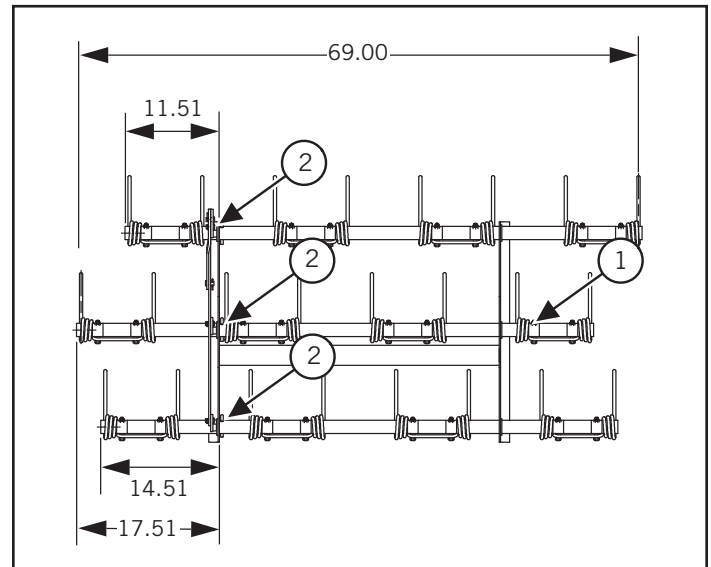


Secure tine using two 3/8" x 2-3/4" bolts (Item 1) [Figure 155] and two 3/8" nuts.

Secure rods using cotter pins (Item 2) [Figure 155].

69" Harrow Assembly

Figure 156



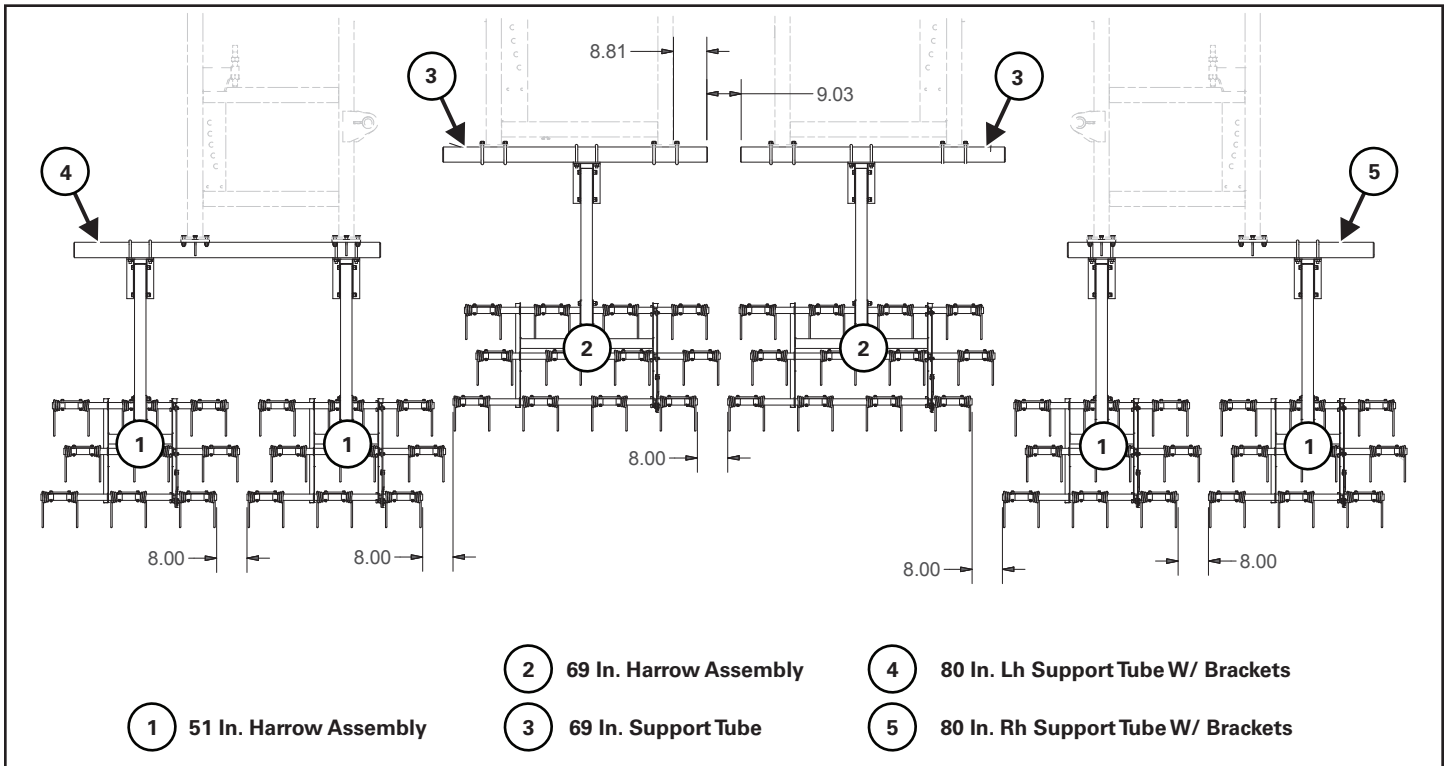
Secure tine using two 3/8" x 2-3/4" bolts (Item 1) [Figure 156] and two 3/8" nuts.

Secure rods using cotter pins (Item 2) [Figure 156].

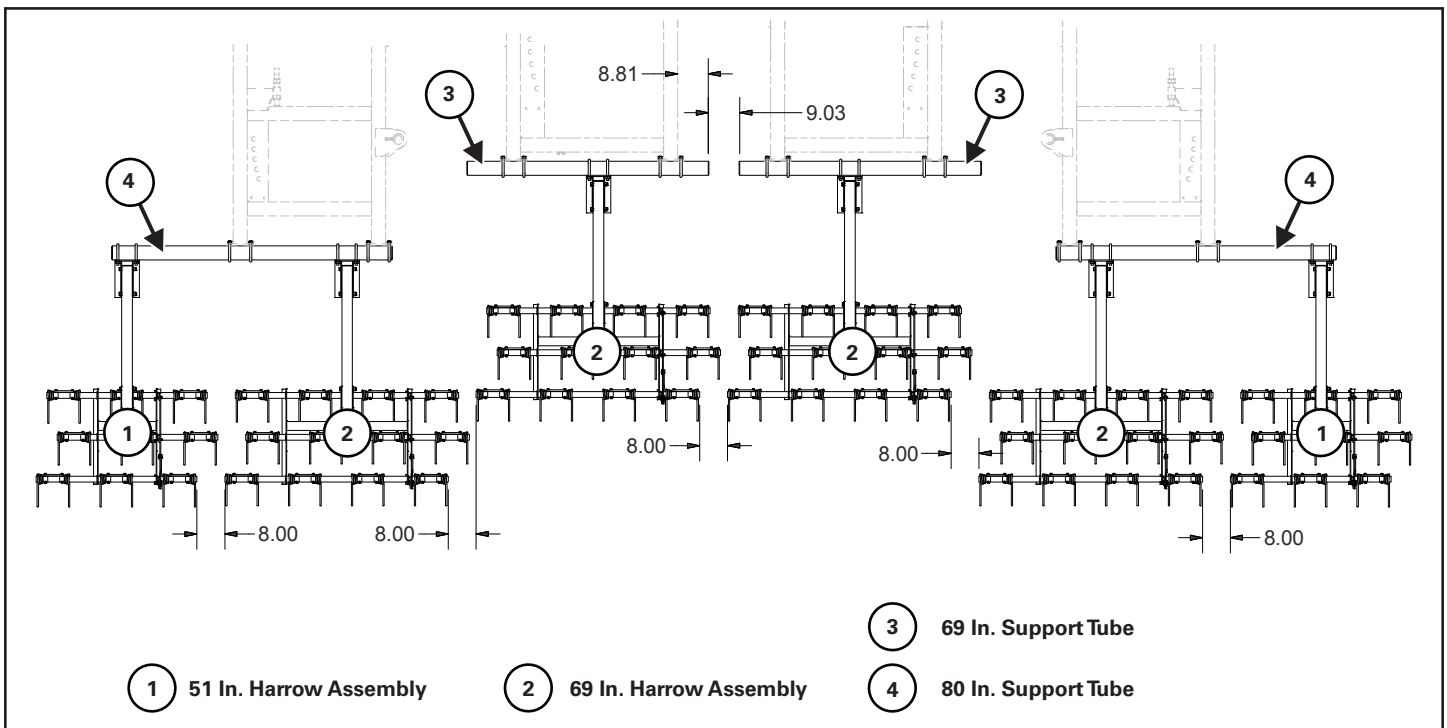
Harrow Diagrams

NOTE: Harrow diagram dimensions are in inches.

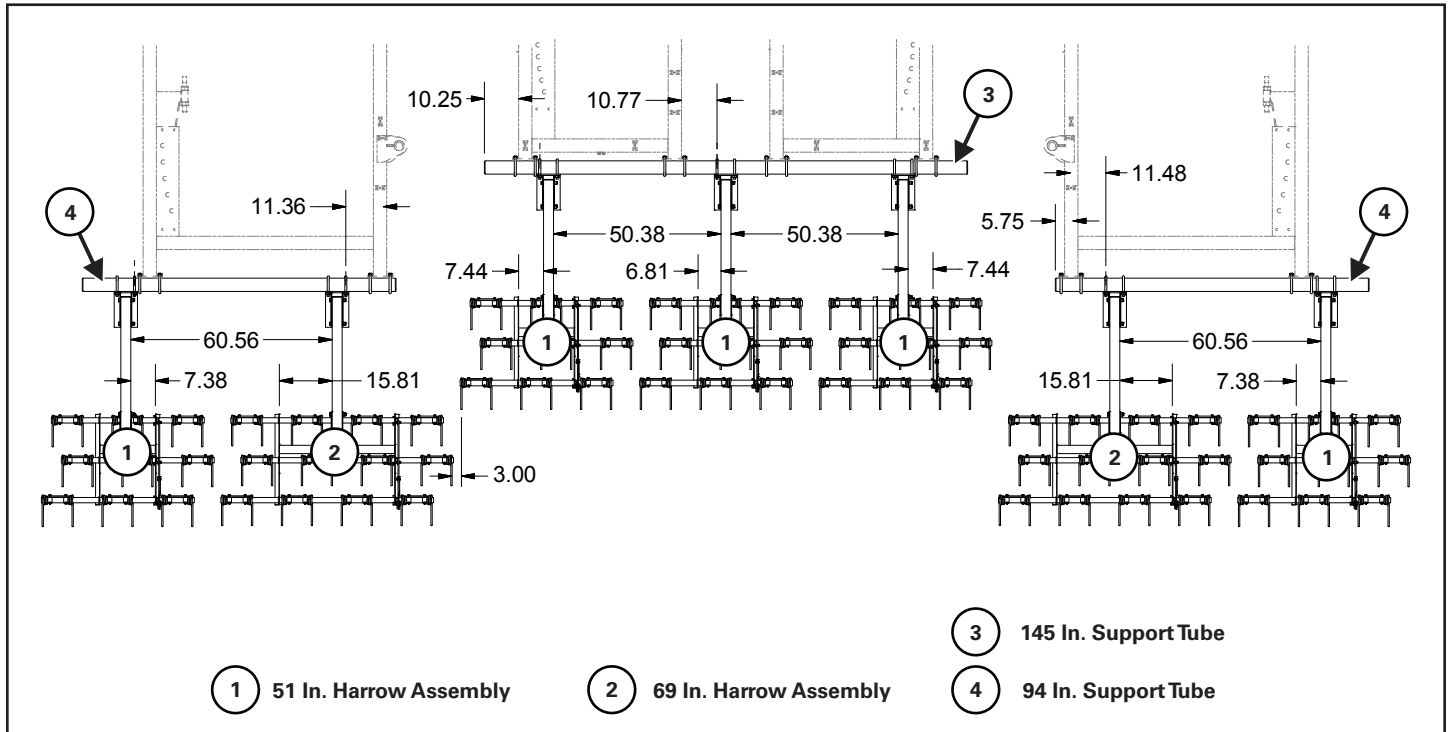
VT3290 Model - 8 In. & 9 In. Spacing



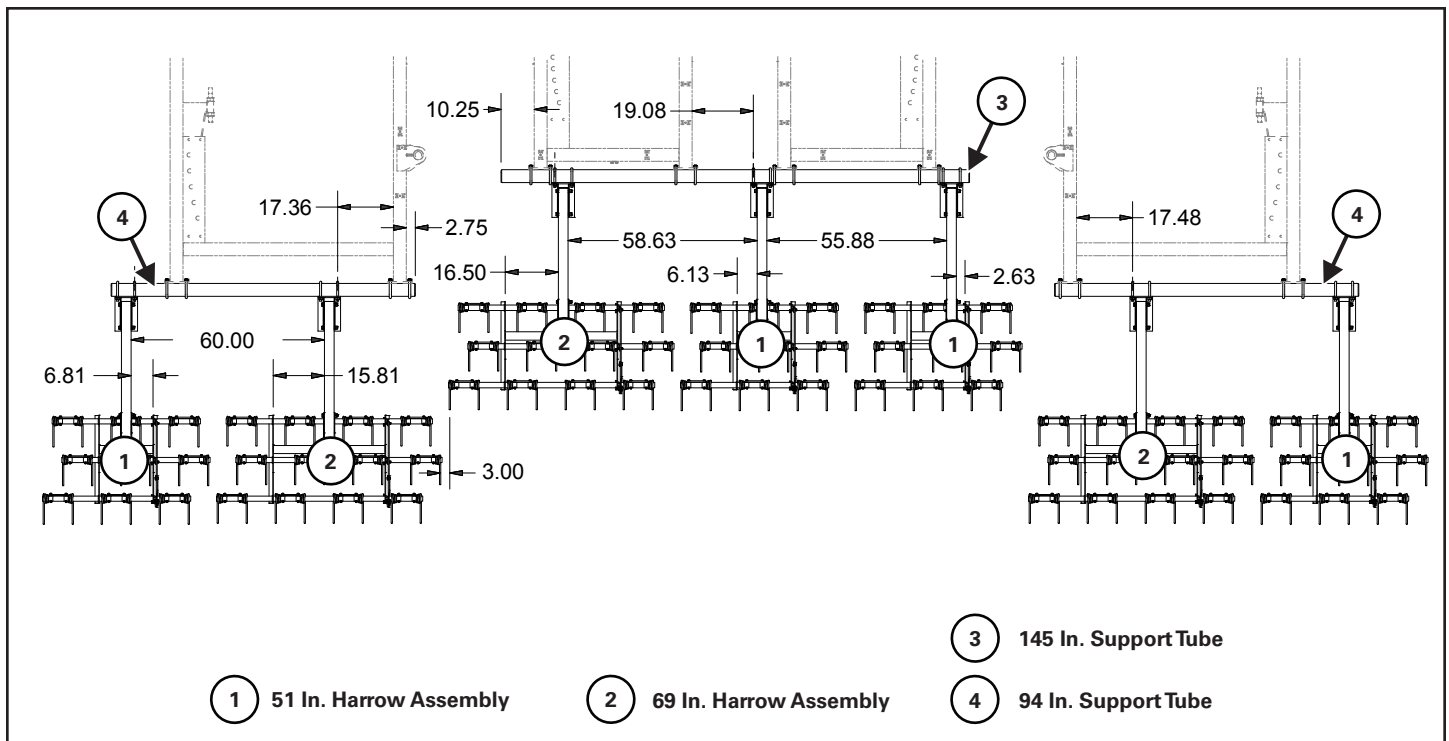
VT3320 Model - 8 In. & 9 In. Spacing



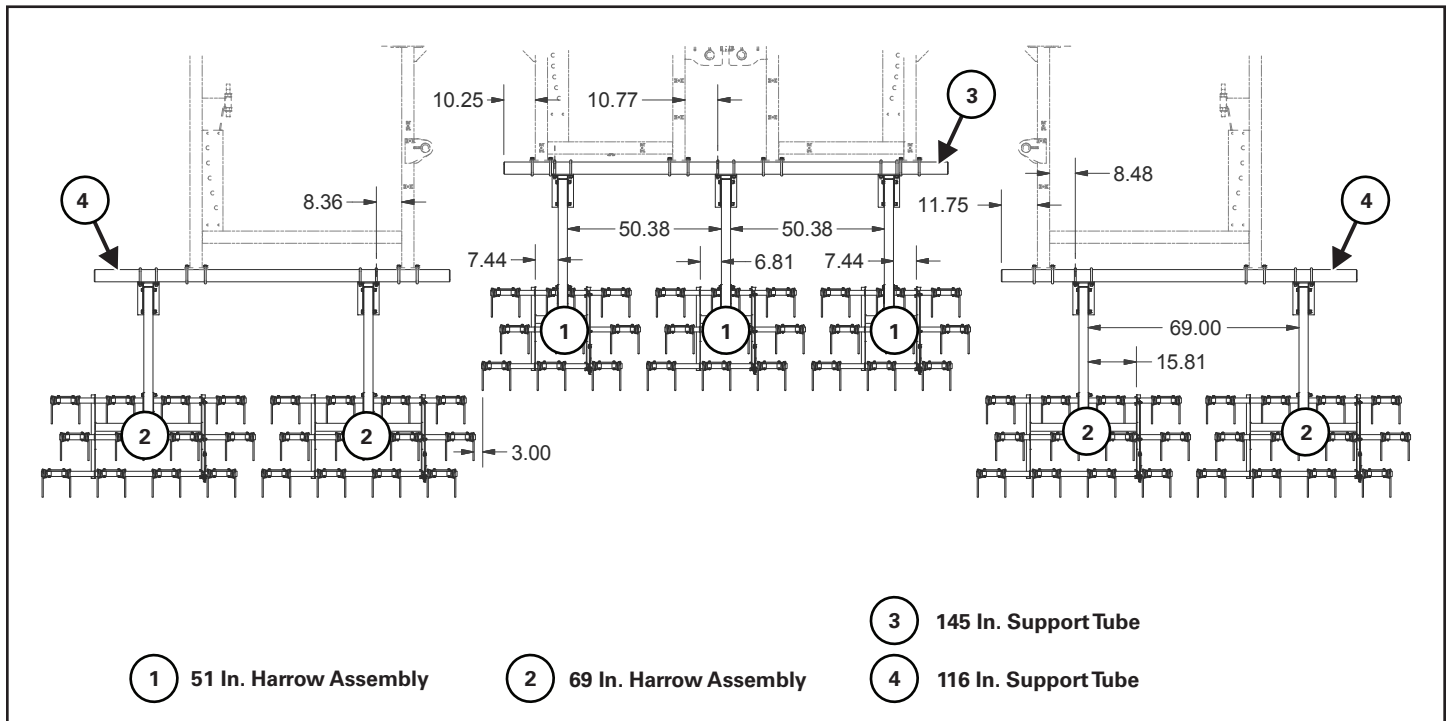
VT3345 Model - 8 In. Spacing



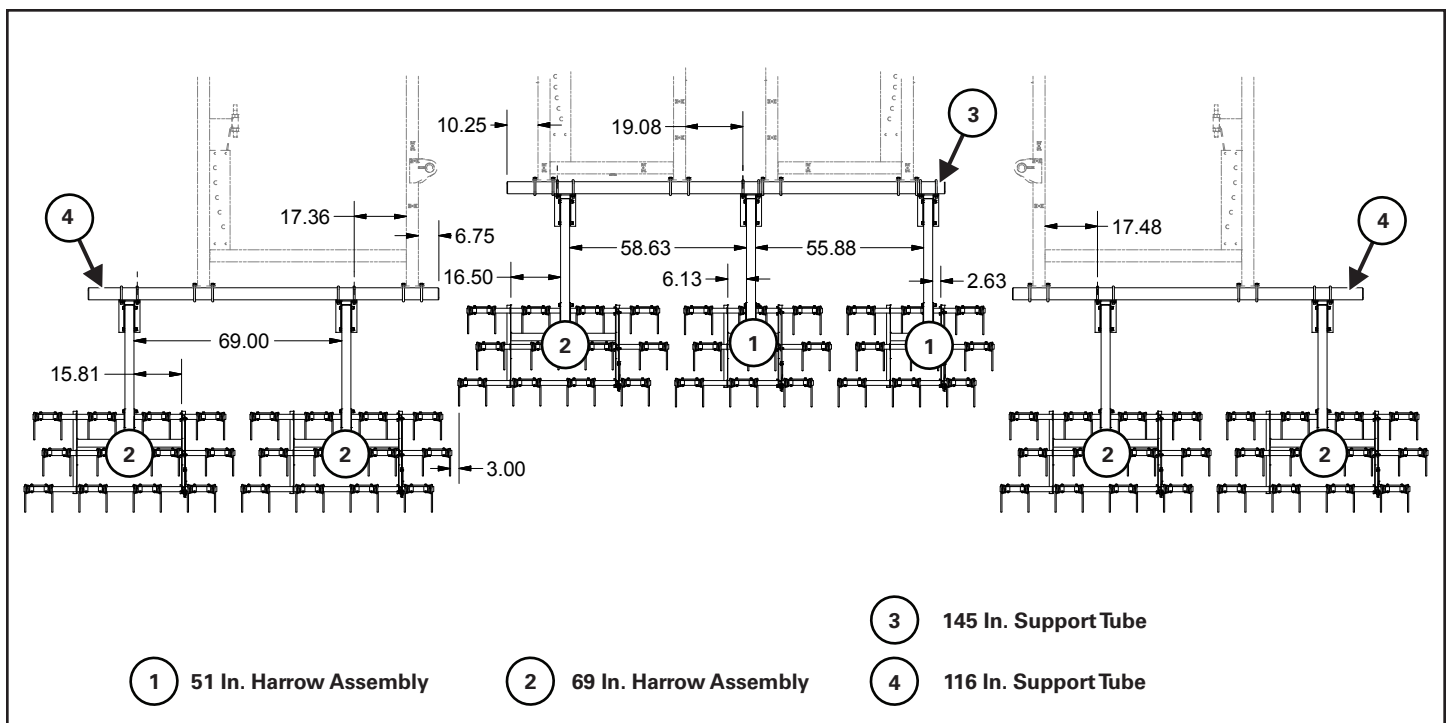
VT3345 Model - 9 In. Spacing



VT3375 Model - 8 In. Spacing



VT3375 Model - 9 In. Spacing



Farm King



OPERATION

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Farm King



GENERAL INFORMATION

Pre - Operation Checklist

Before operating the VT3000 for the first time and each time thereafter, check the following items:



MOVING PART HAZARD

To prevent serious injury or death from moving parts:

- Clear area of all bystanders before starting or moving the tractor and VT3000.
- Keep hands, feet, hair and clothing away from moving parts.
- Disconnect and lockout power source before adjusting or servicing.
- Do not stand or climb on machine when operating.



AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

1. Lubricate the equipment per the schedule outlined in the Maintenance Section.
2. Check the VT3000 hitch for damaged, loose or missing parts. Repair as needed before operation.

3. Check that center frame tire pressure is 90 psi (621 kpa).
4. Check that wing frame tire pressure is 60 psi (414 kpa).
5. Check wheel bolt torque. (See "AXLES" on page 120.)
6. Fully clean the equipment. (See "CLEANING" on page 121.)
7. Check VT3000 for damaged or loose components and hardware. Replace damaged components (if required) and tighten all hardware before operating the VT3000.
8. Check wings for proper operation. Adjust wings as needed before operating the VT3000.
9. Inspect all electrical connections to ensure proper function of the machine.
10. Inspect all safety reflective decals, slow moving vehicle decals and lights where applicable.



HIGH PRESSURE FLUID HAZARD

Leaking fluids under pressure can enter the skin and cause serious injury or death. Immediate medical attention is required. Wear goggles. Use cardboard to check for leaks.

11. Check condition of all hydraulic components for leaks. Repair as required.

NOTE: Do not operate with hydraulic leaks.

12. Verify that the VT3000 is properly connected to the tractor with the safety chain.

Break - In Checklist

Check the following mechanical items after 1 hour of operation and again after 10 hours of operation:

1. Check condition of all hydraulic components for leaks. Tighten fittings to correct leaks or replace components. Do not operate with hydraulic leaks.
2. Check the VT3000 hitch for damaged, loose or missing parts. Repair as needed before operation.
3. Check for loose fasteners and hardware. Tighten as required.
4. Check that center frame tire pressure is 90 psi (621 kpa).
5. Check that wing frame tire pressure is 60 psi (414 kpa).
6. Check that wheel bolt torque is 130 ft-lb (176.3 N•m).

Main Frame - 240 ft.-lb. (325 N•m)

Wing Frame - 150 ft.-lb. (203 N•m)



IMPORTANT

Wheel bolts must be kept tight. If bolts are not tight, bolts will loosen causing severe damage to hub, wheel and tire. Check wheel bolts periodically, especially the first few hours of either transport or field work.

TRACTOR REQUIREMENTS

 **WARNING**

AVOID SERIOUS INJURY OR DEATH

The tractor must be equipped with an approved Roll Over Protection Structure (ROPS) and safety belts to help prevent personal injury or death caused by tractor roll over.

 **WARNING**



- Keep shields and all guards in place.
- Keep away from moving parts.
- Keep bystanders away.

NOTE: The following information will depend on tilling depth, soil type, field speed, etc.

8 in. (203 mm) Spacing

The VT3000 with 8 in. (203 mm) spacing will require a tractor with minimum 8.0 to 12.0 DBHP/foot (6.0 to 9.0 kW per 305 mm).

9 in. (230 mm) Spacing

The VT3000 with 9 in. (230 mm) spacing will require a tractor with minimum 8.0 to 12.0 DBHP/foot (6.0 to 9.0 kW per 305 mm).

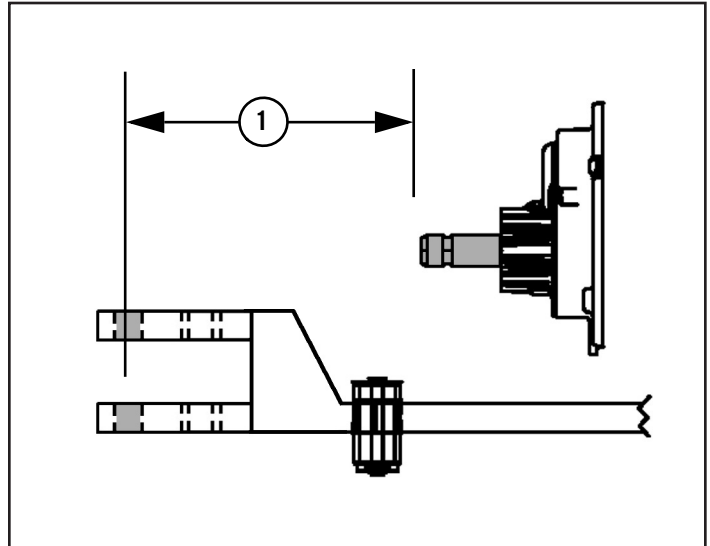
 **CAUTION**

Using a tractor with greater HP than the recommended range may cause severe damage to frame and / or gang components of implement and thereby void warranty.

Drawbar Adjustment

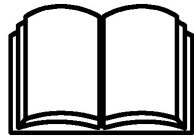
NOTE: Tractor must be equipped with a clevis type drawbar to pull the VT3000.

Figure 157



Adjust the tractor's drawbar in / out, until the center of the hitch pin hole (Item 1) [Figure 157] is 16 in. (410 mm) from the end of the tractor's PTO shaft. See your tractor's owner's manual for correct adjustment procedures.

ENTERING AND LEAVING THE OPERATOR'S POSITION



Follow the instructions in your tractor's operation manual for the correct procedure.

Entering The Operator's Position

Move to the operator's position, start the engine and release the parking brake.

Leaving The Operator's Position



AVOID INJURY OR DEATH

Before you leave the operator's position:

- Always park on a flat level surface.
- Place all controls in NEUTRAL.
- Engage the park brake.
- Stop the engine and remove the key.

Park the tractor / equipment on a flat level surface.

Place all controls in neutral, engage the park brake, stop the engine and wait for all moving parts to stop. Leave the operator's position.

INITIAL SET-UP

Connecting The VT3000 To The Tractor



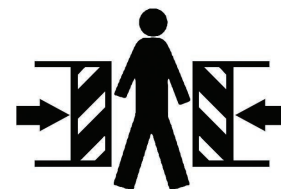
Ballast may need to be added to the front of the tractor for proper operation when the equipment is connected. See the tractor's owner's manual for detailed information on installing front ballast.

Always inspect the tractor's drawbar and VT3000 hitch before connecting. See the tractor's owner's manual.

Verify that the tractor's drawbar is adjusted correctly for use with the VT3000.

Enter the operator's position.

Move the tractor into position in front of the VT3000.



AVOID INJURY OR DEATH

Before moving the tractor, look in all directions and make sure no bystanders, especially small children are in the work area. Do not allow anyone between the tractor and the equipment when backing up to the equipment for connecting.

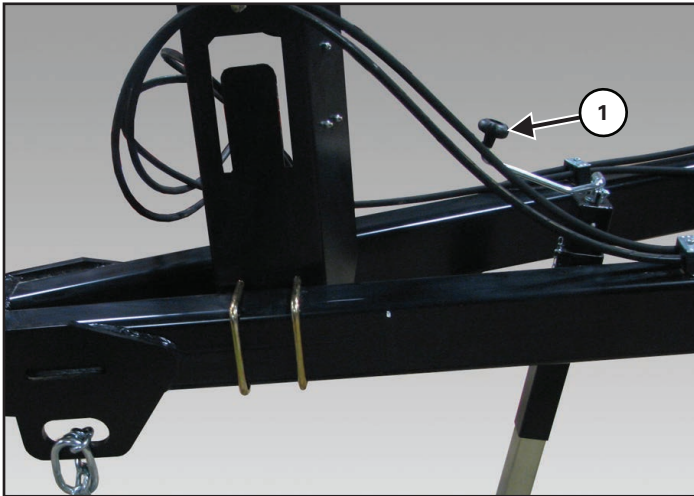
Move the tractor backwards, aligning the drawbar with the VT3000 hitch.

NOTE: The jack may need to be lowered or raised for proper alignment of the drawbar and hitch.

If the VT3000 hitch needs to be adjusted, stop the tractor when drawbar is just in front of the VT3000 hitch.

Leave the operator's position.

Figure 158



Turn the handle (Item 1) [Figure 158] clockwise to raise the hitch or counterclockwise to lower the hitch.

Lower or raise the VT3000 hitch until aligned with the tractor's drawbar.

Move to the operator's seat, start the engine and release the parking brake.

Move the tractor backwards, aligning the drawbar hitch pin hole with the VT3000 hitch pin hole(s).

Stop the tractor and leave operator's position.



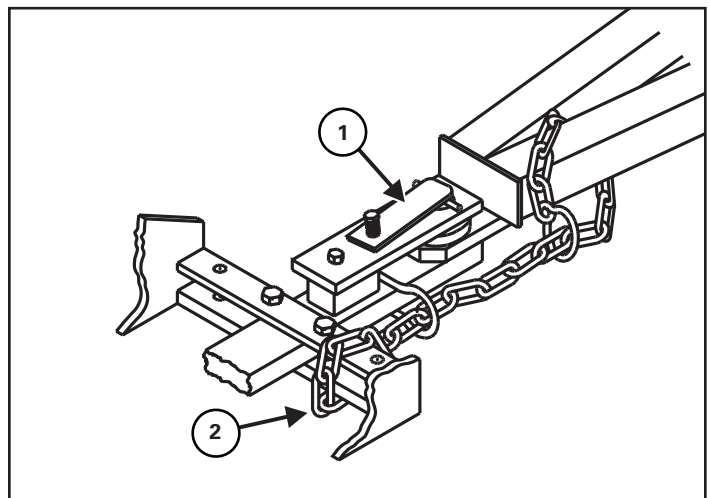
AVOID INJURY OR DEATH

Keep fingers and hands out of pinch points when connecting and disconnecting equipment.

NOTE: Always use a hitch pin of adequate size and strength and a retaining pin with a locking device.

NOTE: The following image may not show your drawbar safety chain exactly as it appears but the procedure is correct.

Figure 159

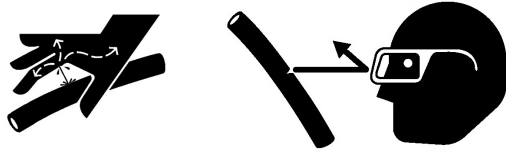


Install the hitch pin (Item 1) [Figure 159] and retaining pin to securely fasten the VT3000 hitch to the tractor drawbar.

Attach the safety chain (Item 2) [Figure 159] around the drawbar mount.

NOTE: Always use a safety chain with a strength rating greater than the gross weight of the towed machine.

Connecting Hydraulic Lines



HIGH PRESSURE FLUID HAZARD

To prevent serious injury or death from high pressure fluid:

- Relieve pressure on system before repairing or adjusting.
- Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.
- Keep all components in good repair.



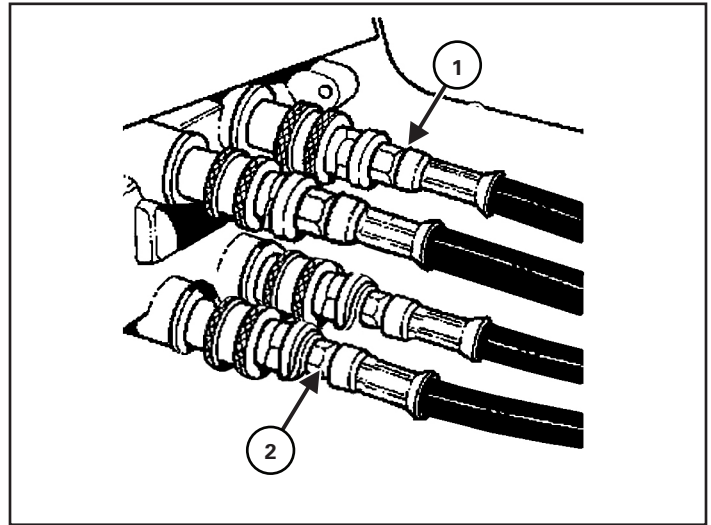
Contain and dispose of any oil leakage in an environmentally safe manner.

Thoroughly clean the quick couplers before making connections. Dirt can quickly damage the system.

NOTE: Make sure the quick couplers are fully engaged. If the quick couplers do not fully engage, check to see that the couplers are the same size and type.

To Connect:

Figure 160



Connect the hydraulic lines to the tractor:

- Raise / Lower, Green Ties (Item 1) [Figure 160]
- Fold / Unfold, Blue Ties (Item 2) [Figure 160]

To Disconnect:



AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running equipment. Be careful when connecting and disconnecting quick couplers.

Pull on the hydraulic lines to disconnect.

Connect Electrical Harness

Connect the VT3000's lighting harness to the tractor's electrical system.

Folding And Unfolding Wings



ELECTROCUTION HAZARD

To prevent serious injury or death from electrocution:

- Be aware of overhead / underground powerlines.
- Keep away from powerlines when transporting or folding / unfolding wings.
- Electrocution can occur without direct contact.



AVOID SERIOUS INJURY OR DEATH

Do not stand under wings when folding / unfolding.

Keep bystanders away.



AVOID EQUIPMENT DAMAGE

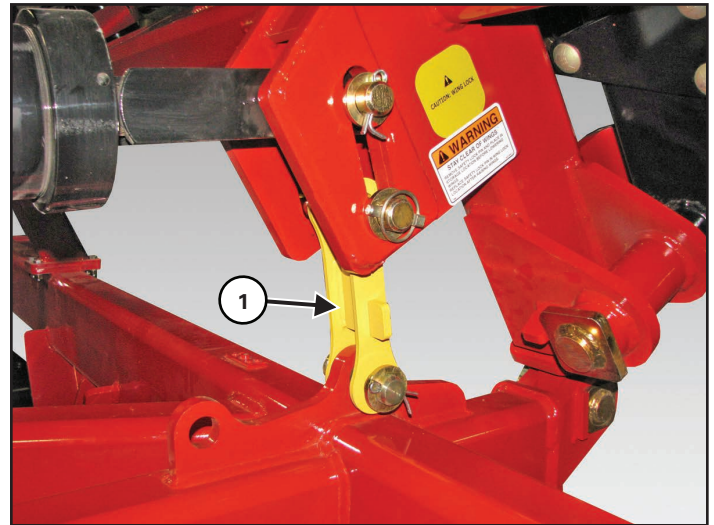
Failure to remove the wing stop links before unfolding the wings will result in serious damage to the equipment.

Move to the operator’s position, start the engine and release the parking brake.

Move the tractor / equipment to the starting point of the work area.

Stop the tractor and engage the parking brake.

Figure 161



Remove wing stop link (Item 1) [Figure 161].

Move to the operator’s position and start the engine.

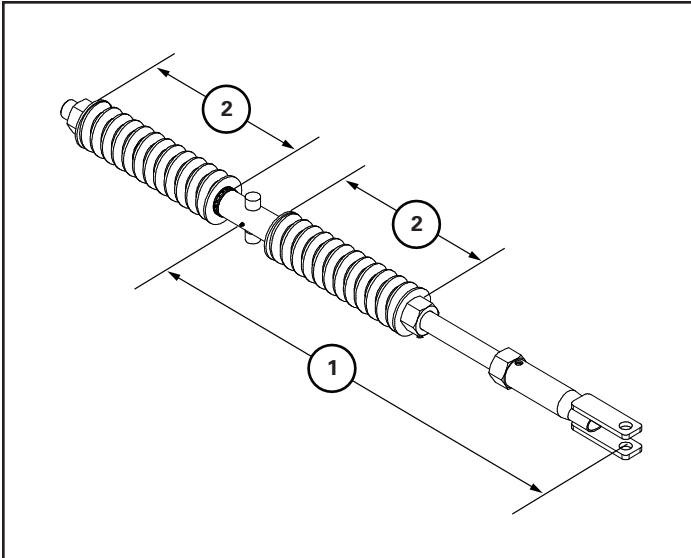
NOTE: When extending wing lift cylinders, there will be a short pause before cylinders fully extend.

Using the tractor controls, slowly unfold the wings until the wing wheels make contact with the ground. Continue to hold the tractor control until the wing lift cylinders are fully extended, placing the wings in the field position.

Leveling

Check Factory Setting on Leveling Crank

Figure 162



Check the following dimensions on the leveling crank.

Front crank pivot to rockshaft crank pivot length (Item 1) **[Figure 162]:**

- VT3290 & VT3320 – 51-1/2"
- VT345 & VT375 – 51"

Spring pre-compress length (Item 2) **[Figure 162]:**

- VT3290 & VT3320 – 16-1/2"
- VT3345 & VT3375 – 15"

Front to Back

Move to the operator's position.

Park the tractor / equipment on a flat level surface.

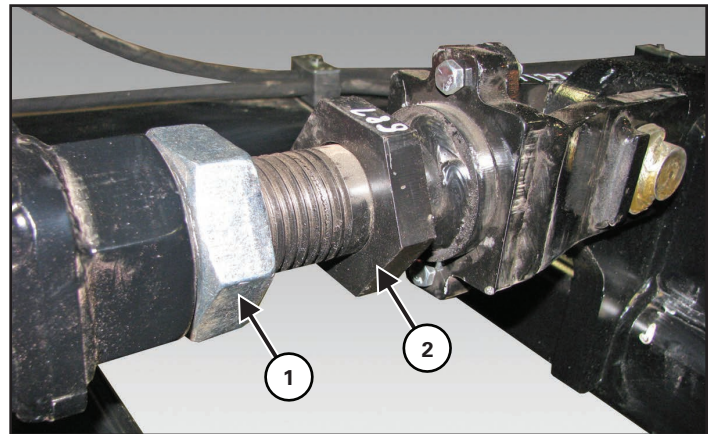
Unfold wings so blades are 2" to 3" (51 mm to 76 mm) off the ground.

Stop the tractor and leave the operator's position.



This notice identifies procedures which must be followed to avoid damage to the machine.

Figure 163



Loosen jam nut (Item 1) **[Figure 163]** on leveling link.

NOTE: One full turn of the adjusting nut will raise / lower the machine approximately 1-3/8".

Tighten adjustment nut (Item 2) **[Figure 163]** to lower the front. Back off adjustment nut to raise the front.

Tighten jam nut (Item 1) **[Figure 163]** when front blades and rear blades are an equal distance off the ground.

NOTE: Lowering the machine may make adjusting easier.

NOTE: Level machine after changing tractor drawbar height.

Left to Right

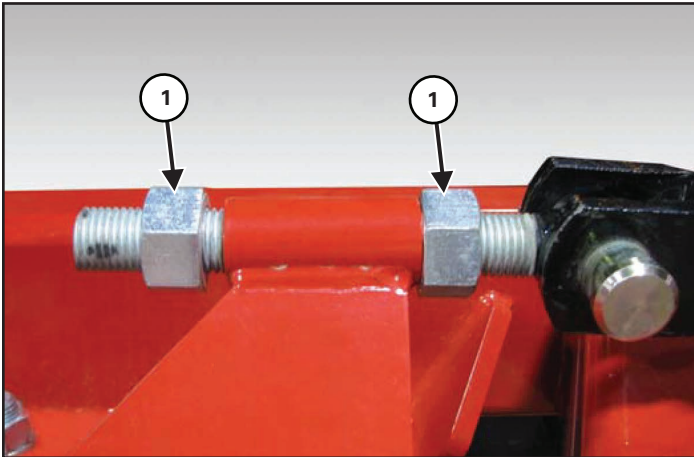
Move to the operator's position.

Park the tractor / equipment on a flat level surface.

Unfold wings so blades are 2" to 3" (51 mm to 76 mm) off the ground.

Stop the tractor and leave the operator's position.

Figure 164



Level the left and right wings by adjusting the wing lift cylinder mounts on each wing.

Loosen the nuts (Item 1) [Figure 164] of each mounting bolt and move the cylinder forward or rearward to adjust.

Tighten nuts (Item 1) [Figure 164] when left and right wing blades are an equal distance off the ground.

NOTE: Lowering the machine may make adjusting easier.

NOTE: Level machine after changing tractor drawbar height.

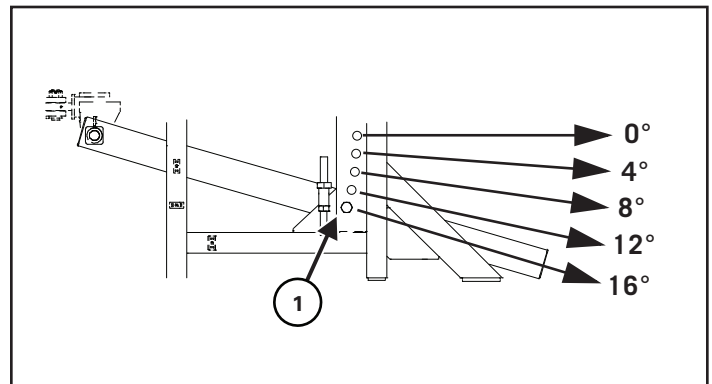
Tilling Angle Adjustment

Connect the VT3000 to the tractor.

Unfold wings.

Position the gangs to the desired tilling angle as shown [Figure 165].

Figure 165



Remove bolt (Item 1) [Figure 165] and nut. Move gang to the desired work angle.

Install bolt and secure the gang section in desired work angle.

Repeat for remaining gang sections.

NOTE: With the capability of changing the degree of angle (0°, 4°, 8°, 12° & 16°), for Spring work set the gangs at a lesser degree to open up the soil and in the Fall set the gangs at a higher degree so the blades' cutting action will be more aggressive with the soil and residue.

Setting Tilling Depth

Move to the operator’s position.

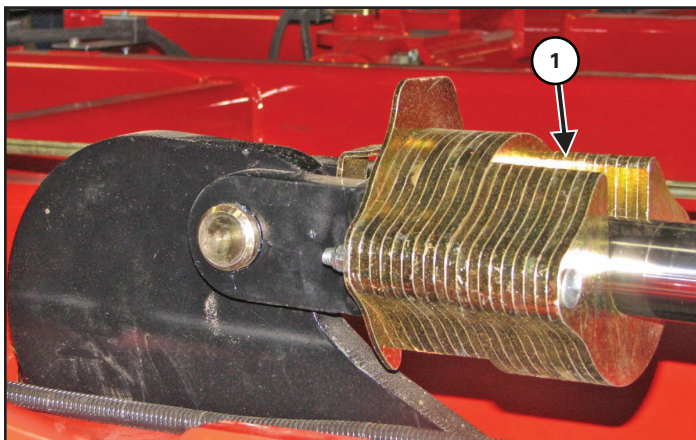
While moving forward, lower implement into the ground until blades reaches desired tilling depth.

Stop the tractor and leave the operator’s position.

IMPORTANT

To keep implement level, transport wheels must be riding on ground gauging desired tilling depth.

Figure 166



The permanent depth stop (Item 1) [Figure 166] installed on the main lift cylinder allows for maximum penetrating depth of 5”

Use the correct permanent depth stop according to blade size and model:

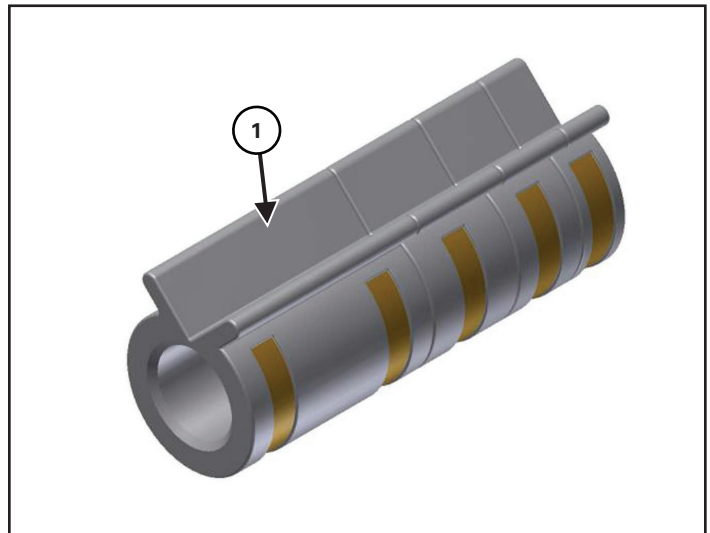
VT3290 & VT3320	
BLADE SIZE	PERMANENT DEPTH STOP SIZE
20 in.	3.87 in (98 mm)
22 in.	4.87 in (123.6 mm)
VT3345 & VT3375	
BLADE SIZE	PERMANENT DEPTH STOP SIZE
20 in.	2.12 in (54 mm)
22 in.	3.12 in (79 mm)

IMPORTANT

The permanent depth stop is not to be removed.

Adjust Tilling Depth

Figure 167



Adjust the tilling depth by installing additional stops (Item 1) [Figure 167] to the main lift cylinder.

NOTE: Adding a 1” stop will reduce approximately 1” of tilling depth.

OPERATING THE VT3000

Field Operation

Move to the operator’s position, start the engine and release the parking brake.

Move the tractor / equipment to the starting point of the work area.

Stop the tractor and engage the parking brake.



ELECTROCUTION HAZARD

To prevent serious injury or death from electrocution:

- Be aware of overhead / underground powerlines.
- Keep away from powerlines when transporting or folding / unfolding wings.
- Electrocution can occur without direct contact.



AVOID SERIOUS INJURY OR DEATH

Do not stand under wings when folding / unfolding.

Keep bystanders away.

NOTE: When extending wing lift cylinders, there will be a short pause before cylinders fully extend.

Using the tractor controls, lower wings until the wing wheels make contact with the ground. Continue to hold the tractor control until the wing lift cylinders are fully extended, placing the wings in the field position.

Stop the tractor and leave the operator’s position.

Level implement (if required). See “Leveling” on page 106.

Adjust tilling angle (if required). See “Tilling Angle Adjustment” on page 107.

Set tilling depth (if required). See “Setting Tilling Depth” on page 108.



AVOID SEVERE EQUIPMENT DAMAGE

When operating the VT3000:

- Always keep implement level when operating.
- Do not make sharp turns with the implement in ground.
- Always lift the implement out of ground before making sharp turns.
- Do not operate implement in field with wings folded in transport position.
- Do not operate implement with front gangs cutting deeper than rear gangs.
- Always place the hitch jack in the horizontal / transport position when operating.
- Always keep transport wheels in contact with the ground.
- Always operate the implement with the tractor drawbar pinned at center of tractor.



MACHINE TIPPING OR ROLL OVER CAN CAUSE SERIOUS INJURY OR DEATH

- Turn on level ground. Slow down when turning.
- Go up and down slopes, not across them.
- Check for adequate traction.

Move to the operator's position, start the engine and release the parking brake.

Recommended operating speed is 8 - 10 mph (13 - 16 kph).

Move tractor and VT3000 forward, slowly lower VT3000 into the ground until the transport wheels make contact with the ground and the implement reaches desired tilling depth.

To keep the VT3000 level, transport wheels must be contacting the ground gauging desired tilling depth (CORRECT).

NOTE: If conditions are such that implement cannot penetrate to maximum depth, Do Not raise transport wheels off ground (INCORRECT). Raised transport wheels may cause front of implement to drop causing front gangs to cut deeper than rear gangs

Uneven And Deep Front Gang Penetration

- Front of VT3000 may drop because rockshaft and hitch linked.
- With front of VT3000 lower than the rear, the front outside blades will cut much deeper than the front inside blades. This means that more of the implement's weight is placed on the front outside blades, forcing them deeper into the ground.
- Uneven and deep front gang penetration in tough conditions will place excessive strain on blades, gang bearings, frame and hitch, and will lead to a premature failure of parts especially outside blades and bearings of front gangs.



IMPORTANT

AVOID EQUIPMENT DAMAGE

Operating VT3000 with transport wheels off ground will cause uneven tilling and place undue strain on machine which could lead to parts failure. Always operate implement with transport wheels on ground even if soil conditions will not allow implement to penetrate to maximum depth.

Rephasing Rockshaft Cylinders

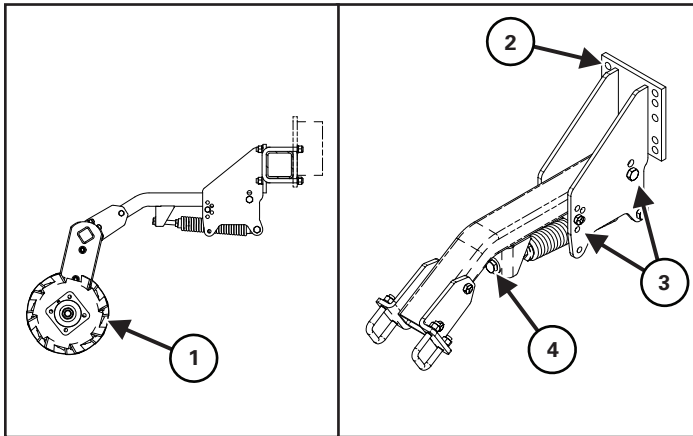
NOTE: Periodically, the hydraulic lift cylinders on wing frame will not be synchronized with center frame cylinder. This will cause uneven cutting depth. If this happens, rephase the lift cylinders.

Procedure

Fully lift the VT3000 completely out of the ground, continue holding the tractor's control lever until all three rockshaft cylinders are fully extended.

Rolling Basket Setup

Figure 168



The rolling basket (Item 1) [Figure 168] should enter the ground a maximum of 2" (51 mm) for all tilling depth.

For example, if rolling basket depth is 3" (76 mm), adjust the height of the rolling basket 1" (25.4 mm) higher than the blade edge.

Major Height Adjustment

Adjust the roller mounting arm up or down on the rear plate (Item 2) [Figure 168].

Minor Height Adjustment

Adjust the arm stops (Item 3) [Figure 168] up or down.

Adjusting Spring Down Pressure

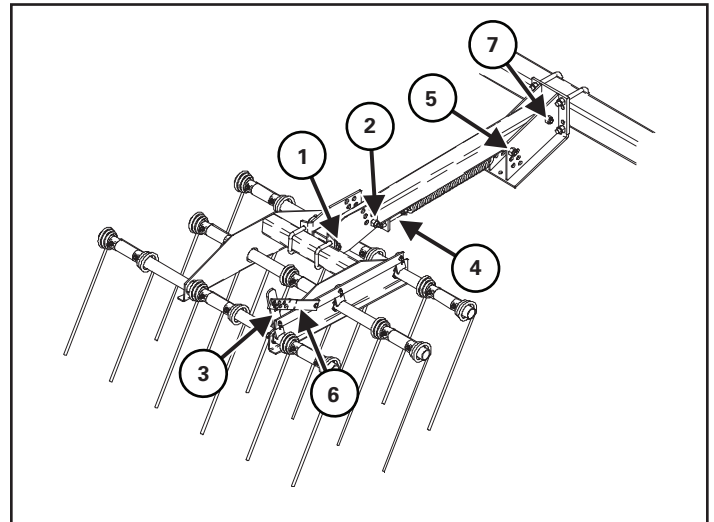
Recommended setting for the down pressure is approximately 70 lb. / ft. (95.4 N•m).

Turn the 5/8" bolt (Item 4) [Figure 168] one complete revolution to change spring tension approximately 6.5 lb. (3 kg).

The spring should be tight enough so it does not move freely in your hand.

Harrow Setup

Figure 169



Harrow Height

The height of harrow section must be adjusted to match your tillage implement. Usually the bottom of harrow tines should be even with bottom of implement shovels.

Harrow height is adjusted by repositioning bolt (Item 5) [Figure 169] in one of six holes in arm attaching bracket.

Leveling Harrow

Once the tillage implement has been set at desired cutting depth, the harrow section must be leveled to give a smooth uniformly finished field.

Leveling is accomplished by loosening bolt (Item 1) then relocating bolt (Item 2) in one of the six sets of holes. Tighten bolt (Item 1) and (Item 2) [Figure 169] after adjustment.

Harrow Tine Angle

Harrow tine angle may be adjusted to suit particular field conditions. If very aggressive action is desired, tine angle should be set at the nearest vertical position.

If harrow plugging is a problem in fields with a large amount of straw, tine angle should be set in a more horizontal position.

Tine angle is adjusted by removing pin and relocating the adjustment handle (Item 3) at one of the six holes in link (Item 6) [Figure 169].

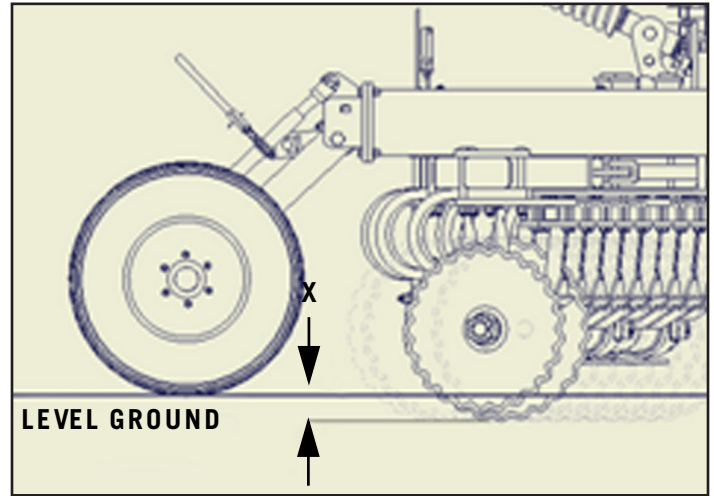
Harrow Pressure

Once Implement depth and tine angle have been set, pressure on the harrow can be adjusted to increase aggressiveness.

If harrow plugging is a problem, pressure should be decreased. Pressure is increased by tightening spring I-Bolt (Item 4). Pressure is decreased by loosening spring I-Bolt (Item 4) [Figure 169].

Gauge Wheel Setup

Figure 170



Adjust the gauge wheel by turning the ratchet so that it always touches the ground for all tilling depth. If the tilling depth is 3" (76 mm), adjust the height of the gauge wheel 3" (76 mm) above from the blade edge [Figure 170].

Optional Rear Attachments

This option does not guarantee that every rear attachment in the market will fit.

Farm King should not be responsible for damages to the VT3000 unit caused by rear attachment that is not adequate for the operation.

Leveling / Balancing of the machine can vary depending on the weight of the rear attachment installed.

Transporting

Requirements

Comply with federal, state, local and provincial laws regarding the transport of farm equipment on public roadways.



AVOID SERIOUS INJURY OR DEATH

Use of an unapproved hitch or tractor can result in loss of control, leading to serious injury or death.

Tractor and hitch must have the rated capacity to tow equipment.



AVOID SERIOUS INJURY OR DEATH

Excess weight will greatly increase tractor stopping distance and may cause the operator to lose control of the tractor.



Tractor must have adequate braking capacity to safely control VT3000 GVW (Gross Vehicle Weight) trailing load. Do not tow over 20 mph (32 kph). Tractor unit should weigh approximately 67% of GVW.

Verify that the tractor is approved for transporting the equipment and that the equipment is securely attached to the tractor.

Verify safety chain is installed and properly connected before transporting equipment.

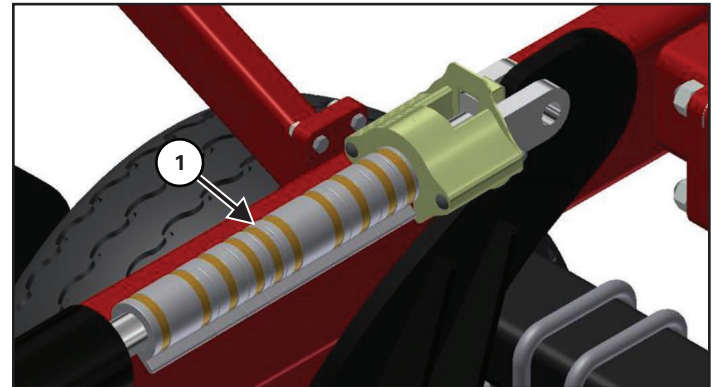
Verify that the SMV (Slow Moving Vehicle) emblem, all lights and reflectors are clean and visible.

When transporting the VT3000, always place the complete depth control package 17" (431.80 mm) long on shaft of 4-1/2" x 24" (114 mm x 610 mm) (clevis end) main frame lift cylinder.

Transport Position

Wings fully raised, depth control package in place and lockout valves in closed position.

Figure 171



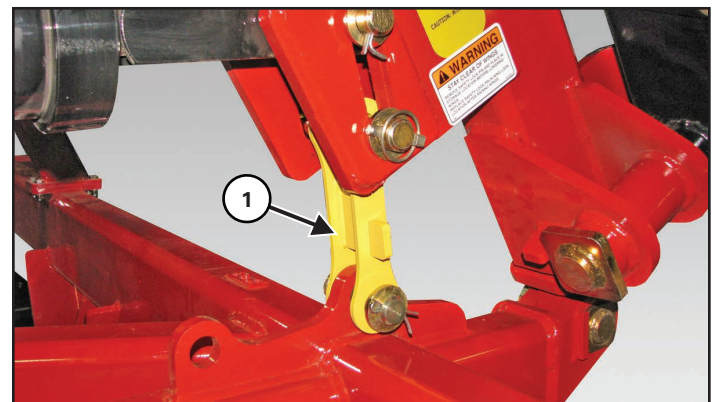
Complete depth control package (Item 1) [Figure 171] installed for transport.



AVOID SERIOUS INJURY OR DEATH

Excess weight will greatly increase tractor stopping distance and may cause the operator to lose control of the tractor.

Figure 172



Engage wing stop link (Item 1) [Figure 172].

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MAINTENANCE

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TROUBLESHOOTING

Chart



WARNING

Instructions are necessary before operating or servicing equipment. Read and understand the Operator And Parts Manual and safety signs (decals) on equipment. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after adjustments, repairs or service. Untrained operators and failure to follow instructions can cause injury or death.

NOTE: If a problem is encountered that is difficult to solve, even after having read through this troubleshooting section, please call your local Farm King dealer. Before you call, please have this Operator And Parts Manual and the serial number of your machine at hand.

PROBLEM	CAUSE	CORRECTION
Uneven tillage, machine leaves furrows or ridges.	Frame and / or wings are not level.	Level the machine by adjusting the leveling link and wing lift cylinders.
	Gauge wheels are too high.	Reset gauge wheels to recommended height.
	Lift cylinders are not in phase.	Rephase all lift cylinders.
	Tire pressure is low.	Check tires and inflate to recommended pressure.
	Exceeding recommended operating speed.	Slow down to recommended operating speed.
Machine buckles or drifts side to side.	Frame and/or wings are not level.	Level the machine by adjusting the leveling link and wing lift cylinders.
	Blades are cutting too deep.	Adjust depth or reset gauge wheels to recommended height.
	Main wheels are not carrying sufficient weight.	Adjust depth stops on main lift cylinder to raise machine.
Hydraulic cylinders extend unevenly.	Air in hydraulic system.	Rephase all lift cylinders.
	Lift cylinders are not in phase.	Rephase all lift cylinders.
	Hydraulic connection is leaking.	Check for leaks and repair.
Machine settles when in transport mode.	Transport lock is not installed.	Always install transport lock when machine is not in use.
Disc gangs are plugging.	Scrapers are too far from blades.	Adjust scrapers closer to blades.
	Unfavorable soil condition.	Wait until conditions are more favorable.
	Blades are cutting too deep.	Adjust depth or reset gauge wheels to recommended height.
Machine is unstable during transport.	Crank setup is not correct.	Set the front crank pivot to rockshaft crank pivot to right length (see Levelling on page 106).
	Crank spring compression is not correct.	Precompress the crank spring to right length. (see Levelling on page 106).

SERVICE SCHEDULE

Maintenance Intervals

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The service schedule is a guide for correct maintenance of the VT3000



WARNING

Instructions are necessary before operating or servicing equipment. Read and understand the Operator and Parts Manual and safety signs (decals) on equipment.

Follow warnings and instructions in the manuals when making repairs, adjustments or servicing.

Check for correct function after adjustments, repairs or service.

Untrained operators and failure to follow instructions can cause injury or death.

HYDRAULIC MAINTENANCE

Hydraulic Hose Requirements



IMPORTANT

Do not exceed the 3000 psi rated maximum operating pressure.

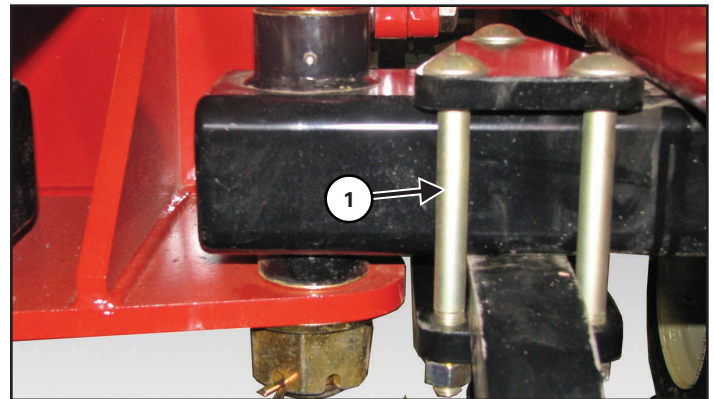
HYDRAULIC HOSE REQUIREMENTS		
HOSE TYPE	MAXIMUM OPERATING PRESSURE	BURST PRESSURE
SAE 100R17 (Minimum)	3000 psi (204.12 bar)	12000 psi (816.48 bar)
SAE 100R19 (Maximum)	4000 psi (272.16 bar)	16000 psi (1088.64 bar)

BEARING HANGERS

Inspection

Inspect and tighten all bearing hanger carriage bolts after the first 10 hours of operation and daily thereafter.

Figure 173



Tighten all bearing hanger carriage bolts (Item 1) [Figure 173] to 430 ft. - lb. (583.0 N•m).

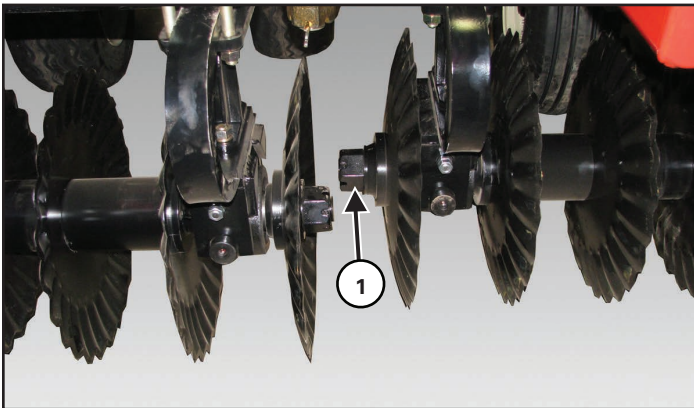
GANG SECTION

Gang Bolt Inspection



Always lower the implement to the ground when servicing or making adjustments. If implement must be serviced or adjusted in the raised position, place blocks under frame. Do not rely on hydraulic lock up valves as a safety device.

Figure 174



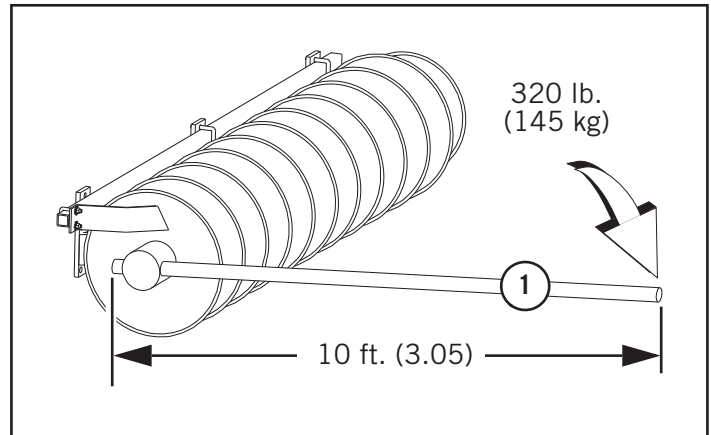
Visually inspect the gang bolt (Item 1) [Figure 174] daily.

Tightening Gang Bolt

Tighten 1-15/16" gang bolts to 3200 ft. - lb. (4339 N•m) torque.

NOTE: Visually inspect gang bolts daily.

Figure 175



Install a 10 ft. bar (Item 1) [Figure 175] of adequate size in socket wrench. Apply 320 lb. (145 kg) of force to end of bar to tighten gang bolt to 3200 ft. - lb. (4339 N•m).



After repairing a gang, the gang bolt should be re-tightened after 2 hours of operation.

NOTE: Severe damage will occur if gang bolts are loose.

AXLES

Wheel Bolts Torque



CHECK WHEEL BOLTS AFTER:

First five hours of field operation.

First twenty-five hours of field operation.

First fifty hours of field operation.

Every two hundred hours of operation.

REPEAT PROCEDURE IF A WHEEL IS REMOVED OR REINSTALLED

Tighten wheel bolts:

- Main Frame - 240 ft.-lb. (325 N•m)
- Wing Frame - 150 ft.-lb. (203 N•m)

Tire / Wheel Replacement

Periodically check tires for cuts, bulges and damaged rims.



AVOID INJURY OR DEATH

Before you leave the operator's position:

1. Always park on a flat level surface.
2. Place all controls in NEUTRAL.
3. Engage the park brake.
4. Stop the engine and remove the key.
5. Wait for all moving parts to stop.

Park the tractor / equipment on a flat level surface.

Place all controls in neutral, engage the park brake, stop the engine and wait for all moving parts to stop. Leave the operator's position.

Fully raise wings into transport position and secure with safety chain.



If wings are folded into transport position, always install a wing stop links between each wing frame and main frame to prevent wings from falling.



AVOID INJURY OR DEATH

Always chock tires before performing any maintenance or service.

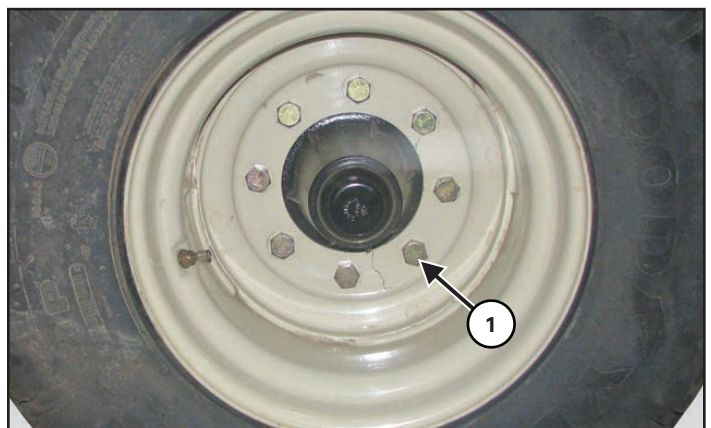
NOTE: Place blocks / stands under the frame to secure the VT3000 when tire / wheel is raised off the ground.

Remove the eight wheel bolts on wings or wheel nuts on main frame and remove the tire / wheel.

Place chock blocks behind and in front of the opposite tire to be removed.

Raise axle frame with jack until the tire / wheel is slightly off the ground.

Figure 176



Install the new tire with the valve stem facing out. Reinstall eight wheel bolts (Items 1) [Figure 176].

Tighten wheel bolts / wheel nuts in a criss-cross pattern.

Torque wheel bolts:

- Main Frame - 240 ft.-lb. (325 N•m)
- Wing Frame - 150 ft.-lb. (203 N•m)

Wheel Bearings

Inspect and re-pack the wheel bearings annually with a quality SAE multi purpose type grease.

Tire Pressure



CAUTION



When inflating tires, use a clip-on chuck and extension hose long enough to allow you to stand to one side and NOT in front of or over the tire assembly.

Center frame tires:

- Check tire pressure daily
- Fill tires to 90 psi (621 kpa).

Wing frame tires:

- Check tire pressure daily
- Fill tires to 60 psi (414 kpa)

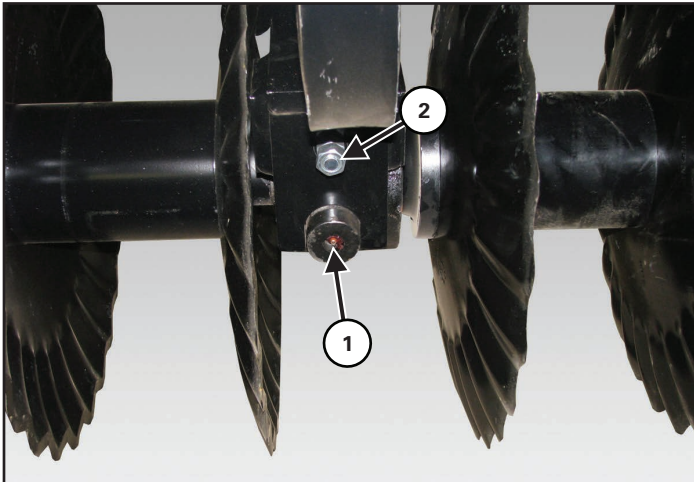
CLEANING

Fully Clean the VT3000 EVERY 50 HOURS.

Keep the VT3000 free of any debris.

SERVICING T2-215 BEARINGS

Figure 177



If T2-215 bearing must be dismantled, double set screws (Item 1) [Figure 177] must be removed from bottom of housing to remove seal cap.

When replacing grease seals in T2-215 bearing, ensure they are installed correctly. The I.D. of the outer shield is larger on one side than the other. Be sure the side with the larger I.D. of both seals are facing out. The rubber seal may be damaged if grease seal is not installed correctly.

When reinstalling bearing hanger on T2-215 bearing (if gangs are dismantled) do not over tighten the 5/8" x 10" bolts (Item 2) [Figure 177]. Snug / tighten the inner nut against bearing hanger. Tighten outer jam nut against inner nut to secure in position.

NOTE: The bolt may break during field operations if it is over tightened.

NOTE: Bolt (Item 1) [Figure 177] is 5/8" x 11" if equipped with wear guards.

WING LIFT CYLINDER

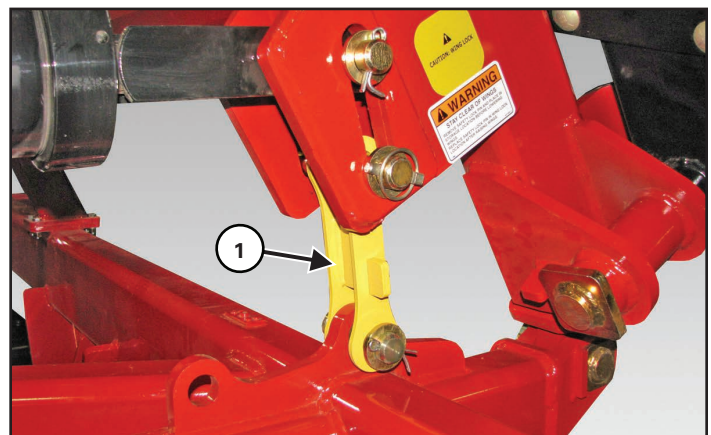
Removal And Installation



AVOID SERIOUS INJURY OR DEATH

If wing cylinders or wing lift hydraulic hoses are removed when wings are folded into transport position, always install a safety lock between each wing frame and main frame to prevent wings from falling.

Figure 178



If wing lift cylinder hydraulic system must be serviced or repaired with wings in folded position, install safety lock (Item 1) [Figure 178], between each wing frame and main frame to prevent wings from falling.



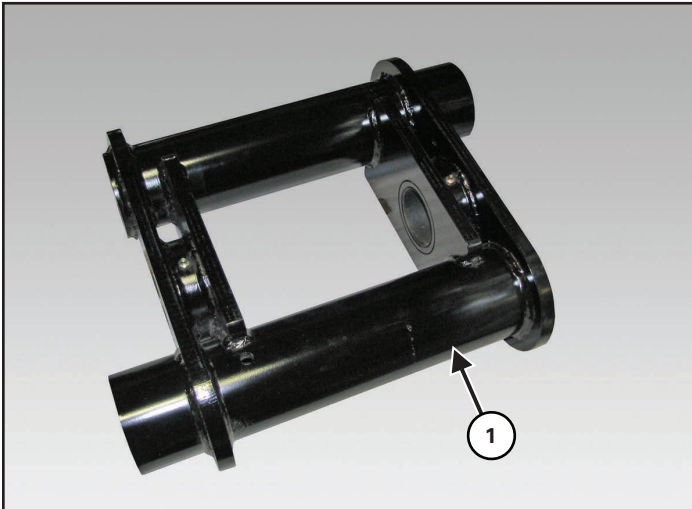
Always install a safety lock on both wings even if only one cylinder is being worked on.

WALKING BEAMS

Installing The Walking Beams

NOTE: The following procedure shows the walking beam installation on the RH side of the main frame. The procedure is the same for the LH side of the main frame.

Figure 179

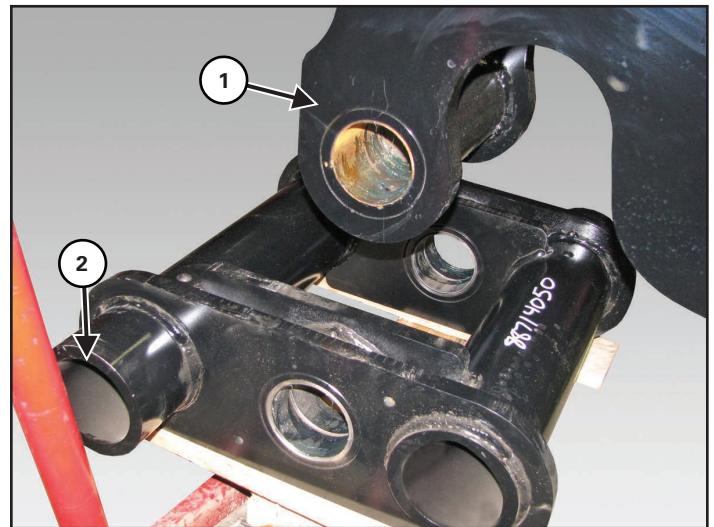


Locate the walking beam (Item 1) [Figure 179]. Place the walking beam onto a floor jack.

NOTE: Adjust / center walking beam on the floor jack's lifting plate before removing strap.

Raise the rockshaft until there is adequate space to allow the walking beam to be rolled into position below the rockshaft.

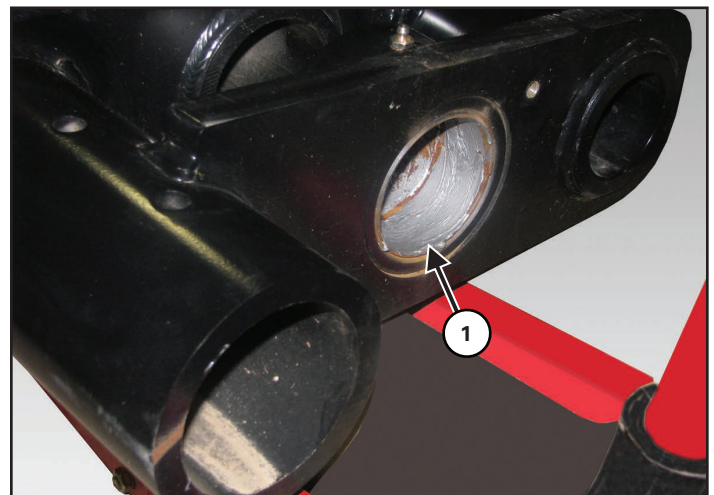
Figure 180



Move the walking beam into position under the rockshaft (Item 1) [Figure 180].

NOTE: Walking beams must be positioned so the rear wheel spindle (Item 2) [Figure 180] is on the outside (both RH and LH side).

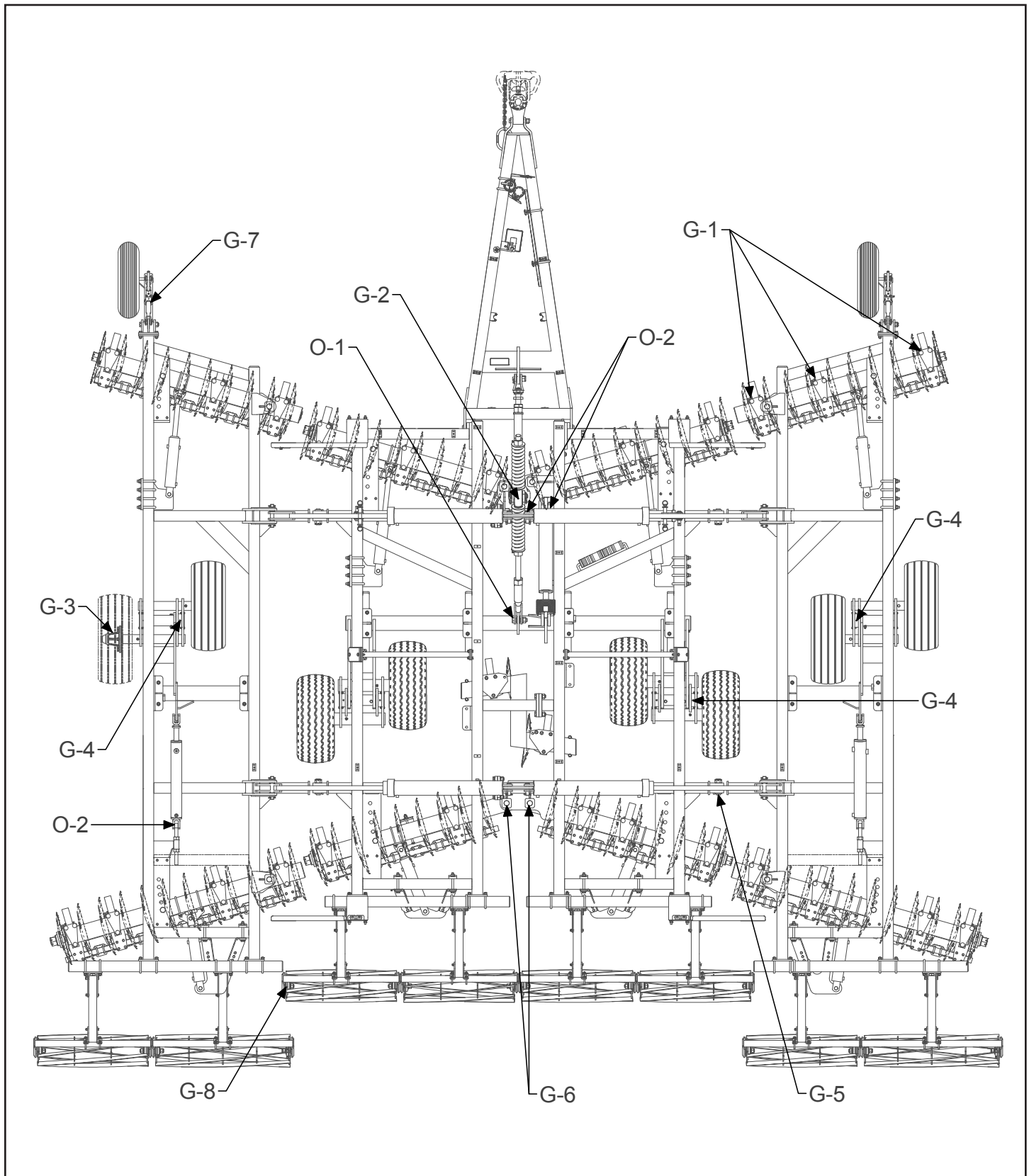
Figure 181



Apply an anti-seize compound (Item 1) [Figure 181] to the inside walking beam pivot holes (both sides).

LUBRICATION

Lubrication Locations



G - All grease lubricating points on implement are marked with arrow "G"

O - All oil lubricating points on implement are marked with arrow "O"

ITEM	LOCATIONS	LUBRICATION INTERVALS
G-1	T2-215 Series Gang Bearing	20 hrs
G-2	Leveling Crank	100 hrs
G-3	Wheel Hubs	50 hrs
G-4	Walking Beam Axles	8 hrs
G-5	Wing Hinge Points	100 hrs
G-6	Gang Pivots	50 hrs
G-7	Front Gauge Wheel	200 hrs
G-8	Rolling Basket Bearing	20 hrs
O-1	Leveling Crank Ball Joint	Beginning And End Of Season
O-2	Rockshaft Cylinder Pins	50 hrs

Recommendations

Always use a good quality multi-purpose / lithium base grease when lubricating the equipment.



T2-215 series bearings have internal seals that can not be over lubricated. Lubricate until grease comes out around seal.

- Always use a hand-held grease gun.
- Clean fitting before greasing, to avoid injecting dirt and grit.
- Replace and repair broken fittings immediately.
- If fittings will not take grease, remove and clean thoroughly. Replace fitting if necessary.

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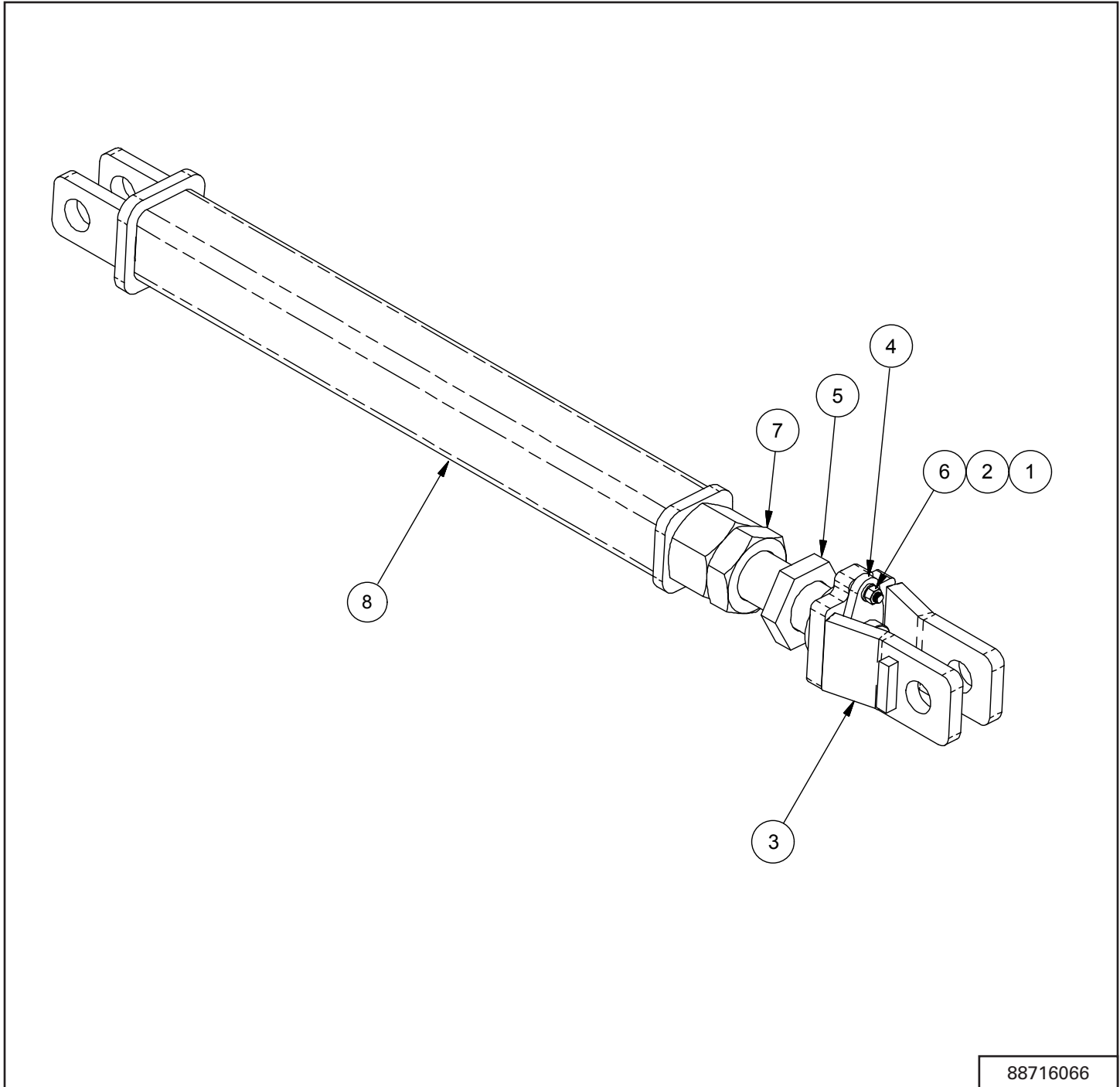
GENERAL PARTS INFORMATION

The parts identification section list descriptions, part numbers and quantities for all North America Base Model 1410 fertilizer applicators. Contact your Farm King dealer for additional fertilizer applicator parts information.

Narrow: VT3290, VT3320

Wide: VT3345, VT3375

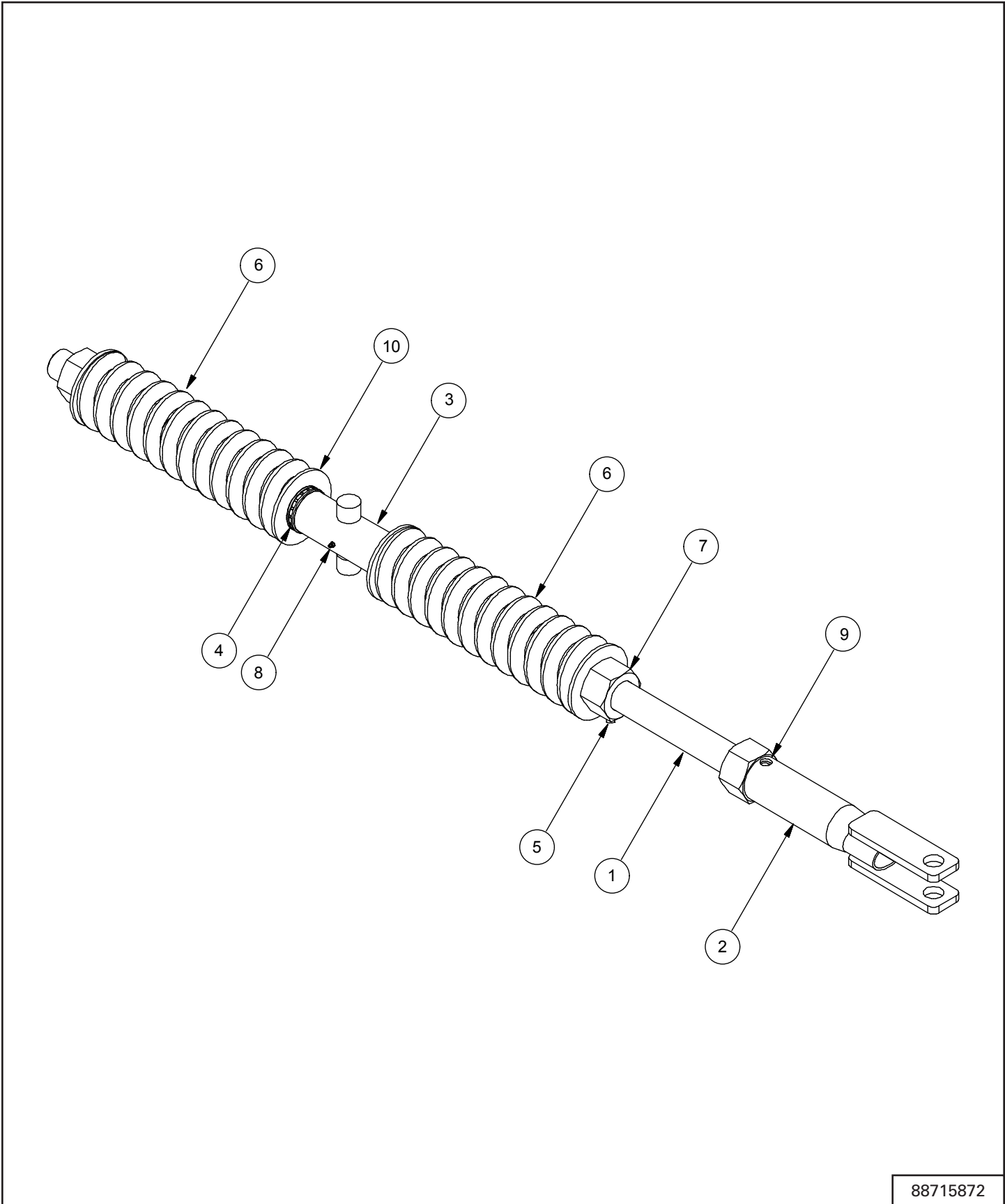
LOWER HITCH LINK



88716066

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	80680	LW P .375 86505602	2
2	9628503	N G5 P .375 86505597	2
3	88712746	HINGE-WA PUSH ARM	1
4	88712741	PLATE - SHAFT LOCK	2
5	88712747	SHAFT-WA PUSH ARM	1
6	9706689	CSHH G5P.38X1.75 86505344	2
7	88712743	2" JAM NUT PLAIN	1
8	88716506	LINK-WA HITCH LOWER	1

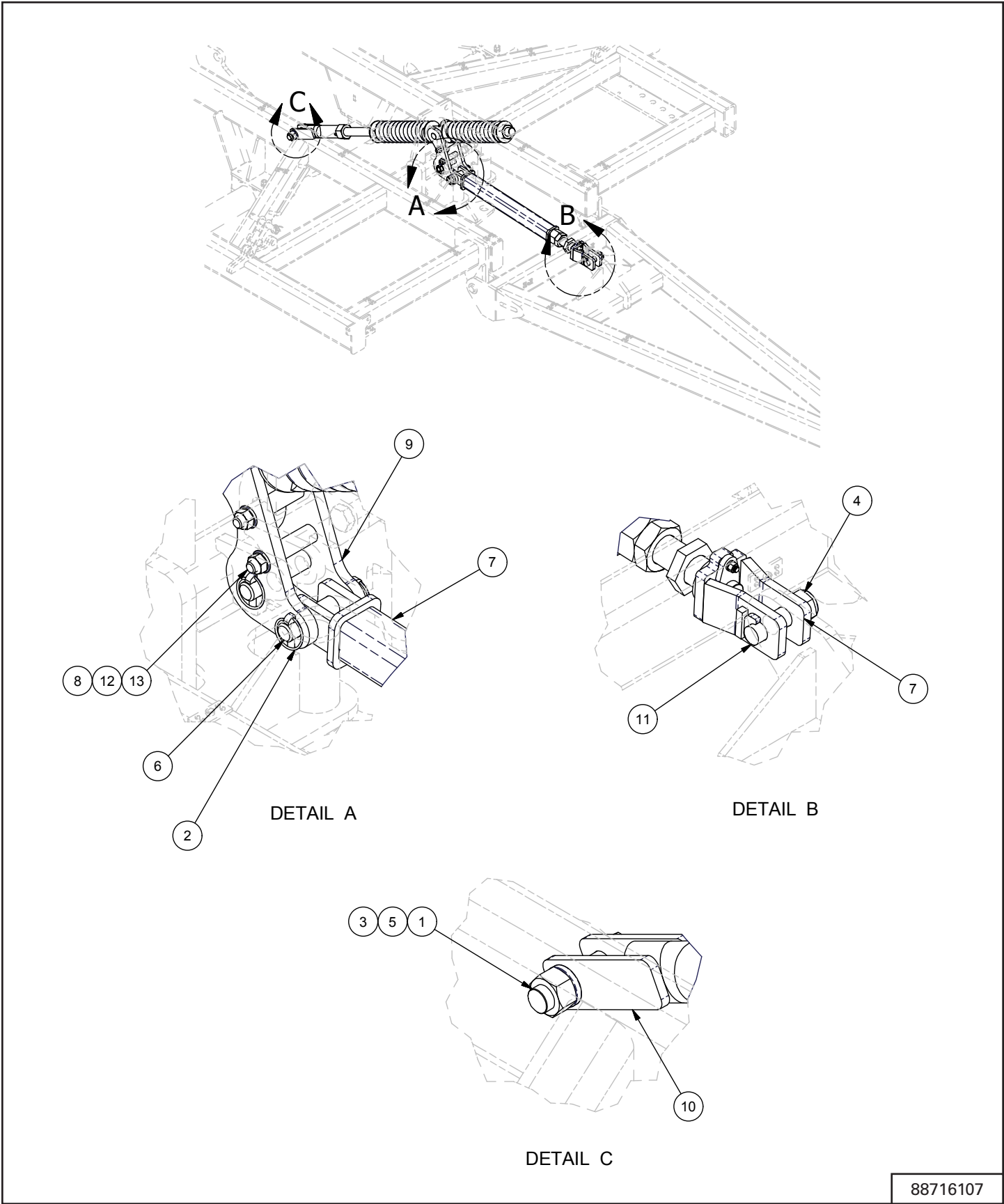
LEVELING CRANK



88715872

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88715878	LEVELING CRANK SHAFT	1
2	88715874	LEVELING PIPE, W.A.	1
3	88715880	LEVELING CRANKTRUNION PIVOT, W.A.	1
4	EZDC15	THRUST BEARING, TIMKENT199	2
5	EZB050010S	SET SCREW, 1/2" NC X 1" SQ HD	2
6	EZDC9621	LEVELING CRANK SPRING, 3000	2
7	EZDH5	NUT, 2" NC HEX GR 2 W / SET	2
8	EZ10GN1	STRAIGHT ZERK FITTING, 1/4" UNF	1
9	88706044	LEVELING CRANK LOCK PIN	1
10	88713526	LEVELING CRANK STOP - W.A.	4

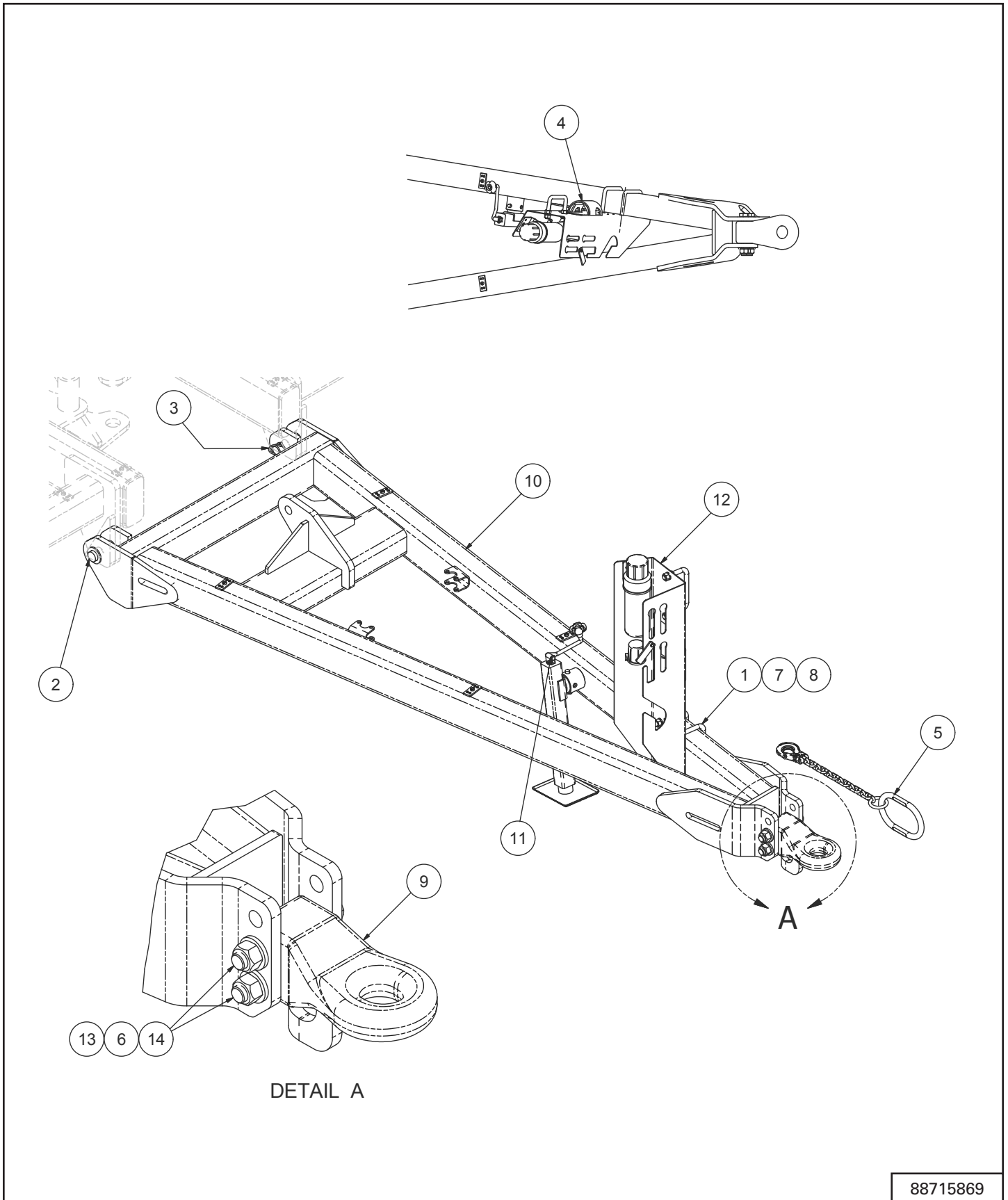
LOWER HITCH LINK & LEVELING CRANK MOUNTS



88716107

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDR5215	BOLT HEX 1-1/4 NC X 4-3/4	1
2	EZDH12518	PIN-LYNCH 7/16 X 2 LG	4
3	EZBW125L	WASHER LOCK 1-1/4X1X5/16ZNCR	1
4	EZBN125L	NUT HEX LOCK NYL 1-1/4NC ZNCR	1
5	EZBN125	NUT HEX 1-1/4 NC GR2 ZNCR	1
6	88716797	PIN - 1-1/4 X 6	2
7	88716066	LINK-HITCH LOWER VT	1
8	88715893	TUBE - CRANK VT	2
9	88715873	PLATE - LEVELING LUG HITCH	2
10	88715872	LEVELING CRANK - ASSY VT	1
11	88712757	PIN - 1-1/4"X 4 7/8" THREADED - W.A.	1
12	86534279	N FL G8 P .75-10	2
13	86508735	CSHH G8P .75X6.00	2

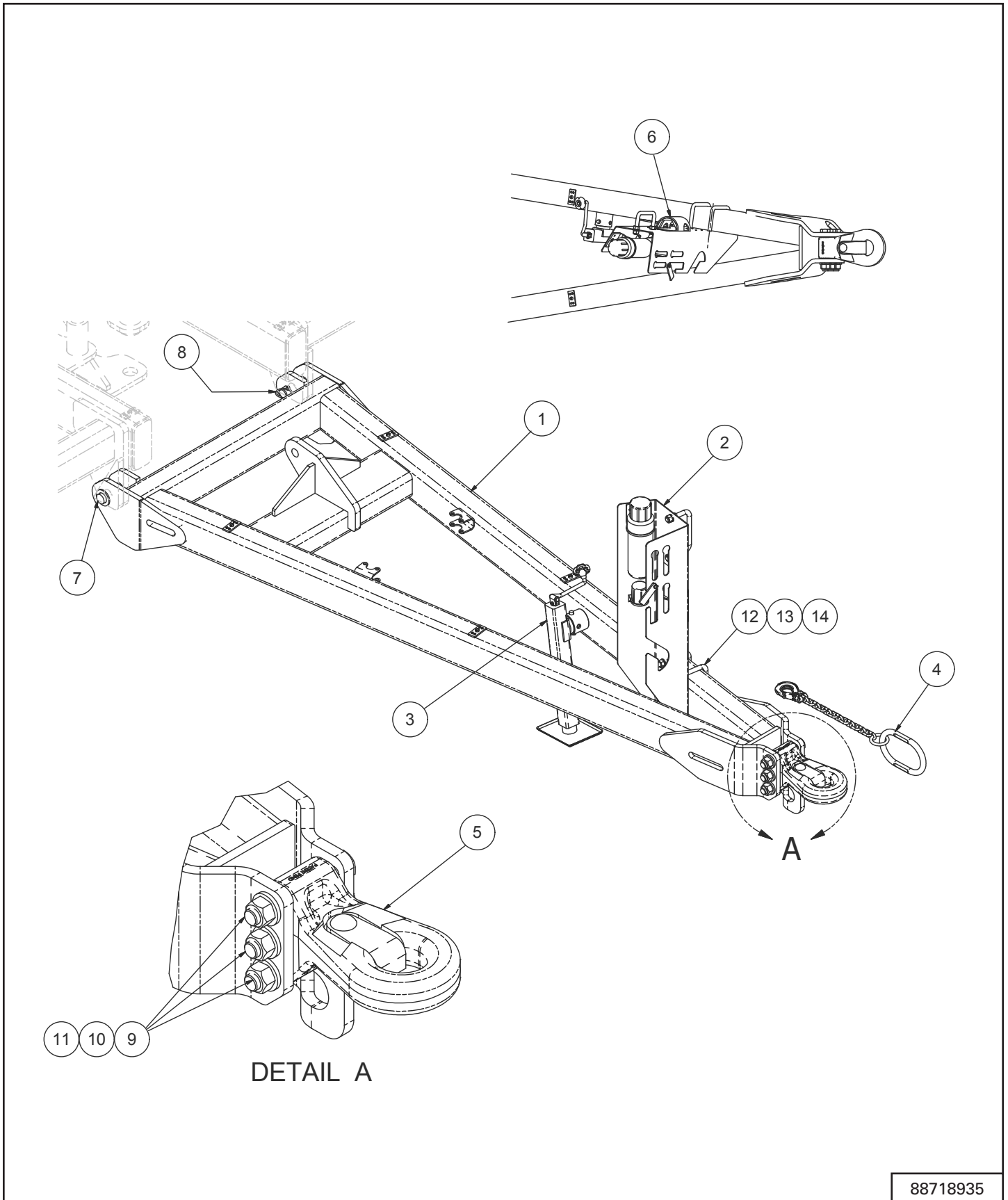
HITCH - NARROW



88715869

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZPL83773	UBOLT-5/8X5.5X6.06X1.5 GR5 PL	2
2	EZDHA9605	PIN-W.A HITCH	2
3	EZDH12517	PIN HITCH LOCK	2
4	EZDGA35	SOCKET-W.A. WRENCH	1
5	EZD13091	SAFETY CHAIN - 30K LB RATING	1
6	EZBW20010325F	WASHER-2ODX1.031IDX.25THK	2
7	EZBW062L	LW P 5/8 86505602	4
8	EZBN062	N G5 P 5/8 86505599	4
9	EZA76128	PINTLE - HITCH CATEGORY 4	1
10	88715680	HITCH - WA VERTICAL TILLAGE	1
11	88715180	JACK - ASSY W / WELD COLLAR	1
12	88708500	HYD HOSE - BRACKET	1
13	EZBN100SL	LOCKNUT 1-8TOP LOCK GRC PL	2
14	EZC60074	1" X 7" NC HEX GR. 8 PLATED	2

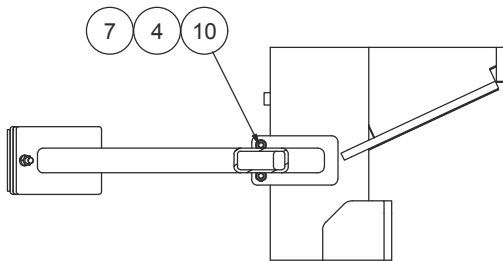
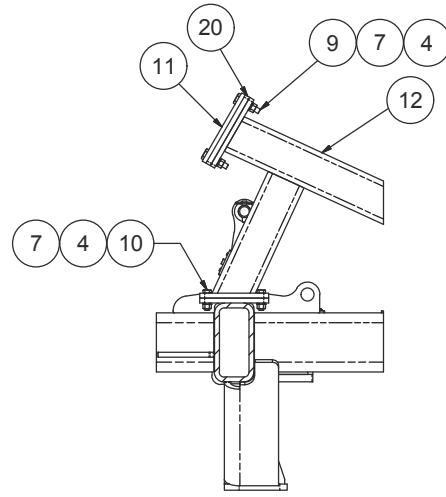
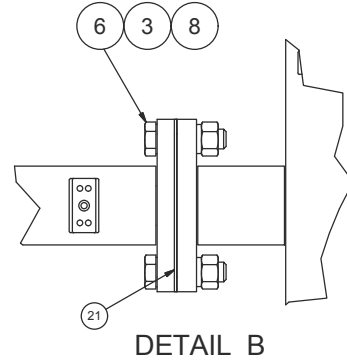
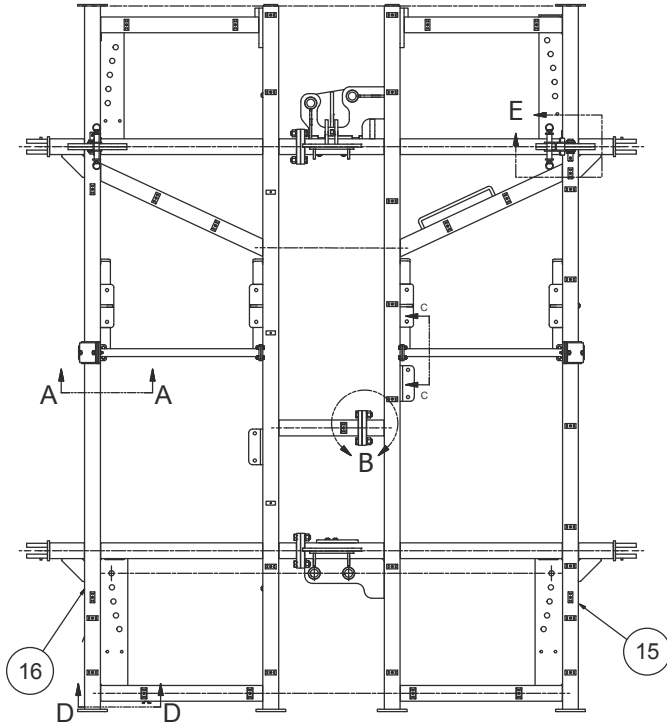
HITCH - WIDE



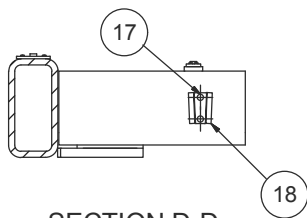
88718935

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88715680	HITCH - WA VERTICAL TILLAGE	1
2	88708500	HYD HOSE - BRACKET	1
3	88715180	JACK - ASSY W / WELD COLLAR	1
4	EZS81542	SAFETY CHAIN - 40K LB RATING	1
5	88661392	HITCH, PINTLE; CAT. 4-5 CRSSOVR	1
6	EZDGA35	SOCKET-W.A. WRENCH	1
7	EZDHA9605	PIN-W.A HITCH	2
8	EZDH12517	PIN HITCH LOCK	2
9	EZC60074	1" X 7" NC HEX GR. 8 PLATED	3
10	EZBW20010325F	WASHER-2ODX1.031IDX.25THK	3
11	EZBN100SL	LOCKNUT 1-8TOP LOCK GRC PL	3
12	EZPL83773	UBOLT-5/8X5.5X6.06X1.5 GR5 PL	2
13	EZBW062L	LW P 5/8 86505602	4
14	EZBN062	N G5 P 5/8 86505599	4

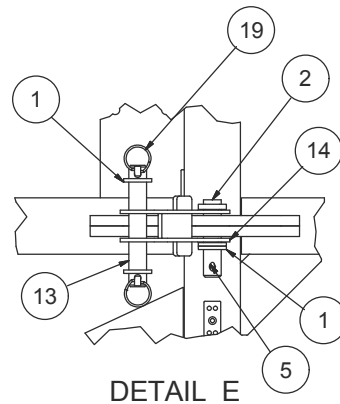
MAIN FRAME - NARROW



SECTION C-C



SECTION D-D

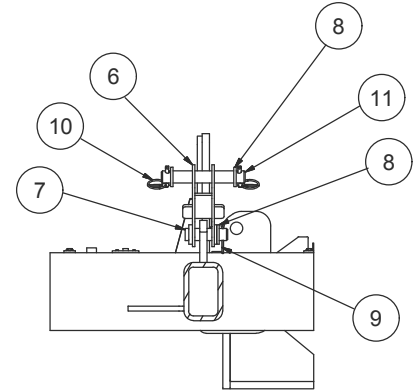
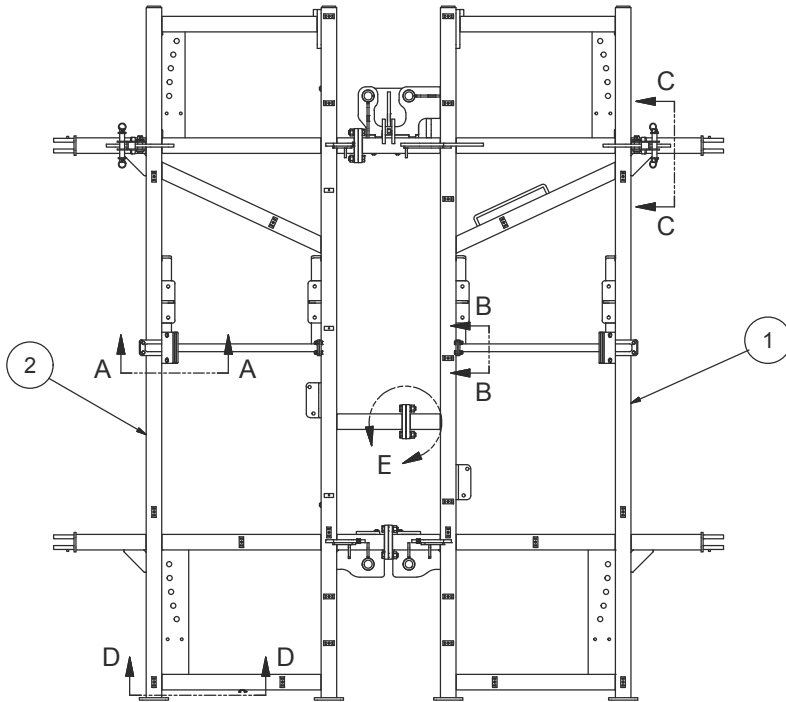


DETAIL E

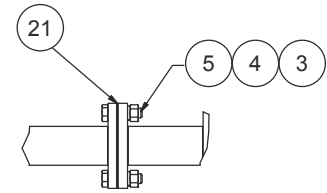
88715369

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDF5068	WASHER-1 9/32 ID X 2 OD X 1/4	8
2	EZC60191	PIN-W.A. CASTOR	2
3	EZBW100L	WASHER LOCK 1X1-1/2X1/4GR5ZNCR	12
4	EZBW050L	WASHER LOCK 1/2X7/8X1/8 ZNCR	16
5	EZBP31200	PIN COTTER 5/16 X 2 ZNCR	2
6	EZBN100	NUT HEX 1-8 NC GR 5 ZNCR	12
7	EZBN050	NUT HEX 1/2 NC ZNCR	16
8	EZB100035	BOLT HEX 1 NC X 3-1/2	12
9	EZB050025	1/2"X 2.5" N.C. HEX BOLT	4
10	EZB050017	BOLT HEX 1/2 NC X 1-3/4	12
11	88716592	BUMPER-WING STOP	2
12	88716590	BRAKT-WA WING SUPPORT	2
13	88716499	PIN-CYLINDER 1 1/4 X 8 5/8 LG	2
14	88715917	LINK-WA WING STOP	2
15	88715372	FRAME-WA MAIN RH	1
16	88715371	FRAME-WA MAIN LH	1
17	813602	RIVET 1/4 X 3/4 FLATHEAD	2
18	35827	MTG SOCKET-SMV SIGN	1
19	132757	LINCH PIN 7/16	4
20	88716599	SPACER - WING STOP	AR
21	88715892	2" X 8-3/4" SHIM PLATE MAIN FRAME	AR

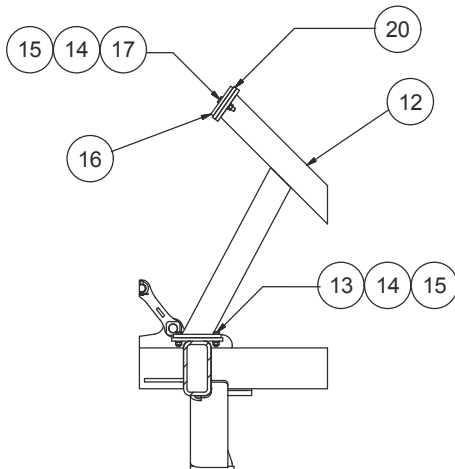
MAIN FRAME - WIDE



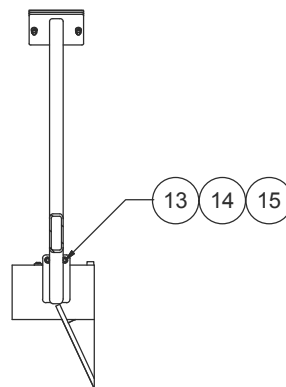
SECTION C-C



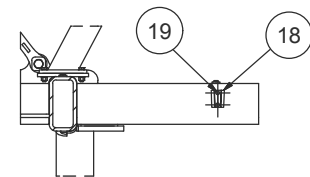
DETAIL E



SECTION A-A



SECTION B-B

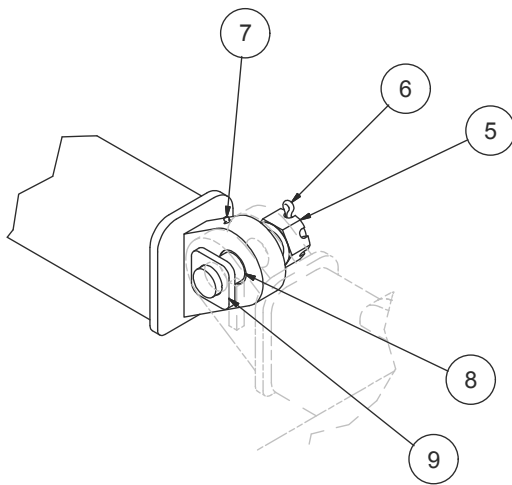
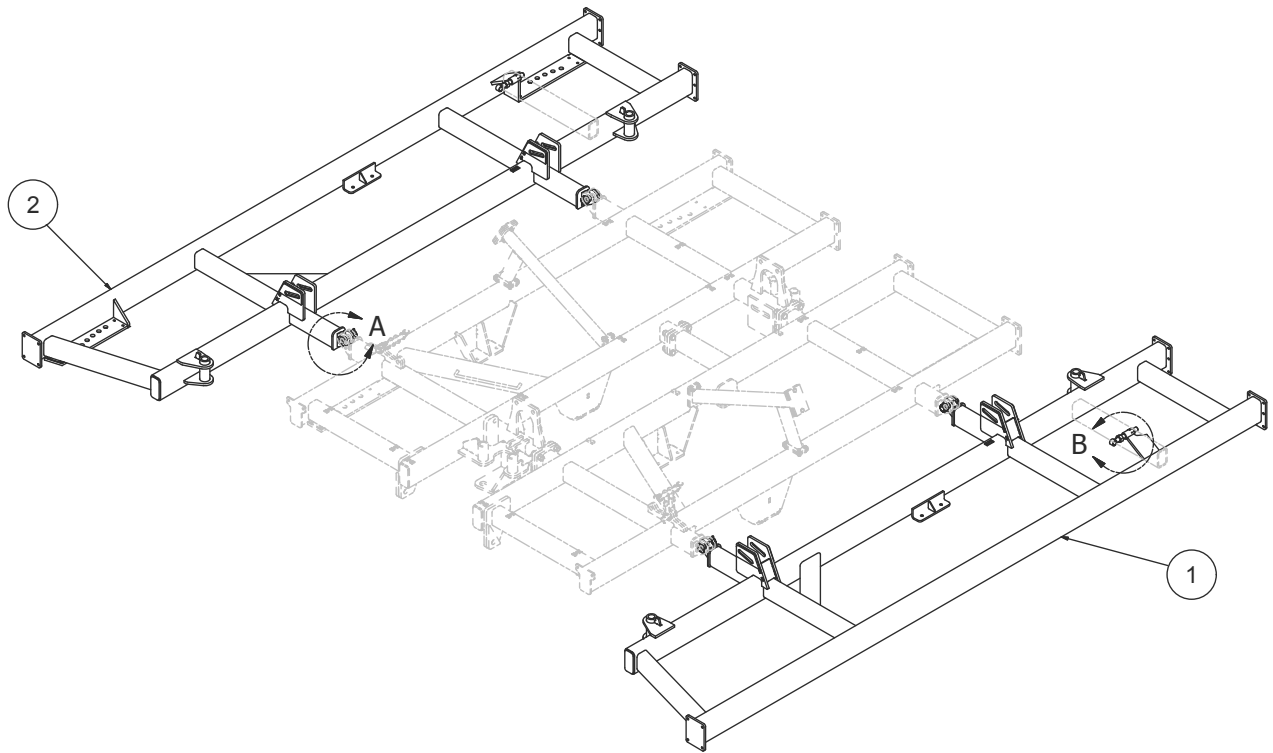


SECTION D-D

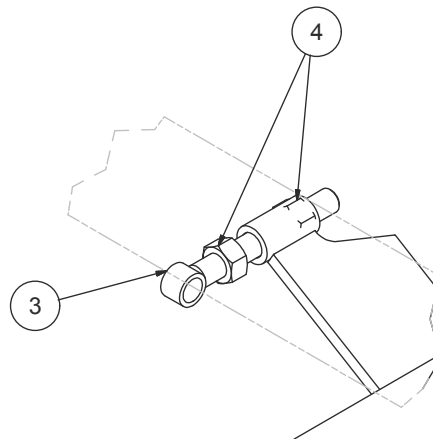
88717735

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88717640	FRAME-WA MAIN RH VT	1
2	88717641	FRAME-WA MAIN LH	1
3	EZBN100	NUT HEX 1-8 NC GR 5 ZNCR	12
4	EZBW100L	WASHER LOCK 1X1-1/2X1/4GR5ZNCR	12
5	EZB100035	BOLT HEX 1 NC X 3-1/2	12
6	88715917	LINK-WA WING STOP	2
7	88705227	PIN - 1-1/4" X 4" SQUARE HEAD - W.A.	2
8	EZDF5068	WASHER-1 9/32 ID X 2 OD X 1/4	8
9	EZBP18250	PIN COTTER 3/16 X 2-1/2	2
10	132757	LINCH PIN 7/16	4
11	88716499	PIN-CYLINDER 1 1/4 X 8 5/8 LG	2
12	88717745	BRKT - WA WING SUPPORT WIDE VT	2
13	EZB050017	BOLT HEX 1/2 NC X 1-3/4	12
14	EZBW050L	WASHER LOCK 1/2X7/8X1/8 ZNCR	16
15	EZBN050	NUT HEX 1/2 NC ZNCR	16
16	88716592	BUMPER-WING STOP	2
17	EZB050025	1/2" X 2.5" N.C. HEX BOLT	4
18	35827	MTG SOCKET-SMV SIGN	1
19	813602	RIVET 1/4 X 3/4 FLATHEAD	2
20	88716599	SPACER - WING STOP	AR
21	88715892	2" X 8-3/4" SHIM PLATE MAIN FRAME	AR

WING FRAME - NARROW



DETAIL A

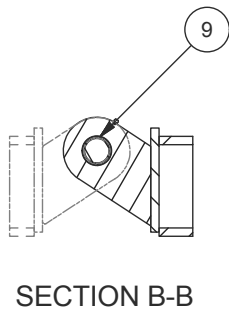
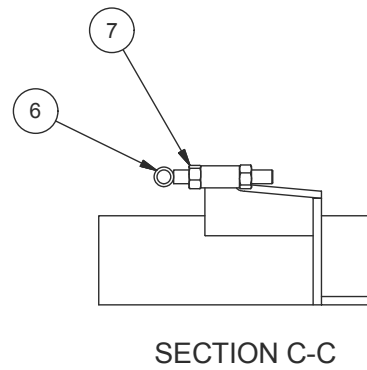
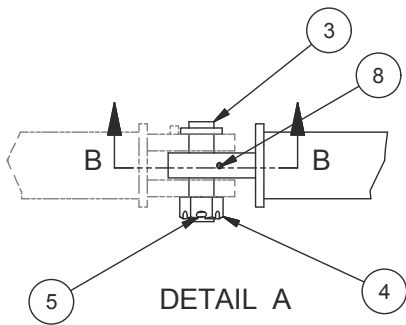
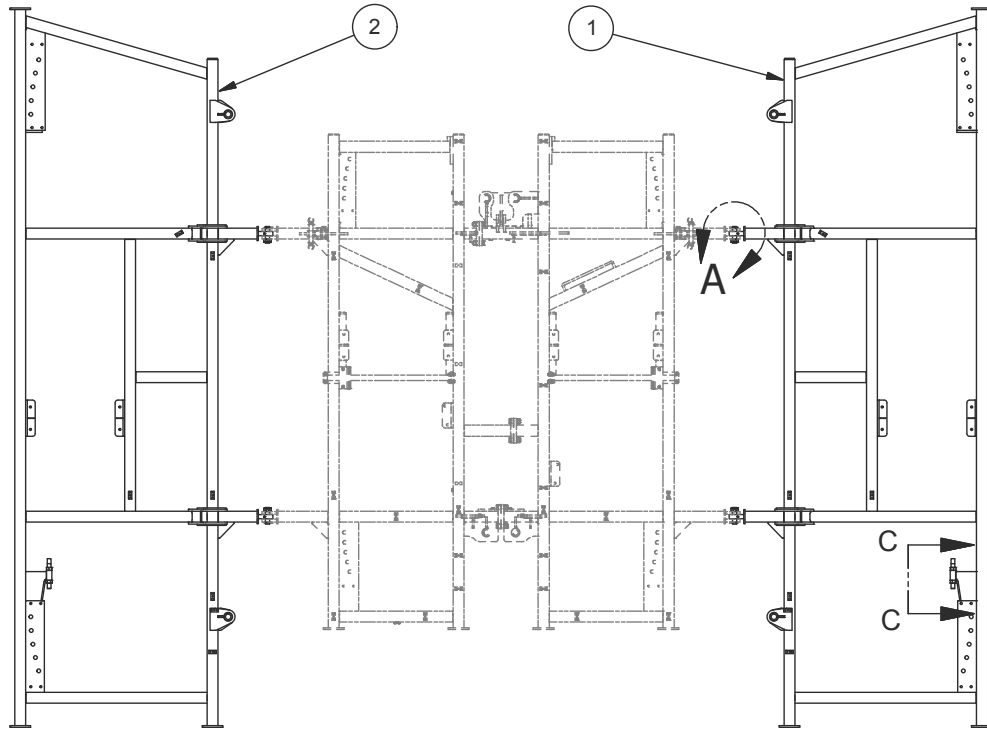


DETAIL B

88715840

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88718323	FRAME-WA WING LH	1
2	88718322	FRAME-WA WING RH	1
3	EZDFA9564	ROD-W.A. EYE BOLT	2
4	EZBN125	NUT HEX 1-1/4 NC GR2 ZNCR	4
5	EZDH5165	NUT HEX SLOT 1-1/2 NC GR 2	4
6	EZBP31225	PIN COTTER 5/16 X 2-1/4	4
7	EZ10GN1	FITTING 1/4 UNF ST ZERK	4
8	EZDG13286	BUSHING-SPRING W/OIL GROOVE	4
9	EZDG1309	PIN - WING HINGE 1-1/2	4
10	86050059	STD GREASE -LITHIUM	AR

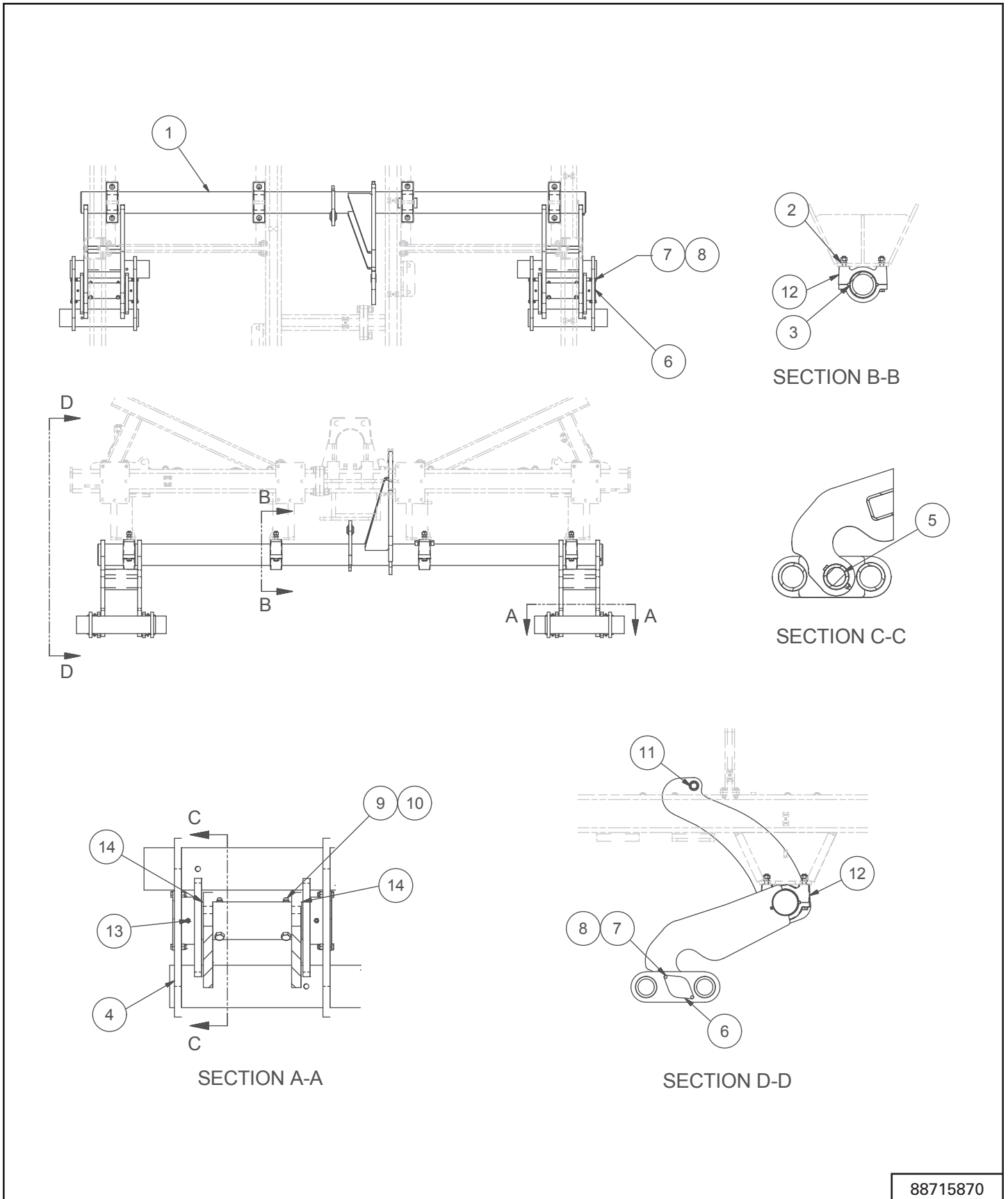
WING FRAME - WIDE



88717736

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88718834	FRAME-WA WIDE WING RH	1
2	88718835	FRAME-WA WIDE WING LH	1
3	EZDG1309	PIN - WING HINGE 1-1/2	4
4	EZDH5165	NUT HEX SLOT 1-1/2 NC GR 2	4
5	EZBP31225	PIN COTTER 5/16 X 2-1/4	4
6	EZDFA9564	ROD-W.A. EYE BOLT	2
7	EZBN125	NUT HEX 1-1/4 NC GR2 ZNCR	4
8	EZ10GN1	FITTING 1/4 UNF ST ZERK	4
9	EZDG13286	BUSHING-SPRING W/OIL GROOVE	4
10	86050059	STD GREASE -LITHIUM	AR

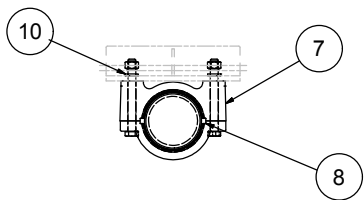
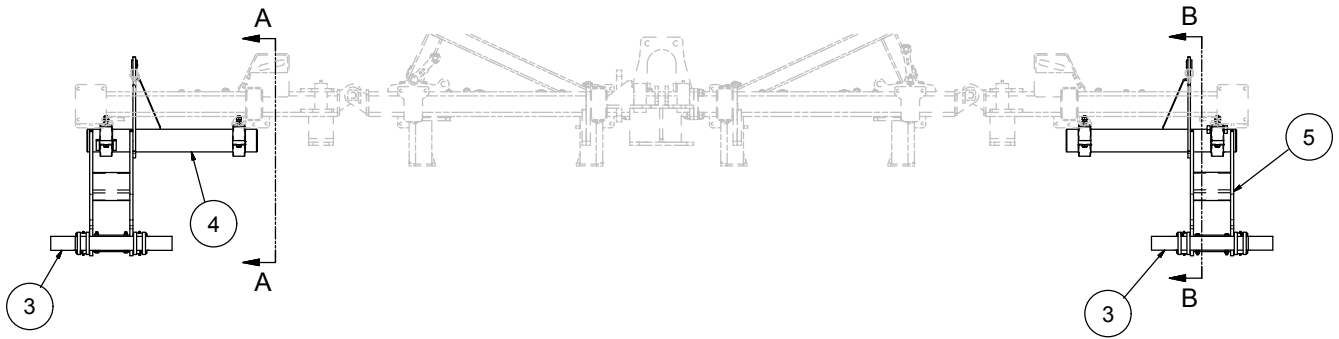
ROCKSHAFT MAIN FRAME



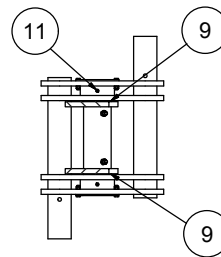
88715870

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716179	ROCKSHAFT- WA MAIN FRAME VT	1
2	87340	LW P .75 86505602	8
3	88713582	BEARING - ROCKSHAFT	4
4	88714050	BEAM - ASSY WALKING TD	2
5	88713892	PIN-PIVOT WB	2
6	88714056	COVER-WALKING BEAM SHAFT	4
7	88044	CSHH G5P 3/8X1.5	8
8	EZBN037L	NUT HEX NYL 3/8 NC	8
9	280231	CSHH G8P 0.5X5.0 86505346	4
10	EZBN050L	NUT HEX LOCK NYL 1/2 NC ZNCR	4
11	EZDR13120	BUSHING-SPRING	1
12	88713586	ASSY - LIGHT ROCKSHAFT CASTING	4
13	80710	LUBE-FITTING, 1/8 NPT	8
14	88713573	WASHER - THRUST WB	4
15	86557158	ANTI SEIZE PER 86557157	AR
16	86050059	STD GREASE - LITHIUM	AR

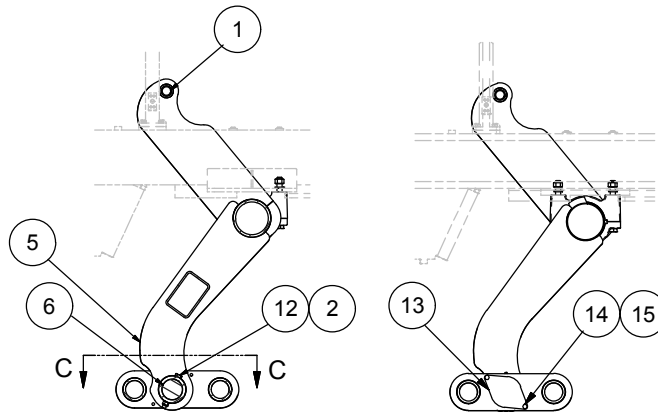
ROCKSHAFT WING FRAME



SECTION A-A



SECTION C-C

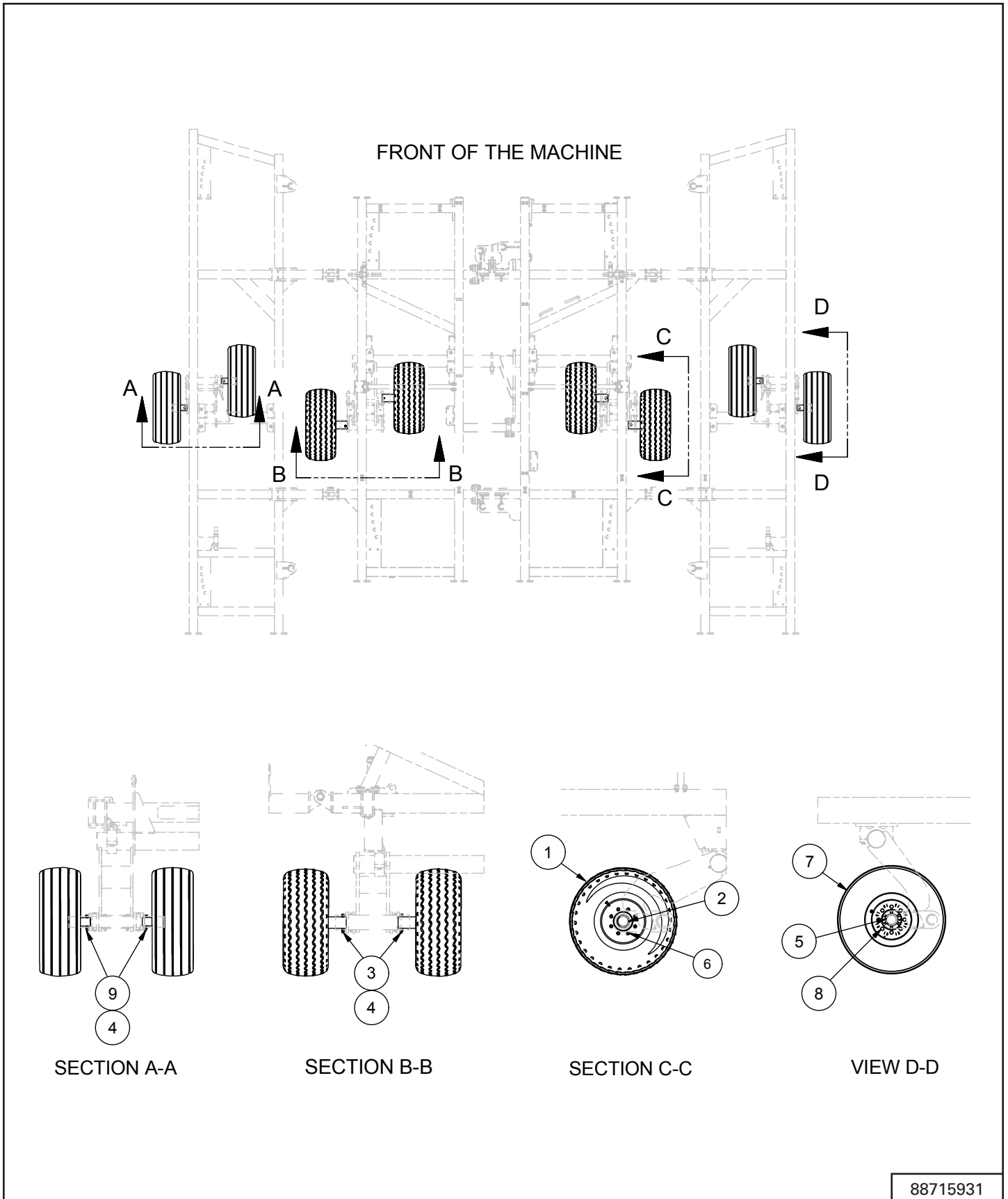


SECTION B-B

88715901

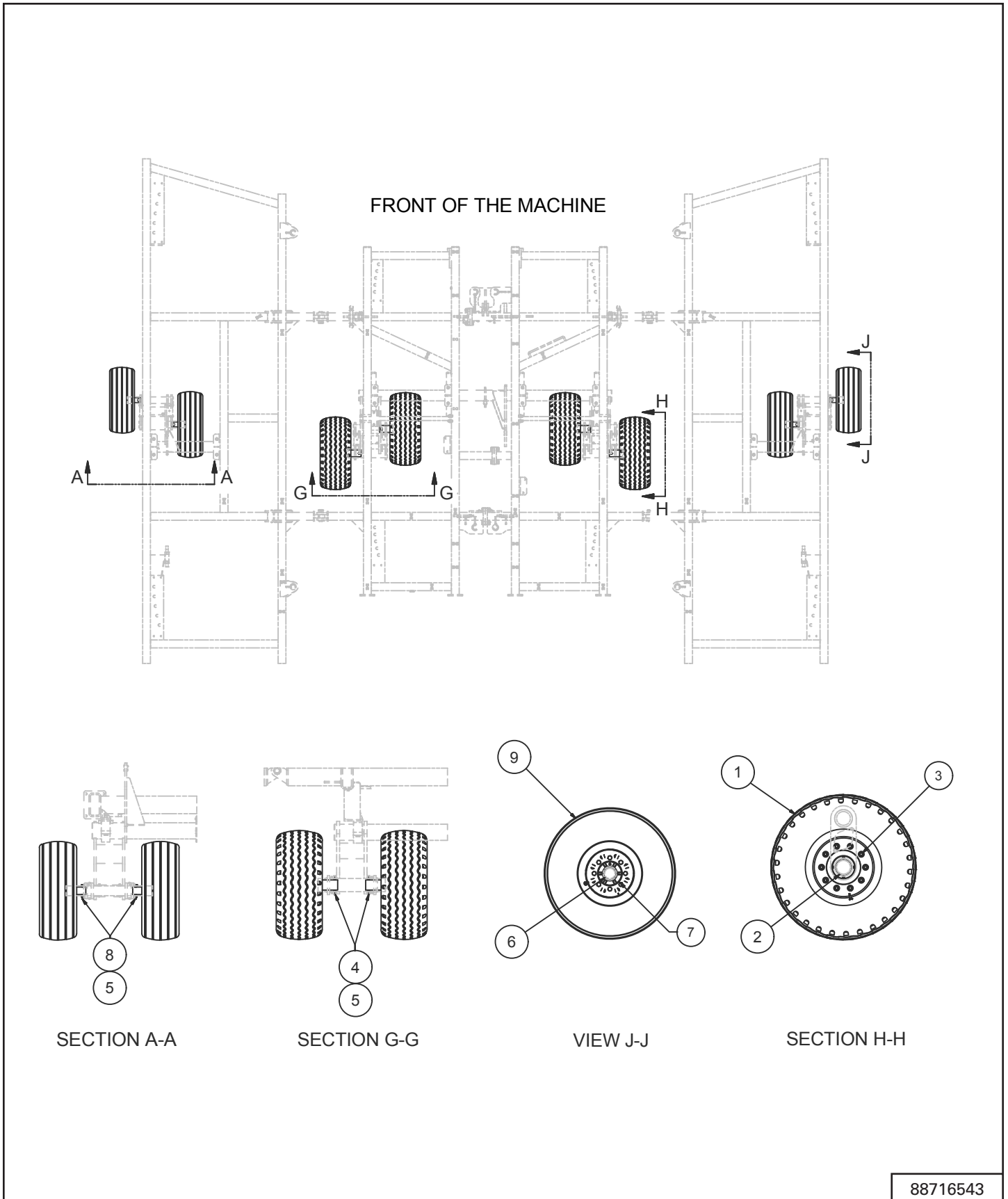
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDR13120	BUSHING-SPRING	2
2	EZBN050L	NUT HEX LOCK NYL 1/2 NC ZNCR	4
3	88715558	BEAM-ASSY WALKING WING VT	2
4	88715521	ROCKSHAFT- WA WING RH	1
5	88715472	ROCKSHAFT- WA WING LH	1
6	88713892	PIN-PIVOT WB	2
7	88713586	ASSY - LIGHT ROCKSHAFT CASTING	4
8	88713582	BEARING - ROCKSHAFT	4
9	88713573	WASHER - THRUST WB	4
10	87340	LW P .75 86505602	8
11	80710	LUBE-FITTING, 1/8 NPT	8
12	280231	CSHH G8P 0.5X5.0 86505346	4
13	88714056	COVER-WALKING BEAM SHAFT	4
14	88044	CSHH G5P 3/8X1.5	8
15	EZBN037L	NUT HEX NYL 3/8 NC	8
16	86557158	ANTI SEIZE PER 86557157	AR
17	86050059	STD GREASE - LITHIUM	AR

WHEELS - NARROW



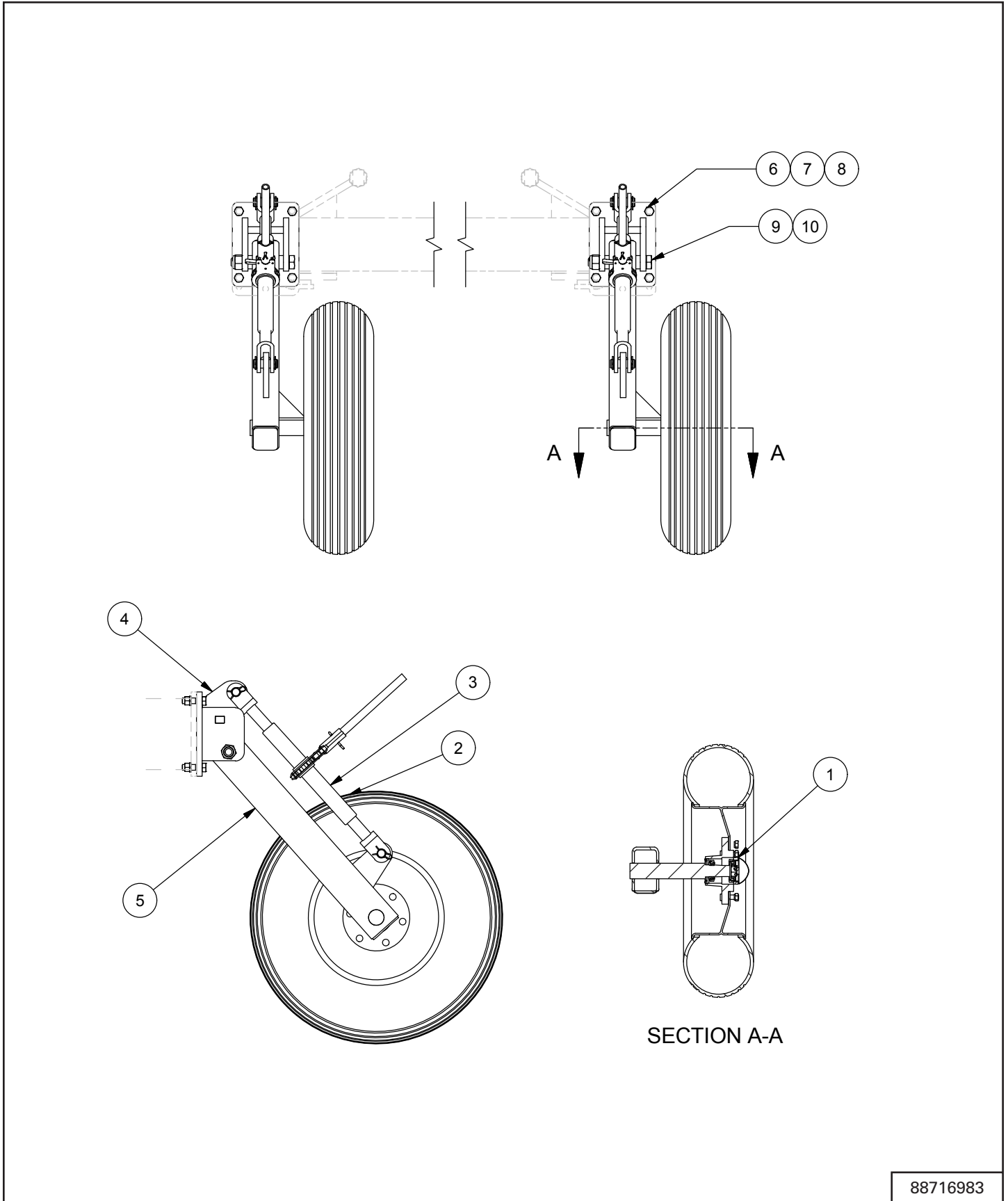
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88712600	ASSY, FS24 - 380/55R16.5 - 8 BOLT	4
2	88712582	ASSY, HUB CTD H817	4
3	EZB050055-8	BOLT - 1/2 X 5-1/2 HEX GR8 ZN	4
4	EZBN050L	NUT HEX LOCK NYL 1/2 NC ZNCR	8
5	88712617	ASSY, 812 HUB WING SPINDLE	4
6	EZA77043	5/8" NF WHEEL NUT	32
7	88713885	TIRE - 12.5L15FID 8 BOLT RIM	4
8	EZDR125	BOLT-WHEEL 9/16 NF X 1-1/8	32
9	86508730	CSHH G8P 0.5X4.5 86505346	4
10	86050059	STD GREASE -LITHIUM	AR

WHEELS - WIDE



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88718787	ASSY-WHEEL AND TIRE 440/55R18 10 BOLT	4
2	88706266	HUB-ASSY W/ SPINDLE 10 BOLT	4
3	EZA70545	NUT HEX FLANGE 3/4 NF	40
4	EZB050055-8	BOLT - 1/2 X 5-1/2 HEX GR8 ZN	4
5	EZBN050L	NUT HEX LOCK NYL 1/2 NC ZNCR	8
6	88712617	ASSY, 812 HUB WING SPINDLE	4
7	EZDR125	BOLT-WHEEL 9/16 NF X 1-1/8	32
8	86508730	CSHH G8P 0.5X4.5 86505346	4
9	88718785	ASSY-WHEEL AND TIRE 12.5L15FID 8 BOLT	4
10	86050059	STD GREASE -LITHIUM	AR

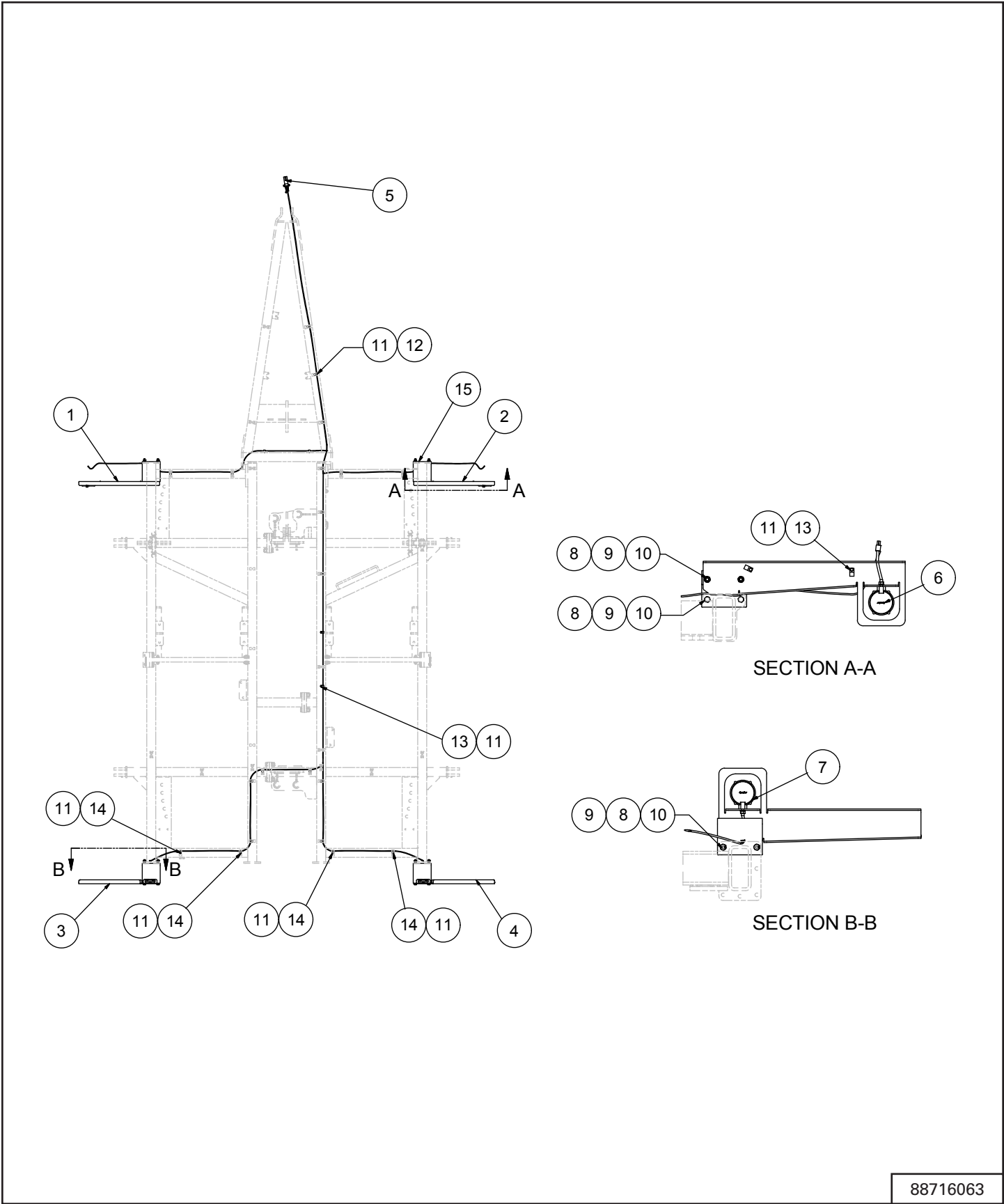
GAUGE WHEELS



88716983

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	SX011503	HUB; 256-6-6-4.62	2
2	SX011506B	TIRE & WHEEL ASSY, 7.6-15SL	2
3	88715715	RATCHET-JACK CASTER	2
4	88716982	BRACKET-WA GW FRAME MTG	2
5	88716978	ARM-WA CASTER WHEEL VT	2
6	EZB062022	BOLT - HEX NC 5/8 X 2-1/4	8
7	EZBN062	N G5 P 5/8 86505599	8
8	EZBW062L	LW P 5/8 86505602	8
9	EZB100065	BOLT - HXHD 1-8UNC X 6.5 GR5	2
10	EZBN100L	NUT HEX LOCK NYL 1NC ZNCR	2
11	86050059	STD GREASE -LITHIUM	AR

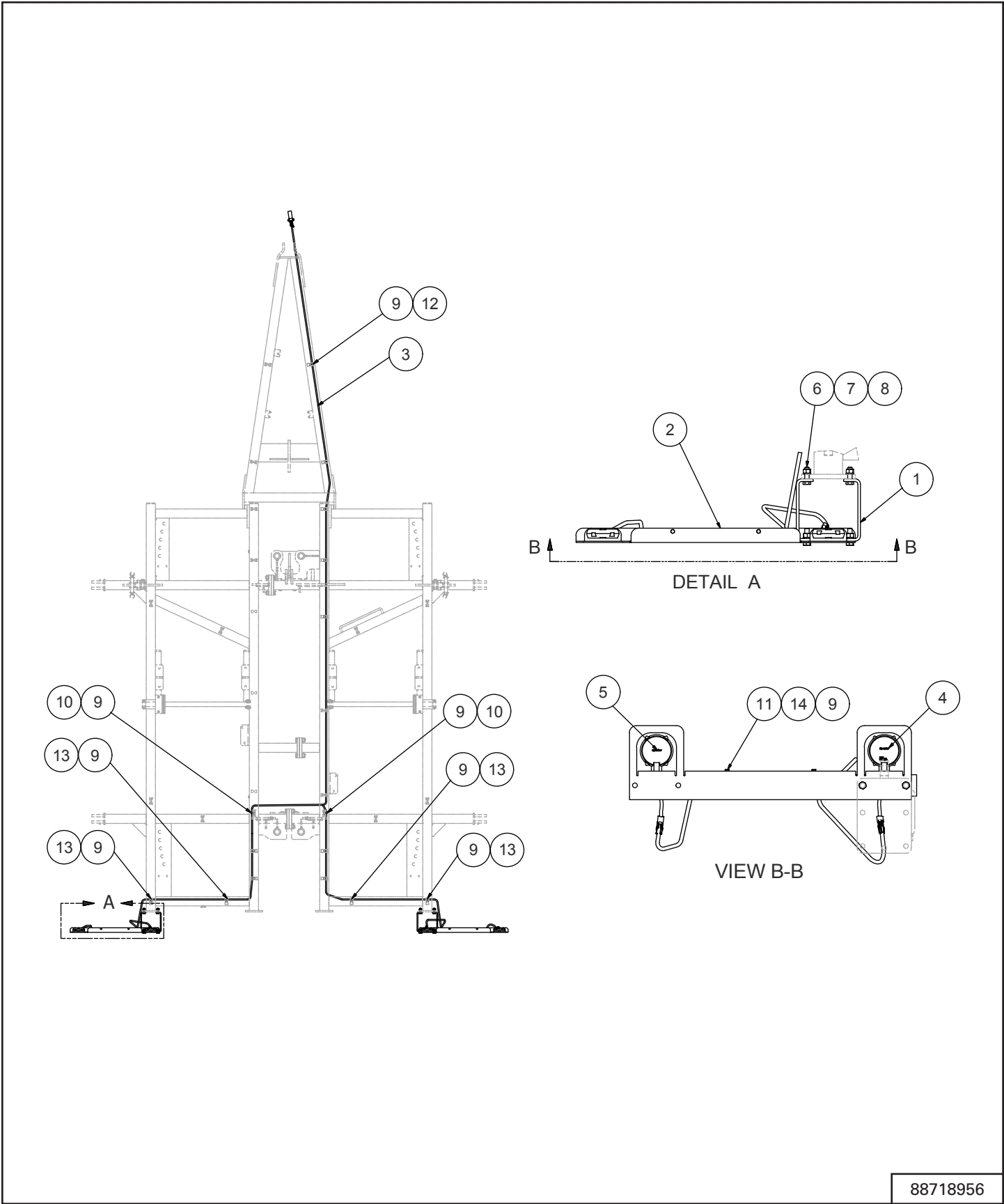
WARNING LIGHTS - NARROW



88716063

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88717241	PLATE- LIGHT BRACKET VT FRONT LH	1
2	88717240	PLATE- LIGHT BRACKET VT FRONT RH	1
3	88716088	PLATE- LIGHT BRACKET VT RR LH	1
4	88716089	PLATE- LIGHT BRACKET VT RR RH	1
5	88716091	WHA - SAFETY LIGHTS, VT	1
6	88714690	AMBER LAMP- 12V LEDTURN SIGNAL	2
7	88714646	RED LAMP- 12V LED W/3 PIN PLUG	2
8	EZBW062L	LW P 5/8 86505602	16
9	EZBN062	N G5 P 5/8 86505599	16
10	EZB062020	BOLT HEX 5/8 NC X 2	16
11	SZ000566	5/16X0.406 HOLE VINYL DIP CLAMP	28
12	SZ126052	BLT HHCS 5/16-18UNC 1-3/4 G5	10
13	EZB031005	BOLT HEX 5/16 NC X 1/2	14
14	SZ126059	BLT HHCS 5/16" - 18UNC 3" G5	4
15	88718451	BRACKET- ADAPTER LIGHT BRKT MNT FRT	4

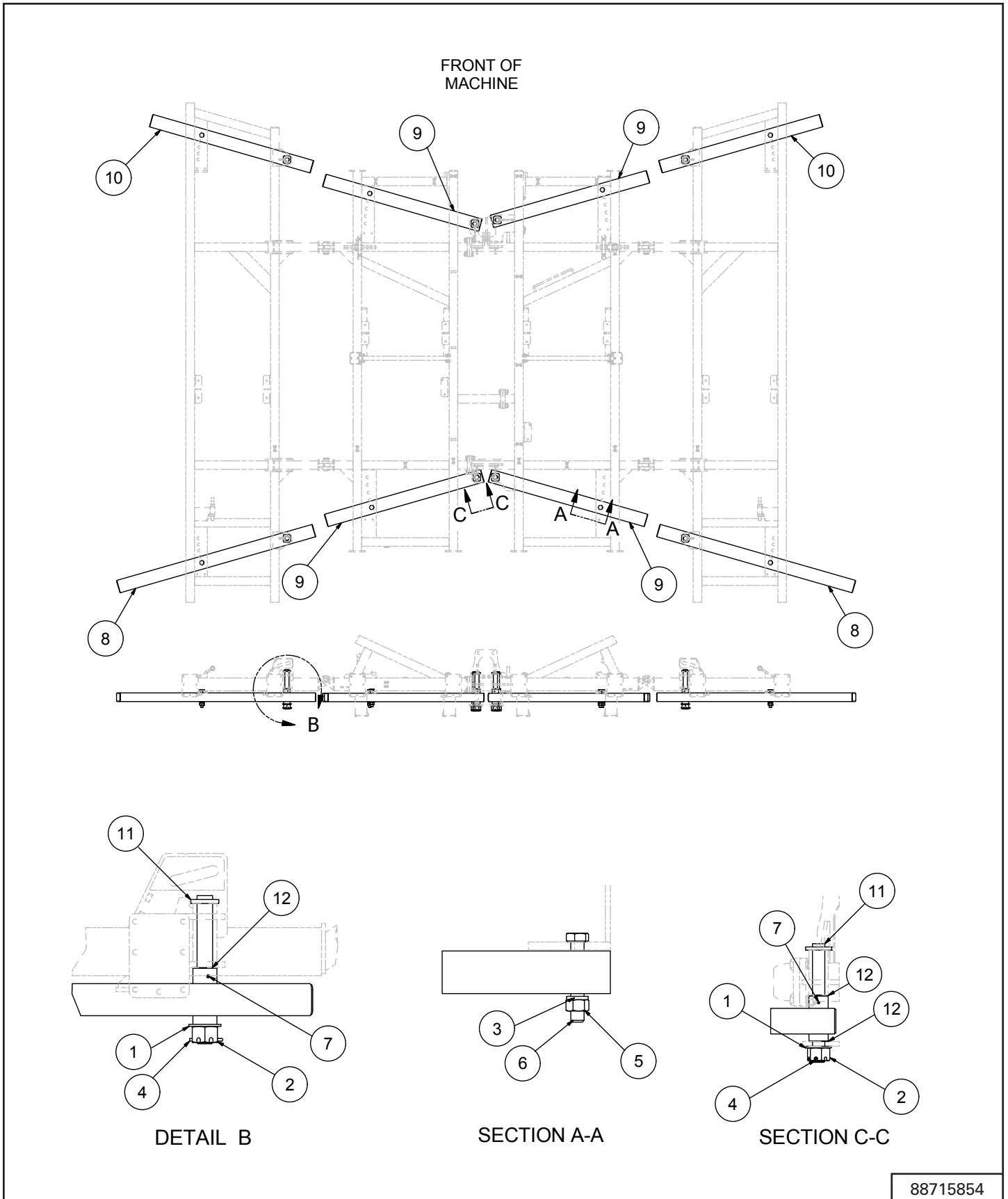
WARNING LIGHTS - WIDE



88718956

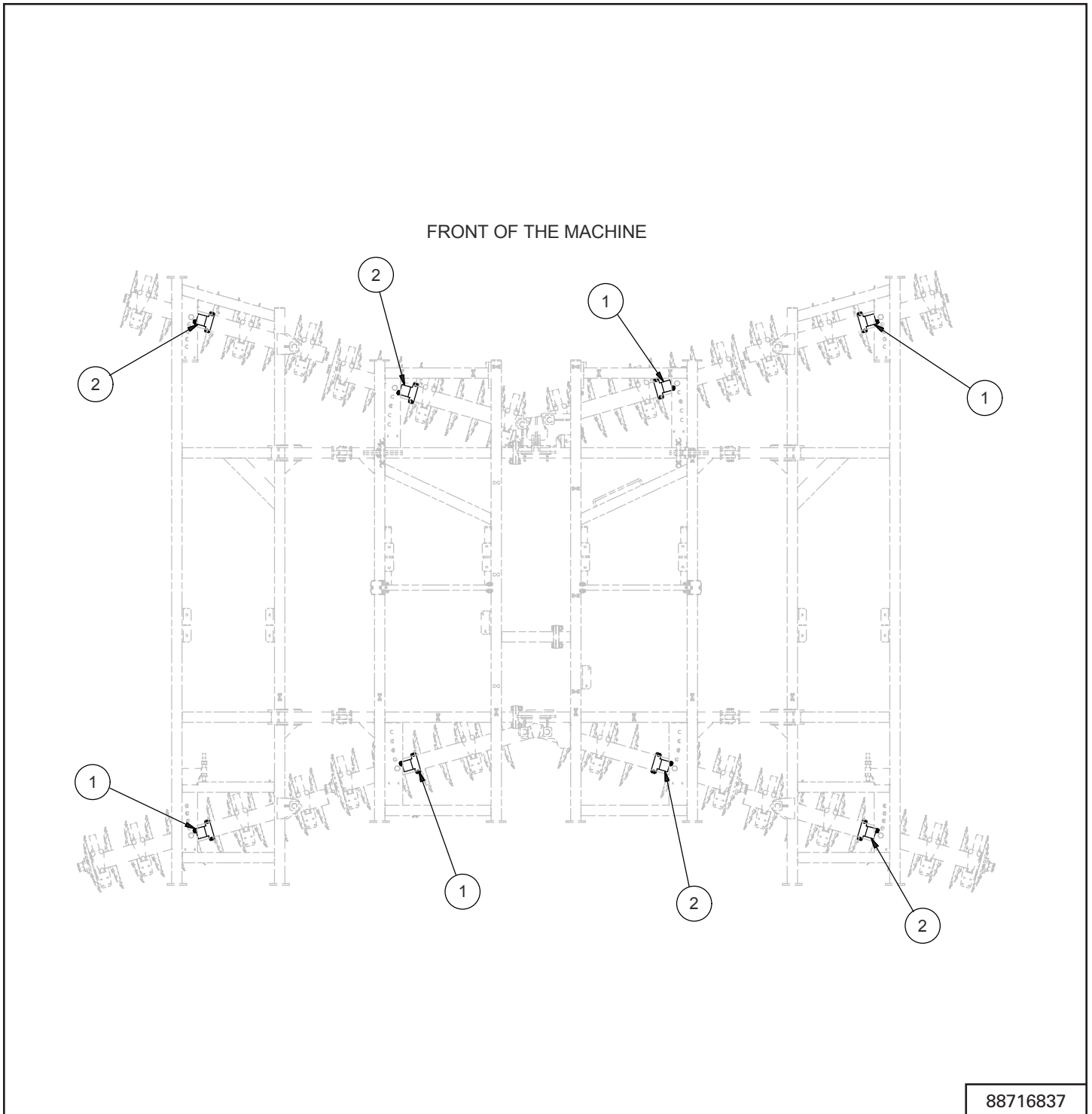
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88718452	BRACKET- ADAPTER LIGHT BRKT MNT RR	4
2	88718955	BRKT - WARNING LIGHT VT W	2
3	88719354	HARNESS-WARNING LIGHTS	1
4	88714646	RED LAMP- 12V LED W/3 PIN PLUG	2
5	88714690	AMBER LAMP- 12V LEDTURN SIGNAL	2
6	EZB062020	BOLT HEX 5/8 NC X 2	8
7	EZBW062L	LW P 5/8 86505602	8
8	EZBN062	N G5 P 5/8 86505599	8
9	SZ000566	5/16X0.406 HOLE VINYL DIP CLAMP	19
10	EZB031005	BOLT HEX 5/16 NC X 1/2	2
11	EZB031010	BOLT HEX 5/16 NC X 1 GR5 ZNCR	4
12	EZB031017	BOLT HEX 5/16 NC X 1-3/4	9
13	EZB031030	BOLT HEX 5/16 NC X 3 GR 5 ZNCR	4
14	EZBN031L	NUT LOCK NYLON 5/16 NC	4

GANG BEAMS



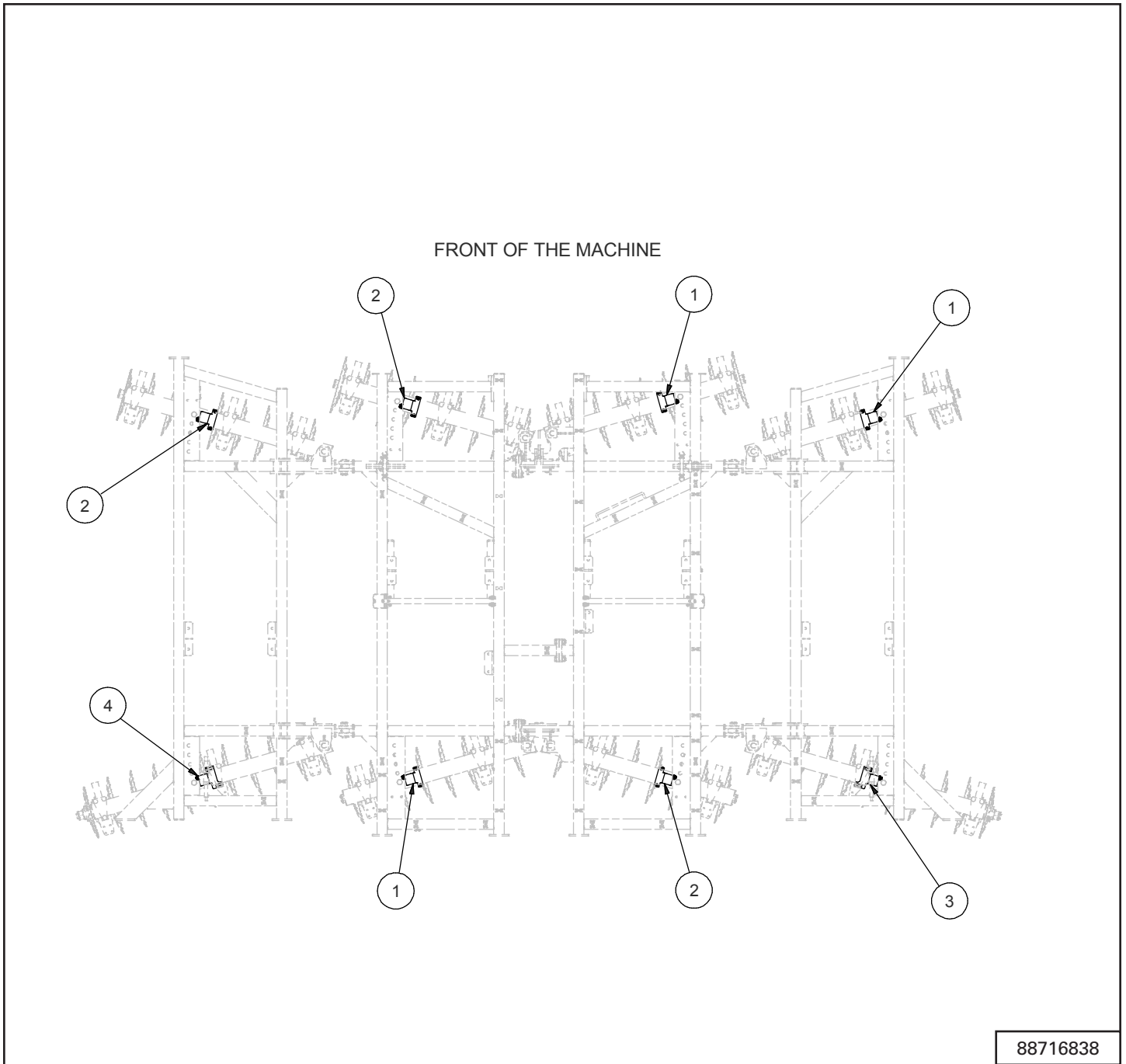
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDG89	WASHER-SHIM	8
2	EZDG12252	NUT - HEAVY HEX SLOTTED 2 NC GR5 ZNCR	8
3	EZBW125L	WASHER LOCK 1-1/4X1X5/16ZNCR	8
4	EZBP37300	PIN-COTTER 3/8 X 3	8
5	EZBN125	NUT HEX 1-1/4 NC GR2 ZNCR	8
6	EZB125075	BOLT-HXHD 1.25-7UNC X 7.50LG	8
7	EZ10GN1	FITTING 1/4 UNF ST ZERK	16
8	88718342	GANG BEAM 95" - 28.5' MODEL	2
	88718440	GANG BEAM 113" - 32' MODEL	2
	88717750	GANG BEAM 117" - 34' MODEL	2
	88717751	GANG BEAM 135" - 36' MODEL	2
9	88715927	GANG BEAM 75.75" - 28.5' MODEL	4
	88715927	GANG BEAM 75.75" - 32' MODEL	4
	88718211	GANG BEAM 94" - 34' MODEL	4
	88718211	GANG BEAM 94" - 36' MODEL	4
10	88718340	GANG BEAM 78" - 28.5' MODEL	2
	88718438	GANG BEAM 94" - 32' MODEL	2
	88718210	GANG BEAM 99" - 34' MODEL	2
	88717750	GANG BEAM 117" - 36' MODEL	2
11	88715925	PIN-W.A. GANG PIVOT	8
12	88715853	WASHER-P 2 X 3 14GA	12
13	86050059	STD GREASE -LITHIUM	AR

GANG ANGLE ROLLER - VT3290 - 8 IN. SPACING



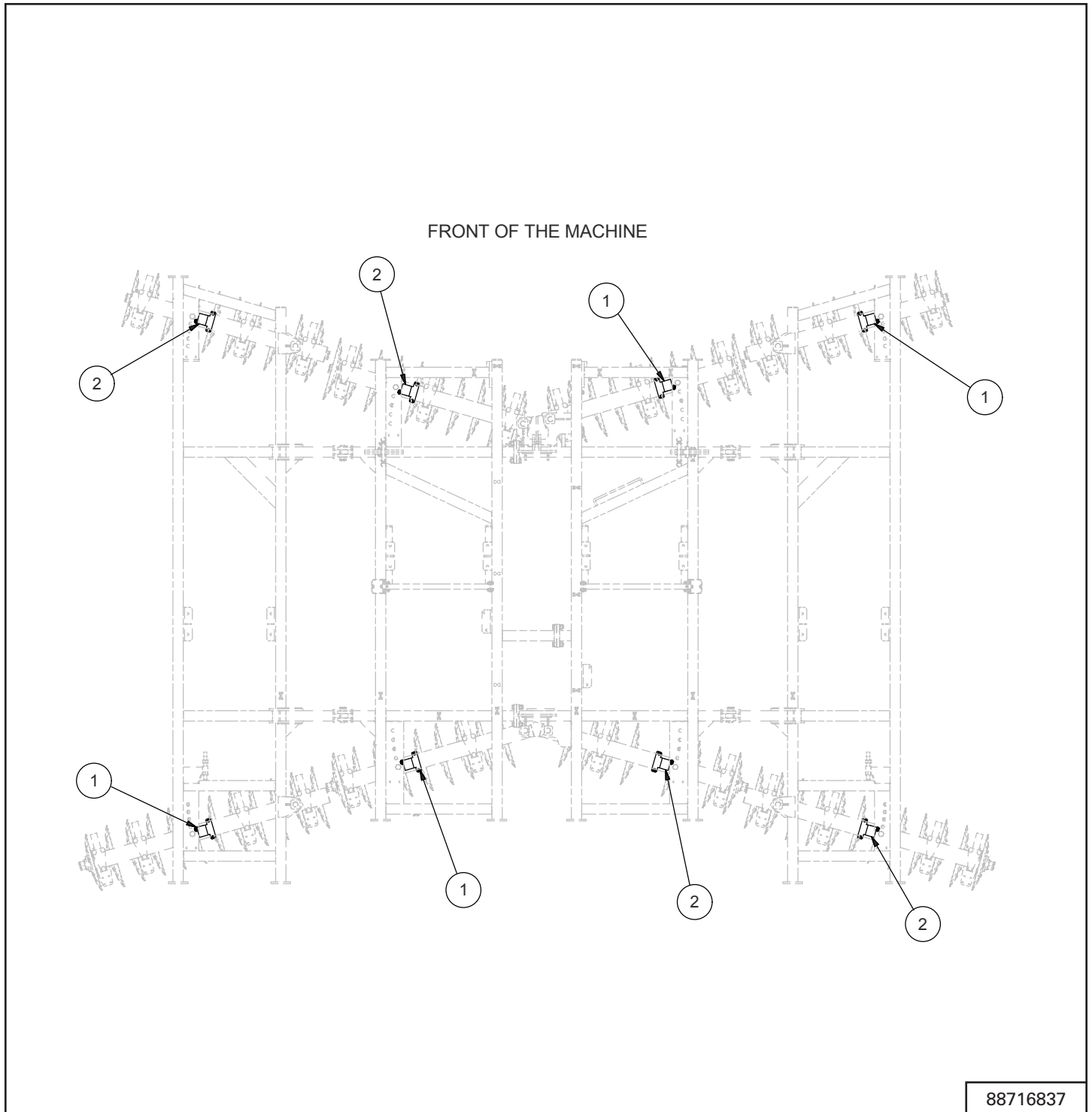
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716115	BEARING MNT -ASSY GNG ROLLER LH	4
2	88717049	BEARING MNT -ASSY GNG ROLLER RH	4

GANG ANGLE ROLLER - VT3290 - 9 IN. SPACING



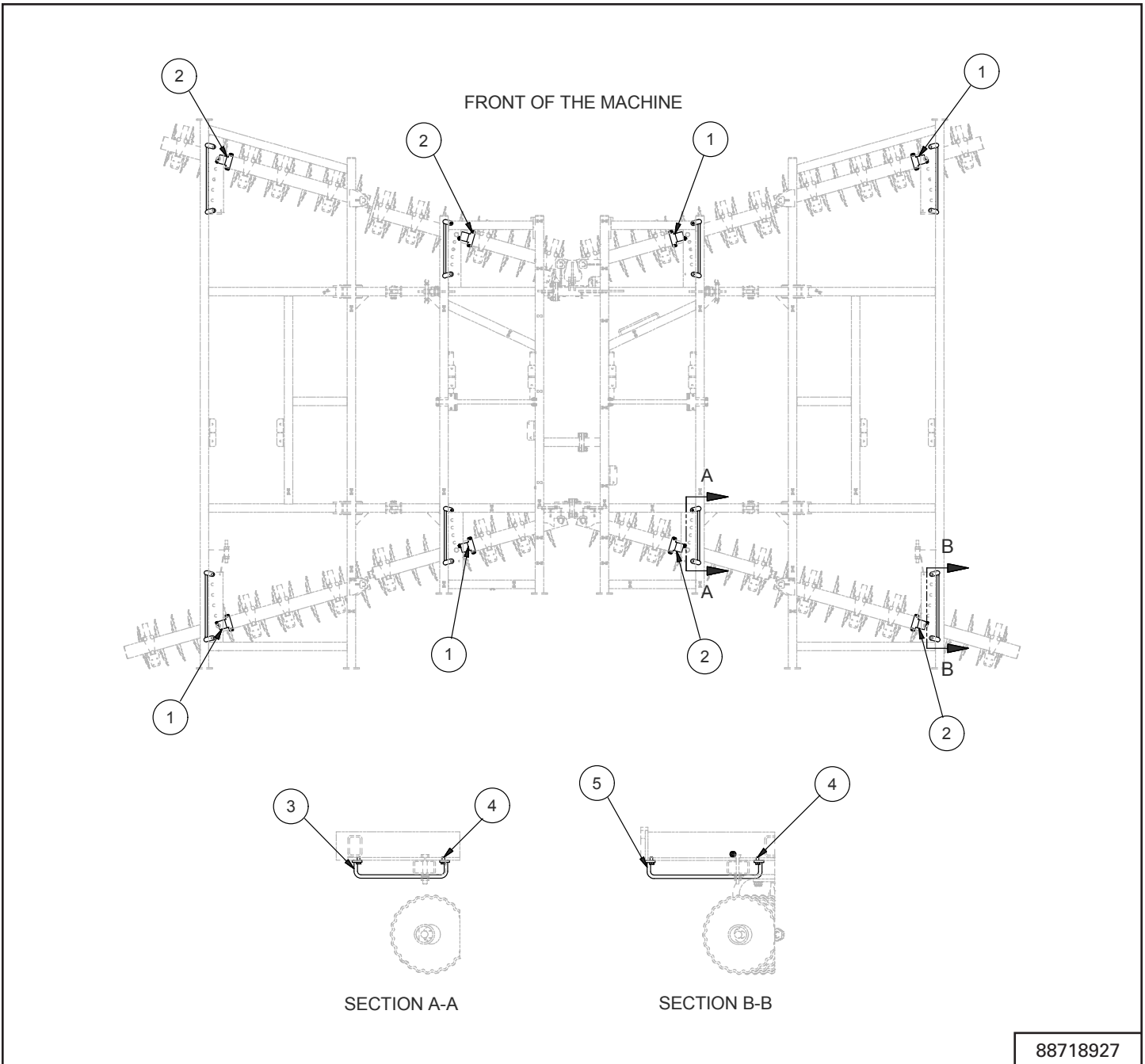
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716115	BEARING MNT -ASSY GNG ROLLER LH	3
2	88717049	BEARING MNT -ASSY GNG ROLLER RH	3
3	88716560	BEARING MNT- ASSY GB ADJUST RH	1
4	88716563	BEARING MNT- ASSY GB ADJUST LH	1

GANG ANGLE ROLLER - VT3320



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716115	BEARING MNT -ASSY GNG ROLLER LH	4
2	88717049	BEARING MNT -ASSY GNG ROLLER RH	4

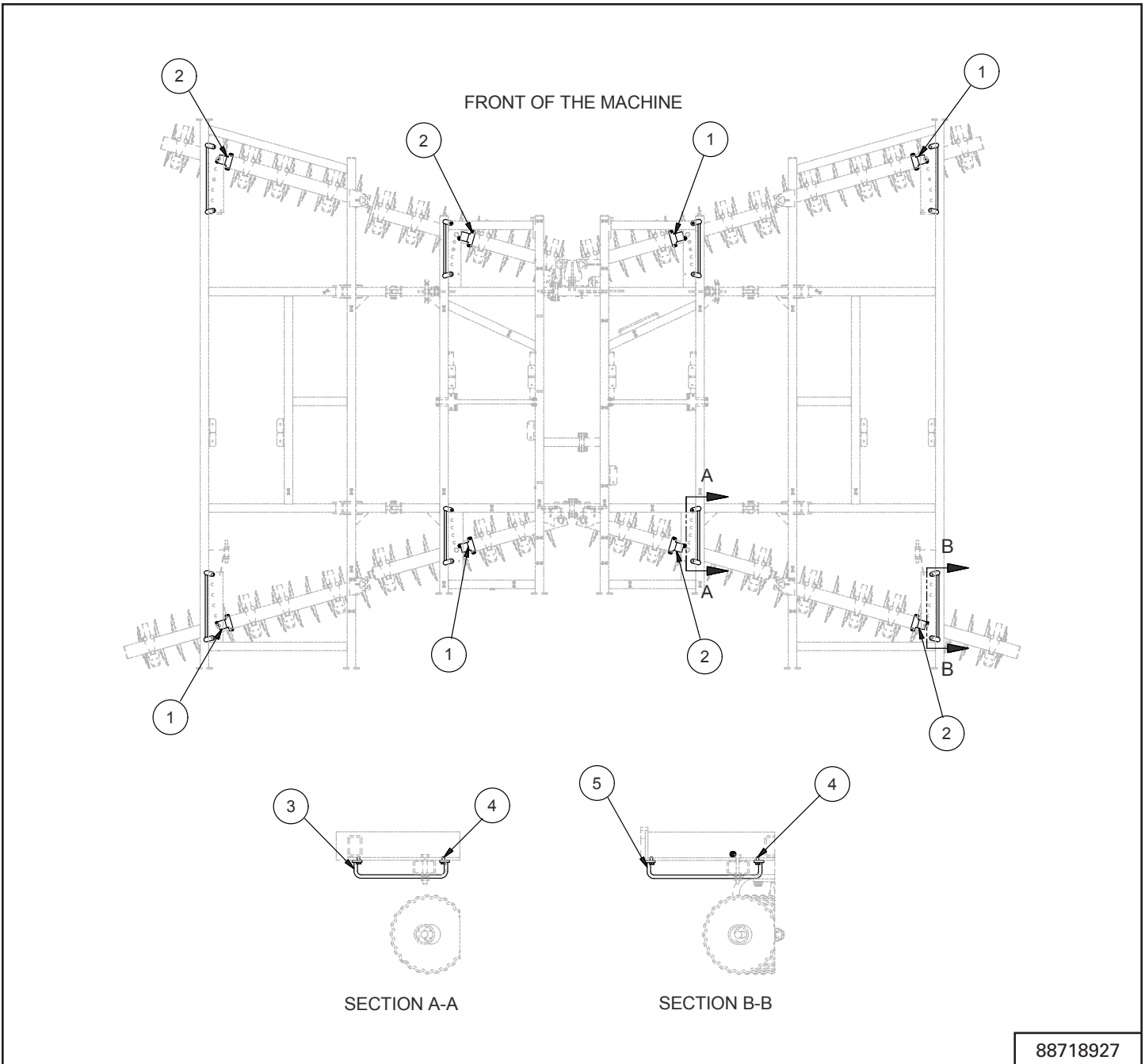
GANG ANGLE ROLLER - VT3345



88718927

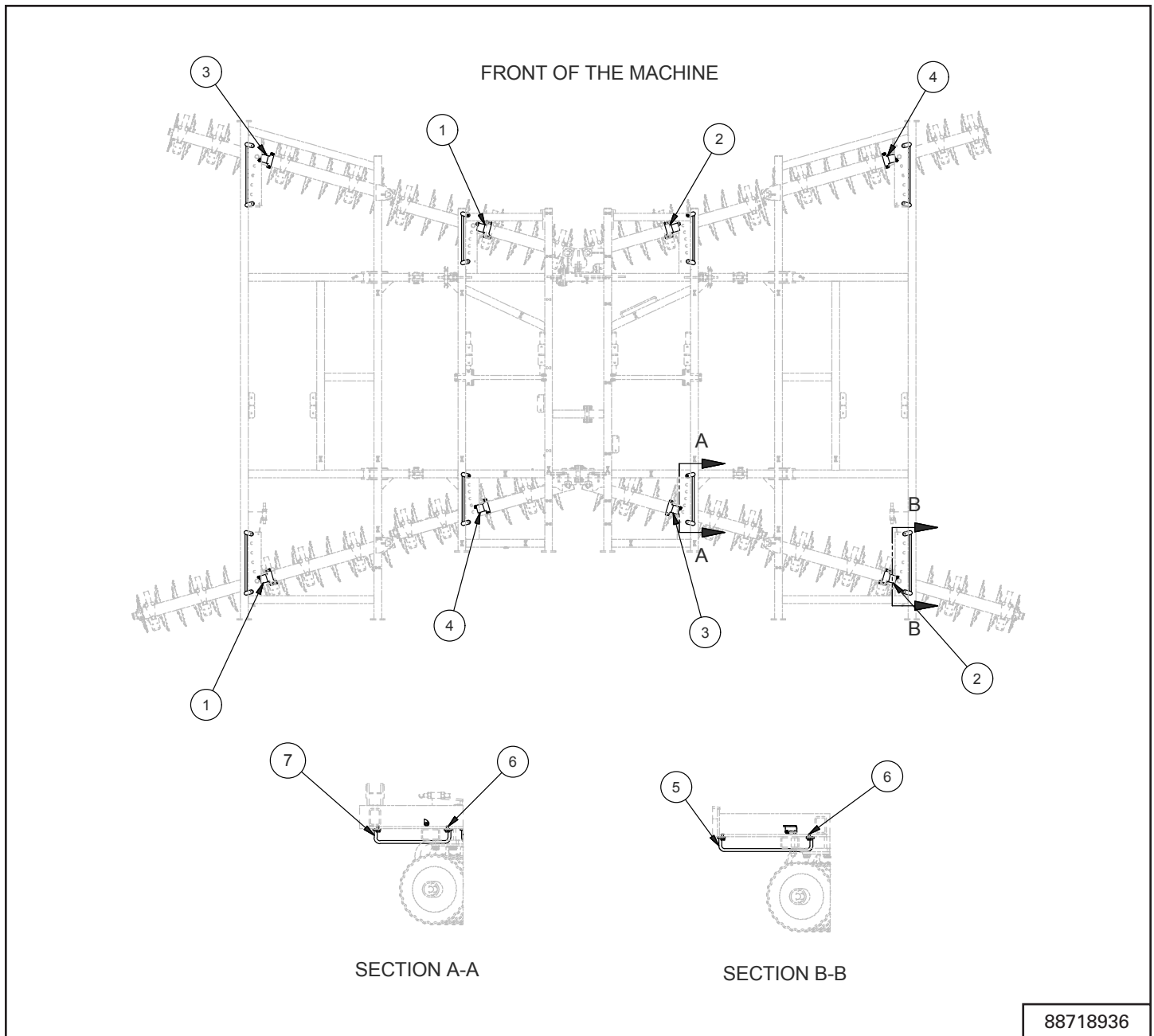
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716115	BEARING MNT -ASSY GNG ROLLER LH	4
2	88717049	BEARING MNT -ASSY GNG ROLLER RH	4
3	88715952	BAR-WA GANG SUPPORT	4
4	EZB075015	3/4 X 1-1/2 NC HEX BOLLT	16
5	88718931	BAR-WA GANG SUPPORT W WING	4

GANG ANGLE ROLLER - VT3375 - 8 IN. SPACING



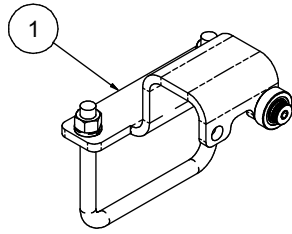
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716115	BEARING MNT -ASSY GNG ROLLER LH	4
2	88717049	BEARING MNT -ASSY GNG ROLLER RH	4
3	88715952	BAR-WA GANG SUPPORT	4
4	EZB075015	3/4 X 1-1/2 NC HEX BOLLT	16
5	88718931	BAR-WA GANG SUPPORT W WING	4

GANG ANGLE ROLLER - VT3375 - 9 IN. SPACING

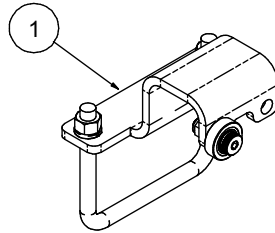


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716563	BEARING MNT- ASSY GB ADJUST LH	2
2	88716560	BEARING MNT- ASSY GB ADJUST RH	2
3	88717049	BEARING MNT -ASSY GNG ROLLER RH	2
4	88716115	BEARING MNT -ASSY GNG ROLLER LH	2
5	88718931	BAR-WA GANG SUPPORT W WING	4
6	EZB075015	3/4 X 1-1/2 NC HEX BOLLT	16
7	88715952	BAR-WA GANG SUPPORT	4

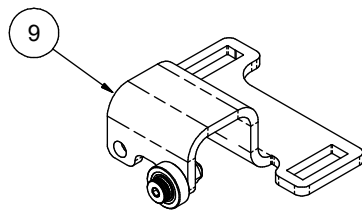
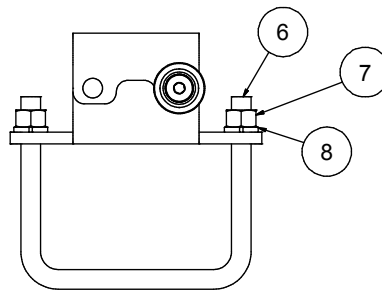
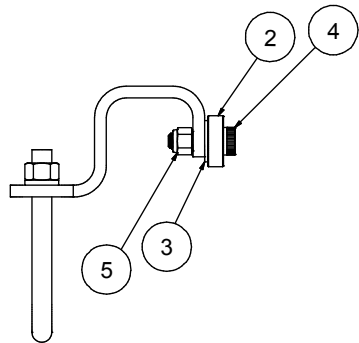
GANG ANGLE ROLLER ASSEMBLY



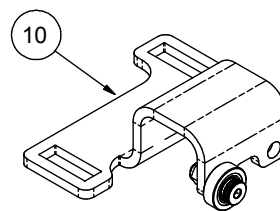
GANG ROLLER RH



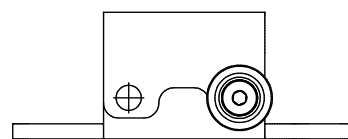
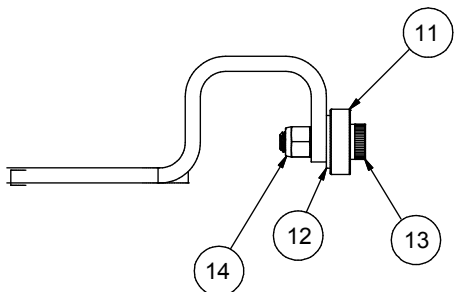
GANG ROLLER LH



GANG ROLLER
ADJUSTABLE RH



GANG ROLLER
ADJUSTABLE LH

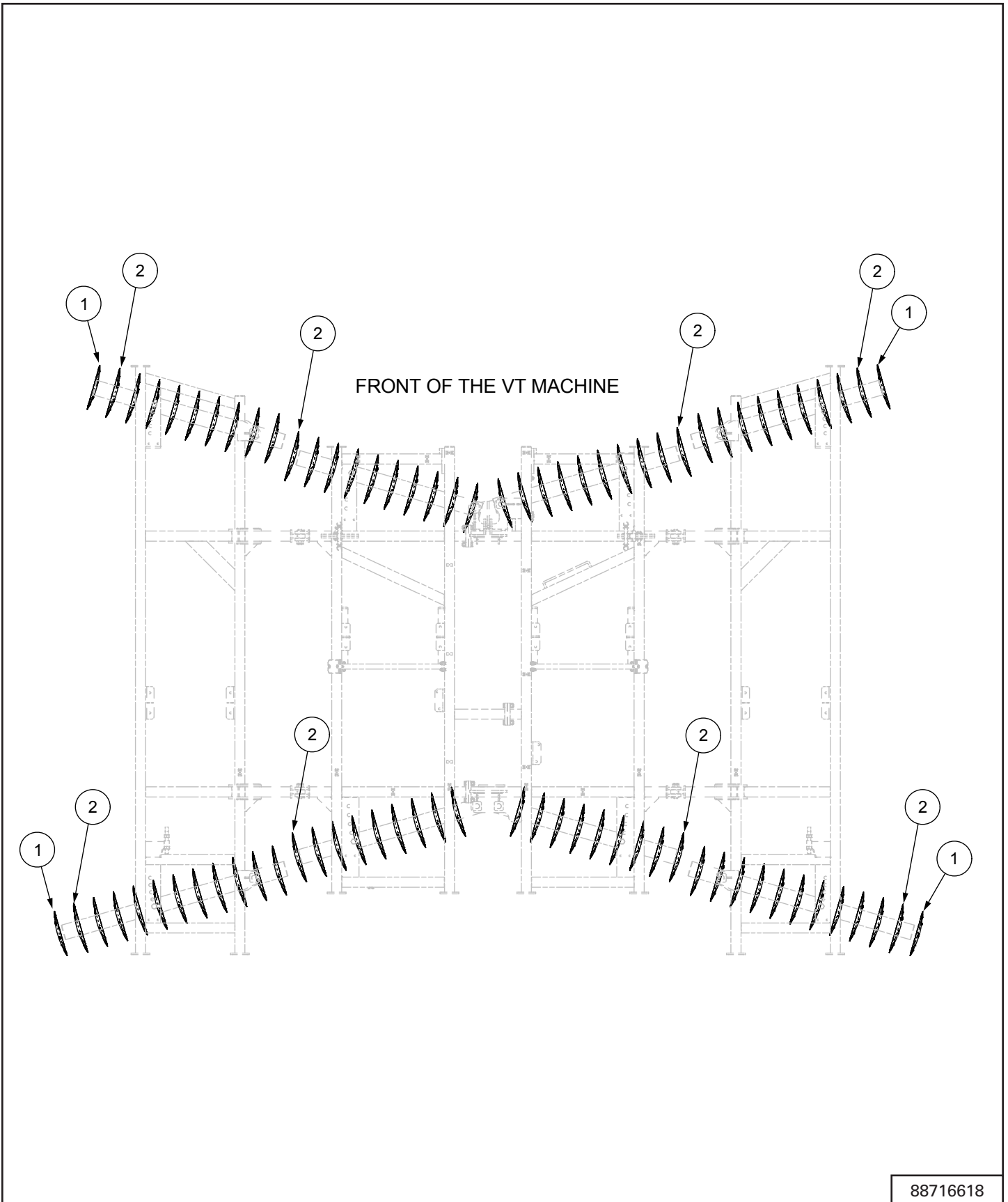


88717049

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88716114	PLATE - GANG ADJUST BEARING MOUNT VT	*
2	88716117	BEARING- GANG ADJUST VT	*
3	87365	WASHER - SAE, PL, 5/8"	*
4	88716561	BOLT- SHOLDER 5/8X1.0	*
5	EZBN050L	NUT HEX LOCK NYL 1/2 NC ZNCR	*
6	EZPL83773	UBOLT-5/8X5.5X6.06X1.5 GR5 PL	*
7	EZBN062	N G5 P 5/8 86505599	*
8	EZBW062L	LW P 5/8 86505602	*
9	88716559	PLATE-GB BEARING MNT RH VT	*
10	88716562	PLATE-GB BEARING MNT LH VT	*
11	88716117	BEARING- GANG ADJUST VT	*
12	87365	WASHER - SAE, PL, 5/8"	*
13	88716561	BOLT- SHOLDER 5/8X1.0	*
14	EZBN050L	NUT HEX LOCK NYL 1/2 NC ZNCR	*

* AS REQUIRED

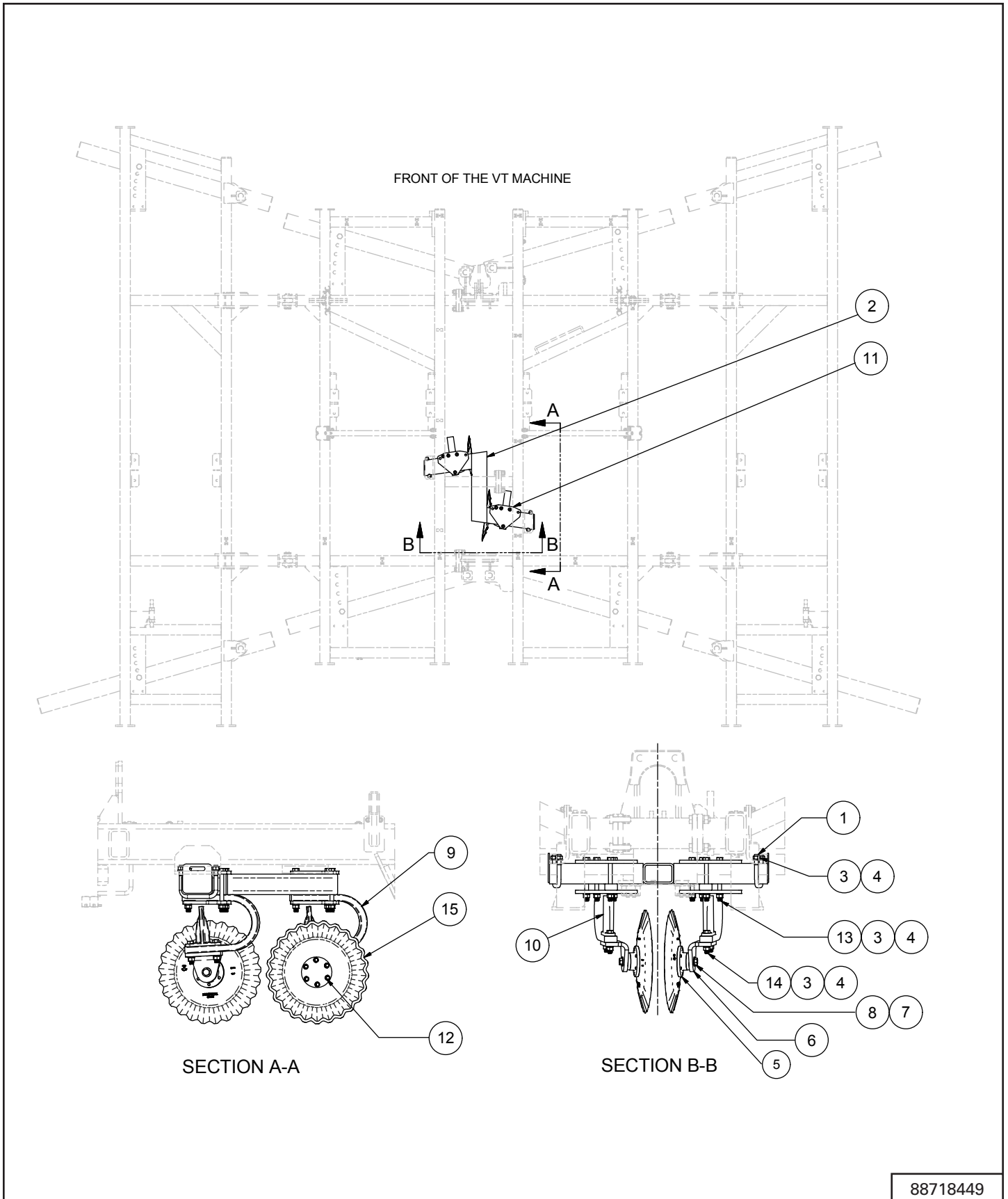
BLADES



88716618

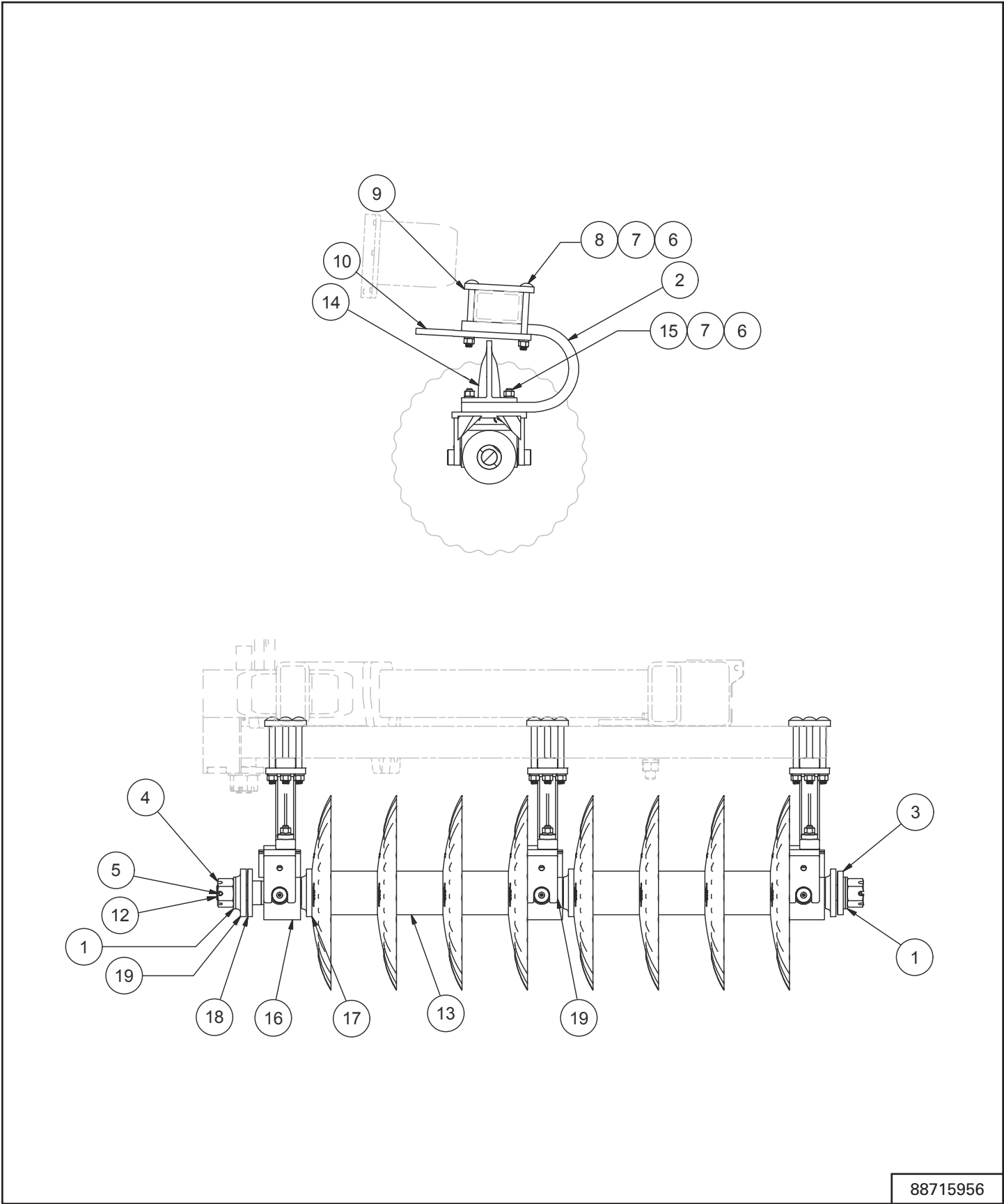
ITEM	PART NUMBER	DESCRIPTION	QTY.
VT3290 - 8" SPACING			
1	88716937	BLADE - SOILRAZOR 0.20 18	4
	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716589	BLADE - SOILRAZOR 0.25 20	78
	88716229	BLADE - SOILRAZOR 0.256 22	78
VT3290 - 9" SPACING			
1	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716229	BLADE - SOILRAZOR 0.256 22	70
VT3320 - 8" SPACING			
1	88716937	BLADE - SOILRAZOR 0.20 18	4
	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716589	BLADE - SOILRAZOR 0.25 20	86
	88716229	BLADE - SOILRAZOR 0.256 22	86
VT3320 - 9" SPACING			
1	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716229	BLADE - SOILRAZOR 0.256 22	78
VT3345 - 8" SPACING			
1	88716937	BLADE - SOILRAZOR 0.20 18	4
	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716589	BLADE - SOILRAZOR 0.25 20	94
	88716229	BLADE - SOILRAZOR 0.256 22	94
VT3345 - 9" SPACING			
1	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716229	BLADE - SOILRAZOR 0.256 22	86
VT3375 - 8" SPACING			
1	88716937	BLADE - SOILRAZOR 0.20 18	4
	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716589	BLADE - SOILRAZOR 0.25 20	102
	88716229	BLADE - SOILRAZOR 0.256 22	102
VT3375 - 9" SPACING			
1	88716589	BLADE - SOILRAZOR 0.25 20	4
2	88716229	BLADE - SOILRAZOR 0.256 22	94

CENTER BLADE



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDG13145	U-BOLT 3/4-10X6-7/8ZNCR	2
2	88718399	GB-WA CENTER BLADE VT	1
3	EZBN075	NUT HEX 3/4 NC GR5 ZNCR	16
4	EZBW075L	WASHER LOCK 3/4X1-1/4X3/16ZNCR	16
5	88717274	BEARING - 40MM A438	2
6	88718392	BRAKET-CENTER BLADE MNT VT	2
7	88717786	WASHER-HARD P 21 ID X 45 OD	2
8	88717730	BOLT- M20 X 1.5 X 40LG	2
9	EZDG5313	HANGER-STONE FLEX	2
10	88712866	STOP - STONEFLEX HANGER	2
11	88718395	PLATE-CB BASE VT	4
12	9804266	CSFL8.8PM12X25 86505674	12
13	EZB075080	3/4 X 8 NC HEX BOLT	8
14	EZB075040	3/4 X 4.0 NC HEX BOLT	4
15	88718101	CENTER BLADE - SOILRAZOR 0.25 20	2
	88718102	CENTER BLADE - SOILRAZOR 0.25 22	2

GANG, BEARING, & HANGER ASSEMBLY - 8 IN. SPACING

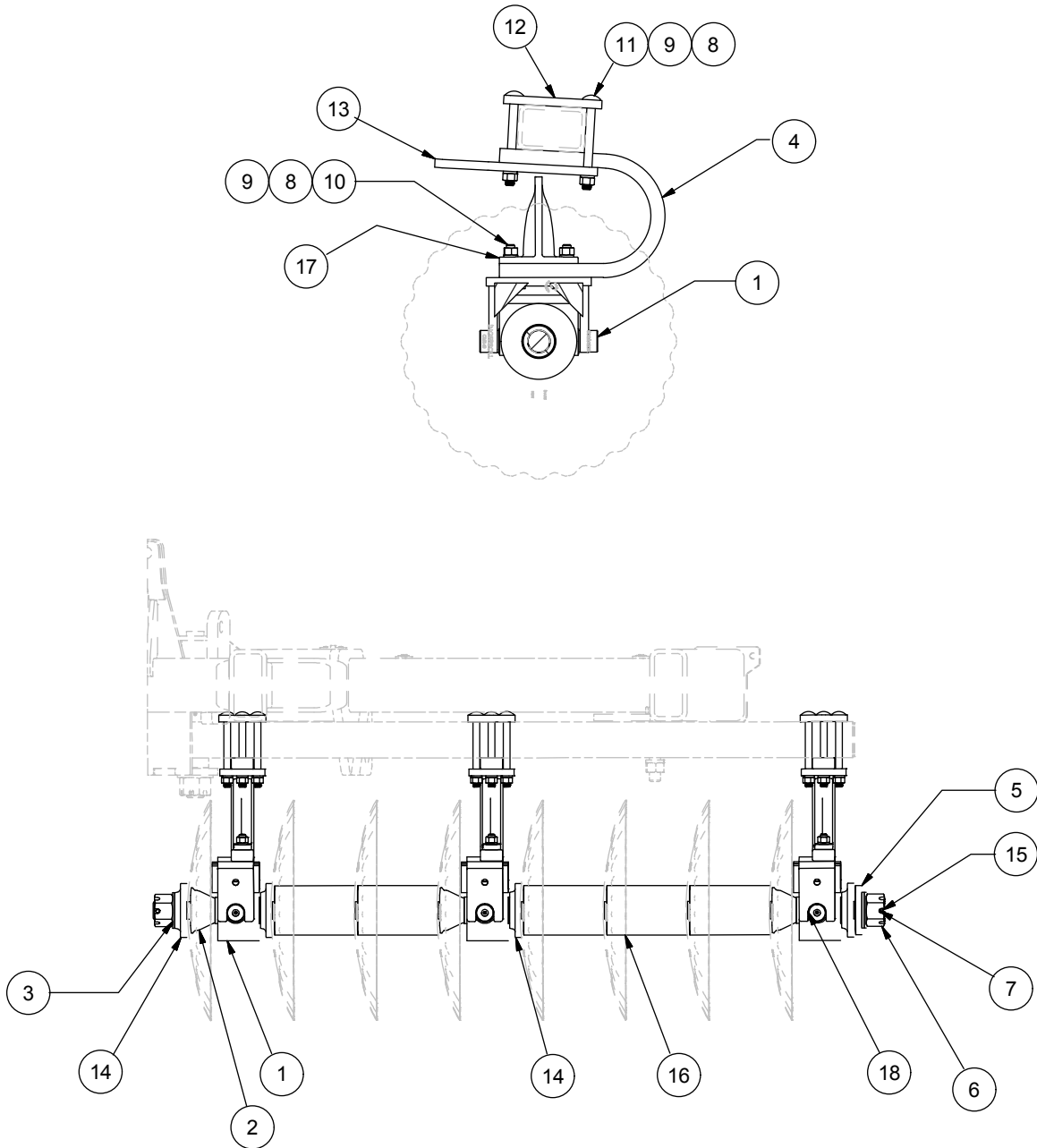


88715956

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDG89	WASHER-SHIM	*
2	EZDG5313	HANGER-STONE FLEX	*
3	EZDG13185	WASHER - 215 OUTBOARD	*
4	EZDG12252	NUT - HEAVY HEX SLOTTED 2 NC GR5 ZNCR	*
5	EZDG10310	PIN-LOCK DISC GANG	*
6	EZBN075	NUT HEX 3/4 NC GR5 ZNCR	*
7	EZBW075L	WASHER LOCK 3/4X1-1/4X3/16ZNCR	*
8	88716588	CB G5 P 0.75X8.00 86505609	*
9	88716587	PLATE- HNGR MNT VT	*
10	88716586	PLATE- MNT HANGER SCRAPER BAR VT	*
12	88718388	GANG BOLT 48.5 - 6 BLADE GANG	*
	88718389	GANG BOLT 64.75 - 8 BLADE GANG	*
	88715895	GANG BOLT 73 - 9 BLADE GANG	*
	88715896	GANG BOLT 81.25 - 10 BLADE GANG	*
	88718383	GANG BOLT 89.5 - 11 BLADE GANG	*
	88715897	GANG BOLT 97.5 - 12 BLADE GANG	*
	88716840	GANG BOLT 114 - 14 BLADE GANG	*
13	88715716	SPOOL-WA FULL 8 IN SP	*
14	88712866	STOP - STONEFLEX HANGER	*
15	EZB075035	BOLT HEX 3/4 NC X 3-1/2	*
16	EZDGB9900	BEARING-ASSY HSG DISC GANG	*
17	88715958	SPOOL- HALF SHORT 1-3/8 VT	*
18	88716915	SPOOL- HALF LONG 1-3/4 VT	*
19	EZDGA10570	BRACKET-W.A. STANDARD	*
-	86050059	STD GREASE -LITHIUM	*

* AS REQUIRED

GANG, BEARING, HANGER ASSEMBLY - 9 IN. SPACING

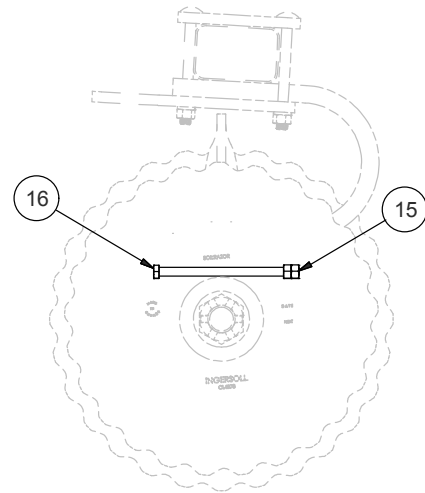
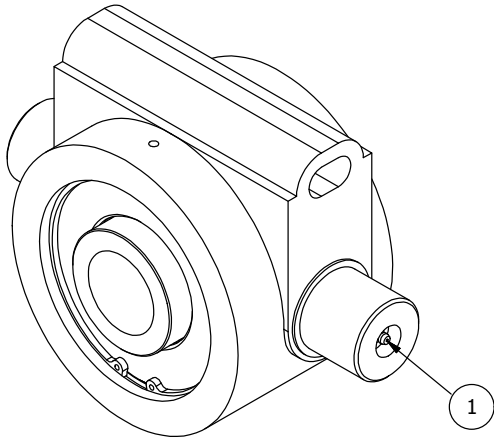


88715957

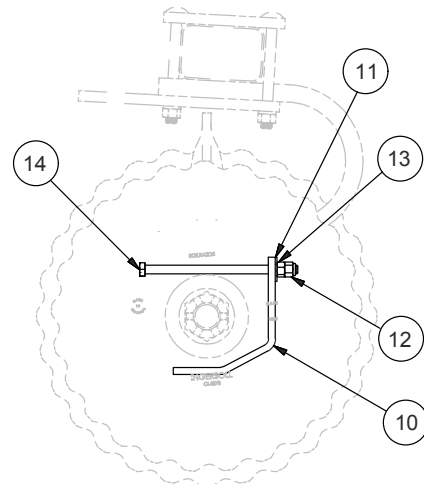
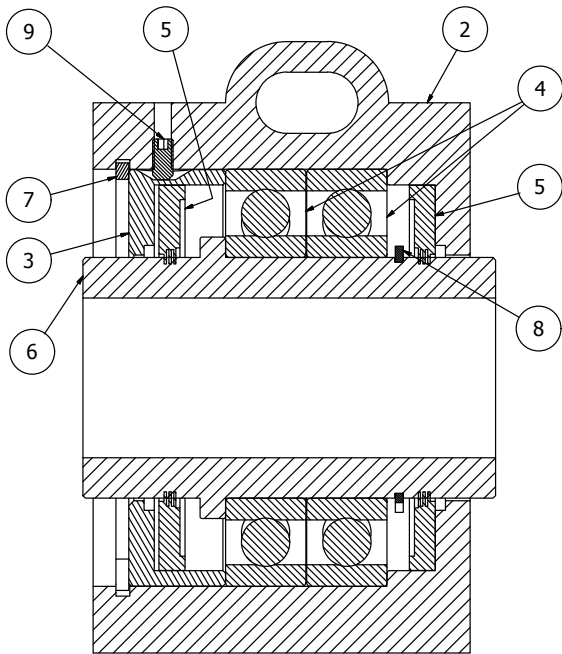
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDGB9900	BEARING-ASSY HSG DISC GANG	*
2	88715959	SPOOL- HALF LONG 2-5/8 VT	*
3	EZDG89	WASHER-SHIM	*
4	EZDG5313	HANGER-STONE FLEX	*
5	EZDG13185	WASHER - 215 OUTBOARD	*
6	EZDG12252	NUT - HEAVY HEX SLOTTED 2 NC GR5 ZNCR	*
7	EZDG10310	PIN-LOCK DISC GANG	*
8	EZBW075L	WASHER LOCK 3/4X1-1/4X3/16ZNCR	*
9	EZBN075	NUT HEX 3/4 NC GR5 ZNCR	*
10	EZB075035	BOLT HEX 3/4 NC X 3-1/2	*
11	88716588	CB G5 P 0.75X8.00 86505609	*
12	88716587	PLATE- HNGR MNT VT	*
13	88716586	PLATE- MNT HANGER SCRAPER BAR VT	*
14	88715958	SPOOL- HALF SHORT 1-3/8 VT	*
15	88718928	GANG BOLT 53.5 - 6 BLADE GANG	*
	88715894	GANG BOLT 71.75 - 8 BLADE GANG	*
	88715896	GANG BOLT 81.25 - 9 BLADE GANG	*
	88717901	GANG BOLT 90.25 - 10 BLADE GANG	*
	88715898	GANG BOLT 99.5 - 11 BLADE GANG	*
	88716866	GANG BOLT 117.75 - 13 BLADE GANG	*
16	88715717	SPOOL-WA FULL 9 IN SP	*
17	88712866	STOP - STONEFLEX HANGER	*
18	EZDGA10570	BRACKET-W.A. STANDARD	*
-	86050059	STD GREASE -LITHIUM	*

* AS REQUIRED

BEARINGS & WEAR GUARDS



MOUNTING BOLT
W/O WEAR PLATE

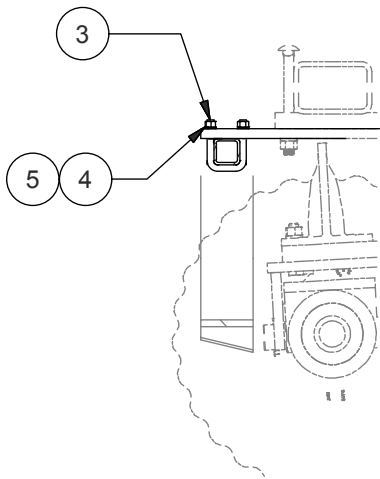
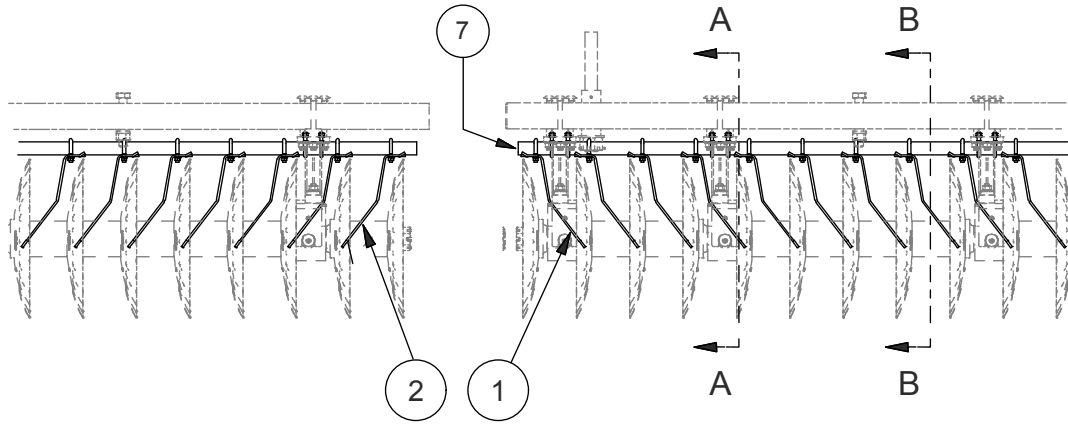


MOUNTING BOLT
W/ WEAR PLATE

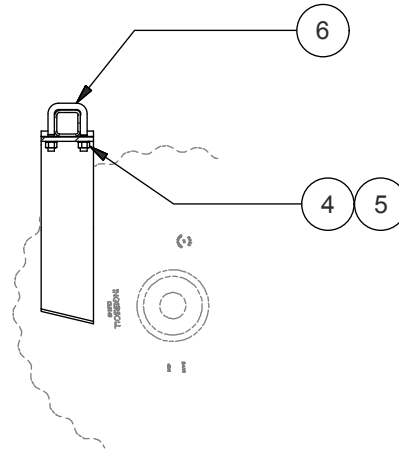
EZDGB9900

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZ10GN1	FITTING 1/4 UNF ST ZERK	2
2	EZDG9901	HOUSING-BEARING T2-215	1
3	EZDG9902	CAP-BEARING HOUSING	1
4	EZDG9904	BEARING-BALL T2-215	2
5	EZDG9905	SEAL-BEARING T2-215	2
6	EZDG9906	SLEEVE-BEARING	1
7	EZDG9910	RING-RETAINING INT 130MM OD	1
8	EZDG9911	RING-RETAINING EXT 72MM ID	1
9	EZDG9912	SCREW SET 1/4 NF X 1/2	1
10	EZDG10590	PLATE-SAND GUARD STONE FLEX	1
11	EZB062110	BOLT HEX CAP 5/8NCX11 GR5 ZNCR	1
12	EZBW17506812F	WSHR FLT 11/16X1-3/4X1/8 ZNCR	1
13	EZBN062	N G5 P 5/8 86505599	1
14	EZBN062L	NUT LOCK NYLON 5/8 NC	1
15	EZBN062	N G5 P 5/8 86505599	2
16	EZB062100	BOLT HEX CAP 5/8NCX10 GR5 ZNCR	1

SCRAPERS STANDARD



SECTION A-A



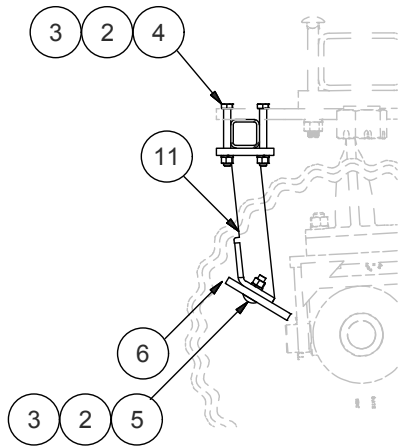
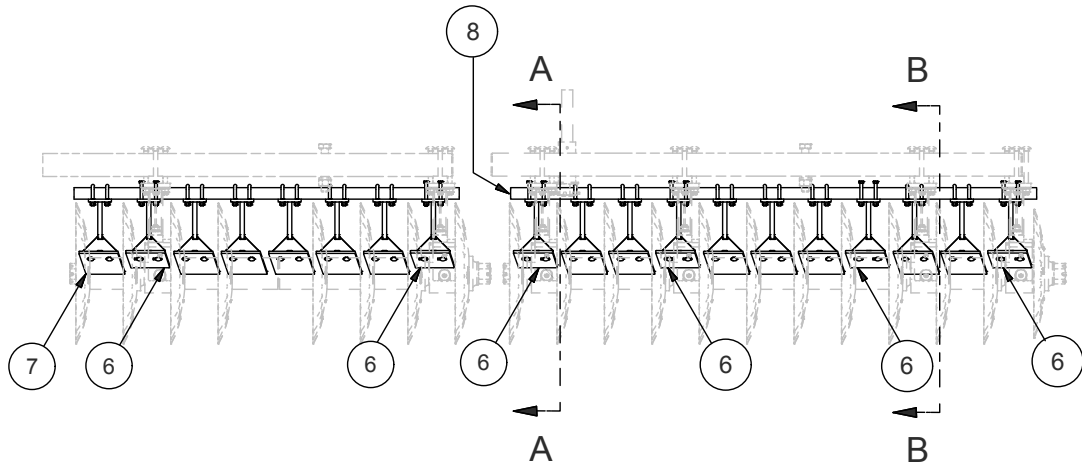
SECTION B-B

88718018

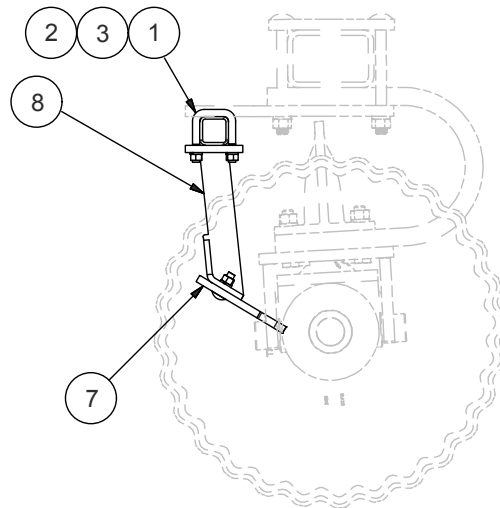
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88717495	SCRAPER-F/L & R/R STD .313	*
2	88717496	SCRAPER-F/R & R/L STD .313	*
3	88717929	UBOLT - 0.5X3.44X2.5 ZNCR	*
4	EZBN050	NUT HEX 1/2 NC ZNCR	*
5	EZBW050L	WASHER LOCK 1/2X7/8X1/8 ZNCR	*
6	EZDG5308	U-BOLT 1/2-13X2-1/2ZNCR	*
7	EZDS41	TUBE-SCRAPER BAR 41 - 6 BLADE GANG	*
	EZDS49	TUBE-SCRAPER BAR 49 - 6 BLADE GANG	*
	EZDS52	TUBE-SCRAPER BAR 52 - 8 BLADE GANG	*
	EZDS58	TUBE-SCRAPER BAR 58 - 8 BLADE GANG	*
	EZDS65	TUBE-SCRAPER BAR 65.5 - 8 BLADE GANG	*
	EZDS69	TUBE-SCRAPER BAR 69 - 9 BLADE GANG	*
	EZDS73	TUBE-SCRAPER BAR 73 - 9 BLADE GANG	*
	EZDS76	TUBE-SCRAPER BAR 76-1/2 - 10 BLADE GANG	*
	EZDS84	TUBE-SCRAPER BAR 84 - 11 BLADE GANG	*
	EZDS87	TUBE-SCRAPER BAR 87 - 12 BLADE GANG	*
	EZDS91	TUBE-SCRAPER BAR 91.5 - 12 BLADE GANG	*
	EZDS93	TUBE-SCRAPER BAR 93 - 12 BLADE GANG	*
	EZDS106	TUBE-SCRAPER BAR 106 - 13 BLADE GANG	*
	EZDS109	TUBE-SCRAPER BAR 109 - 14 BLADE GANG	*
EZDS110	TUBE-SCRAPER BAR 110 - 13 BLADE GANG	*	

*AS REQUIRED

SCRAPERS HEAVY DUTY



SECTION A-A



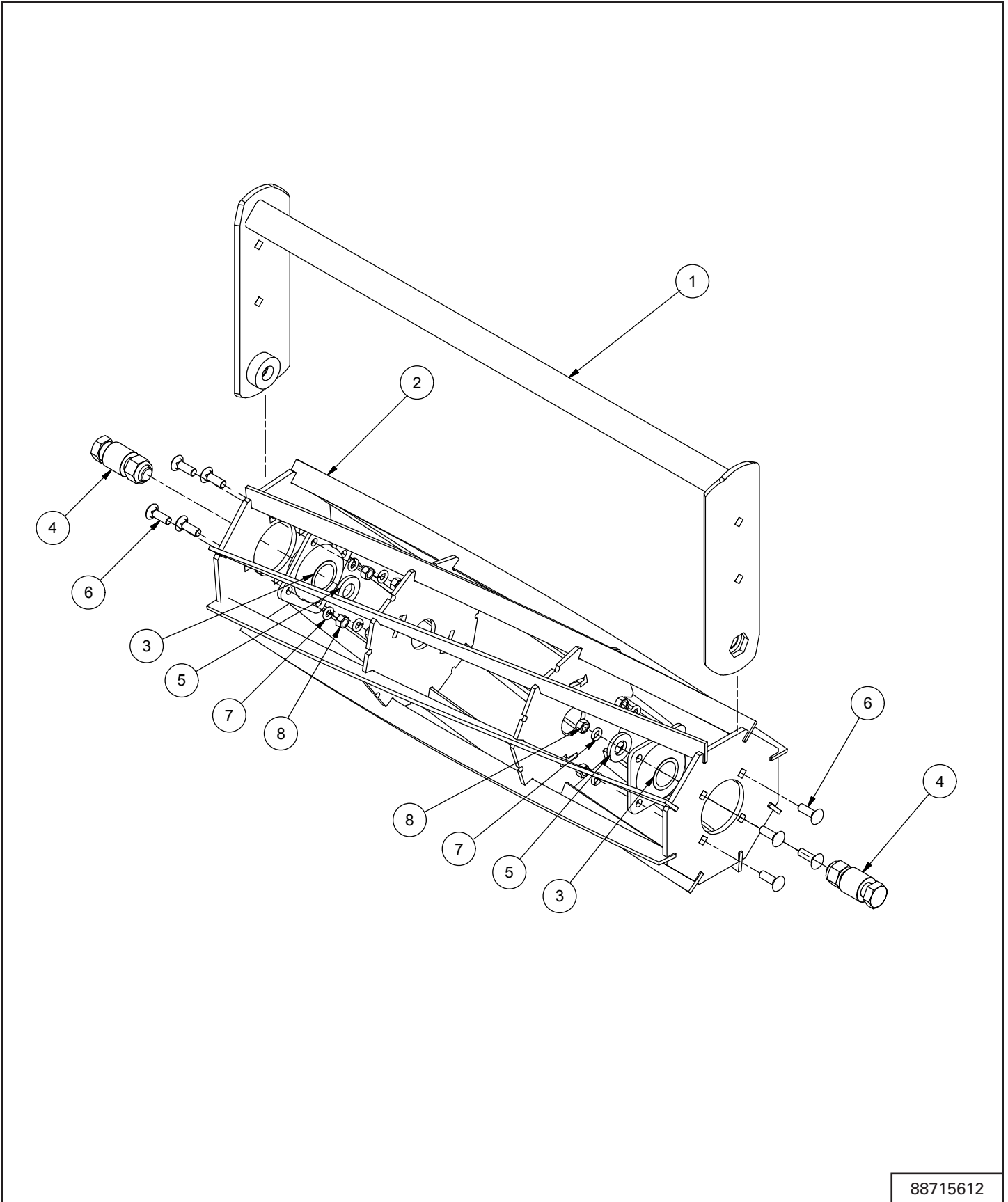
SECTION B-B

88715946

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDG5308	U-BOLT 1/2-13X2-1/2ZNCR	*
2	EZBW050L	WASHER LOCK 1/2X7/8X1/8 ZNCR	*
3	EZBN050	NUT HEX 1/2 NC ZNCR	*
4	EZB050040	BOLT HEX 1/2 NC X 4	*
5	EZB050017C	1/2 X 1-3/4 NC CARR BOLT	*
6	88716960	PLATE-SCRAPER 8 SP BEARING	*
	88716974	PLATE-SCRAPER 9 SP BEARING	*
7	88716959	PLATE- SCRAPER 8 SP SPOOL	*
	88716973	PLATE- SCRAPER 9 SP SPOOL	*
8	88716954	SCRAPER - W.A. BODY	*
9	EZDS41	TUBE-SCRAPER BAR 41 - 6 BLADE GANG	*
	EZDS49	TUBE-SCRAPER BAR 49 - 6 BLADE GANG	*
	EZDS55	TUBE-SCRAPER BAR 55 - 8 BLADE GANG	*
	EZDS62	TUBE-SCRAPER BAR 62 - 8 BLADE GANG	*
	EZDS67	TUBE-SCRAPER BAR 67 - 9 BLADE GANG	*
	EZDS69	TUBE-SCRAPER BAR 69 - 9 BLADE GANG	*
	EZDS72	TUBE-SCRAPER BAR 72 - 10 BLADE GANG	*
	EZDS80	TUBE-SCRAPER BAR 81.5 - 11 BLADE GANG	*
	EZDS87	TUBE-SCRAPER BAR 87 - 12 BLADE GANG	*
	EZDS90	TUBE-SCRAPER BAR 90 - 12 BLADE GANG	*
	EZDS91	TUBE-SCRAPER BAR 91.5 - 12 BLADE GANG	*
	EZDS106	TUBE-SCRAPER BAR 106 - 14 BLADE GANG	*
	EZDS107	TUBE-SCRAPER BAR 107 - 13 BLADE GANG	*
EZDS109	TUBE-SCRAPER BAR 109 - 13 BLADE GANG	*	

*AS REQUIRED

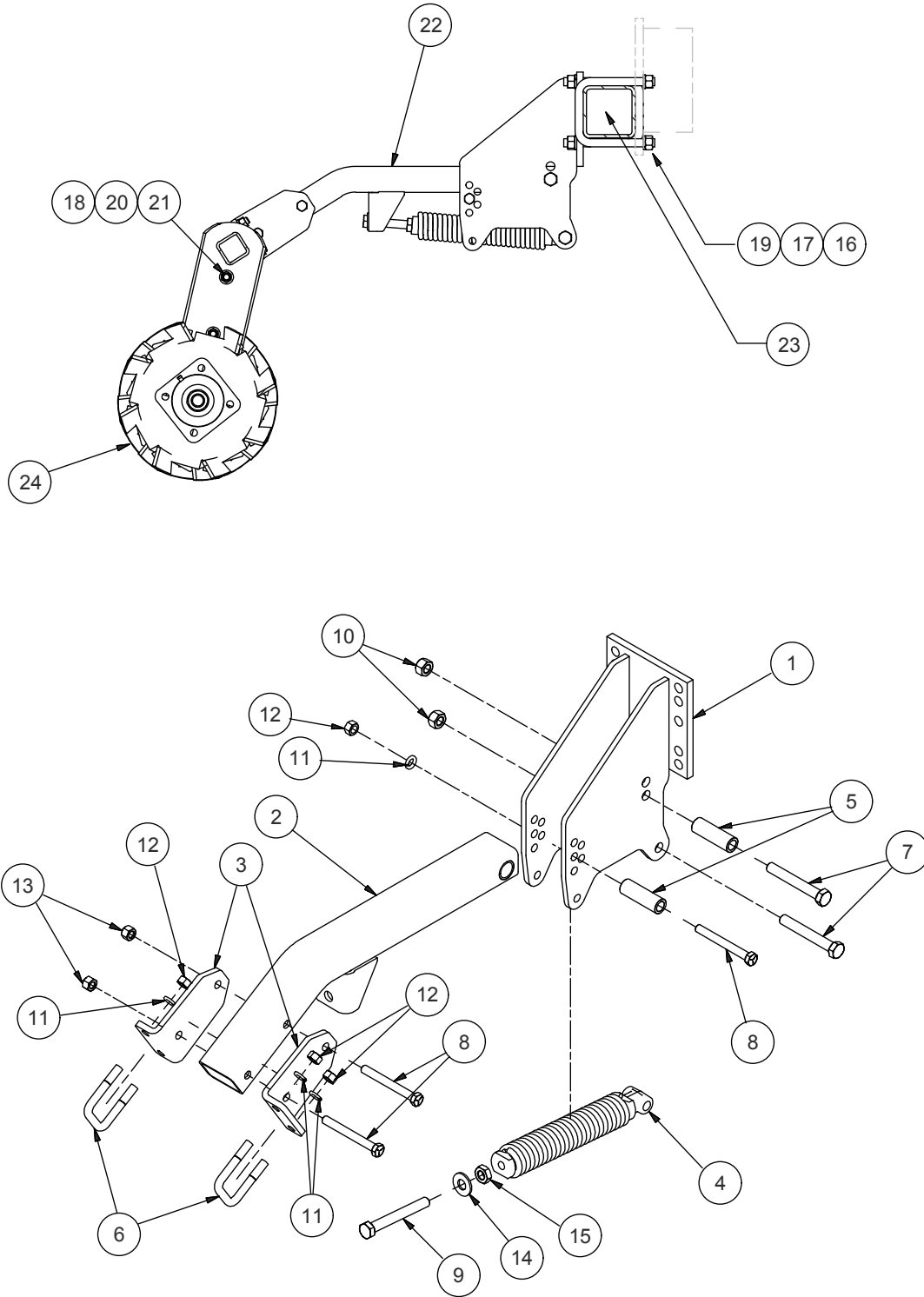
ROLLING BASKET



88715612

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88718586	FRAME-W.A. REM BASKET 3FT-6IN	1
	88718587	FRAME-W.A. REM BASKET 4FT-3IN	1
	88718588	FRAME-W.A. REM BASKET 5FT-0IN	1
2	88718591	ROLLER-W.A. REM BASKET 3FT-6IN	1
	88718592	ROLLER-W.A. REM BASKET 4FT-3IN	1
	88718593	ROLLER-W.A. REM BASKET 5FT-0IN	1
3	88718572	BEARING-ASSY FLANGED REM BASKET	2
4	88718573	SPACER-ASSY REM BASKET BEARING	2
5	EZBW20010325F	WASHER-2ODX1.031IDX.25THK	2
6	EZB050012C	BOLT-CARRIAGE .50 UNC X 1.25	8
7	EZBW050L	WASHER LOCK 1/2X7/8X1/8 ZNCR	8
8	EZBN050	NUT HEX 1/2 NC ZNCR	8

ROLLING BASKET MOUNT

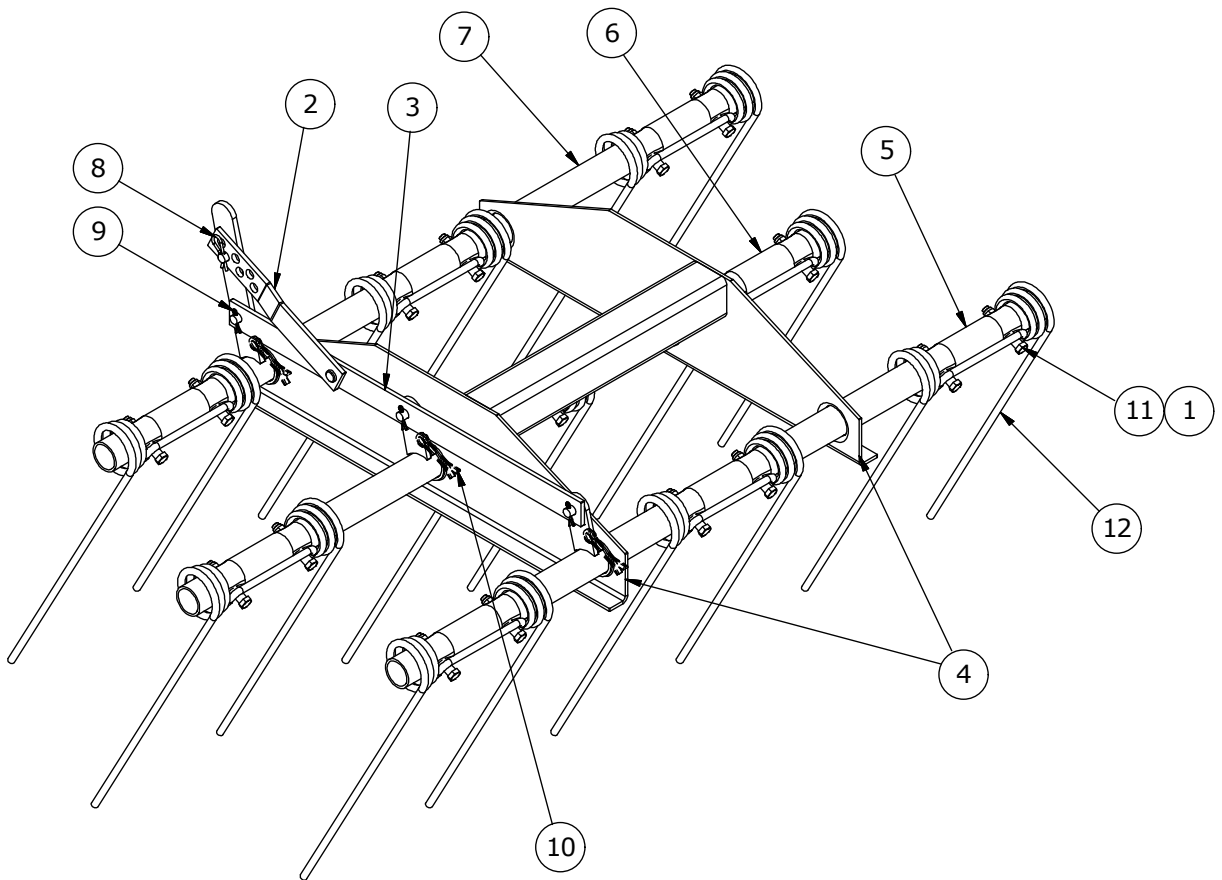


88716011

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88718583	BRACKET-W.A. REM BASKET PIVOT W/6" DROP	*
2	88718584	ARM-W.A. REM BASKET MNT	*
3	88718585	BRACKET-REM BASKET GANG	*
4	88718571	SPRING-ASSY REM BASKET MNT ARM	*
5	88718582	BUSHING-REM BASKET ARM	*
6	EZDG5308	U-BOLT 1/2-13X2-1/2ZNCR	*
7	EZB062045	BOLT HEX 5/8NC X 4.5 ZNC	*
8	EZB050045	BOLT HEX CAP1/2NCX4-1/2GR5ZNCR	*
9	88718658	BOLT HEX 5/8 NC X 5 FULL THREAD	*
10	85700693	LOCKNUT 5/8-11 TOP LOCK GRC PL	*
11	EZBW050L	WASHER LOCK 1/2X7/8X1/8 ZNCR	*
12	EZBN050	NUT HEX 1/2 NC ZNCR	*
13	88713528	TOP LOCK NUT, GRADE C, P, .50	*
14	EZBW15006812F	1-1/2 OD X 11/16/ ID X 1/8	*
15	EZBN062J	5/8 NC JAM NUT	*
16	EZDG6080	SQUARE BEND U-BOLT 5/8 X 4-11/16	*
17	EZBW062L	LW P 5/8 86505602	*
18	EZBW050F	FLATWASHER - 1/2" SAE PLATED	*
19	EZBN062	N G5 P 5/8 86505599	*
20	EZBN050L	NUT HEX LOCK NYL 1/2 NC ZNCR	*
21	88717024	BOLT-G8 .50 UNC X 1.25	*
22	88715613	ARM-ASSY BASKET MTG	*
23	88717202	TUBE - SUPPORT 69	*
	88717098	TUBE - SUPPORT 80	*
	88718940	TUBE - SUPPORT 94	*
	88718942	TUBE - SUPPORT 116	*
	88718948	TUBE - SUPPORT 145	*
24	88715612	BASKET-ASSY 12 DIA X 3.5	*
	88715606	BASKET-ASSY 12 DIA X 4.25	*
	88715607	BASKET-ASSY 12 DIA X 5	*

* AS REQUIRED

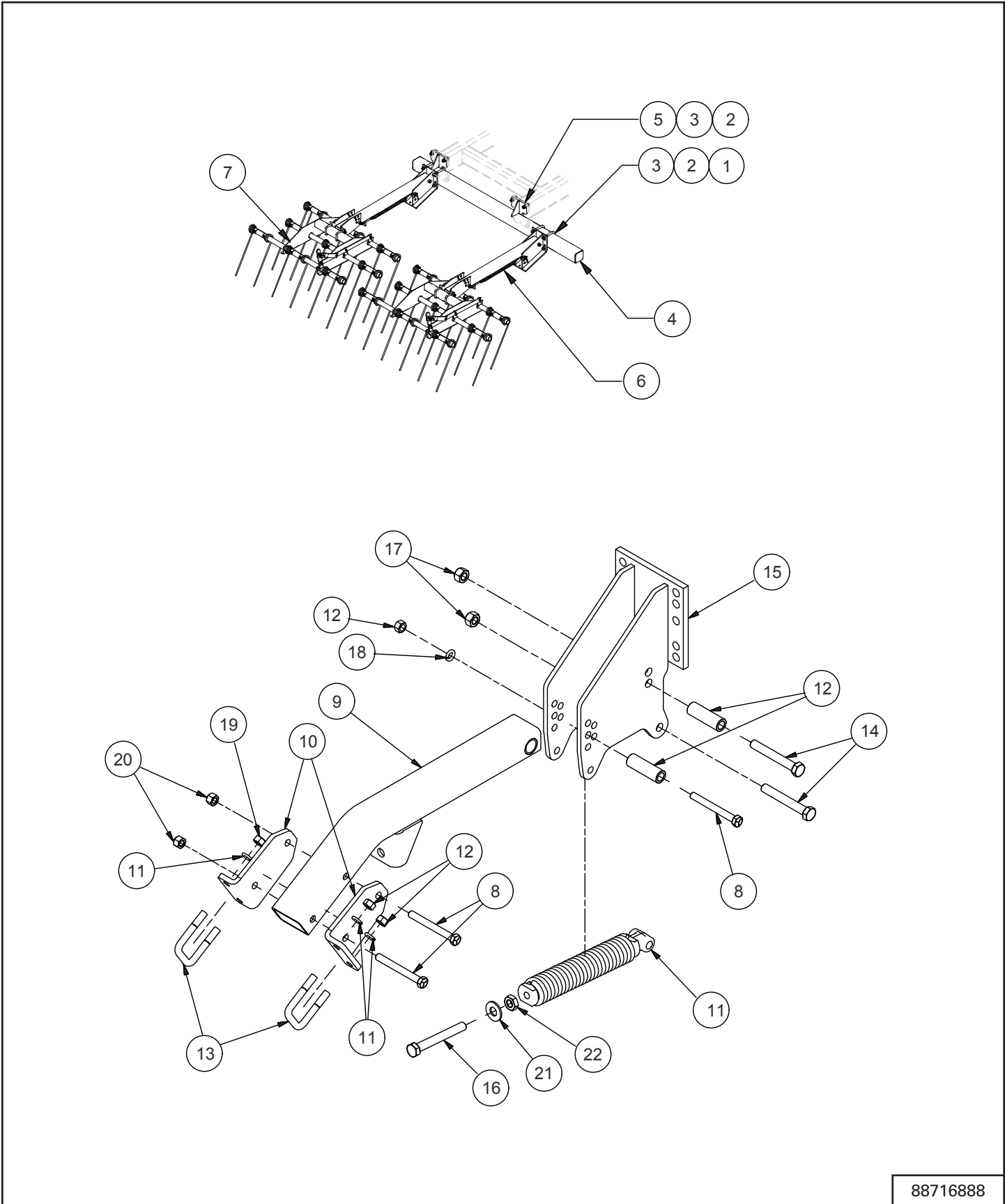
HARROW



88716635

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZBN037L	NUT HEX NYL 3/8 NC	18
2	920071	WELDT-ANGLE ADJUSTMENT	1
3	920108L	PLATE-ANGLE ADJUSTMENTTIE BAR-3 BAR	1
4	920115	WELDT-HARROW FRAME 354	1
	920100	WELDT-HARROW FRAME 372	1
5	920117	WELDT-FRONT 3 BAR 4-1/2	1
	920104	WELDT-FRONT 3 BAR 6	1
6	920118	WELDT-SECOND 3 BAR 4-1/2	1
	920105	WELDT-SECOND 3 BAR 6	1
7	920119	WELDT-REAR 3 BAR 4-1/2	1
	920106	WELDT-REAR 3 BAR 6	1
8	961012	#16 HAIR PIN CLIP	1
9	9812430	1/8" X 1" COTTER PIN (PL)	4
10	EZBP37200	COTTER PIN-3/8" X 2", PLATED	3
11	EZM80012	3/8" N.C. X 2-3/4" SPECIAL LONG HEX BOLT	18
12	88716634	HARROWTINE 18" STR	9

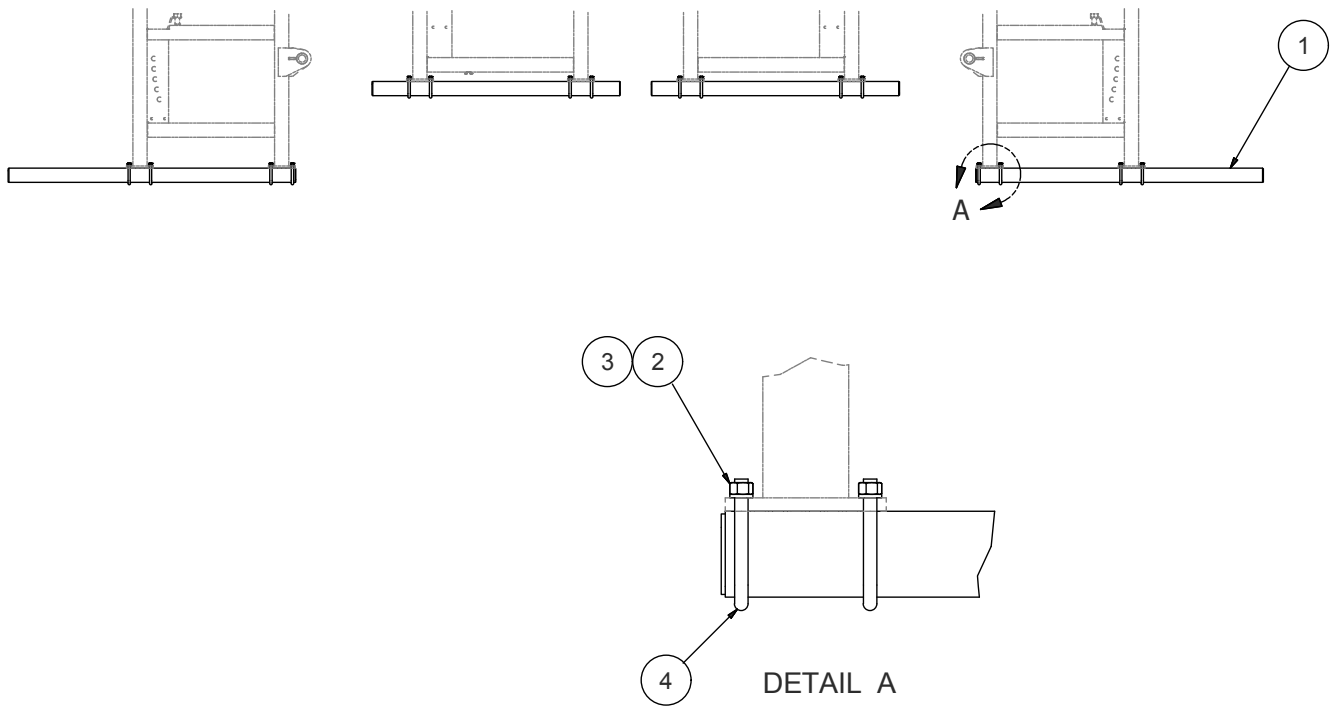
HARROW MOUNT



88716888

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZDG6080	SQUARE BEND U-BOLT 5/8 X 4-11/16	*
2	EZBW062L	LW P 5/8 86505602	*
3	EZBN062	N G5 P 5/8 86505599	*
4	88717202	TUBE - SUPORT 69	*
	88717204	TUBE - BRACKETED SUPORT RH 80	*
	88717210	TUBE - BRACKETED SUPORT LH 80	*
	88717098	TUBE - SUPORT 80	*
	88718940	TUBE - SUPORT 94	*
	88718942	TUBE - SUPORT 116	*
	88718948	TUBE - SUPORT 145	*
5	EZB062025	BOLT HEX 5/8 NC X 2 1/2	*
6	920082	HITCH-EZH301	*
7	88716635	HARROW - ASSY 51	*
	88716665	HARROW - ASSY 69	*
8	88718583	BRACKET-W.A. REM BASKET PIVOT W/6" DROP	*
9	88718584	ARM-W.A. REM BASKET MNT	*
10	88718585	BRACKET-REM BASKET GANG	*
11	88718571	SPRING-ASSY REM BASKET MNT ARM	*
12	88718582	BUSHING-REM BASKET ARM	*
13	EZDG5308	U-BOLT 1/2-13X2-1/2ZNCR	*
14	EZB062045	BOLT HEX 5/8NC X 4.5 ZNC	*
15	EZB050045	BOLT HEX CAP1/2NCX4-1/2GR5ZNCR	*
16	88718658	BOLT HEX 5/8 NC X 5 FULLTHREAD	*
17	85700693	LOCKNUT 5/8-11 TOP LOCK GRC PL	*
18	EZBW050L	WASHER LOCK 1/2X7/8X1/8 ZNCR	*
19	EZBN050	NUT HEX 1/2 NC ZNCR	*
20	88713528	TOP LOCK NUT, GRADE C, P, .50	*
21	EZBW15006812F	1-1/2 OD X 11/16/ ID X 1/8	*
22	EZBN062J	5/8 NC JAM NUT	*

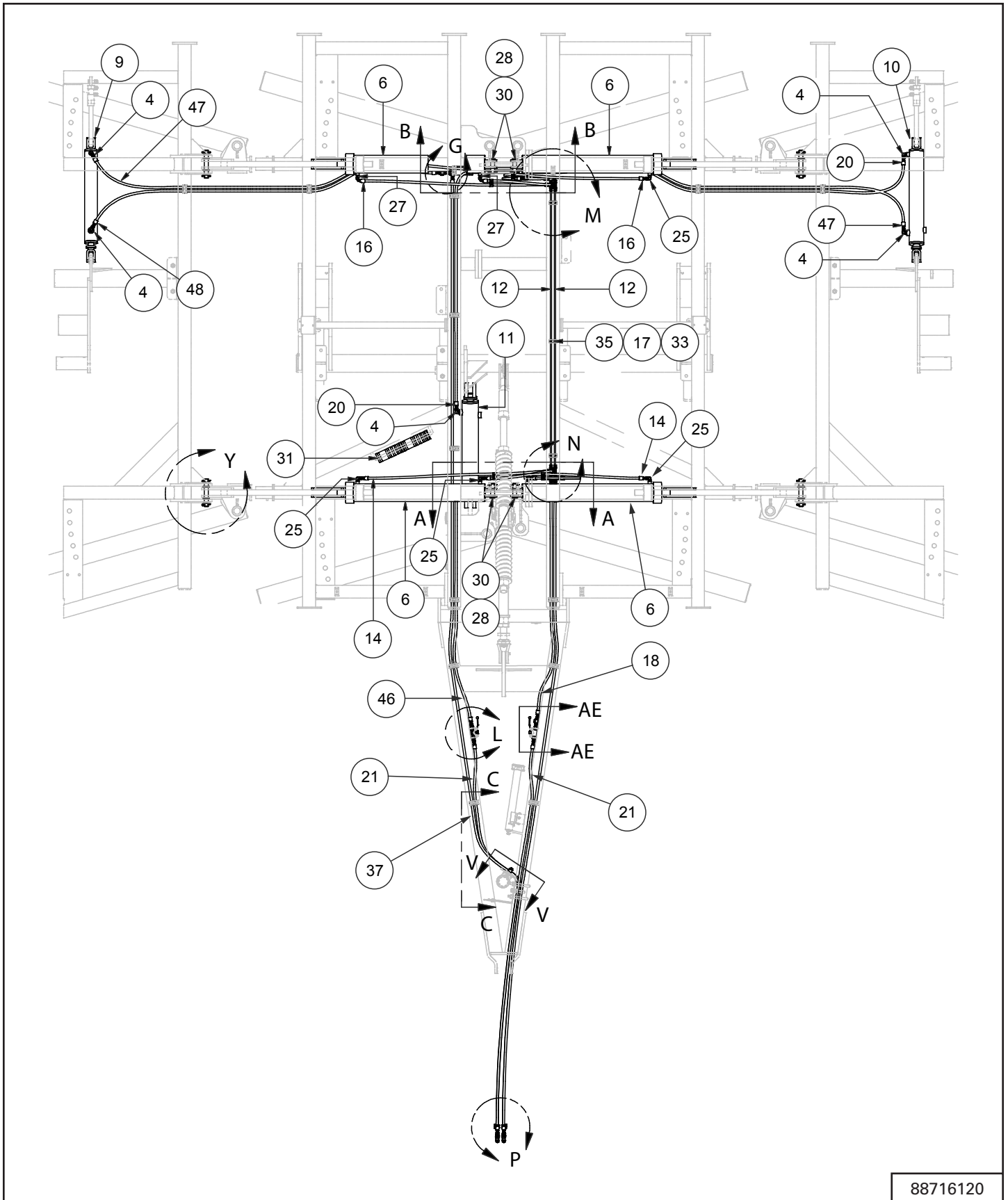
REAR ATTACHMENT MOUNTING TUBE



88718531

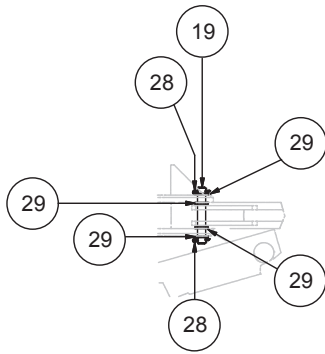
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88717098	TUBE - SUPORT 69	*
	88717202	TUBE - SUPORT 80	*
	88718942	TUBE - SUPPORT 116"	*
	88718948	TUBE - SUPPORT 145"	*
2	EZBN062	N G5 P 5/8 86505599	*
3	EZBW062L	LW P 5/8 86505602	*
4	EZDG6080	SQUARE BEND U-BOLT 5/8 X 4-11/16	*

HYDRAULICS - NARROW

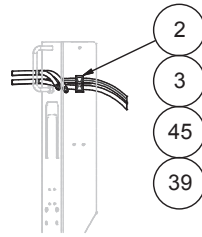


88716120

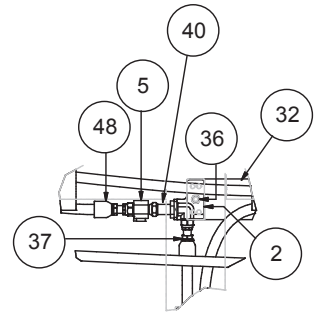
HYDRAULICS - NARROW (CONT.)



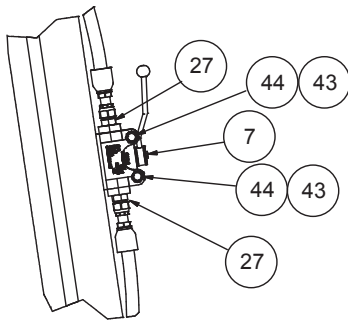
DETAIL Y



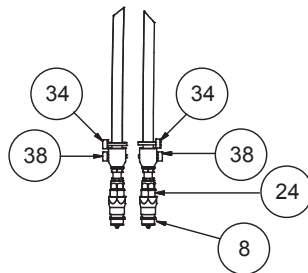
SECTION V-V



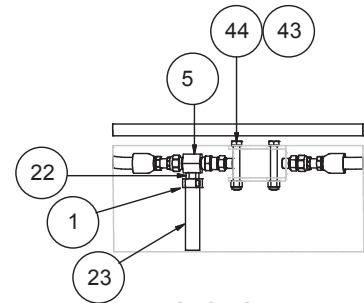
DETAIL G



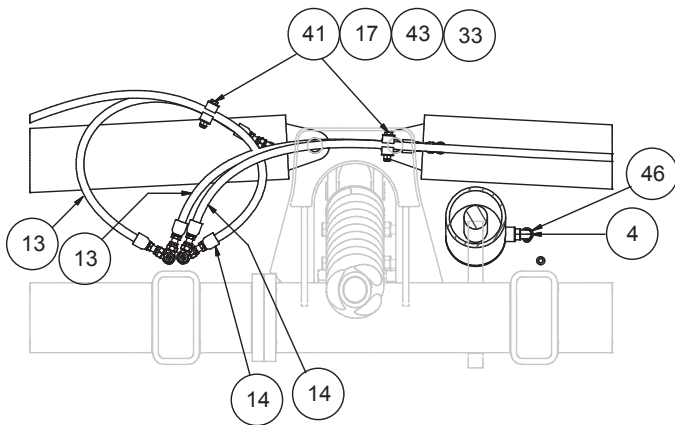
DETAIL L



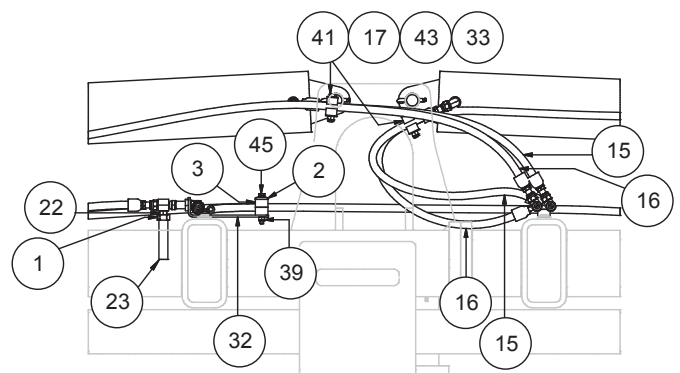
DETAIL P



SECTION AE-AE

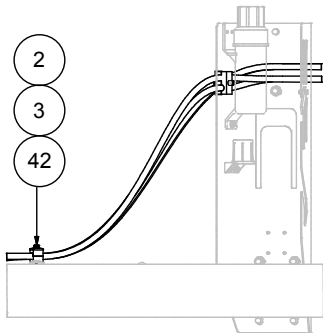


SECTION A-A

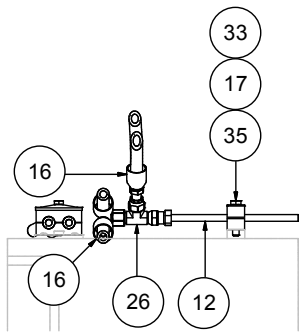


SECTION B-B

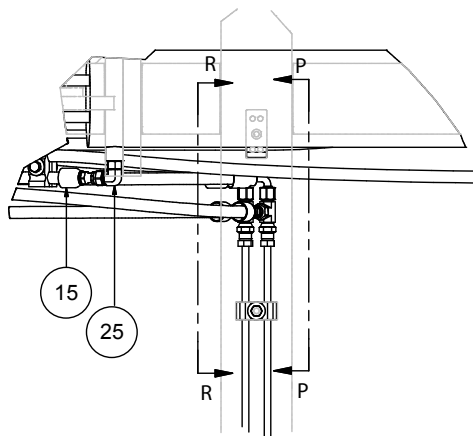
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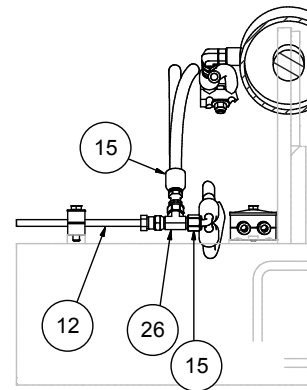
SECTION C-C



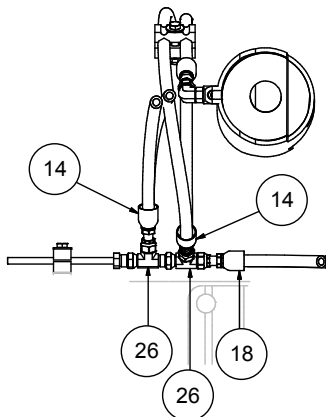
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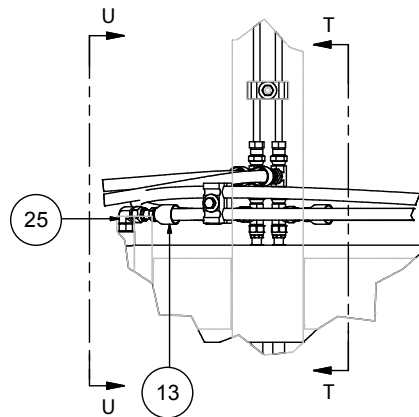
DETAIL M



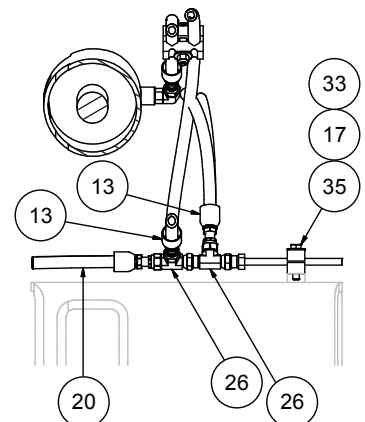
SECTION P-P



SECTION U-U



DETAIL N



SECTION T-T

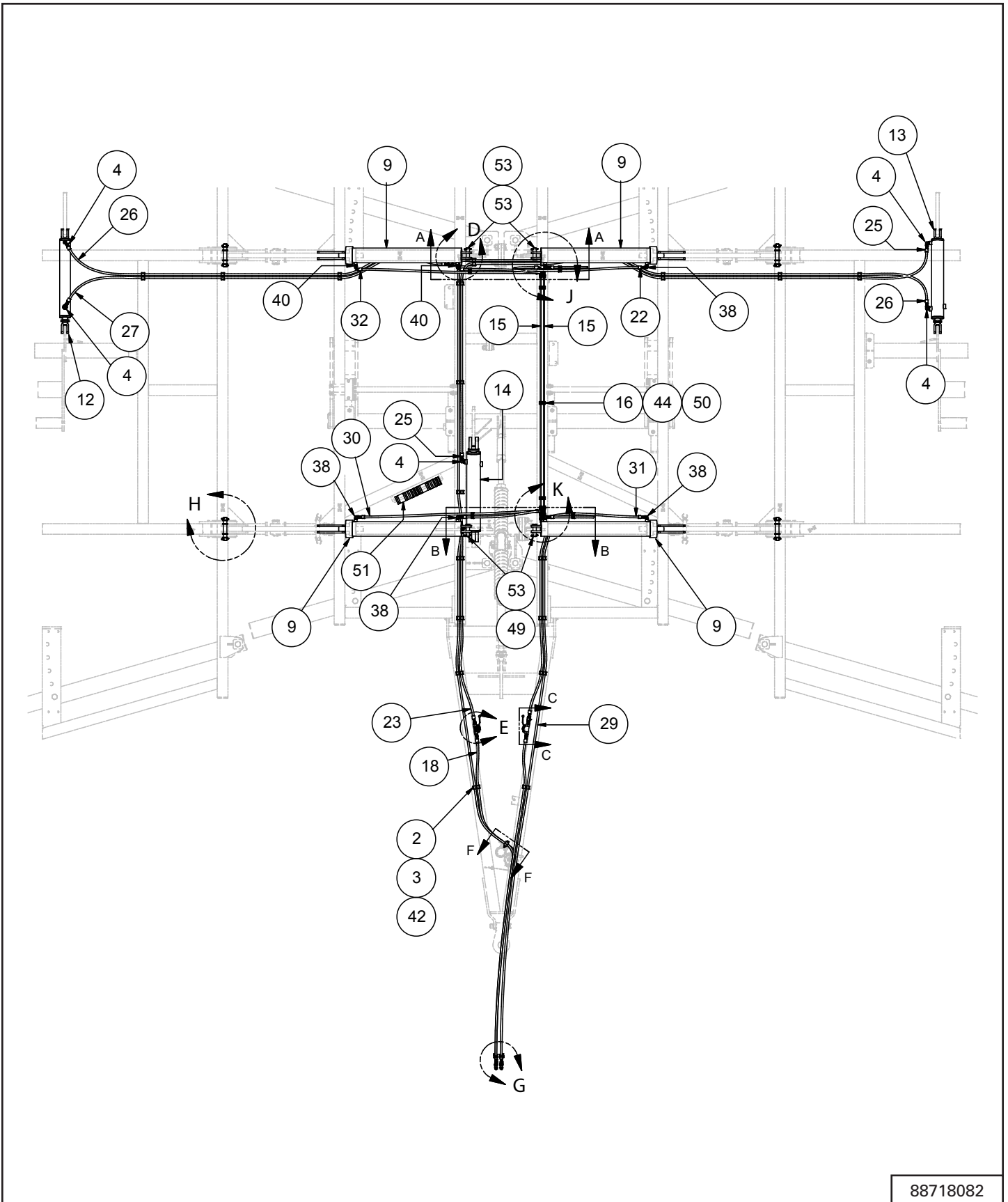
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	21193	CLAMP HOSE 14.2	2
2	29256	COVER PLATE	19
3	815608	BLOCK POLYPROPELENE 3/8 PAIR	18
4	86018376	ELBOW 90 DEGREE	6
5	86060682	-6 ORFS IN-LINE TEST PORT ADAPTER	2
6	88705034	CYL-HYD 5IN DIA X 36 STR	4
7	88705116	GE2 - SAE6 BALL VLV 2 WAY	2
8	88713042	COUPLER 1/2", MALE NIPPLE	4
9	88715260	CYL-ASSY 3-1/2 X 24 IN STR REPH	1
10	88715261	CYL-ASSY 4 X 24 IN STR REPH	1
11	88715262	CYL-ASSY 4.5 X 24 IN STR REPH	1
12	88715976	HYDRAULICTUBE, FRAME, VT	2
13	88716035	HOSE [-06, 06-00, 06-00, 700]	2
14	88716036	HOSE [-06, 06-00, 06-00, 1600]	2
15	88716037	HOSE [-06, 06-00, 06-90, 700]	2
16	88716038	HOSE [-06, 06-00, 06-90, 1650]	2
17	88716050	HOSE HOLD DOWN CLAMP	14
18	88716145	HOSE [-06, 06-00, 06-00, 2150]	1
19	88716499	PIN-CYLINDER 1 1/4 X 8 5/8 LG	4
20	88716583	HOSE [-06, 06-00, 06-00, 5700]	2
21	88716584	HOSE [-06, 06-00, 06-00, 3480]	2
22	88716789	CHK VLV, 4500 PSI CRK, -04MB - 1/2" HB	2
23	88716792	DRAIN HOSE, WING CYL RELIEF,VT	2
24	9626421	CONNECTOR, -8MB-6MOR (6-8 F5OLO)	4
25	9840543	90 DEGREE ELBOW .375A	6
26	9843615	6MOR-6FORX-6MOR (6 R6LO-S)	6
27	9993143	CONNECTOR 11/16 ORFS X 9/16(6 F5OLO)	6
28	EZBP31175	PIN COTTER 5/16 X 1-3/4	12
29	EZDF5068	WASHER-1 9/32 ID X 2 OD X 1/4	16
30	EZDR5262	PIN-CYLINDER	4
31	EZC50716	PACKAGE, WADLER DEPTH STOPS	2
32	88718070	BRKT, HYD SUPPORT BLKHD, VT	1
33	EZBW037F	3/8" FLAT WASHER SAE ZP	11
34	88704517	TIE-HYD, WING FOLD, BLUE	2
35	EZB037017	BOLT HEX NC 3/8 X 1-3/4	3
36	EZB031005	BOLT HEX 5/16 NC X 1/2	1
37	88717387	HOSE [-06, 6-00, 6-00 , 319]	1
38	88704516	TIE-HYD RAISE/LOWER GREEN	2
39	EZBN031L	NUT LOCK NYLON 5/16 NC	2
40	86060326	ELBOW, BULKHEAD, 6MORF, 6MORF	1

ITEM	PART NUMBER	DESCRIPTION	QTY.
41	EZB037022	BOLT HEX NC 3/8 X 2-1/4	4
42	EZB031017	BOLT HEX 5/16 NC X 1-3/4	16
43	EZBN037L	NUT HEX NYL 3/8 NC	8
44	EZB037025	3/8 X 2-1/2 NC HEX BOLT	4
45	EZB031025	BOLT HEX 5/16 NC X 2-1/2	2
46	88718068	HOSE [-06, 06-00, 06-00, 78]	1
47	88718069	HOSE [-06, 06-00, 06-00, 274]	1
48	88717981	HOSE [-06, 06-00, 06-00, 118]	1

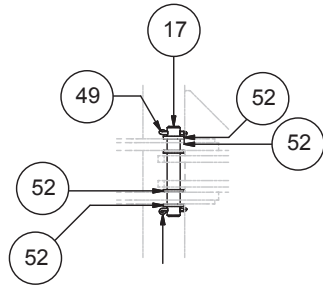
Farm King



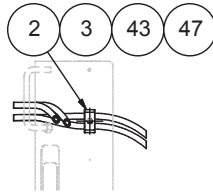
HYDRAULICS - WIDE



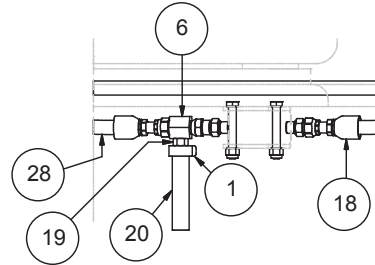
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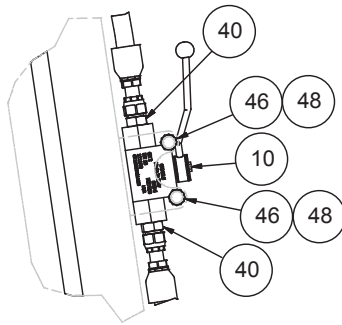
DETAIL H



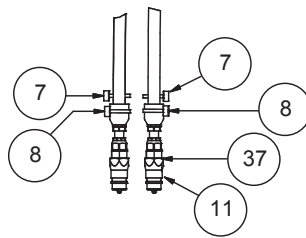
SECTION F-F



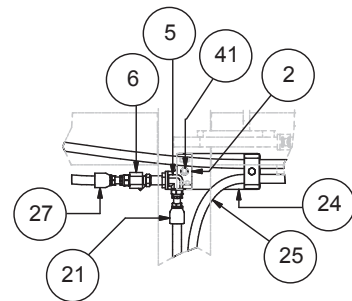
SECTION C-C



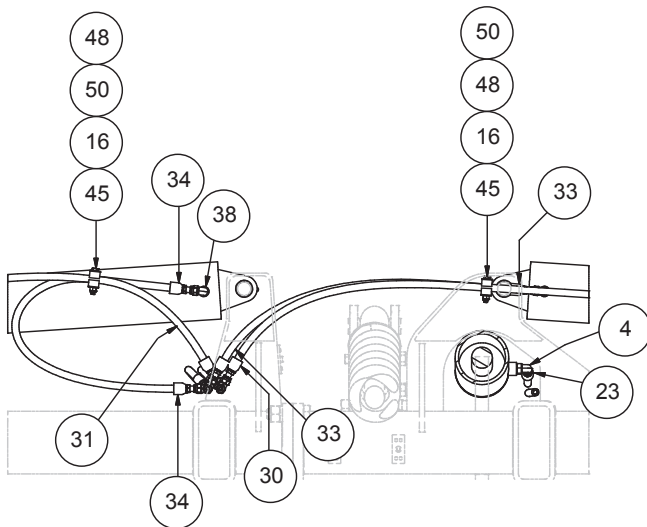
DETAIL E



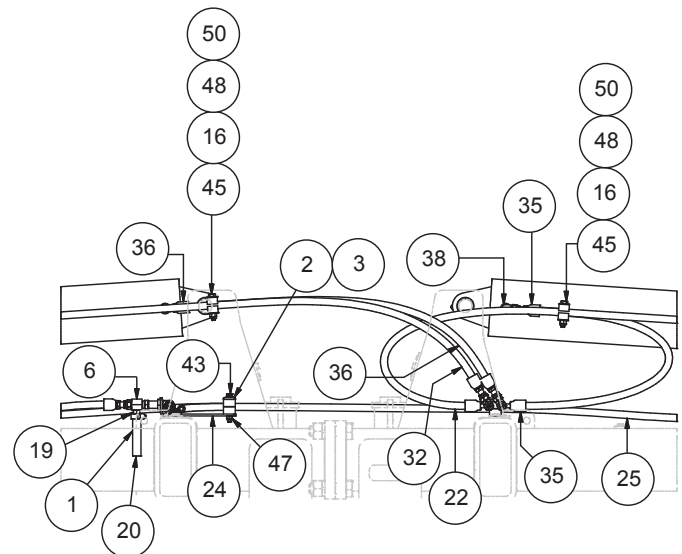
DETAIL G



DETAIL D

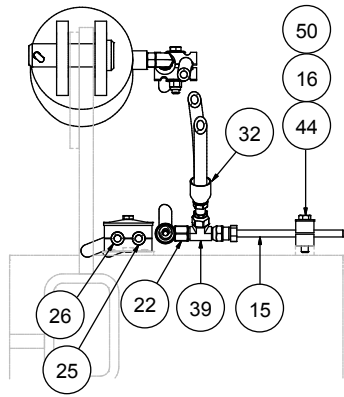


SECTION B-B

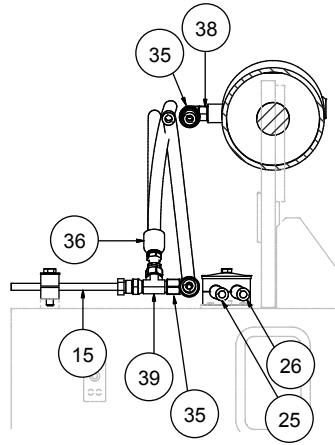


SECTION A-A

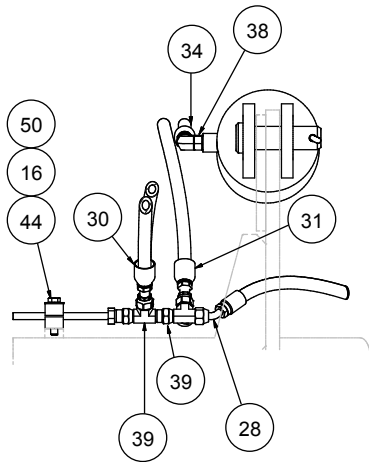
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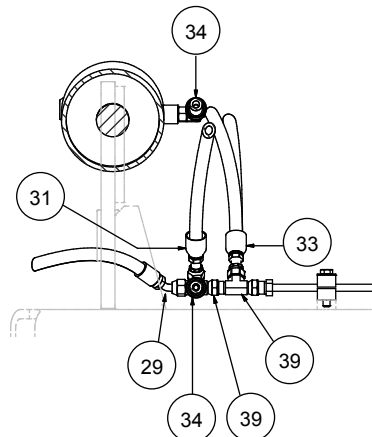
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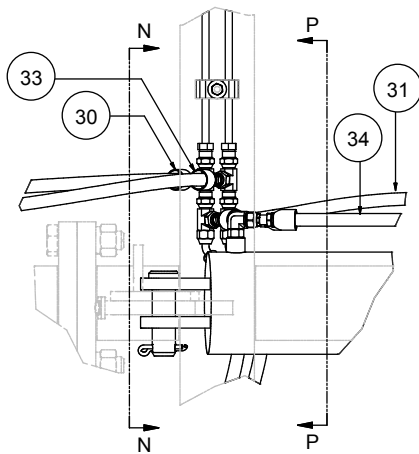
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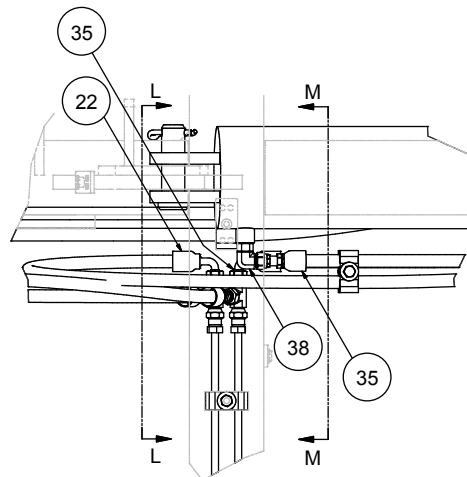
SECTION N-N



SECTION P-P



DETAIL K



DETAIL J

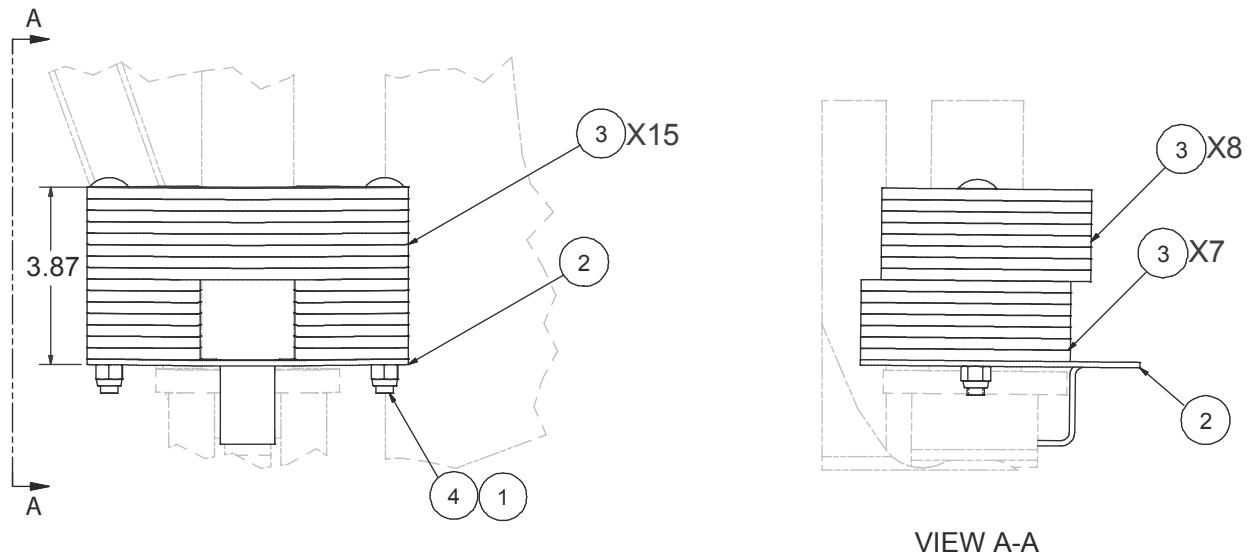
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	21193	CLAMP HOSE 14.2	2
2	29256	COVER PLATE	23
3	815608	BLOCK POLYPROPELENE 3/8 PAIR	22
4	86018376	ELBOW 90 DEGREE	6
5	86060326	ELBOW, BULKHEAD, 6MORF, 6MORF	1
6	86060682	-6 ORFS IN-LINE TEST PORT ADAPTER	2
7	88704516	TIE-HYD RAISE/LOWER GREEN	2
8	88704517	TIE-HYD, WING FOLD, BLUE	2
9	88705034	CYL-HYD 5IN DIA X 36 STR	4
10	88705116	GE2 - SAE6 BALL VLV 2 WAY	2
11	88713042	COUPLER 1/2", MALE NIPPLE	4
12	88715260	CYL-ASSY 3-1/2 X 24 IN STR REPH	1
13	88715261	CYL-ASSY 4 X 24 IN STR REPH	1
14	88715262	CYL-ASSY 4.5 X 24 IN STR REPH	1
15	88715976	HYDRAULICTUBE, FRAME, VT	2
16	88716050	HOSE HOLD DOWN CLAMP	14
17	88716499	PIN-CYLINDER 1 1/4 X 8 5/8 LG	4
18	88716584	HOSE [-06, 06-00, 06-00, 3480]	2
19	88716789	CHK VLV, 4500 PSI CRK, -04MB - 1/2" HB	2
20	88716792	DRAIN HOSE, WING CYL RELIEF, VT	2
21	88717387	HOSE [-06, 6-00, 6-00 , 319]	1
22	88717821	HOSE [-06, 06-00, 06-90, 64]	1
23	88718068	HOSE [-06, 06-00, 06-00, 78]	1
24	88718070	BRKT, HYD SUPPORT BLKH, VT	1
25	88718108	HOSE [-06, 06-00, 06-00, 258]	1
26	88718109	HOSE [-06, 06-00, 06-00, 343]	1
27	88718110	HOSE [-06, 06-00, 06-00, 152]	1
28	88718111	HOSE [-06, 06-00, 06-45, 80]	1
29	88718112	HOSE [-06, 06-00, 06-45, 219]	1
30	88718113	HOSE [-06, 06-00, 06-00, 72]	1
31	88718114	HOSE [-06, 06-00, 06-00, 43]	1
32	88718115	HOSE [-06, 06-00, 06-90, 73]	1
33	88718116	HOSE [-06, 06-00, 06-00, 35]	1
34	88718117	HOSE [-06, 06-00, 06-00, 40]	1
35	88718118	HOSE [-06, 06-00, 06-90, 34]	1
36	88718119	HOSE [-06, 06-00, 06-90, 36]	1
37	9626421	CONNECTOR, -8MB-6MOR (6-8 F5OLO)	4
38	9840543	90 DEGREE ELBOW .375A	6
39	9843615	6MOR-6FORX-6MOR (6 R6LO-S)	6
40	9993143	CONNECTOR 11/16 ORFS X 9/16(6 F5OLO)	6

ITEM	PART NUMBER	DESCRIPTION	QTY.
41	EZB031005	BOLT HEX 5/16 NC X 1/2	1
42	EZB031017	BOLT HEX 5/16 NC X 1-3/4	20
43	EZB031025	BOLT HEX 5/16 NC X 2-1/2	2
44	EZB037017	BOLT HEX NC 3/8 X 1-3/4	3
45	EZB037022	BOLT HEX NC 3/8 X 2-1/4	4
46	EZB037025	3/8 X 2-1/2 NC HEX BOLT	4
47	EZBN031L	NUT LOCK NYLON 5/16 NC	2
48	EZBN037L	NUT HEX NYL 3/8 NC	8
49	EZBP31175	PIN COTTER 5/16 X 1-3/4	12
50	EZBW037F	3/8" FLAT WASHER SAE ZP	11
51	EZC50716	PACKAGE, WADLER DEPTH STOPS	2
52	EZDF5068	WASHER-1 9/32 ID X 2 OD X 1/4	16
53	EZDR5262	PIN-CYLINDER	4

Farm King



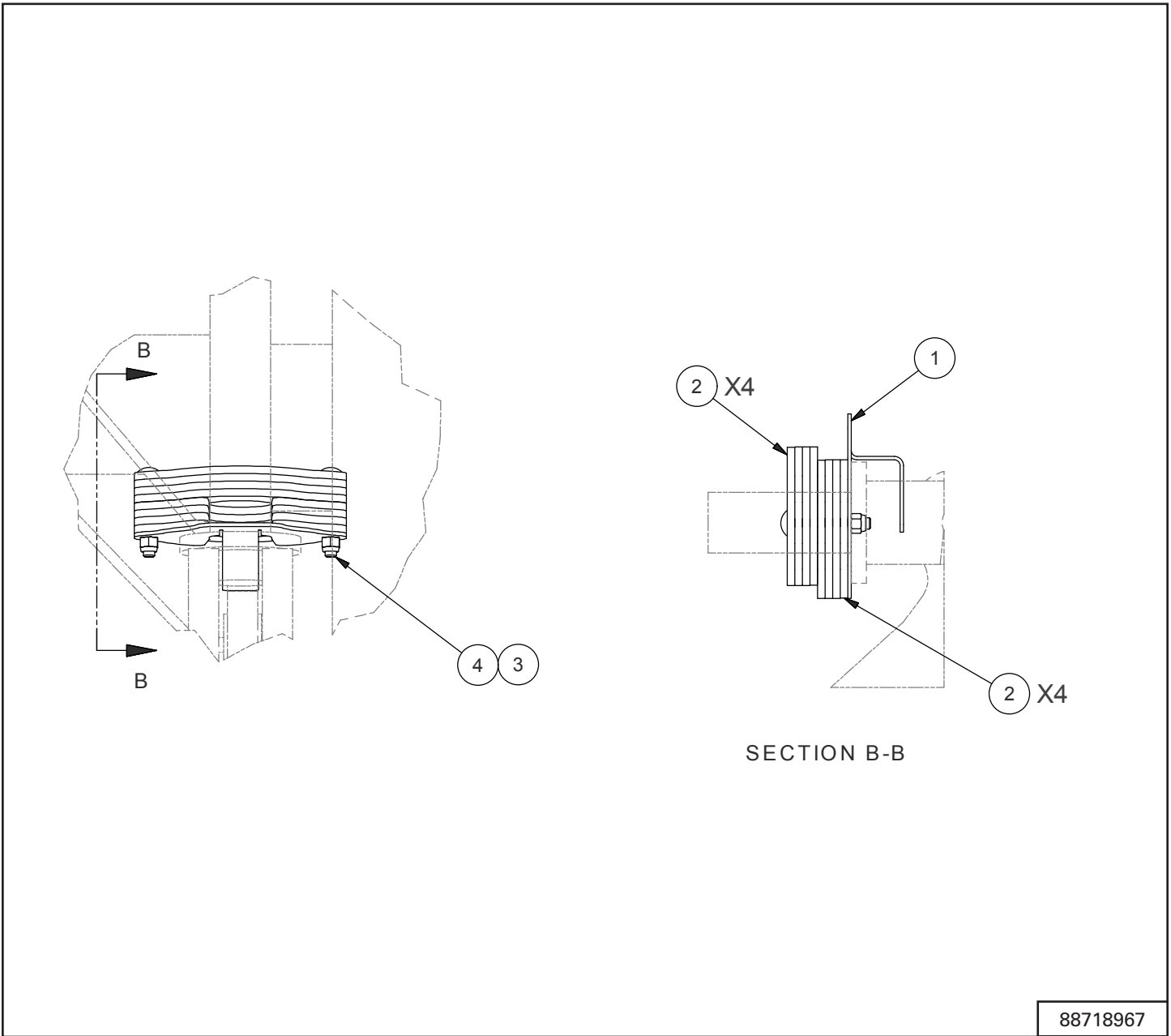
HYDRAULIC CYLINDER STOPS - NARROW, 20 IN. BLADES



88717057

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZBN037L	NUT HEX NYL 3/8 NC	2
2	88717107	PLATE - LONG SUPPORT	1
3	88717106	PLATE - CYLINDER STOP 0.25 VT	15
4	84050	BOLT-3/8-16 UNC 4 1/2 RND HD SQ NK	2

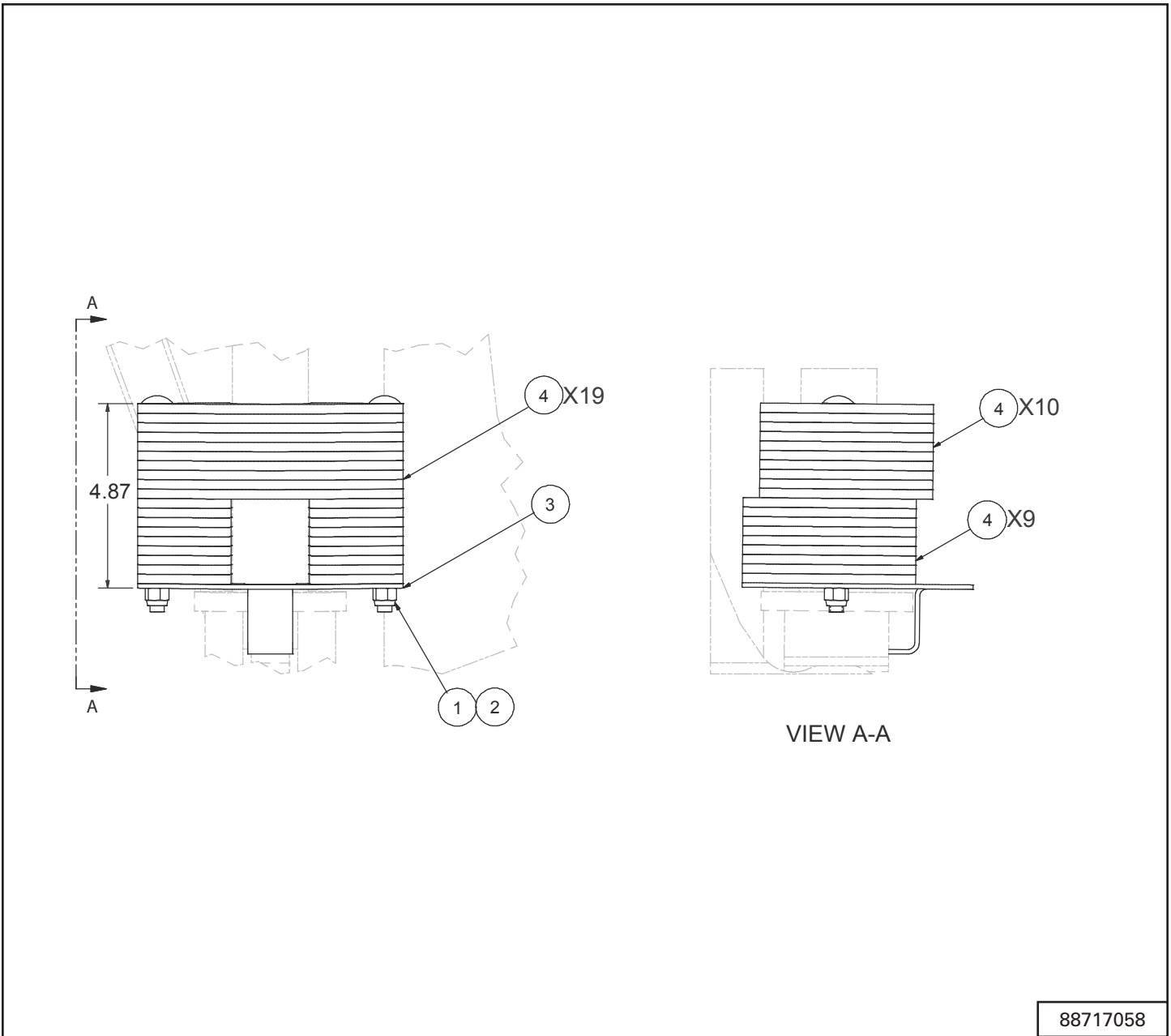
HYDRAULIC CYLINDER STOPS - WIDE, 20 IN. BLADES



88718967

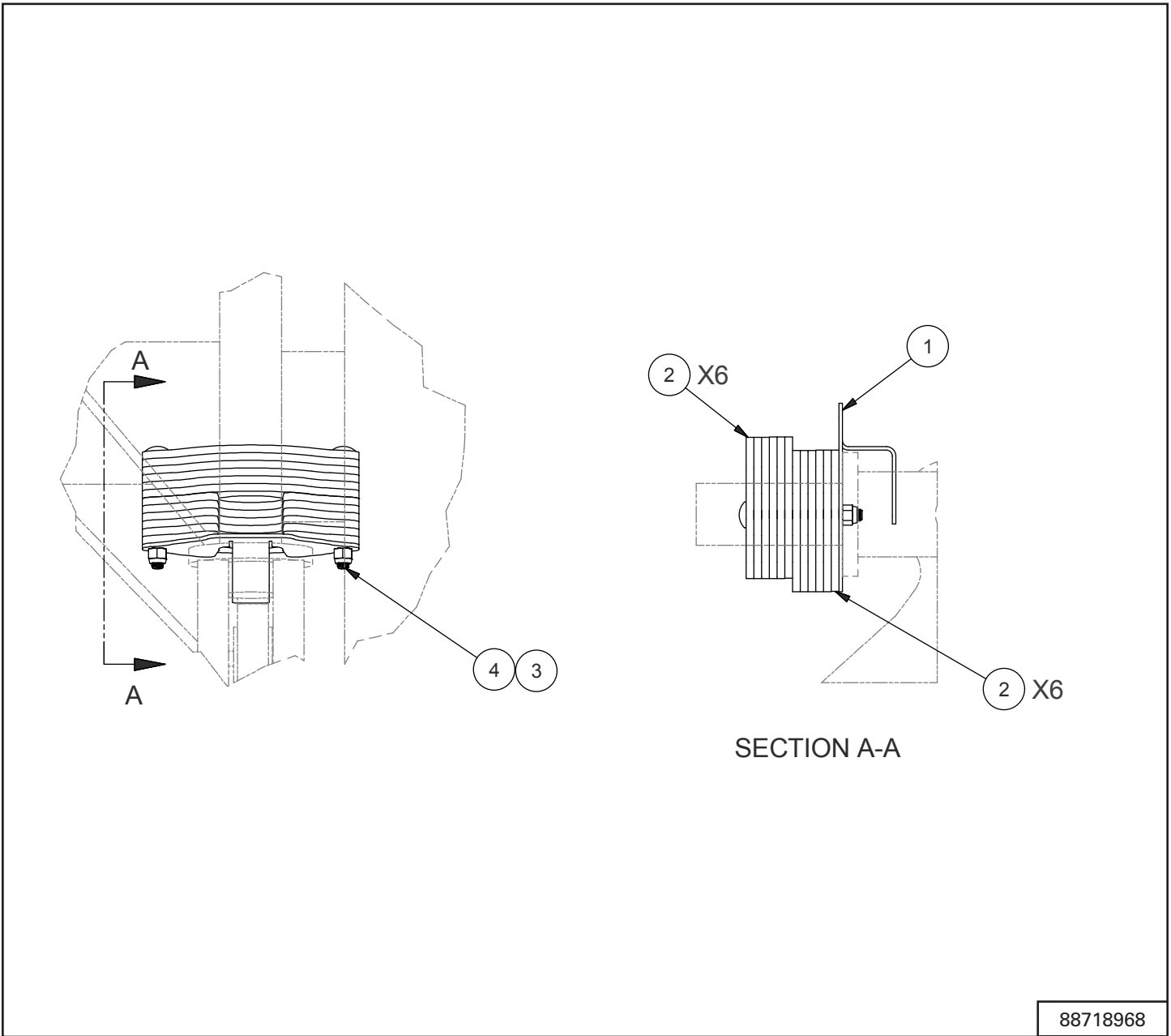
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88717107	PLATE - LONG SUPPORT	1
2	88717106	PLATE - CYLINDER STOP 0.25 VT	8
3	EZBN037L	NUT HEX NYL 3/8 NC	2
4	280628	CB G5 P .38X2.75 86505609	2

HYDRAULIC CYLINDER STOPS - NARROW, 22 IN. BLADES



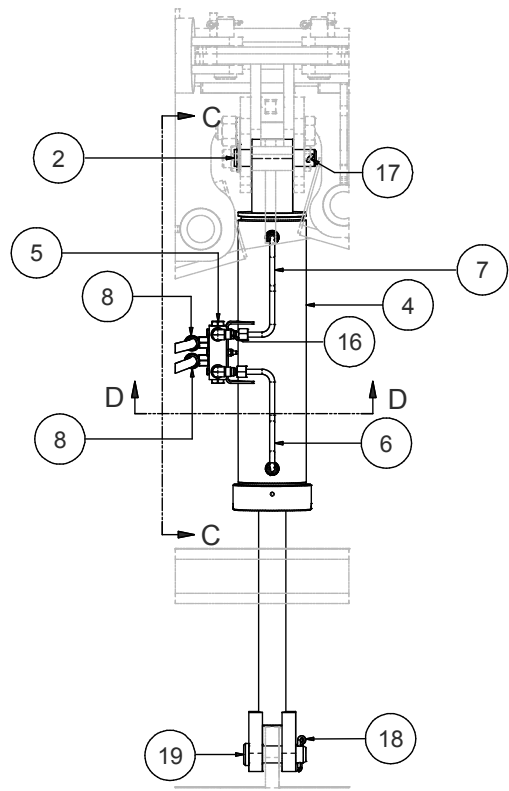
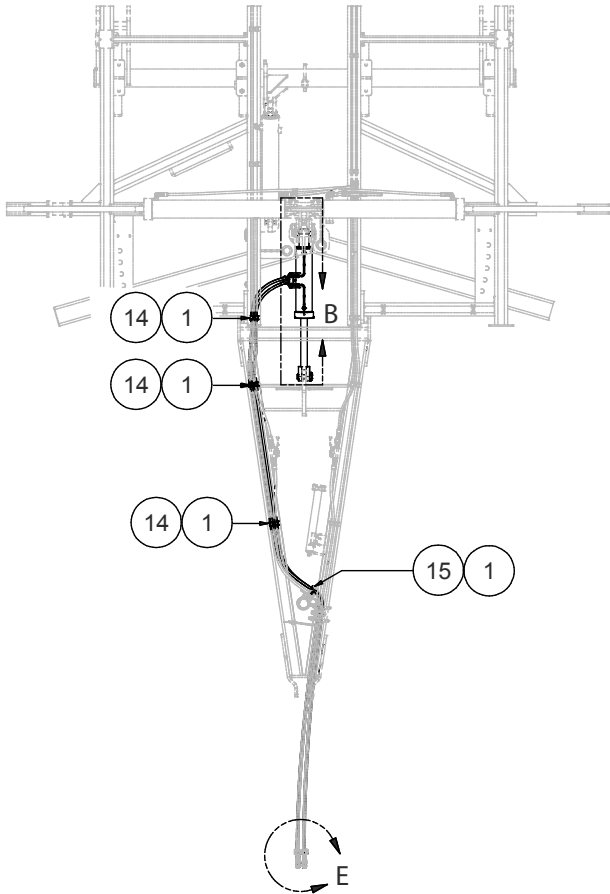
ITEM	PART NUMBER	DESCRIPTION	QTY.
1	EZBN037L	NUT HEX NYL 3/8 NC	2
2	88717122	BOLT-3/8-16 UNC 5 1/2 RND HD SQ NK	2
3	88717107	PLATE - LONG SUPPORT	1
4	88717106	PLATE - CYLINDER STOP 0.25 VT	19

HYDRAULIC CYLINDER STOPS - WIDE, 22 IN. BLADES

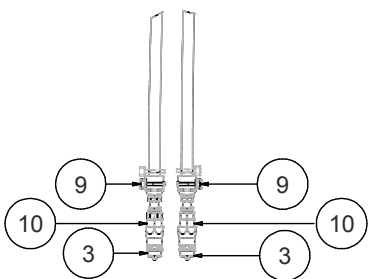


ITEM	PART NUMBER	DESCRIPTION	QTY.
1	88717107	PLATE - LONG SUPPORT	1
2	88717106	PLATE - CYLINDER STOP 0.25 VT	12
3	EZBN037L	NUT HEX NYL 3/8 NC	2
4	280866	CB G5 P 0.38X3.75 86505609	2

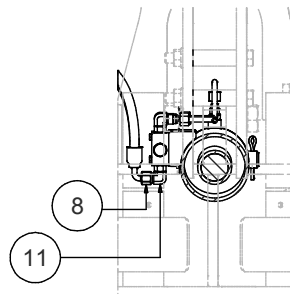
HYDRAULIC LEVELING LINK



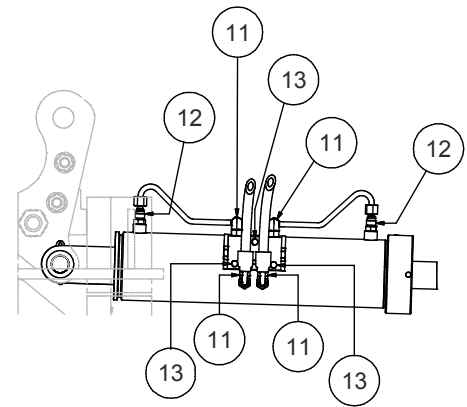
DETAIL B



DETAIL E



SECTION D-D



VIEW C-C

88718903

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	815608	BLOCK POLYPROPELENE 3/8 PAIR	4
2	88705391	WING LIFT PIN	1
3	88713042	COUPLER 1/2", MALE NIPPLE	2
4	88717551	4.5" DIA X 2.375" STROKE HCA, VT LEVELING	1
5	88718904	HYD LOCK VALVE, VT LEVELING	1
6	88718905	FEEDERTUBE, LH, VT LEVELING	1
7	88718906	FEEDERTUBE, RH, VT LEVELING	1
8	88719067	HOSE [-06, 06-00, 06-90, 207]	2
9	88719069	TIE-HYD, ORANGE	2
10	9626421	CONNECTOR, -8MB-6MOR (6-8 F5OLO)	2
11	9840543	90 DEGREE ELBOW .375A	4
12	9993143	CONNECTOR 11/16 ORFS X 9/16	2
13	EZB025020	BOLT HEX 1/4 NC X 2	3
14	EZB031032	BOLT HEX 5/16 NC X 3.25 GR 5 ZNCR	3
15	EZB031040	5/16 X 4 NC HEX BOLT	1
16	EZBN025L	NUT HEX LOCK NYL 1/4 NC	3
17	EZBP25200	CT PN P 1/4 X 2 86505604	1
18	EZBP31175	PIN COTTER 5/16 X 1-3/4	1
19	EZDR5262	PIN-CYLINDER	1

Farm King



SPECIFICATIONS

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Farm King



SPECIFICATIONS

Dimensions

MODEL	BLADES	WORKING WIDTH*	TRANSPORT HEIGHT	TRANSPORT WIDTH	BLADES	WORKING WIDTH*	TRANSPORT HEIGHT	TRANSPORT WIDTH
	8 IN. SPACING				9 IN. SPACING			
VT3290	106	36'11"	16'0"	17'7"	98	38'4"	16'3"	17'10"
VT3320	98	34'2"	14'8"	17'7"	90	35'2"	15'0"	17'10"
VT3345	90	31'7"	14'2"	17'3"	82	32'0"	14'2"	17'3"
VT3375	82	28'10"	13'4"	17'3"	74	28'10"	13'4"	17'3"

*Working width measured up to the Furrow Fuller Blade at 8 degrees of gang angle.

Performance

DESCRIPTION	VT MODEL
Weight	23,500 lb (10,682 kg)
Horsepower Required	8.5 DBHP / Foot (6.5 kW per 305 mm)†
Frame	8" x 4" x 1/2" and 6" x 4" x 1/2" (203 x 102 x 13 mm and 152 x 102 x 13 mm) Structural Steel Frame Members
Bearings	Single Row Bearing
Gang Shaft	1-15/16" (49 mm) High Carbon Steel, Factory Torqued to 3200 ft. - lb. (4339 N•m)
Blades (Front & Back)	20" x 0.256" (508 x 6.5 mm), SoilRazor VT
Depth Control	3-Cylinder Series System C/W Depth Stop Segments
	Auto-Leveling
Tires (Main Frame)	(4) (Optional FS24-380/55R16.5)
Tires (Wing Frame)	(4) 12.5L x 15 FI LR 'D'
† Depends on tilling depth, soil type, field speed, etc.	

Hydraulic Cylinders

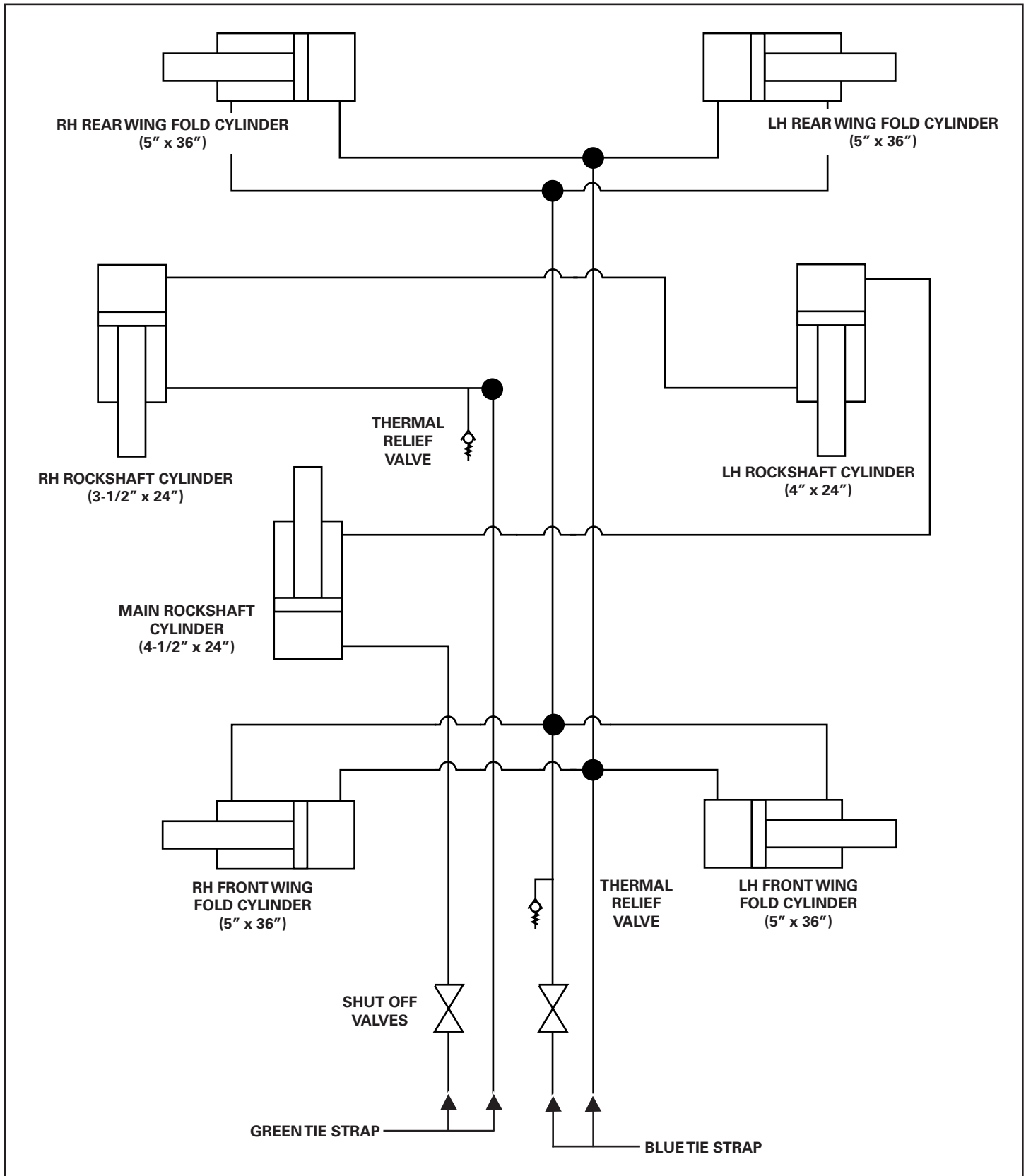
APPLICATION	SIZE	# REQUIRED
Center Frame Lift	4-1/2" x 24" Rephasing	1
L.H. Wing Frame Lift	4" x 24" Rephasing	1
R.H. Wing Frame Lift	3-1/2" x 24" Rephasing	1
Wing Lift	5" x 36"	4

Bolt Torques

DESCRIPTION	TORQUE
Gang Bolts (1-15/16" (49 mm) diameter)	3200 ft. - lb. (4339 N•m)
Gang Beam Bolts (1-1/4" (31 mm) diameter)	840 ft. - lb. (1139.2 N•m)
Leveling Crank Bolts (1-1/4" (31 mm) diameter)	840 ft. - lb. (1139.2 N•m)
Wheel Bolts (9/16" (14 mm) diameter)	130 ft. - lb. (176.3 N•m)
Bearing Hanger U-bolts - 7/8" (15 mm) diameter)	430 ft. - lb. (583 N•m) (Solid Hangers)

Hydraulic Schematic

All Models



HYDRAULIC CONNECTION SPECIFICATIONS

O-Ring Fitting (Straight Thread)

Lubricate the O-ring before installing the fitting. Loosen the jam nut and install the fitting. Tighten the jam nut until the washer is tight against the surface.

O-Ring Face Seal Connection

Figure 182

O-ring Face Seal Tightening Torque		
Tubeline O.D.	Thread Size	N•m (ft-lb)
1/4"	9/16" - 18	13 (18)
3/8"	11/16" - 16	22 (30)
1/2"	13/16" - 16	40 (54)
5/8"	1" - 14	60 (81)
3/4"	1-3/16" - 12	84 (114)
7/8"	1-3/16" - 12	98 (133)
1"	1-7/16" - 12	118 (160)
1-1/4"	1-11/16" - 12	154 (209)
1-1/2"	2" - 12	163 (221)

When the fitting is tightened, you can feel when the fitting is tight to eliminate leakage caused by under or over torqued fittings. Use petroleum jelly to hold the O-ring in position until the fittings are assembled **[Figure 182]**.

Flare Fitting

Figure 183

Flare Fitting Tightening Torque		
Tubeline O.D.	Thread Size	N • m (ft-lb)
1/4"	7/16" - 20	13 (18)
5/16"	1/2" - 20	17 (23)
3/8"	9/16" - 18	22 (30)
1/2"	3/4" - 16	40 (54)
5/8"	7/8" - 14	60 (81)
3/4"	1-1/16" - 12	84 (114)
7/8"	1-3/16" - 12	98 (133)
1"	1-5/16" - 12	118 (160)
1-1/4"	1-5/8" - 12	154 (209)
1-1/2"	1-7/8" - 12	163 (221)
2"	2-1/2" - 12	252 (342)

Tighten until the nut makes contact with the seat. Use the chart to find the correct tightness needed **[Figure 183]**.

Port Seal (O-Ring Boss) Fitting

Figure 184

Port Seal And O-ring Boss Tightening Torque		
Tubeline O.D.	Thread Size	N•m (ft-lb)
1/4"	7/16" - 20	13 (18)
3/8"	9/16" - 18	22 (30)
1/2"	3/4" - 16	40 (54)
5/8"	7/8" - 14	60 (81)
3/4"	1-1/16" - 12	84 (114)
7/8"	1-3/16" - 12	98 (133)
1"	1-5/16" - 12	118 (160)
1-1/8"	1-7/16" - 12	154 (209)
1-1/4"	1-5/8" - 12	163 (221)

NOTE: Port seal and nut, washer and O-ring (O-ring Boss) fittings use the same tightening torque valve chart [Figure 184].

If a torque wrench cannot be used, use the following method.

Tighten the nut until it just makes metal to metal contact, you can feel the resistance.

Tighten the nut with a wrench no more than one hex flat maximum.

Do not over tighten the port seal fitting.

NOTE: If a torque wrench cannot be used, use the hex flat tightening method as an approximate guideline.

NOTE: Port seal fittings are not recommended in all applications. Use O-ring boss fittings in these applications.

Tubelines And Hoses

Replace any tubelines that are bent or flattened. They will restrict flow, which will slow hydraulic action and cause heat.

Replace hoses which show signs of wear, damage or weather cracked rubber.

Always use two wrenches when loosening and tightening hose or tubeline fittings.

HARDWARE TORQUE VALUES

Metric Chart

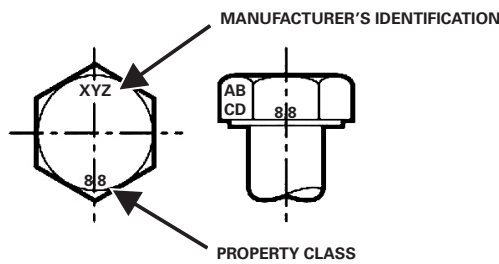
NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications.

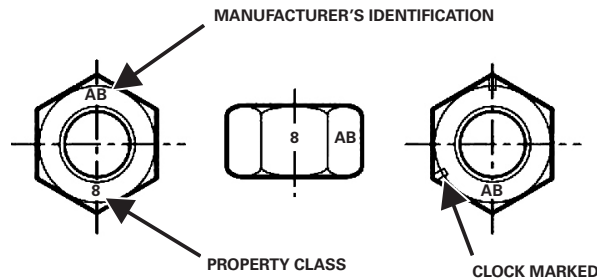
Nominal Size	Class 5.8		Class 8.8		Class 10.9		Lock nuts
	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	Unplated	Plated W / ZnCr	CL.8 W/ CL. 8.8 Bolt
M4	1.7 (15*)	2.2 (19*)	2.6 (23*)	3.4 (30*)	3.7 (33*)	4.8 (42*)	1.8 (16*)
M6	5.8 (51*)	7.6 (67*)	8.9 (79*)	12 (102*)	13 (115*)	17 (150*)	6.3 (56*)
M8	14 (124*)	18 (159*)	22 (195*)	28 (248*)	31 (274*)	40 (354*)	15 (133*)
M10	28 (21)	36 (27)	43 (32)	56 (41)	61 (45)	79 (58)	30 (22)
M12	49 (36)	63 (46)	75 (55)	97 (72)	107 (79)	138 (102)	53 (39)
M16	121 (89)	158 (117)	186 (137)	240 (177)	266 (196)	344 (254)	131 (97)
M20	237 (175)	307 (226)	375 (277)	485 (358)	519 (383)	671 (495)	265 (195)
M24	411 (303)	531 (392)	648 (478)	839 (619)	897 (662)	1160 (855)	458 (338)

NOTE: Torque values shown with * are inch pounds.

Identification of Hex Cap Screws and Carriage Bolts - Classes 5 and up



Identification of Hex Nuts and Lock Nuts - Classes 5 and up



HARDWARE TORQUE VALUES (CONT'D)

Imperial Chart

NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications.

Nominal Size	SAE Grade 5		SAE Grade 8		LOCK NUTS			
	Unplated or Plated Silver	Plated W / ZnCr Gold"	Unplated or Plated Silver	Plated W / ZnCr Gold"	Unplated or Plated Silver	Plated W / ZnCr Gold"	Grade W / Gr. 5 Bolt	Grade W / Gr. 8 Bolt
1/4	6.2 (55*)	8.1 (72*)	9.7 (86*)	12.6 (112*)	13.6 (121*)	17.7 (157*)	6.9 (61*)	9.8 (86*)
5/16	13 (115*)	17 (149*)	20 (178*)	26 (229*)	28 (250*)	37 (324*)	14 (125*)	20 (176*)
3/8	23 (17)	30 (22)	35 (26)	46 (34)	50 (37)	65 (48)	26 (19)	35 (26)
7/16	37 (27)	47 (35)	57 (42)	73 (54)	80 (59)	104 (77)	41 (30)	57 (42)
1/2	57 (42)	73 (54)	87 (64)	113 (83)	123 (91)	159 (117)	61 (45)	88 (64)
9/16	81 (60)	104 (77)	125 (92)	163 (120)	176 (130)	229 (169)	88 (65)	125 (92)
5/8	112 (83)	145 (107)	174 (128)	224 (165)	244 (180)	316 (233)	122 (90)	172 (127)
3/4	198 (146)	256 (189)	306 (226)	397 (293)	432 (319)	560 (413)	217 (160)	306 (226)
7/8	193 (142)	248 (183)	495 (365)	641 (473)	698 (515)	904 (667)	350 (258)	494 (364)
1	289 (213)	373 (275)	742 (547)	960 (708)	1048 (773)	1356 (1000)	523 (386)	739 (545)

NOTE: Torque values shown with * are inch pounds.

Identification of Hex Cap Screws and Carriage Bolts



GRADE 2 SAE BOLT



GRADE 5 SAE BOLTS



GRADE 8 SAE BOLTS



GRADE 2 SAE NUTS

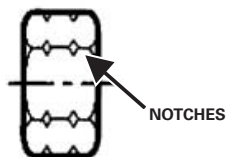


GRADE 5 SAE HEX NUTS

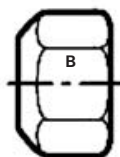


GRADE 8 SAE HEX NUTS

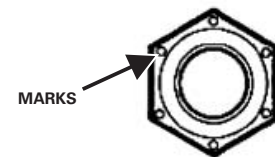
Identification of Hex Nuts and Lock Nuts



GRADE IDENTIFICATION
 GRADE A: NO NOTCHES
 GRADE B: ONE CIRCUMFERENTIAL NOTCH
 GRADE C: TWO CIRCUMFERENTIAL NOTCHES



GRADE IDENTIFICATION
 GRADE A: NO MARK
 GRADE B: LETTER B
 GRADE C: LETTER C



GRADE IDENTIFICATION
 GRADE A: NO MARKS
 GRADE B: THREE MARKS
 GRADE C: SIX MARKS
 MARKS NEED NOT BE LOCATED AT CORNERS

Farm King



WARRANTY

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Farm King



WARRANTY

Farm King

Limited Warranty

BASE LIMITED WARRANTY

Farm King provides this warranty only to original retail purchasers of its products. Farm King warrants to such purchasers that all Farm King manufactured parts and components used and serviced as provided for in the Operator's Manual shall be free from defects in materials and workmanship for a period following delivery to the original retail purchaser of three (3) years. This limited warranty applies only to those parts and components manufactured by Farm King. Parts and components manufactured by others are subject to their manufacturer's warranties, if any.

100% Parts and Labor are covered for the first year.

100% Parts only, are covered for the second year.

50% Parts only, are covered for the third year.

Farm King will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Farm King within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Parts must be returned through the selling representative and the buyer must prepay transportation charges.

Farm King will not be responsible for repairs or replacements that are necessitated, in whole or part, by the use of parts not manufactured by or obtained from Farm King. Under no circumstances are component parts warranted against normal wear and tear. There is no warranty on product pump seals, product pump bearings, rubber product hoses, pressure gauges, or other components that require replacement as part of normal maintenance.

Farm King warrants that the following disc gang bearing parts used and serviced as provided for in the Operator's Manual shall be free from defects in materials and workmanship for an extended period following delivery to the original retail purchaser.

T2-215 bearings are covered for seven (7) years. Extended coverage (12-84 months) is limited to replacement of ball bearings and seals only. Labour and associated bearing parts are not included.

REPAIR PARTS LIMITED WARRANTY

Farm King warrants genuine Farm King replacement parts purchased after the expiration of the Farm King Limited Warranty, and used and serviced as provided for in the Operator's Manual, to be free from defects in materials or workmanship for a period of thirty (30) days from the invoice date for the parts. Farm King will fulfill this limited warranty by, at its option, repairing or replacing any covered part that is defective or is the result of improper workmanship, provided that the part is returned to Farm King within thirty (30) days of the date that such defect or improper workmanship is, or should have been, discovered. Such parts must be shipped to the Farm King factory at the purchaser's expense.

COMMERCIAL USE

Warranty for commercial (other than bona fide farmers), rental, or custom use is limited to 100% parts and labor for ninety (90) days.

WHAT IS NOT COVERED

Under no circumstances does this limited warranty cover any components or parts that have been subject to the following: negligence; alteration or modification not approved by Farm King; misuse; improper storage; lack of reasonable and proper maintenance, service, or repair; normal wear; damage from failure to follow operating instructions; accident; and/or repairs that have been made with parts other than those manufactured, supplied, and / or authorized by Farm King.

Farm King

Limited Warranty

AUTHORIZED DEALER AND LABOR COSTS

Repairs eligible for labor under this limited warranty must be made by Farm King or an authorized Farm King dealer. Farm King retains the exclusive discretion to determine whether it will pay labor costs for warranty repairs or replacements, and the amount of such costs that it will pay and the time in which the repairs will be made. If Farm King determines that it will pay labor costs for warranty work, it will do so by issuing a credit to the dealer's or distributor's account. Farm King will not approve or pay invoices sent for repairs that Farm King has not previously approved. Warranty service does not extend the original term of this limited warranty.

WARRANTY REQUIREMENTS

To be covered by warranty, each new product must be registered with Farm King within thirty (30) days of delivery to original retail purchaser. If the customer decides to purchase replacement components before the warranty disposition of such components is determined, Farm King will bill the customer for such components and then credit the replacement invoice for those components later determined to be covered by this limited warranty. Any such replacement components that are determined not to be covered by this limited warranty will be subject to the terms of the invoice and shall be paid for by the purchaser.

EXCLUSIVE EFFECT OF WARRANTY AND LIMITATION OF LIABILITY

TO THE EXTENT PERMITTED BY LAW, FARM KING DISCLAIMS ANY WARRANTIES, REPRESENTATIONS, OR PROMISES, EXPRESS OR IMPLIED, AS TO THE QUALITY, PERFORMANCE, OR FREEDOM FROM DEFECT OF THE COMPONENTS AND PARTS COVERED BY THIS WARRANTY AND NOT SPECIFICALLY PROVIDED FOR HEREIN.

TO THE EXTENT PERMITTED BY LAW, FARM KING DISCLAIMS ANY IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ON ITS PRODUCTS COVERED HEREIN, AND DISCLAIMS ANY RELIANCE BY THE PURCHASER ON FARM KING'S SKILL OR JUDGMENT TO SELECT OR FURNISH GOODS FOR ANY PARTICULAR PURPOSE. THE PURCHASER'S ONLY AND EXCLUSIVE REMEDIES IN CONNECTION WITH THE BREACH OR PERFORMANCE OF ANY WARRANTY ON FARM KING'S PRODUCTS ARE THOSE SET FORTH HEREIN. IN NO EVENT SHALL FARM KING BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING, BY WAY OF EXAMPLE ONLY AND NOT LIMITATION, LOSS OF CROPS, LOSS OF PROFITS OR REVENUE, OTHER COMMERCIAL LOSSES, INCONVENIENCE, OR COST OF REPLACEMENT OF RENTAL EQUIPMENT). IN NO EVENT SHALL FARM KING'S CONTRACT OR WARRANTY LIABILITY EXCEED THE PURCHASE PRICE OF THE PRODUCT. (Note that some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusion may not apply to you.) This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

Farm King neither assumes nor authorizes any person or entity, including its selling representatives, to assume any other obligations or liability in connections with the sale of covered equipment, or to make any other warranties, representations, or promises, express or implied, as to the quality, performance, or freedom from defect of the components and parts covered herein. No one is authorized to alter, modify, or enlarge this limited warranty, or its exclusions, limitations and reservations.

Corrections of defects and improper workmanship in the manner, and for the applicable time periods, provided for herein shall constitute fulfillment of all responsibilities of Farm King to the purchaser, and Farm King shall not be liable in negligence, contract, or on any other basis with respect to the subject equipment.

This limited warranty is subject to any existing conditions of supply which may directly affect Farm King's ability to obtain materials or manufacturer replacement parts.

Buhler Industries Inc. reserves the right to make improvements in design or changes in specifications to its products at anytime, without incurring any obligation to owners of units previously sold.

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