Farm King

# OPERATOR AND PARTS MANUAL

## Square Bale Carrier

Model 4480XD

022018 FK83000068

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**Manufacturer's Statement:** For technical reasons, Buhler Industries Inc. 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 bale structure, applied techniques, weather conditions and other factors.

# Farm King

# 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 Name Model: Serial Number: Delivery Date:

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

Dealer Inspection Report

- ☐ Bearing Seals
- ☐ Lubricate Machine
- ☐ Wheel Nut Torque
- ☐ Fasteners Tight
- ☐ Pusher Sprocket And Chain Tension
- ☐ Hydraulic Hoses
- ☐ Electrical Harnesses
- ☐ 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's 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.

# Farm King

## 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.

# Farm King

**OWNER'S INFORMATION**

Thank you for your decision to purchase a Farm King 4480 Square Bale Carrier. To ensure maximum performance of your equipment, it is mandatory that you thoroughly study the Operator And Parts Manual and follow the 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.

Make sure that all personnel have read this Operator and Parts Manual and thoroughly understand safe and correct operating, installation and maintenance procedures.

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.

Although great care has been taken to ensure the accuracy of this publication, 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.

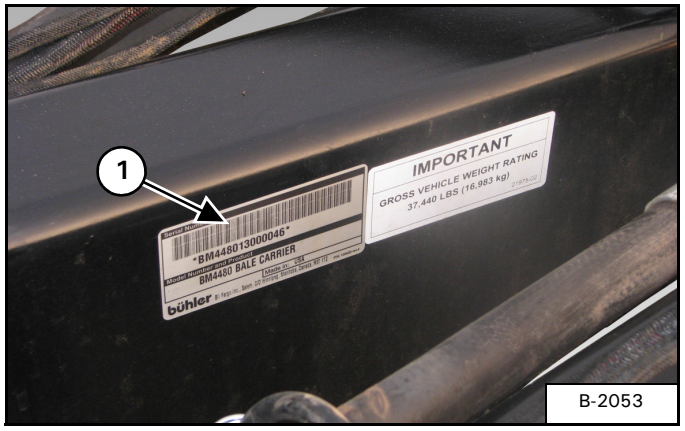
Keep this manual available for frequent reference. All new operators or owners must review the manual before using the equipment and annually thereafter. Contact your Farm King Dealer if you need assistance, information, or additional copies of the manual. Visit our website at **www.farm-king.com** for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

The directions left, right, front and rear, as mentioned throughout this manual, are as viewed from the rear of the equipment.

## Serial Number Location

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

**Figure 1**




Model Number: _____

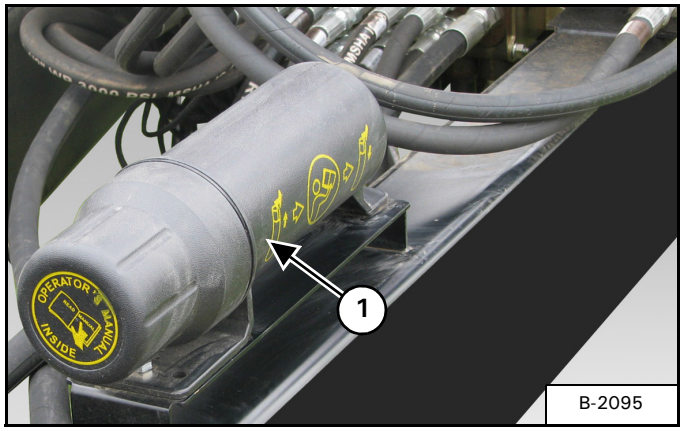
Serial Number: _____

The serial number plate (Item 1) **[Figure 1]** is located on the inside of the left frame forward of the jack.

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

**Manual Storage**

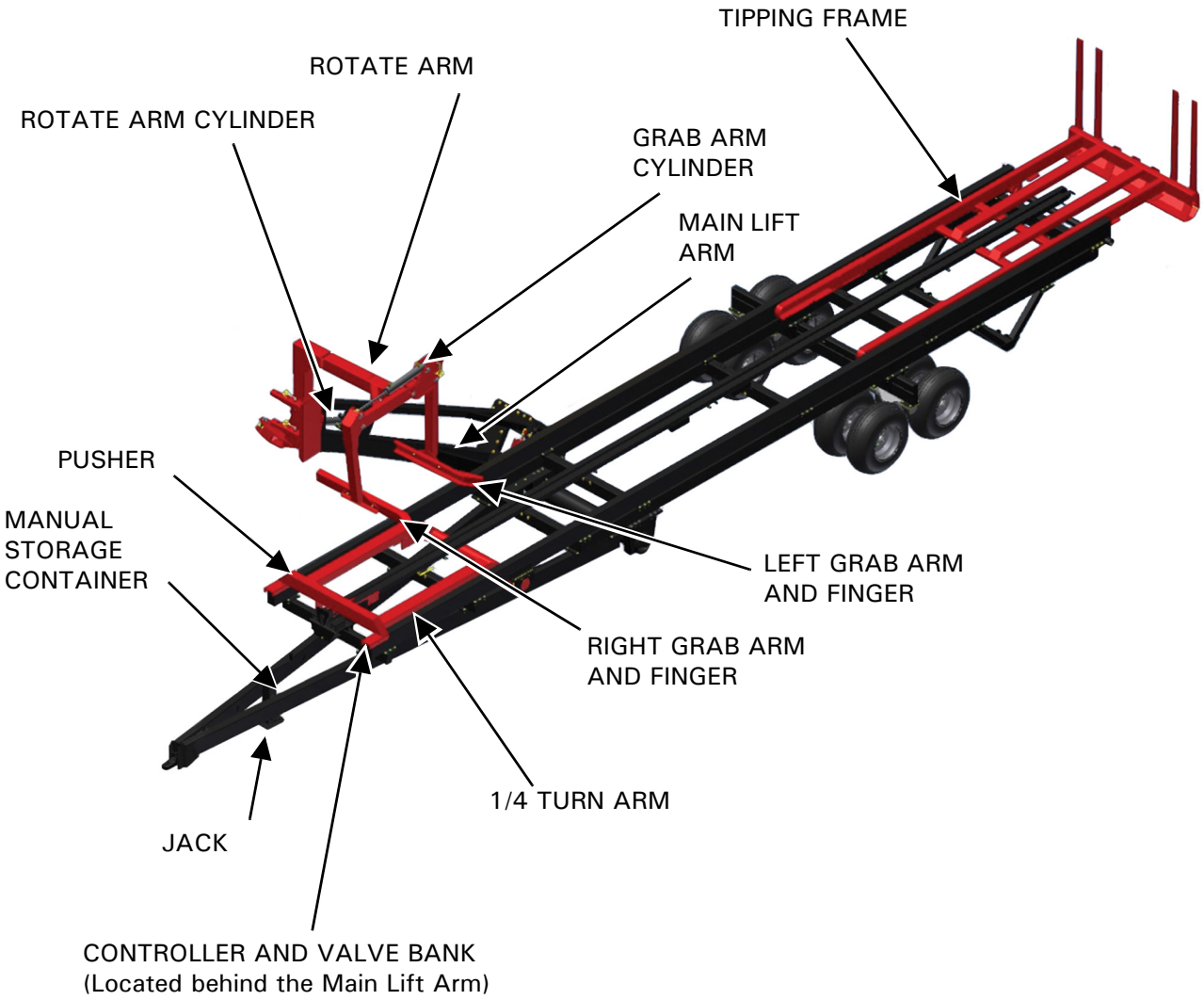
**Figure 2**




The Operator And Parts Manual and other documents can be stored in the canister (Item 1) **[Figure 2]** located on the front left side of the carrier.

## EQUIPMENT IDENTIFICATION

### Component Location

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# SAFETY

# Farm King

## SAFETY INSTRUCTIONS

### Safe Operation Is The Operator's Responsibility

**Safety Alert Symbol**

**This symbol with a warning statement means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.**

**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 alcoholic drinks 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 machine signs (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.

**SAFETY INSTRUCTIONS (CONT'D)**

**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 tipping frame or lift arm. Electrocution 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 / towing vehicle.
- 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 And Parts Manual.
- When learning to operate the equipment, do 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 / transport vehicles.
- 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.

**Transport Safety**

- Do not exceed 20 mph (32 kph). Reduce speed on rough roads and surfaces.
- Comply with state and local laws governing highway safety and movement of machinery on public roads.
- The use of flashing amber lights is acceptable in most localities. However, some localities prohibit their use. Local laws should be checked for all highway lighting and marking requirements.
- Always install transport locks, pins or brackets before transporting.
- 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 / towing vehicle in a lower gear at all times when traveling down steep grades.
- Maintain proper brake settings at all times (if equipped).
- Stay away from overhead power lines when tipping frame or lift arm is raised. Electrocution can occur without direct contact.

**Safety Rules For Power Take-Off (PTO) Driven Equipment**

- Keep PTO shields and all guards in place. Replace damaged or missing shields and guards before operating.
- Follow warnings and instructions on machine signs (decals). Replace damaged or missing decals.
- Do not wear loose or bulky clothing around the PTO or other moving parts.
- Keep bystanders away from PTO driven equipment, and never allow children near machines.
- Read and understand the manuals for the PTO driven equipment and be aware of safe operating procedures and hazards that may not be readily apparent.
- Always walk around equipment to avoid coming near a turning PTO driveline. Stepping over, leaning across or crawling under a turning PTO driveline can cause entanglement.
- Position the machine and equipment hitch correctly to prevent driveline stress and separation.
- Use caution when turning. Turning too sharp can cause driveline damage.
- Use caution when raising PTO driven attachment. Excessive driveline angle can cause driveline damage. Use stops if needed.

**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.
- Machine’s three-point hitch must be equipped with sway bars or chains.
- 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 maintenance items.

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.

**Spark Arrester Exhaust System**

The spark arrester exhaust system is designed to control the emission of hot particles from the engine and exhaust system, but the muffler and the exhaust gases are still hot.

Check the spark arrester exhaust system regularly to make sure it is maintained and working properly. Use the procedure in the machine's Operator's Manual for cleaning the spark arrester muffler (if equipped).

**FIRE PREVENTION (CONT'D)**

**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**

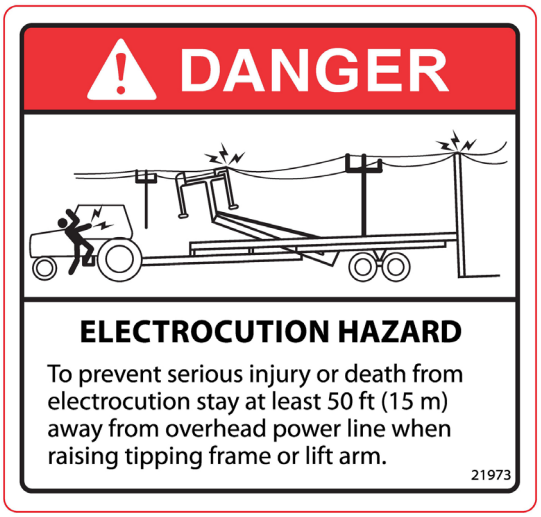
Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

## SAFETY 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.

Part Number 813736


Part Number 21973




Part Number 813627


Part Number 21970

Part Number 813635


Part Number 21976


Right Side Frame Above Lift Arm Cylinder

**EQUIPMENT DECALS AND SIGNS**

**NOTE: All safety related decals are shown in the Safety Signs Section. (See "SAFETY SIGNS (DECALS)" on page 16.)**

Check and replace any worn, torn, hard to read or missing decals on your equipment.

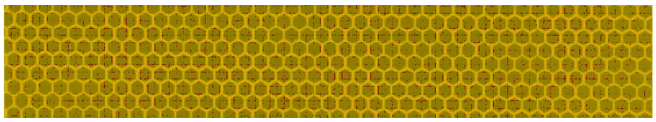
Part Number 818560


Part Number 815004

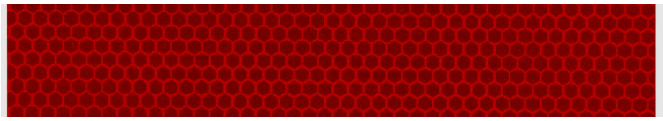

Part Number 21975-02


Part Number 105420

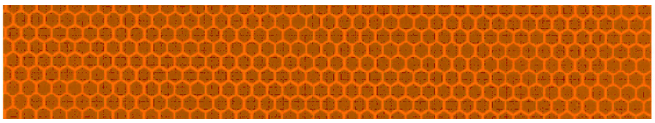

Part Number 967055 (Amber)



Part Number 967053 (Red)

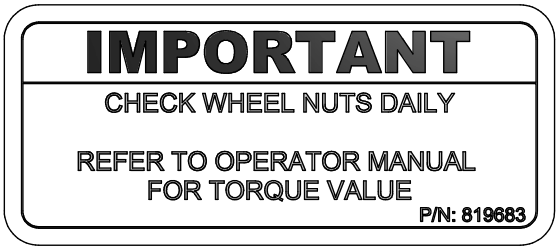


Part Number 813631 (Day Orange)



Part Number SZ000560


Part Number 819683




Part Number 21867

**SAFETY SIGN-OFF FORM**

# ⚠ 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.**

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Farm King follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and / or maintaining the 4480 Square Bale Carrier must read and clearly understand ALL Safety, Operating and Maintenance information presented in this manual.

Annually review this information before the season start-up and make these periodic reviews of SAFETY and OPERATION a standard practice for all of your equipment. An untrained operator is unqualified to operate this machine.

The following sign-off sheet is provided for your record and to show that all personnel who will be working with the equipment have read and understand the information in this Operator And Parts Manual and have been instructed in the operation of the equipment.

| SIGN-OFF SHEET | | |
|---|---|---|
| **Date** | **Employee's Signature** | **Employer's Signature** |
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# Farm King

## OPERATION

## GENERAL OPERATION INFORMATION

### Pre - Operation Checklist

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

**⚠ WARNING**

**MOVING PART HAZARD**

**To prevent serious injury or death from moving parts:**

- **Close and secure guards and shields before starting.**
- **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.**

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**⚠ 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.**

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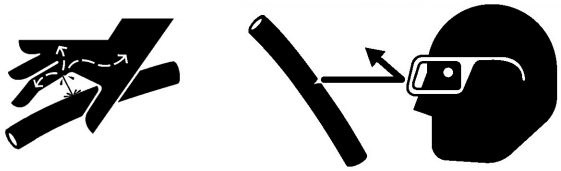
1. Lubricate the equipment per the schedule outline in the Maintenance Section. (See "SERVICE SCHEDULE" on page 69.)
2. Check the Bale Carrier hitch for damaged, loose or missing parts. Repair as needed before operation.
3. Check that tire pressure is 90 psi (620 kpa).
4. Check that wheel nut torque is 190 ft. lb. (257 Nm).
5. Fully clean the equipment. (See "CLEANING THE BALE CARRIER" on page 74.)
6. Check chain tension and adjust if necessary. (See "Adjusting Chain Tension" on page 72.)
7. Check carrier beams and add graphite coating if necessary. (See "Resurfacing" on page 74.)
8. Inspect all electrical connections to ensure proper function of the machine.
9. Inspect all safety reflective decals, slow moving vehicle decals and lights where applicable.

**⚠ WARNING**



**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.**

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

**NOTE: Do not operate with hydraulic leaks.**

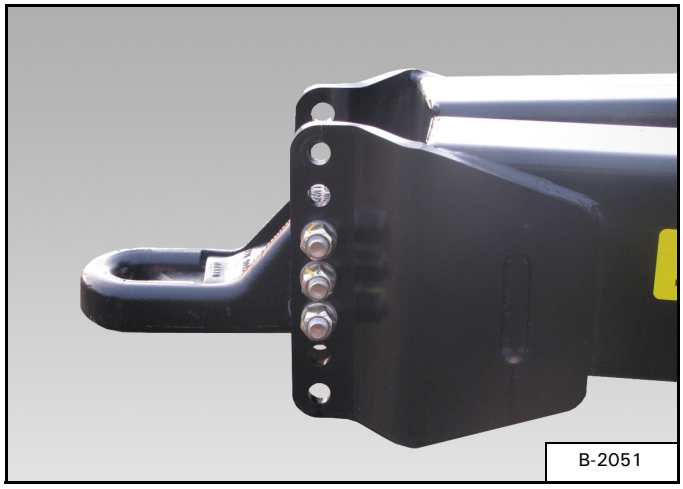
11. Verify that the lift arm transport lock has been removed and securely stored.
12. Verify that the bale carrier is properly connected to the tractor with the safety chain.

**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.

**Figure 3**




2. Check the bale carrier hitch for damaged, loose or missing parts **[Figure 3]**. Repair as needed before operation.
3. Check for loose fasteners and hardware. Tighten as required.
4. Check that tire pressure is 90 psi (620 kpa).
5. Check that wheel nut torque is 190 ft. lb. (257 Nm).

**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.**

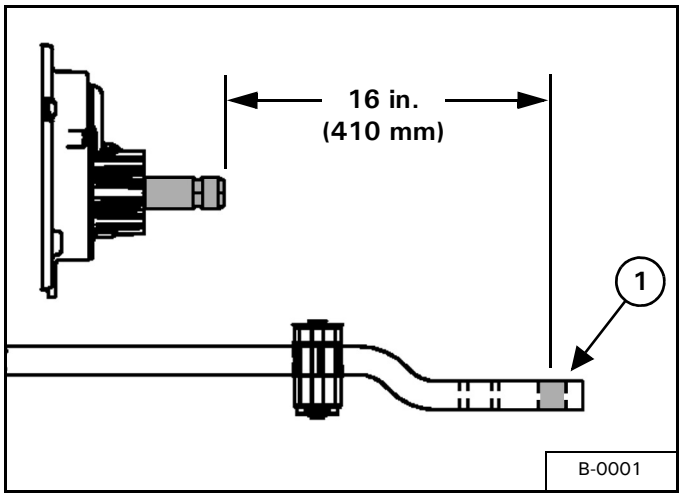
The 4480 Square Bale Carrier will require a tractor with minimum 100 hp (75 kw) and 1 pair remote outlets with variable flow control setting (system should be set at approximately 20 gpm @ 2500 psi – closed center or open center). Control valve is restricted to approximately 27 gpm.

**IMPORTANT**

**Towing Vehicle / Tractor must have adequate braking capacity to safely control 37,440 lb. (16,983 kg) GVW trailing load. Do not tow over 20 mph (32 km/h). Towing Vehicle / Tractor unit should weigh 25,000 lb. (11,340 kg) or approximately 67% of**

*Drawbar Adjustment*

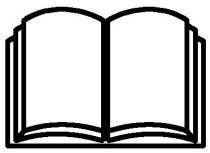
**Figure 4**




Adjust the tractor's drawbar in / out, until the center of the hitch pin hole (Item 1) **[Figure 4]** is 16 inches (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**

**IMPORTANT**



**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*

**⚠ WARNING**

**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.**
- **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.

**INITIAL SET-UP**

**Connecting The Bale Carrier To The Tractor**

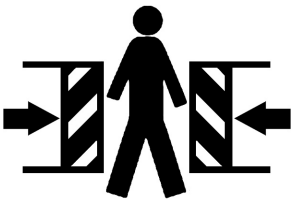
Always inspect the tractor's drawbar and Bale Carrier hitch before connecting. See the tractor's owner's manual.

Verify that the tractor's drawbar is adjusted correctly for use with the Bale Carrier. (See "Drawbar Adjustment" on page 25.)

Enter the operator's position. (See "Entering The Operator's Position" on page 25.)

Move the tractor into position in front of the Bale Carrier.

**⚠ WARNING**



**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.**

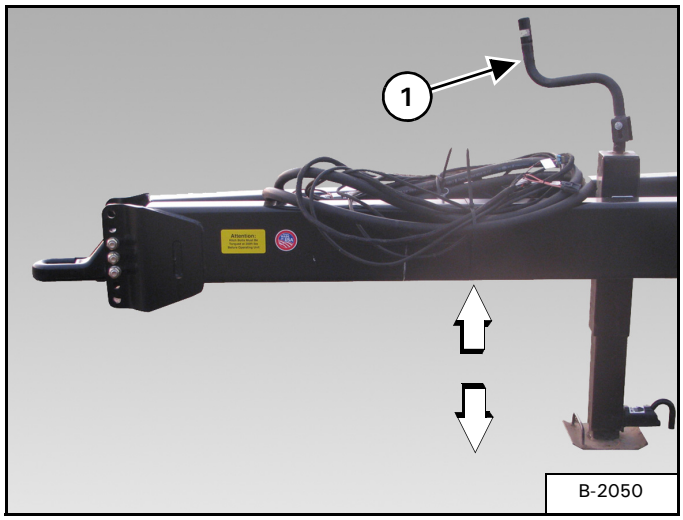
Move the tractor backwards, aligning the drawbar with the Bale Carrier hitch.

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

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

Leave the operator's position. (See "Leaving The Operator's Position" on page 26.)

**Figure 5**




Turn the handle (Item 1) **[Figure 5]** clockwise to raise the hitch or counterclockwise to lower the hitch.

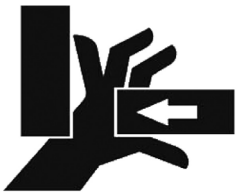
Lower or raise the Bale Carrier hitch until aligned with the tractor's drawbar.

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 Bale Carrier hitch pin hole(s).

Stop the tractor and leave operator's position.

**⚠ WARNING**

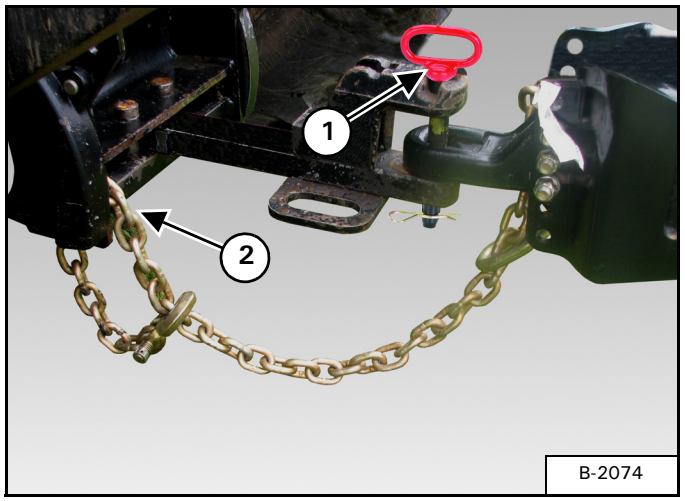


**AVOID INJURY OR DEATH**

**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.**

**Figure 6**




Install the hitch pin (Item 1) **[Figure 6]** and retaining pin to securely fasten the Bale Carrier hitch to the tractor drawbar.

Attach the safety chain (Item 2) **[Figure 6]** around the drawbar.

### Leveling The Bale Carrier

**IMPORTANT**

**The bale carrier frame must be adjusted down or up until the bale carrier is parallel with the ground prior to operation.**

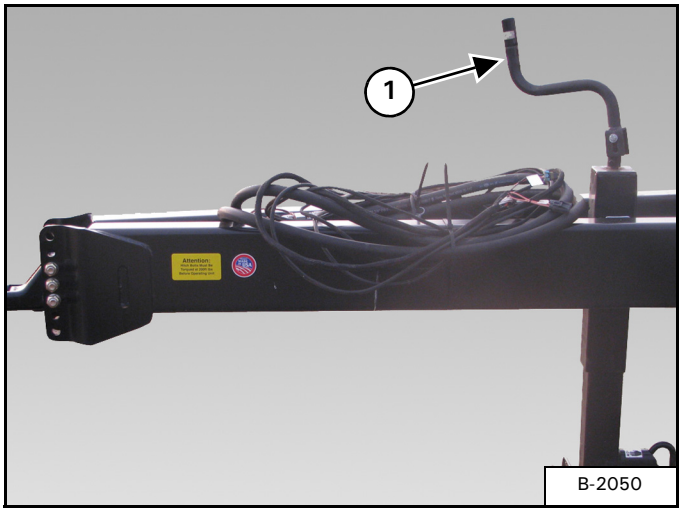
**WARNING**

**AVOID INJURY OR DEATH**

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

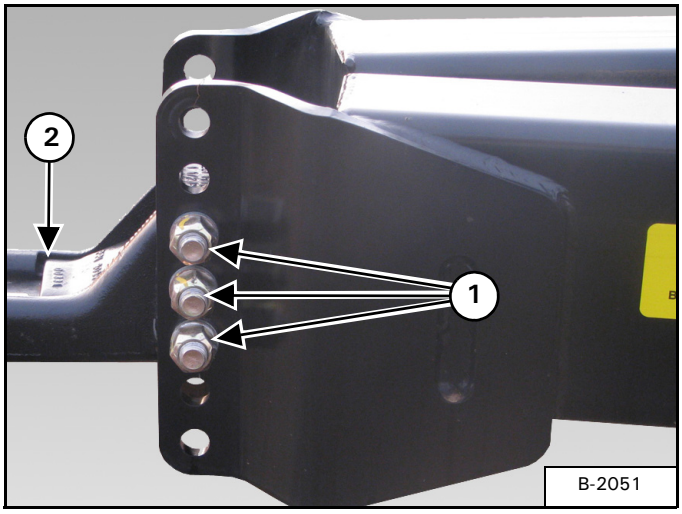
- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

**Figure 7**




With the bale carrier attached to the tractor, lower the jack from the transport position. Using the handle (Item 1) **[Figure 7]** on the jack, raise the jack until the weight of the bale carrier is on the jack. This will allow the clevis mounting bolts to be loosened and moved for leveling (if required).

**Figure 8**




Loosen the three clevis mounting bolts (Item 1) **[Figure 8]**.

Raise or lower the jack until the bale carrier frame is parallel with the ground. Raise or lower the clevis (Item 2) **[Figure 8]** and align the closest clevis mounting holes with frame. Install the three bolts.

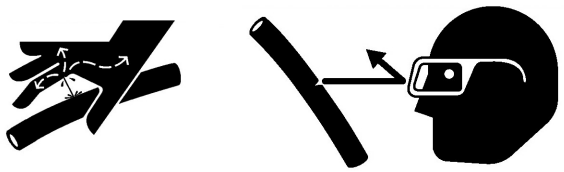
Tighten the three clevis mounting bolts to the correct torque and raise the jack into the storage position.

**IMPORTANT**

**The objective of adjusting the hitch height is to bring the tipping frame firmly on the ground when unloading, but not hard enough to transfer excessive machine weight onto the tipping frame.**

### Connecting Hydraulic Lines

**⚠ WARNING**



**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.**

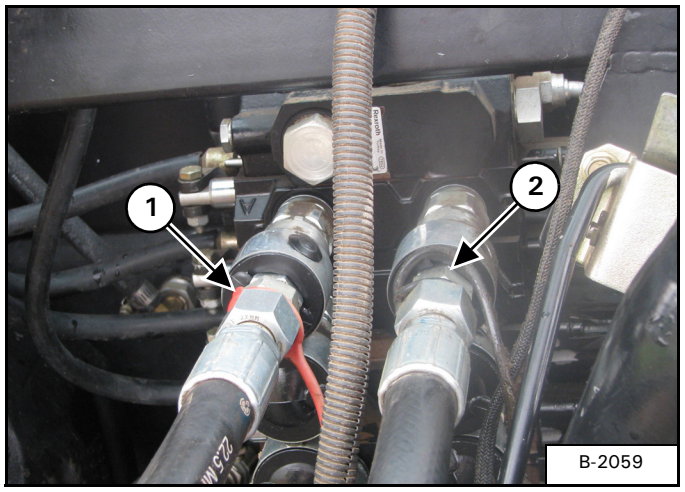
**! IMPORTANT**

- **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 9**




Connect the two hydraulic lines to the tractor **[Figure 9]**.

1. Supply Line (Red dust cap) “P” port of valve bank.
2. Return Line (Black dust cap) “T” port of valve bank.

*To Disconnect:*

**⚠ WARNING**

**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.

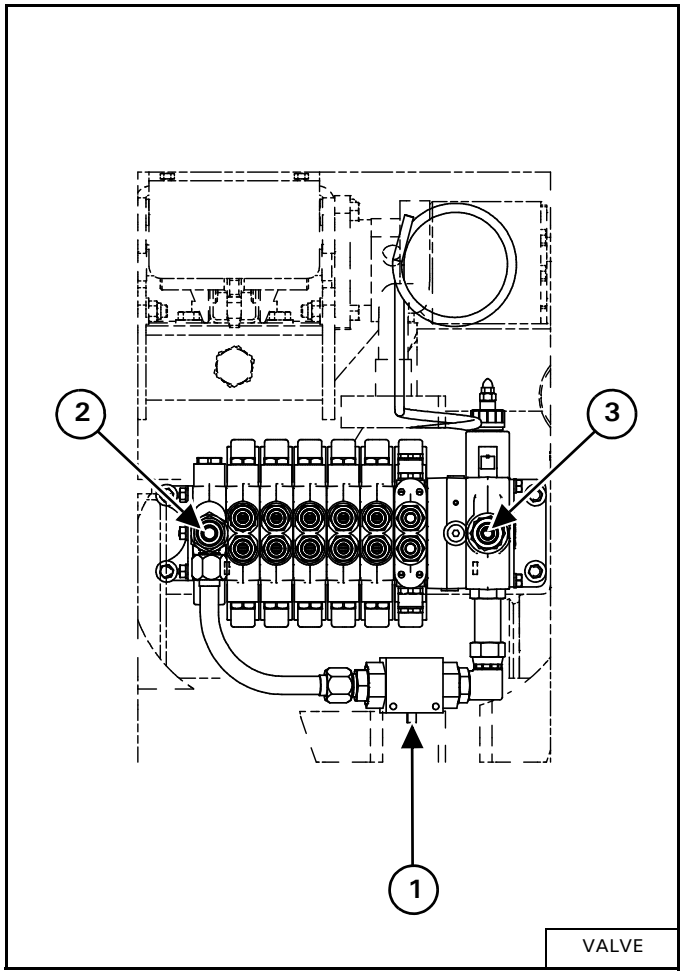
**Open / Closed Hydraulic Systems**

**IMPORTANT**

**Open or close the ball valve to be compatible with the tractor hydraulics system being used to operate the bale carrier.**

**NOTE: Use a 9/16" wrench to open or close ball valve.**

**Figure 10**

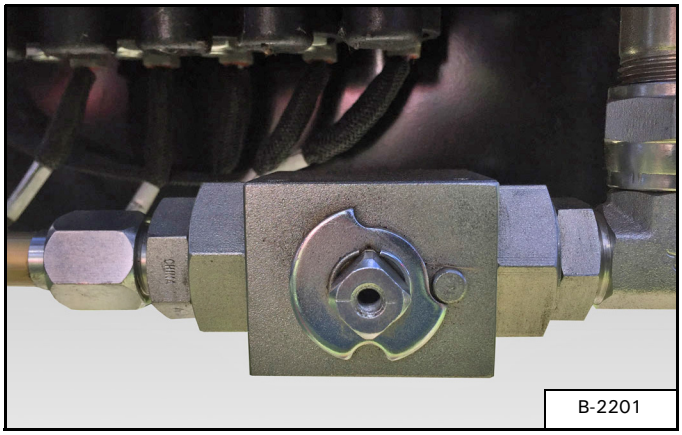



Ball valve (Item 1) **[Figure 10]**.

Hydraulic connections (Items 2 & 3) **[Figure 10]** to tractor hydraulics.

*Open Center Hydraulic System:*

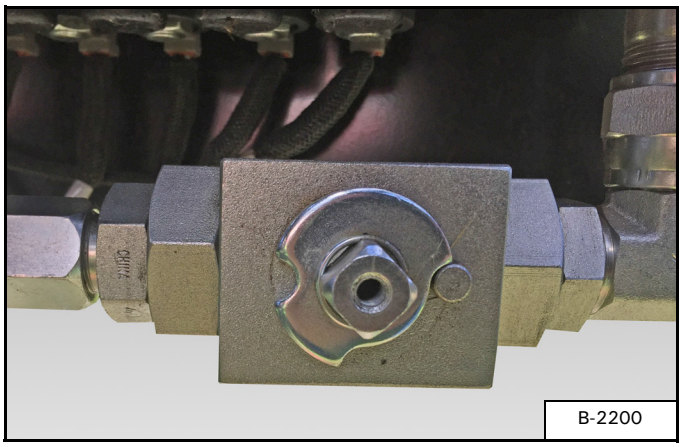
**Figure 11**




Ball valve shown in the OPEN position **[Figure 11]**.

*Closed Center Hydraulic System:*

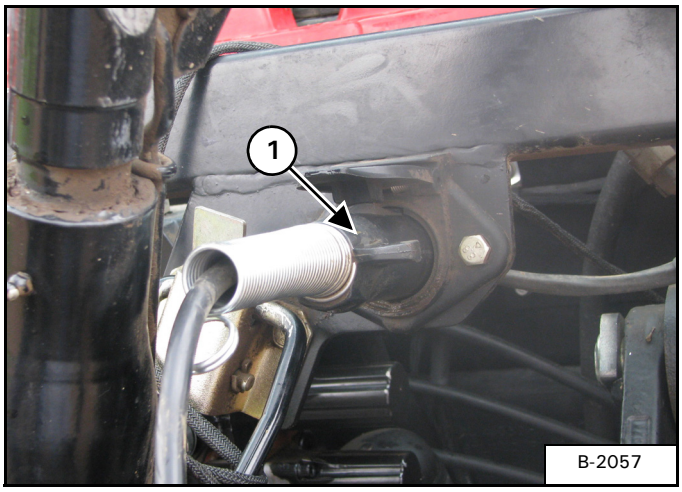
**Figure 12**




Ball valve shown in the CLOSED position **[Figure 12]**.

### Connect Electrical Harness

**Figure 13**




Connect the Bale Carrier's lighting harness (Item 1) **[Figure 13]** to the tractor's electrical system.

### Controller Power Supply

Power for the Display Unit (located in the tractor cab) and the Controller (located near the valve bank) comes from the Power connection connected to your tractor's power accessory port.

The Controller is powered by tractor's accessory power port.

**IMPORTANT**

**Always disconnect the cab harness from the bale carrier electrical harness when not in use.**

## CONTROLLER AND DISPLAY

### Built-in Safety Features

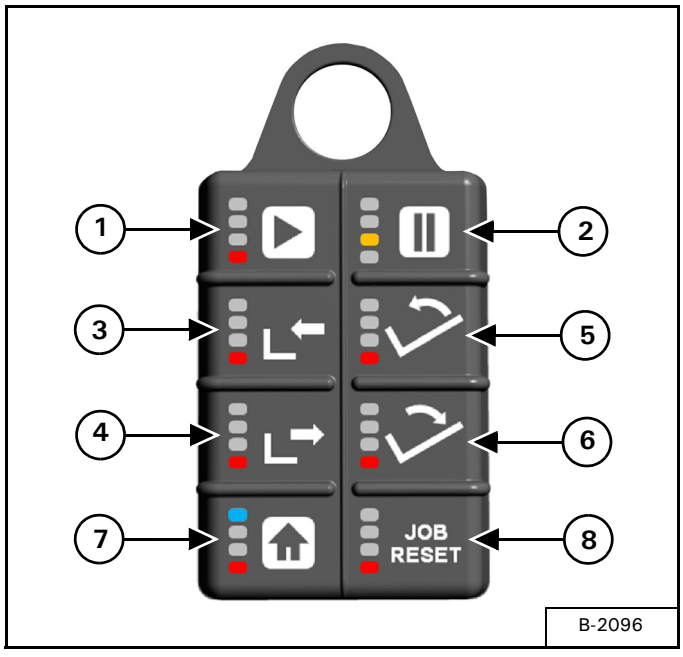
**CAUTION**

**Before proceeding to the field, become thoroughly familiar with the operating controls. Although the loading arms cycling is virtually automatic, the operator needs to be aware of some safety functions.**

1. The rotate arm will not rotate toward the deck if it has not been raised above the deck by a minimum of one foot.
2. Pusher will not push back toward the tipping frame if the tipping frame is not at “home” position (tipping frame is parallel to the deck).
3. Tipping frame will not lower or raise if pusher is not in its “home” position (adjacent to the proximity sensor)
4. Lift arm will not lower beyond deck height if rotate arm is positioned over the deck. Rotate arm must be rotated parallel to lift arm (to the right) before lift arm can be lowered to its “home” position.

### Remote Key Pad Description

**Figure 14**




The following descriptions refer to [**Figure 14**].

1. START BUTTON

   Press and hold the START button to start automatic loading cycle. Release button once AUTO cycle is started (loading arm raising).

2. PAUSE BUTTON

   Press and hold the PAUSE button to move PUSHER home (forward). Release to stop pusher motion. Pusher will also stop when it is in “home” position.

3. PUSHER BACK BUTTON

   Press and hold the PUSHER BACK button to move PUSHER back. Release to stop pusher motion. Pusher will not travel back beyond set limit.

4. PUSHER HOME (FORWARD) BUTTON

   Press and hold the PUSHER HOME button to move PUSHER home (forward). Release to stop pusher motion. Pusher will also stop when it is in “home” position.

5. TIPPING FRAME UP BUTTON

   Press and hold the TIPPING FRAME UP button to raise the tipping frame vertically. Release button to stop tipping frame motion.

6. TIPPING FRAME DOWN BUTTON

   Press and hold the TIPPING FRAME DOWN button to lower the tipping frame. Release button to stop. Tipping Frame will stop when it reaches “home” position.

7. HOME BUTTON

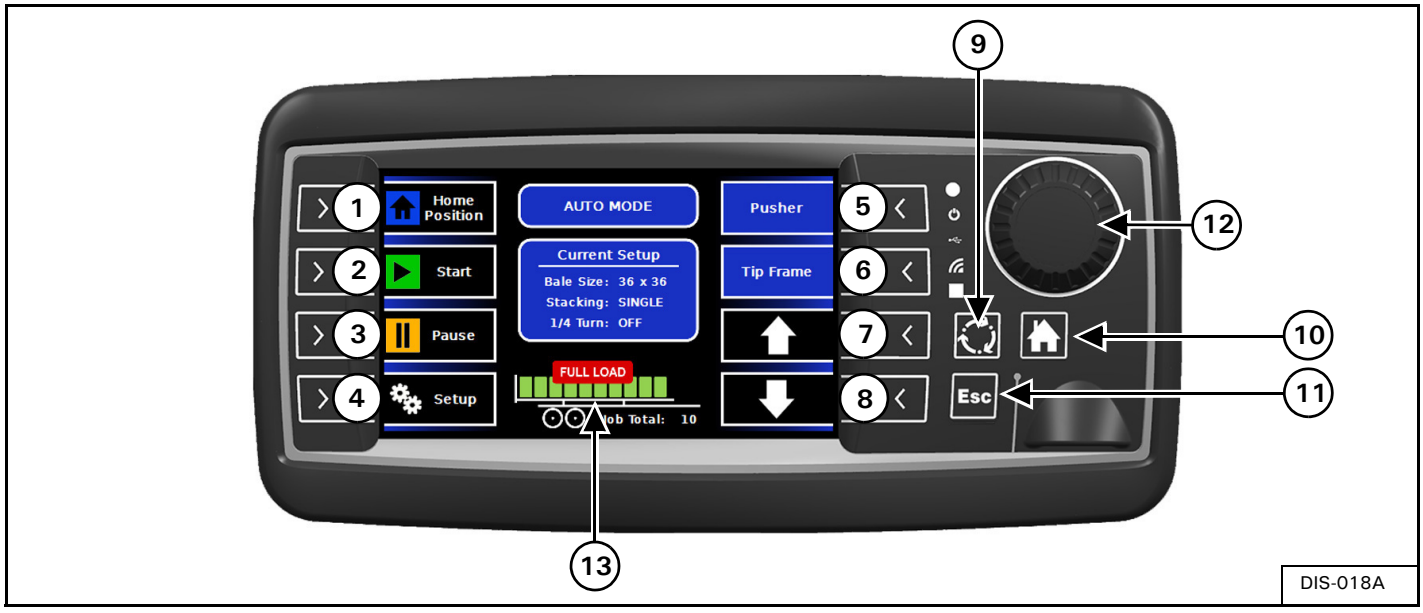
   Press and hold the HOME button to return all functions to their “home” position.

8. JOB RESET BUTTON

   Press and hold the JOB RESET button for three seconds to clear / zero out the job counter.

**Display Auto Mode Description**

**Figure 15**

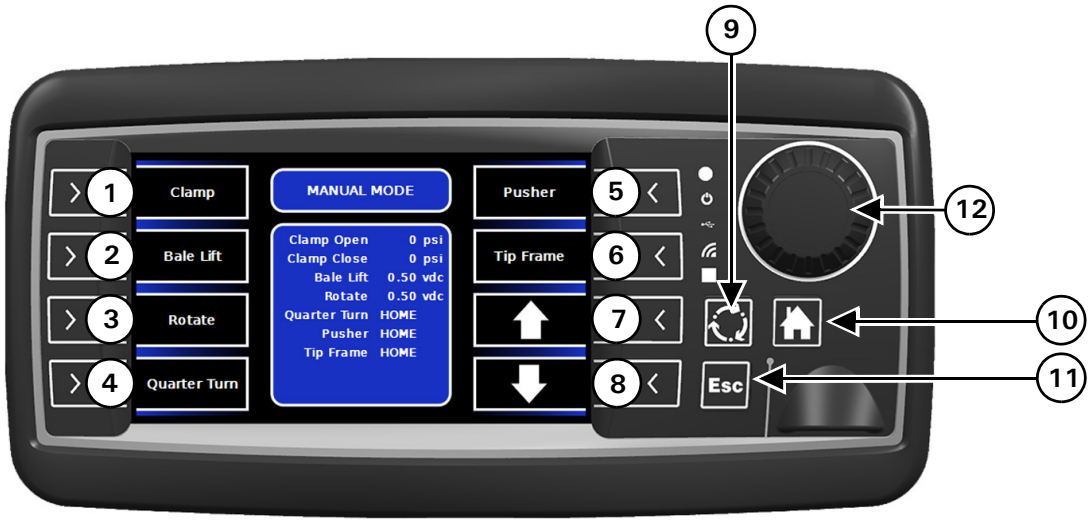



1. HOME BUTTON - Press and hold the HOME switch to return all functions to their “home” position.
2. START BUTTON - Press the START button activate loading sequence.
3. PAUSE BUTTON - Press the PAUSE button to pause / stop loading sequence.
4. SETUP BUTTON - Press the SETUP button to display the setup screen.
5. PUSHER BUTTON - Press the PUSHER button to manually operate the pusher. Once pressed, the Pusher button will change color (Blue) and can be operated manually using the Up and Down arrow buttons. The pusher functions will be disabled when an auto sequence is running.
6. TIP FRAME BUTTON - Press the TIP FRAME button to manually operate the tip frame. Once pressed, the TIP FRAME button will change color (Blue) and can be operated manually using the UP and DOWN ARROW buttons. The tip frame functions will be disabled when an auto sequence is running.
7. UP ARROW BUTTON - Press the UP ARROW button to move the pusher forward (HOME position). Press the UP ARROW button to raise the tip frame.
8. DOWN ARROW BUTTON - Press the DOWN ARROW button to move the pusher back, pushing bale(s). Press the DOWN ARROW button to lower the tip frame (HOME position).
9. NEXT BUTTON - Press the NEXT button to display the next screen.
10. HOME BUTTON - Press the HOME button to display the home screen.
11. ESC BUTTON - Press the ESC button to display the previous screen or view.
12. ENCODER KNOB - Turn the ENCODER knob to adjust the screen brightness. Screen brightness will default to 100%.
13. BALE CARRIER ICON - The controller will count and display how many bales have been loaded. The bales will appear on the BALE CARRIER icon one bale at a time. Once the carrier is full, a FULL LOAD window will appear.

    Once the Tip Frame is operated, and the Tip Frame is fully lowered for 1 sec, the bales will clear from the BALE CARRIER icon showing it is unloaded and the FULL LOAD window will disappear. Also, there will be a running Job Total number of bales shown. Job Total can be reset on the Setup screen.

**Display Manual Mode Description**

**Figure 16**




**NOTE: All functions (Manual Mode) will be disabled when an auto sequence is running.**

DIS-022

1. CLAMP BUTTON - Press the CLAMP button to manually operate the bale clamp. Once pressed, the Clamp button will change color (Blue) and can be operated manually using the Up and Down arrow buttons.
2. BALE LIFT BUTTON - Press the BALE LIFT button to manually operate the bale lift. Once pressed, the Bale Lift button will change color (Blue) and can be operated manually using the Up and Down arrow buttons.
3. ROTATE BUTTON - Press the ROTATE button to manually operate the rotate function. Once pressed, the Rotate button will change color (Blue) and can be operated manually using the Up and Down arrow buttons.
4. QUARTER TURN BUTTON - Press the QUARTER TURN button to manually operate the quarter turn. Once pressed, the Quarter Turn button will change color (Blue) and can be operated manually using the Up and Down arrow buttons.
5. PUSHER BUTTON - Press the PUSHER button to manually operate the pusher. Once pressed, the Pusher button will change color (Blue) and can be operated manually using the Up and Down arrow buttons.
6. TIP FRAME BUTTON - Press the TIP FRAME button to manually operate the tip frame. Once pressed, the TIP FRAME button will change color (Blue) and can be operated manually using the UP and DOWN ARROW buttons.

| ARROW BUTTON FUNCTIONS | |
|---|---|
| **UP ARROW** | **DOWN ARROW** |
| Open Clamp | Close Clamp |
| Raise Bale Lift | Lower Bale Lift |
| Rotate Arm Right / Out | Rotate Arm Left / In |
| Raise Quarter Turn | Lower Quarter Turn |
| Move Pusher Forward | Move Pusher Back |
| Raise Tip Frame | Lower Tip Frame |

7. UP ARROW BUTTON - Press the UP ARROW button to move / operate the desired function.
8. DOWN ARROW BUTTON - Press the DOWN ARROW button to move / operate the desired function.
9. NEXT BUTTON - Press the NEXT button display the next display screen.
10. HOME BUTTON - Press the HOME button to display the home screen.
11. ESC BUTTON - Press the ESC button to display the previous screen or view.
12. ENCODER KNOB - Turn the ENCODER knob to adjust screen brightness. Screen brightness will default to 100%.

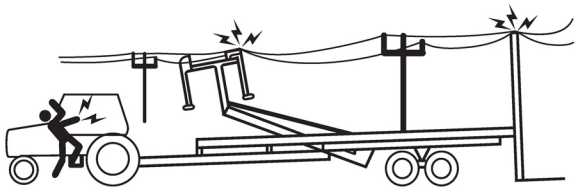
## CALIBRATION PROCEDURES

**DANGER**

**AVOID INJURY OR DEATH**

**All safety features are turned off in calibration mode.**

**DANGER**



**ELECTROCUTION HAZARD**

**To prevent serious injury or death from electrocution, stay at least 50 ft. (15 m) away from overhead power lines when raising tipping frame or lift arm.**

**WARNING**

**Before operating the equipment:**

- **Clear the work area of all bystanders, especially small children.**
- **Clear the work area of all obstacles.**
- **Keep shields and all guards in place.**
- **Keep away from moving parts.**

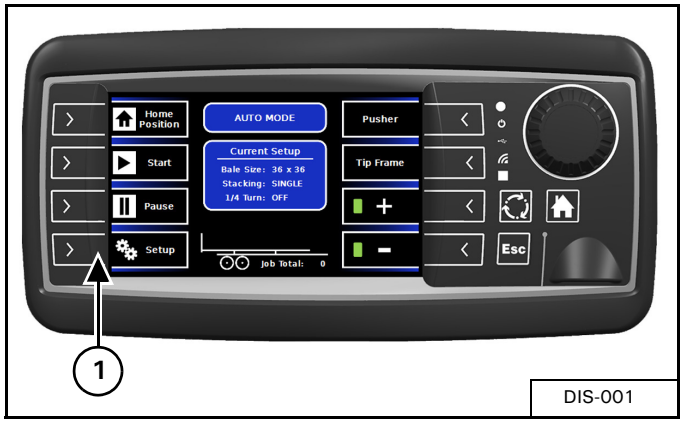
### Hydraulic System Procedure

The automatic loading cycle has been factory tested and adjusted.

**IMPORTANT**

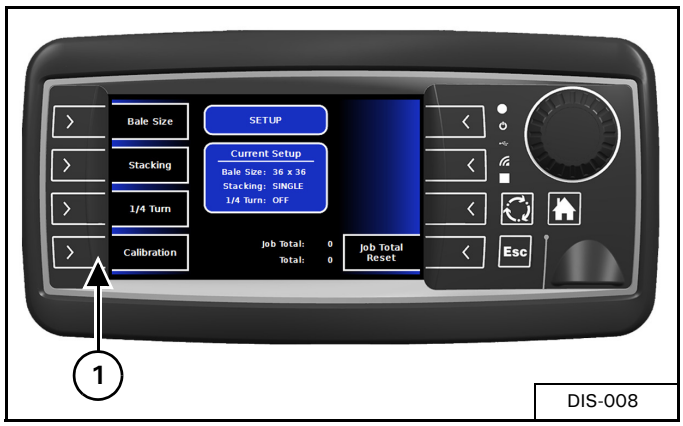
**The CLAMP CLOSE pressure setting must be adjusted until compatible to your tractor to ensure that the automatic load / unload sequence performs correctly.**

**Figure 17**



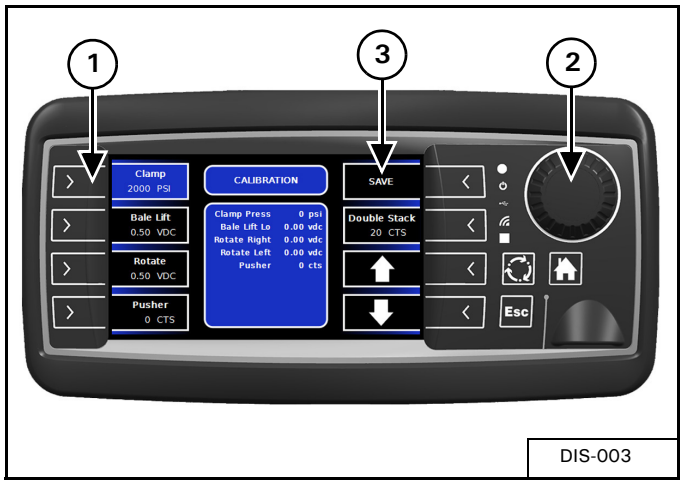

Press Setup button (Item 1) **[Figure 17]** to display the SETUP screen.

**Figure 18**




Press Calibration button (Item 1) to display calibration screen **[Figure 18]**.

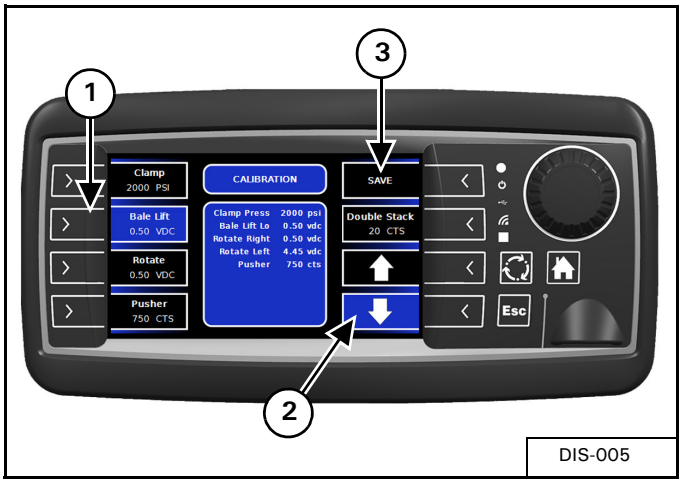
**Figure 19**




Press Clamp button (Item 1) **[Figure 19]**, button will turn Blue.

Turn encoder knob (Item 2) until clamp pressure is approximately 2000 PSI. Press the SAVE button (Item 3) **[Figure 19]**.

**Figure 20**




Press Bale Lift button (Item 1) **[Figure 20]**, button will turn Blue.

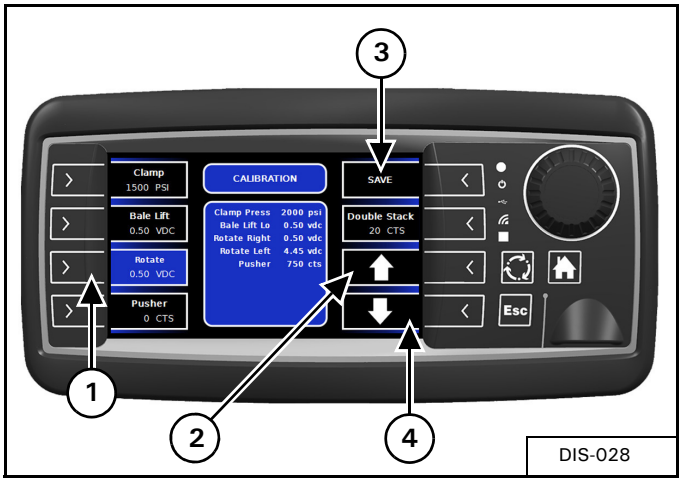
Remove transport lock. (See "Lift Cylinder Lock Removal And Installation" on page 46.)

Press down arrow (Item 2) until the bale lift is fully lowered. Press the SAVE button (Item 3) **[Figure 20]**.

**NOTE: Down limit should be greater than 0.25V. The down limit should be no greater than approximately 1.00V, with the lift arm in lowest position.**

**NOTE: Down limit target is at or near 0.5vdc.**

**Figure 21**




Press Rotate button (Item 1) **[Figure 21]**, button will turn Blue.

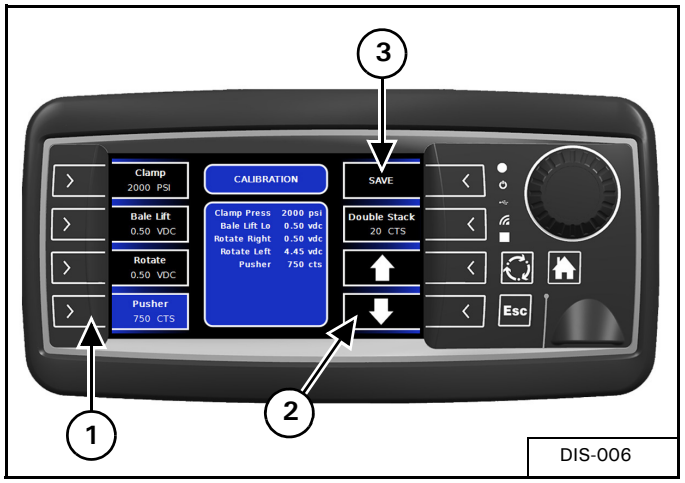
Press down arrow (Item 4) and fully retract (right) the rotate arm. Press the save button (Item 3) **[Figure 21]**.

Press up arrow (Item 2) and fully extend (left) the rotate arm. Press the SAVE button (Item 3) **[Figure 21]**.

**NOTE: Left limit should be greater than 3.50V and less than 5.00V.**

**NOTE: Right limit should be greater than 0.25V and less than 2.5V.**

**Figure 22**

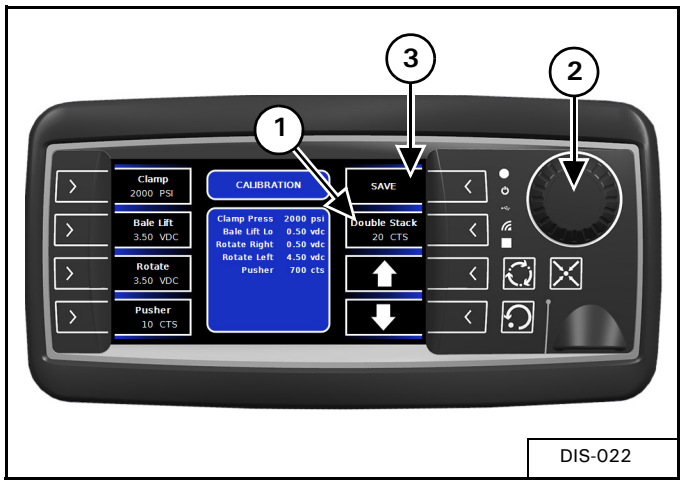



**NOTE: Do not run pusher into the hydraulic motor cover.**

Press Pusher button (Item 1) **[Figure 22]**, button will turn Blue.

Press down arrow (Item 2) until the pusher is approximately 12 in. (304 mm) in front of the tip frame. Press the SAVE button (Item 3) **[Figure 22]**.

**Figure 23**



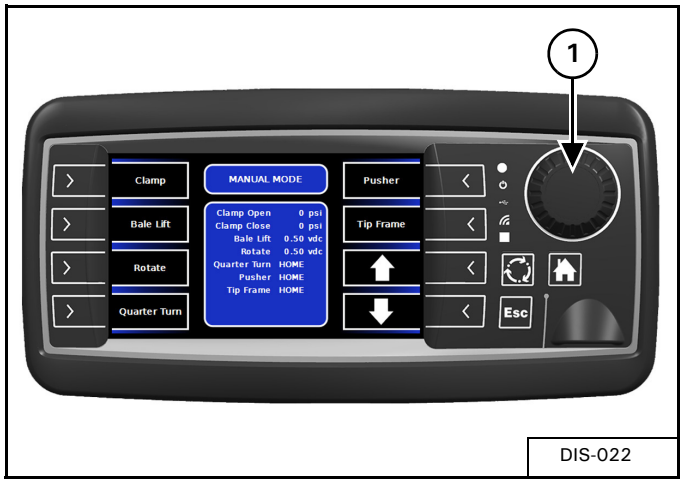

Press Double Stack button (Item 1) **[Figure 23]**, button will turn Blue.

**NOTE: Double Stack button is used to adjust how far the first bale is pushed back when double stacking.**

Turn encoder knob (Item 2) **[Figure 23]** to increase or decrease CTS number. Increase the CTS number to increase the distance the pusher moves the first bale. Decrease the CTS number to decrease the distance.

Press the Save button (Item 3) **[Figure 23]**.

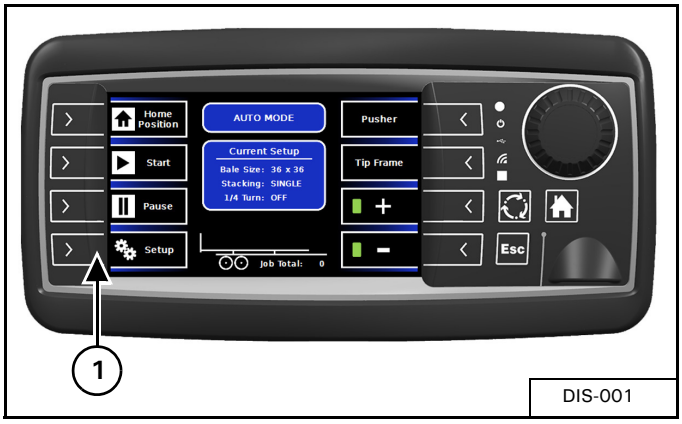
**Figure 24**




Turn encoder knob (Item 1) **[Figure 24]** to adjust screen brightness.

**Bale Size Setup**

**Figure 25**



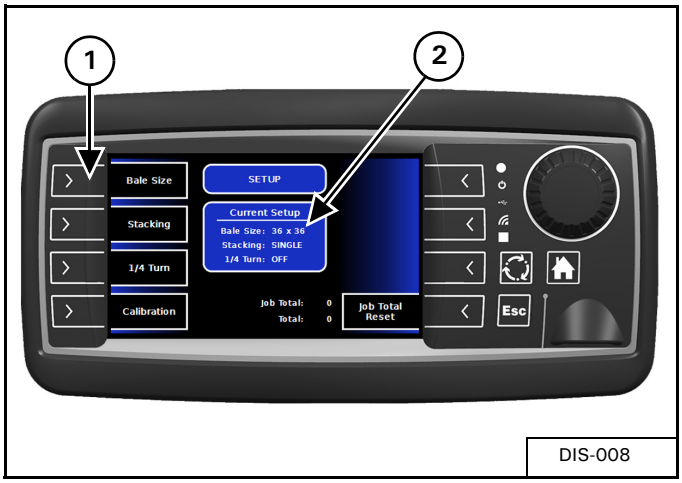

Press Setup button (Item 1) **[Figure 25]** to display the SETUP screen.

**NOTE: Double stacking 36" x 48" bales with 1/4 turn OFF.**

**NOTE: Single stacking only on 36" x 48" bales with 1/4 turn ON.**

**NOTE: Double stacking 36" x 36" bales with 1/4 turn OFF.**

**Figure 26**

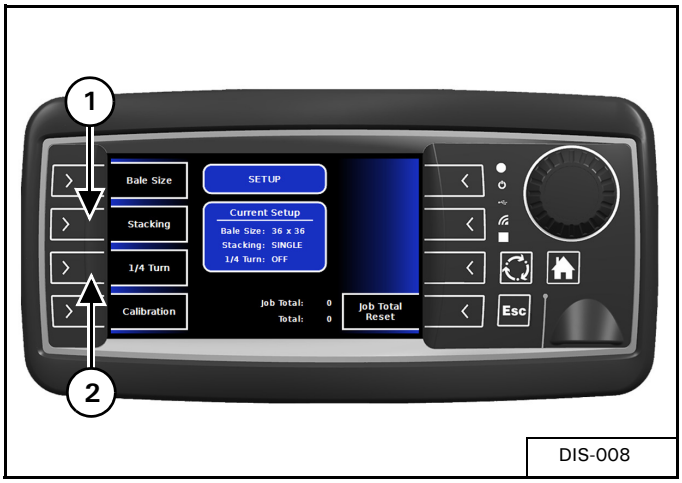



Press Bale Size button (Item 1) to select the desired bale size (Item 2) **[Figure 26]**.

*Bale Size Options*

- 36 in. x 36 in. (914 mm x 914 mm)
- 36 in. x 48 in. (914 mm x 1219 mm)
- 48 in. x 48 in. (1219 mm x 1219 mm)

**Figure 27**




Press Stacking button (Item 1) **[Figure 27]** to select single or double stacking.

**NOTE: Single stacking only on 48 in. x 48 in. (1219 mm x 1219 mm) bales.**

Press 1/4 Turn button (Item 2) **[Figure 27]** to turn ON or OFF.

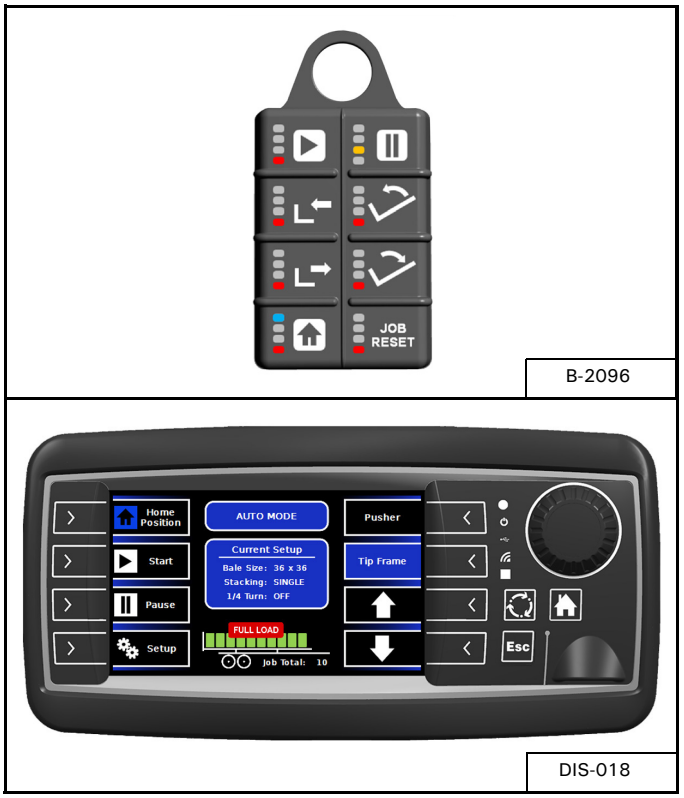
Return to Home page.

## CONTROLLER OPERATION

### Auto Mode

**NOTE: Auto Mode function can be operated with the display or remote key pad.**

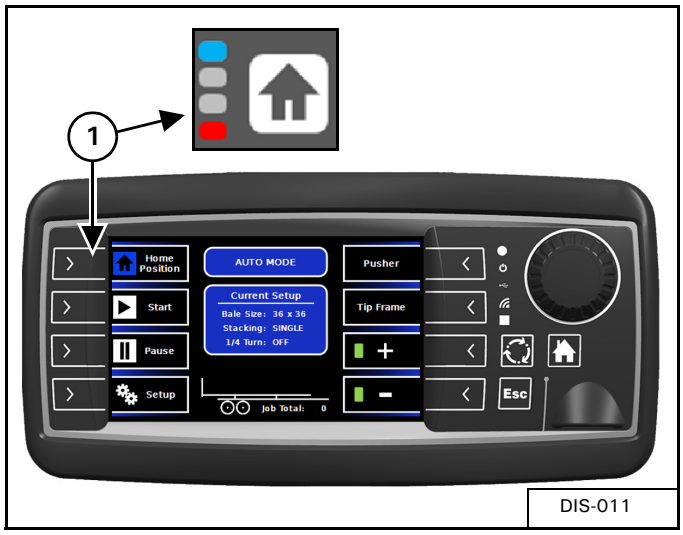
**Figure 28**




Use the buttons on the remote key pad or display to operate the bale carrier **[Figure 28]**.

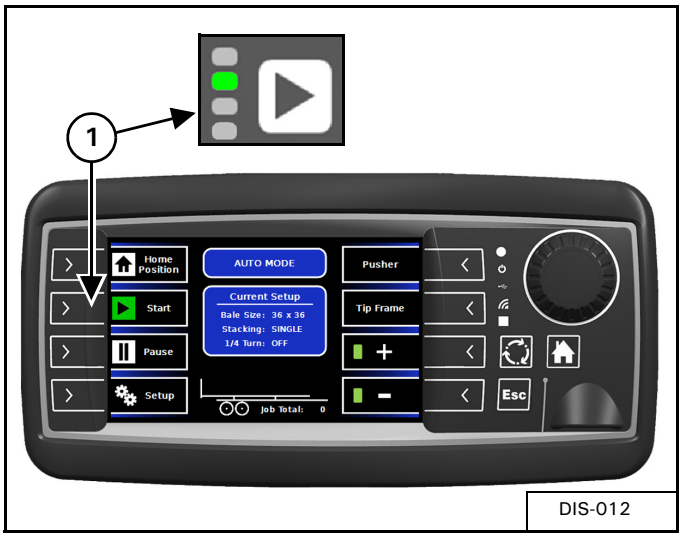
Once the unit has been calibrated and the bale size selected, the controller sets all functions to the ready STATE required to allow the operator to operate the bale carrier in auto mode.

**Figure 29**




Press / hold Home button (Item 1) **[Figure 29]** until the icon turns Blue. This indicates that all functions are in the Home / Start position.

**Figure 30**




With all functions in the Home position, press / hold the Start button (Item 1) **[Figure 30]**, the Loading Sequence will begin by clamping the bale. Once the bale is clamped, the Loading Sequence will be latched ON, the Start icon will blink Green in color and the Start button can then be released.

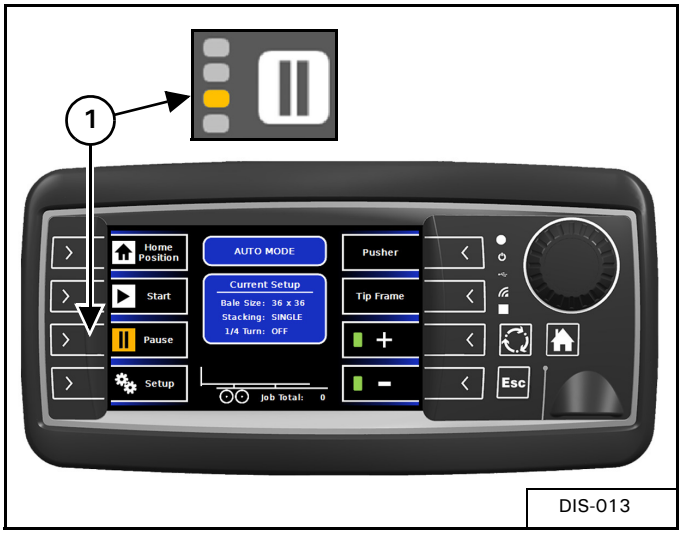
**IMPORTANT**

**AVOID LIFT ARM DAMAGE**

**When operating along tree-lines, always monitor the lift arm operation. Verify that the lift arm and bale will not make contact with branches or overhead obstructions as the bale is raised and placed on the carrier deck. Press Pause to stop loading sequence.**

**NOTE: When the sequence is paused, only the Bale Lift Raise / Lower can be operated.**

**Figure 31**




Press / hold Pause button (Item 1) **[Figure 31]** anytime during Loading Sequence will stop and the Pause icon will blink Amber in color and the Start icon will be White in color.

**NOTE: If the Pause button is pressed a second time the sequence will be canceled.**

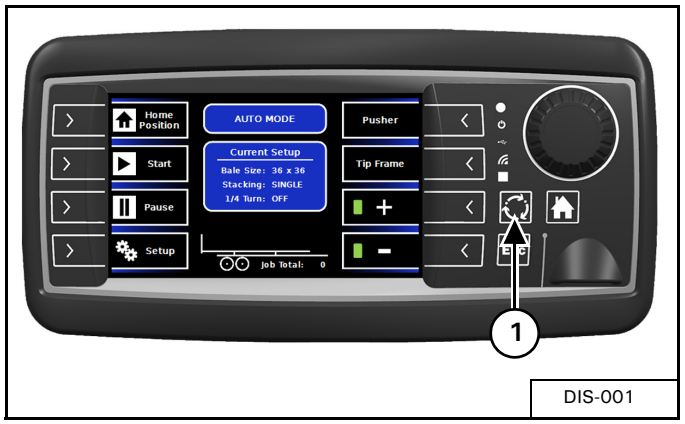
If the Start button is pressed when the Loading Sequence is paused, the sequence will start again where it left off and the Start icon will be Green in color. Allow bale carrier to run through the complete cycle.

By pressing and holding the Home Position button, until all functions are at the Home Position. If the Home Position button is released the sequence will stop. The Loading Sequence will not be able to continue until all functions are back in the Home Position.

**Manual Mode**

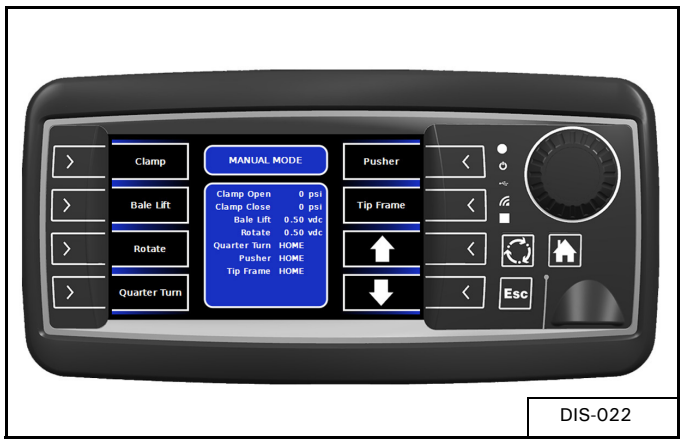
The Manual mode allows the operator to only operate one function at a time. The operator selects the desired function; the selected function button will turn Blue.

**Figure 32**




Press Next button (Item 1) **[Figure 32]** to display the MANUAL MODE screen.

**Figure 33**




Manual Mode Screen **[Figure 33]**.

*Manual Function Operation*

**CLAMP ARM** - Press the UP arrow to open the clamp. Press the DOWN arrow to close the clamp.

**LIFT ARM** - Press the UP arrow to raise the lift arm. Press the DOWN arrow to lower the lift arm.

**ROTATE ARM** - Press the UP arrow to move the rotate arm to the right. Press the DOWN arrow to move the rotate arm to the left.

**QUARTER TURN** - Press the UP arrow to raise the quarter turn arm. Press the DOWN arrow to lower the quarter turn arm.

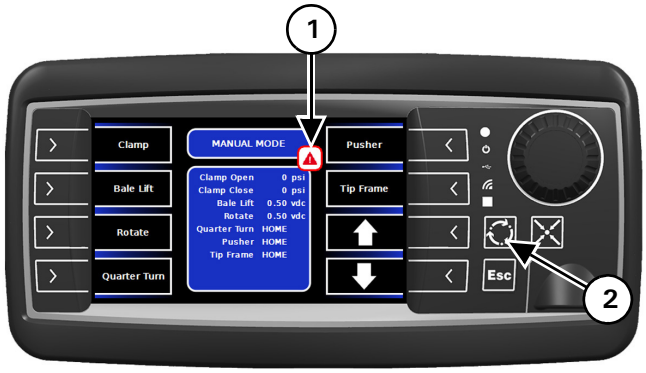
**PUSHER** - Press the UP arrow to return the pusher to the home position. Press the DOWN arrow to move the pusher back.

**TIPPING FRAME** - Press the UP arrow to raise the tipping frame. Press the DOWN arrow to lower the tipping frame.

Press ESC to return to the main menu.

**Diagnostic Mode**

**Figure 34**

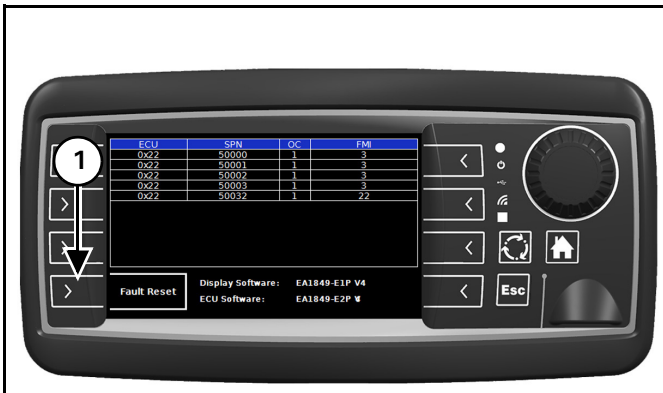



DIS-025

If any faults are active, a blinking icon (Item 1) **[Figure 34]** will appear on the screen.

Press Next button (Item 2) **[Figure 34]** to display the Fault Screen.

**Figure 35**




DIS-024

Fault screen **[Figure 35]**.

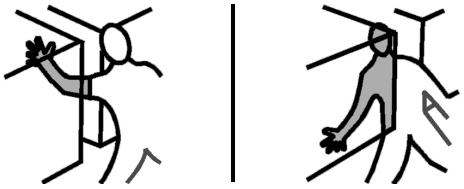
Refer to **Page 67-68** for the list of faults.

Press Fault Reset button (Item 1) **[Figure 35]** to clear fault.

## PRE OPERATION

### Adjusting The Left Grab Arm

**⚠ WARNING**

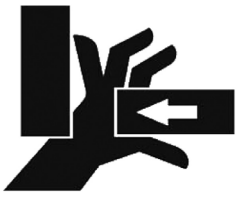


**PINCHING / CRUSHING HAZARD**

**To prevent serious injury or death from pinching or crushing:**

- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

**⚠ WARNING**

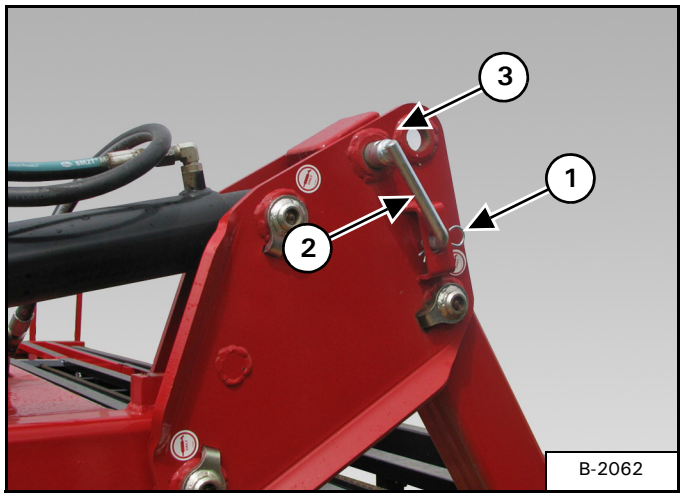


**AVOID INJURY OR DEATH**

**Keep fingers and hands out of pinch points when adjusting or servicing equipment.**

*Large Bale Setting*

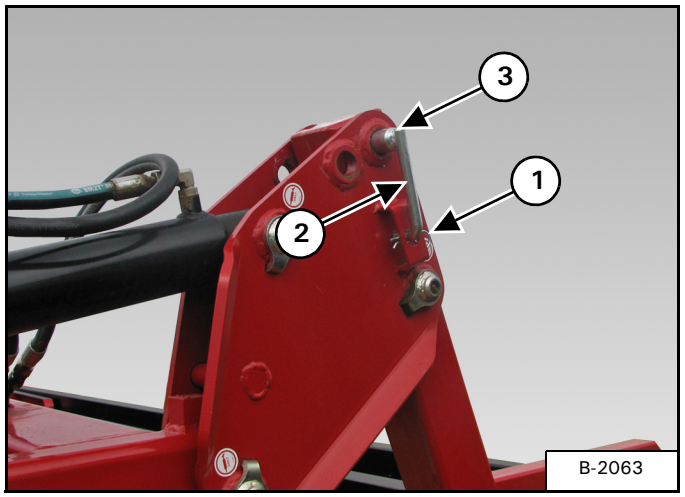
**Figure 36**




Remove retaining pin (Item 1). Remove the pin (Item 2), align the left grab arm with the inside location (Item 3) **[Figure 36]** for large bales (approximately 4' in width).

*Intermediate Bale Setting*

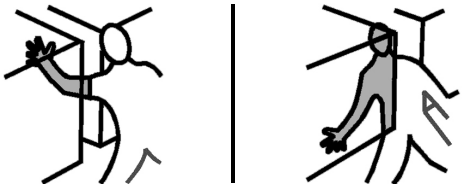
**Figure 37**




Remove retaining pin (Item 1). Remove the pin (Item 2), align the left grab arm with the outside location (Item 3) **[Figure 37]** for intermediate bales (approximately 3' in width).

### Adjusting The Bale Stop

**⚠ WARNING**

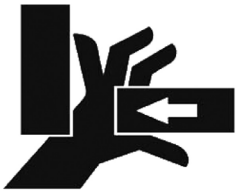


**PINCHING / CRUSHING HAZARD**

**To prevent serious injury or death from pinching or crushing:**

- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

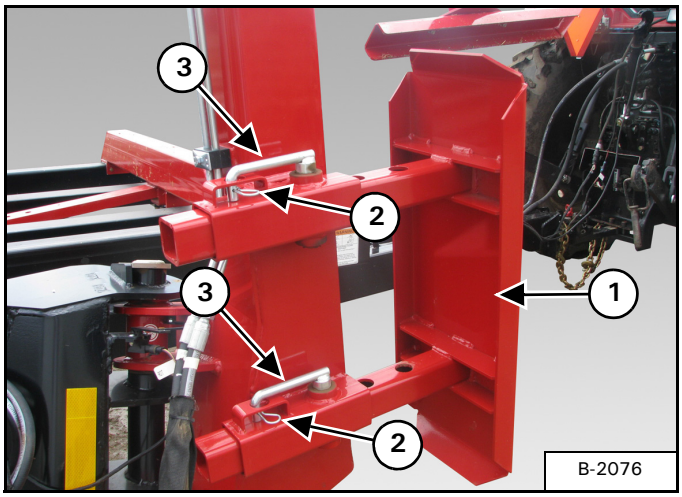
**⚠ WARNING**



**AVOID INJURY OR DEATH**

**Keep fingers and hands out of pinch points when adjusting or servicing equipment.**

**Figure 38**



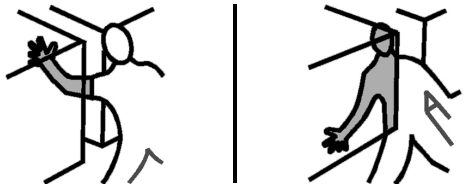

Adjust the bale stop (Item 1) **[Figure 38]** in or out as needed to allow the bale to be centered on the deck of the bale carrier.

Remove the two hairpins (Item 2) and the two locking pins (Item 3) **[Figure 38]**, move the bale stop to the desired position.

Reinstall locking pins and hairpins to secure the bale stop in the desired position.

### Adjusting The Tipping Frame Extensions

**⚠ WARNING**

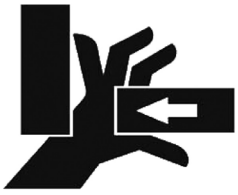


**PINCHING / CRUSHING HAZARD**

**To prevent serious injury or death from pinching or crushing:**

- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

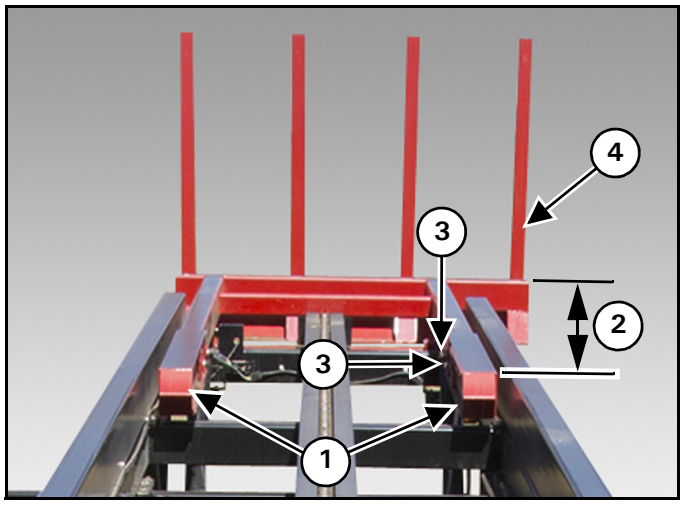
**⚠ WARNING**



**AVOID INJURY OR DEATH**

**Keep fingers and hands out of pinch points when adjusting or servicing equipment.**

**Figure 39**




Adjust the tipping frame extensions (Item 1) approximately 6" (15 cm) (Item 2) **[Figure 39]** shorter than the desired stack height of the bales.

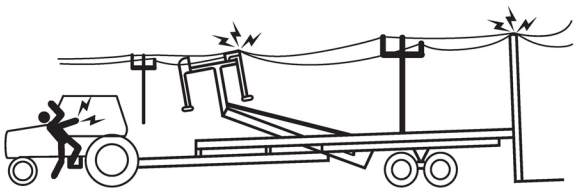
Loosen the four jam nuts and bolts (Item 3). Adjust bale extension sleeves to the desired length from the front of the tail stops (Item 4) **[Figure 39]** to the front of the bale extension sleeves. Tighten bolts and jam nuts.

**NOTE: Every time the tip frame arms are adjusted, the pusher will need to be re-calibrated. (See "CALIBRATION PROCEDURES" on page 35.)**

## INITIAL PREPARATION

### Lift Cylinder Lock Removal And Installation

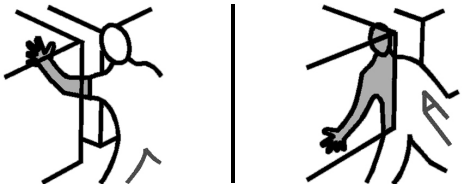
**DANGER**



**ELECTROCUTION HAZARD**

**To prevent serious injury or death from electrocution, stay at least 50 ft. (15 m) away from overhead power line when raising tipping frame or lift arm.**

**WARNING**



**PINCHING / CRUSHING HAZARD**

**To prevent serious injury or death from pinching or crushing:**

- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

**WARNING**

**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.**
- **Keep the heavy end of the machine uphill.**
- **Do not overload the machine.**
- **Check for adequate traction.**

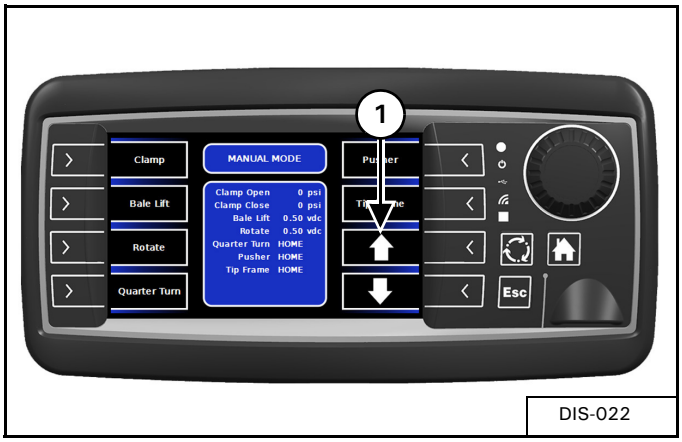
*Removal*

Park the tractor / equipment on a flat level surface.

**Figure 40**


Press Next button (Item 1) **[Figure 40]** to display the MANUAL MODE screen.

**Figure 41**

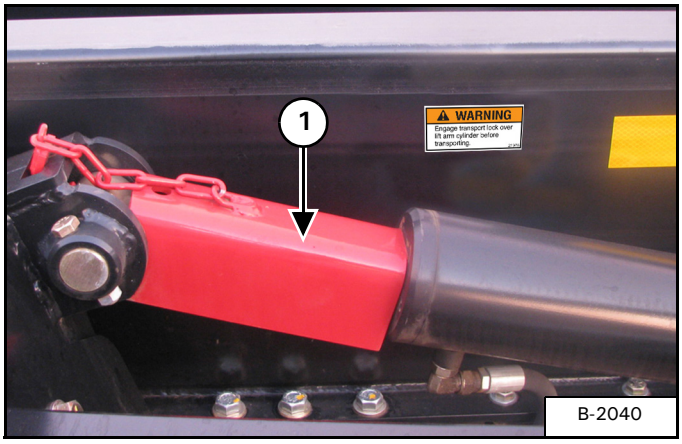



Press UP Arrow button (Item 1) **[Figure 41]** to raise LIFT ARM.

Press and hold the up arrow key (Item 1) **[Figure 41]** until the lift cylinder lock is free of the lift arm cylinder, release the button.

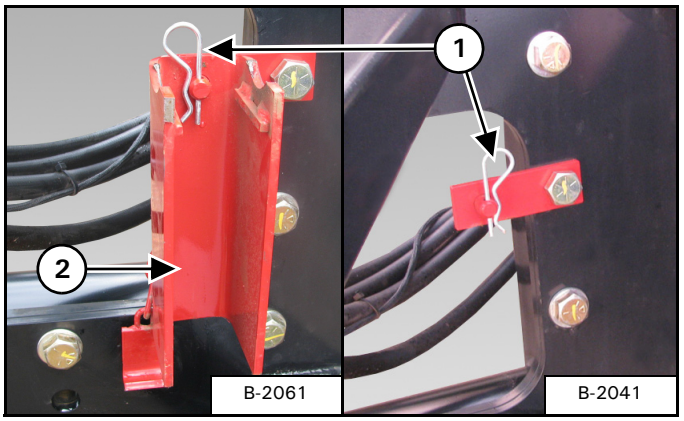
Place all controls in neutral, engage the park brake, stop the engine and wait for all moving parts to stop. Leave the operator's position.

**Figure 42**




Remove the lift cylinder lock (Item 1) **[Figure 42]** from the lift cylinder.

**Figure 43**




Remove the hairpin (Item 1) from the storage bracket. Place the lift cylinder lock (Item 2) **[Figure 43]** on the peg of the storage bracket. Install the hairpin to secure the lift cylinder lock to the storage bracket (operating position).

Press ESC button to return the previous page.

*Installation*

**IMPORTANT**

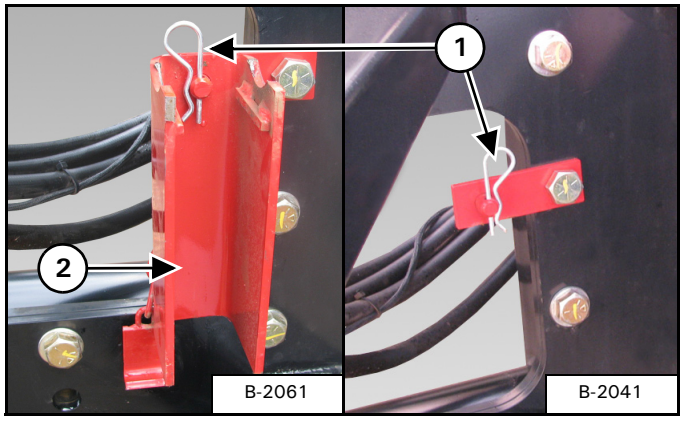
**Always install the lift cylinder lock over the lift arm cylinder before transporting.**

Park the tractor / equipment on a flat level surface.

Fully lower the lift arm.

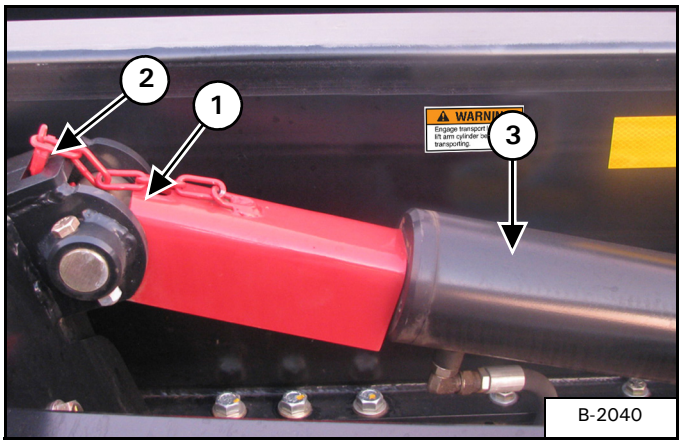
Place all controls in neutral, engage the park brake, stop the engine and wait for all moving parts to stop. Leave the operator's position.

**Figure 44**




Remove the retaining pin (Item 1) and remove the lift cylinder lock (Item 2) **[Figure 44]** from the storage bracket. Reinstall the retaining pin onto the peg of the storage bracket.

**Figure 45**



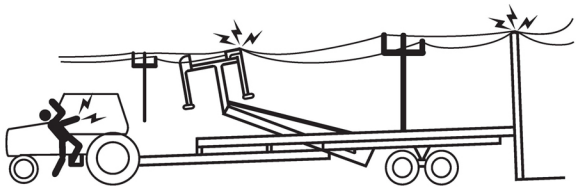

Place the notched end of the lift cylinder lock (Item 1) over the lift cylinder's rod pin eye and between the pin plates. Install chain hook (Item 2) **[Figure 45]** to the gusset above the pin plates.

Retract the lift cylinder (Item 3) **[Figure 45]** to secure the lift cylinder lock in the transport position.

## STACKING BALES

### Starting A Stack

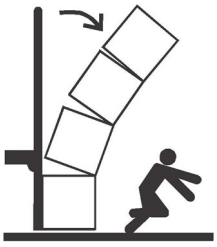
**DANGER**



**ELECTROCUTION HAZARD**

**To prevent serious injury or death from electrocution, stay at least 50 ft. (15 m) away from overhead power line when raising tipping frame or lift arm.**

**DANGER**



**FALLING BALE HAZARD**
**KEEP AWAY**

**To prevent serious injury or death from falling bales:**

1. **Stay away from bale stack when unloading bale carrier.**
2. **Keep others away.**

**IMPORTANT**

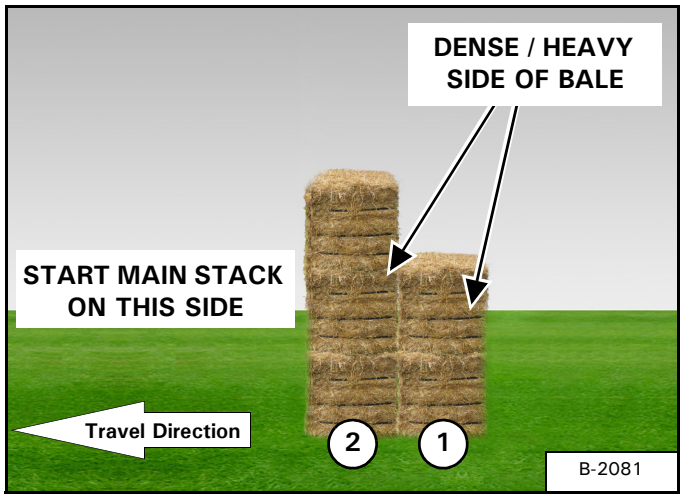
**STACKING BALES**

**The most stable bale stack is achieved by stacking bales with the dense / heavy side facing outward. Gravity virtually assures that as bales are being formed in the baler heavier particles end up in the bottom half of the bale, making the lower half denser (heavier) than the top. The lighter side of the bale may "sag" over time.**

**NOTE: If possible, start a stack less than full height for the first load to allow bales to support each other.**

Load only five bales for the first load. Load two bales first, push the two bales all the way to the rear, then load three additional bales.

**Figure 46**

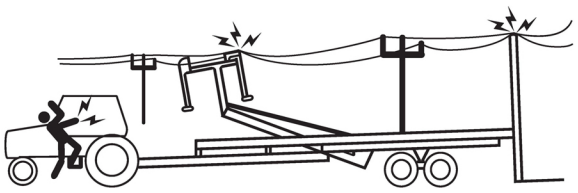



Unload the first stack of two bales (Item 1), drive forward, and then unload the remaining stack of three bales (Item 2) **[Figure 46]** against the first stack of two bales. Lay the main stack from the opposite end to the direction of the initial stack.

## MANUAL MODE OPERATION

### Loading Procedure

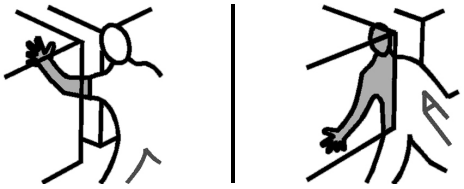
**DANGER**



**ELECTROCUTION HAZARD**

**To prevent serious injury or death from electrocution, stay at least 50 ft. (15 m) away from overhead power line when raising tipping frame or lift arm.**

**WARNING**



**PINCHING / CRUSHING HAZARD**

**To prevent serious injury or death from pinching or crushing:**

- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

**WARNING**

**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.**
- **Keep the heavy end of the machine uphill.**
- **Do not overload the machine.**
- **Check for adequate traction.**

Move the tractor and bale carrier to starting area in the field.

Stop the tractor and bale carrier on flat level surface.

Remove the lift cylinder lock. (See “Lift Cylinder Lock Removal And Installation” on page 46.)

Enter the operator’s position. (See “Entering And Leaving The Operator’s Position” on page 25.)

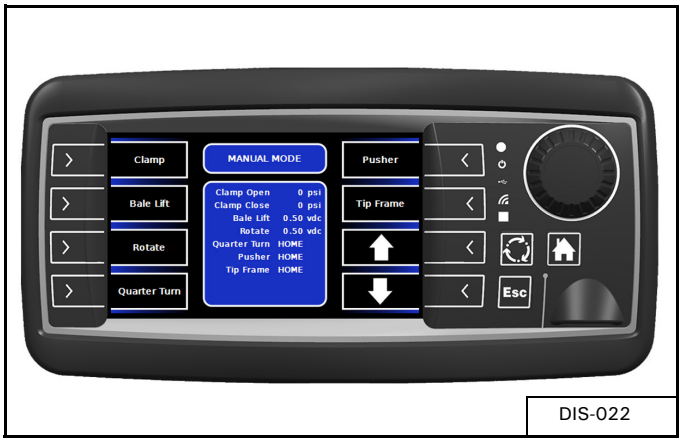
Move the tractor and bale carrier to loading area. Align the tractor and bale carrier with the narrow side of the first bale to be loaded.

Stop the tractor and engage the parking brake.

**Figure 47**


Press Next button (Item 1) **[Figure 47]** to display the MANUAL MODE screen.

**Figure 48**




Using the individual functions, raise the lift arm, move the rotate arm right (out) and lower the lift arm. Open the grab arms **[Figure 48]**.

**Figure 49**


Disengage the tractor's parking brake. Move the tractor and bale carrier straight forward, center the first bale in the grab arms (Item 1) **[Figure 49]**.

Stop the tractor and engage parking brake.

Select CLAMP from the manual mode screen. Using the DOWN arrow, close the grab arms against the first bale **[Figure 49]**.

**Figure 50**


Select LIFT ARM from the manual mode screen. Using the UP arrow, raise the lift arm until the bale is slightly above the deck of the carrier.

Select ROTATE ARM from the manual mode screen. Using the DOWN arrow, move the rotate arm left (in) until the bale is over the deck of the carrier.

Select CLAMP from the manual mode screen. Using the UP arrow, open the grab arms, allowing the bale to drop down onto the deck of the carrier **[Figure 50]**.

Select PUSHER from the manual mode screen. Using the DOWN arrow, Move the pusher back approximately 6" to 12" to slide the first bale back.

Select ROTATE ARM from the manual mode screen. Using the UP arrow, move the rotate arm right (out).

Select LIFT ARM from the manual mode screen. Using the DOWN arrow, lower the lift arm.

**Figure 51**


Disengage the tractor's parking brake. Move the tractor and bale carrier forward, center the second bale in the grab arms (Item 1) **[Figure 51]**.

Stop the tractor and engage parking brake.

Select CLAMP from the manual mode screen. Using the DOWN arrow, close the grab arms against the second bale **[Figure 51]**.

**Figure 52**


Select LIFT ARM from the manual mode screen. Using the UP arrow, raise the lift arm until the second bale is slightly above the first (lower) bale.

Select ROTATE ARM from the manual mode screen. Using the DOWN arrow, move the rotate arm left (in) until the second bale is over the first (lower) bale.

Select CLAMP from the manual mode screen. Using the UP arrow, open the grab arms, allowing the bale to drop down onto the first (lower) bale **[Figure 52]**.

Select PUSHER from the manual mode screen. Using the DOWN arrow, Move the pusher back, to slide the two bales back allowing enough room to load the next bale(s).

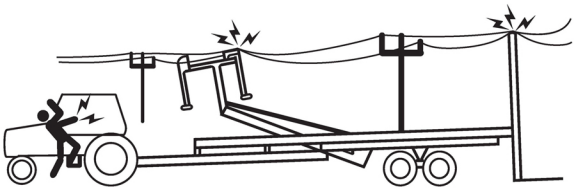
Select ROTATE ARM from the manual mode screen. Using the UP arrow, move the rotate arm right (out).

Select LIFT ARM from the manual mode screen. Using the DOWN arrow, lower the lift arm.

Repeat procedure until desired number of bales have been loaded or the deck is full.

**Unloading Procedure**

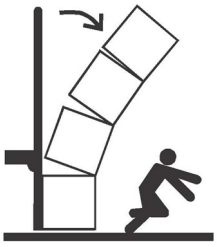
**DANGER**



**ELECTROCUTION HAZARD**

**To prevent serious injury or death from electrocution, stay at least 50 ft. (15 m) away from overhead power line when raising tipping frame or lift arm.**

**DANGER**

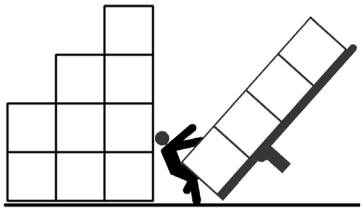


**FALLING BALE HAZARD**
**KEEP AWAY**

**To prevent serious injury or death from falling bales:**

1. **Stay away from bale stack when unloading bale carrier.**
2. **Keep others away.**

**WARNING**



**AVOID INJURY OR DEATH**

**Before moving the tractor and bale carrier, 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 stacking / unloading bales.**

Move the tractor and bale carrier to stacking / unloading area.

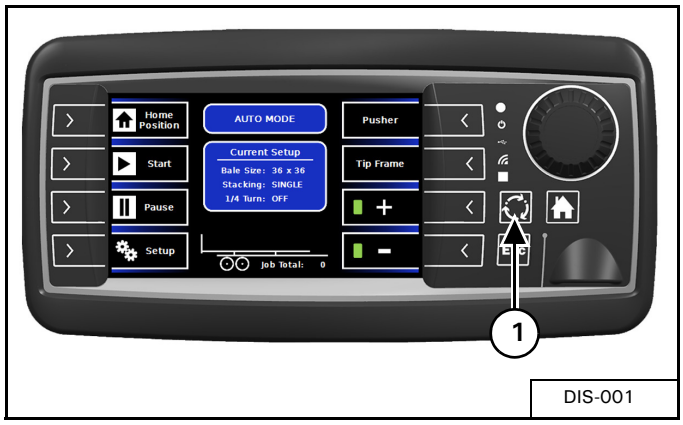
Stop the tractor and bale carrier on flat level surface.

Enter the operator's position. (See "Entering And Leaving The Operator's Position" on page 25.)

Move the tractor and bale carrier into position in front of the three bales stacked for support.

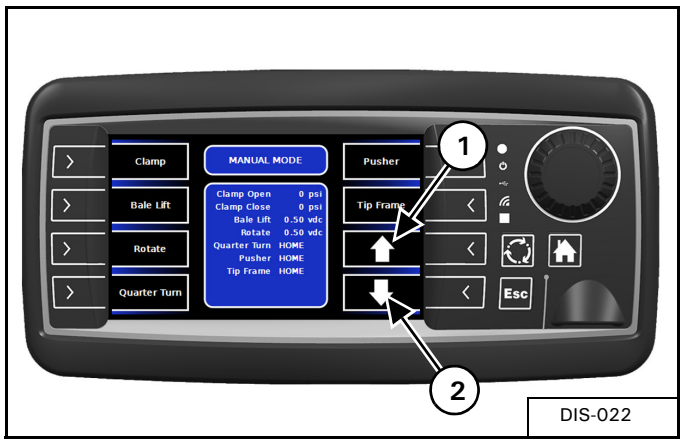
Stop the tractor and engage the parking brake.

**Figure 53**




Press Next button (Item 1) **[Figure 53]** to display the MANUAL MODE screen.

**Figure 54**

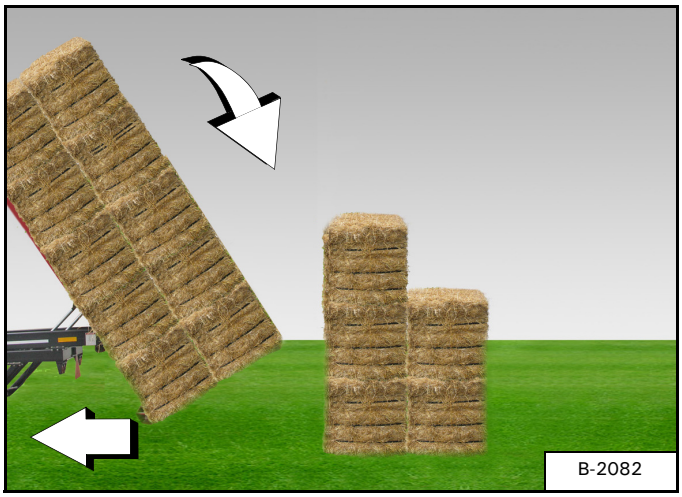



Select Tip Frame **[Figure 54]** from the manual mode screen.

Start the bale stack. (See "STACKING BALES" on page 49.)

**NOTE: The tipping frame can also be operated with the remote control. (See "Remote Key Pad Description" on page 32.)**

**Figure 55**




Using the UP arrow (Item 1) **[Figure 54]**, raise the tipping frame until the bales being stacked / unloaded contacts the ground **[Figure 55]**.

Slowly drive the tractor forward until the stack eases off the TAIL STOPS and onto the ground.

Drive the tractor forward until there is enough room to safely lower the TIPPING FRAME onto the carrier deck.

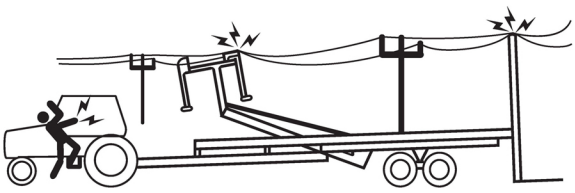
Using the DOWN arrow (Item 2) **[Figure 54]**, fully lower the tipping frame onto the carrier deck.

Repeat if necessary to empty the deck. Use the pusher to push the next set of bales onto the tipping frame.

## AUTO MODE OPERATION

### Loading Procedure

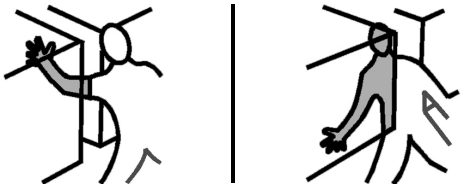
**DANGER**



**ELECTROCUTION HAZARD**

**To prevent serious injury or death from electrocution, stay at least 50 ft. (15 m) away from overhead power line when raising tipping frame or lift arm.**

**WARNING**



**PINCHING / CRUSHING HAZARD**

**To prevent serious injury or death from pinching or crushing:**

- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

**WARNING**

**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.**
- **Keep the heavy end of the machine uphill.**
- **Do not overload the machine.**
- **Check for adequate traction.**

Move the tractor and bale carrier to starting area in the field.

Stop the tractor and bale carrier on flat level surface.

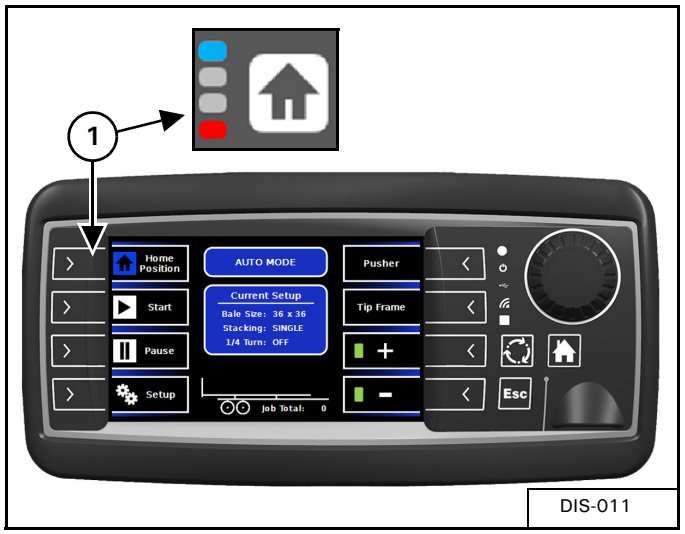
Remove the lift cylinder lock. (See “Lift Cylinder Lock Removal And Installation” on page 46.)

Enter the operator’s position. (See “Entering And Leaving The Operator’s Position” on page 25.)

Move the tractor and bale carrier to loading area. Align the tractor and bale carrier with the narrow side of the first bale to be loaded.

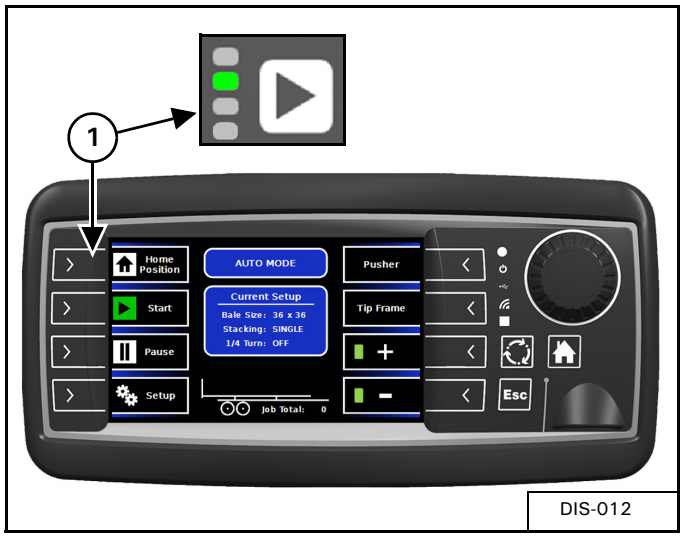
Stop the tractor.

**Figure 56**




Press / hold Home button (Item 1) **[Figure 56]** until the icon turns Blue. This indicates that all functions are in the Home / Start position.

**Figure 57**




With all functions in the Home position, press / hold the Start button (Item 1) **[Figure 57]**, the Loading Sequence will begin by clamping the bale. Once the bale is clamped, the Loading Sequence will be latched ON, the Start icon will blink Green in color and the Start button can then be released.

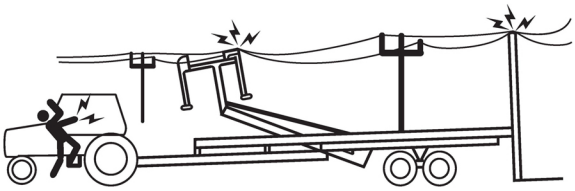
**Figure 58**


Move the tractor and bale carrier forward, center the first bale in the grab arms (Item 1) **[Figure 58]**.

Allow the bale carrier to complete the AUTO cycle before picking up the next bale.

**Unloading Procedure**

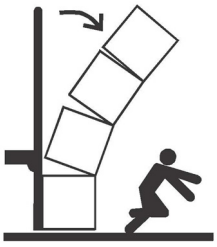
**DANGER**



**ELECTROCUTION HAZARD**

**To prevent serious injury or death from electrocution, stay at least 50 ft. (15 m) away from overhead power line when raising tipping frame or lift arm.**

**DANGER**

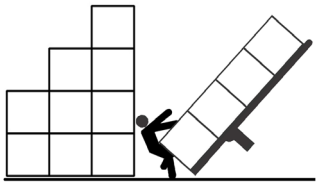


**FALLING BALE HAZARD**
**KEEP AWAY**

**To prevent serious injury or death from falling bales:**

1. **Stay away from bale stack when unloading bale carrier.**
2. **Keep others away.**

**WARNING**



**AVOID INJURY OR DEATH**

**Before moving the tractor and bale carrier, 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 stacking / unloading bales.**

Move the tractor and bale carrier to stacking / unloading area.

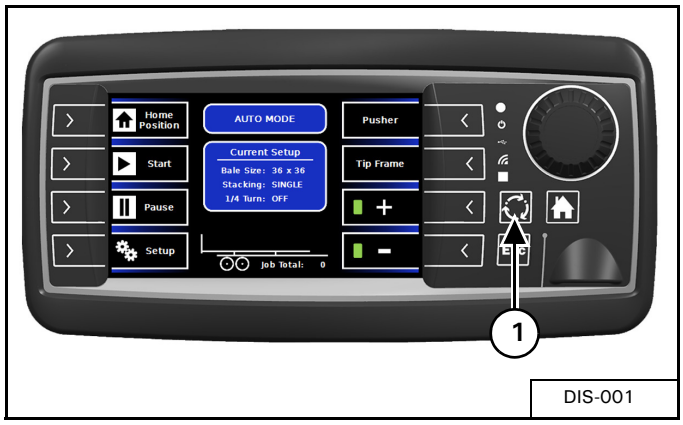
Stop the tractor and bale carrier on flat level surface.

Enter the operator's position. (See "Entering And Leaving The Operator's Position" on page 25.)

Move the tractor and bale carrier into position in front of the three bales stacked for support.

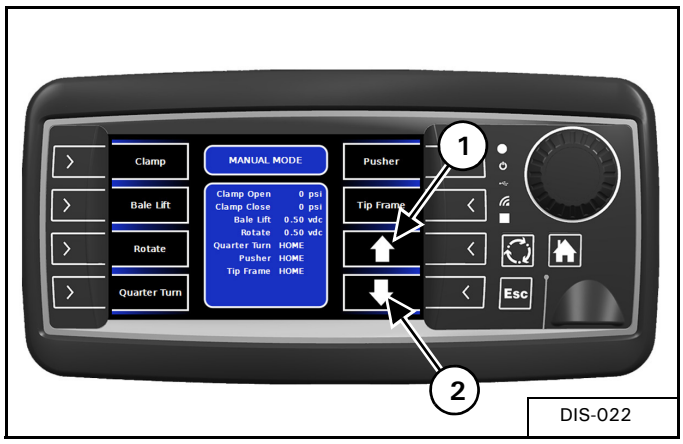
Stop the tractor.

**Figure 59**




Press Next button (Item 1) **[Figure 59]** to display the MANUAL MODE screen.

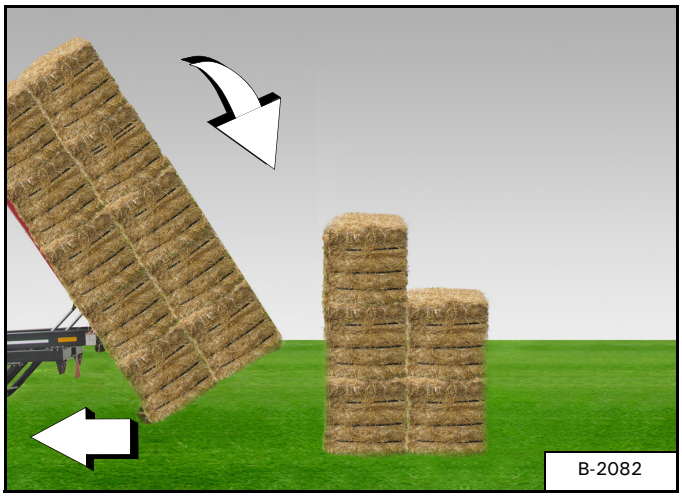
**Figure 60**




Select Tip Frame **[Figure 60]** from the manual mode screen.

Start the bale stack. (See “STACKING BALES” on page 49.)

**Figure 61**




Using the UP arrow (Item 1) **[Figure 60]**, raise the tipping frame until the bales being stacked / unloaded contacts the ground **[Figure 61]**.

Slowly drive the tractor forward until the stack eases off the TAIL STOPS and onto the ground.

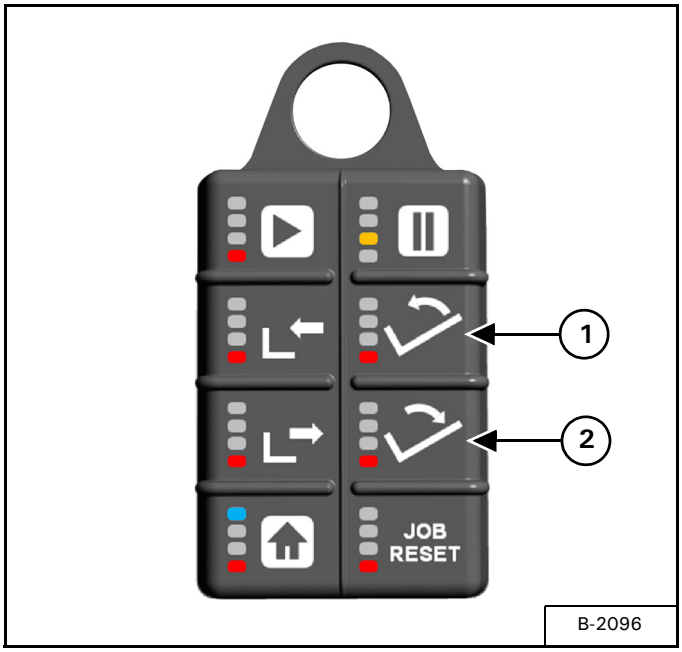
Drive the tractor forward until there is enough room to safely lower the TIPPING FRAME onto the carrier deck.

Using the DOWN arrow (Item 2) **[Figure 60]**, fully lower the tipping frame onto the carrier deck.

Repeat if necessary to empty the deck. Use the pusher to push the next set of bales onto the tipping frame.

*Control Handle Operation*

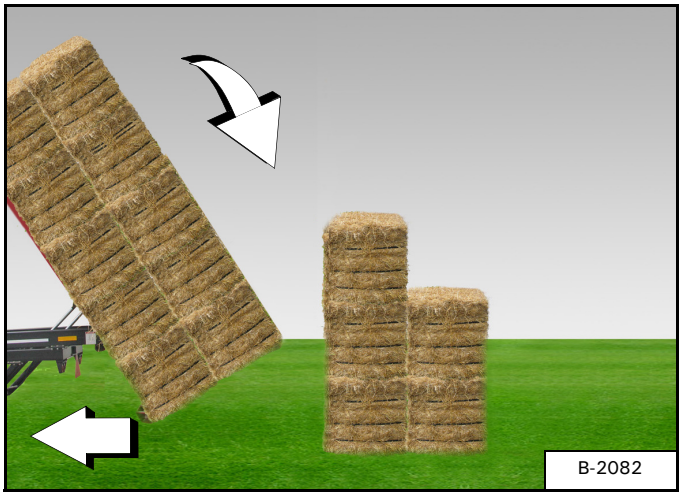
**Figure 62**




Press and hold the tipping frame UP button (Item 1) **[Figure 62]** on the remote to raise the tipping frame.

Start the bale stack. (See "STACKING BALES" on page 49.)

**Figure 63**




Using the tipping frame UP button (Item 1) **[Figure 62]**, raise the tipping frame until the bales being stacked / unloaded contacts the ground **[Figure 63]**.

Slowly drive the tractor forward until the stack eases off the TAIL STOPS and onto the ground.

Drive the tractor forward until there is enough room to safely lower the TIPPING FRAME onto the carrier deck.

Using the tipping frame DOWN button (Item 2) **[Figure 62]**, fully lower the tipping frame onto the carrier deck.

Repeat sequence (if needed) to empty carrier by using the pusher to move second set of bales onto the tipping frame.

## TRANSPORTING

### Requirements

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

**⚠ WARNING**

**AVOID SERIOUS INJURY OR DEATH**

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

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

**⚠ WARNING**

**AVOID SERIOUS INJURY OR DEATH**

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

**! IMPORTANT**

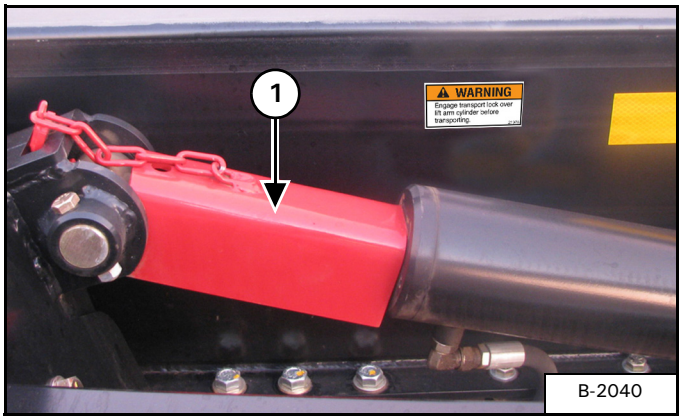
**Towing Vehicle / Tractor must have adequate braking capacity to safely control 37,440 lb. (16,983 kg) GVW trailing load. Do not tow over 20 mph (32 km/h). Towing Vehicle / Tractor unit should weigh 25,000 lb. (11,340 kg) or approximately 67% of**

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

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.

**Figure 64**




Install the lift cylinder lock (Item 1) **[Figure 64]**. (See “Lift Cylinder Lock Removal And Installation” on page 46.)

### Transport Position

Arm raised with cylinder lock in place, clamp closed and rotated over the carrier deck.

## MAINTENANCE

# Farm King

## TROUBLESHOOTING

### General 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 distributor or dealer. Before you call, please have this Operator And Parts Manual and the serial number of your machine at hand.**

| PROBLEM | CAUSE | CORRECTION |
|---|---|---|
| Display unit does not turn ON. | Loose harness connection. | Make sure all connectors are all securely connected. |

**Manual Mode Chart**

| PROBLEM | CAUSE | CORRECTION |
|---|---|---|
| No functions operating. | No hydraulic flow to control valve. | Make sure there is hydraulic flow going to carrier's valve bank. Supply line is on the top side (Red dust cap) and Return line is bottom line (Black dust cap). |
| | Valve bank is not correctly configured to match tractor hydraulic system. | Make sure valve bank is correctly configured to match tractor hydraulic system type, OPEN-CENTER or CLOSE-CENTER. |
| | | NOTE: Select OPEN CENTER with tractors having LOAD SENSING hydraulic systems. See the tractor's manual for hydraulic system type. |
| Rotate Arm does not rotate toward deck (to the left) when Lift Arm is down. | Rotate function not activated. | Raise lift arm a minimum of one foot above deck to activate rotate function. |
| Pusher does not work. | Pusher function not activated. | Make sure the tipping frame is all the way down on the deck ("home" position) to activate the pusher. |
| Pusher works, but no change in the counter value is shown on the Display unit. | Motor speed sensor or sensor harness is not properly installed or connected. | Check motor speed sensor or sensor harness connections. |
| | Speed sensor or harness might be defective, replace as required. | Replace speed sensor or harness as required. |
| Bale Carrier freezes, creates back pressure on hydraulic hose. | Hydraulic couplers are not the same size and type as the tractor. | Make sure the female and male couplers on the bale carrier are compatible with the tractor. |

**Auto Mode Chart**

| PROBLEM | CAUSE | CORRECTION |
|---|---|---|
| No response after pressing CLAMP button. | Pusher not at “home” position. | Move pusher to the “home” position. Verify that the front proximity sensor turns “ON” as the switch activator is lined up with the sensor head (a small LED in the back of the sensor should be lit). |
| | Tipping frame not at “home” position. | Move tipping frame to the “home” position. Verify that the back proximity sensor turns “ON” as the tipping frame is lined up with the sensor head (a small LED in the back of the sensor should be lit). |
| CLAMP responds, but arm will not lift up. | Clamp-close pressure not calibrated. | Go to calibration mode and re-calibrate clamp-close pressure. |
| Swing arm rotates 90° (left) but grab arms do not release the bale. | Rotation limits not calibrated correctly. | Go to calibration mode and reset rotate arm (left) 90° rotation limits under the rotate arm menu. |
| | Defective sensor. | Verify that there is a constant change in the sensor reading as it rotates. NOTE: This check applies to all position sensors. |
| Grab arms release bale, but swing arm does not rotate back to right. | Clamp open pressure setting is too high. | Go to calibration mode and re-adjust clamp open pressure under the clamp pressure setting. |
| Pusher does not push the bale back to the preset location. | Speed sensor is not working (“Deck Full” message). | Check speed sensor and / or motor sensor harness. Replace sensor and / or motor sensor harness, if required. |
| | Tipping frame not at “home” position. | Move tipping frame to the “home” position. |
| Pusher moves the bale back toward the tipping frame and does not stop at the pre-set location. | Pusher motor speed sensor defective. | Verify that there is a constant change in the sensor reading as the pusher moves back and forth on the deck. |
| | | Check speed sensor and / or motor sensor harness. Replace sensor and / or motor sensor harness, if required. |
| Pusher does not have enough power to push back full load of heavy bales. | Tractor hydraulic pressure too low. | Adjust tractor hydraulic pressure if possible. |
| | High moisture content in silage or alfalfa bales. | When load is half full, push bale all the way back. Do not attempt to push more than a half load at once. |
| No response after pressing squeeze button. | Pressure too low | Adjust tractor hydraulic pressure if possible. |
| | Quarter turn not at home position. | Return quarter turn to home position. |
| | Time out conditions. | Locate fault code on display. (See “Fault Code Chart” on page 67.) |

| PROBLEM | CAUSE | CORRECTION |
|---|---|---|
| Clamp arm does not work. | Faulty clamp-close sensor. | Close clamp arms and go to diagnostic mode and check clamp-close sensor. If ERROR, re-calibrate clamp-close pressure. |
| | | Check sensor harness and / or replace sensor. |
| | Clamp-close pressure not calibrated. | Go to calibration mode and re-calibrate clamp-close pressure. |

**CONTROLLER CODE IDENTIFICATION**

Fault Code Chart

| ECU | SPN - FMI | DESCRIPTION |
|---|---|---|
| 0x22 | 50000-4 | Clamp Open Press: No Signal |
| 0x22 | 50000-3 | Clamp Open Press: Signal High |
| 0x22 | 50001-4 | Clamp Closed Press: No Signal |
| 0x22 | 50001-3 | Clamp Closed Press: Signal High |
| 0x22 | 50002-4 | Bale Lift Sensor: No Signal |
| 0x22 | 50002-3 | Bale Lift Sensor: Signal High |
| 0x22 | 50003-4 | Rotate Sensor: No Signal |
| 0x22 | 50003-3 | Rotate Sensor: Signal High |
| 0x22 | 50004-4 | Clamp Open Output: Short to battery |
| 0x22 | 50004-22 | Clamp Open Output: Open circuit |
| 0x22 | 50004-23 | Clamp Open Output: Short to ground |
| 0x22 | 50005-24 | Clamp Closed Output: Short to battery |
| 0x22 | 50005-22 | Clamp Closed Output: Open circuit |
| 0x22 | 50005-23 | Clamp Closed Output: Short to ground |
| 0x22 | 50006-24 | Bale Lift Raise Output: Short to battery |
| 0x22 | 50006-22 | Bale Lift Raise Output: Open circuit |
| 0x22 | 50006-23 | Bale Lift Raise Output: Short to ground |
| 0x22 | 50007-24 | Bale Lift Lower Output: Short to battery |
| 0x22 | 50007-22 | Bale Lift Lower Output: Open circuit |
| 0x22 | 50007-23 | Bale Lift Lower Output: Short to ground |
| 0x22 | 50008-24 | Rotate Left Output: Short to battery |
| 0x22 | 50008-22 | Rotate Left Output: Open circuit |
| 0x22 | 50008-23 | Rotate Left Output: Short to ground |
| 0x22 | 50009-24 | Rotate Right Output: Short to battery |
| 0x22 | 50009-22 | Rotate Right Output: Open circuit |
| 0x22 | 50009-23 | Rotate Right Output: Short to ground |
| 0x22 | 500010-24 | Quarter Turn Raise Output: Short to battery |
| 0x22 | 500010-22 | Quarter Turn Raise Output: Open circuit |
| 0x22 | 500010-23 | Quarter Turn Raise Output: Short to ground |
| 0x22 | 500011-24 | Quarter Turn Home Output: Short to battery |
| 0x22 | 500011-22 | Quarter Turn Home Output: Open circuit |
| 0x22 | 500011-23 | Quarter Turn Home Output: Short to ground |
| 0x22 | 500012-24 | Pusher Back Output: Short to battery |
| 0x22 | 500012-22 | Pusher Back Output: Open circuit |
| 0x22 | 500012-23 | Pusher Back Output: Short to ground |
| 0x22 | 500013-24 | Pusher Home Output: Short to battery |

| ECU | SPN - FMI | DESCRIPTION |
|---|---|---|
| 0x22 | 500013-22 | Pusher Home Output: Open circuit |
| 0x22 | 500013-23 | Pusher Home Output: Short to ground |
| 0x22 | 500014-24 | Pusher High Speed Output: Short to battery |
| 0x22 | 500014-22 | Pusher High Speed Output: Open circuit |
| 0x22 | 500014-23 | Pusher High Speed Output: Short to ground |
| 0x22 | 500015-24 | Tip Frame Raise Output: Short to battery |
| 0x22 | 500015-22 | Tip Frame Raise Output: Open circuit |
| 0x22 | 500015-23 | Tip Frame Raise Output: Short to ground |
| 0x22 | 500016-24 | Tip Frame Lower Output: Short to battery |
| 0x22 | 500016-22 | Tip Frame Lower Output: Open circuit |
| 0x22 | 500016-23 | Tip Frame Lower Output: Short to ground |
| 0x22 | 500017-24 | Proportional Inlet Output: Short to battery |
| 0x22 | 50000-4 | Clamp Open Press: No Signal |
| 0x22 | 50000-3 | Clamp Open Press: Signal High |
| 0x22 | 50001-4 | Clamp Closed Press: No Signal |
| 0x22 | 50001-3 | Clamp Closed Press: Signal High |
| 0x22 | 50002-4 | Bale Lift Sensor: No Signal |
| 0x22 | 50002-3 | Bale Lift Sensor: Signal High |
| 0x22 | 50003-4 | Rotate Sensor: No Signal |
| 0x22 | 50003-3 | Rotate Sensor: Signal High |
| 0x22 | 50004-4 | Clamp Open Output: Short to battery |
| 0x22 | 50004-22 | Clamp Open Output: Open circuit |
| 0x22 | 50004-23 | Clamp Open Output: Short to ground |
| 0x22 | 50005-24 | Clamp Closed Output: Short to battery |
| 0x22 | 50005-22 | Clamp Closed Output: Open circuit |
| 0x22 | 50005-23 | Clamp Closed Output: Short to ground |
| 0x22 | 50006-24 | Bale Lift Raise Output: Short to battery |
| 0x22 | 50006-22 | Bale Lift Raise Output: Open circuit |
| 0x22 | 50006-23 | Bale Lift Raise Output: Short to ground |
| 0x22 | 50007-24 | Bale Lift Lower Output: Short to battery |
| 0x22 | 50007-22 | Bale Lift Lower Output: Open circuit |
| 0x22 | 50007-23 | Bale Lift Lower Output: Short to ground |
| 0x22 | 50008-24 | Rotate Left Output: Short to battery |
| 0x22 | 50008-22 | Rotate Left Output: Open circuit |
| 0x22 | 50008-23 | Rotate Left Output: Short to ground |

## 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 4480 Square Bale Carrier.

**⚠ 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.**

| # | DESCRIPTION | SERVICE PROCEDURES | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Check | Clean | Lube | Change | Adjust | Drain | Locations |
| **Daily Maintenance (or every 8 hours)** | | | | | | | | |
| 1 | Tire Pressure | • | | | | | | |
| 2 | Wheel Nuts | • | | | | | | |
| 3 | Axle Bearing | | | • | | | | |
| 4 | Hydraulic Cylinders | • | | • | | | | |
| 5 | Main Arm | | | • | | | | |
| 6 | Swing Arm | | | • | | | | |
| 7 | Grab Arms | | | • | | | | |
| 8 | Tipping Frame | | | • | | | | |
| **Weekly (or every 50 hours)** | | | | | | | | |
| 9 | Carrier Beams | • | | • | | | | |
| 10 | Pusher Chain And Sprocket | • | | • | | | | |
| 11 | Hydraulic Cylinders | • | | | | | | |
| 12 | Bale Carrier | • | • | | | | | |
| **Annually (or every 500 hours)** | | | | | | | | |
| 13 | Wheel Bearings | • | | • | | | | |

## LUBRICATION

### Recommendations

Always use a good quality multipurpose / lithium base grease when lubricating the equipment.

**IMPORTANT**

**Do not over-grease bearings. Greasing too often can damage seals and lead to premature bearing failure.**

- 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.

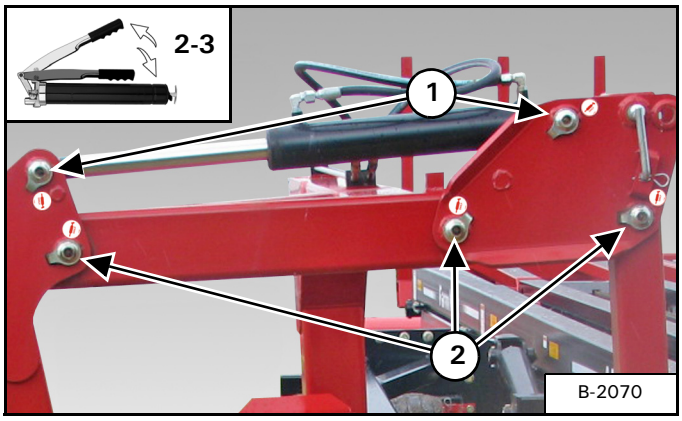
### Locations

**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.**

Lubricate the following grease locations EVERY 8 HOURS:

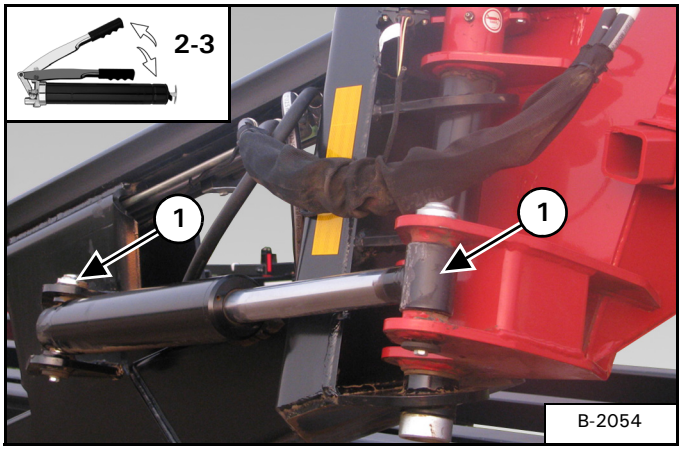
**Figure 65**




Apply two - three pumps of grease to both ends of the grab arm cylinder (Item 1) **[Figure 65]**.

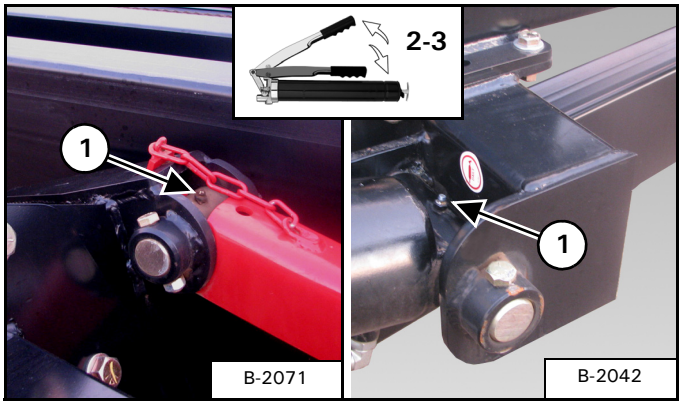
Apply two - three pumps of grease to the grab arm pivots (Item 2) **[Figure 65]**.

**Figure 66**



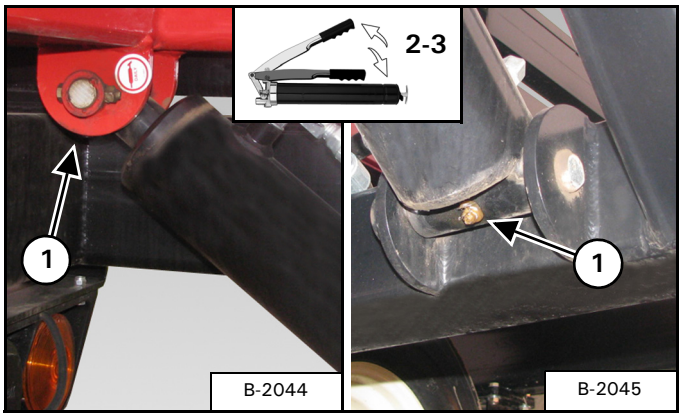

Apply two - three pumps of grease to both ends of the swing arm cylinder (Item 1) **[Figure 66]**.

**Figure 67**



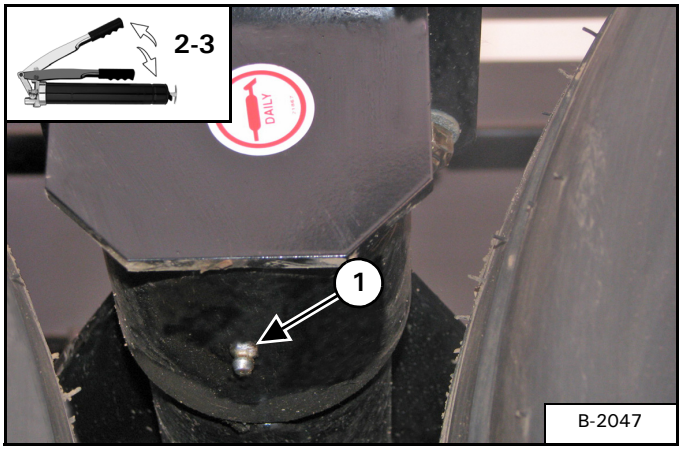

Apply two - three pumps of grease to both ends of the main arm cylinder (Item 1) **[Figure 67]**.

**Figure 68**




Apply two - three pumps of grease to both ends of the tipping frame cylinders (Item 1) **[Figure 68]**.

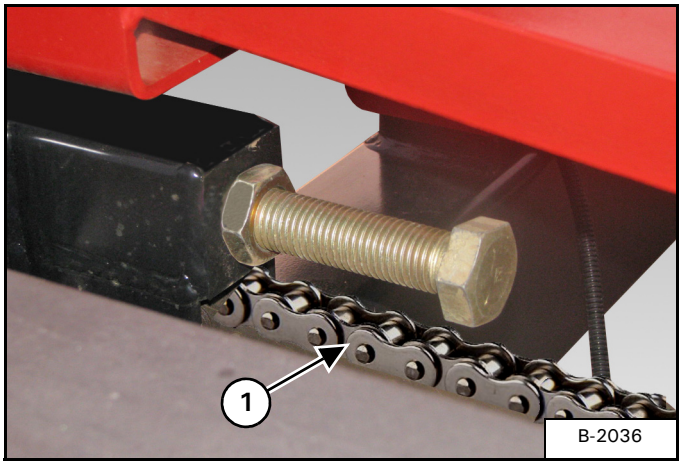
**Figure 69**




Apply two - three pumps of grease to the axle bearings (Item 1) **[Figure 69]** (both sides).

Lubricate the following grease locations EVERY 50 HOURS:

**Figure 70**




Using a brush, apply SAE light machine oil (or equivalent) to pusher chain (Item 1) **[Figure 70]** several times during the season and before storing for an extended period of time.

## PUSHER CHAIN AND SPROCKET

### Inspection

**⚠ WARNING**

**AVOID INJURY OR DEATH**

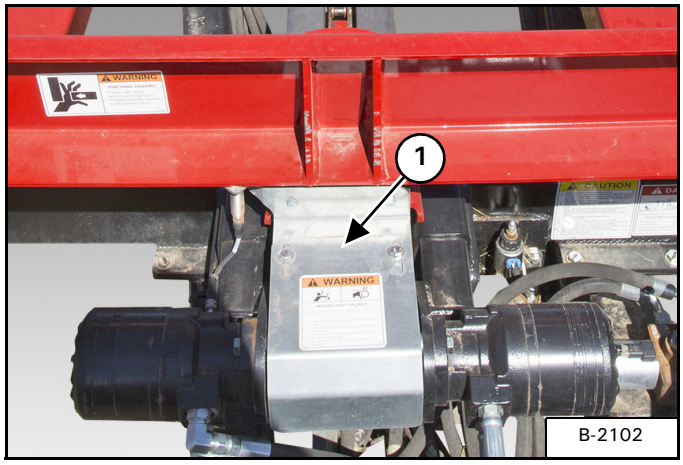
**Before you leave the operator's position:**

- **Always park on a flat level surface.**
- **Place all controls in NEUTRAL.**
- **Engage the park brake.**
- **Stop the engine and remove the key.**
- **Wait for all moving parts to stop.**

Inspect and tighten chain and sprockets after the first 10 hours of operation and every 50 hours thereafter.

### Adjusting Chain Tension

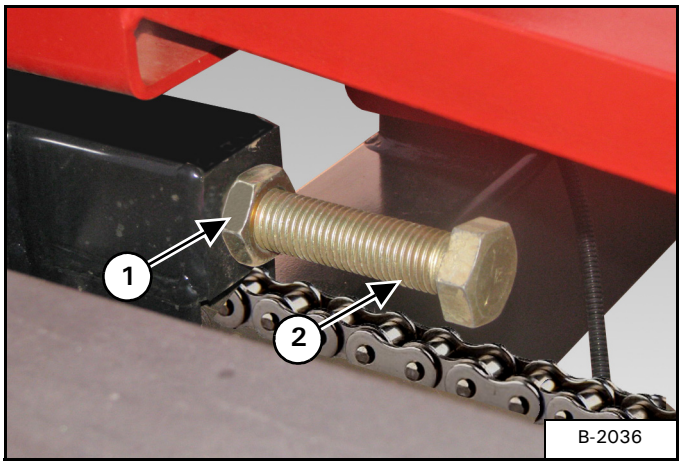
**Figure 71**




Pusher chain adjustment bolt is located behind shield (Item 1) **[Figure 71]**.

Lift up on the center of the pusher chain. There should be approximately six inches of upward slack. If there is more than six inches of slack, adjust tension as needed.

**Figure 72**



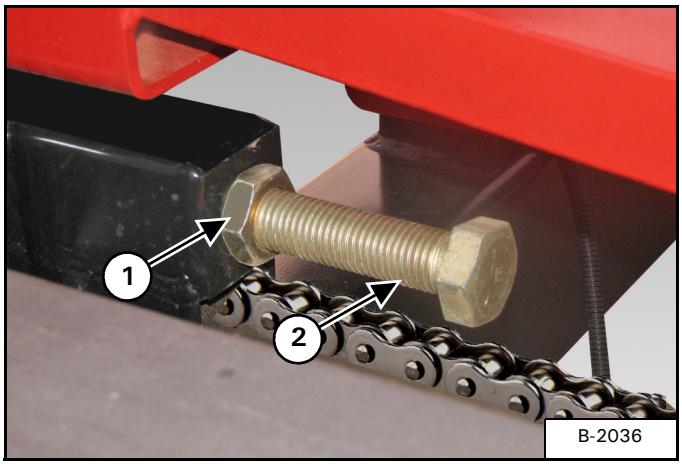

Loosen the jam nut (Item 1) **[Figure 72]**.

Tighten the adjustment bolt (Item 2) **[Figure 72]** (clockwise) until there is approximately six inches of slack in the center of the chain. Tighten jam nut.

**NOTE: If no more adjustment is possible, shorten pusher chain by removing one link.**

### Shortening The Pusher Chain

**Figure 73**




Loosen the jam nut (Item 1) **[Figure 73]**.

Loosen the adjustment bolt (Item 2) **[Figure 73]** until there is enough slack in the pusher chain to remove one link.

## AXLE

### Wheel Nuts Torque

Check the torque on wheel nuts daily. Torque wheel nuts to 190 lb. ft. (257 Nm).

### Tire / Wheel Replacement

Empty the Bale Carrier (if required).

**⚠ WARNING**

**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.**
- **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.

**⚠ WARNING**

**AVOID INJURY OR DEATH**

- **The parking brake must be engaged before leaving the operator's position. Rollaway can occur because the transmission may not prevent machine movement.**
- **Always chock tires before performing any maintenance or service.**

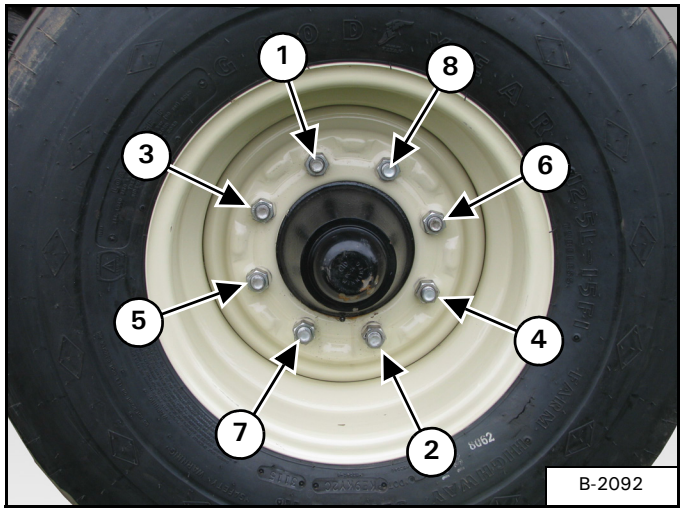
Place chock blocks behind and in front of the opposite tire to be removed.

Place a jack under the axle frame as close to the tire / wheel being replaced. Raise the jack until the tire / wheel is slightly off the ground.

**NOTE: Place blocks under the frame to help secure the carrier when tire / wheel is raised off the ground.**

Remove the eight wheel nuts and remove the tire / wheel.

**Figure 74**




Install the new tire with the valve stem facing out.

Install the eight wheel nuts (Items 1 - 8) **[Figure 74]**.

Tighten wheel nuts in a criss-cross pattern **[Figure 74]**. Torque wheel nuts to 190 lb. ft. (257 Nm).

### Wheel Bearings

Inspect and re-pack the wheel bearings annually with a quality SAE multipurpose 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.**

Check tire pressure daily. Fill tires to 90 psi (620 kPa).

## CLEANING THE BALE CARRIER

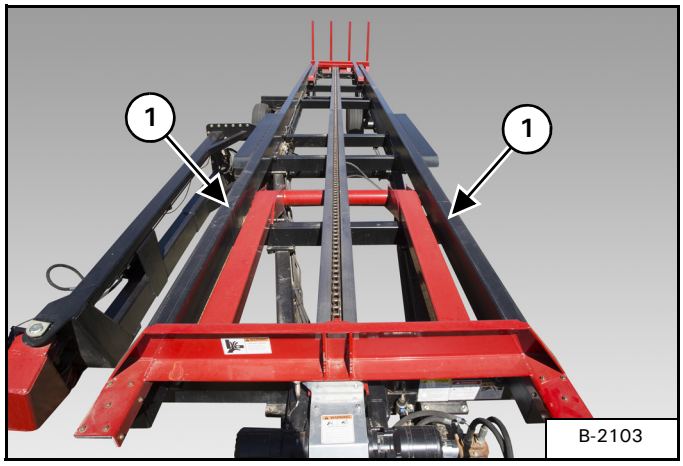
Fully Clean the Bale Carrier EVERY 50 HOURS:

Keep the bale carrier free of any hay or straw build up, especially in areas where the sensors are located.

## CARRIER BEAMS

**Resurfacing**

**Figure 75**




Apply EZ-Slide (graphite-based coating to reduce sliding friction) to the carrier beams (Item 1) **[Figure 75]** regularly, especially when handling heavier bales.

## SAFETY SIGN (DECAL) INSTALLATION

**Procedure**

**IMPORTANT**

**When replacing safety signs (decals), the temperature must be above 10° C (50° F).**

- Remove all portions of the damaged safety sign (decal).
- Thoroughly clean the area with glass cleaner. Remove all adhesive residue.
- Allow the area to dry completely before installing the new safety sign (decal).
- Position the safety sign (decal) in the correct location. Remove a small portion of the backing paper on the safety sign (decal).
- Press on the safety sign (decal) where the backing paper has been removed.
- Slowly remove the remaining backing paper, pressing on the safety sign (decal) as the backing paper is removed.
- Using the backing paper, pressing firmly, move the backing paper over the entire safety sign (decal) area.

**NOTE: Small air pockets can be pierced with a pin and smoothed out using the piece of the backing paper.**

## STORAGE AND RETURN TO SERVICE

### Storage

Sometimes it may be necessary to store your Farm King Bale Carrier for an extended period of time. Below is a list of items to perform before storage.

**IMPORTANT**

**DO NOT permit children to play on or around the stored machine.**

- Thoroughly clean the equipment.
- Lubricate the equipment.
- Inspect the hitch and all welds on the equipment for wear and damage.
- Check for loose hardware, missing guards, or damaged parts.
- Check for damaged or missing safety signs (decals). Replace if necessary.
- Replace worn or damaged parts.
- Touch up all paint nicks and scratches to prevent rusting.
- Clean pusher chain and brush with SAE light machine oil (or equivalent) to prevent rust.
- Repaint the top of the carrier beams with graphite paint such as EZ-Slide to prevent rust.
- Store the bale carrier in a clean, dry, sheltered area.
- Place the equipment flat on the ground.

### Return To Service

After the Farm King Bale Carrier has been in storage, it is necessary to follow a list of items to return the equipment to service.

- Be sure all shields and guards are in place.
- Lubricate the equipment.
- Clean and inspect pusher chain for excessive wear or stiffness. Check for proper adjustment and alignment.
- Inspect and repack wheel bearings with a SAE multipurpose type grease.
- Check that tires are properly inflated.
- Connect to a tractor and operate equipment, verify all functions operate correctly.
- Check for leaks. Repair as needed.
- Review the Operator's Manual.

## STACK STORAGE

**WARNING**

**Take all necessary steps to prevent children or unauthorized personnel from entering storage area. Keep a fire extinguisher handy because of the flammable nature of the baled material.**

**CAUTION**

**Use caution when retrieving stacks or bales. Do not extend bale-lifting equipment beyond its capacity or move more bales than the equipment is designed for.**

Stacks should be placed in an open, flat and well-drained area. The area should have safe and easy access for bale handling and transportation equipment.

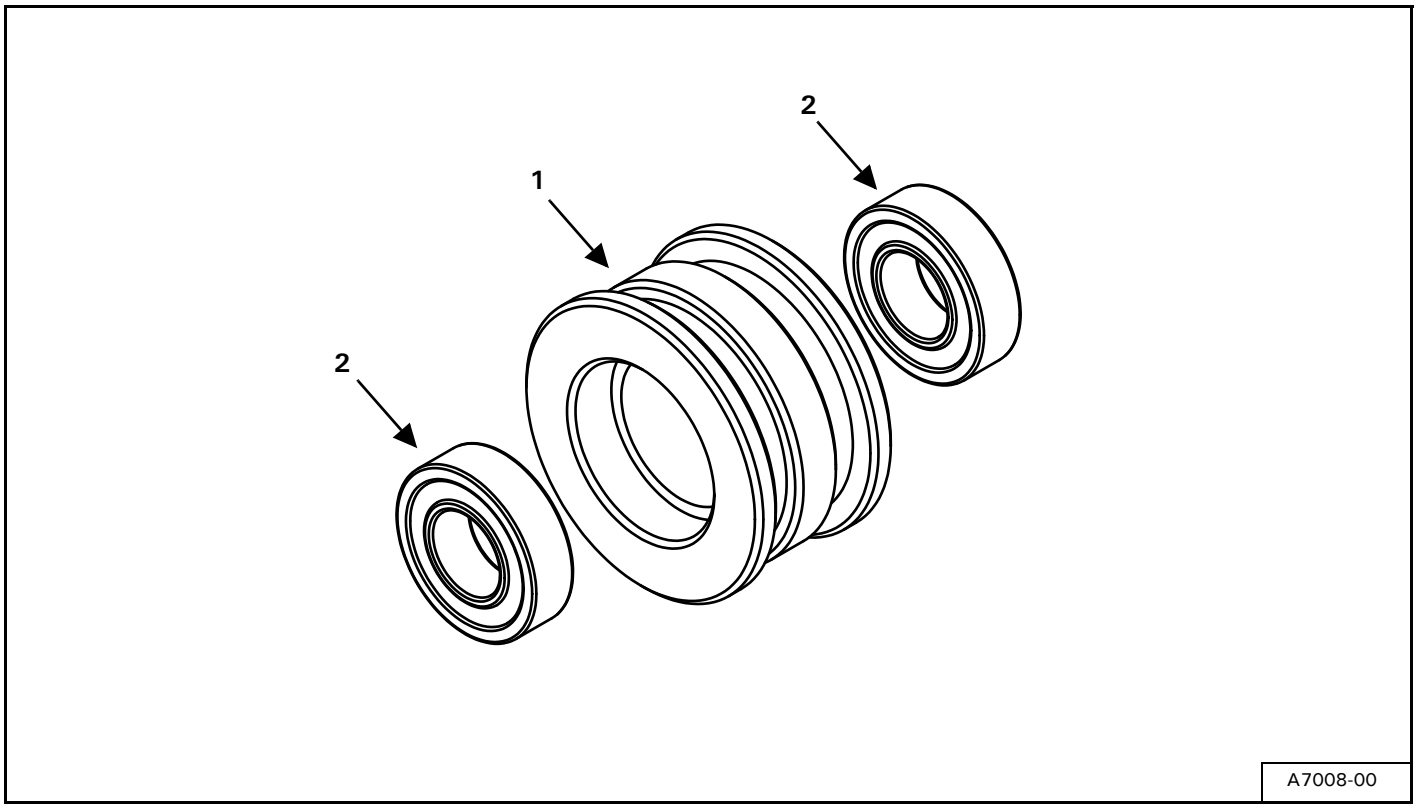
# Farm King

## PARTS IDENTIFICATION

**GENERAL PARTS INFORMATION**

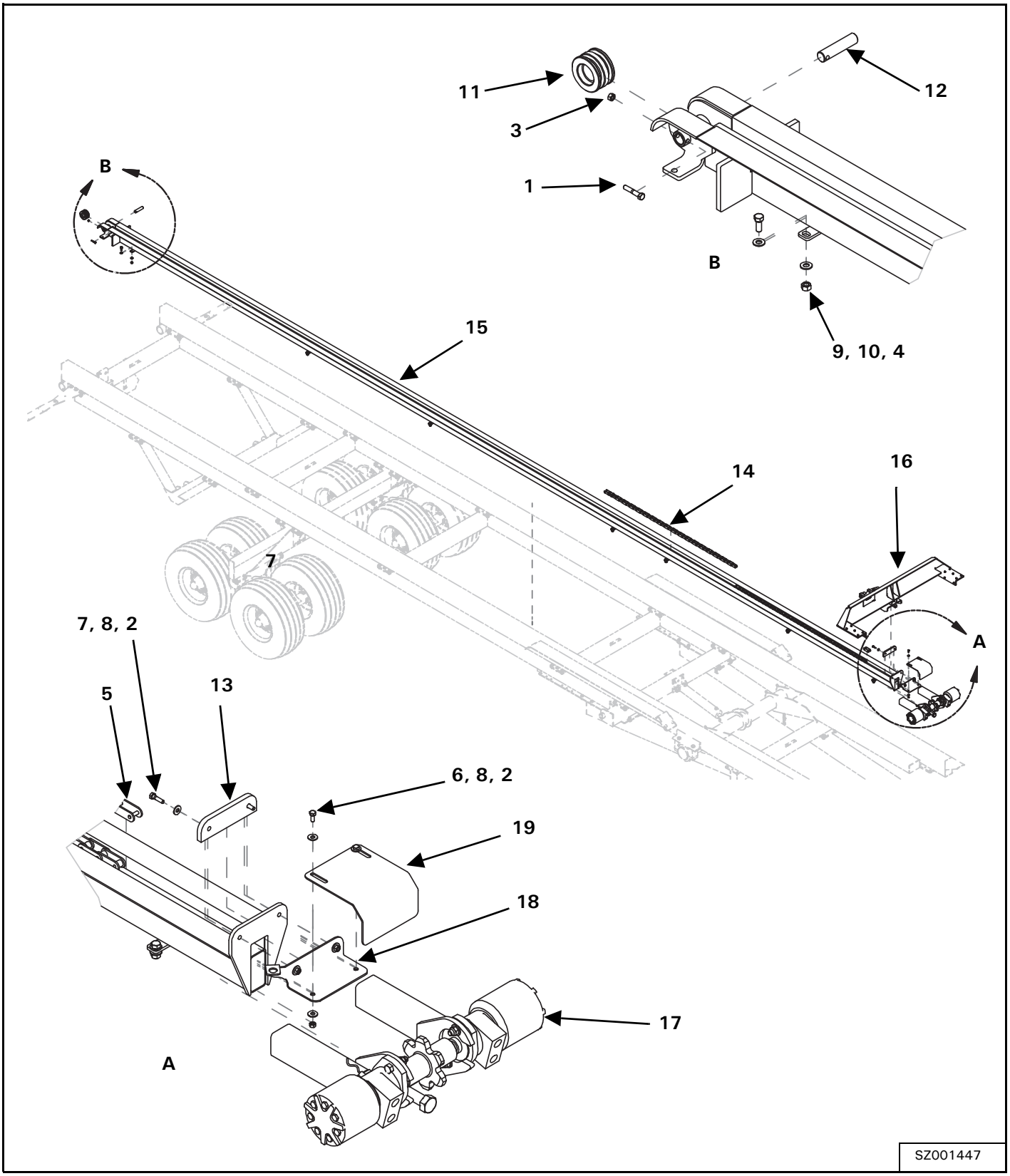
The parts identification section lists descriptions, part numbers and quantities for the Square Bale Carrier 4480. Contact your Farm King dealer for additional Square Bale Carrier 4480 parts information.

**CHAIN GUIDE ASSEMBLY**



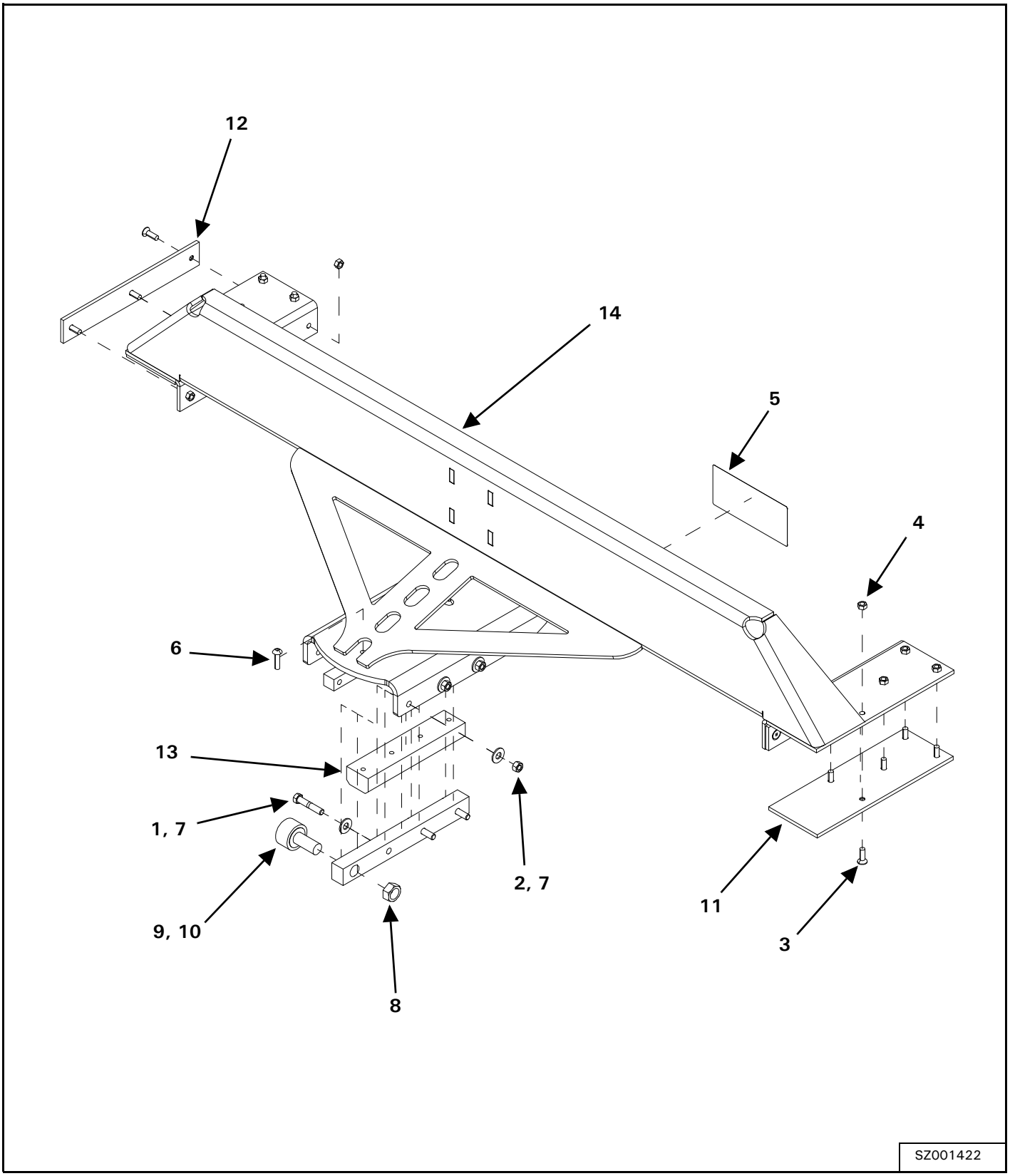

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | INE7037-00 | ROLLER / CHAIN GUIDE | 1 |
| 2 | 813645 | BEARING / 6205LLU / 25.4 / 3E | 2 |

**PUSHER CHAIN AND RAIL ASSEMBLY**



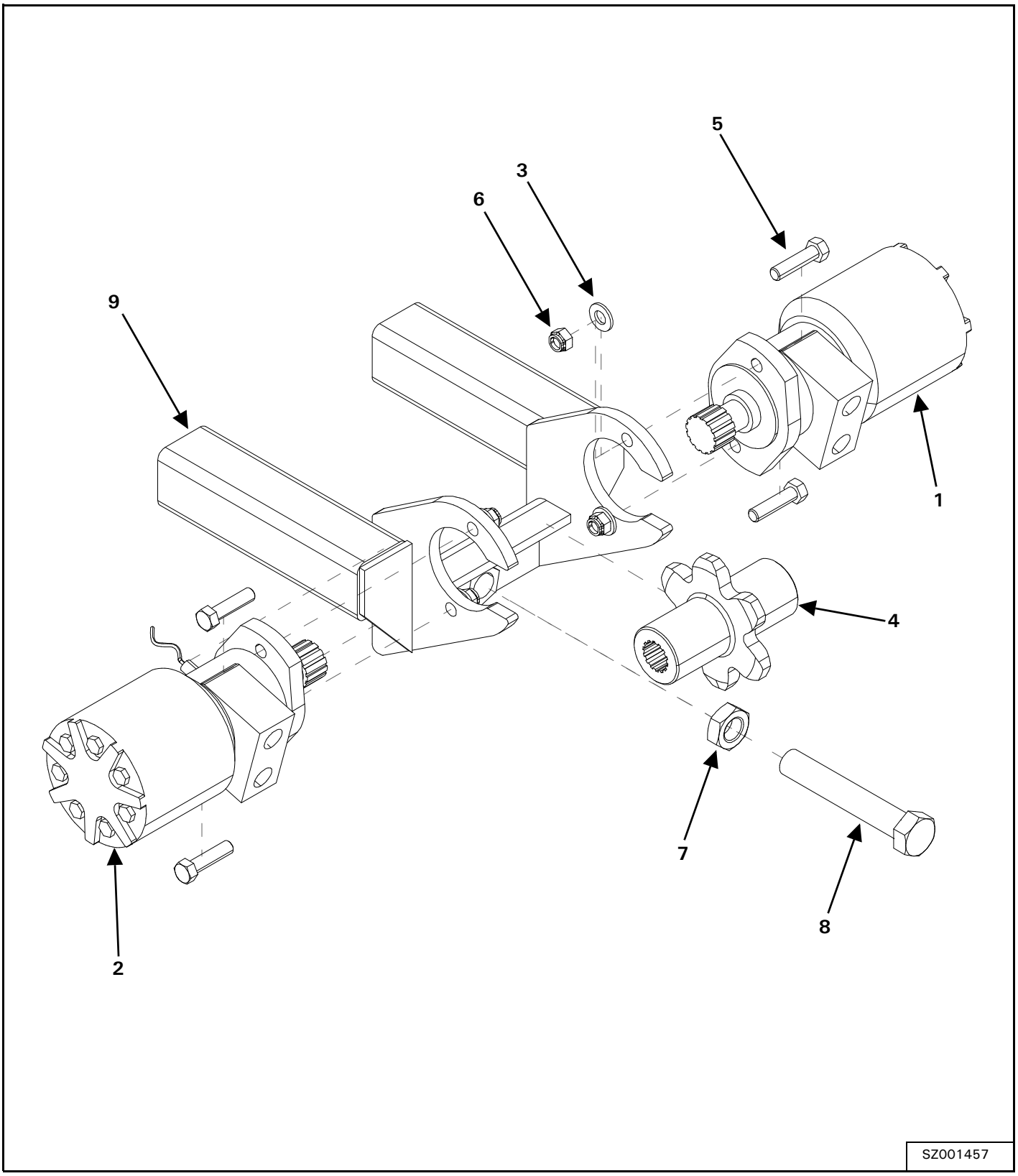
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 811795 | 3/8″ X 2" HEX BOLT (PL) | 1 |
| 2 | 812362 | 5/16″ LOCK NUT (PL) | 4 |
| 3 | 812363 | 3/8″ LOCK NUT (PL) | 1 |
| 4 | 812364 | 1/2″ LOCK NUT (PL) | 14 |
| 5 | 813643 | CONNECTOR LINK HD C2080 | 1 |
| 6 | 81549 | 5/16″ X 3/4″ HEX BOLT (PL) | 2 |
| 7 | 81552 | 5/16″ X 1 1/4″ HEX BOLT (PL) | 2 |
| 8 | 81570 | WASHER - 3/8″ STD FLAT (PL) | 8 |
| 9 | 81620 | 1/2″ X 1 1/4″ HEX BOLT PL | 14 |
| 10 | 84048 | 1/2″ SAE FLAT WASHER (PL) | 28 |
| 11 | A7008-00 | CHAIN GUIDE ROLLER ASM | 1 |
| 12 | 819689 | PIN - 0.997 DIA X 4.25" | 1 |
| 13 | E7040-00 | CUSHION PUSHER/STOP | 1 |
| 14 | SZ000510 | CHAIN ROLLER HD C2080 HR | 2 |
| 15 | SZ001417 | CHAIN GUIDE WLDT - 2016 | 1 |
| 16 | SZ001422 | ASSEMBLY - SQBM PUSHER | 1 |
| 17 | SZ001457 | PUSHER DRIVE ASSY W/SENSOR | 1 |
| 18 | SZ001472 | SHIELD & SENSOR MOUNTING BRKT | 1 |
| 19 | SZ001474 | DRIVE SPROCKET SHIELD | 1 |

**PUSHER ASSEMBLY**



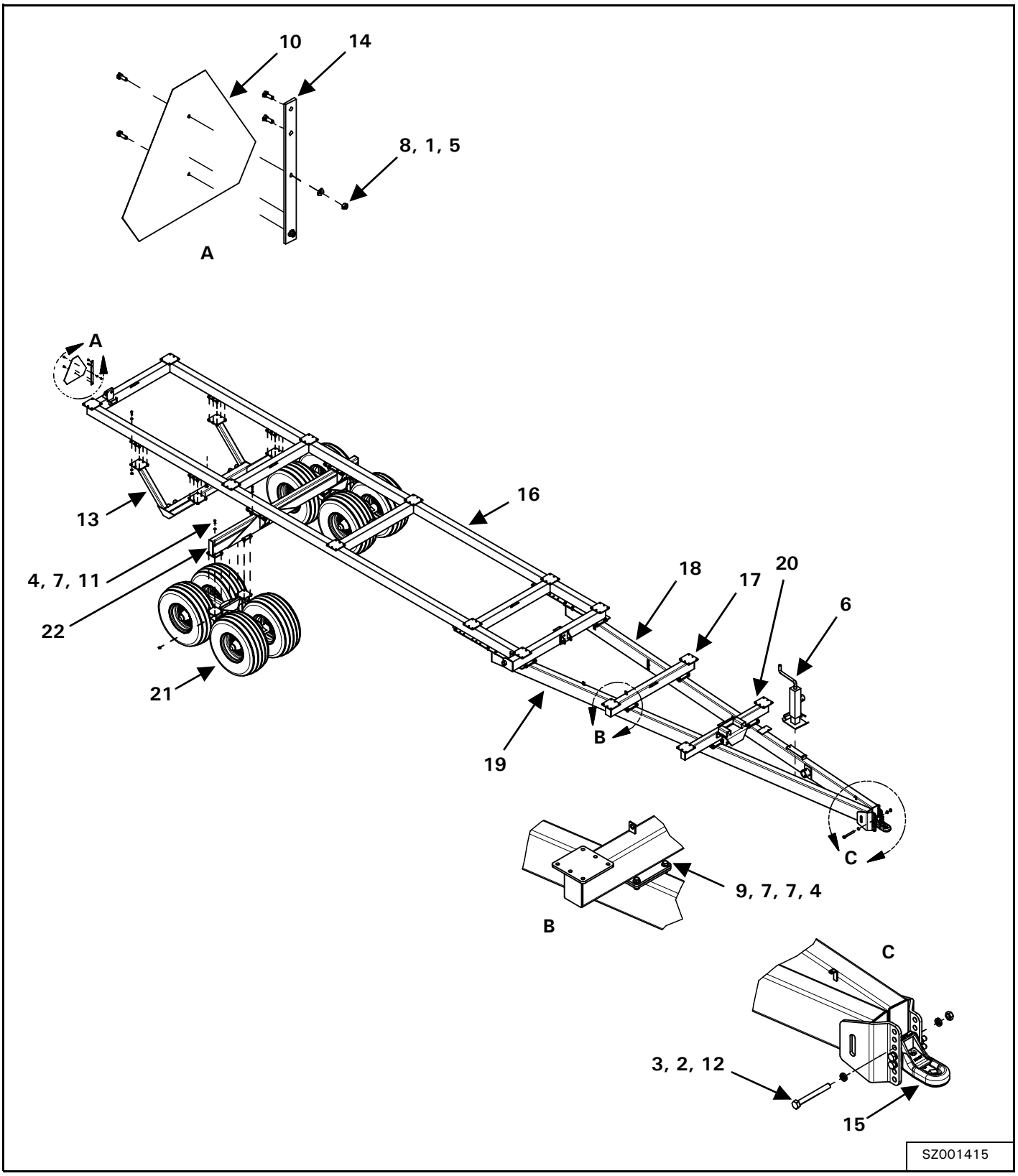
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 811795 | 3/8″ X 2" HEX BOLT (PL) | 3 |
| 2 | 812363 | 3/8″ LOCK NUT (PL) | 3 |
| 3 | 813558 | SCREW MACH M8 X 20 FLHD BRASS | 16 |
| 4 | 813561 | NUT HEX M8 BRASS | 16 |
| 5 | 813632 | DECAL WARNING PUSHER PINCHING HAZ | 1 |
| 6 | 813644 | SCREW MACH 0.313NC X 1.25 RDHD | 4 |
| 7 | 81570 | WASHER - 3/8″ STD FLAT (PL) | 6 |
| 8 | 815778 | BAR TRACK ROLLER | 1 |
| 9 | 815779 | TRACK ROLLER 1-3/4″ DIA | 1 |
| 10 | 815827 | NUT HEX 3/4-16 NF GRB | 1 |
| 11 | E2749-00 | TOP SLIDER | 2 |
| 12 | E2750-00 | SIDE SLIDER | 2 |
| 13 | E7032-00 | CENTER SLIDER, UMHW POLY WHITE | 1 |
| 14 | SZ001421 | WELDMENT - SQBM PUSHER | 1 |

**PUSHER DRIVE ASSEMBLY WITH SENSOR**



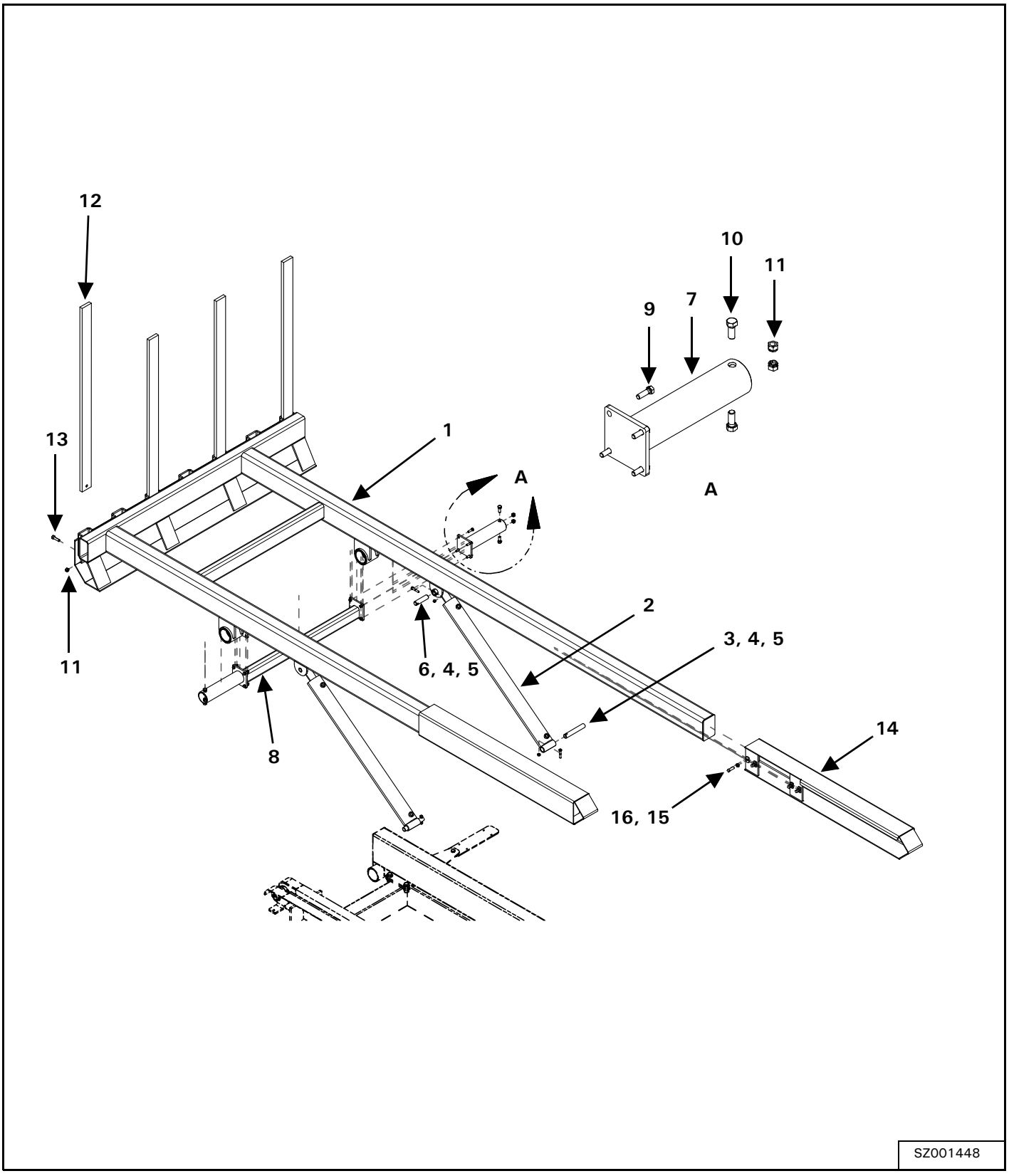
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 813660 | MOTOR 22.2 CU IN ROSS | 1 |
| 2 | 814106 | PUSHER MOTOR 22.2 CU IN W/SENSOR | 1 |
| 3 | 84048 | 1/2″ SAE FLAT WASHER (PL) | 4 |
| 4 | C7031-00 | SPROCKET DRIVE WELDT HAYLINER | 1 |
| 5 | 967275 | BOLT HEX 0.500NC X 2.00 GR8PL | 4 |
| 6 | 813663 | NUT LOCK (STEEL) 0.500NC GRCPL | 4 |
| 7 | 84051 | 1" HEX JAM NUT GR2 | 1 |
| 8 | C2768-00 | 1" X 6" HEX BOLT (PL) | 1 |
| 9 | 817544 | WELDMENT - MOTOR MOUNT | 1 |

**BASE FRAME ASSEMBLY**



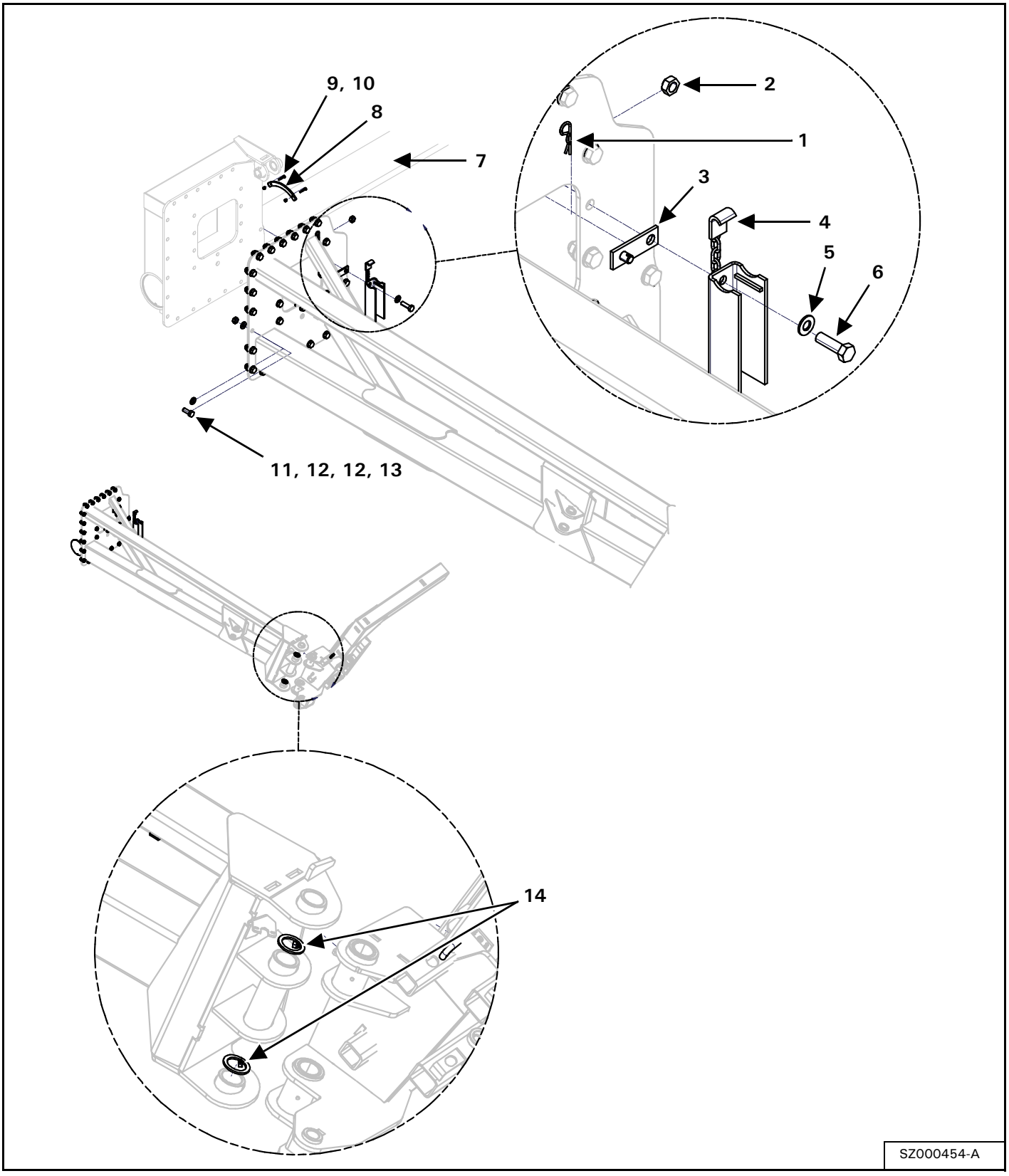
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 812624 | 1/4" FLAT WASHER PL | 4 |
| 2 | 813590 | WASHER 0.781ID X 1.25OD FL PL | 6 |
| 3 | 813648 | NUT LOCK (STEEL)0.750NC GRC PL | 3 |
| 4 | 813663 | NUT LOCK (STEEL) 0.500NC GRCPL | 90 |
| 5 | 81525 | 1/4" X 3/4" HEX BOLT (PL) | 4 |
| 6 | 815378 | SCREW JACK 5 TON | 1 |
| 7 | 84048 | 1/2" SAE FLAT WASHER (PL) | 180 |
| 8 | 84498 | 1/4" LOCK NUT (PL) | 4 |
| 9 | 87553 | 1/2" X 1.75" HEX BOLT UNC GR5 (PL) | 2 |
| 10 | 967066 | SLOW MOVING VEHICLE SIGN | 1 |
| 11 | 967274 | BOLT HEX 0.500NC X 1.50 GR8 PL | 88 |
| 12 | 9846394 | BOLT HEX 0.750NC X 7LG GR8 PL | 3 |
| 13 | C2719-00 | REAR CYLINDER MOUNT | 1 |
| 14 | E2795-00 | DECAL MOUNT SMV | 1 |
| 15 | SZ000561 | PERFECT HITCH | 1 |
| 16 | SZ001406 | MAIN FRAME WLDT | 1 |
| 17 | SZ001409 | SECOND CROSS MEMBER WLDT | 1 |
| 18 | SZ001410 | LH DRAWBAR HITCH WLDT | 1 |
| 19 | SZ001411 | RH DRAWBAR HITCH WLDT | 1 |
| 20 | SZ001414 | CHAIN RAIL DRIVE MNT X-MBR | 1 |
| 21 | SZ001435 | SQBM AXLE BOGIE ASSEMBLY | 2 |
| 22 | SZ001482 | AXLE BEAM, SQBM | 1 |

**TIPPING FRAME ASSEMBLY**



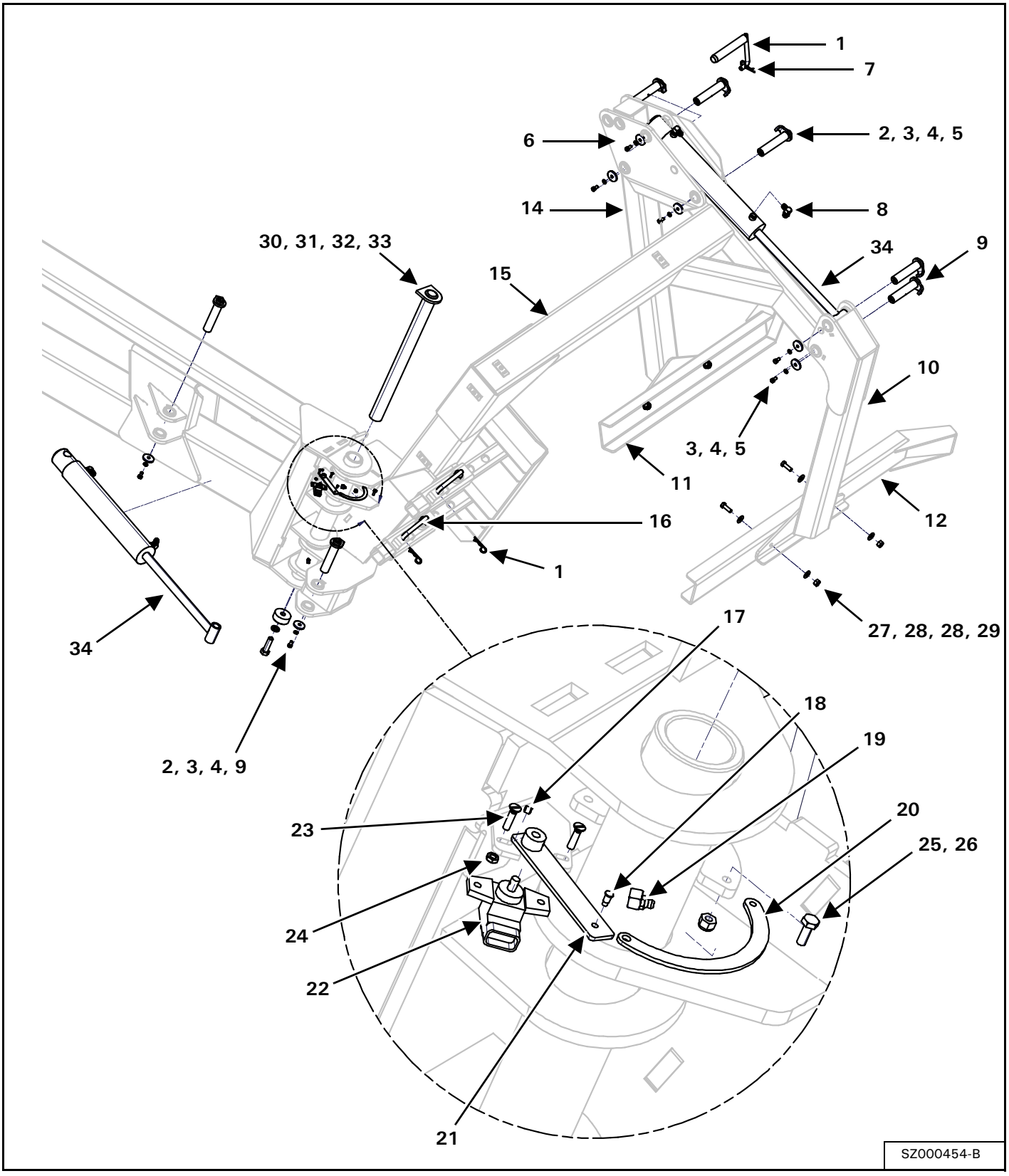
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001401 | TIPPING FRAME WELDMENT, SQBM | 1 |
| 2 | 25106 | CYLINDER, 3-1/2" x 36" INL | 2 |
| 3 | E2912-00 | HYDRAULIC CYLINDER PIN | 2 |
| 4 | 811795 | BOLT, 3/8" x 2" HEX (PL) | 4 |
| 5 | 812363 | LOCK NUT, 3/8" (PL) | 12 |
| 6 | C2893-00 | CYLINDER ROD PIN | 2 |
| 7 | I20094 | PIVOT TUBE WELDMENT | 2 |
| 8 | SZ001438 | TIPPING FRAME PIVOT WELDMENT | 1 |
| 9 | 86171 | BOLT, 3/8" x 1-1/4" HEX (PL) | 8 |
| 10 | 81620 | BOLT, 1/2" x 1-1/4" HEX (PL) | 4 |
| 11 | 813663 | NUT LOCK, 1/2" NC GR 5 (STEEL) CPL | 8 |
| 12 | E2723-00 | TAIL STOP | 4 |
| 13 | 87553 | BOLT, 1/2" x 1-3/4" HEX UNC GR 5 (PL) | 4 |
| 14 | SZ001405 | TIPPING FRAME EXTENSION | 2 |
| 15 | 984077 | JAM NUT, 1/2" (PL) | 8 |
| 16 | 813547 | SET SCREW, 1/2" NC SQ HD CUP | 8 |

**ARM ASSEMBLY**



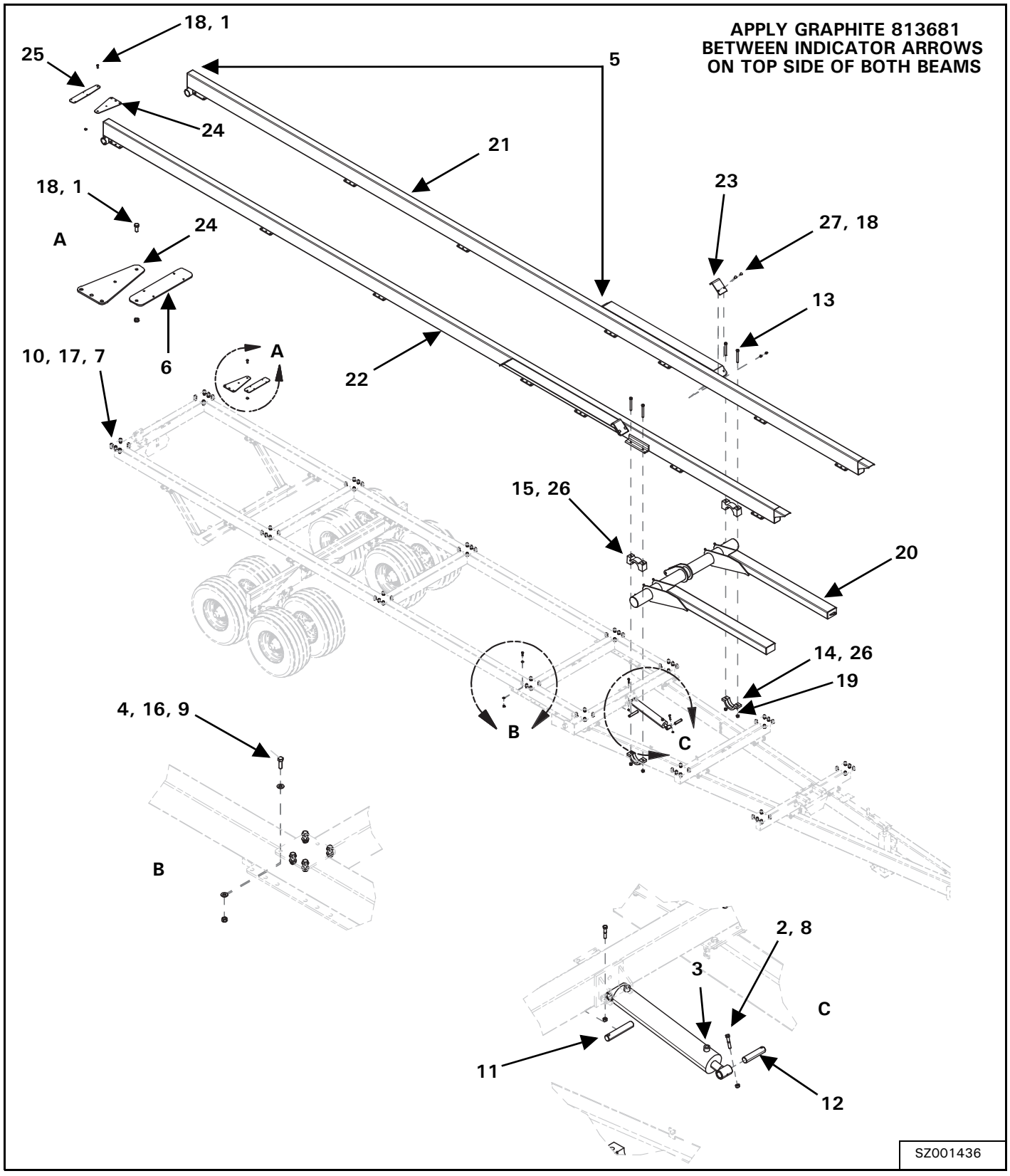
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 12779 | #9 HAIR PIN CLIP | 4 |
| 2 | 813648 | LOCK NUT, 3/4" NC (STEEL) GR 5 (PL) | 28 |
| 3 | C2863-00 | CYLINDER LOCK HOLDER | 1 |
| 4 | I20074 | LIFT CYLINDER LOCK ASSEMBLY, 4500 | 1 |
| 5 | 84050 | FLAT WASHER, 3/4" SAE BS (PL) | 56 |
| 6 | 813515 | BOLT, 3/4" NC x 2-1/2" HEX GR 8 (PL) | 2 |
| 7 | I20067 | PIVOT ARM ASSEMBLY 4500 | 1 |
| 8 | I100221 | LIFT ARM SENSOR HOLD DOWN | 1 |
| 9 | 811631 | BOLT, 1/4" x 1-1/2" HEX GR 5 (PL) | 2 |
| 10 | 81922 | LOCK NUT, 1/4" NC (NYLON) | 3 |
| 11 | 84467 | BOLT, 3/4" NC x 2" HEX GR 5 (PL) | 27 |
| 12 | 84050 | FLAT WASHER, 3/4" SAE BS (PL) | 56 |
| 13 | 813648 | LOCK NUT, 3/4" NC (STEEL) GR 5 (PL) | 28 |
| 14 | 814355 | SHIM, 2" ID x 2-3/4" OD x 0.188" POLYU | 2 |

**ARM ASSEMBLY CONT.**



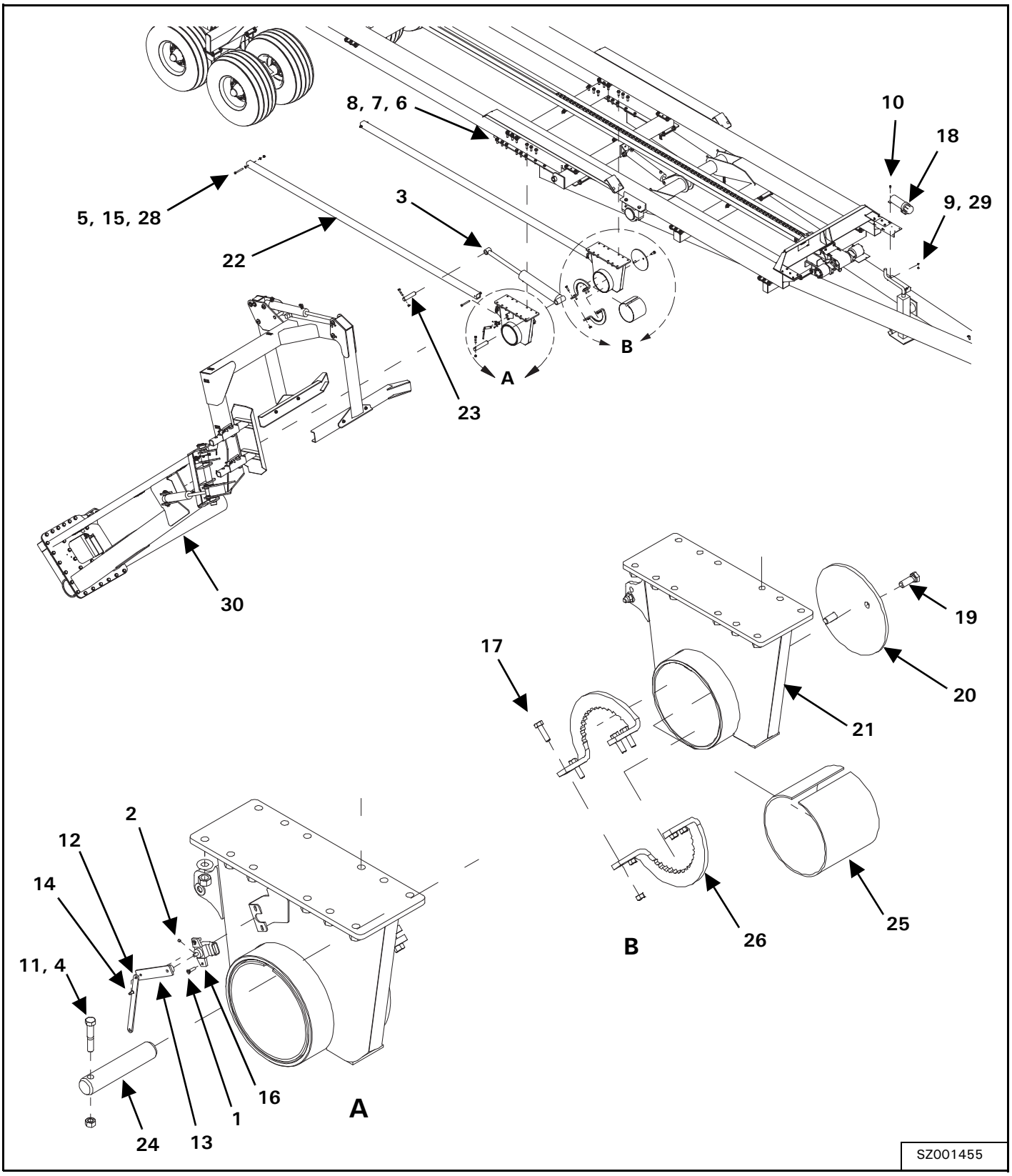
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ000662 | REMOVEABLE PIN ASSEMBLY, 4500 | 1 |
| 2 | 84072 | BOLT, 3/8" x 3/4" HEX (PL) | 7 |
| 3 | 81593 | LOCK WASHER, 3/8" | 7 |
| 4 | 114825 | PIN CAP, 1-3/4" OD x 0.41" ID x 1/4" (PL) | 7 |
| 5 | I20071 | LH GRAB ARM PIN ASSEMBLY, 4500 | 3 |
| 6 | I20066 | GRAB ARM JOINT, 4500 | 1 |
| 7 | 12779 | #9 HAIRPIN CLIP | 3 |
| 8 | 811414 | 90° ELBOW, 3/4" MORB x 3/4" MJIC | 4 |
| 9 | I20070 | RH GRAB ARM PIN ASSEMBLY, 4500 | 4 |
| 10 | I20062 | RH GRAB ARM ASSEMBLY, 4500 | 1 |
| 11 | I20065 | LH GRAB FINGER ASSEMBLY, 4500 | 1 |
| 12 | I20063 | RH GRAB ARM ASSEMBLY, 4500 | 1 |
| 13 | I20068 | BALE STOP ASSEMBLY, 4500 | 1 |
| 14 | I20064 | LH GRAB ARM ASSEMBLY, 4500 | 1 |
| 15 | I20061 | ROTATE ARM WELDMENT | 1 |
| 16 | I20069 | BALE STOP LOCKING PIN, 4500 | 2 |
| 17 | 00050714 | SET SCREW, HEX SKT | 1 |
| 18 | 83000038 | FLAT HEAD RIVET, (STEEL) | 1 |
| 19 | SZ000663 | 90° GREASE FITTING, 1/8"-27 NPT | 2 |
| 20 | 83000034 | SWING ARM ROTARY SENSOR LINK | 1 |
| 21 | 83000037 | ROTARY SENSOR LEVER WELDMENT | 1 |
| 22 | 86038881 | ROTARY SENSOR | 1 |
| 23 | 86511996 | LOCK NUT, M5 (NYLON) CLASS 8 (PL) | 2 |
| 24 | 00044510 | SCREW, M5 x 16 | 2 |
| 25 | 81525 | BOLT, 1/4" NC x 3/4"HEX GR 5 (PL) | 1 |
| 26 | 81922 | LOCK NUT, 1/4" NC (NYLON) | 1 |
| 27 | 84277 | BOLT, 1/2" NC x 1-1/2" HEX GR 5 (PL) | 4 |
| 28 | 84048 | FLAT WASHER, 1/2" SAE BS (PL) | 8 |
| 29 | 812364 | LOCK NUT, 1/2" NC (STEEL) GR B (PL) | 4 |
| 30 | I20075 | PIVOT PIN ASSEMBLY, 4500 | 1 |
| 31 | I100222 | PIVOT PIN CAP BOLT ASSEMBLY | 1 |
| 32 | 81701 | LOCK WASHER, 3/4" (PL) | 1 |
| 33 | 813515 | BOLT, 3/4" NC x 2-1/2" HEX GR 8 (PL) | 1 |
| 34 | 24968 | CYLINDER, 3" x 16" ASSEMBLY INLAND | 2 |

**BEAM AND STACK INVERTER ASSEMBLY**



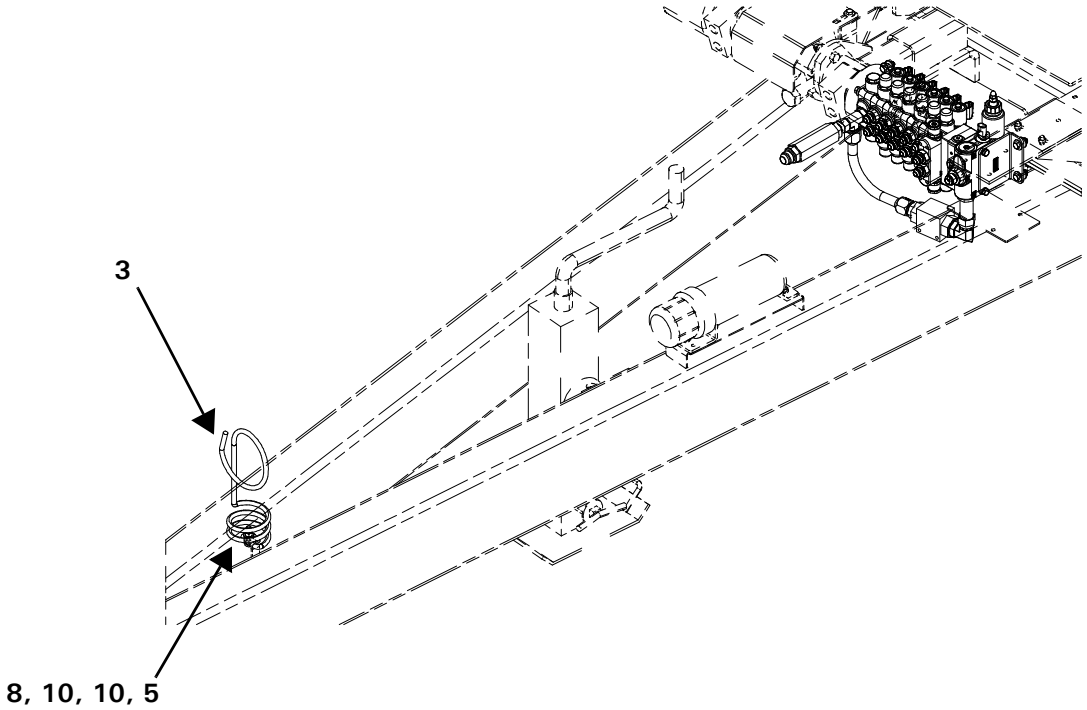
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 87670 | BOLT HEX 0.50 X 1.25GR5 PL | 2 |
| 2 | 88436 | BOLT HEX 0.38 X 2.00GR5 PL | 2 |
| 3 | 22510 | CYL 3.0 X 16.0 INLNAD | 1 |
| 4 | 813663 | NUT LOCK (STEEL) 0.500NC GRCPL | 59 |
| 5 | 813681 | GRAPHITE COATING | 0.33 |
| 6 | 815373 | LIGHT BRACKET OUTER | 1 |
| 7 | 85700693 | LOCKNUT 5/8-11 TOP LOCK GRC PL | 10 |
| 8 | 9637692 | 3/8'' GRADE B HEX LOCK NUT | 2 |
| 9 | 967274 | BOLT HEX 0.500NC X 1.50 GR8 PL | 59 |
| 10 | 967285 | 5/8" X 1 3/4"  HEX BOLT GR8 (PL) | 10 |
| 11 | E1932-00 | CYLINDER PIN 1.0 X 5 9/16 | 1 |
| 12 | E2345-00 | PIN CYLINDER 1.0 DIA X 4.250 | 1 |
| 13 | EZB075065 | BOLT HEX 3/4NCX6-1/2 GR5 ZNCR | 4 |
| 14 | EZDR8601B | HOUSING-BEARING BOTTOM | 2 |
| 15 | EZDR8601T | HOUSING-BEARING TOP | 2 |
| 16 | SXFW-050YZ | FLATWASHER; 1/2" YZ | 118 |
| 17 | SXFW-062YZ | FLATWASHER; 5/8" YLLWZN | 20 |
| 18 | SXLN-050-NI-YZ | LOCKNUT; 1/2" NYLON INSERT YZ | 6 |
| 19 | SXLN-075-NI-YZ | LOCKNUT; 3/4" NYLON INSERT YZ | 4 |
| 20 | SZ001413 | BALE 1/4-TURN FORK WLDT | 1 |
| 21 | SZ001449 | LEFT CARRIER BEAM SQBM | 1 |
| 22 | SZ001450 | RIGHT CARRIER BEAM SQBM | 1 |
| 23 | SZ001496 | QTR TURN SLIDE STOP PLATE | 2 |
| 24 | SZ001499 | FRAME BRACKET, CAUTION LIGHT | 2 |
| 25 | SZ001500 | CAUTION LIGHT MNT PLT, RH | 1 |
| 26 | SZ101704 | GREASE ZERK, 1/4" | 4 |
| 27 | SZ126012 | BLT CRG 1/2-13 UNC 1-1/4 SHRT NECK | 4 |

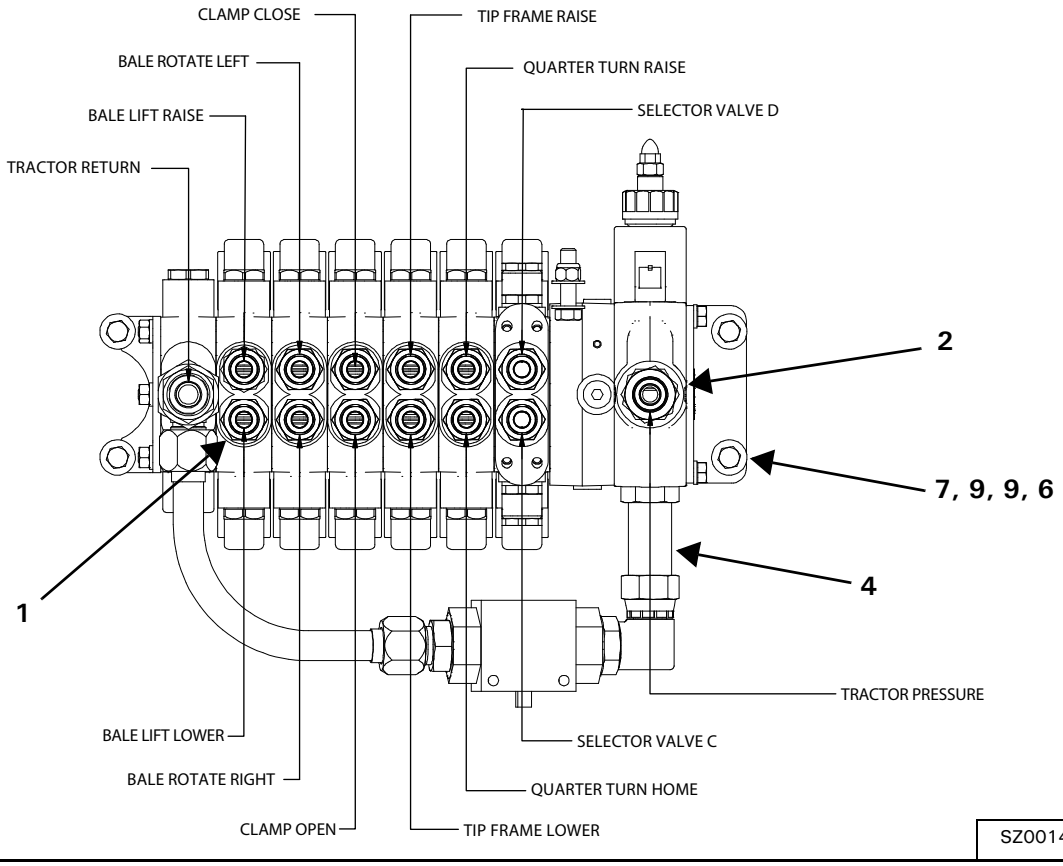
**ARM MOUNT ASSEMBLY**



| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 44510 | SCREW, M5 X 16 | 2 |
| 2 | 50714 | SET SCREW, HEX SKT | 1 |
| 3 | 24879 | CYL 4.0 X 18.0 INL | 1 |
| 4 | 812364 | 1/2" LOCK NUT (PL) | 10 |
| 5 | 813663 | NUT LOCK (STEEL) 0.500NC GRCPL | 4 |
| 6 | 813729 | BOLT HEX 0.625NC X 1.79 L9 BOLT | 24 |
| 7 | 813730 | WASHER FL 0.325 L9 PL | 48 |
| 8 | 813731 | NUT LOCK 0.625NC PL | 24 |
| 9 | 81546 | 5/16" FLAT WASHER (PL) | 2 |
| 10 | 81549 | 5/16" X 3/4" HEX BOLT (PL) | 2 |
| 11 | 81626 | 1/2" X 2 3/4" HEX BOLT (PL) | 2 |
| 12 | 83000033 | ROTARY SENSOR LINK, LIFT ARM | 1 |
| 13 | 83000037 | ROTARY SENSOR LEVER  WELD'T | 1 |
| 14 | 83000038 | RIVET, FLAT HEAD (STEEL) | 1 |
| 15 | 84048 | 1/2"  SAE FLAT WASHER (PL) | 8 |
| 16 | 86038881 | ROTARY SENSOR | 1 |
| 17 | 87553 | 1/2" X 1.75" HEX BOLT UNC GR5 (PL) | 8 |
| 18 | 909277 | MANUAL HOLDER | 1 |
| 19 | 967285 | 5/8" X 1 3/4"  HEX BOLT GR8 (PL) | 2 |
| 20 | B2724-00 | END CAP LH / PIVOT ARM | 1 |
| 21 | C2875-00 | PIVOT HOLDER LH | 1 |
| 22 | C7036-00 | CENTER BRACE | 2 |
| 23 | E2732-00 | CYL PIN MAIN ARM LIFT | 1 |
| 24 | E2733-00 | MAIN CLEVIS PIN | 1 |
| 25 | E2791-00 | SPLIT BUSHING UHMW | 2 |
| 26 | I100225 | STOP PLATE UHMW PIVOT ARM | 4 |
| 27 | I20073 | WELDMENT - PIVOT HOLDER RH | 1 |
| 28 | SXBH-050-450-5 | CSHH G5P 0.5X 4.5 | 4 |
| 29 | SXLN-031-NIYZ | LOCKNUT; 5/16" NYLON INSERT YZ | 2 |
| 30 | SZ000454 | ASSEMBLY - LIFT ARM | 1 |

## HYDRAULIC ROUTING ASSEMBLY, VALVE

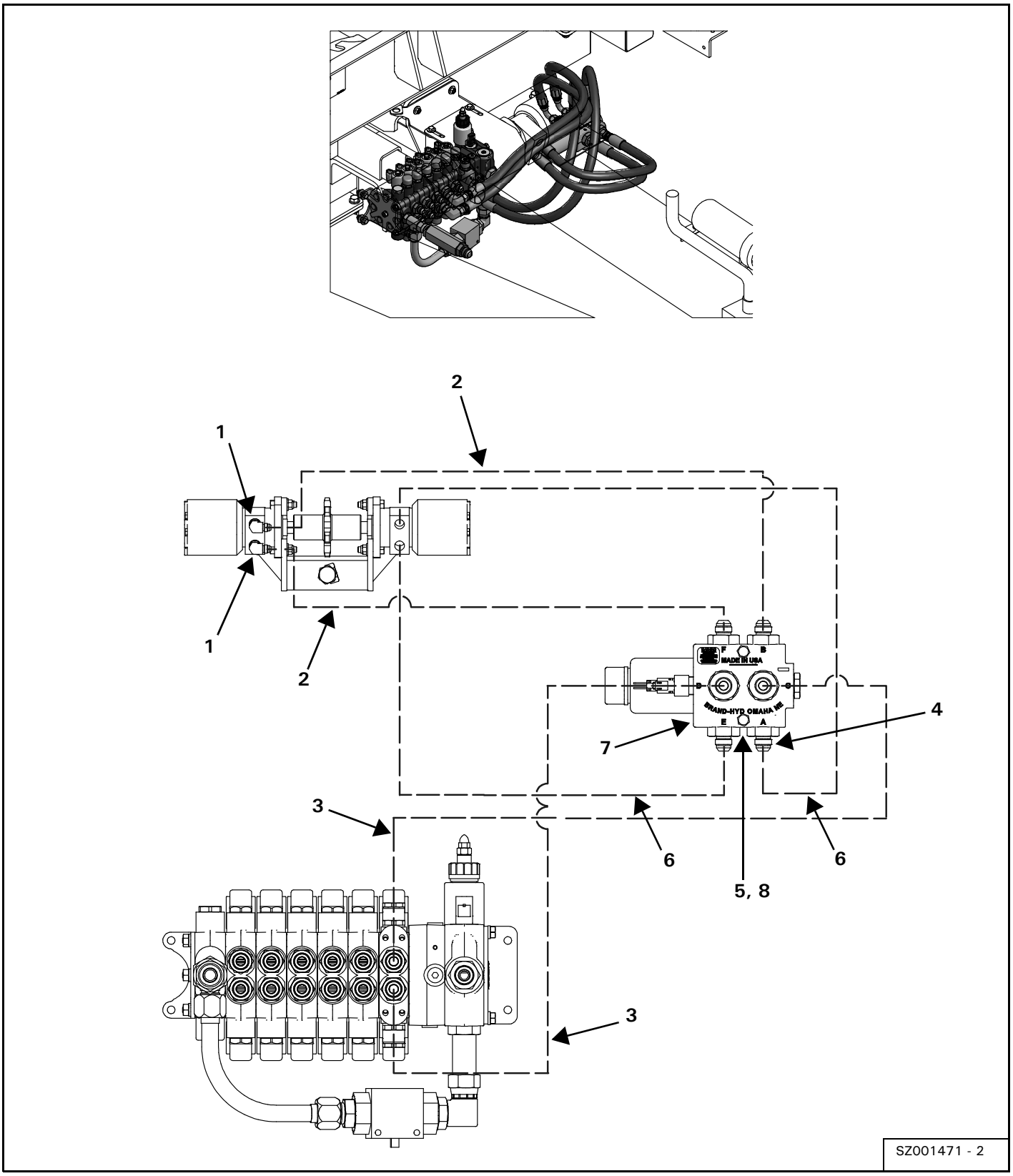



SZ001471 - 1

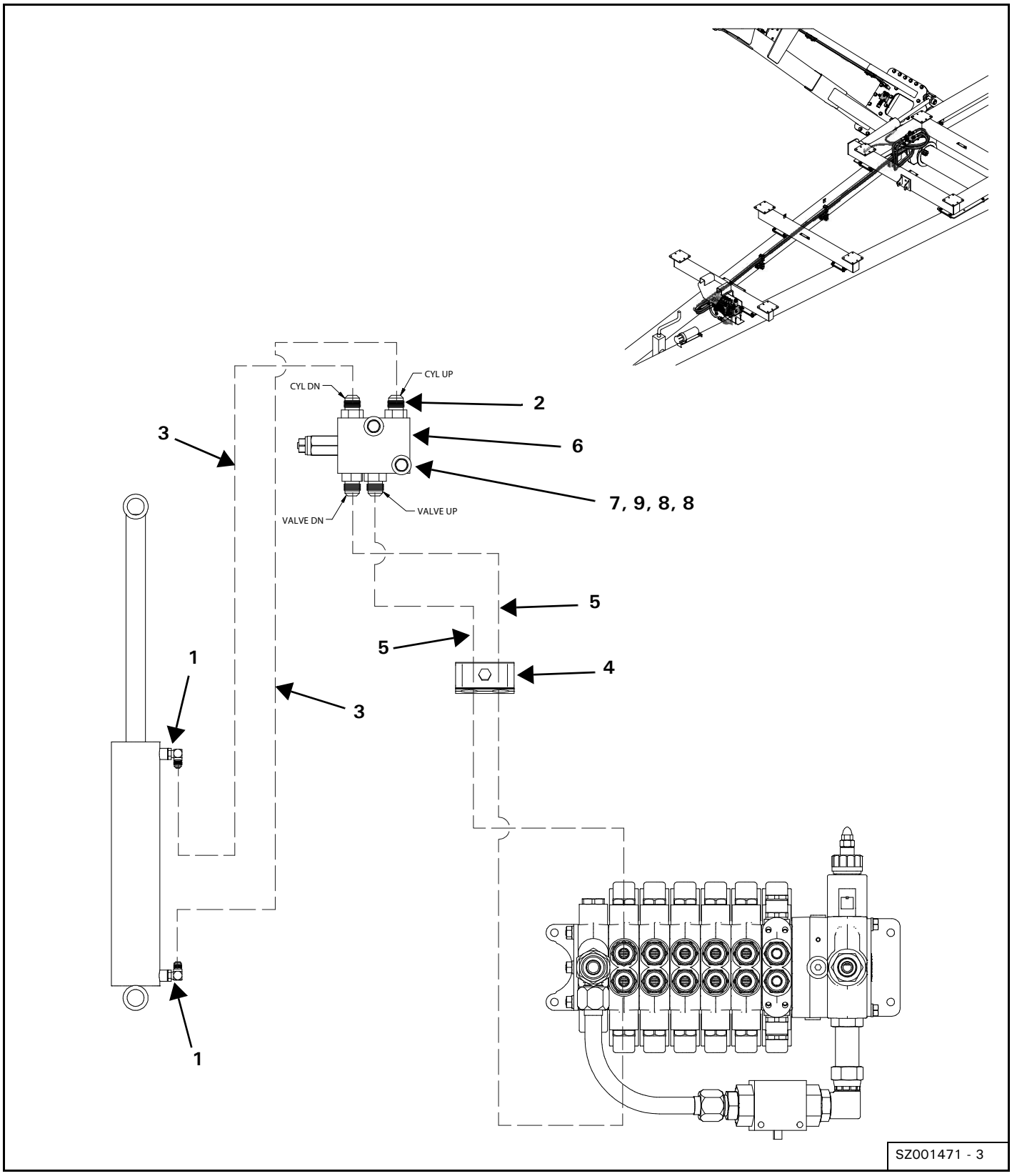
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 813094 | ADAPTOR STR 7/8 MORB X 3/4 MJIC | 12 |
| 2 | 88666872 | ADPTR, STRGHT; -10MJIC-12MORB | 1 |
| 3 | 966314 | HYDRAULIC HOSE HOLDER | 1 |
| 4 | SZ001465 | HYDRAULIC VALVE ASSEMBLY | 1 |
| 5 | SZ125030 | NUT LCK 3/8-16UNC NYLOCK | 1 |
| 6 | SZ125035 | NUT LCK, 5/16” -18UNC, NYLOCK G5 | 4 |
| 7 | SZ126047 | BLT HHCS, 5/16” -18UNC, 1"G5 | 4 |
| 8 | SZ126068 | BLT HHS 3/8-16UNC 1-1/2 G5 | 1 |
| 9 | SZ127001 | WSHR, FLT, 5/16 | 8 |
| 10 | SZ127002 | WASHER FLAT 3/8 | 2 |

**HYDRAULIC ROUTING ASSEMBLY, MOTOR CIRCUIT**



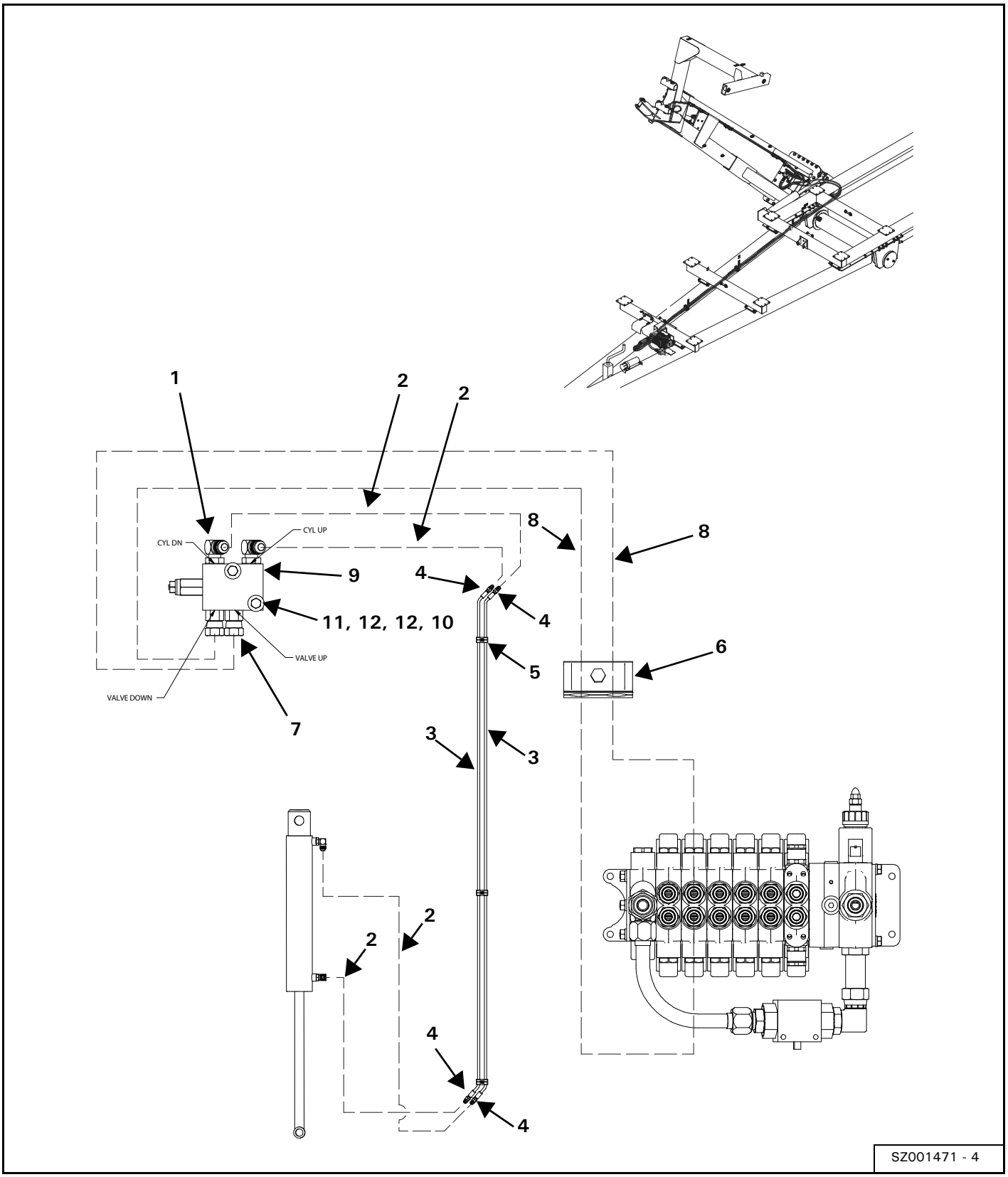
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 9617891 | 90ELB 37D-OR 8-10 86512105 | 2 |
| 2 | 116011 | HOSE 1/2 X 48" 3/4 SWFJIC-3/4 SWFJIC 90 DEG | 2 |
| 3 | 812270 | HOSE 1/2 X 48" 3/4-3/4 SWFJIC | 2 |
| 4 | 83000074 | JIC(-8) TO MALE O-RING (-12), STRAIGHT | 6 |
| 5 | SXBH-031-300-5 | BOLT; 5/16" X 3" GRADE 5 | 2 |
| 6 | SZ000512 | HOSE 1/2 X 24" 3/4 SWFJIC-7/8 MORB | 2 |
| 7 | SZ001475 | VALVE, HYDRAULIC SELECTOR | 1 |
| 8 | SZ125035 | NUT LCK, 5/16" -18UNC, NYLOCK G5 | 2 |

## HYDRAULIC ROUTING ASSEMBLY, BALE LIFT CIRCUIT



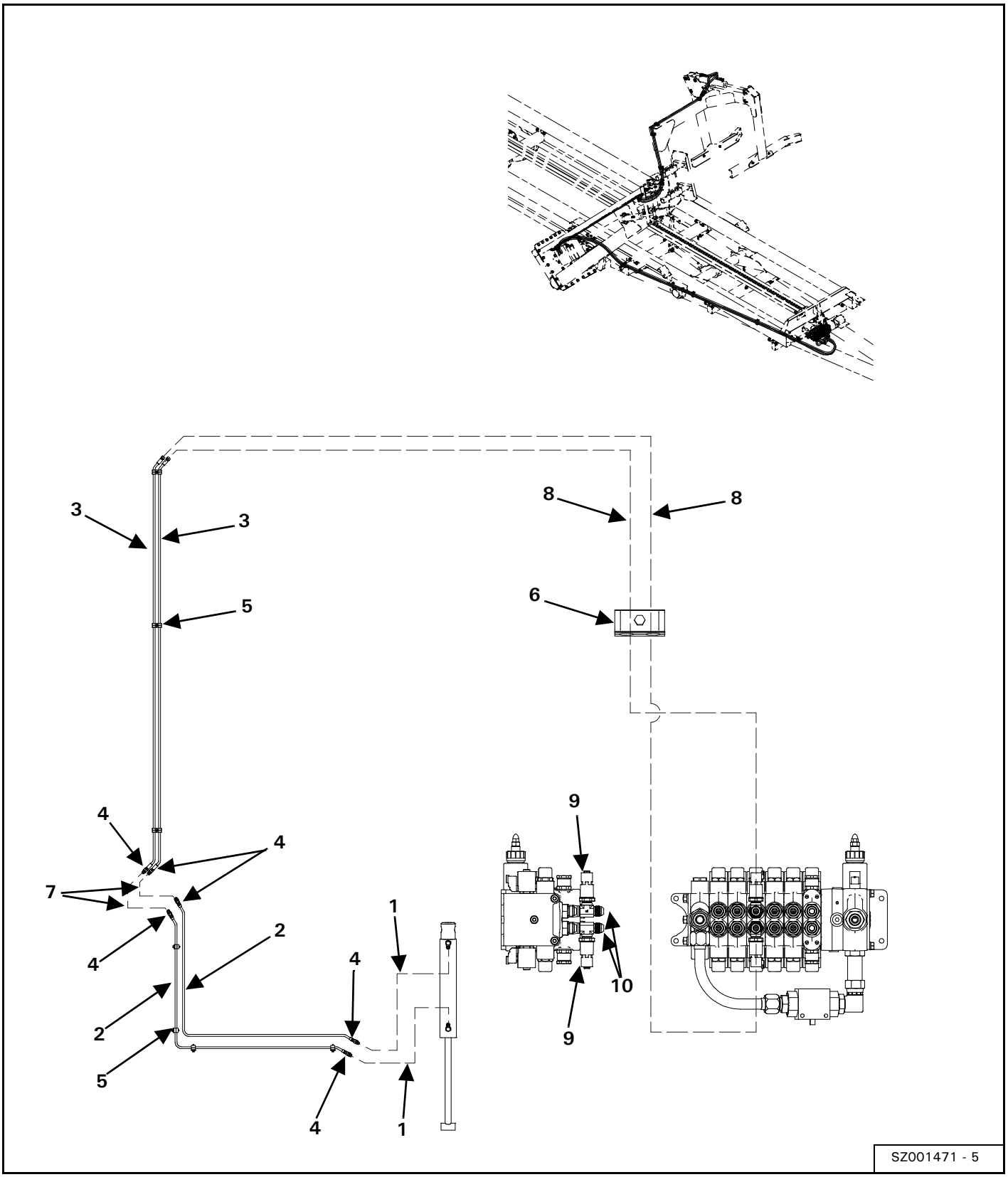
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 811414 | ELBOW 90 3/4 MORB X 3/4 MJIC | 2 |
| 2 | 812080 | ADAPTOR STR SAE -08 MJIC -08 MORB | 4 |
| 3 | 812449 | HOSE 1/2 X 36" 3/4-3/4 SWFJIC | 2 |
| 4 | A2700-49 | 3/4 STEEL LINE MOUNT ASSY | 3 |
| 5 | SZ001459 | HOSE 1/2 X 192" 3/4-3/4 SWFJIC | 2 |
| 6 | SZ001494 | VALVE, COUNTERBALANCE | 1 |
| 7 | SZ126055 | BLT HHCS 5/16-18 UNC 2-1/2 G5 | 2 |
| 8 | SZ127001 | WSHR, FLT, 5/16 | 4 |
| 9 | SZ127010 | WSHR LCK, 5/16” | 2 |

## HYDRAULIC ROUTING ASSEMBLY, BALE ROTATE CIRCUIT



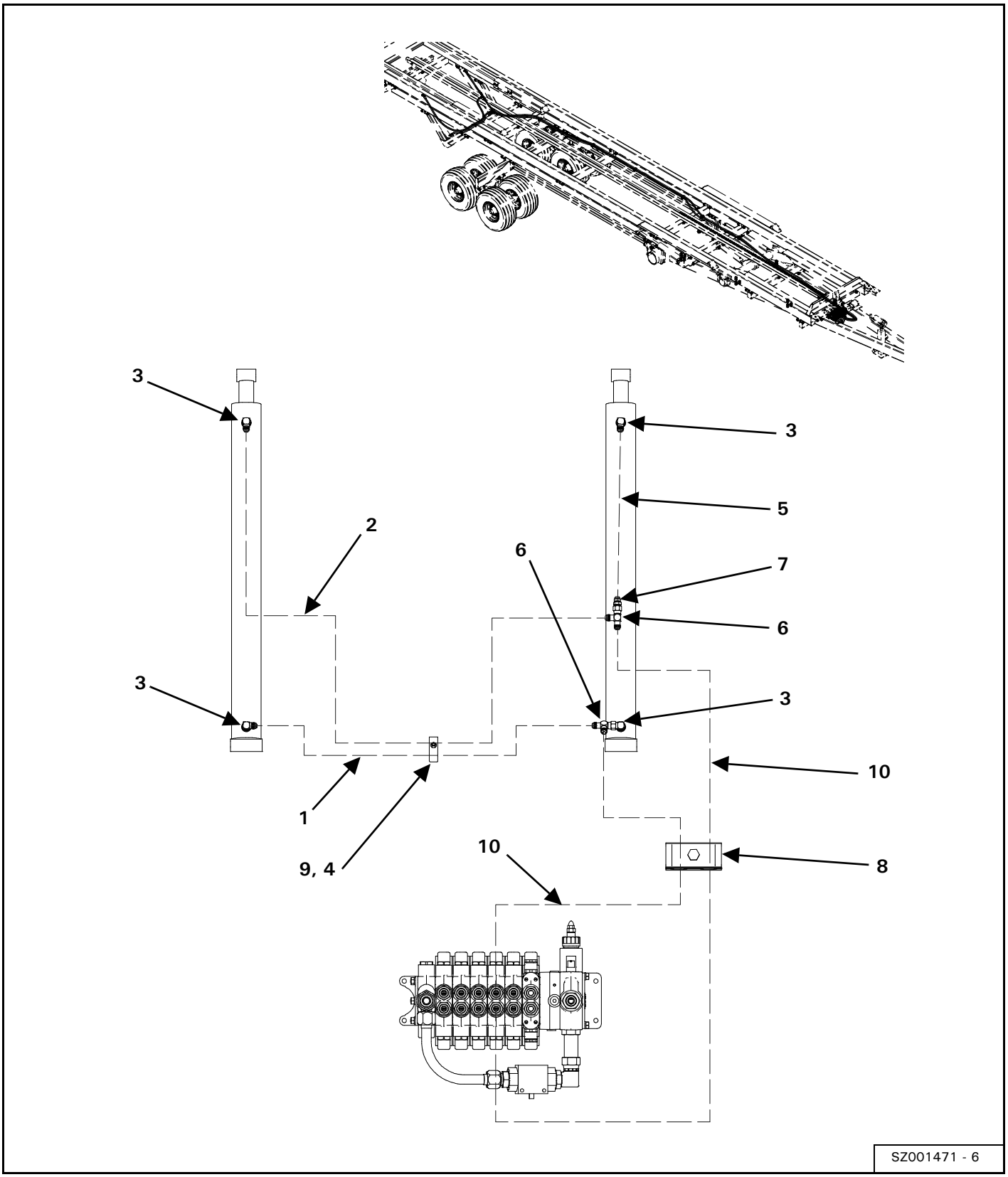
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 811414 | ELBOW 90 3/4 MORB X 3/4 MJIC | 2 |
| 2 | 812449 | HOSE 1/2 X 36" 3/4-3/4 SWFJIC | 4 |
| 3 | 814098 | 1/2 X 108 HYD HARDLINE LIFT ARM | 2 |
| 4 | 886704 | UNION STR 3/4 MJIC X 3/4 MJIC | 4 |
| 5 | A2700-27 | 1/2" STEEL LINE MOUNT ASSEMBLY | 3 |
| 6 | A2700-49 | 3/4 STEEL LINE MOUNT ASSY | 3 |
| 7 | SX018597 | ADPTR, HYD; -08ORB-08FJIC | 2 |
| 8 | SZ001461 | HOSE 1/2 X 252" 3/4 MJIC-3/4 SWFJIC | 2 |
| 9 | SZ001494 | VALVE, COUNTERBALANCE | 1 |
| 10 | SZ125035 | NUT LCK, 5/16" -18UNC, NYLOCK G5 | 2 |
| 11 | SZ126060 | BLT HHCS 5/16-18 UNC 3-1/2 G5 | 2 |
| 12 | SZ127001 | WSHR, FLT, 5/16 | 4 |

**HYDRAULIC ROUTING ASSEMBLY, CLAMP CIRCUIT**



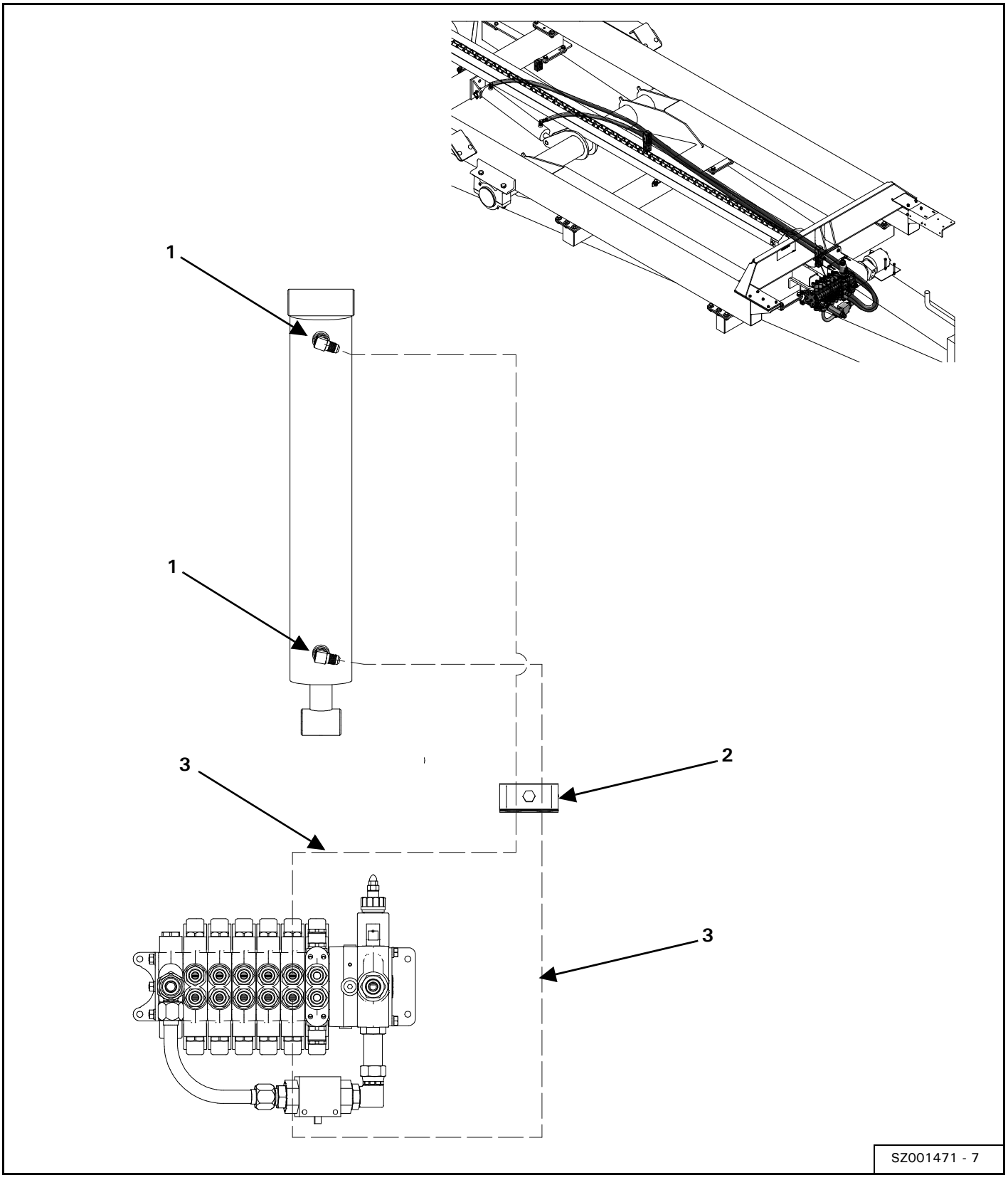
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 812449 | HOSE 1/2 X 36" 3/4-3/4 SWFJIC | 2 |
| 2 | 814097 | 1/2 X 108 HYD HARDLINE ROTATE ARM | 2 |
| 3 | 814098 | 1/2 X 108 HYD HARDLINE LIFT ARM | 2 |
| 4 | 886704 | UNION STR 3/4 MJIC X 3/4 MJIC | 6 |
| 5 | A2700-27 | 1/2” STEEL LINE MOUNT ASSEMBLY | 7 |
| 6 | A2700-49 | 3/4 STEEL LINE MOUNT ASSY | 3 |
| 7 | SZ000562 | HOSE 1/2 X 40" 3/4-3/4 SWFJIC, IN SLEEVE | 1 |
| 8 | SZ001461 | HOSE 1/2 X 252" 3/4 MJIC-3/4 SWFJIC | 2 |
| 9 | SZ001480 | TRANSDUCER, PRESSURE 4000PSI | 2 |
| 10 | SZ001495 | TEE 08 MJIC X SWFJIC RUN 04FORB | 2 |

**HYDRAULIC ROUTING ASSEMBLY, TIP FRAME CIRCUIT**



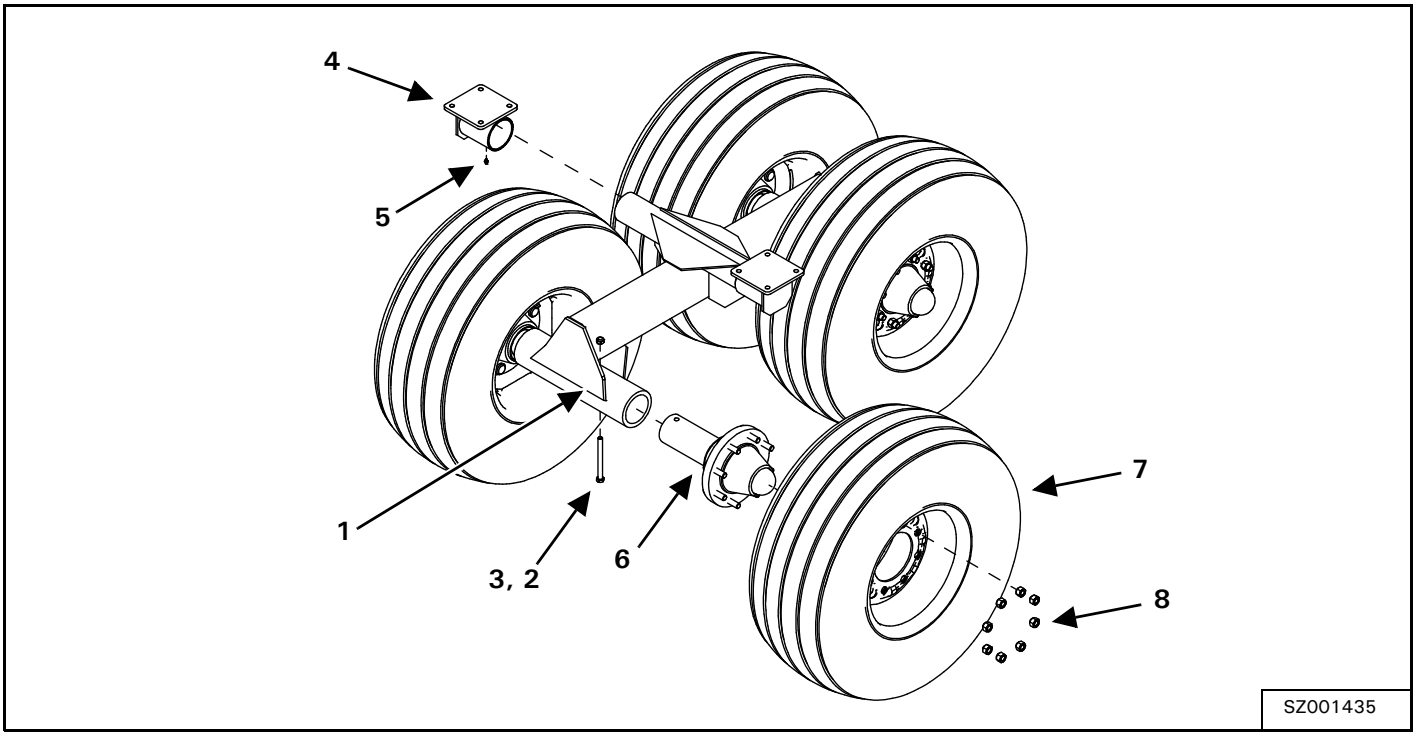
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 29164 | HOSE 1/2 X 44" 3/4-3/4 SWFJIC | 1 |
| 2 | 29166 | HOSE 1/2 X 77" 3/4-3/4 SWFJIC | 1 |
| 3 | 811414 | ELBOW 90 3/4 MORB X 3/4 MJIC | 4 |
| 4 | 812363 | 3/8″ LOCK NUT (PL) | 1 |
| 5 | 812449 | HOSE 1/2 X 36" 3/4-3/4 SWFJIC | 1 |
| 6 | 812786 | TEE 3/4 MJIC X RUN 3/4 SWFJIC | 2 |
| 7 | 886704 | UNION STR 3/4 MJIC X 3/4 MJIC | 1 |
| 8 | A2700-49 | 3/4 STEEL LINE MOUNT ASSY | 8 |
| 9 | I100113 | HOSE CLAMP 3/4 4500 | 1 |
| 10 | SZ001460 | HOSE 1/2 X 420" 3/4-3/4 SWFJIC | 2 |

**HYDRAULIC ROUTING ASSEMBLY, QUARTER TURN CIRCUIT**



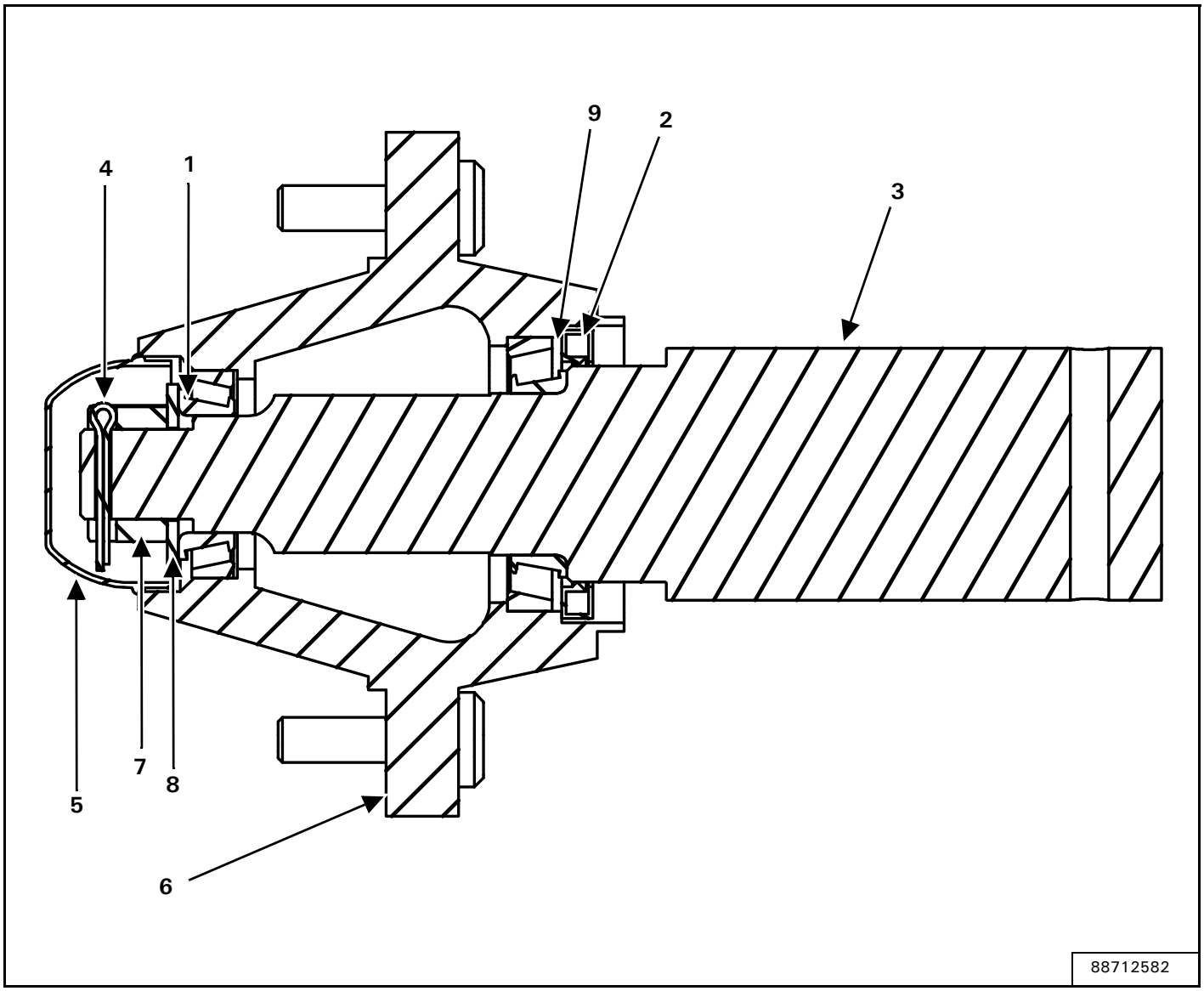
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 813640 | ELBOW 90 9/16 MORB ADJ X 3/8 | 2 |
| 2 | A2700-49 | 3/4 STEEL LINE MOUNT ASSY | 2 |
| 3 | SZ001462 | HOSE 1/2 X 186" 3/4-9/16 SWFJIC | 2 |

**BOGIE AXLE ASSEMBLY**



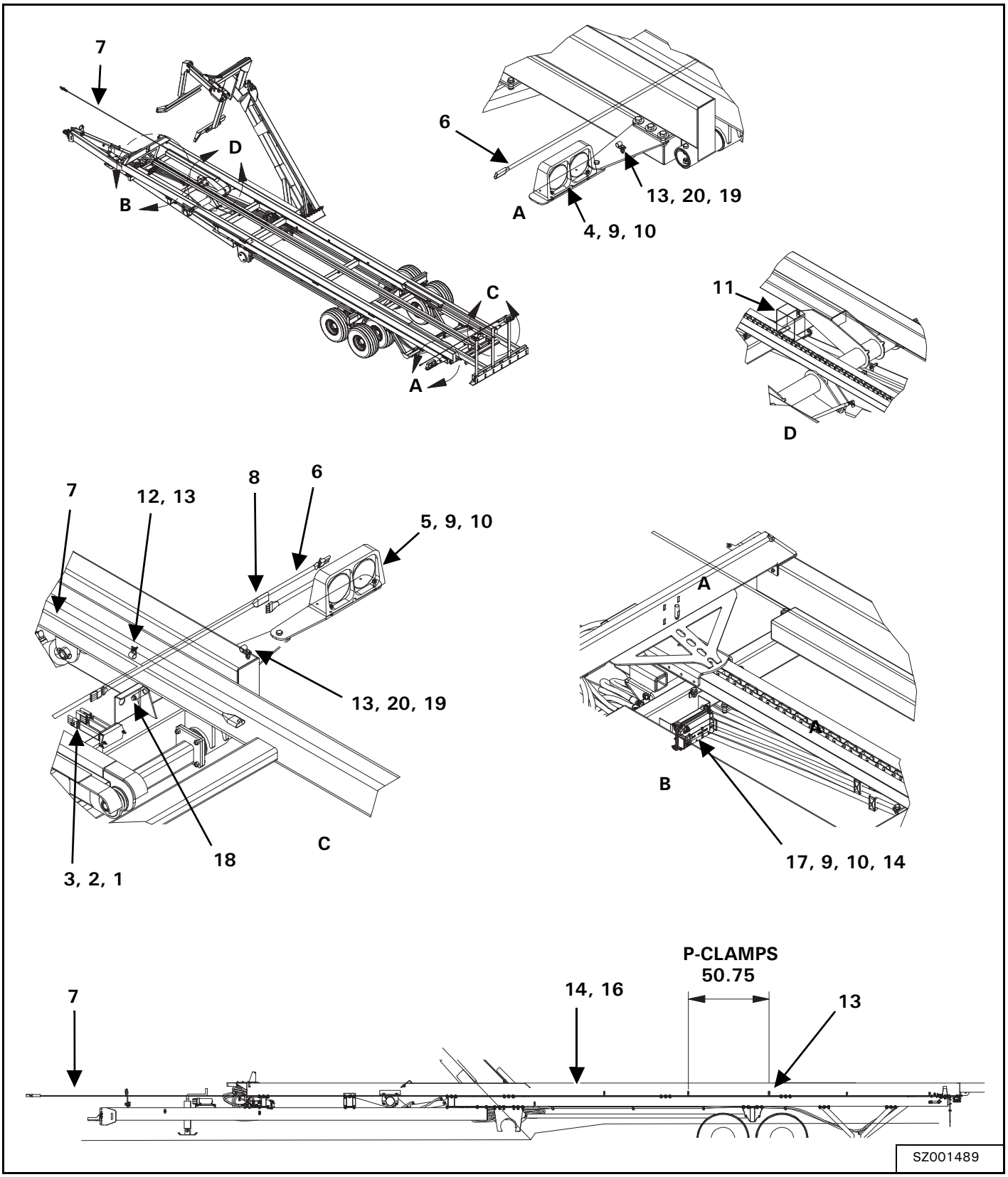

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001429 | 4480 AXLE BOGIE WELDMENT, 2016 | 1 |
| 2 | EZB050055-8 | BOLT, 1/2" x 5-1/2" HEX GR 8 ZN | 4 |
| 3 | SZ125032 | LOCK NUT, 1/2" -13 UNC NYLOCK | 4 |
| 4 | C2322-00 | BEARING AXLE WELDMENT | 2 |
| 5 | SZ101704 | GREASE ZERK, 1/4" | 2 |
| 6 | 88712582 | HUB ASSEMBLY, CTD H817 | 4 |
| 7 | 88706457 | 8-BOLT WHEEL AND TIRE ASSEMBLY | 4 |
| 8 | EZA77043 | 5/8" NF WHEEL NUT | 32 |

**8 BOLT HUB ASSEMBLY**



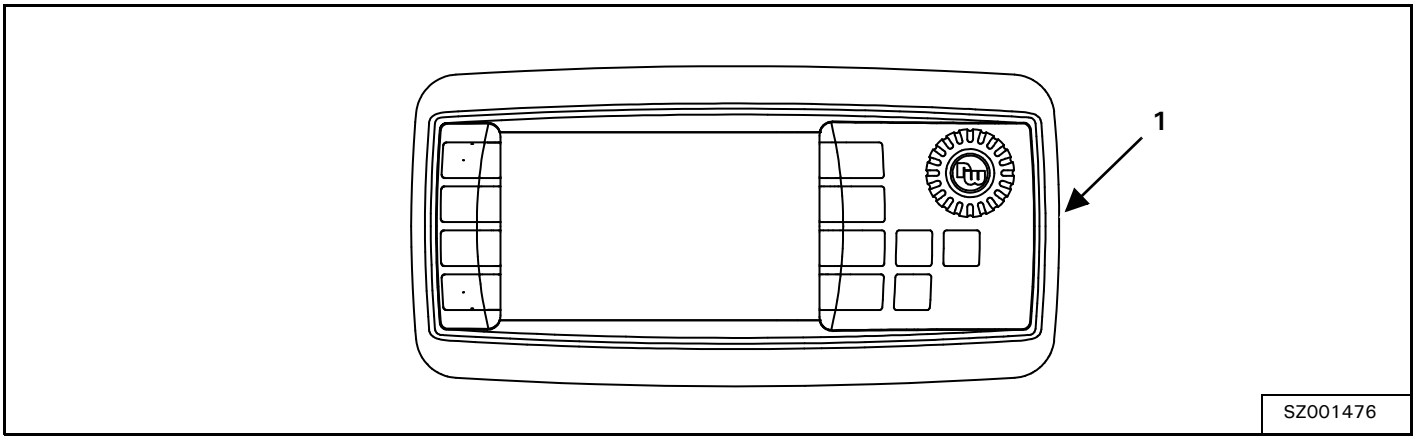

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 88713013 | BEARING CONE | 1 |
| 2 | EZA77040 | GREASE SEAL, SE-42 | 1 |
| 3 | 88712594 | 817 SPINDLE, 15" x 3-1/2" OD | 1 |
| 4 | EZBP18175 | PIN COTTER, 3/16" x 1-3/4" | 1 |
| 5 | EZDR9681 | HUB CAP | 1 |
| 6 | 88713012 | 8 BOLT HUB ASSEMBLY W / CUPS | 1 |
| 7 | EZDR13126 | SN UNF P 1-1/4" 86528691 | 1 |
| 8 | EZBW25012815F | W, 2-1/2" OD x 1-9/32" ID | 1 |
| 9 | 88713014 | BEARING CONE | 1 |

**ELECTRICAL ASSEMBLY**



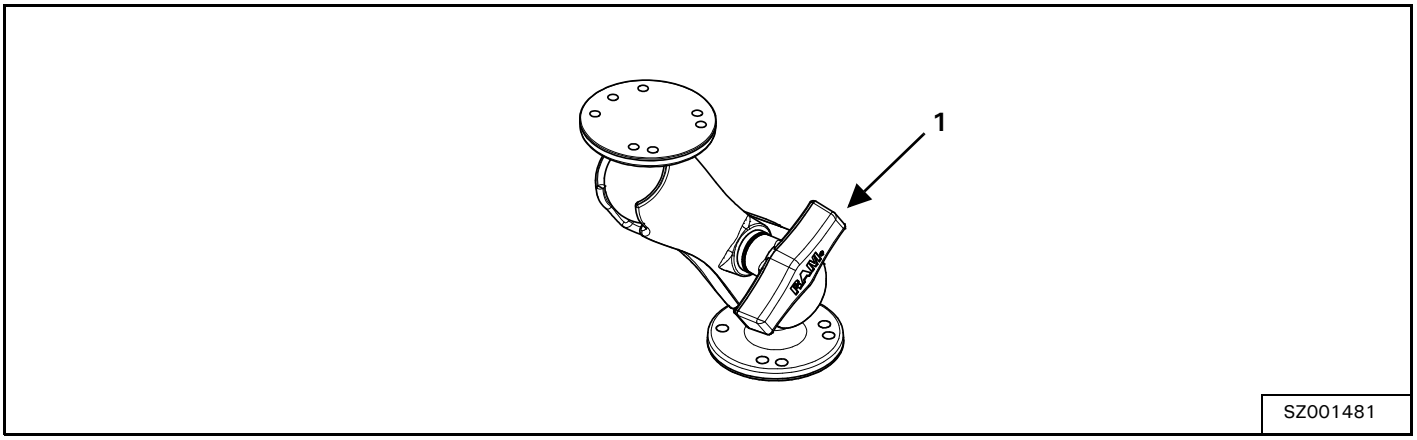
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | 812537 | NUT LOCK (NYLON) 0.136 NC GRB PL | 2 |
| 2 | 813958 | SCREW MACH #8-32 X 0.75 FLATHD | 2 |
| 3 | 814193 | ENHANCED AG LIGHTING MODULE | 1 |
| 4 | 814195 | LAMP-AG/DUAL/RH/4-WAY WP | 1 |
| 5 | 814196 | LAMP-AG/DUAL/LH/4-WAY WP | 1 |
| 6 | 814197 | EXTENSION HARNESS 114" LG | 1 |
| 7 | 814198 | MAIN HARNESS 52' LONG 7 PIN PLUG | 1 |
| 8 | 814199 | EXTENSION HARNESS 27" LONG | 1 |
| 9 | 81527 | 1/4” X 1" HEX BOLT (PL) | 12 |
| 10 | 81922 | LOCK NUT (NYLON) 0.25 NC | 12 |
| 11 | 819699 | PLATE - SENSOR BRACKET | 1 |
| 12 | SZ000565 | 5/16-12 X 3/4 STAPSCW #3 PNT | 8 |
| 13 | SZ000566 | 5/16X0.406 HOLE VINYL DIP CLAMP | 16 |
| 14 | SZ001467 | HARNESS, IMPLEMENT MAIN | 1 |
| 15 | SZ001468 | HARNESS, IMPLEMENT FRONT | 1 |
| 16 | SZ001469 | HARNESS, IMPLEMENT REAR | 1 |
| 17 | SZ001477 | CONTROLLER, EATON | 1 |
| 18 | SZ001479 | SWITCH, PROX 18MM | 4 |
| 19 | SZ125035 | NUT LCK, 5/16” -18UNC, NYLOCK G5 | 2 |
| 20 | SZ126047 | BLT HHCS, 5/16” -18UNC, 1"G5 | 2 |

**OPUS DISPLAY**




| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001476 | DISPLAY, OPUS A3SL | 1 |

**RAM MOUNTING KIT**



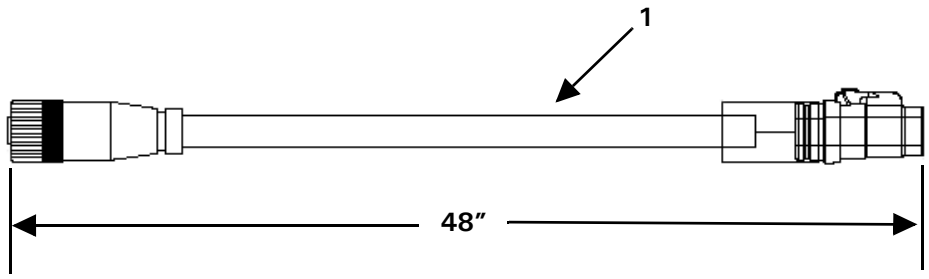

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001481 | MOUNTING KIT, RAM | 1 |

**KEY PAD**


SZ001478

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001478 | PENDENT, EATON CAN KEY PAD | 1 |

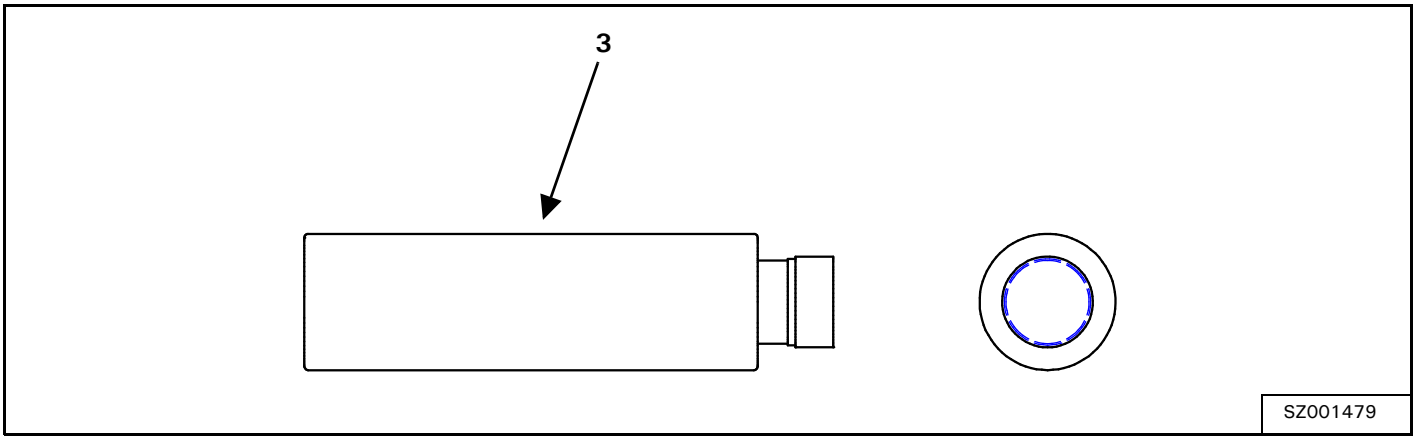
**HARNESS, M12 TO DTM06-6S**




SZ001470

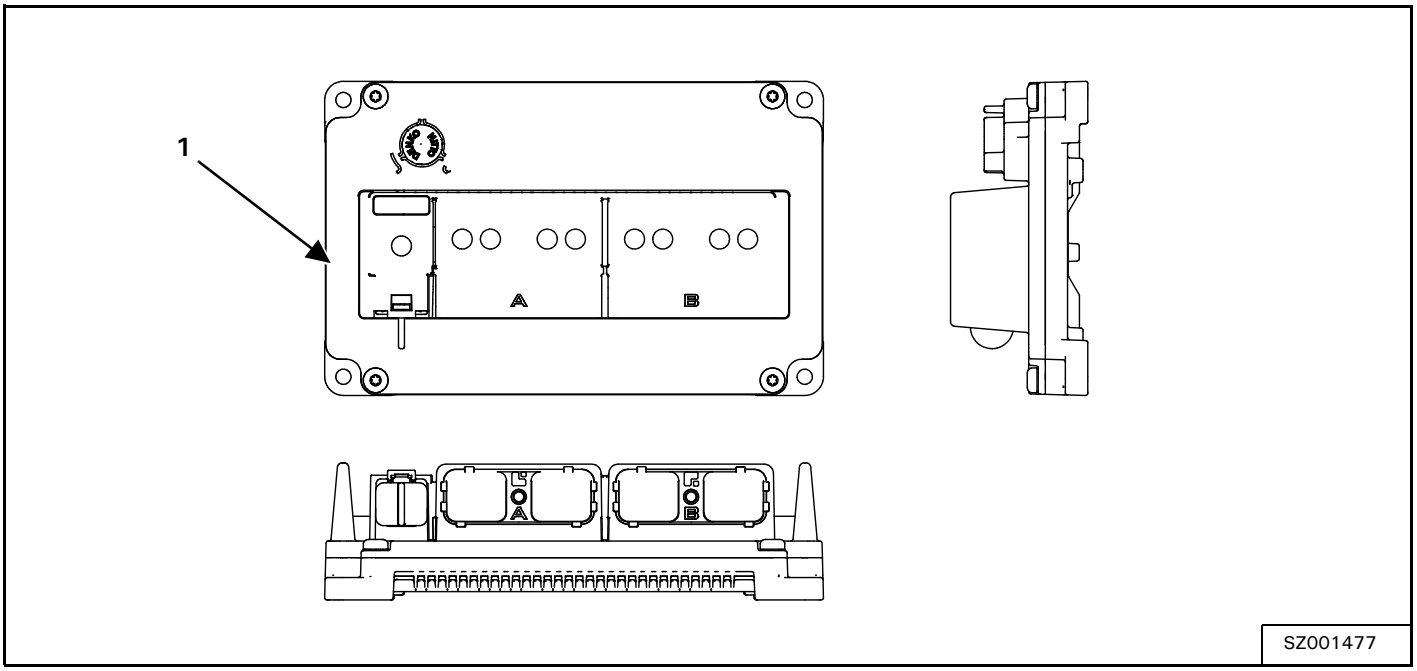
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001470 | HARNESS, M12 TO DTM06-6S | 1 |

## 18MM PROXIMITY SWITCH




| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001479 | 18MM PROXIMITY SWITCH | 1 |

## CONTROLLER




| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001477 | CONTROLLER | 1 |

## SPECIFICATIONS

# Farm King

## SPECIFICATIONS

### Dimensions

| DESCRIPTION | 4480 |
|---|---|
| Overall Length | 42′ 8″ (13 m) |
| Usable Deck Length | 34′ (10.36 m) |
| Overall Width | 13′ 10″ (4.2 m) |
| Width (Without Loading Arm) | 10′ 2″ (3.1 m) |
| Transport Width | 10′ 2″ (3.1 m) |
| Overall Height | 15′ 10″ (4.8 m) |
| Tipping Frame Height (Raised) | 15′ 10″ (4.8 m) |
| Rotate Arm Height (Lift Arm Fully Raised) | 15′ 7″ (4.75 m) |

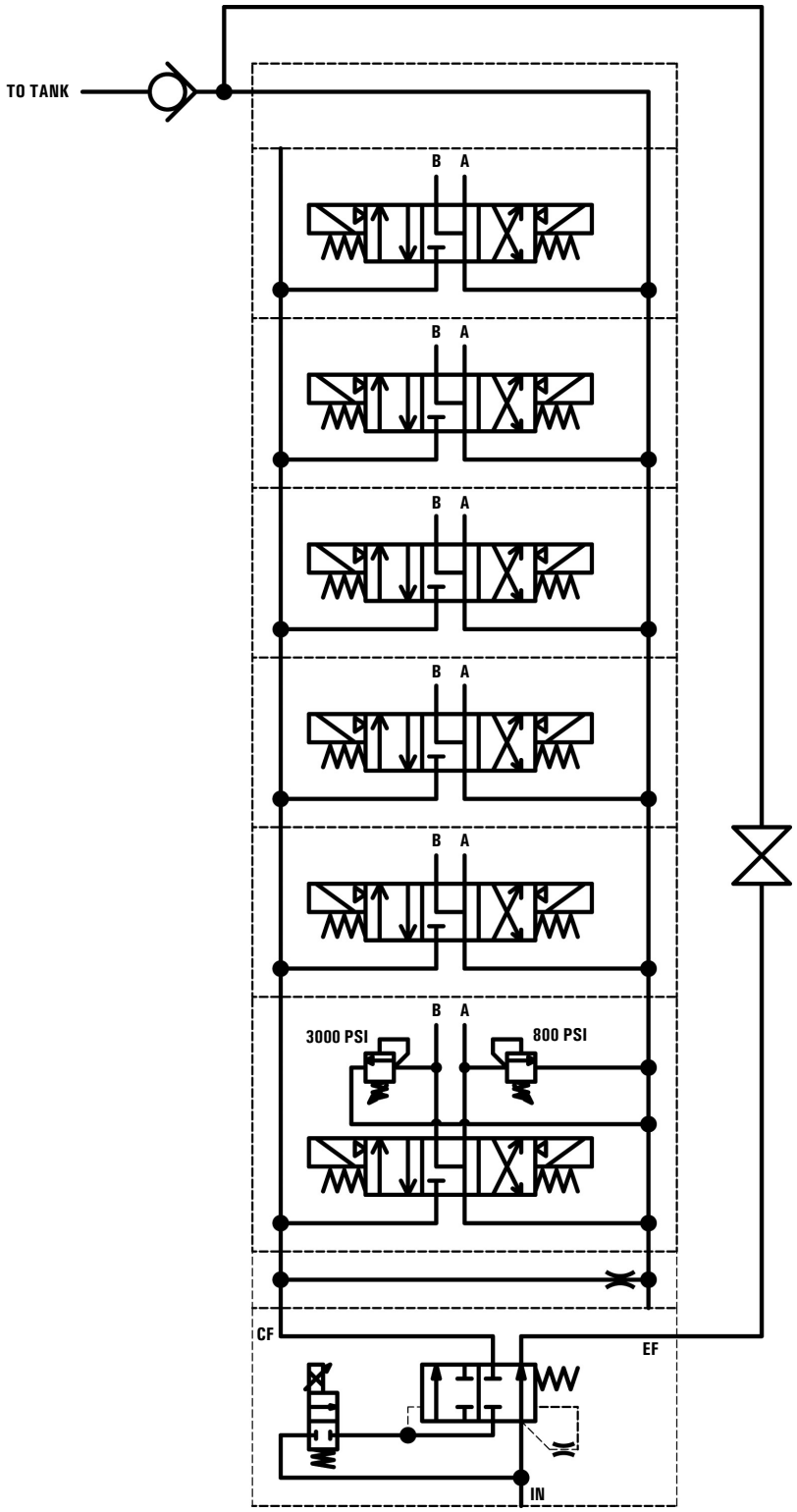
### Performance

| DESCRIPTION | 4480 |
|---|---|
| Weight (empty) | 9485 lb. (4302 kg) (approx.) |
| Hitch Weight (empty) | 1950 lb. (884 kg) (approx.) |
| Hitch Weight (maximum) | 7500 lb. (3402 kg) (approx.) |
| Tires | Eight 12.5L x 15 - Load Range F |
| Hubs | 8 Bolt Heavy Duty |
| Hub Spindle / Tire Capacity | 8000 lb. (3630 kg) @ 90 psi |
| Hydraulic Flow (closed or open center) | 25 US gpm (80 lpm) @ 3000 psi |
| Maximum Hydraulic Pressure | 3500 psi (24132.5 kPa) (238.14 bar) |
| Operating Hydraulic Pressure | 3000 psi (20685 kPa) (204.12 bar) |
| Hydraulic Motors (Pusher) | Dual 22.2 cu. in. |
| Lift Cylinder | 4″ diameter x 18″ stroke |
| Clamp Cylinder | 3″ diameter x 16″ stroke |
| Rotate Cylinder | 3″ diameter x 16″ stroke |
| Tilt Cylinders | 3.5″ diameter x 36″ stroke |
| Electrical | 12V (Internal Fuse Protection) |

### Load Capacity

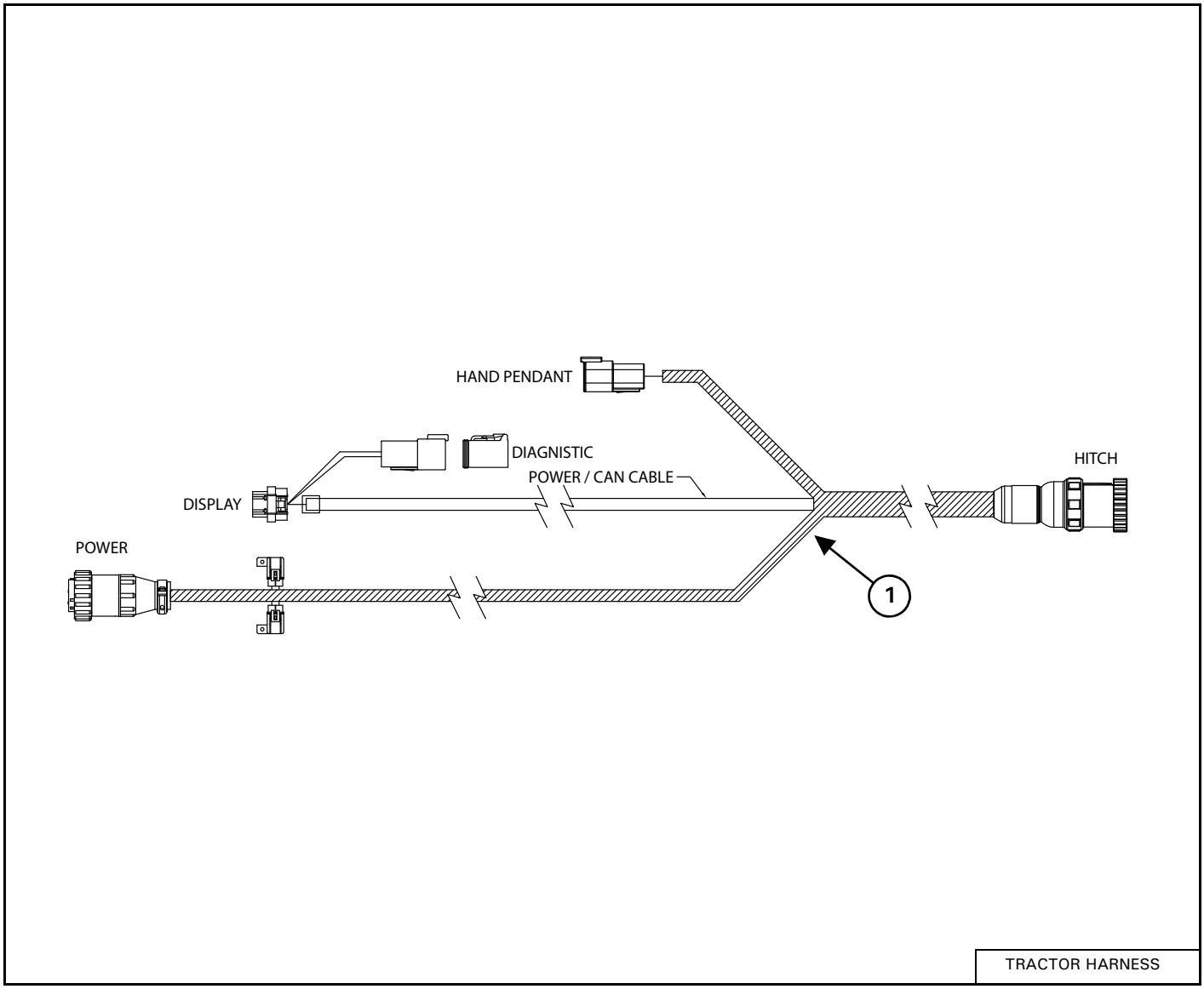
| DESCRIPTION | 4480 |
|---|---|
| Maximum Load | 25,000 lb. (11,300 kg) |
| Bale Length | 8′ (2.4 m) |
| 48″ x 48″ (122 x 122 cm) Bales | 9 Bales (single row on carrier) / 8 Bales (single row with 1/4 turn) |
| 32″ x 35″ (81 x 90 cm) Bales | 24 Bales (double row on carrier) / 20 Bales (double row with 1/4 turn) |
| 36″ x 48″ (91 x 122 cm) Bales | 18 Bales (double row on carrier) / 10 Bales (single row with 1/4 turn) |

## HYDRAULIC SCHEMATIC



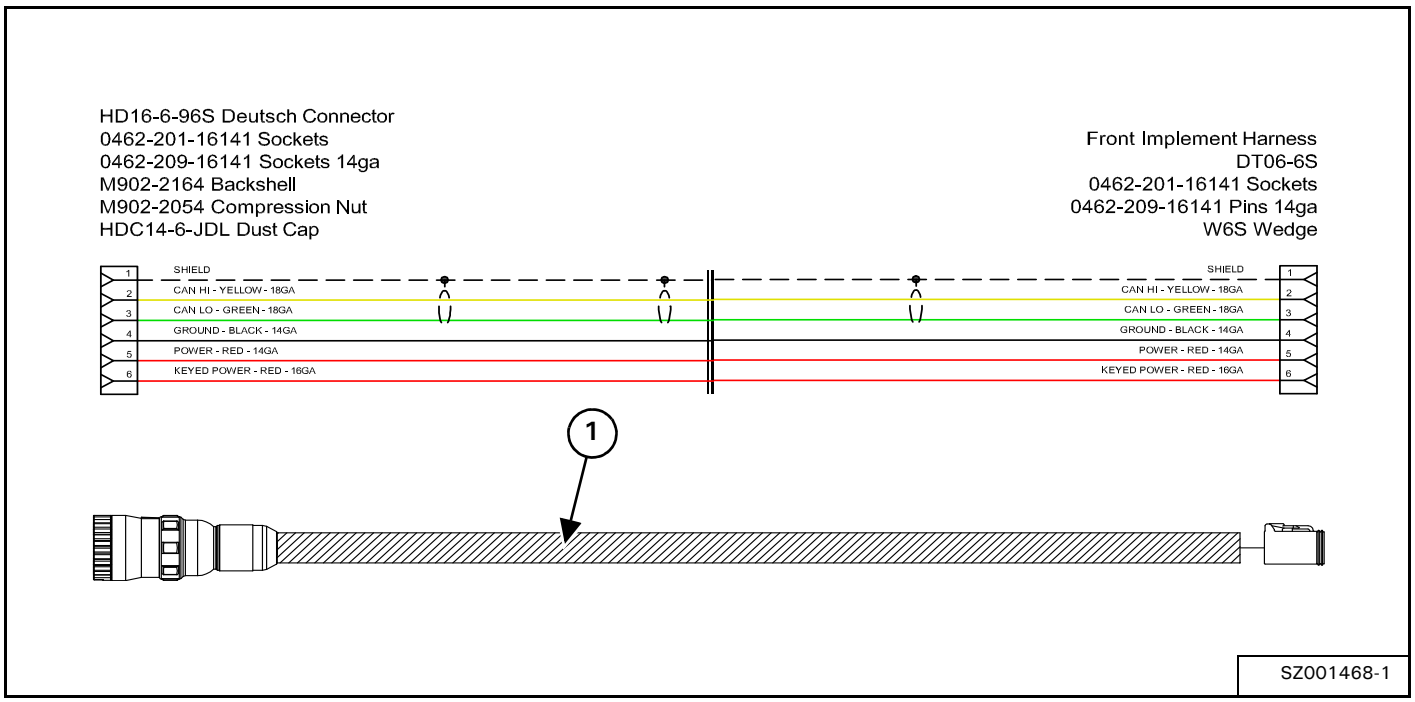

PS-00003-VSV R2

## CAB HARNESS DIAGRAM



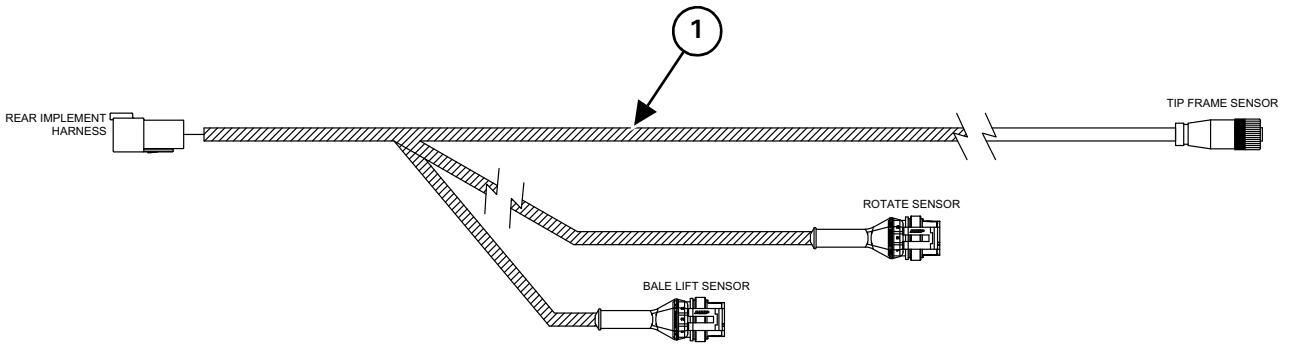

| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001466 | COMPLETE TRACTOR WIRE HARNESS | 1 |

## FRONT IMPLEMENT WIRE HARNESS DIAGRAM




| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001468 | COMPLETE FRONT IMPLEMENT WIRE HARNESS | 1 |

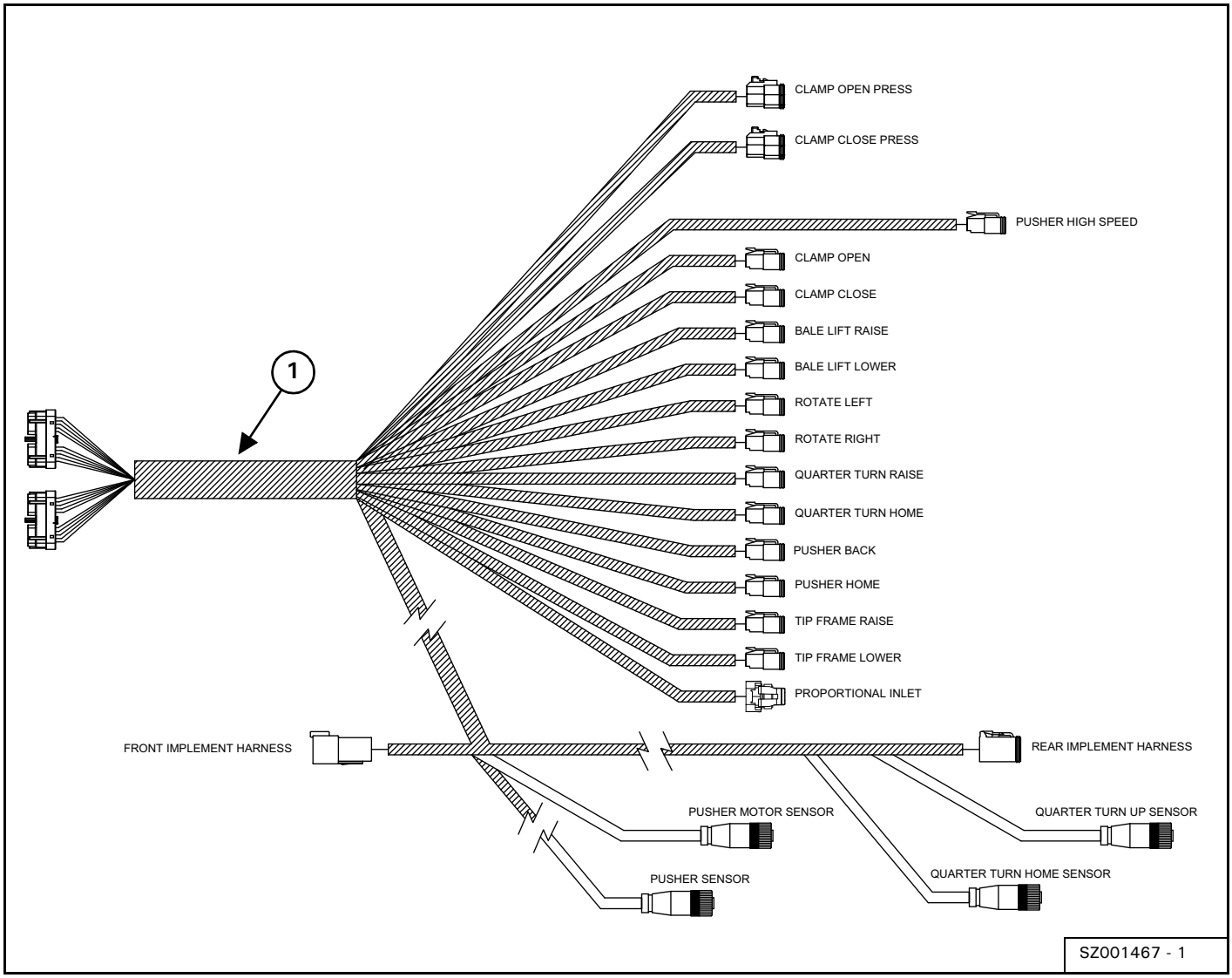
## REAR IMPLEMENT HARNESS DIAGRAM




SZ001469 - 1

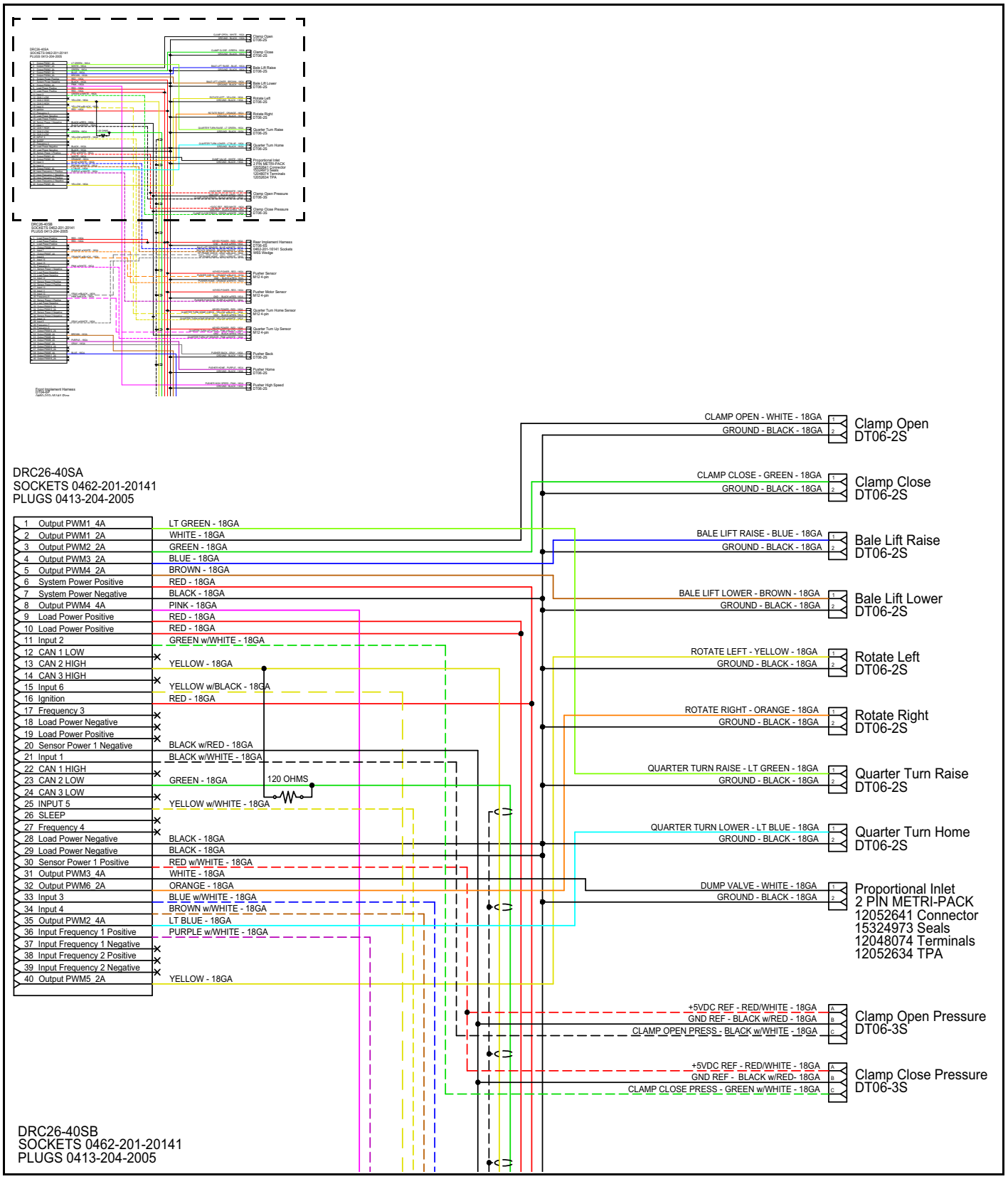
| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001469 | COMPLETE REAR IMPLEMENT WIRE HARNESS | 1 |

## BALE CARRIER HARNESS / VALVE BLOCK DIAGRAM

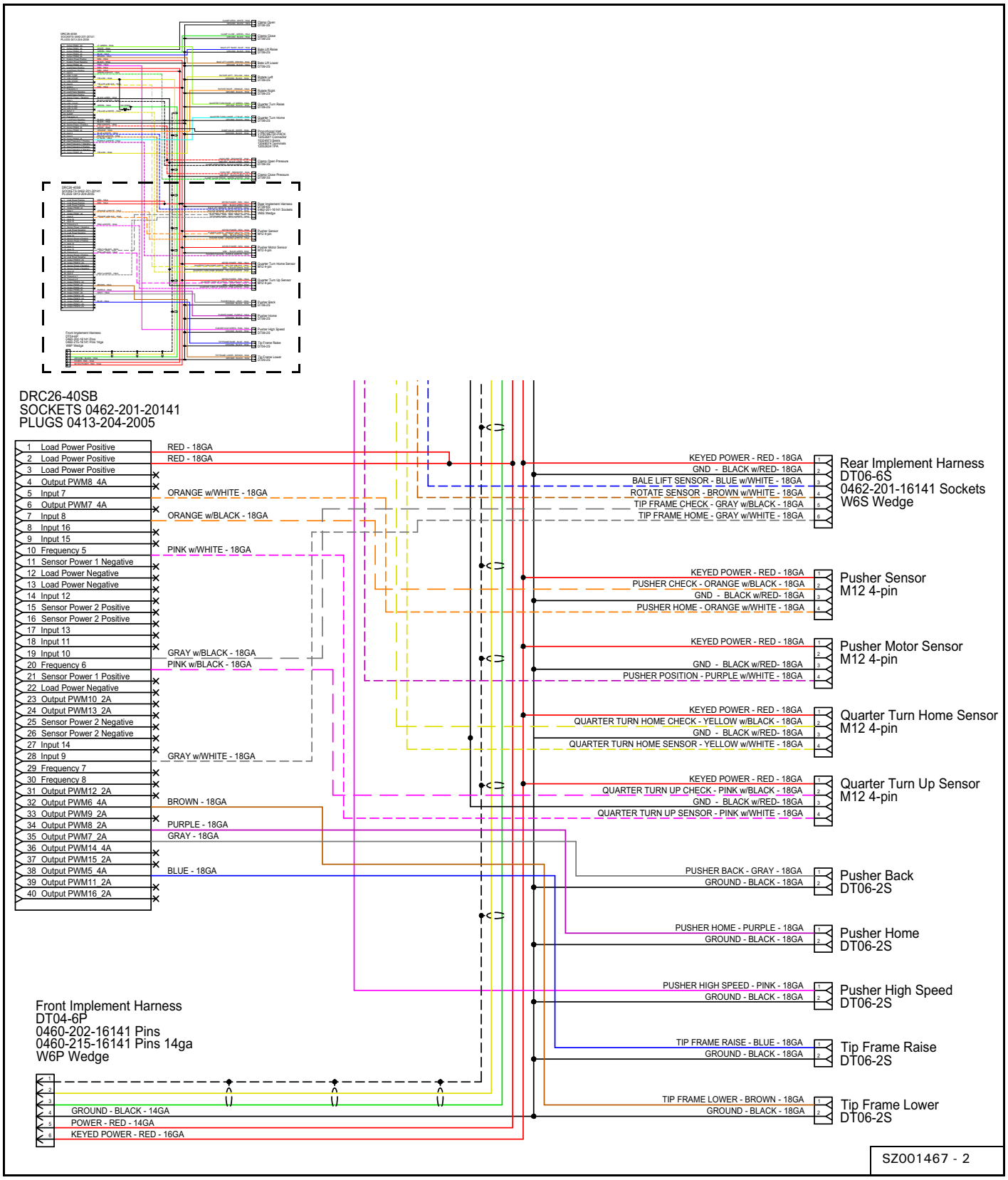



| ITEM | PART NUMBER | DESCRIPTION | QTY |
|---|---|---|---|
| 1 | SZ001467 | COMPLETE MAIN IMPLEMENT WIRE HARNESS | 1 |

## MAIN IMPLEMENT HARNESS SCHEMATIC



## MAIN IMPLEMENT HARNESS SCHEMATIC (CONT'D)



## HARDWARE TORQUE VALUES

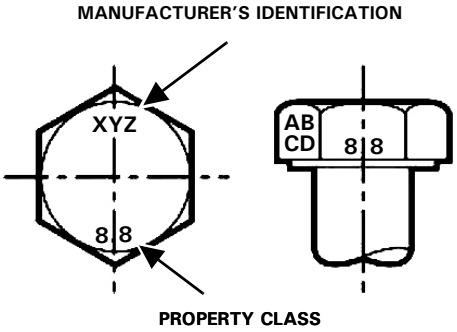
### Metric Chart

**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.**

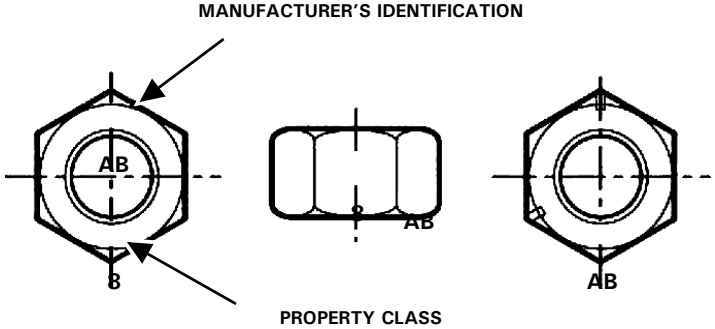
Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. **Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications.**

| 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.**

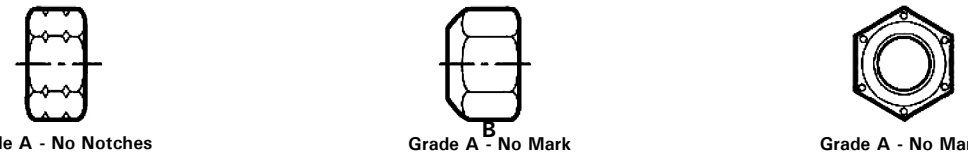
Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. **Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications.**

| 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

SAE GRADE 2 BOLTS | SAE GRADE 5 BOLTS | SAE GRADE 8 BOLTS | SAE GRADE 2 NUTS | SAE GRADE 5 NUTS | SAE GRADE 8 NUTS

### Identification of Hex Nuts and Lock Nuts




Grade A - No Notches
Grade B - One Circumferential Notch
Grade C - Two Circumferential Notches

Grade A - No Mark
Grade B - Letter B
Grade C - Letter C

Grade A - No Marks
Grade B - Three Marks
Grade C - Six Marks
(Marks not always located at corners)

## 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 76**

| 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.

### Flare Fitting

**Figure 77**

| 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 **[Figure 77]** to find the correct tightness needed.

**NOTE: If the fitting leaks, disconnect and inspect the seat area for damage.**

### Port Seal (O-ring Boss) Fitting

**Figure 78**

| 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″ -1 6 | 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.**

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.

# Farm King

# WARRANTY

# 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 one (1) year. 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.**

**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.**

## 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.**

## 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.**

## 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.**

Farm King

# 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 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.**

## ALPHABETICAL INDEX

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