Farm King

OPERATOR AND PARTS MANUAL

Square Bale Carrier

Model 4480

112014 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.

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WARRANTY REGISTRATION FORM

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

Customer Name:		Dealer Name:	
Customer Address:		Dealer Address:	
City:	Prov / State:	City:	Prov / State:
Postal / Zip Code:	Phone:	Postal / Zip Code:	Phone:

Equipment 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 Bolt 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.

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INTRODUCTION

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

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OWNER'S INFORMATION

Thank you for your decision to purchase a Farm King 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.

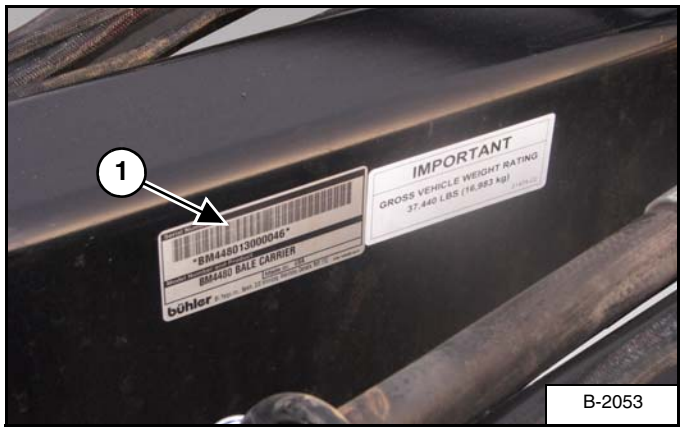
Keep this manual available for frequent reference. All new operators or owners must review the manual before using the equipment and annually thereafter. Contact your Farm King Dealer if you need assistance, information, or additional copies of the manual. Visit our website at **www.farm-king.com** for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

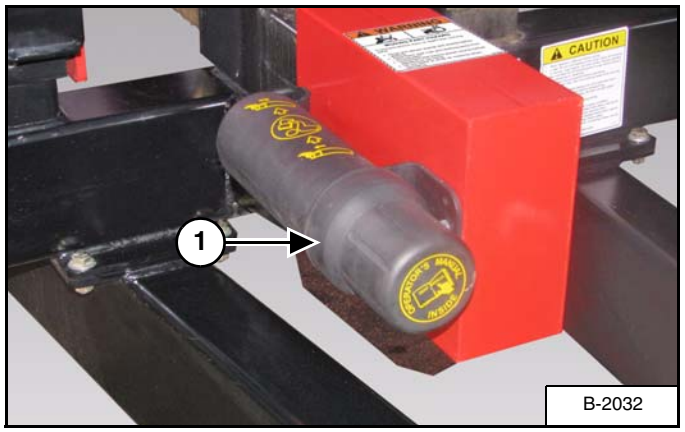
Serial Number: _____

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

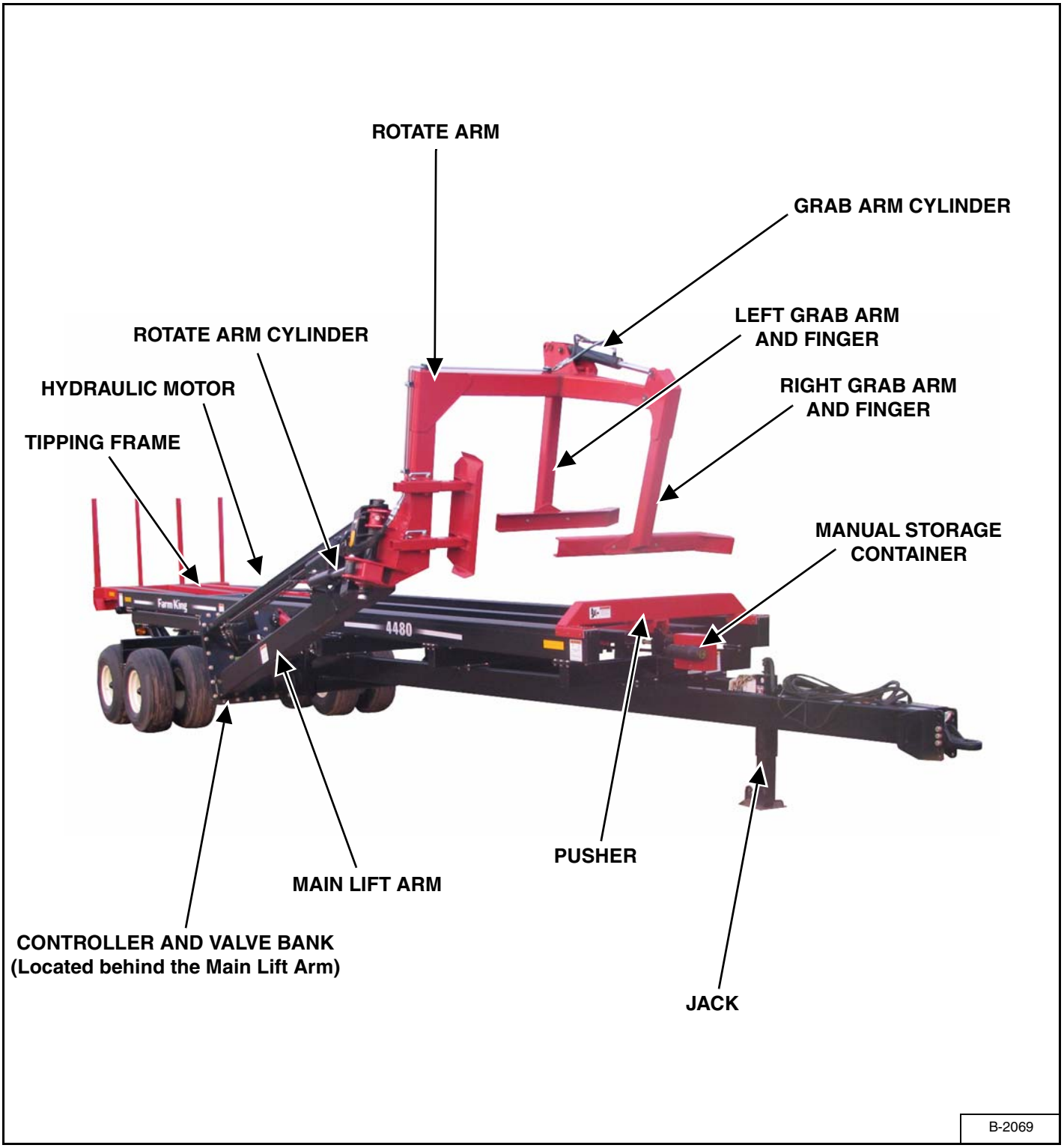
Figure 2



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 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 of the items listed on the service schedule under the 8 hour column. (See "SERVICE SCHEDULE" on page 77.)

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.

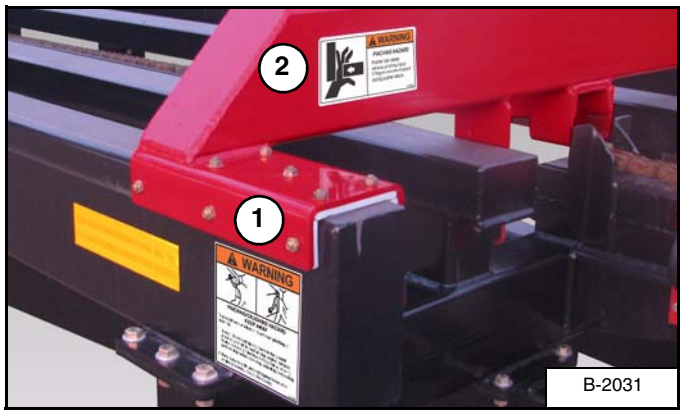
Fire Extinguishers

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.

Front Left & Right Side Of Pusher



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p/n 21972

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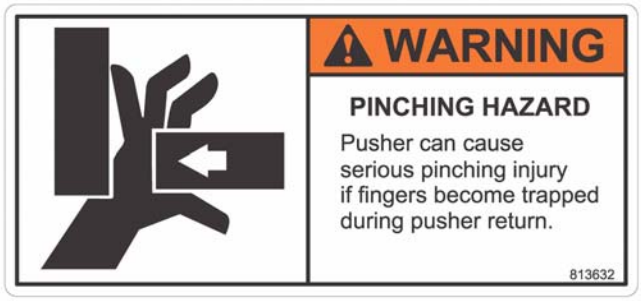
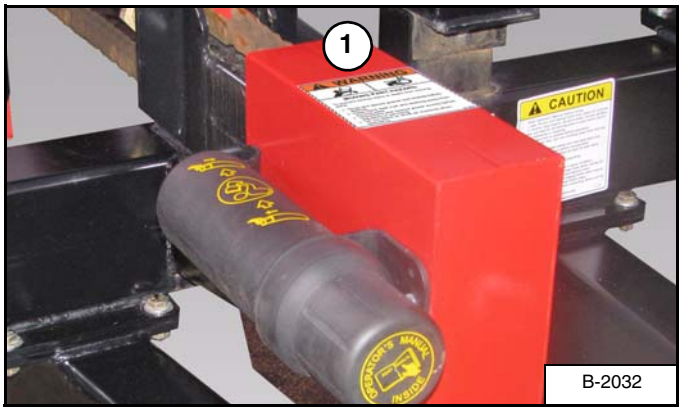


p/n 813632

Front Sprocket Shield



1

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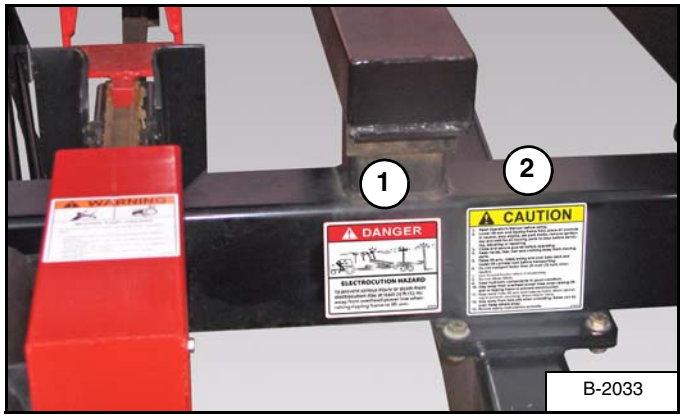
Front Cross Member



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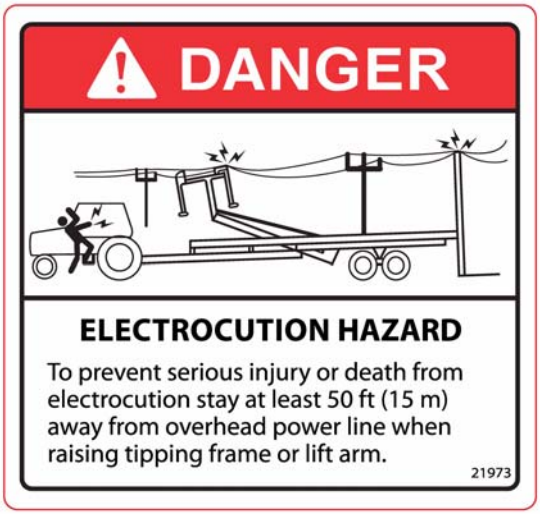

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2

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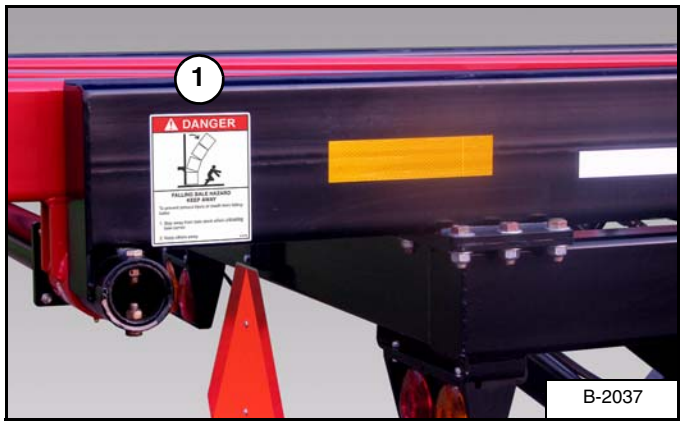
Left And Right Rear Carrier Side Frame



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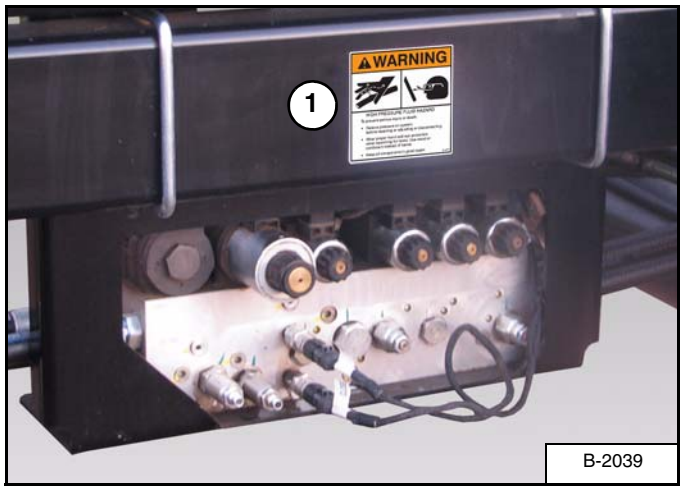
Side Frame Above Control Valve



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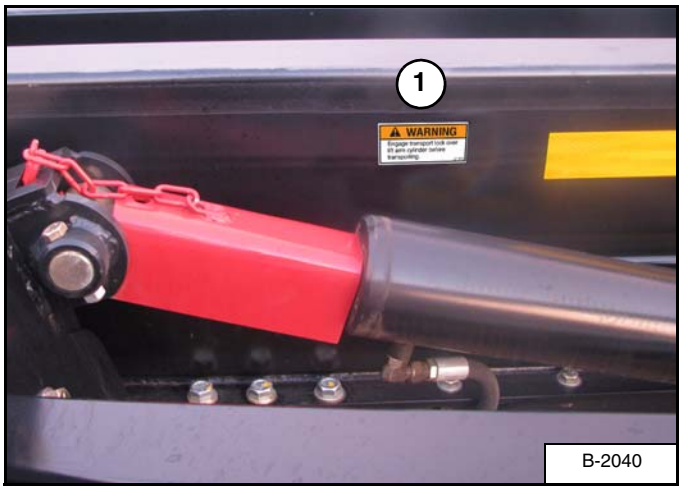
Right Side Frame Above Lift Arm Cylinder



1

p/n 21978

EQUIPMENT DECALS AND SIGNS

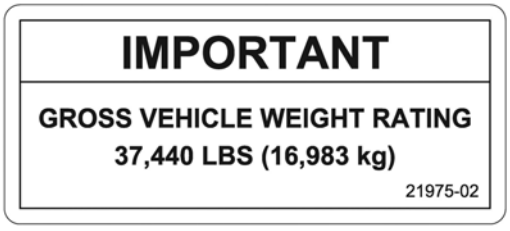
NOTE: All safety related decals are shown in the Safety Signs Section. (See "SAFETY SIGNS (DECALS)" on page 16.)

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

Part Number 815000

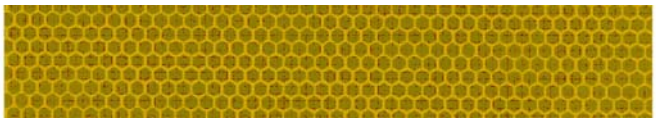
Part Number 815004

Part Number 21975-02



Part Number 88663103

Part Number 967055 (Amber)



Part Number 967053 (Red)

Part Number 813631 (Day Orange)

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.

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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GENERAL 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.**

⚠ WARNING

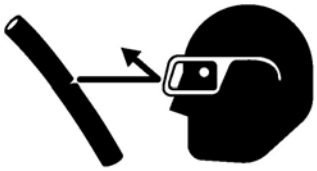
AVOID INJURY OR DEATH

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.**

1. Lubricate the equipment per the schedule outline in the Maintenance Section. (See “SERVICE SCHEDULE” on page 77.)
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 bolt torque is 90 ft. lb. (122 Nm).
5. Fully clean the equipment. (See “CLEANING THE BALE CARRIER” on page 84.)
6. Check chain tension and adjust if necessary. (See “Adjusting Chain Tension” on page 80.)
7. Check carrier beams and add graphite coating if necessary. (See “Resurfacing” on page 84.)
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.

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

NOTE: Do not operate with hydraulic leaks.

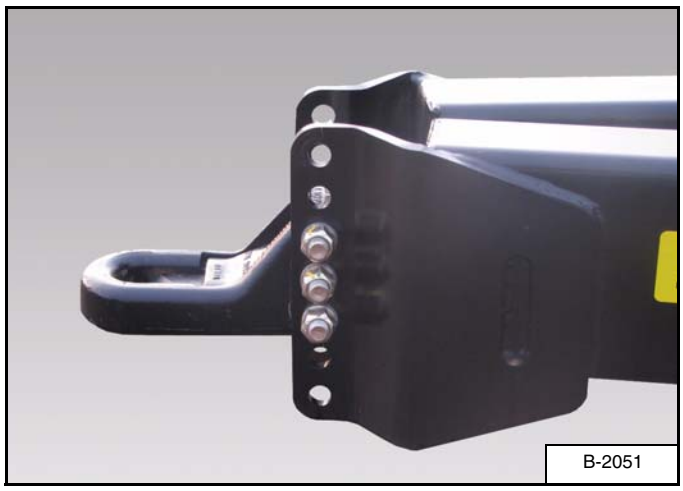
11. Verify that the lift arm transport lock has been removed and securely stored.
12. Verify that the bale carrier is properly connected to the tractor with the safety chain.

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 bolt torque is 90 ft. lb. (122 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.**

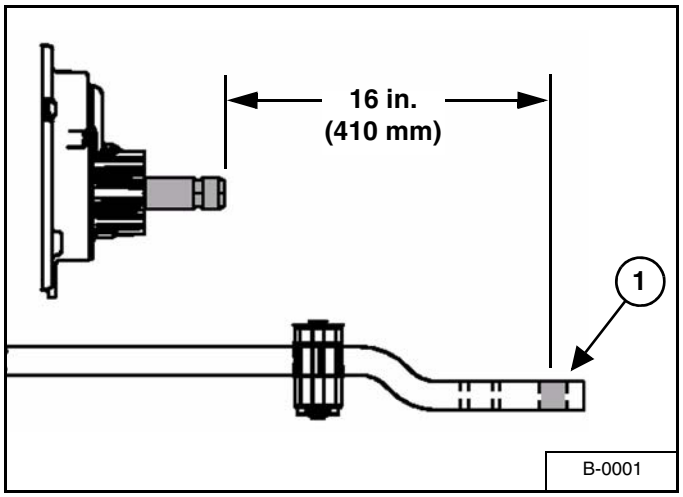
The 4480 Square Bale Carrier will require a tractor with minimum 100 hp (75 kw) and 1 pair remote outlets with variable flow control setting (system should be set at approximately 20 gpm @ 2500 psi – closed center or open center). Control valve is restricted to approximately 27 gpm.

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 GVW.

Drawbar Adjustment

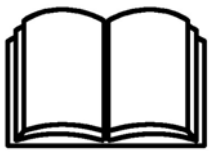
Figure 4



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.

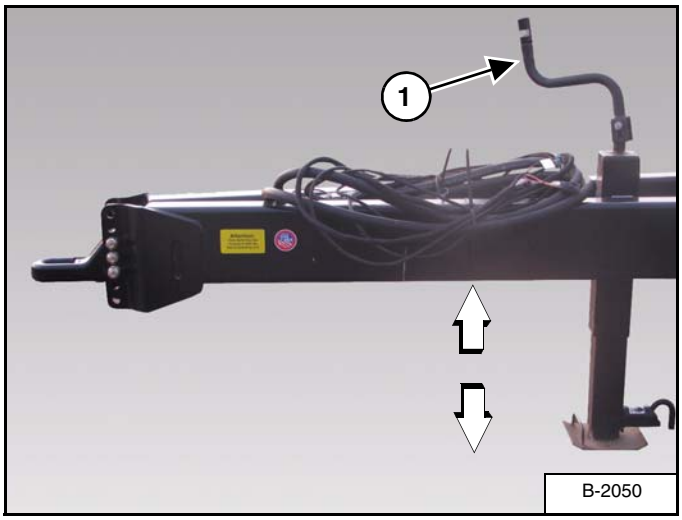
Move the tractor backwards, aligning the drawbar with the Bale Carrier hitch.

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.

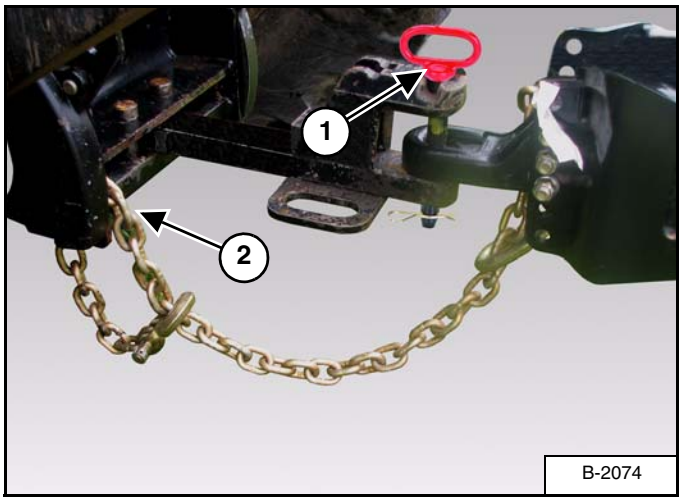
⚠ WARNING

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.

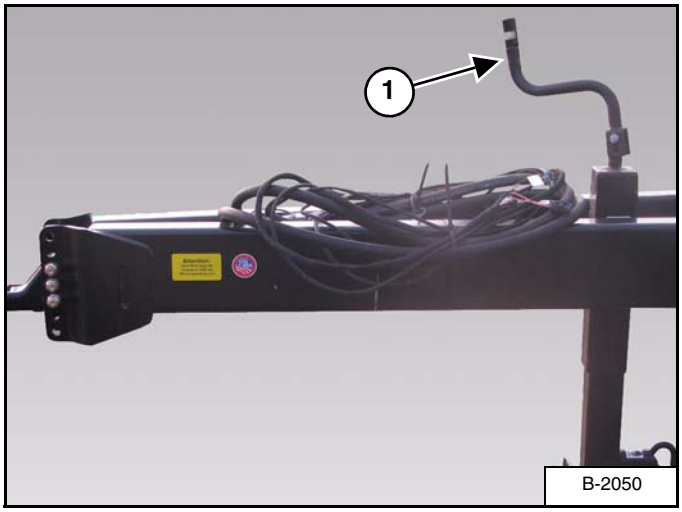
WARNING

AVOID INJURY OR DEATH

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

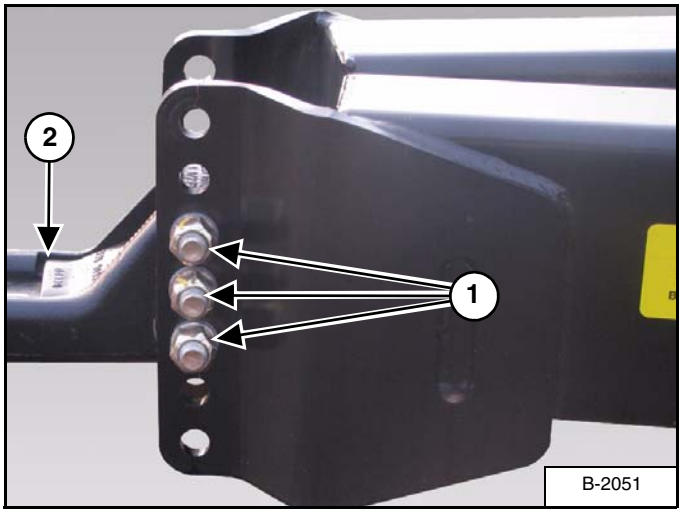
- **When fluids are under pressure.**
- **Flying debris or loose material is present.**
- **Engine is running.**
- **Tools are being used.**

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.**

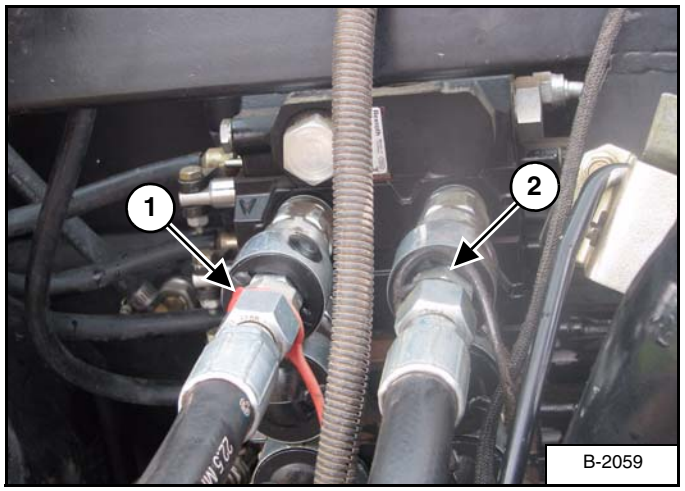
! IMPORTANT

- **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.

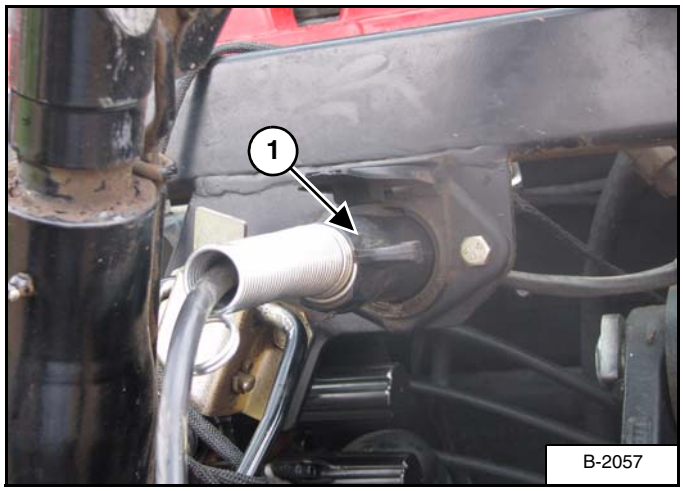
Connect Power / Communication Harness

Figure 10

Connect power / communication harness (Item 1) **[Figure 10]** to cab harness.

Connect Electrical Harness

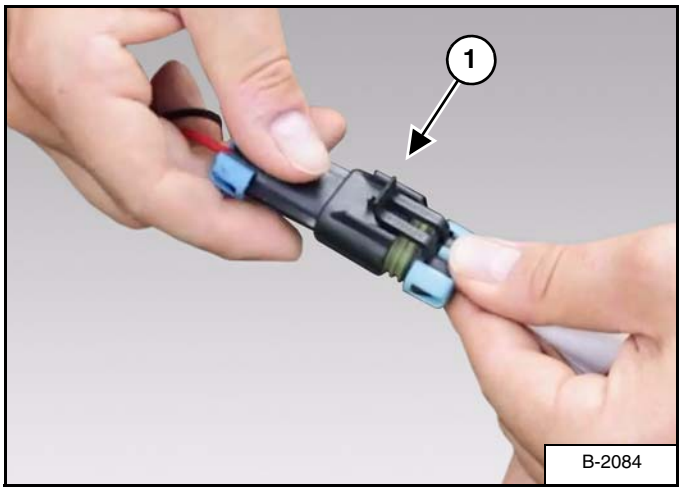
Figure 11



Connect the Bale Carrier's lighting harness (Item 1) **[Figure 11]** to the tractor's electrical system.

Connect Power Jumper Harness

Figure 12



Connect power jumper harness (Item 1) **[Figure 12]** to the bale carrier relay harness.

NOTE: Connect the power jumper harness to a 12V power source (tractor's battery).

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.

CONTROLLERS

Built-in Safety Features

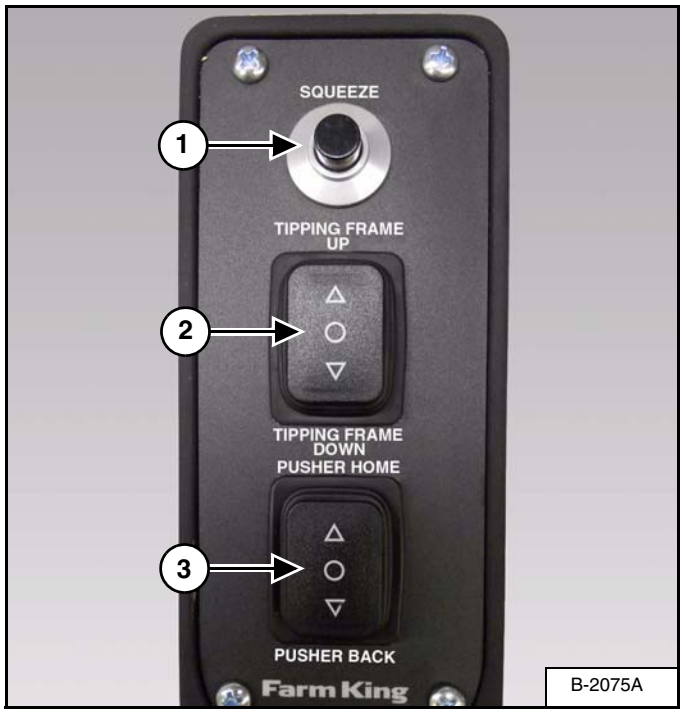
CAUTION

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.

Control Handle Description

Figure 13



1. SQUEEZE BUTTON

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

2. TIPPING FRAME UP / DOWN SWITCH

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

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

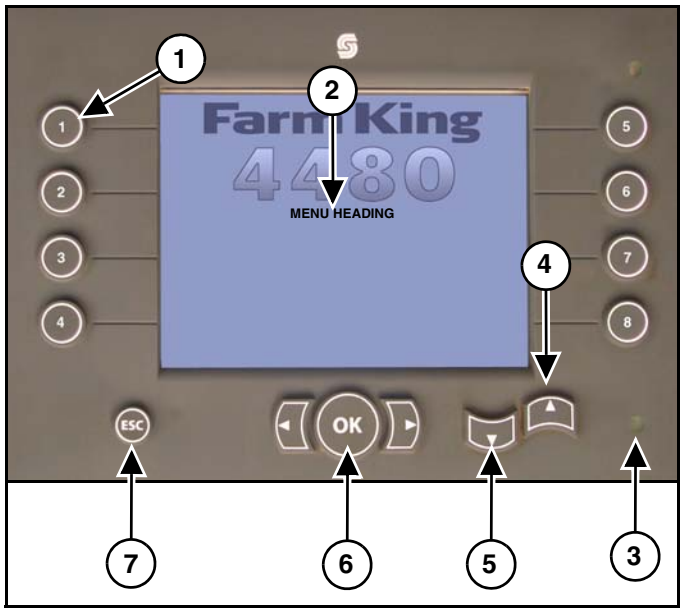
3. PUSHER HOME / BACK SWITCH

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

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

Display Unit Description

Figure 14



1. 1 - 8 BUTTONS - Function selection buttons.
2. MENU HEADING - Name of current menu.
3. LED LIGHT

   No Light - Communication OK.

   Blinking Red Light - Communication error.
4. UP OR RIGHT BUTTON - Press and hold to move feature up or right.
5. DOWN OR LEFT BUTTON - Press and hold to move feature down or left.
6. OK BUTTON - Press to accept input.
7. ESC BUTTON - Press to exit out of current menu and return to previous menu.

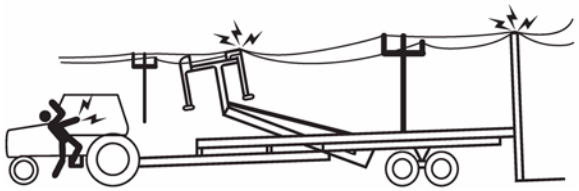
CALIBRATION PROCEDURES

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.**

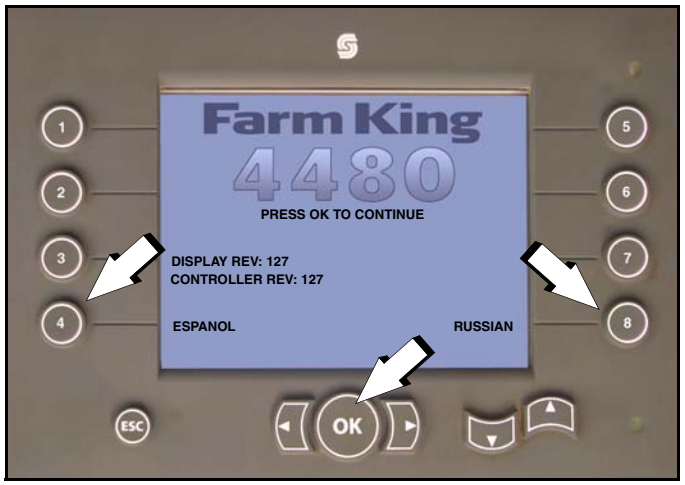
Hydraulic System Procedure

The automatic loading cycle has been factory tested and adjusted.

IMPORTANT

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

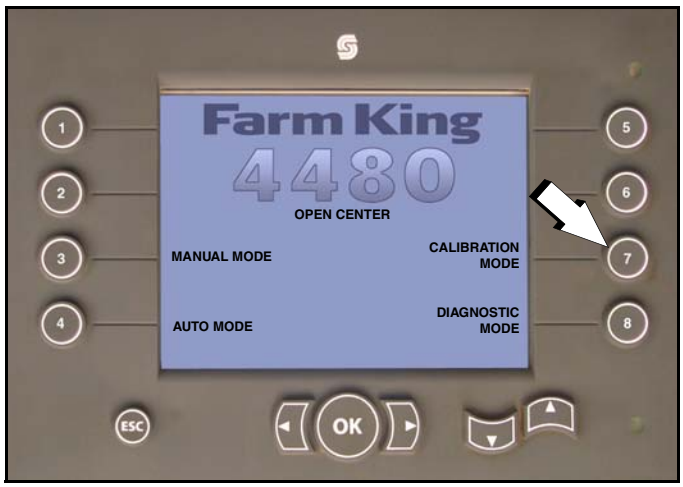
Figure 15



If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 15]**.

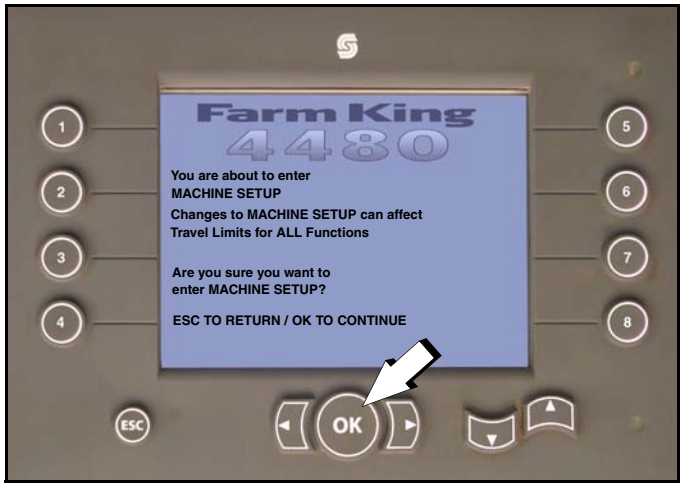
Press OK to continue **[Figure 15]**.

Figure 16



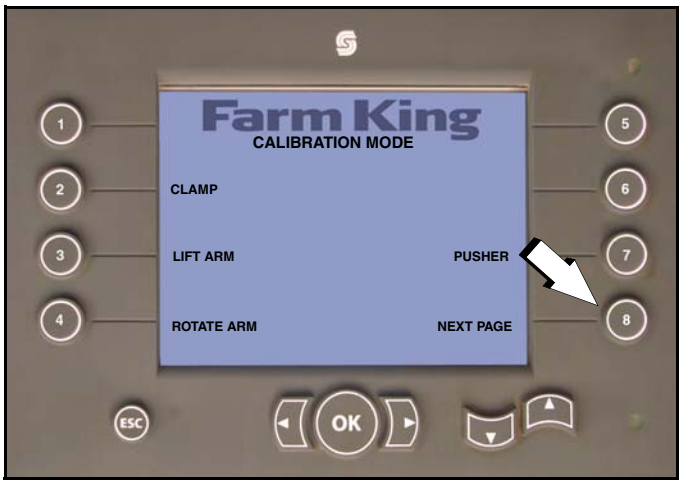
Press button #7 to select CALIBRATION MODE **[Figure 16]**.

Figure 17



Press OK to enter machine setup **[Figure 17]**.

Figure 18

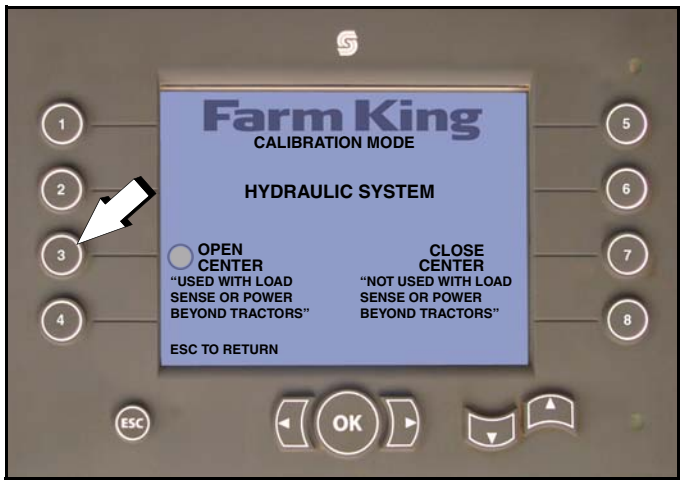


Press button #8 to select NEXT PAGE **[Figure 18]**.

Figure 19

Press button #3 to select SET HYD SYSTEM **[Figure 19]**.

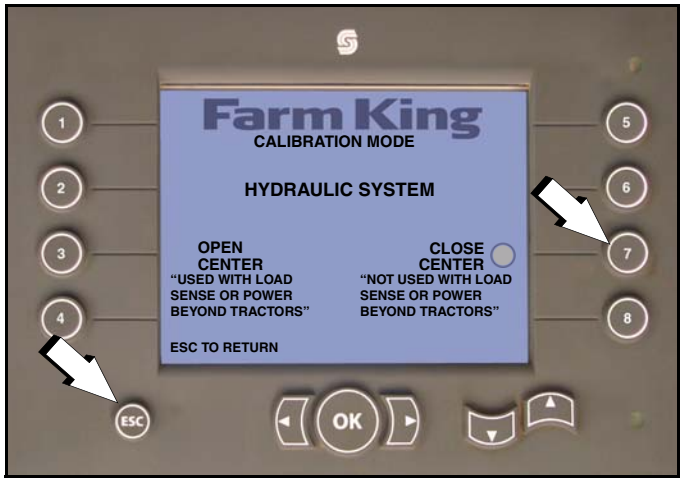
Figure 20



Press button #3 to select OPEN CENTER **[Figure 20]**.

NOTE: Use open center with open center, power beyond, pressure flow compensated closed center and load sense closed center systems.

Figure 21



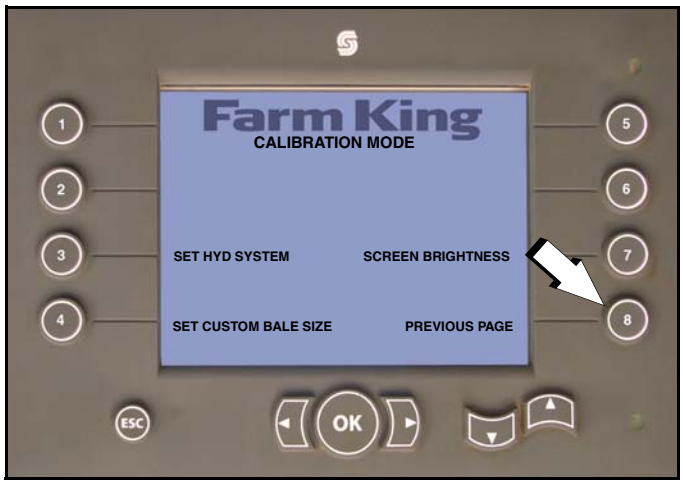
Press button #7 to select CLOSE CENTER **[Figure 21]**.

Press ESC button to return to CALIBRATION MODE screen.

NOTE: Use with closed center and pressure compensated closed center systems.

NOTE: See the tractor's owner's manual or local dealer to determine the type of hydraulic system the tractor is equipped with.

Figure 22



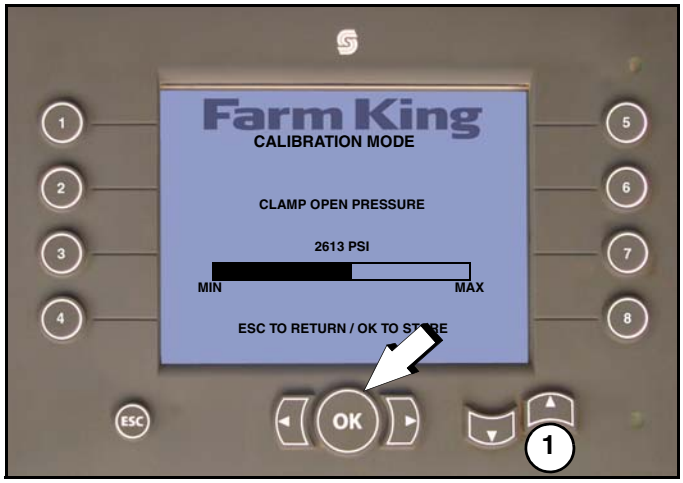
Press button #8 to select PREVIOUS PAGE **[Figure 22]**.

Clamp Procedure

Figure 23

Press button #2 to select CLAMP **[Figure 23]**.

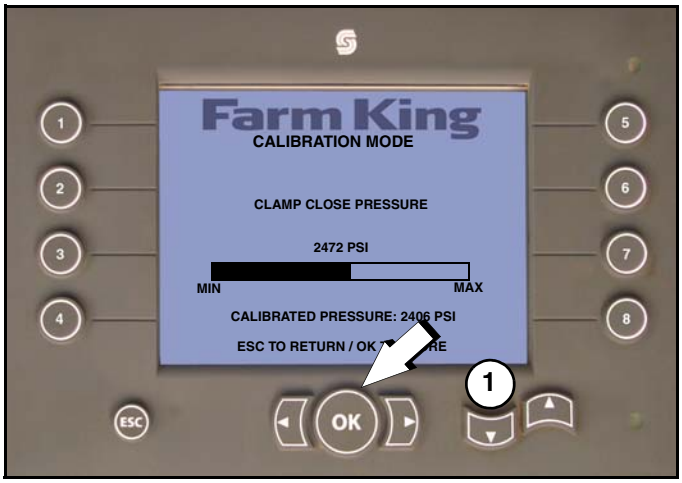
Figure 24



Press the up arrow (Item 1) **[Figure 24]** for clamp open pressure, when maximum pressure is reached, select OK to store the setting.

Select OK to store the setting.

Figure 25



Press the down arrow (Item 1) **[Figure 25]** for clamp close pressure, when maximum pressure is reached, select OK to store the setting.

Press ESC button to return to CALIBRATION MODE screen.

Lift Arm Procedure

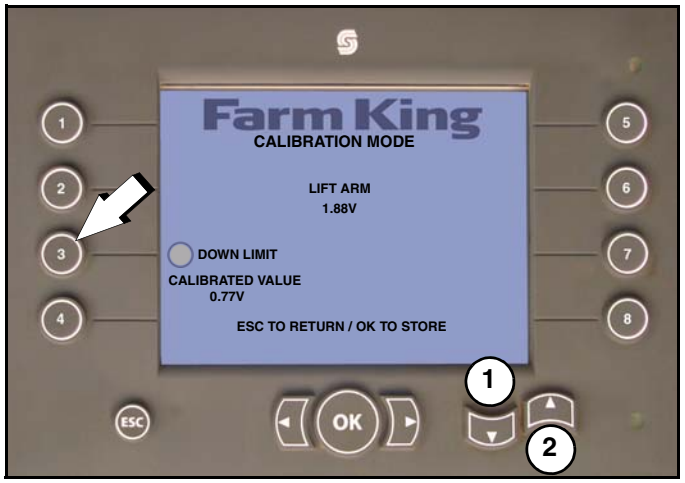
Remove transport lock. (See “Lift Cylinder Lock Removal And Installation” on page 54.)

Figure 26

Return to the CALIBRATION MODE screen.

Press button #3 to select LIFT ARM **[Figure 26]**.

Figure 27



Press button #3 to select DOWN LIMIT **[Figure 27]**.

Press and hold the down arrow (Item 1) **[Figure 27]** to decrease down limit.

NOTE: Down limit should be greater than 0.25V.

Press and hold the up arrow (Item 2) **[Figure 27]** to increase down limit.

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

Select OK to store the setting.

After selecting OK, move the arm above the deck to allow the rotate arm to swing with no obstacles. Press ESC when lift arm is at safe height.

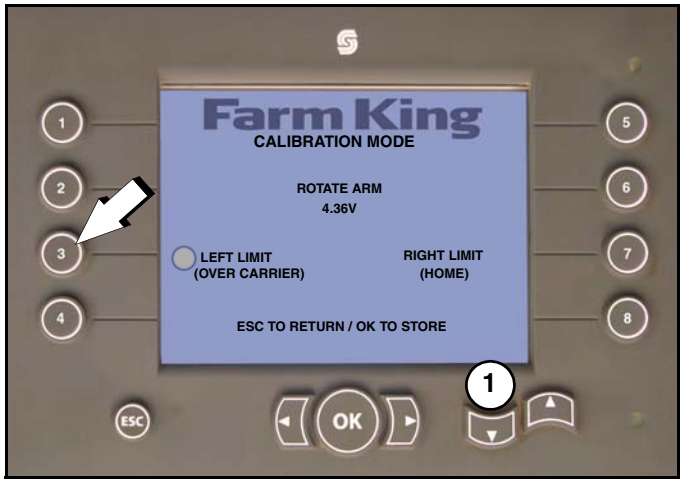
Rotate Arm Procedure

Figure 28

Return to the CALIBRATION MODE screen.

Press button #4 to select ROTATE ARM **[Figure 28]**.

Figure 29



Press button #3 to select LEFT LIMIT (over carrier) **[Figure 29]**.

Press and hold the down arrow key (Item 1) **[Figure 29]** to rotate clamp left.

NOTE: Left limit should be less than 4.75V and greater than 2.5V

Select OK to store the setting.

Figure 30

Press button #7 to select RIGHT LIMIT (home) **[Figure 30]**.

Press and hold the up arrow key (Item 1) **[Figure 30]** to rotate clamp right.

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

Select OK to store the setting.

Press ESC button to return to CALIBRATION MODE screen.

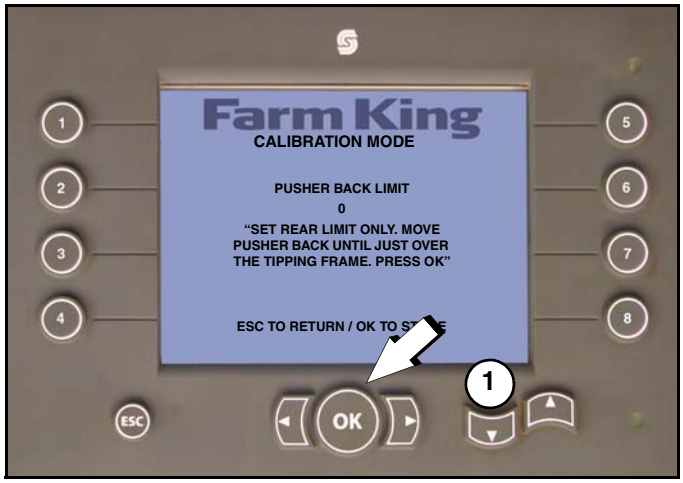
Pusher Procedure

Figure 31

Return to the CALIBRATION MODE screen.

Press button #7 to select PUSHER **[Figure 31]**.

Figure 32



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

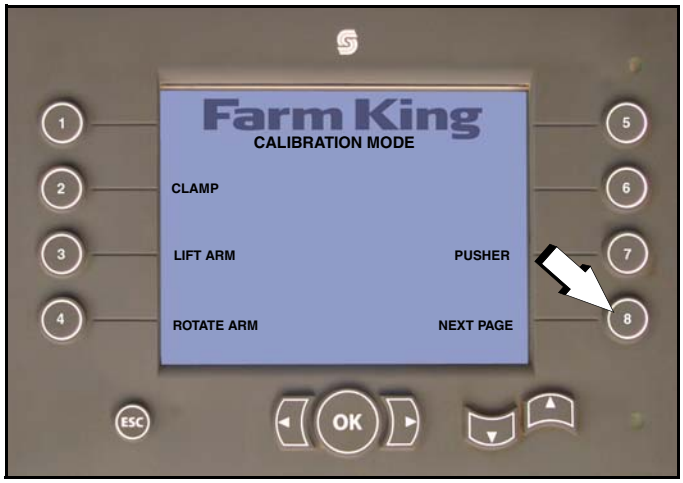
Press and hold the down arrow (Item 1) **[Figure 32]** to set the pusher back limit.

Move the pusher just over the tipping frame, select OK to store the setting **[Figure 32]**.

Press the ESC button to return to the CALIBRATION MODE screen.

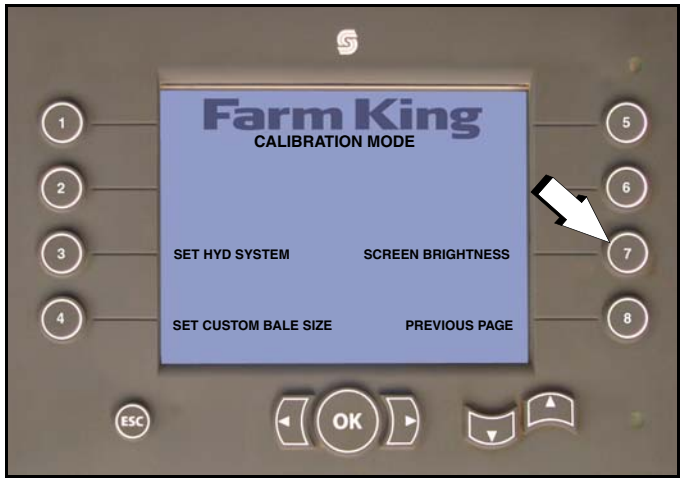
Screen Brightness Procedure

Figure 33



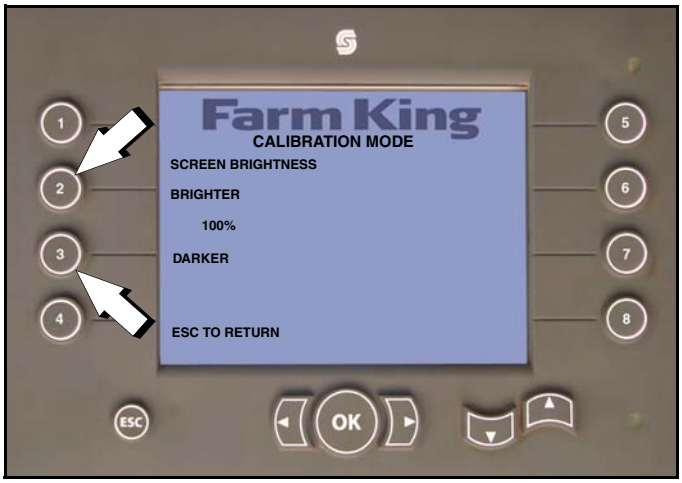
Press button #8 to select NEXT PAGE **[Figure 33]**.

Figure 34



Screen brightness can be adjusted by pressing button #7 SCREEN BRIGHTNESS in the CALIBRATION MODE **[Figure 34]**.

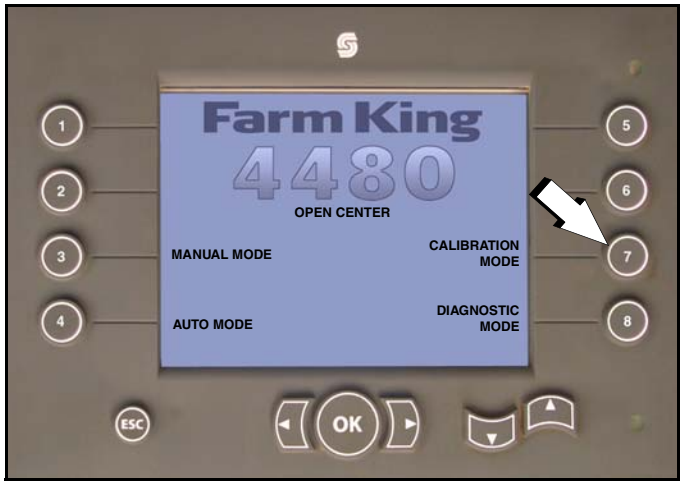
Figure 35



Use buttons #2 (BRIGHTER) and #3 (DARKER) to make adjustments **[Figure 34]**.

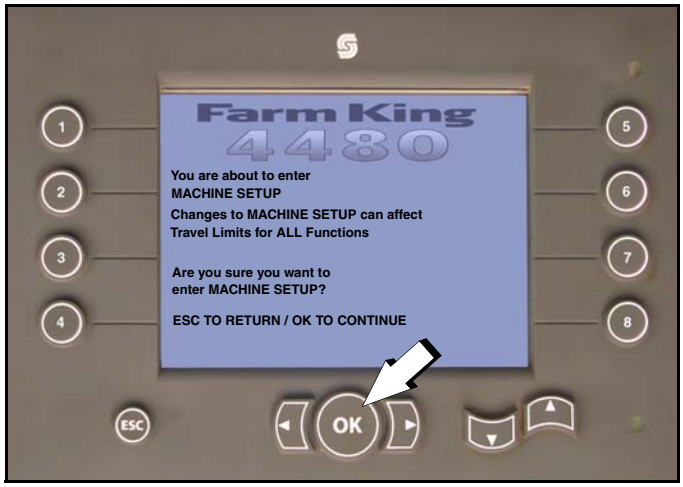
Custom Bale Setup Procedure

Figure 36



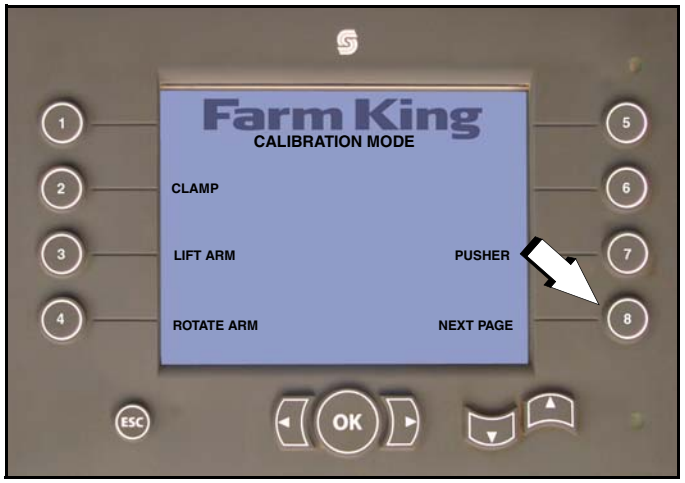
Press button #7 to select CALIBRATION MODE **[Figure 36]**.

Figure 37



Press OK to enter machine setup **[Figure 37]**.

Figure 38

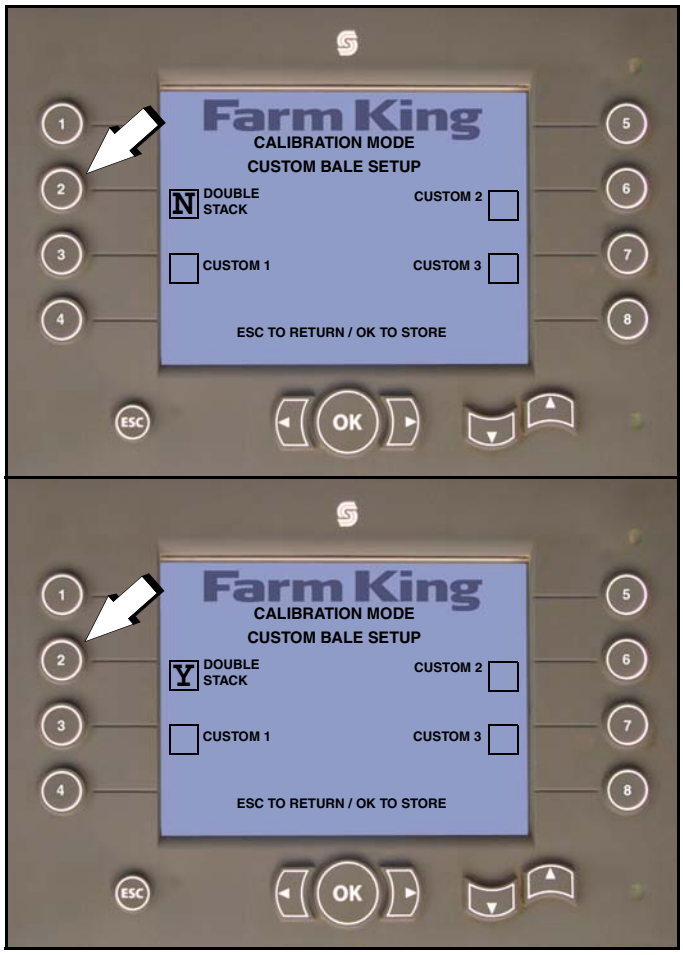


Press button #8 to select NEXT PAGE **[Figure 38]**.

Figure 39

Press button #4 to select SET CUSTOM BALE SIZE **[Figure 39]**.

Figure 40



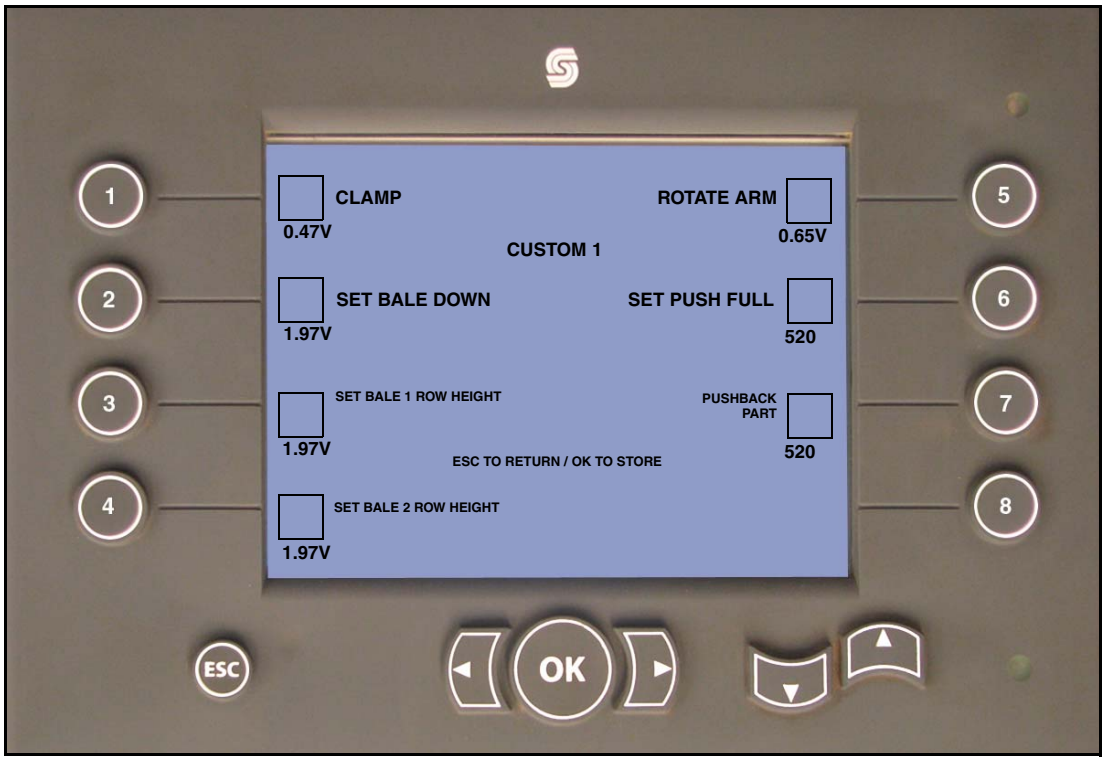
Press button #2 once to select Y (yes) if double stacking is desired **[Figure 40]**.

Figure 41

Press the button adjacent to the CUSTOM setting preferred **[Figure 41]**.

Select OK to store the setting and continue.

Figure 42



NOTE: Farm King recommends to use bales to aid in setting up a custom program.

1. CLAMP - Used for moving bales for setup only, no setting required (Will use calibrated values in automatic mode).
2. SET BALE DOWN - Sets height of lift arm for picking up bales.
3. SET BALE 1 ROW HEIGHT - Sets height of lift arm for row 1 over the carrier deck.
4. SET BALE 2 ROW HEIGHT - Sets height of lift arm for row 2 over the carrier deck.
5. ROTATE ARM - Used for moving bales for setup only, no setting required (Will use calibrated values in automatic mode).
6. SET PUSH FULL - Sets the pusher distance to clear deck for next set of bales.
7. PUSHBACK PART - Sets the pusher distance to stack second bale on first bale.

UP / DOWN ARROW KEYS - Use up / down arrow keys to adjust functions after selecting desired function.

NOTE: Farm King suggests to write down the values as the program is edited. If further program editing is required after operating in automatic mode, the user will have a better understanding of the values needed for the desired change. See “Custom Bale Function Values” on page 44 to record function values.

Custom Bale Function Values

Using the table(s) below, enter the function's value to the right of the function(s) being edited.

CUSTOM BALE NO. _____

BUTTON #	FUNCTION	VALUE
1	Clamp	Not Required
2	Set Bale Down	
3	Set Bale 1 Row Height	
4	Set Bale 2 Row Height	
5	Rotate Arm	Not Required
6	Set Push Full	
7	Pushback Part	

CUSTOM BALE NO. _____

BUTTON #	FUNCTION	VALUE
1	Clamp	Not Required
2	Set Bale Down	
3	Set Bale 1 Row Height	
4	Set Bale 2 Row Height	
5	Rotate Arm	Not Required
6	Set Push Full	
7	Pushback Part	

CUSTOM BALE NO. _____

BUTTON #	FUNCTION	VALUE
1	Clamp	Not Required
2	Set Bale Down	
3	Set Bale 1 Row Height	
4	Set Bale 2 Row Height	
5	Rotate Arm	Not Required
6	Set Push Full	
7	Pushback Part	

CUSTOM BALE NO. _____

BUTTON #	FUNCTION	VALUE
1	Clamp	Not Required
2	Set Bale Down	
3	Set Bale 1 Row Height	
4	Set Bale 2 Row Height	
5	Rotate Arm	Not Required
6	Set Push Full	
7	Pushback Part	

CUSTOM BALE NO. _____

BUTTON #	FUNCTION	VALUE
1	Clamp	Not Required
2	Set Bale Down	
3	Set Bale 1 Row Height	
4	Set Bale 2 Row Height	
5	Rotate Arm	Not Required
6	Set Push Full	
7	Pushback Part	

CUSTOM BALE NO. _____

BUTTON #	FUNCTION	VALUE
1	Clamp	Not Required
2	Set Bale Down	
3	Set Bale 1 Row Height	
4	Set Bale 2 Row Height	
5	Rotate Arm	Not Required
6	Set Push Full	
7	Pushback Part	

CUSTOM BALE NO. _____

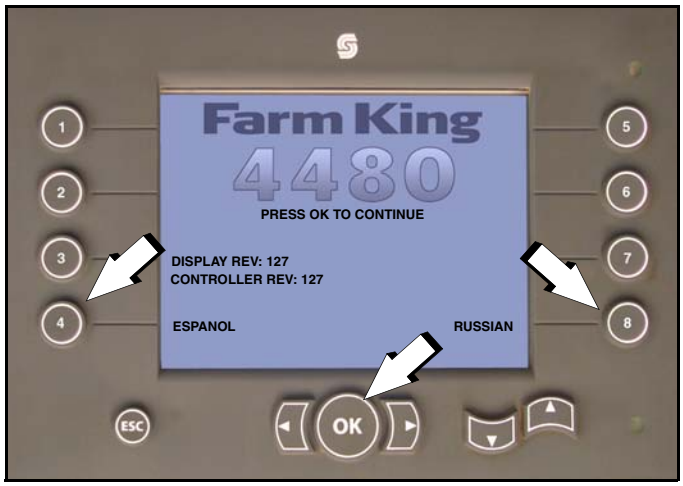
BUTTON #	FUNCTION	VALUE
1	Clamp	Not Required
2	Set Bale Down	
3	Set Bale 1 Row Height	
4	Set Bale 2 Row Height	
5	Rotate Arm	Not Required
6	Set Push Full	
7	Pushback Part	

CONTROLLER OPERATION

Auto Mode

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.

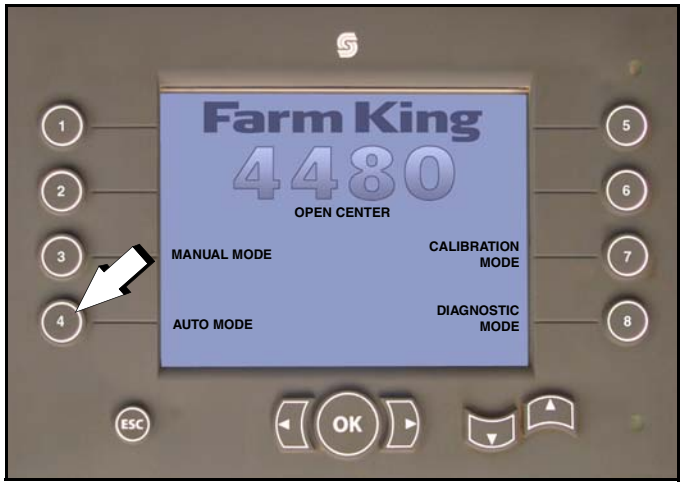
Figure 43



If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 43]**.

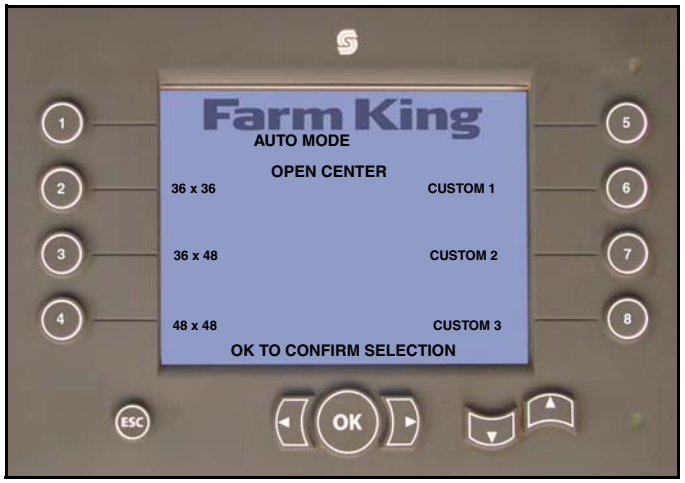
Press OK to continue **[Figure 43]**.

Figure 44



Press button #4 to select AUTO MODE **[Figure 44]**.

Figure 45



The AUTO MODE has three factory pre-programed settings and three custom settings **[Figure 45]**.

Pre-programed Settings

Button #2 - Pre-programed 36” x 36” bale setting.

Button #3 - Pre-programed 36” x 48” bale setting.

Button #4 - Pre-programed 48” x 48” bale setting.

Custom Settings

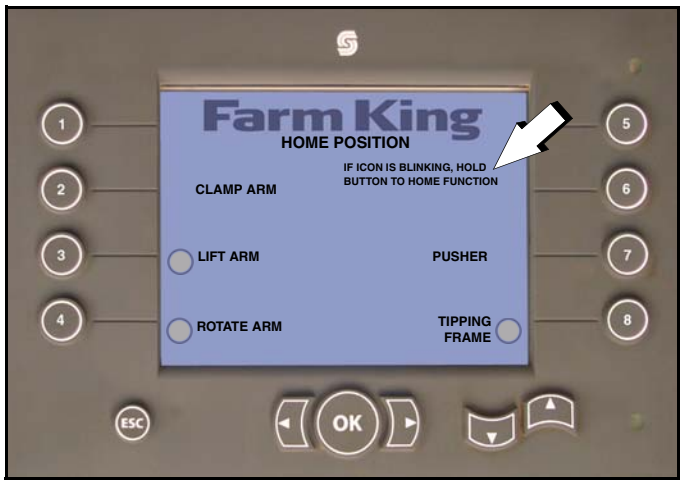
Button #6 - Custom 1 bale setting.

Button #7 - Custom 2 bale setting.

Button #8 - Custom 3 bale setting.

Press the button adjacent to the desired setting, then press OK to confirm setting.

Figure 46



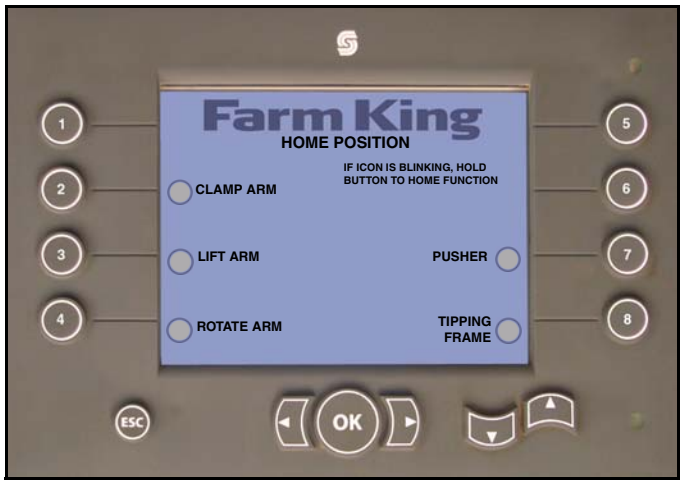
After selecting bale size, the auto “HOME POSITION” screen **[Figure 46]** appears.

NOTE: If icon is blinking, press and hold the button adjacent to the blinking icon to return the function to the HOME FUNCTION.

The “HOME POSITION” screen is designed to automatically set (“activate”) all functions to the ready state needed for loading operation. By pressing the button adjacent to each function, the controller will automatically activate that function. When a function is in the ready position (activated) a circular icon will appear beside that function.

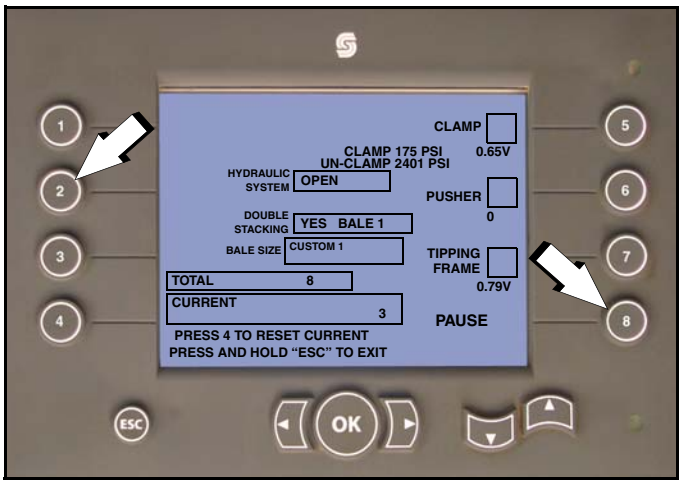
Auto Mode Function Operation

Figure 47



All functions must be in the HOME POSITION to begin AUTO MODE **[Figure 47]**.

Figure 48



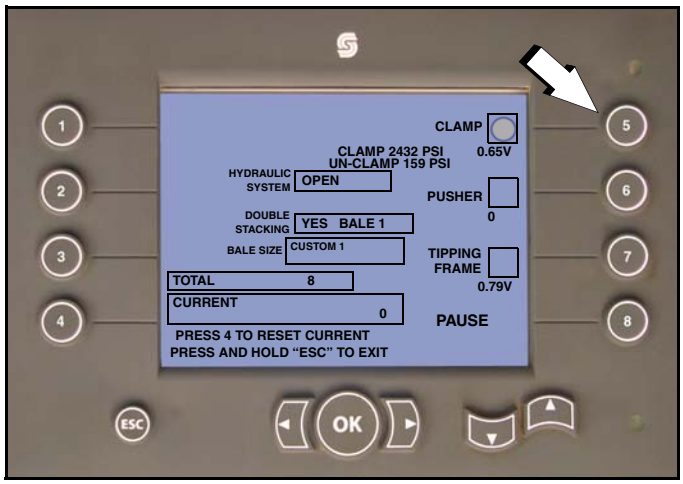
With all functions in the HOME POSITION, a screen similar to **[Figure 48]** will appear.

NOTE: Press button #2 to switch between double stack (YES) and double stack (NO) by pressing the button. If the bale selected has only single row values, pressing the button does not change the status.

NOTE: By pressing button #8 the automatic sequence can be paused or resumed from pause.

NOTE: Auto Mode function can be operated with the display or control handle.

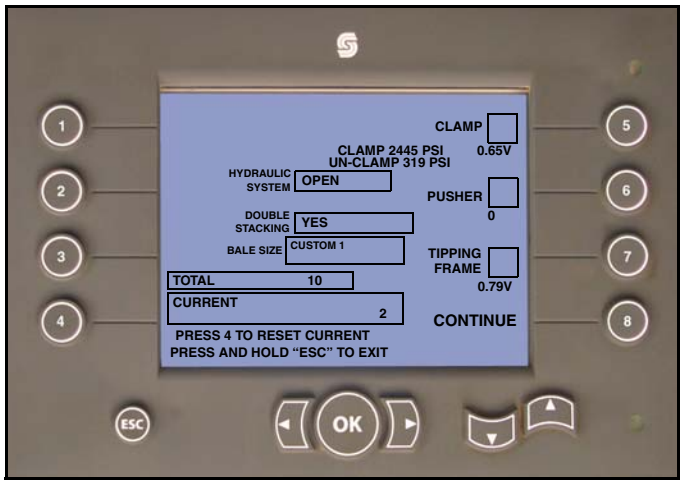
Figure 49



To begin AUTO MODE, press and hold button #5 CLAMP ARM on the display or SQUEEZE button on the control handle. Once the lift arm starts raising (AUTO cycle activated), release the button to allow the bale carrier to run through the complete cycle **[Figure 49]**.

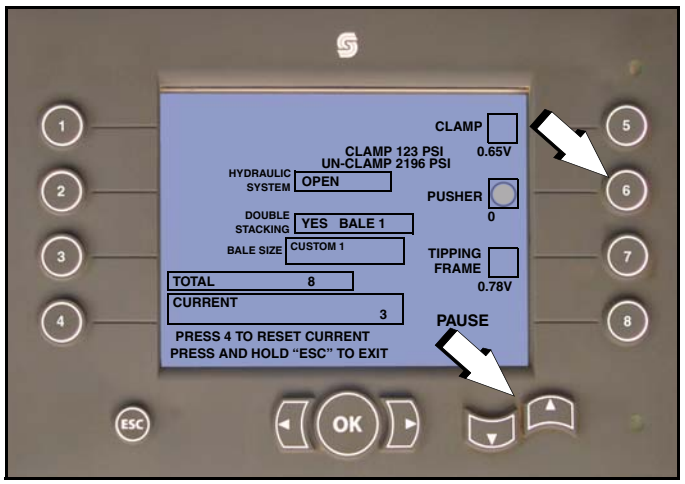
NOTE: Pressing and releasing the squeeze button quickly will move the grab arms closer to each other in small increments.

Figure 50



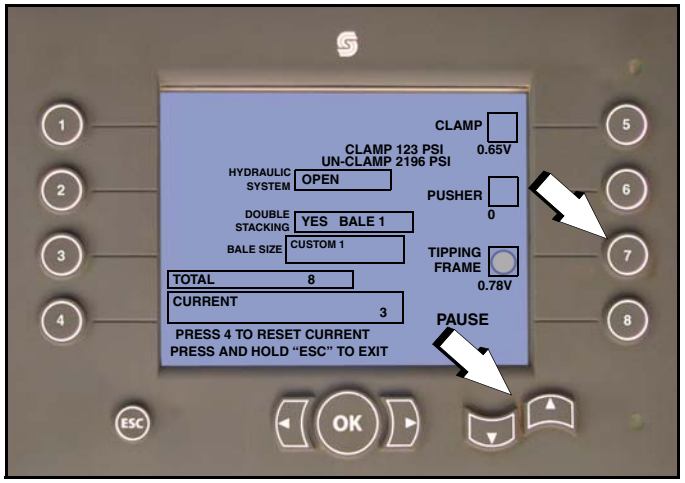
The screen **[Figure 50]** displays the information similar to when a second bale is about to be stacked.

Figure 51



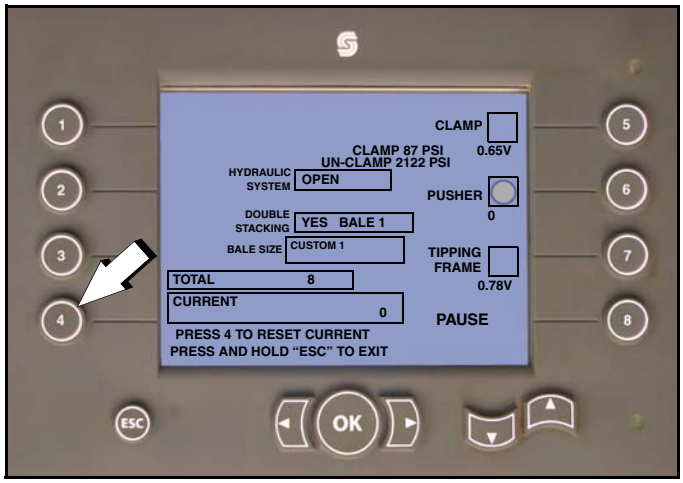
To empty the carrier, press button #6 to select PUSHER. Using the up / down arrows to push the bales onto the tipping frame **[Figure 51]**.

Figure 52



With the bales moved back onto the tipping frame, press button #7 to select TIPPING FRAME. Using the up / down arrows to raise / lower the tipping frame **[Figure 52]** to remove the bales.

Figure 53

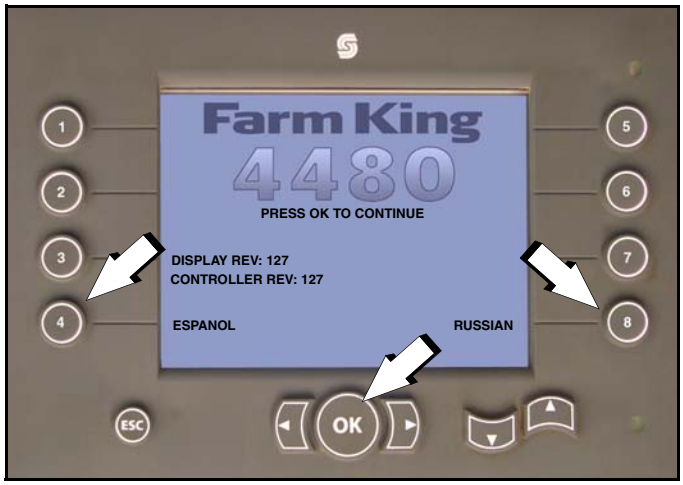


The CURRENT number can be reset by pressing button #4 **[Figure 53]**.

Manual Mode

The Manual mode allows the operator to only operate one function at a time. The operator selects the desired function; a circular light icon will appear beside the selected function.

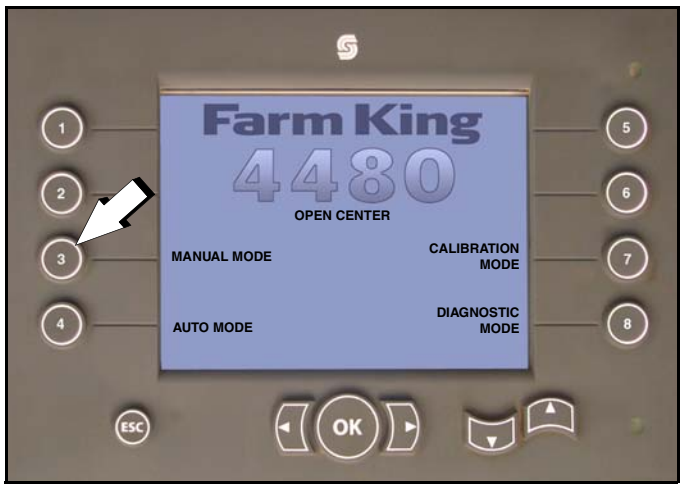
Figure 54



If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 54]**.

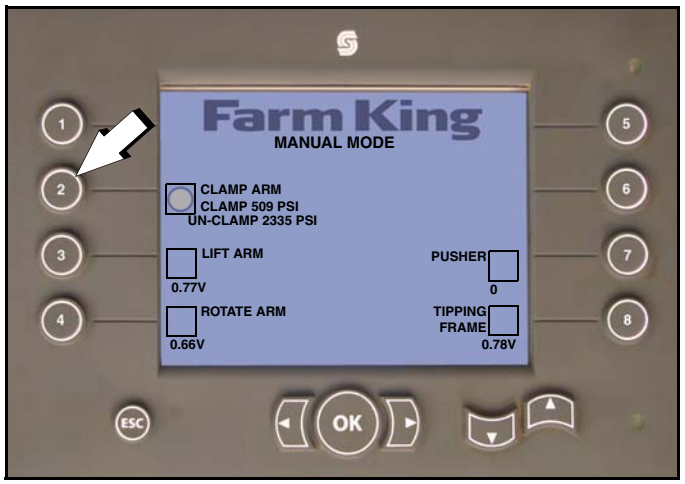
Press OK to continue **[Figure 54]**.

Figure 55



Press button #3 to select MANUAL MODE **[Figure 55]**.

Figure 56



Press button #2 to select CLAMP ARM (a circular light icon will appear beside selected function) or press the button adjacent to the function to be operated manually **[Figure 56]**.

Use the UP / DOWN arrow keys to activate the desired function **[Figure 56]**.

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.

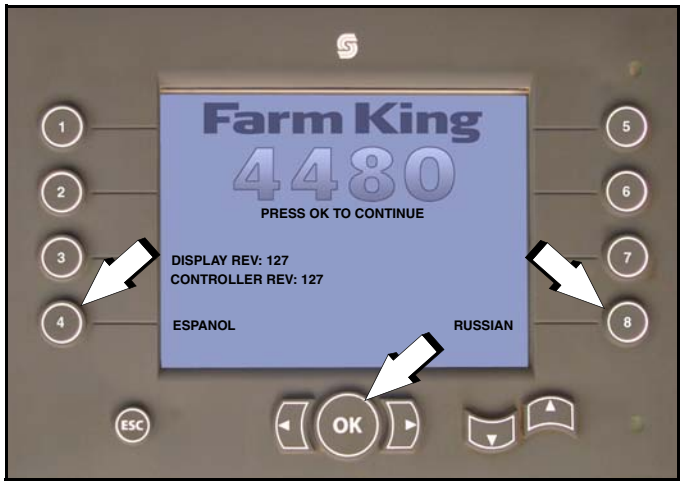
PUSHER - Press the UP arrow to return the pusher to the home position. Press the DOWN arrow to move the pusher back.

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

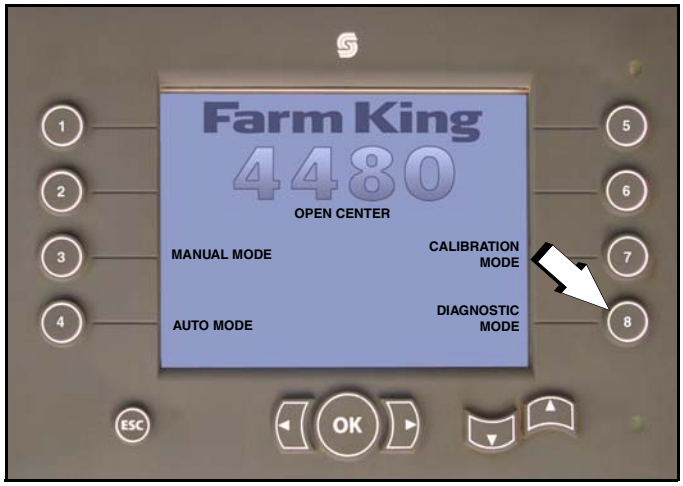
Figure 57



If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 57]**.

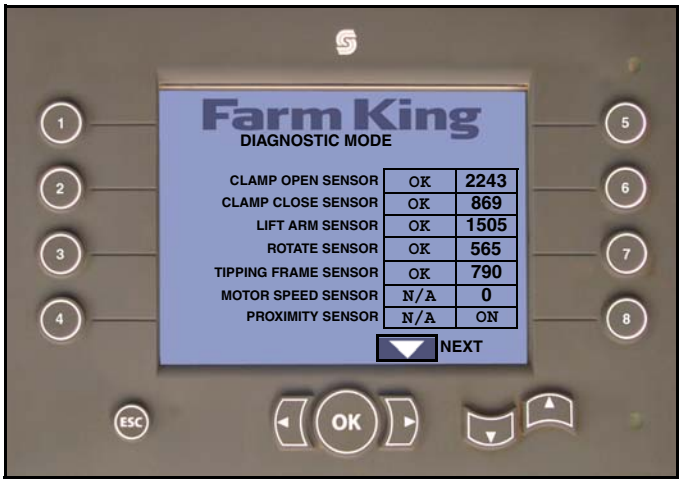
Press OK to continue **[Figure 57]**.

Figure 58



Press button #8 to select DIAGNOSTIC MODE **[Figure 58]**.

Figure 59



The diagnostic mode is used to determine errors (malfunctions) in all sensors used on the unit **[Figure 59]**.

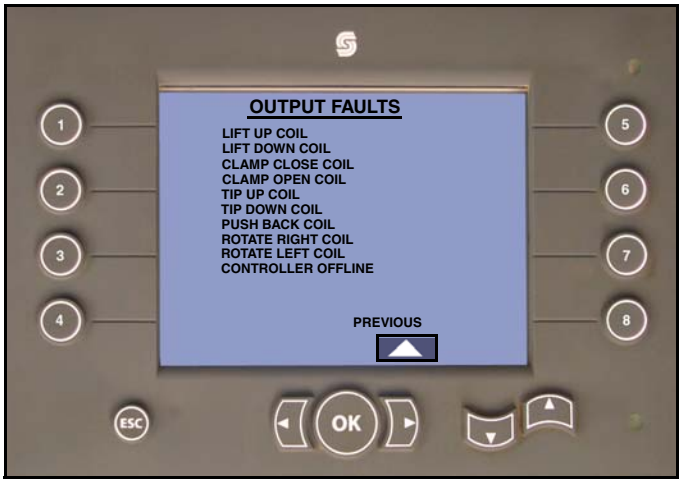
If the status of the sensor displays OK, sensor(s) are operating normally.

If the status of the sensor displays ERROR, this indicates that the sensor is not working, not connected properly to the wire harness, or has a defective wire harness.

Press NEXT (down arrow) to go to the OUTPUT FAULT page.

NOTE: A dot will appear at the left of the affected function coil if a output fault code is triggered.

Figure 60



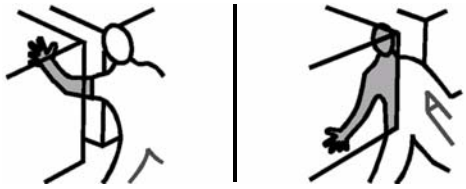
Output fault codes **[Figure 60]**.

Press PREVIOUS (up arrow) to return to the DIAGNOSTIC MODE.

PRE OPERATION

Adjusting The Left Grab Arm

⚠ WARNING

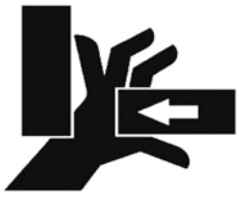


PINCHING / CRUSHING HAZARD

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

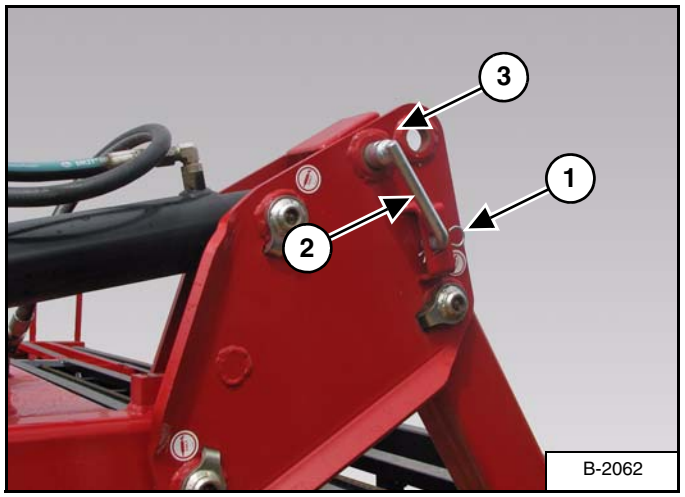


AVOID INJURY OR DEATH

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

Large Bale Setting

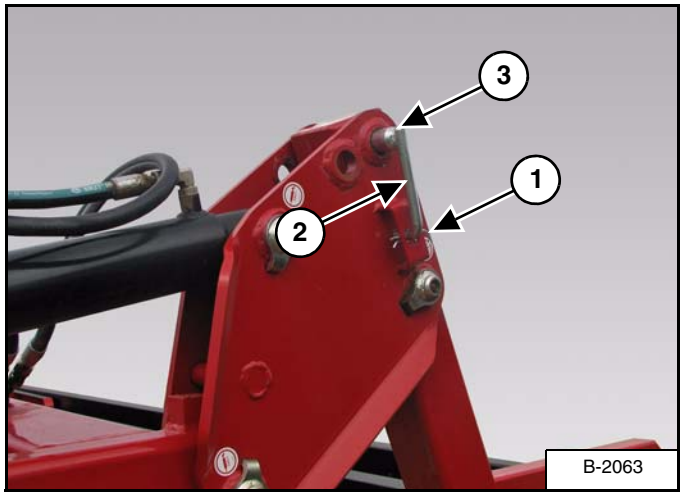
Figure 61



Remove retaining pin (Item 1). Remove the pin (Item 2), align the left grab arm with the inside location (Item 3) **[Figure 61]** for large bales (approximately 4’ in width).

Intermediate Bale Setting

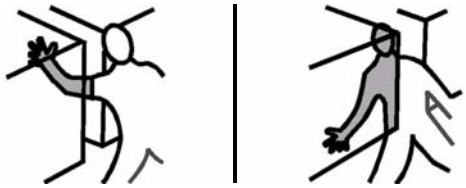
Figure 62



Remove retaining pin (Item 1). Remove the pin (Item 2), align the left grab arm with the outside location (Item 3) **[Figure 62]** 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:

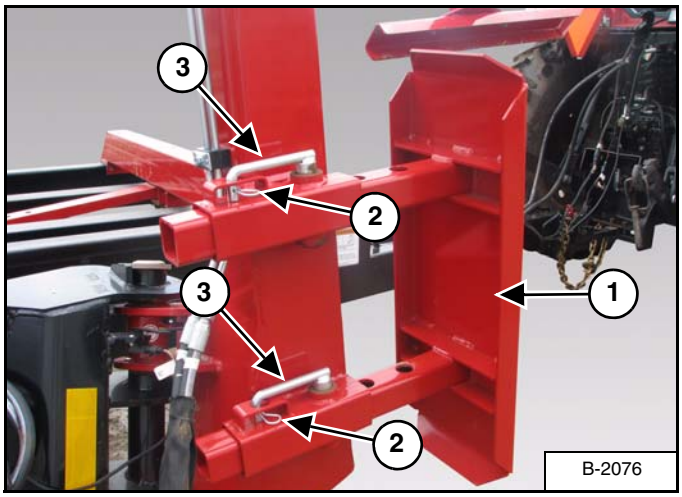
- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

⚠ WARNING

AVOID INJURY OR DEATH

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

Figure 63



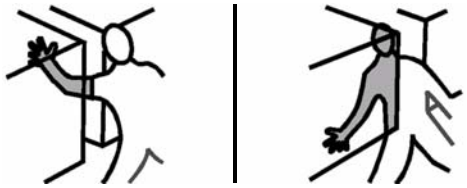
Adjust the bale stop (Item 1) **[Figure 63]** in or out as needed to allow the bale to be centered on the deck of the bale carrier.

Remove the two hairpins (Item 2) and the two locking pins (Item 3) **[Figure 63]**, move the bale stop to the desired position.

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

Adjusting The Bale Extension Sleeves

⚠ WARNING



PINCHING / CRUSHING HAZARD

To prevent serious injury or death from pinching or crushing:

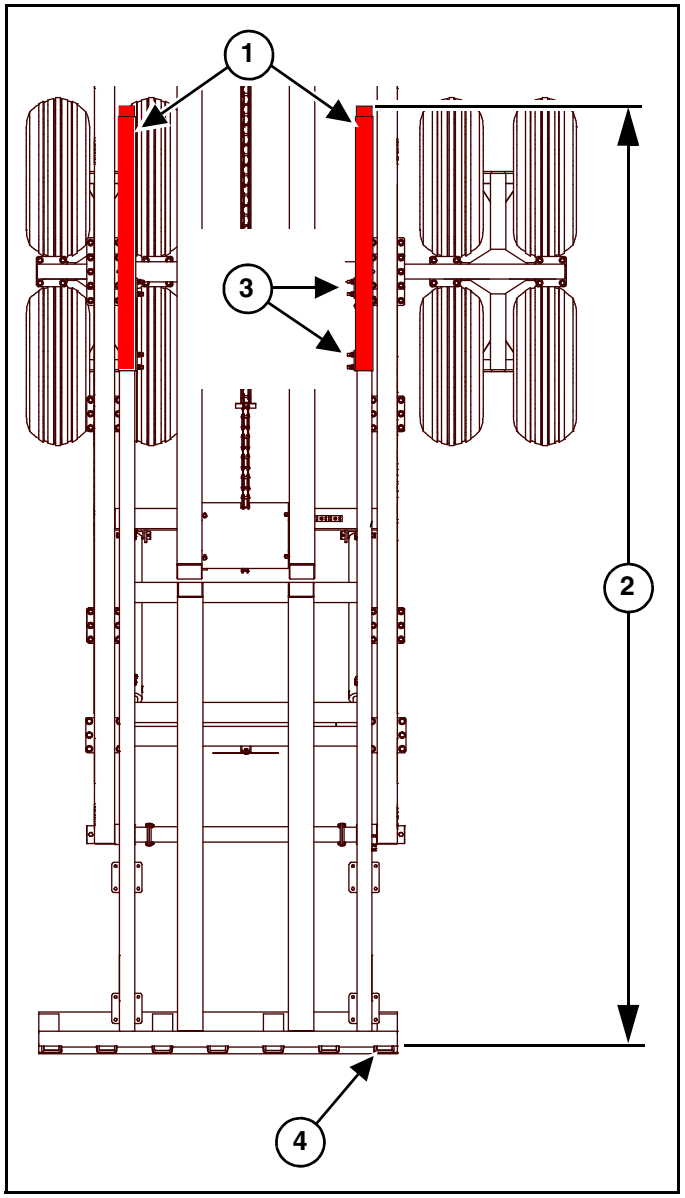
- **Lower lift arm and tipping frame to the ground, place all controls in neutral, stop engine, set park brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing.**
- **Keep away from lift arm and tipping frame when engine is running. Keep others away.**

⚠ WARNING

AVOID INJURY OR DEATH

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

Figure 64



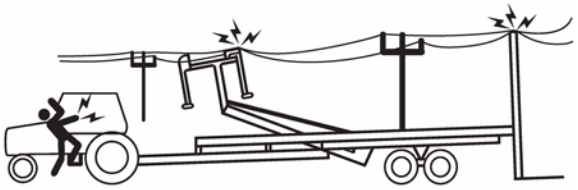
Adjust the bale extension sleeve(s) (Item 1) approximately 6” (15 cm) (Item 2) **[Figure 63]** shorter than the desired stack height of the bales.

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 63]** to the front of the bale extension sleeves. Tighten bolts and jam nuts.

INITIAL PREPARATION

Lift Cylinder Lock Removal And Installation

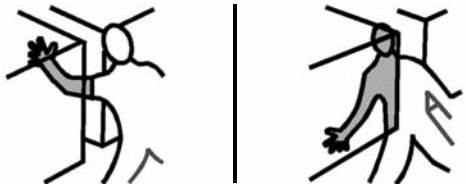
DANGER



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

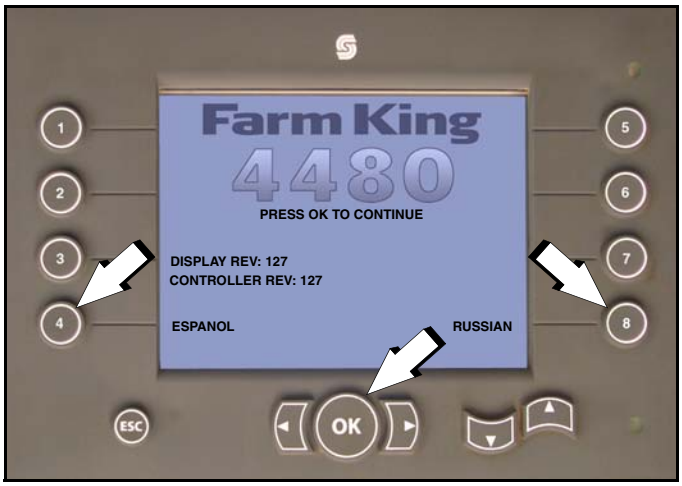
MACHINE TIPPING OR ROLL OVER CAN CAUSE SERIOUS INJURY OR DEATH

- **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 65



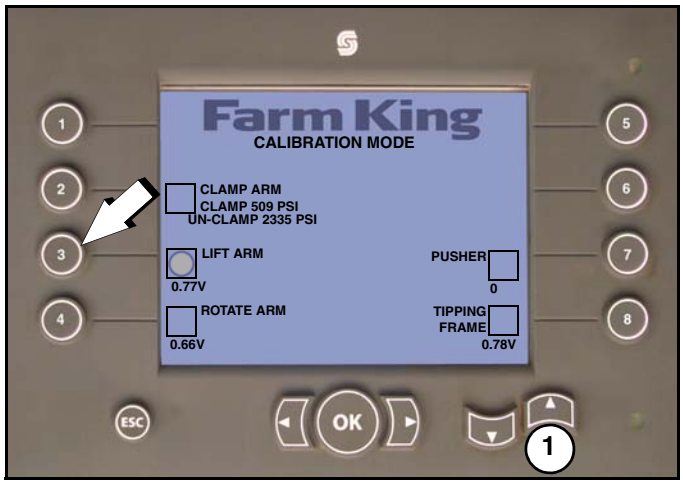
If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 65]**.

Press OK to continue **[Figure 65]**.

Figure 66

Press button #3 to select MANUAL MODE **[Figure 66]**.

Figure 67

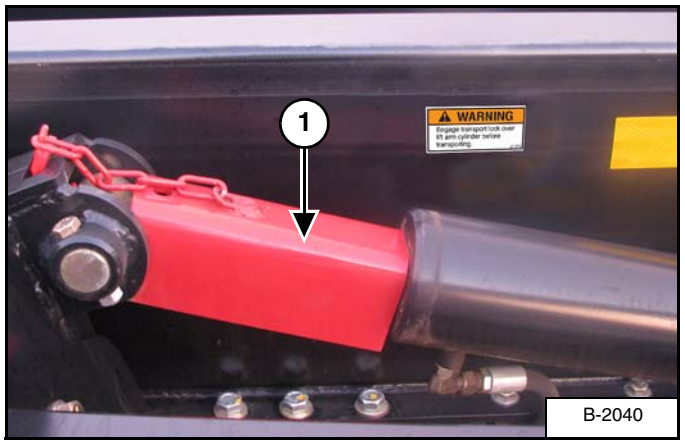


Press button #3 to select LIFT ARM **[Figure 67]**.

Press and hold the up arrow key (Item 1) **[Figure 67]** until the lift cylinder lock is free of the lift arm cylinder, release the button.

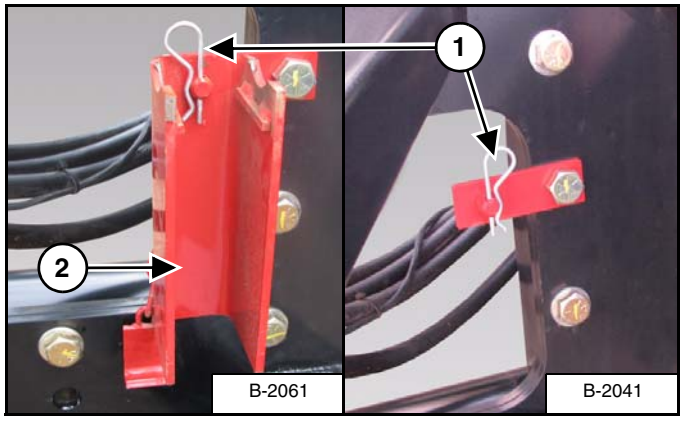
Place all controls in neutral, engage the park brake, stop the engine and wait for all moving parts to stop. Leave the operator's position.

Figure 68



Remove the lift cylinder lock (Item 1) **[Figure 68]** from the lift cylinder.

Figure 69



Remove the hairpin (Item 1) from the storage bracket. Place the lift cylinder lock (Item 2) **[Figure 69]** 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

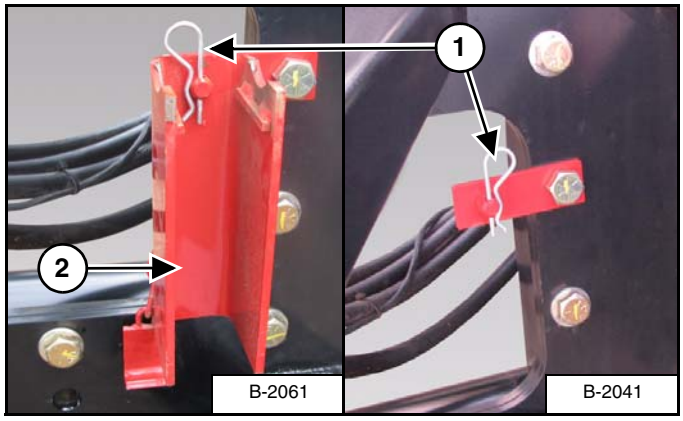
Always install the lift cylinder lock over the lift arm cylinder before transporting.

Park the tractor / equipment on a flat level surface.

Fully lower the lift arm.

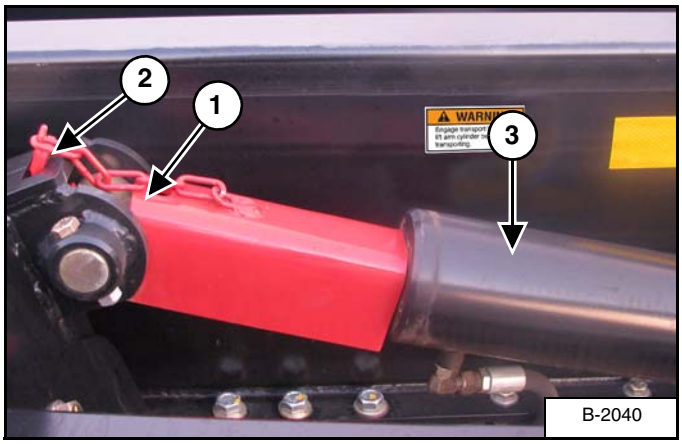
Place all controls in neutral, engage the park brake, stop the engine and wait for all moving parts to stop. Leave the operator's position.

Figure 70



Remove the retaining pin (Item 1) and remove the lift cylinder lock (Item 2) **[Figure 70]** from the storage bracket. Reinstall the retaining pin onto the peg of the storage bracket.

Figure 71



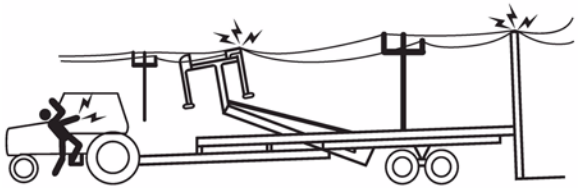
Place the notched end of the lift cylinder lock (Item 1) over the lift cylinder's rod pin eye and between the pin plates. Install chain hook (Item 2) **[Figure 71]** to the gusset above the pin plates.

Retract the lift cylinder (Item 3) **[Figure 71]** to secure the lift cylinder lock in the transport position.

STACKING BALES

Starting A Stack

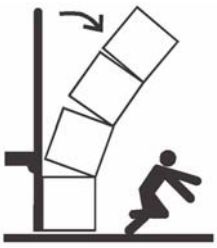
DANGER



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

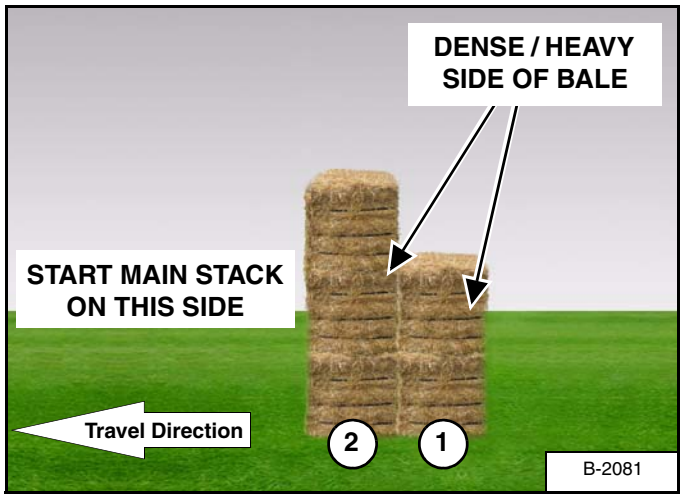
STACKING BALES

The most stable bale stack is achieved by stacking bales with the most dense 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 72

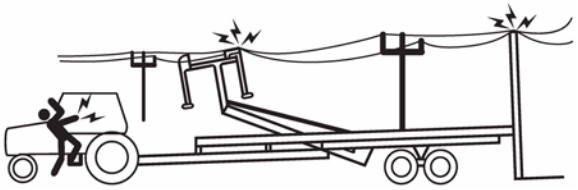


Unload the first stack of two bales (Item 1), drive forward, and then unload the remaining stack of three bales (Item 2) **[Figure 72]** against the first stack of two bales. Lay the main stack from the opposite end to the direction of the initial stack.

MANUAL MODE OPERATION

Loading Procedure

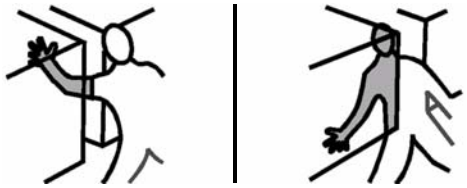
DANGER



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.

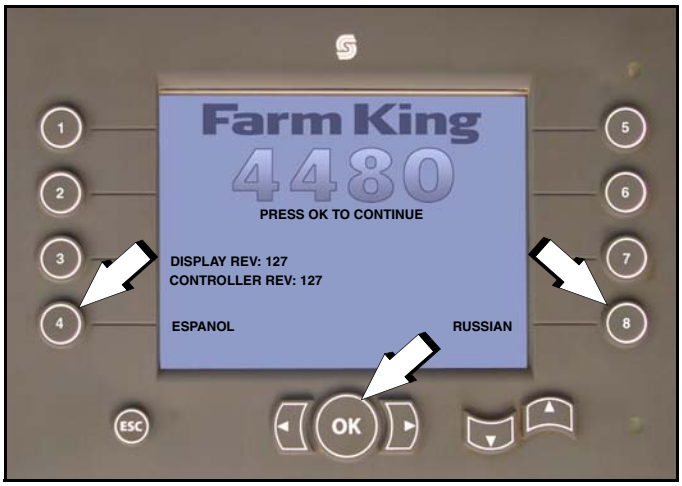
Remove the lift cylinder lock. (See “Lift Cylinder Lock Removal And Installation” on page 54.)

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 73



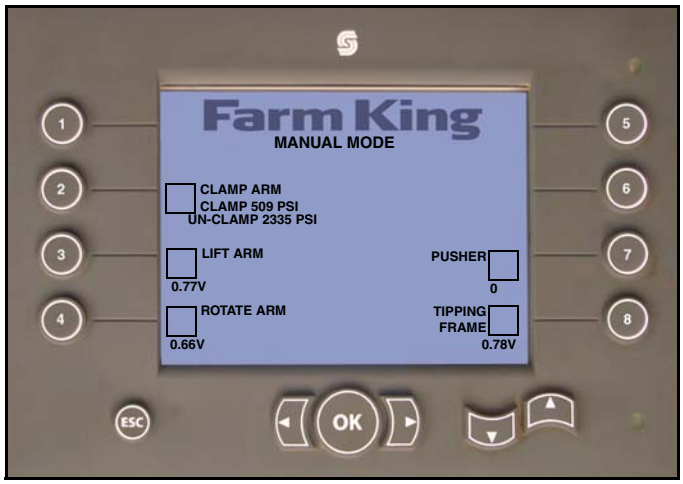
If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 73]**.

Press OK to continue **[Figure 73]**.

Figure 74

Press button #3 to select MANUAL MODE **[Figure 74]**.

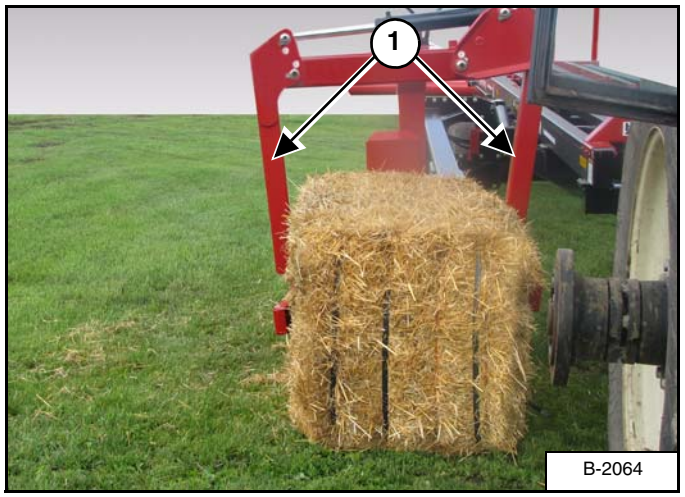
Figure 75



Use the UP / DOWN arrows to select the function to operate manually **[Figure 75]**.

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

Figure 76



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 76]**.

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 76]**.

Figure 77

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.

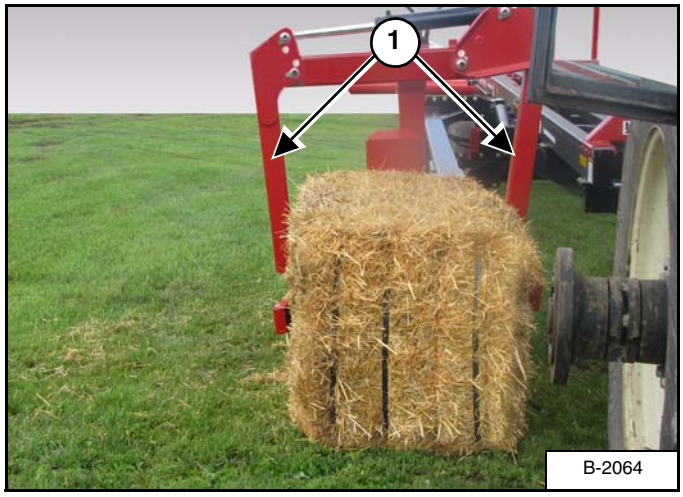
Select CLAMP from the manual mode screen. Using the UP arrow, open the grab arms, allowing the bale to drop down onto the deck of the carrier **[Figure 77]**.

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 78



Disengage the tractor’s parking brake. Move the tractor and bale carrier forward, center the second bale in the grab arms (Item 1) **[Figure 78]**.

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 78]**.

Figure 79

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 79]**.

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).

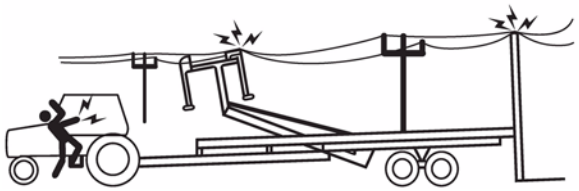
Select ROTATE ARM from the manual mode screen. Using the UP arrow, move the rotate arm right (out).

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.

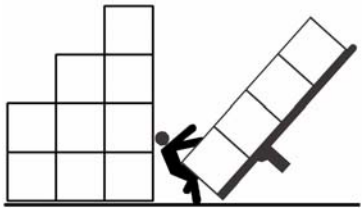
DANGER

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.

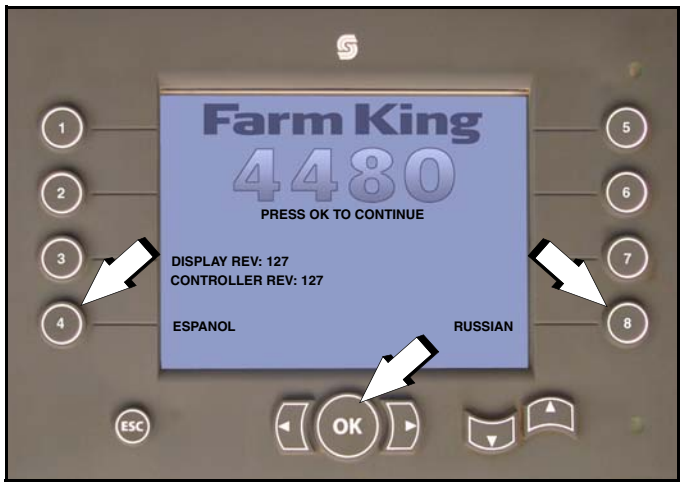
Remove the lift cylinder lock. (See “Lift Cylinder Lock Removal And Installation” on page 54.)

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.

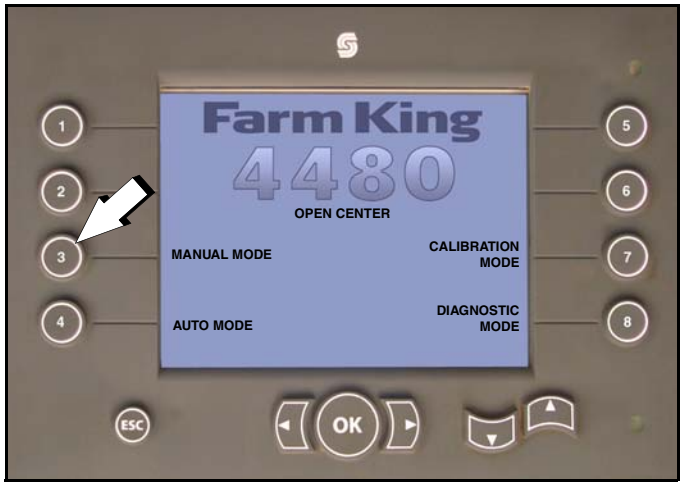
Figure 80



If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 80]**.

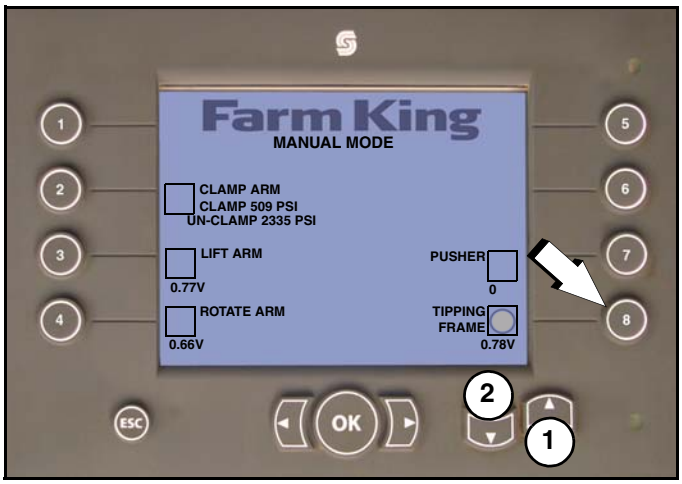
Press OK to continue **[Figure 80]**.

Figure 81



Press button #3 to select MANUAL MODE **[Figure 81]**.

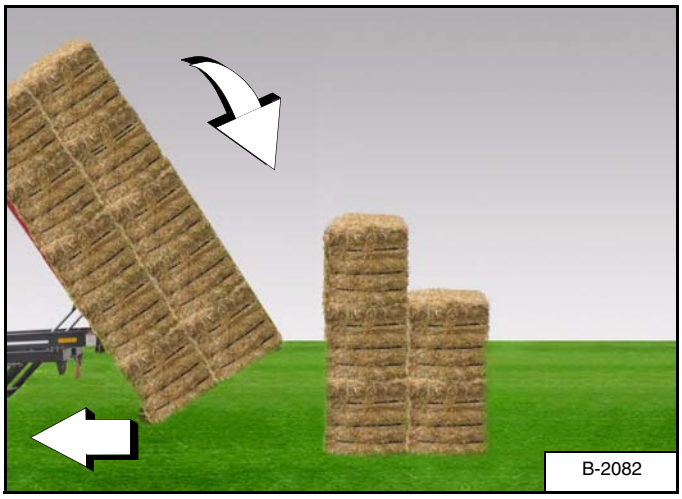
Figure 82



Select TIPPING FRAME **[Figure 82]** from the manual mode screen.

Start the bale stack. (See “STACKING BALES” on page 57.)

Figure 83



Using the UP arrow (Item 1) **[Figure 82]**, raise the tipping frame until the bales being stacked / unloaded contacts the ground **[Figure 83]**.

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.

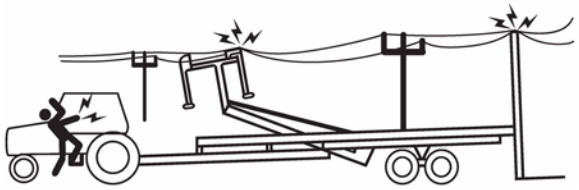
Using the DOWN arrow (Item 2) **[Figure 82]**, fully lower the tipping frame onto the carrier deck.

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

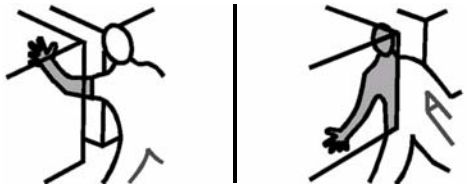
DANGER



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.

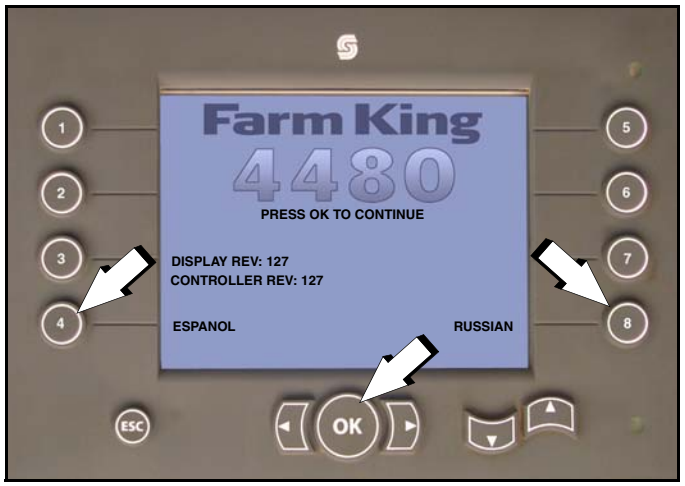
Remove the lift cylinder lock. (See “Lift Cylinder Lock Removal And Installation” on page 54.)

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.

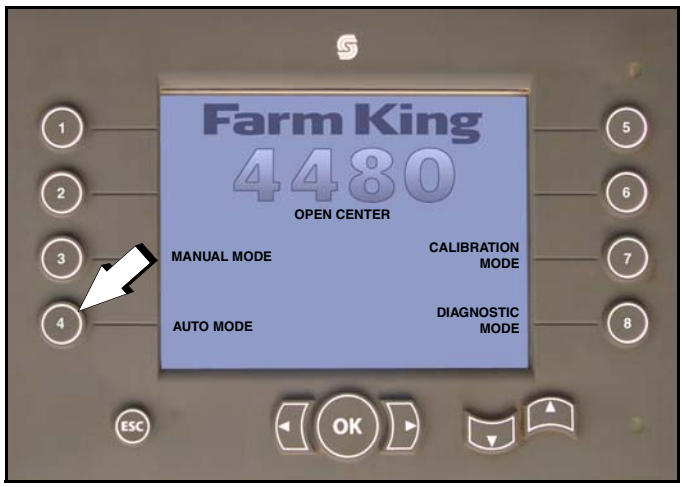
Figure 84



If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 84]**.

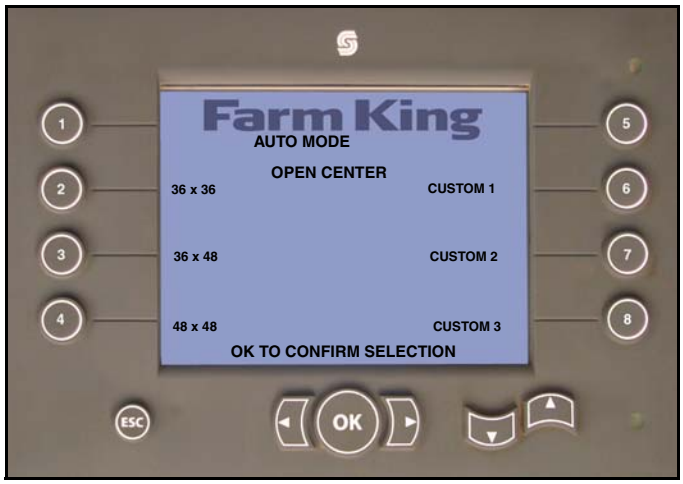
Press OK to continue **[Figure 84]**.

Figure 85



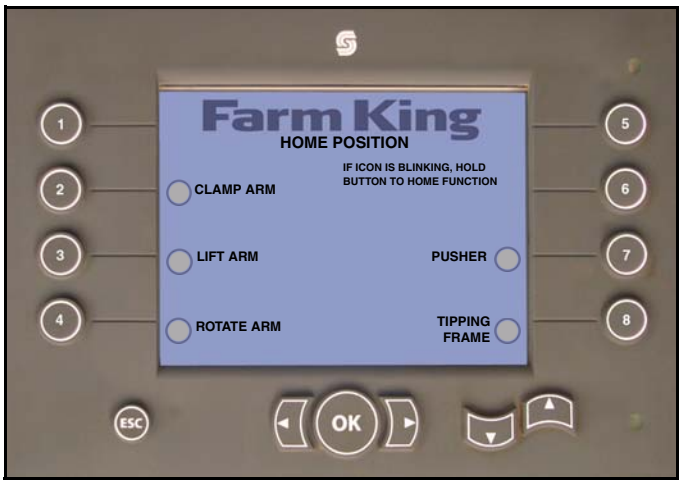
Press button #4 to select AUTO MODE **[Figure 85]**.

Figure 86



Select one of the three factory pre-programed settings or three custom settings **[Figure 86]**.

Figure 87



Press the button adjacent to each function. The controller will automatically activate each function **[Figure 87]**.

NOTE: If icon is blinking, press and hold the button adjacent to the blinking icon to return the function to the HOME FUNCTION.

Figure 88

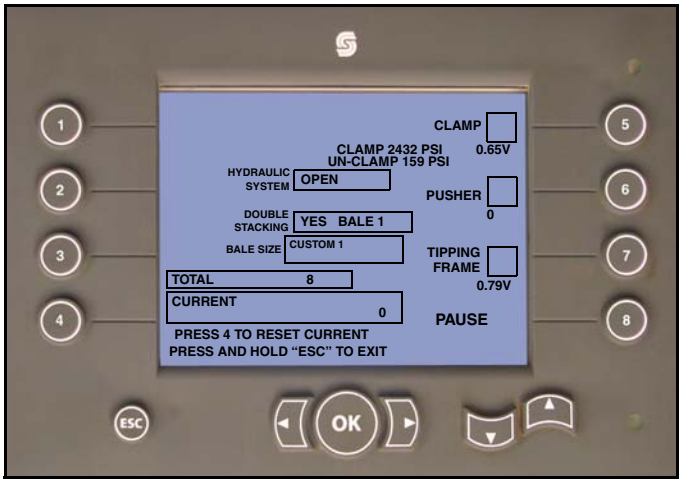
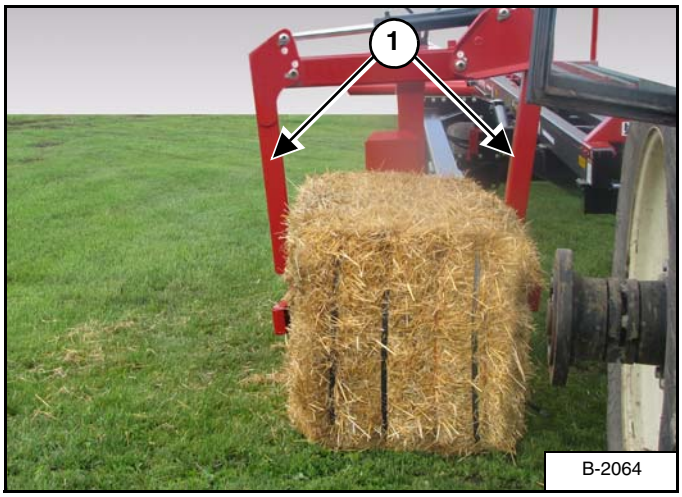
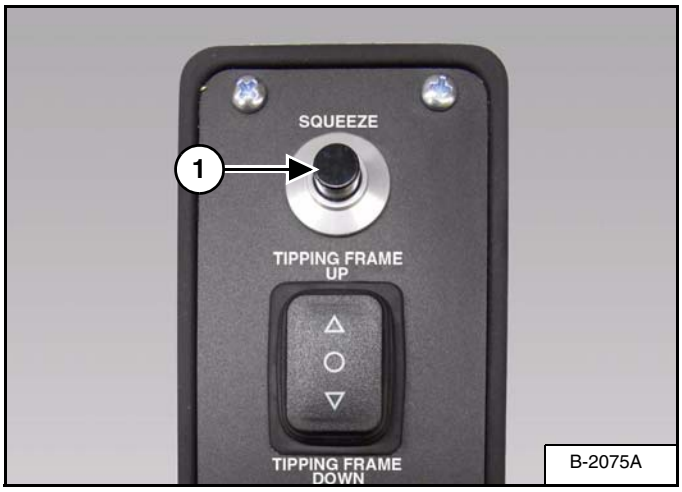


Figure 89



Disengage the tractor's parking brake. Move the tractor and bale carrier forward, center the first bale in the grab arms (Item 1) **[Figure 89]**.

Figure 90



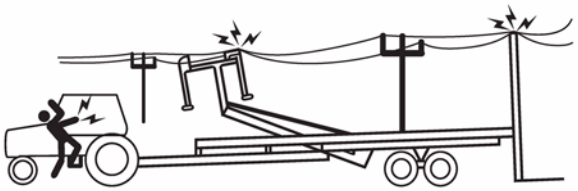
Press and hold the squeeze button (Item 1) **[Figure 90]** on the control handle or clamp on the display. Once the lift arm starts raising (AUTO cycle activated), release squeeze button.

NOTE: Pressing and releasing the squeeze button quickly will move the grab arms closer to each other in small increments.

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.

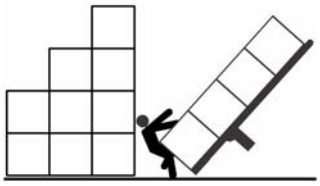
DANGER

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.

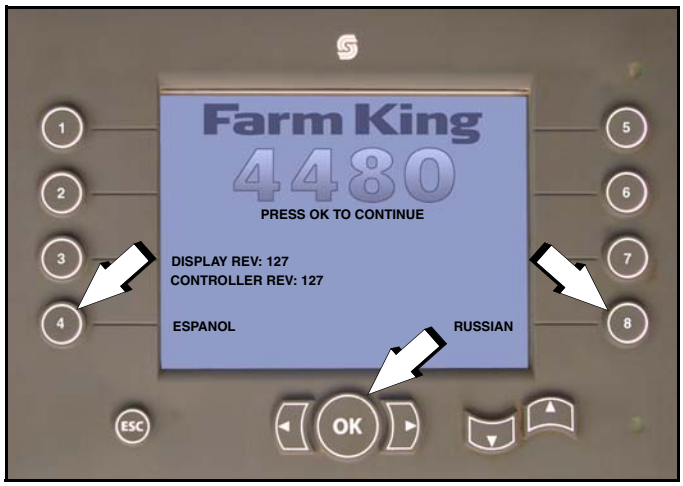
Remove the lift cylinder lock. (See “Lift Cylinder Lock Removal And Installation” on page 54.)

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.

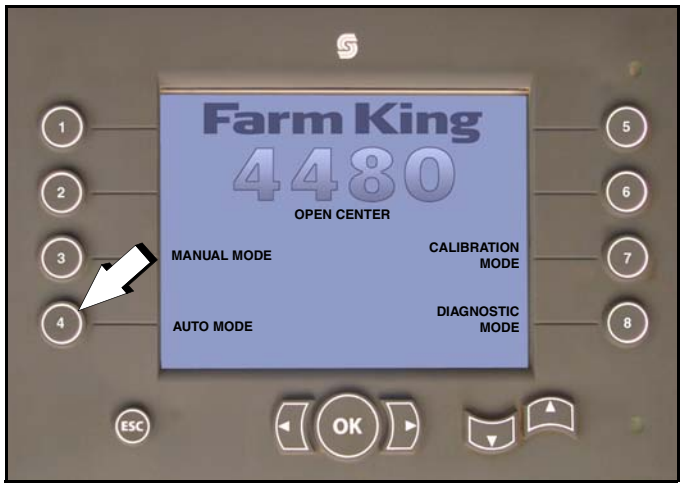
Figure 91



If English is preferred, press OK to continue. Otherwise, press button #4 (ESPANOL) or button #8 (RUSSIAN) **[Figure 91]**.

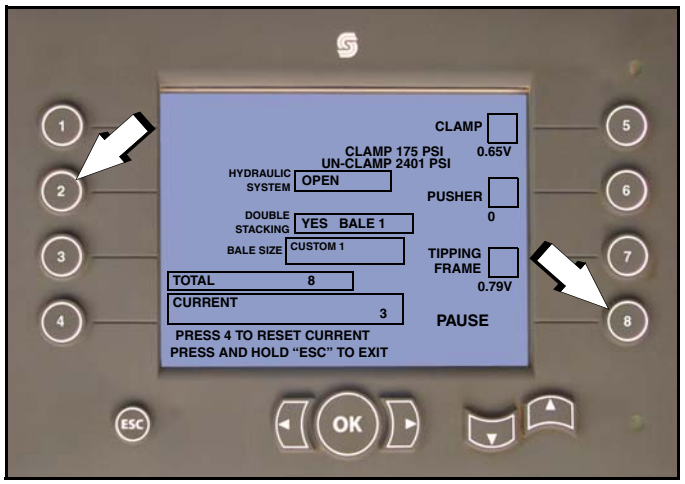
Press OK to continue **[Figure 91]**.

Figure 92



Press button #4 to select AUTO MODE **[Figure 92]**.

Figure 93



With all functions in the HOME POSITION, a screen similar to **[Figure 48]** will appear.

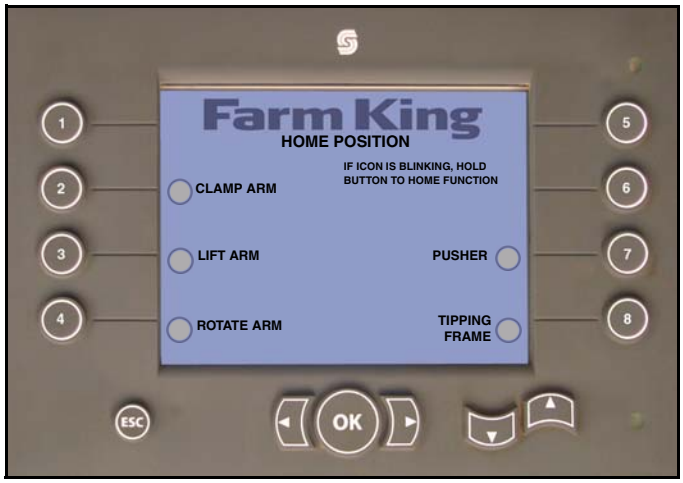
NOTE: Press button #2 to switch between double stack (YES) and double stack (NO) by pressing the button. If the bale selected has only single row values, pressing the button does not change the status.

NOTE: By pressing button #8 the automatic sequence can be paused or resumed from pause.

Display Operation

NOTE: Auto Mode function can be operated with the display or control handle.

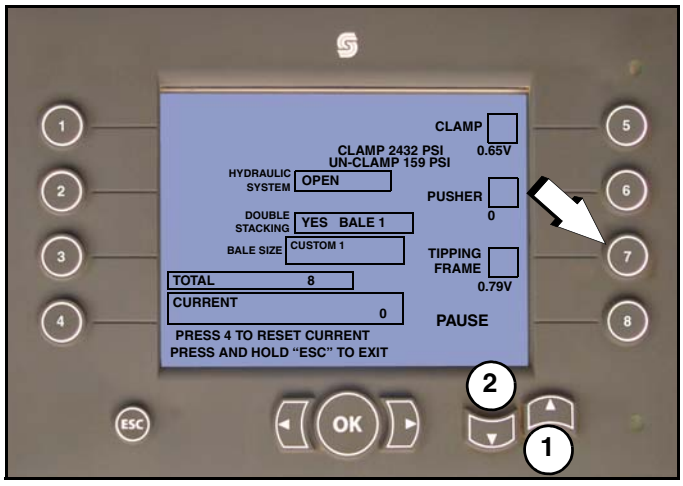
Figure 94



Press the button adjacent to each function. The controller will automatically activate each function **[Figure 87]**.

NOTE: If icon is blinking, press and hold the button adjacent to the blinking icon to return the function to the HOME FUNCTION.

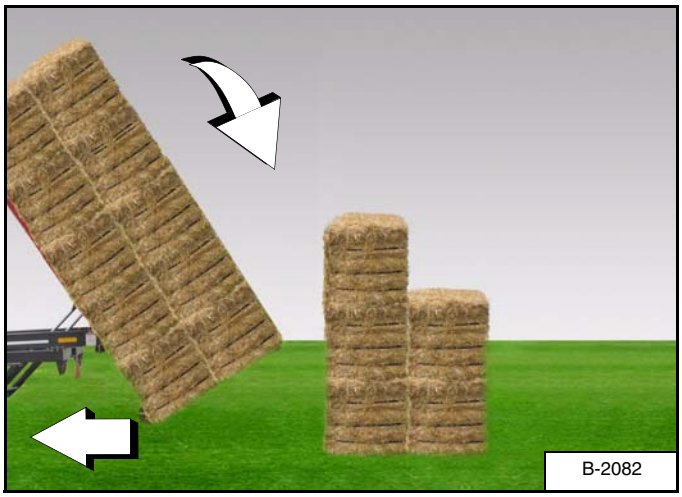
Figure 95



Select TIPPING FRAME **[Figure 95]**.

Start the bale stack. (See "STACKING BALES" on page 57.)

Figure 96



Select TIPPING FRAME **[Figure 95]**.

Using the tipping frame UP arrow key (Item 1) **[Figure 95]**, raise the tipping frame until the bales being stacked / unloaded contact the ground **[Figure 96]**.

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

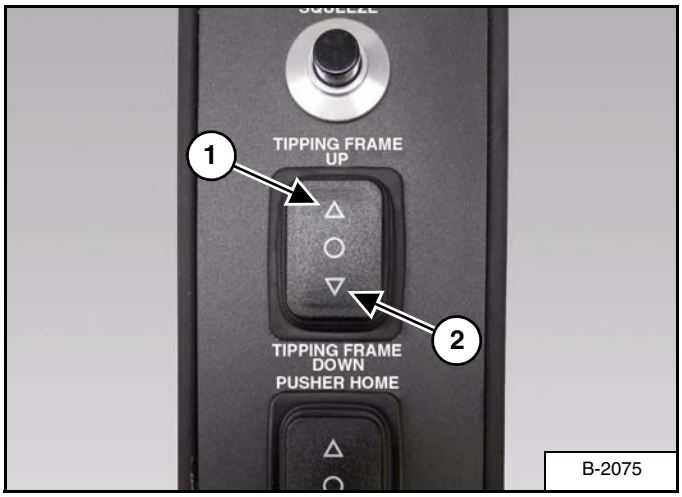
Drive the tractor forward until there is enough room to safely lower the TIPPING FRAME onto the carrier deck.

Using the tipping frame DOWN button (Item 2) **[Figure 95]**, 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.

Control Handle Operation

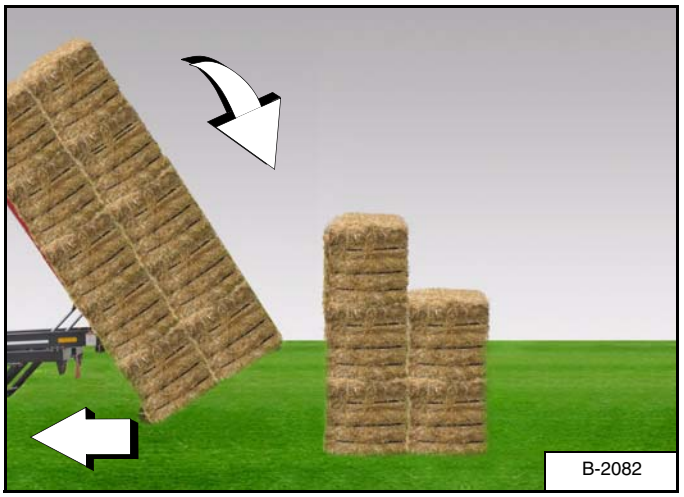
Figure 97



Press and hold the tipping frame UP button (Item 1) **[Figure 97]** on the control handle to raise the tipping frame.

Start the bale stack. (See “STACKING BALES” on page 57.)

Figure 98



Using the tipping frame UP button (Item 1) **[Figure 97]**, raise the tipping frame until the bales being stacked / unloaded contacts the ground **[Figure 98]**.

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 97]**, 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

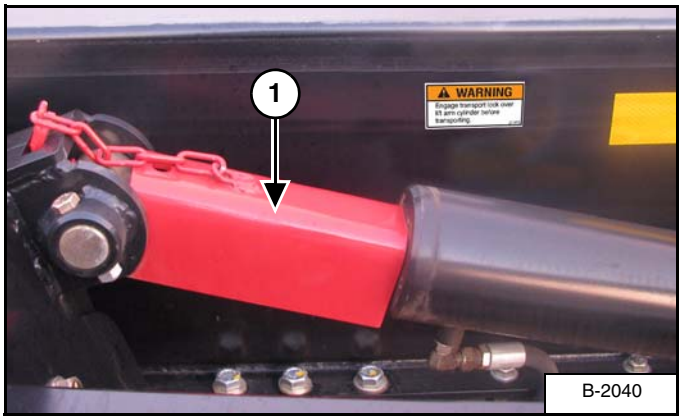
Towing Vehicle / Tractor must have adequate braking capacity to safely control 37,440 lb. (16,983 kg) GVW trailing load. Do not tow over 20 mph (32 km/h). Towing Vehicle / Tractor unit should weigh 25,000 lb. (11,340 kg) or approximately 67% of GVW.

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 99



Install the lift cylinder lock (Item 1) **[Figure 71]**. (See “Lift Cylinder Lock Removal And Installation” on page 54.)

Transport Position

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

MAINTENANCE

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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.
LED blinks Red on Display unit.	Loose harness connection.	No communication between Display unit and Controller. Make sure all connections are secure and correctly connected.

Diagnostic Mode Chart

PROBLEM	CAUSE	CORRECTION
Diagnostic Mode, “ERROR” status on one or more sensor output values.	One or more sensors are not correctly connected and / or sensor damage.	Make sure sensors are connected correctly or change sensors.

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 SQUEEZE 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).
SQUEEZE 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.
	Push-back pressure out of adjustment.	Adjust push-back pressure relief valve to 3000 PSI. (See page 81.)
Rotate arm rotates slow.	Flow rate out of adjustment.	Increase swing arm flow rate. (See page 82.)

PROBLEM	CAUSE	CORRECTION
Lift arm raises slow.	Flow rate out of adjustment.	Increase lift arm drop restrictor flow rate. (See page 82.)
Lift arm “jerks” while going down.	Flow rate out of adjustment.	Reduce lift arm flow rate. (See page 82.)
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.

Auto Mode Chart (Custom Bale Program Only)

PROBLEM	CAUSE	CORRECTION
SQUEEZE responds, arm raises too high or too low.	Lift arm height not adjusted correctly.	Recalibrate lift arm positions in the custom bale setup.
		Verify if lift arm rotation sensor is installed properly.
Arm raises, but swing arm will not rotate 90° to the left.	Lift arm has not been set high enough to safely rotate arm over deck.	Recalibrate lift arm positions in the custom bale setup.
		Verify if lift arm rotation sensor is installed properly.
Pusher does not push the bale back to the preset location.	Push-back setting not calibrated correctly.	Go to calibration mode and adjust push-back location in the custom bale setup.
Pusher moves the bale back toward the tipping frame and does not stop at the pre-set location.	Push-back setting not calibrated correctly.	Go to calibration mode and adjust push-back location in the custom bale setup.

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 Bolts	•						
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 multi-purpose / 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.

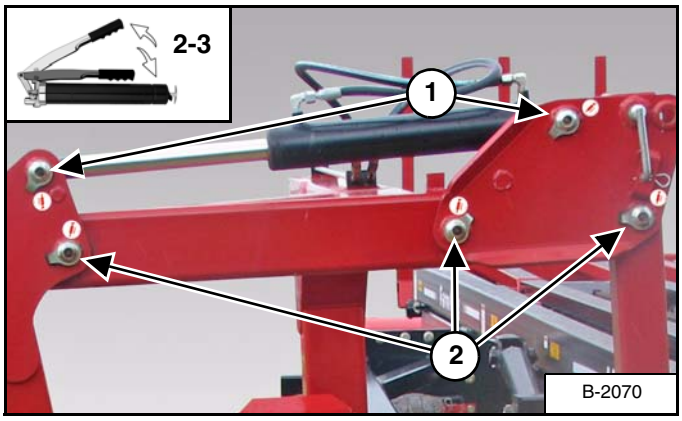
Locations

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:

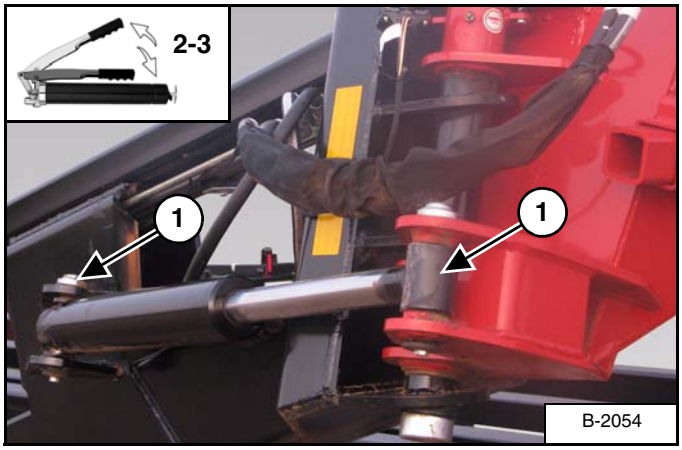
Figure 100



Apply two - three pumps of grease to both ends of the grab arm cylinder (Item 1) **[Figure 100]**.

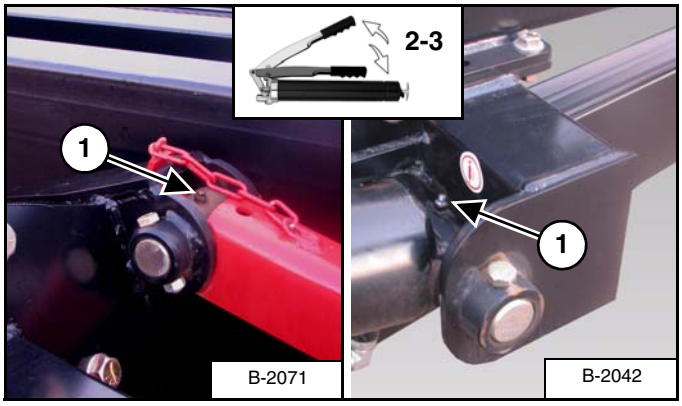
Apply two - three pumps of grease to the grab arm pivots (Item 2) **[Figure 100]**.

Figure 101



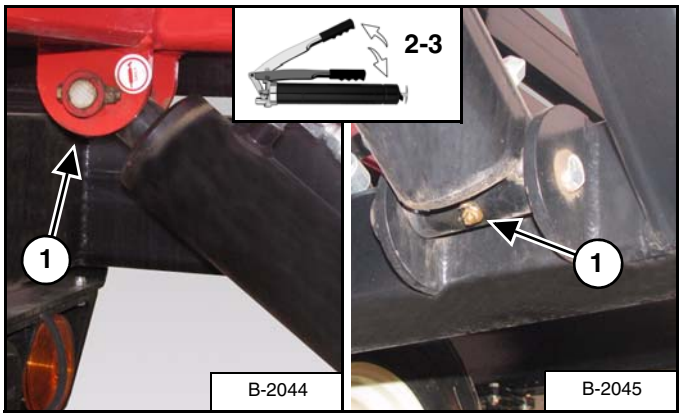
Apply two - three pumps of grease to both ends of the swing arm cylinder (Item 1) **[Figure 101]**.

Figure 102



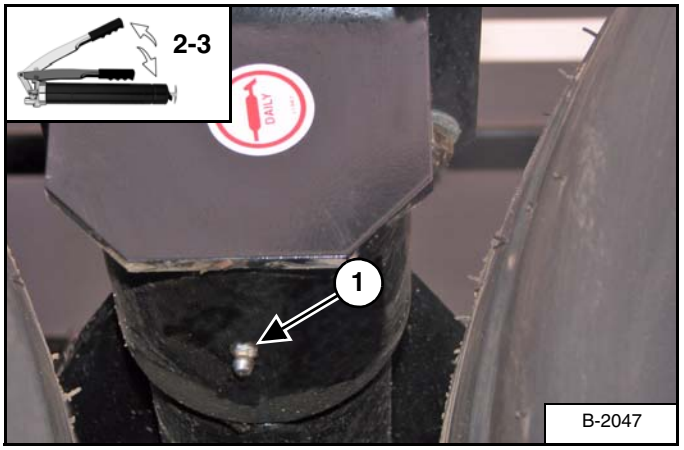
Apply two - three pumps of grease to both ends of the main arm cylinder (Item 1) **[Figure 102]**.

Figure 103



Apply two - three pumps of grease to both ends of the tipping frame cylinders (Item 1) **[Figure 103]**.

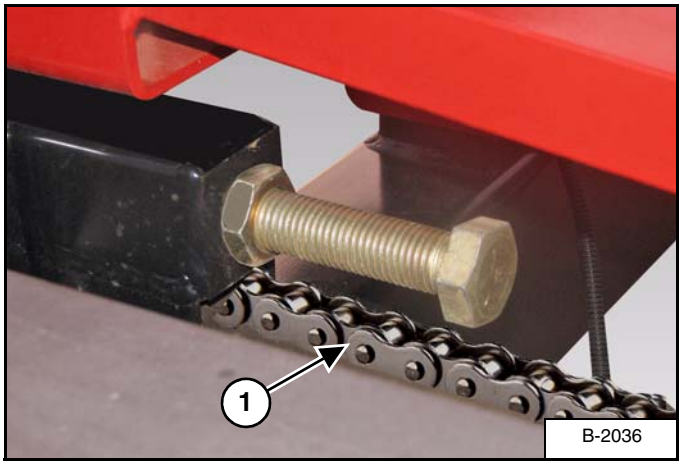
Figure 104



Apply two - three pumps of grease to the axle bearings (Item 1) **[Figure 104]** (both sides).

Lubricate the following grease locations EVERY 50 HOURS:

Figure 105



Using a brush, apply a SAE light machine oil (or equivalent) to pusher chain (Item 1) **[Figure 105]** several times during the season and before storing for an extended period of time.

PUSHER CHAIN AND SPROCKET

Inspection

⚠ WARNING

AVOID INJURY OR DEATH

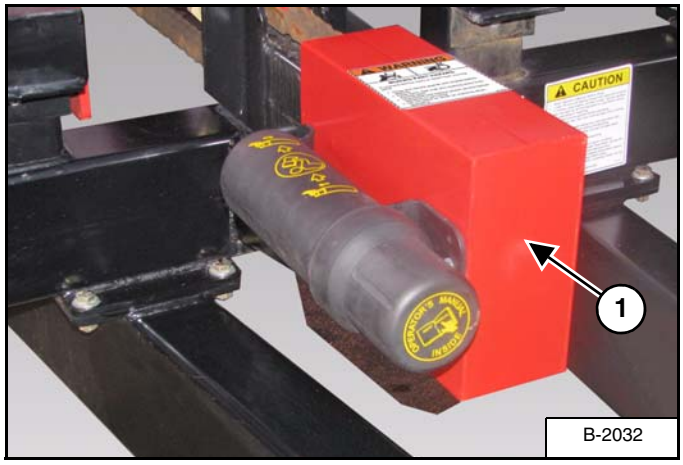
Before you leave the operator's position:

- **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

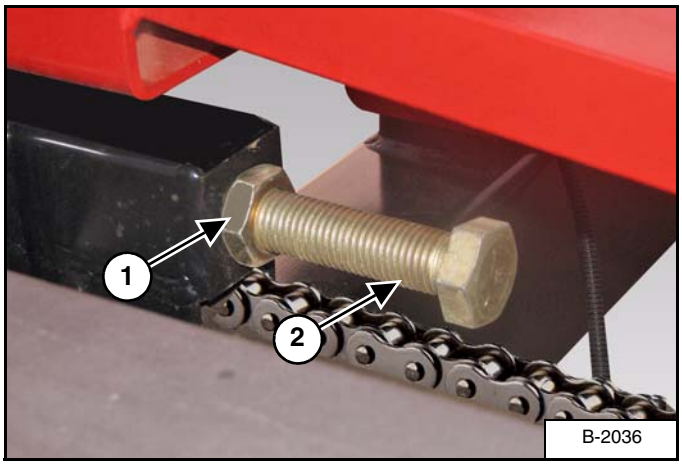
Figure 106



Pusher chain adjustment bolt is located behind shield (Item 1) **[Figure 106]**.

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 107



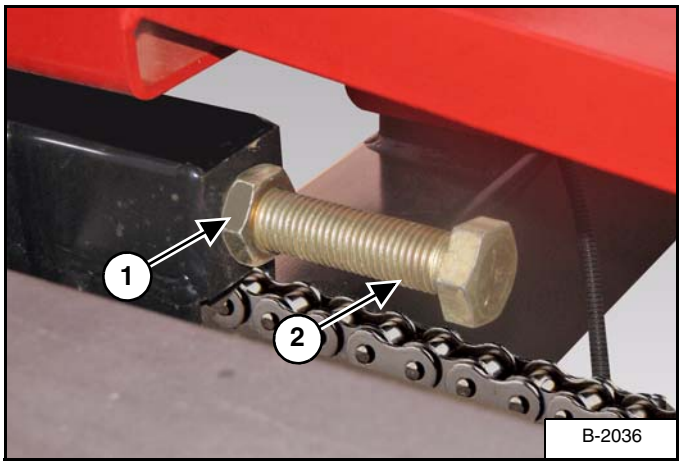
Loosen the jam nut (Item 1) **[Figure 107]**.

Tighten the adjustment bolt (Item 2) **[Figure 107]** (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 108



Loosen the jam nut (Item 1) **[Figure 108]**.

Loosen the adjustment bolt (Item 2) **[Figure 108]** until there is enough slack in the pusher chain to remove one link.

CONTROL VALVE

Adjusting Push-Back Pressure

⚠ WARNING

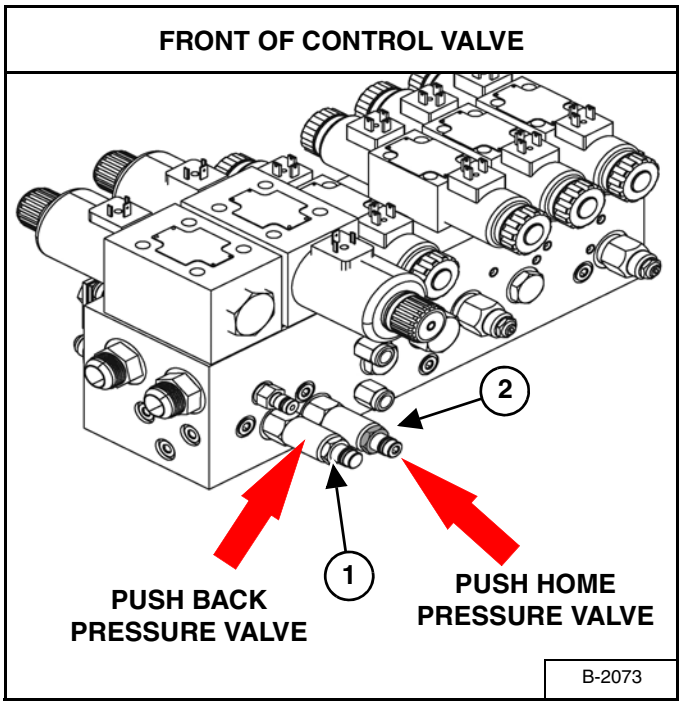
AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running equipment. Be careful when making adjustments on the control valve.

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.

Figure 109



Locate the push back / home pressure valve on the front of the control valve **[Figure 109]**.

Increasing Push-Back Pressure

Using a wrench, loosen the jam nut (Item 1) **[Figure 109]**.

NOTE: Turn the setting screw in quarter turn increments.

Using a hex key, turn the setting screw "IN" to increase pressure setting (3000 PSI maximum). Retighten the jam nut (Item 1) **[Figure 109]**.

Enter the tractor and start the engine. (See "Entering And Leaving The Operator's Position" on page 25.)

Engage the tractor hydraulics. Run the tractor engine at low idle.

Activate the pusher control and check the push-back pressure.

Repeat adjustment procedure until the desired setting is achieved.

Decreasing Push-Home Pressure

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.

Using a wrench, loosen the jam nut (Item 1) **[Figure 109]**.

NOTE: Turn the setting screw in quarter turn increments.

Using a hex key, turn the setting screw "OUT" to decrease pressure setting. Retighten the jam nut (Item 2) **[Figure 109]**.

Enter the tractor and start the engine. (See "Entering And Leaving The Operator's Position" on page 25.)

Engage the tractor hydraulics. Run the tractor engine at low idle.

Activate the pusher control and check the push-home pressure.

Repeat adjustment procedure until the desired setting is achieved.

Adjusting Lift Arm And Rotate Arm Flow Rates

⚠ WARNING

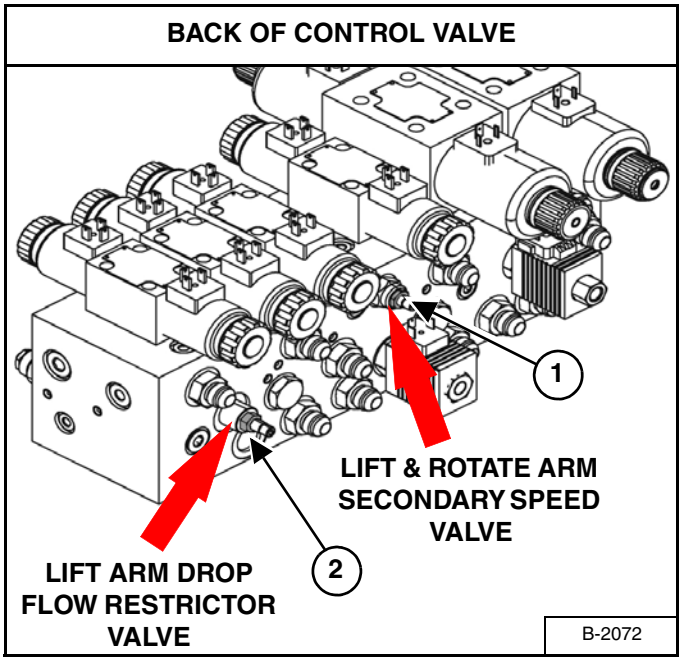
AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running equipment. Be careful when making adjustments on the control valve.

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.

Figure 110



Locate the lift and rotate arm flow restrictor valve on the back of the control valve **[Figure 110]**.

Locate the flow restrictor valve for relieving jerking motion in the lift arm (if required) **[Figure 110]**.

Increasing Lift Arm And Rotate Arm Speed

Using a wrench, loosen the jam nut (Item 1) **[Figure 110]**.

NOTE: Turn the setting screw in quarter turn increments.

Using a hex key, turn the setting screw "OUT" to increase oil flow rate. Retighten the jam nut.

Enter the tractor and start the engine. (See "Entering And Leaving The Operator's Position" on page 25.)

Engage the tractor hydraulics. Run the tractor engine at low idle.

Activate the lift arm / rotate arm control and check the lift arm / rotate arm speeds.

Repeat adjustment procedure until the desired setting is achieved.

Decreasing Lift Arm And Rotate Arm Speed

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.

Using a wrench, loosen the jam nut (Item 1) **[Figure 110]**.

NOTE: Turn the setting screw in quarter turn increments.

Using a hex key, turn the setting screw "IN" to decrease oil flow rate. Retighten the jam nut.

Enter the tractor and start the engine. (See "Entering And Leaving The Operator's Position" on page 25.)

Engage the tractor hydraulics. Run the tractor engine at low idle.

Activate the lift arm / rotate arm control and check the lift arm / rotate arm speed.

Repeat adjustment procedure until the desired setting is achieved.

Relieving Jerking Motion In The Lift Arm (If Required)

Using a wrench, loosen the jam nut (Item 2) **[Figure 110]**.

NOTE: Turn the setting screw in quarter turn increments.

Using a wrench, loosen the jam nut.

Using a hex key, turn the setting screw "IN" to decrease oil flow rate. Retighten the jam nut (Item 2) **[Figure 110]**.

Repeat as needed until the desired setting is achieved.

AXLE

Wheel Bolts Torque

Check the torque on wheel bolts daily. Tighten wheel bolts to 90 lb. / ft. (122 N•m) torque.

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.**

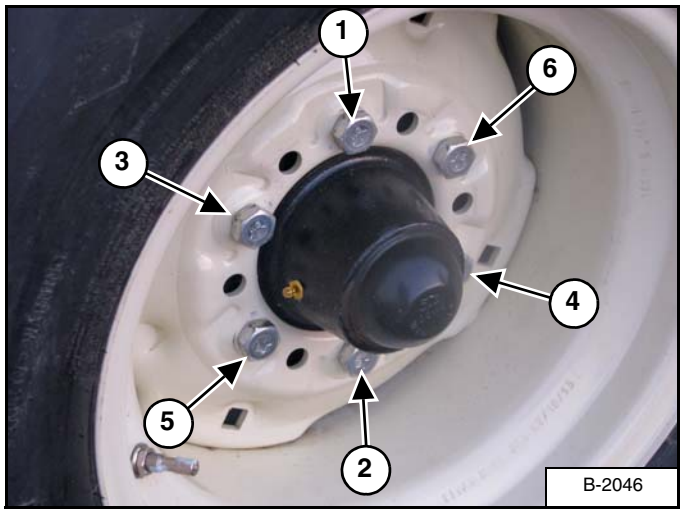
Place chock blocks behind and in front of the opposite tire to be removed.

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 six wheel bolts and remove the tire / wheel.

Figure 111



Install the new tire with the valve stem facing out.

Install the six wheel bolts (Items 1 - 6) **[Figure 111]**.

Tighten wheel bolts in a criss-cross pattern **[Figure 111]**. Tighten wheel bolts to 90 lb. / ft. (122 N•m) of torque.

Wheel Bearings

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

Tire Pressure

⚠ CAUTION

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

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

CLEANING THE BALE CARRIER

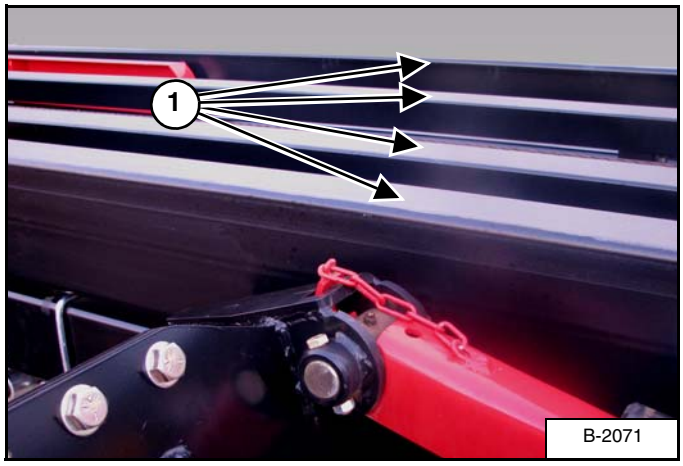
Fully Clean the Bale Carrier EVERY 50 HOURS:

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

CARRIER BEAMS

Resurfacing

Figure 112



Apply EZ-Slide (graphite-based coating to reduce sliding friction) to the carrier (Item 1) **[Figure 112]** 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 multi purpose 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

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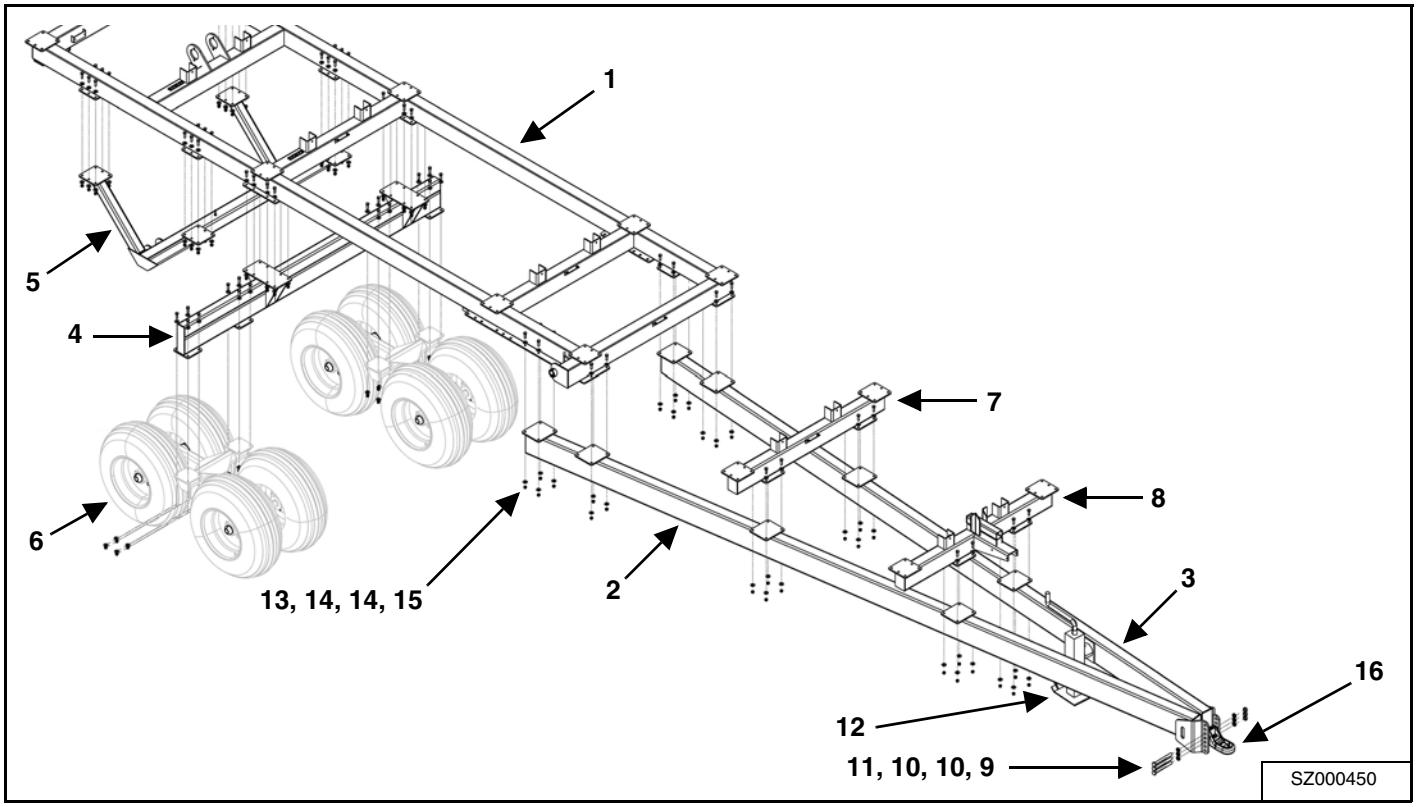
Farm King

GENERAL 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.

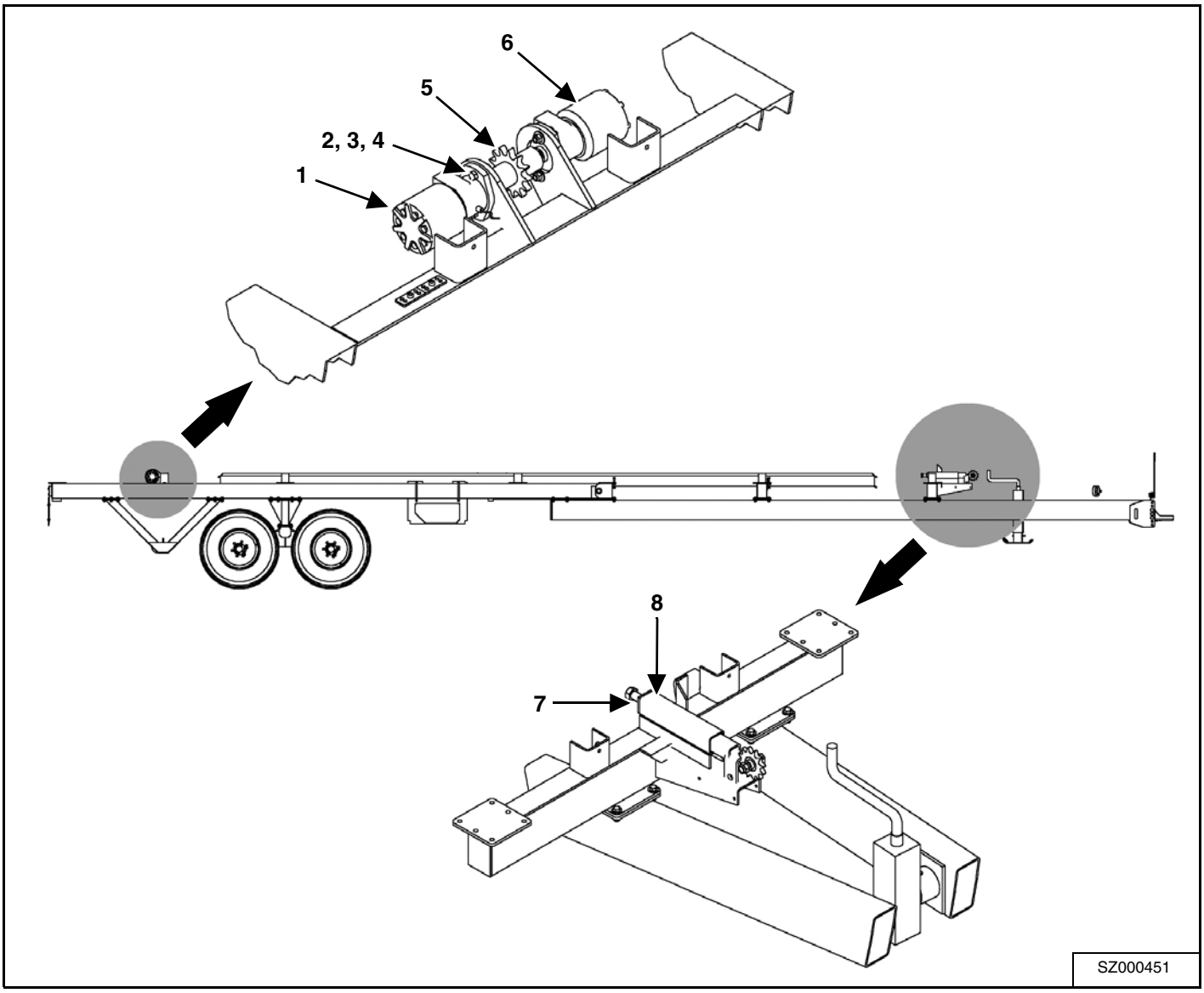
BASE FRAME

Carrier Final Assembly



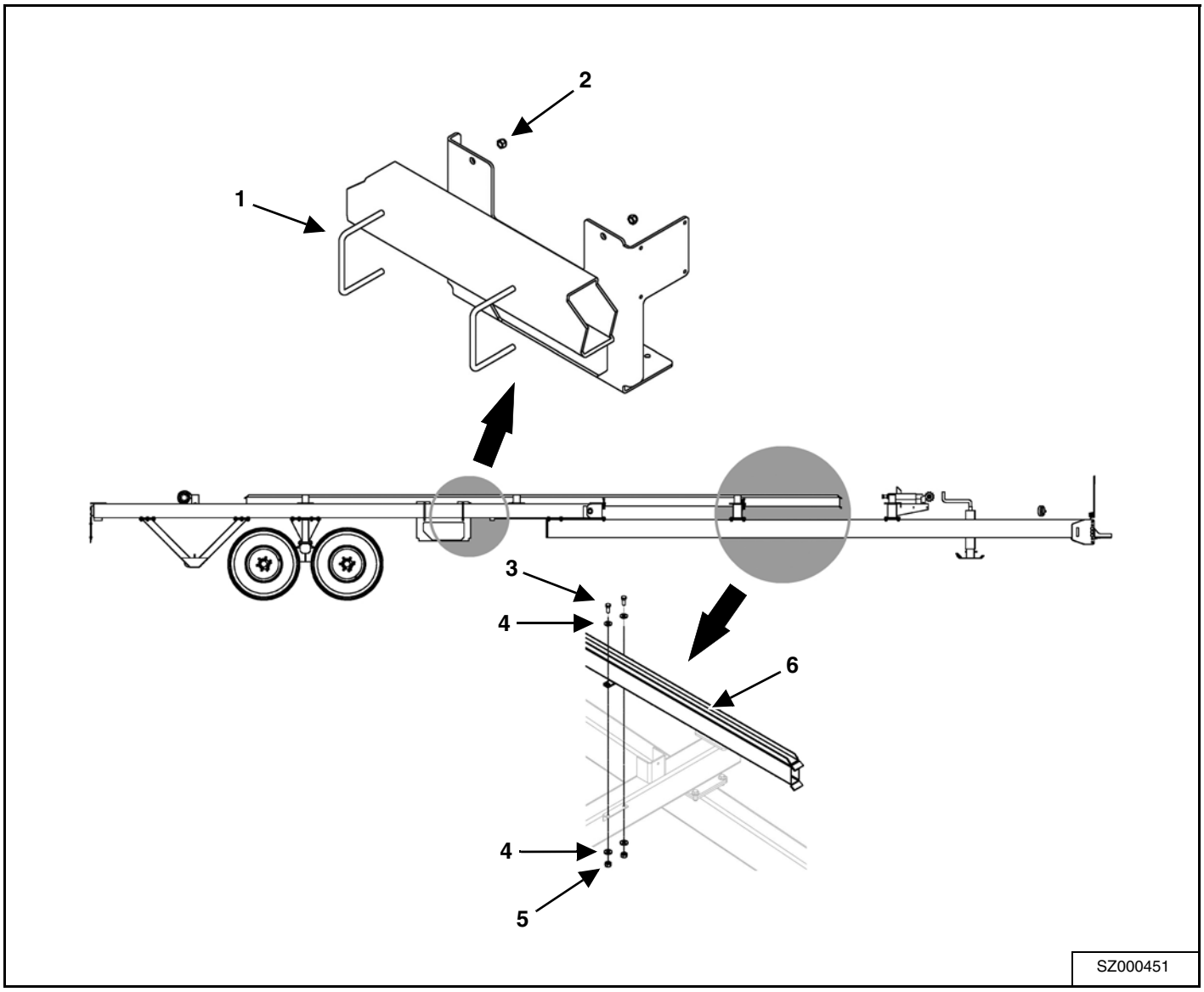
ITEM	PART NUMBER	DESCRIPTION	QTY
1	C2700-00	MAIN FRAME ASSEMBLY	1
2	I20087	HITCH WELDMENT RH	1
3	I20086	HITCH WELDMENT LH	1
4	C2721-00	AXLE BEAM	1
5	C2719-00	REAR CYLINDER MOUNT	1
6	A7004-00	TANDEM AXLE ASSEMBLY	2
7	C2705-00	SECOND CROSS MEMBER ASSEMBLY	1
8	I20089	FRONT CROSS MEMBER WELDMENT	1
9	9846394	BOLT, HEX 0.750” NC x 7” LG GR8 PL	3
10	813590	WASHER, 0.781” ID x 1.25” OD FL PL	6
11	813648	LOCK NUT, (STEEL) 0.750” NC GRC PL	3
12	815378	SCREW JACK, 5 TON	1
13	967274	BOLT, HEX 0.500” NC x 1.50” GR8 PL	86
14	84048	FLAT WASHER, 0.500” SAE Bs PL	172
15	813663	LOCK NUT, (STEEL) 0.500” NC GRCPL	86
16	SZ000561	PERFECT HITCH	1

Motor And Chain Guide Assembly



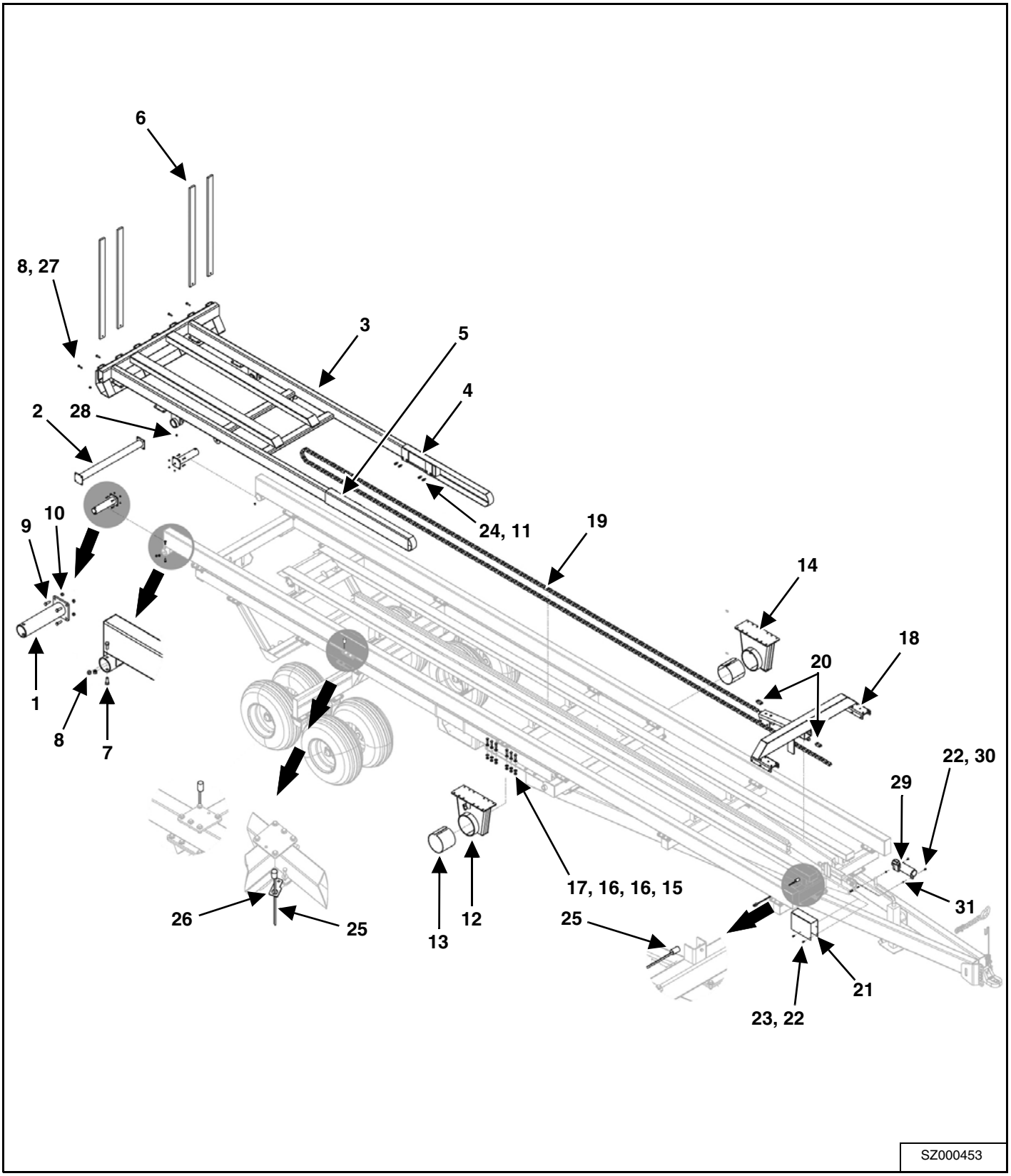
ITEM	PART NUMBER	DESCRIPTION	QTY
1	814106	PUSHER MOTOR, 22.2 CU IN W/SENSOR	1
2	813663	LOCK NUT, (STEEL) 0.500” NC GRCPL	8
3	84048	FLAT WASHER, 0.500” SAE Bs PL	20
4	87553	BOLT HEX 0.500” NC x 1.75” GR5 PL	4
5	C2770-00	REAR SPROCKET ASSEMBLY	1
6	813660	MOTOR, 22.2 CU IN ROSS	1
7	84051	JAM NUT, HEX 1.00” NC GR2	1
8	A2700-46	SPROCKET ASSEMBLY	1

Motor And Chain Guide Assembly



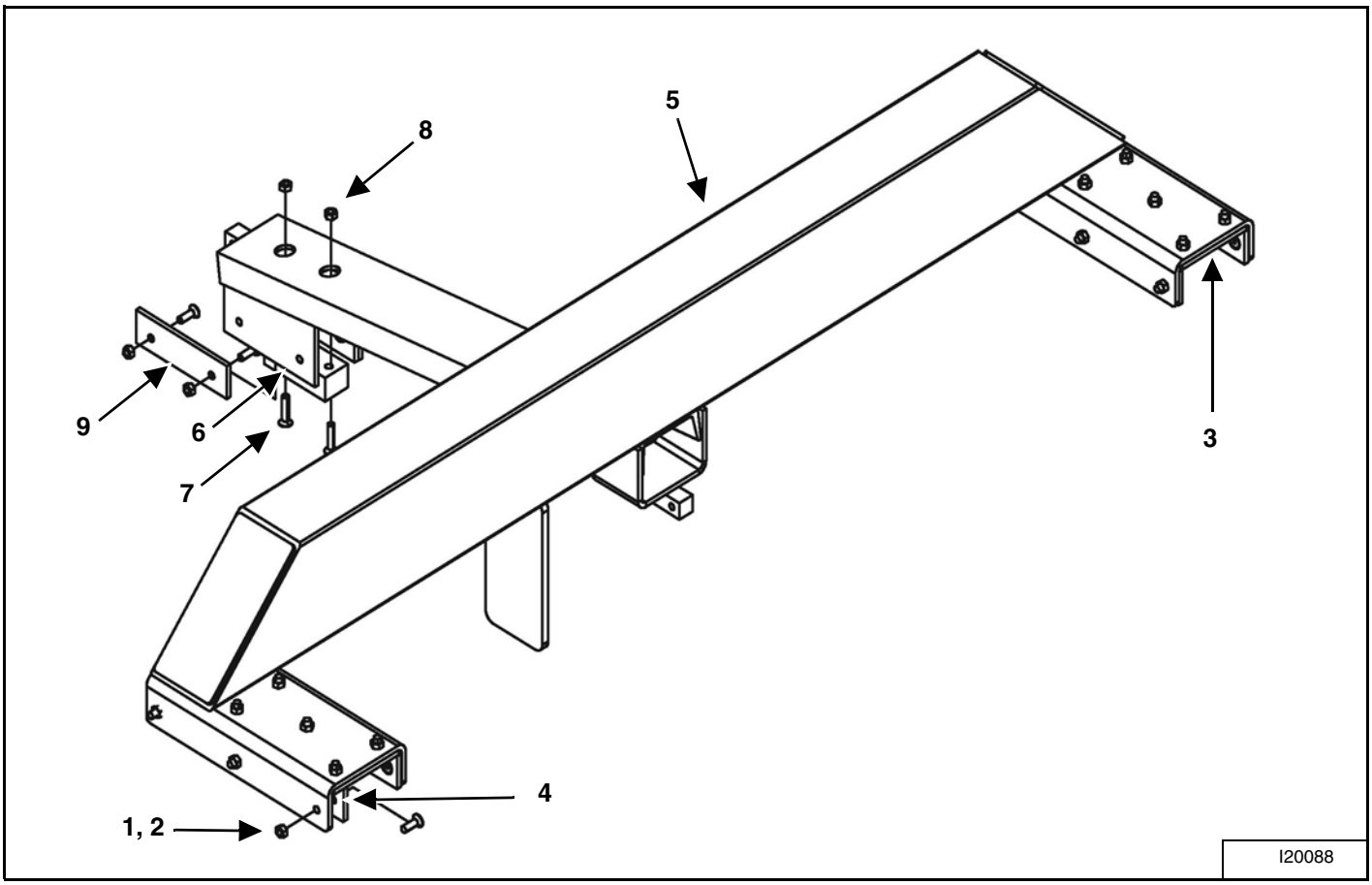
ITEM	PART NUMBER	DESCRIPTION	QTY
1	I100180	U-BOLT, VALVE MOUNT	2
2	813663	LOCK NUT, (STEEL) 0.500” NC GRCPL	8
3	81620	BOLT, HEX 0.500” NC x 1.25” GR5 PL	8
4	84048	FLAT WASHER, 0.500” SAE Bs PL	16
5	812364	LOCK NUT, (STEEL) 0.500” NC GRB PL	8
6	I20091	CHAIN GUIDE RAIL WELDMENT	1

Tipping Frame And Pusher Assembly



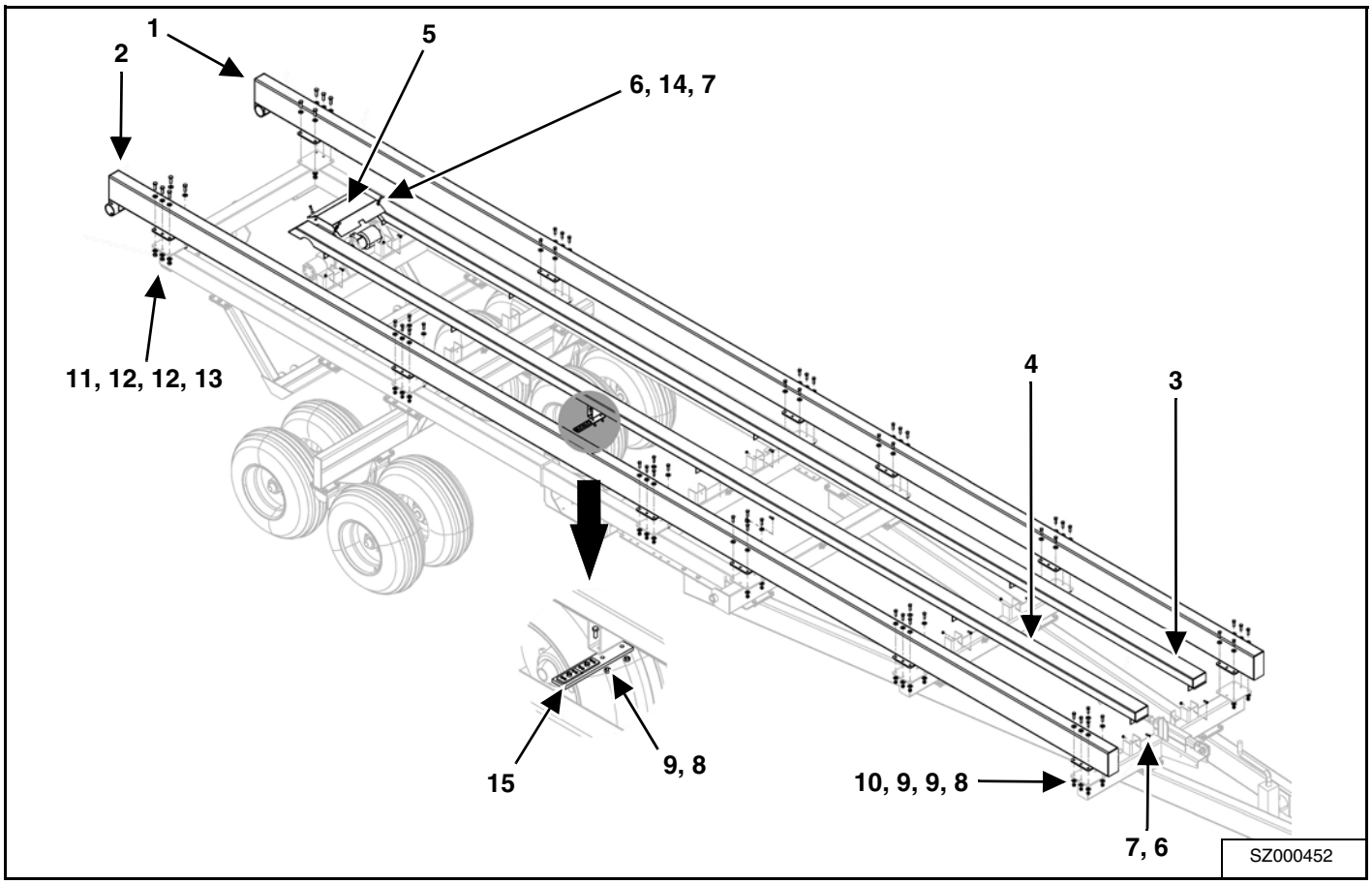
ITEM	PART NUMBER	DESCRIPTION	QTY
1	I20094	PIVOT TUBE WELDMENT	2
2	I20076	PIVOT CONNECTOR TUBE WELDMENT	1
3	I20077	TIPPING FRAME ASSY	1
4	C2736-00	LH BALE EXTENSION SLEEVE	1
5	C2737-00	RH BALE EXTENSION SLEEVE	1
6	E2723-00	TAIL STOP	4
7	812768	BOLT, HEX 0.500” NC x 1.25” GR8 PL	4
8	813663	LOCK NUT, (STEEL) 0.500” NC GRCPL	8
9	86171	BOLT, HEX 0.375” NC x 1.25”	8
10	812363	LOCK NUT, (STEEL) 0.375” GRB PL	8
11	984077	JAM NUT, HEX 0.500” NC GR2PL	8
12	I20073	RH PIVOT HOLDER	1
13	E2791-00	SPLIT BUSHING UHMW	2
14	C2875-00	LH PIVOT HOLDER	1
15	813729	BOLT, HEX 0.625” NC x 2.00” L9 BOLT	24
16	813730	FLAT WASHER, 0.625” L9 PL	48
17	813731	LOCK NUT, 0.625” NC PL	24
18	I20088	BALE PUSHER COMPLETE ASSY	1
19	SZ000563	CHAIN ROLLER #80	1
20	813643	CONNECTOR LINK HD C2080	2
21	C2853-00	FRONT SPROCKET SHIELD	1
22	81549	BOLT, HEX 0.313” NC x 0.75” GR5 PL	6
23	812362	LOCK NUT, (STEEL) 0.313” NC GRBPL	4
24	813547	SET SCREW, SQHDCUP 0.500” NC	8
25	814481	PROXIMITY SENSOR HARNESS ASSEMBLY	2
26	83000031	TIPPING PROXIMITY SENSOR BRACKET	1
27	87553	BOLT, HEX 0.500” NC x 1.75” GR5 PL	4
28	SZ000663	GREASE FITTING, 1/8” - 27 NPT 90 DEG	2
29	909277	MANUAL HOLDER, 3 1/2” x 12”	1
30	81546	FLAT WASHER, 5/16” (PL)	2
31	84541	LOCK NUT, (NYLON) 0.313” NC GRB PL	2

Pusher Assembly (# I20088)



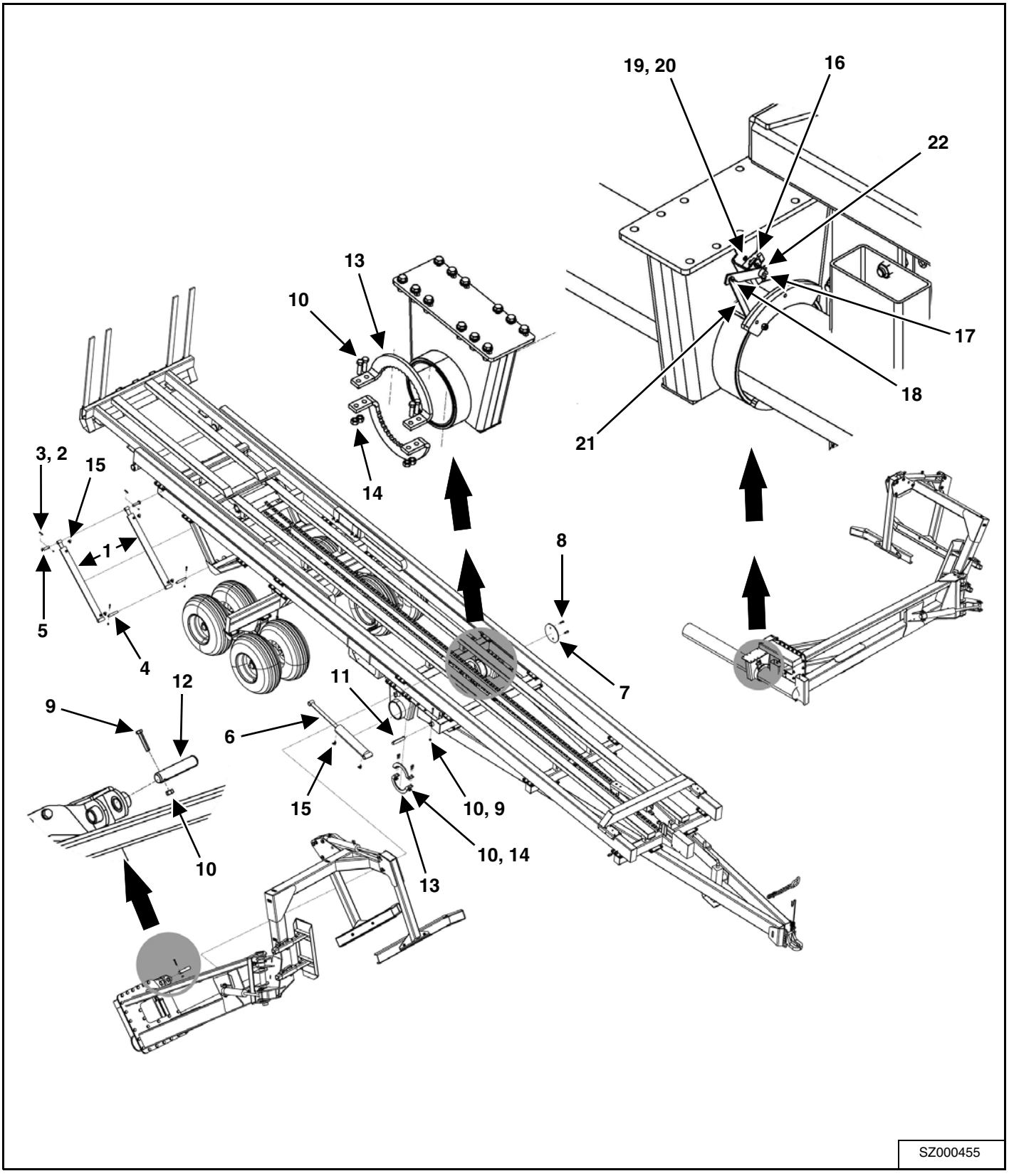
ITEM	PART NUMBER	DESCRIPTION	QTY
1	813558	SCREW, MACHINE M8 x 20 FLHD BRASS	26
2	813561	NUT, HEX M8 BRASS	26
3	E2749-00	TOP SLIDER	2
4	E2750-00	SIDE SLIDER	4
5	I20080	BALE PUSHER WELDMENT 4480	1
6	E2792-00	TOP SLIDER PUSHER REAR	1
7	813543	SCREW, MACHINE 0.313 NC x 1.50” FLHD	2
8	812362	LOCK NUT, 0.313 NC GRBPL (STEEL)	2
9	E2794-00	SIDE SLIDER PUSHER REAR	2

Carrier Beam And Track Assembly



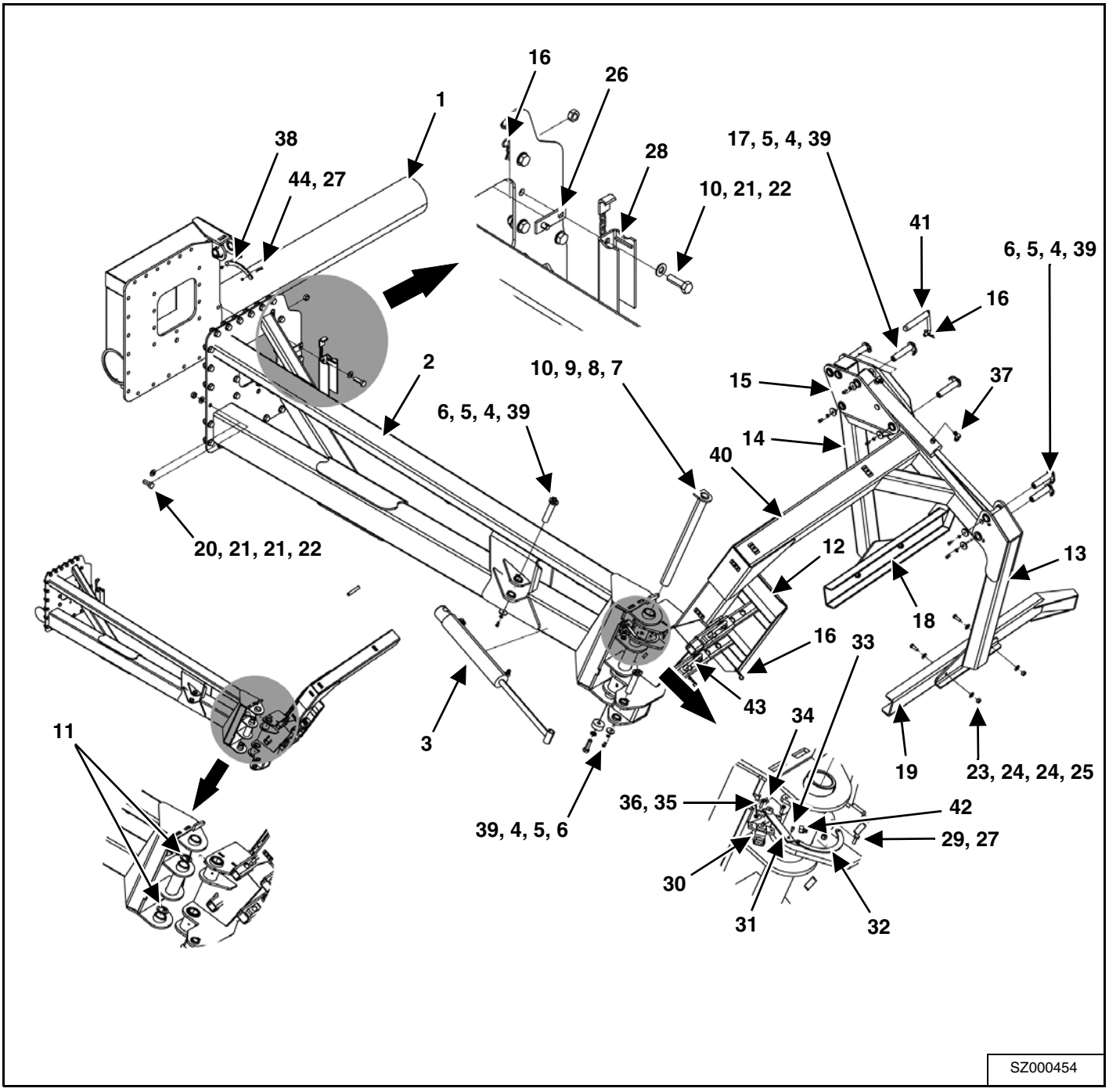
ITEM	PART NUMBER	DESCRIPTION	QTY
1	I20079	LEFT CARRIER BEAM	1
2	I20078	RIGHT CARRIER BEAM	1
3	C2706-00	LEFT SLIDER BEAM	1
4	C2766-00	RIGHT SLIDER BEAM	1
5	E2776-00	REAR SPROCKET SHIELD	1
6	86170	BOLT, HEX 0.375” UNC x 1.0” GR5 PL	16
7	812363	LOCK NUT, (STEEL) 0.375” GRB PL	16
8	967274	BOLT, HEX 0.500” NC x 1.50” GR8 PL	49
9	84048	FLAT WASHER, 0.500” SAE Bs PL	98
10	813663	LOCK NUT, (STEEL) 0.500NC GRCPL	49
11	967285	BOLT, HEX 0.625” NC x 1.75” GR8 PL	10
12	812639	FLAT WASHER, 0.625” SAE BS PL	20
13	812482	LOCK NUT, (STEEL) 0.625” NC GRB PL	10
14	81570	FLAT WASHER, 0.375” ST HS PL	4
15	C2858-00	HARD LINE LIFT	1

Tipping Frame And Arm Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	25106	CYLINDER, 3.5” x 36.0” INL	2
2	812363	LOCK NUT, (STEEL) 0.375” GRB PL	4
3	811795	BOLT, HEX 0.375” NC x 2.00” GR5 PL	4
4	E2912-00	PIN / HYDRAULIC CYLINDER	2
5	C2893-00	CYLINDER ROD PIN	2
6	24879	CYLINDER, 4.0” x 18.0” INL	1
7	B2724-00	END CAP LH / PIVOT ARM	1
8	967285	BOLT, HEX 0.625” NC x 1.75” GR8 PL	2
9	81626	BOLT, HEX 0.500” NC x 2.75” GR5 PL	2
10	812364	LOCK NUT, (STEEL) 0.500” NC GRB PL	10
11	E2733-00	MAIN CLEVIS PIN	1
12	E2732-00	CYLINDER PIN MAIN ARM LIFT	1
13	I100225	STOP PLATE UHMW PIVOT ARM	4
14	87553	BOLT, HEX 0.500” NC x 1.75” GR5 PL	8
15	811414	90° ELBOW, 3/4” MORB x 3/4” MJIC	6
16	86038881	SENSOR-INCH PEDAL	1
17	83000037	ROTARY SENSOR LEVER WELDMENT	1
18	83000038	RIVET, FLAT HEAD (STEEL)	1
19	00044510	SCREW, M5 x 16	2
20	86511996	LOCK NUT, (NYLON) M5 CLASS 8 PL	2
21	83000033	ROTARY SENSOR LINK, LIFT ARM	1
22	00050714	SET SCREW, HEX SKT, 10-24 x 3/16” PL	1

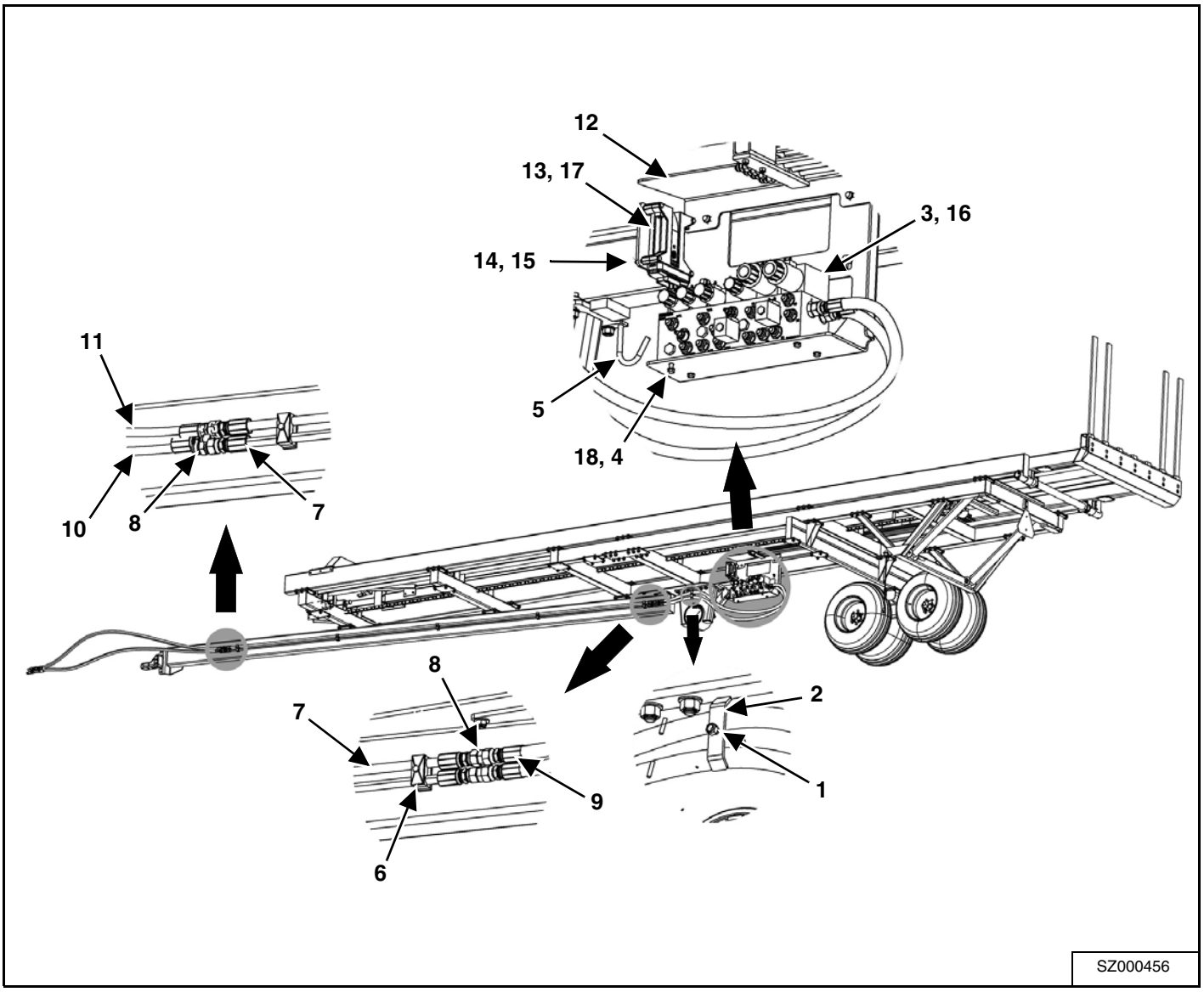
Arm Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	I20067	PIVOT ARM WELDENT	1
2	I20060	LIFT ARM WELDENT	1
3	24968	CYLINDER, 3.0” x 16.0” ASSEMBLY INLAND	2
4	81593	LOCK WASHER, 0.375”	7
5	114825	PIN CAP, 1.75” OD x 0.41” ID x 0.25” PL	7

6	I20070	WELDMENT 1.25” DIA x 6.25” LG	4
7	I20075	PIVOT PIN WELDMENT	1
8	I100222	CAP PIVOT PIN	1
9	81701	LOCK WASHER, 3/4” (PL)	1
10	813515	BOLT, HEX 0.750” NC x 2.50” GR8 PL	2
11	814355	SHIM, 2.0” ID x 2.75” OD x 0.188” POLYU	2
12	I20068	BALE STOP WELDMENT	1
13	I20062	RH GRAB ARM WELDMENT	1
14	I20064	LH GRAB ARM WELDMENT	1
15	I20066	GRAM ARM JOINT WELDMENT	1
16	12779	HAIRPIN CLIP #9	4
17	I20071	PIN WELDMENT 1.25” DIA x 6.75” LG	3
18	I20065	LH GRAB FINGER WELDMENT	1
19	I20063	RH GRAB FINGER WELDMENT	1
20	84467	BOLT, HEX 0.750” NC x 2.00” GR5 PL	27
21	84050	FLAT WASHER, 0.750” SAE BS PL	56
22	813648	LOCK NUT, (STEEL) 0.750” NC GRC PL	28
23	84277	BOLT, HEX 0.500” NC x 1.50” GR5 PL	4
24	84048	FLAT WASHER, 0.500” SAE BS PL	8
25	812364	LOCK NUT, (STEEL) 0.500” NC GRB PL	4
26	C2863-00	LIFT CYLINDER LOCK HOLDER	1
27	81922	LOCK NUT, (NYLON) 0.25” NC GRB PL	3
28	I20074	LIFT CYLINDER LOCK WELDMENT	1
29	81525	BOLT, HEX 0.250” NC x 0.750” GR5 PL	1
30	86038881	SENSOR-INCH PEDAL	1
31	83000037	ROTARY SENSOR LEVER WELDMENT	1
32	83000034	ROTARY SENSOR LINK, SWING ARM	1
33	83000038	RIVET, FLAT HEAD (STEEL)	1
34	00050714	SET SCREW, HEX SKT, 10-24 x 3/16” PL	1
35	00044510	SCREW, M5 x 16	2
36	86511996	LOCK NUT, (NYLON) M5 CLASS 8 PL	2
37	811414	90° ELBOW, 3/4” MORB x 3/4” MJIC	4
38	I100221	LIFT ARM SENSOR HOLD DOWN	1
39	84072	BOLT, 3/8” x 3/4” HEX GR5 PL	7
40	I20061	ROTATE ARM WELDMENT	1
41	SZ000662	PIN ASSEMBLY REMOVEABLE	1
42	SZ000663	GREASE FITTING, 1/8” - 27 NPT 90 DEG	2
43	I20069	LOCKING PIN BALE STOP WELDMENT	2
44	811631	BOLT, 1/4” x 1 1/2” HEX GR5 (PL)	2

Main Hydraulic Line Assembly

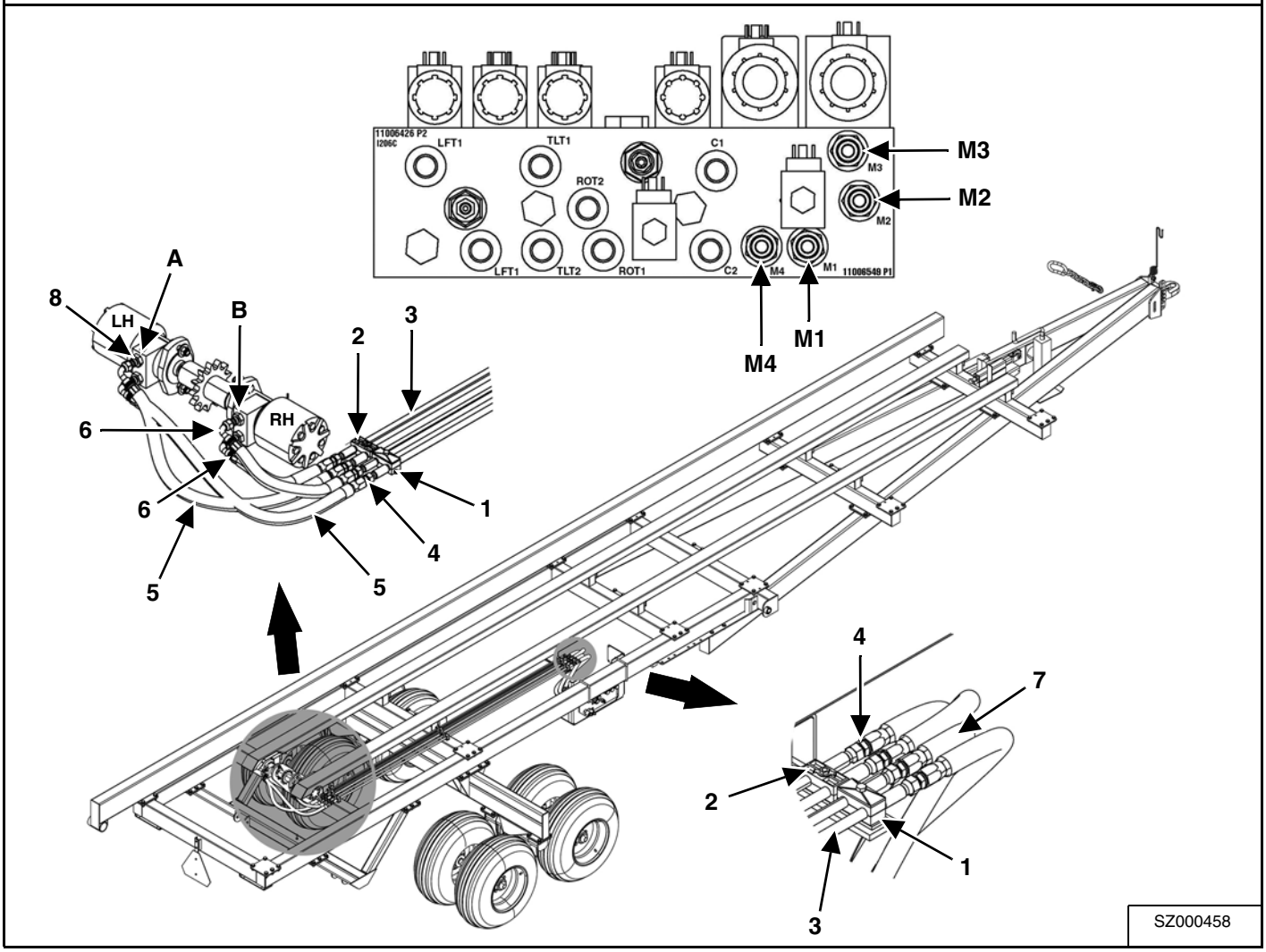


ITEM	PART NUMBER	DESCRIPTION	QTY
1	812363	LOCK NUT, (STEEL) 0.375” GRB PL	1
2	I100113	HOSE CLAMP, 3/4”	1
3	83000046	VALVE MANIFOLD ASSEMBLY	1
4	86170	BOLT, HEX 0.375” NC x 1.00” GR5 PL	4
5	83000025	HOSE HOLDER WELDMENT	1
6	A2700-49	3/4” STEEL LINE MOUNT ASSEMBLY	5
7	814095	3/4” x 204” HYDRAULIC HARD LINE	2
8	814140	ADAPTOR, STRAIGHT 1-1/16” MJIC-MJIC	4
9	115608	HOSE, 3/4” x 86” - 1-1/16” SWFJIC - SWFJIC	2
10	I20085	HOSE, 3/4” x 84” ASSEMBLY (RETURN)	1
11	I20084	HOSE, 3/4” x 84” ASSEMBLY (PRESSURE)	1
12	83000047	COVER SHIELD, MANIFOLD	1
13	814100	CONTROLLER	1
14	967193	BOLT, HEX 0.250” x 2.50” GR5 PL	4
15	84498	LOCK NUT, 1/4” GRB PL	4
16	83000016	WIRE HARNESS RELAY BANK	1
17	83000045	WIRE HARNESS BALE WAGON	1
18	81593	LOCK WASHER, 3/8” PL	4

Pusher Motor Hydraulic Assembly

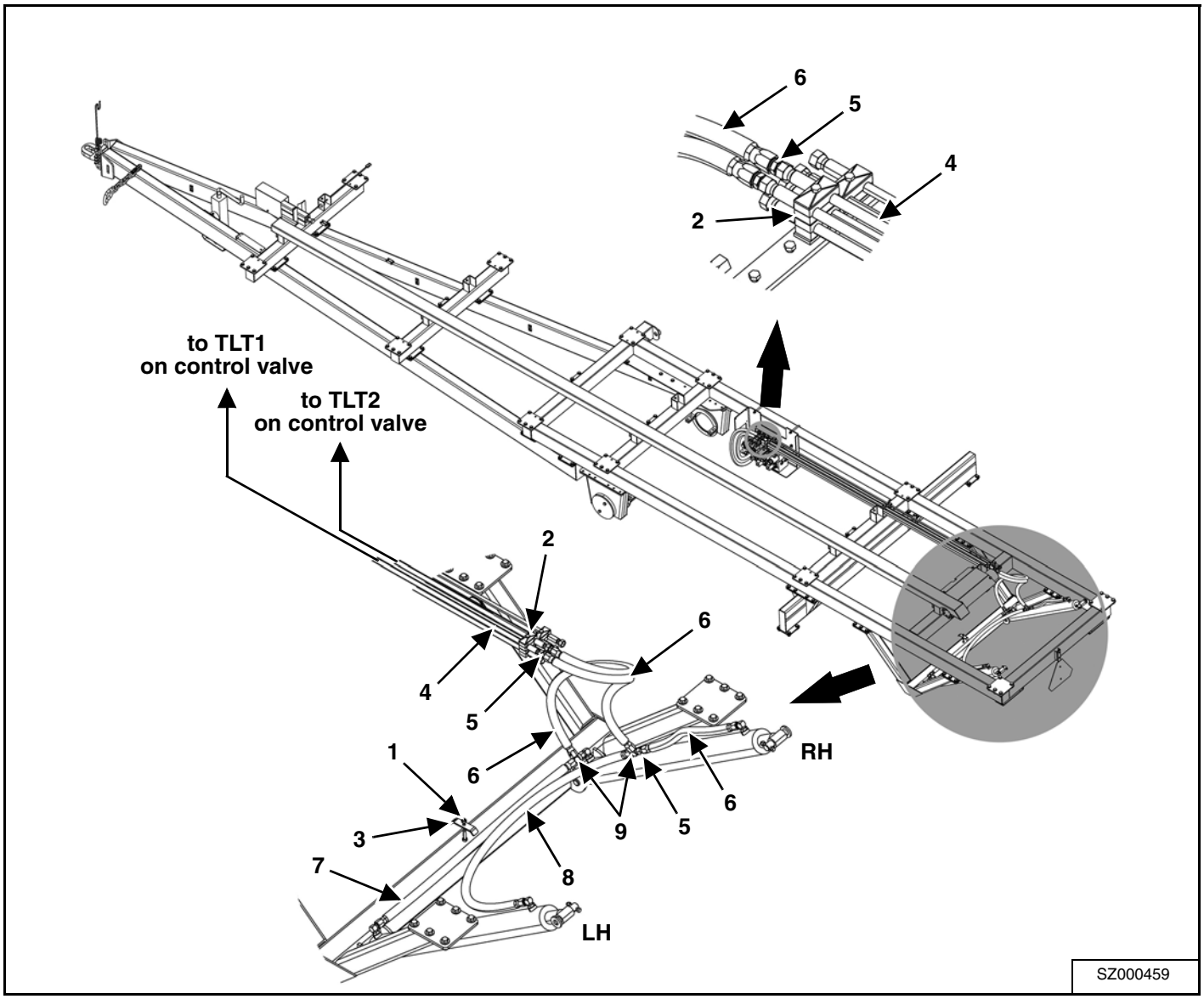
ITEM 5 Hydraulic Hose Routing - One hose connects to the A port on the LH motor and to the M4 port on the valve. One hose connects to the B port on the LH motor and to the M2 port on the valve.

ITEM 6 Hydraulic Hose Routing - One hose connects to the A port on the RH motor and to the M1 port on the valve. One hose connects to the B port on the RH motor and to the M3 port on the valve.



ITEM	PART NUMBER	DESCRIPTION	QTY
1	A2700-27	1/2” STEEL LINE MOUNT ASSEMBLY	3
2	A2700-28	STACKING MOUNT ASSEMBLY	3
3	814094	HYDRAULIC HARDLINE 1/2” x 108”	4
4	886704	ADAPTOR, STRAIGHT 3/4” MJIC - MJIC	8
5	116011	HOSE, 1/2” x 38” - 3/4” SWFJIC x 3/4” SWFJIC - 90	2
6	815981	HOSE, 1/2” x 22” - 3/4” SWFJIC x 3/4” SWFJIC - 90	2
7	812449	HOSE, 1/2” x 36” - 3/4” - 3/4” SWFJIC	4
8	886897	ADAPTOR, STRAIGHT 7/8” MORB - 3/4” MJIC	4

Tipping Frame Hydraulic Assembly

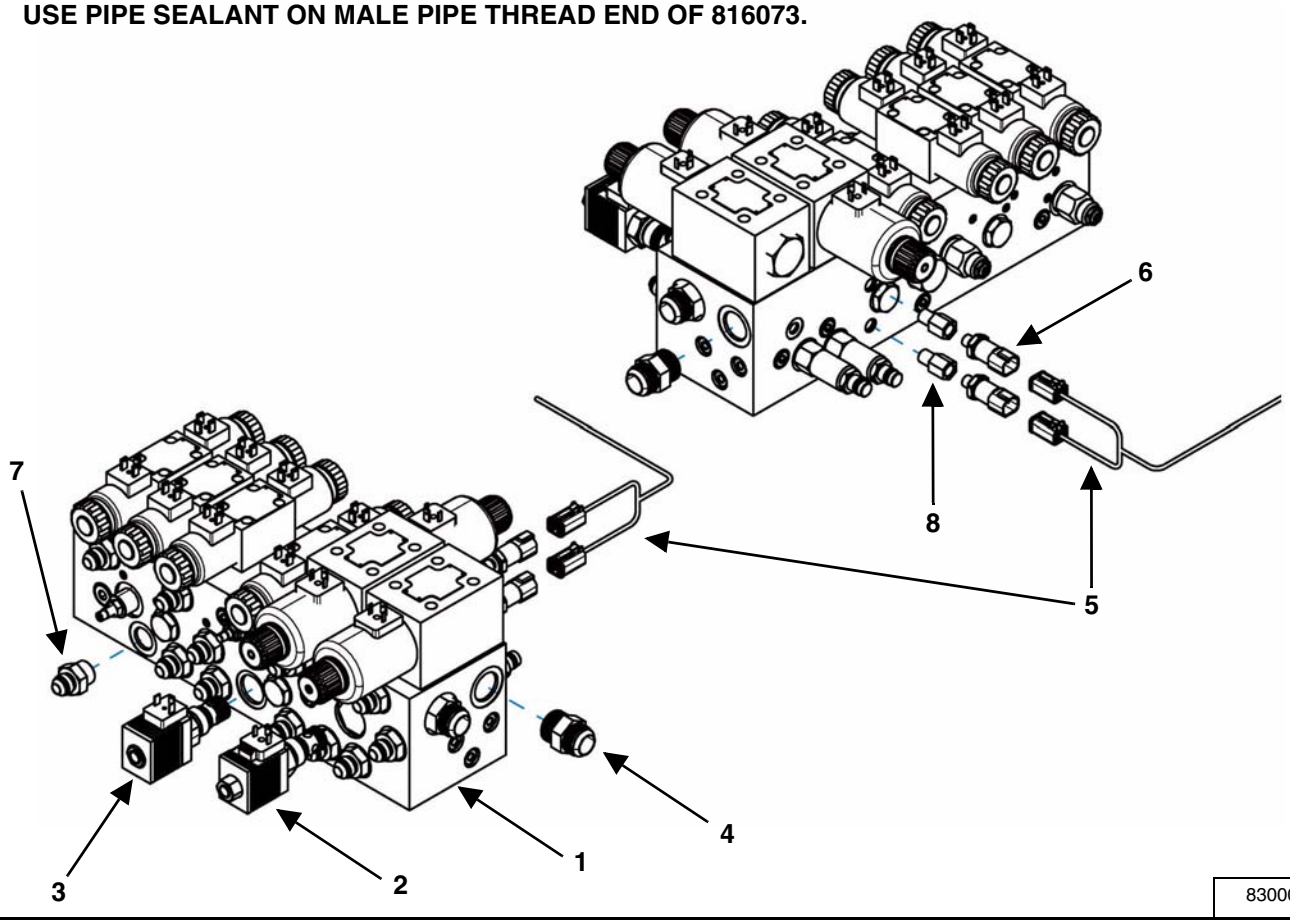


ITEM	PART NUMBER	DESCRIPTION	QTY
1	812363	NUT LOCK (STEEL) 0.375 GRB PL	1
2	A2700-27	1/2” STEEL LINE MOUNT ASSEMBLY	3
3	I100113	HOSE CLAMP 3/4”	1
4	814094	HYDRAULIC HARDLINE 1/2” x 108”	2
5	886704	ADAPTOR, STRAIGHT 3/4” MJIC / MJIC	5
6	812449	HOSE 1/2” x 36” - 3/4” - 3/4” SWFJIC	5
7	29164	HOSE 1/2” x 44” - 3/4” - 3/4” SWFJIC	1
8	29166	HOSE, 1/2” x 77” - 3/4” - 3/4” SWFJIC	1
9	812786	TEE, 3/4” MJIC x RUN 3/4” SWFJIC	2

Valve Bank

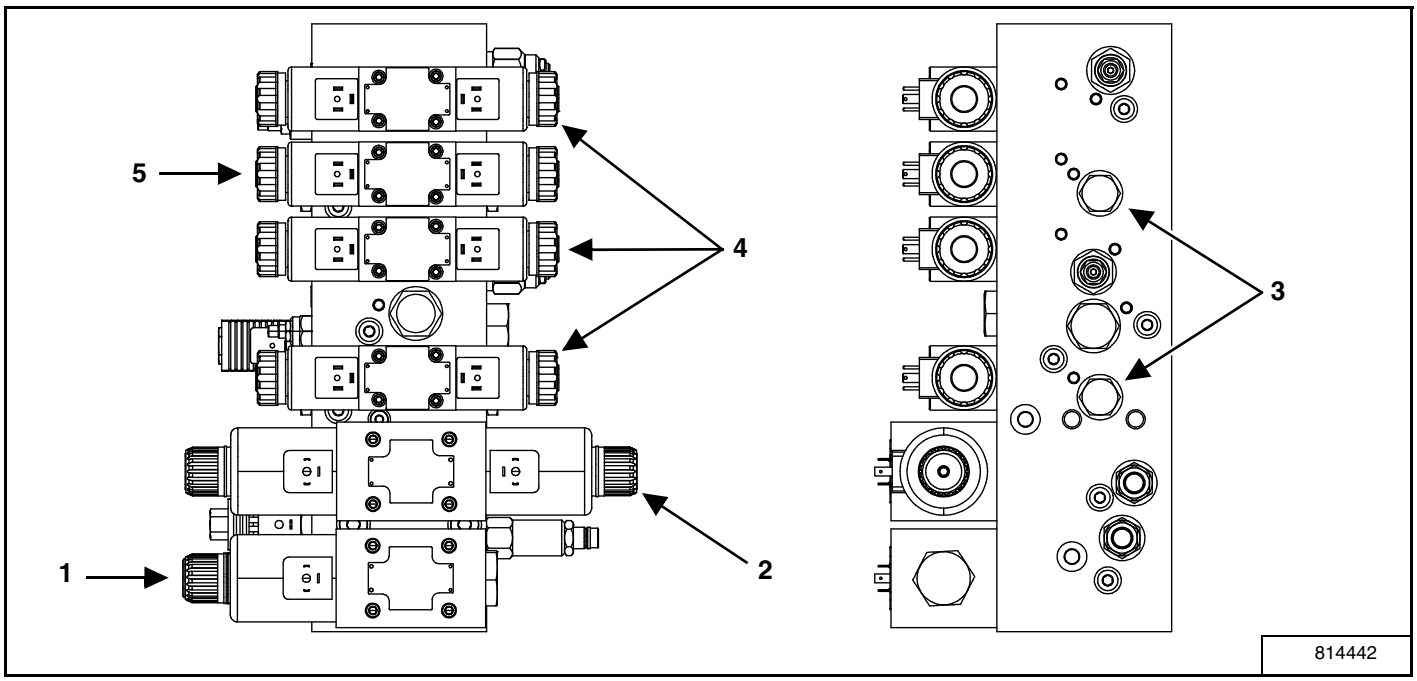
NOTE

1. **ON 816018: PLUG CONNECTOR LABEL “OPEN” TO TOP SENSOR AND CONNECTOR LABELED “CLOSED” TO BOTTOM SENSOR.**
2. **USE PIPE SEALANT ON MALE PIPE THREAD END OF 816073.**



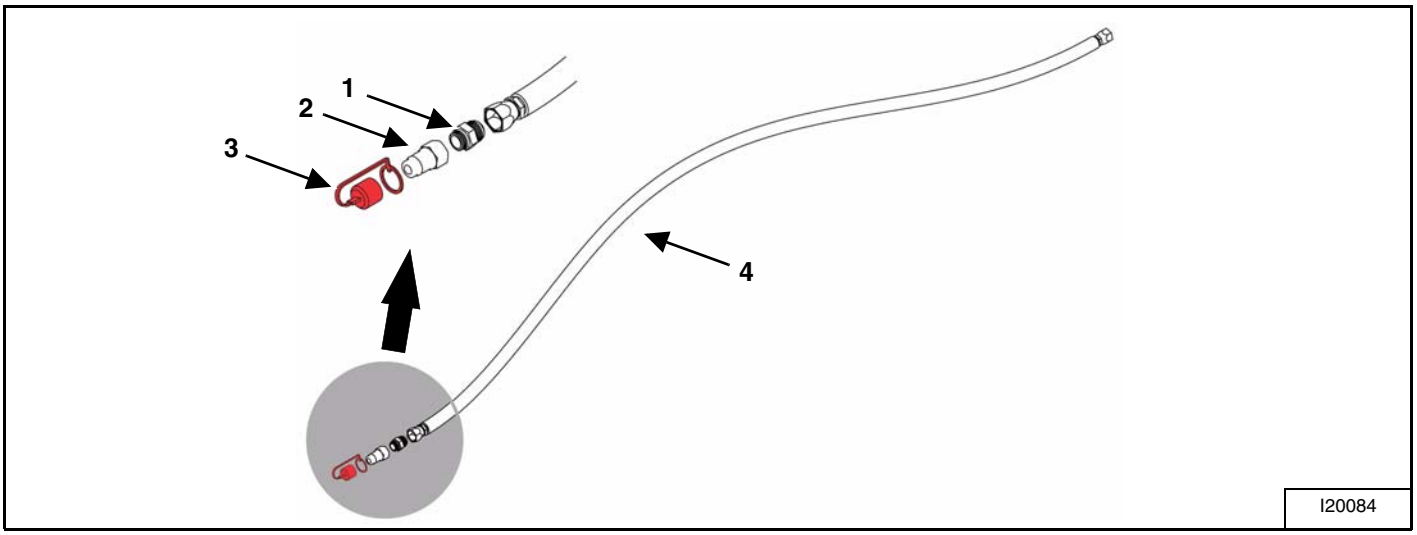
ITEM	PART NUMBER	DESCRIPTION	QTY
1	814442	VALVE BANK	1
2	SZ000597	SQBM OPEN / CLOSE SERVICE VALVE	1
	SZ000599	VALVE COIL, O / C - F / S, SQBM	1
3	SZ000598	SQBM FAST / SLOW SERVICE VALVE	1
	SZ000599	VALVE COIL, O / C - F / S, SQBM	1
4	812661	ADAPTOR, STRAIGHT 1 1/16” MORB x 1-1/6” MJIC	2
5	816018	PRESSURE SENSOR JUMPER HARNESS	1
6	816019	5V PRESSURE SENSOR	2
7	886897	ADAPTOR, STRAIGHT 7/8” MORB x 3/4” MJIC S	12
8	816073	ADAPTOR, STRAIGHT 1/4” MNPT x 7/16” FORB	2

Valve Block



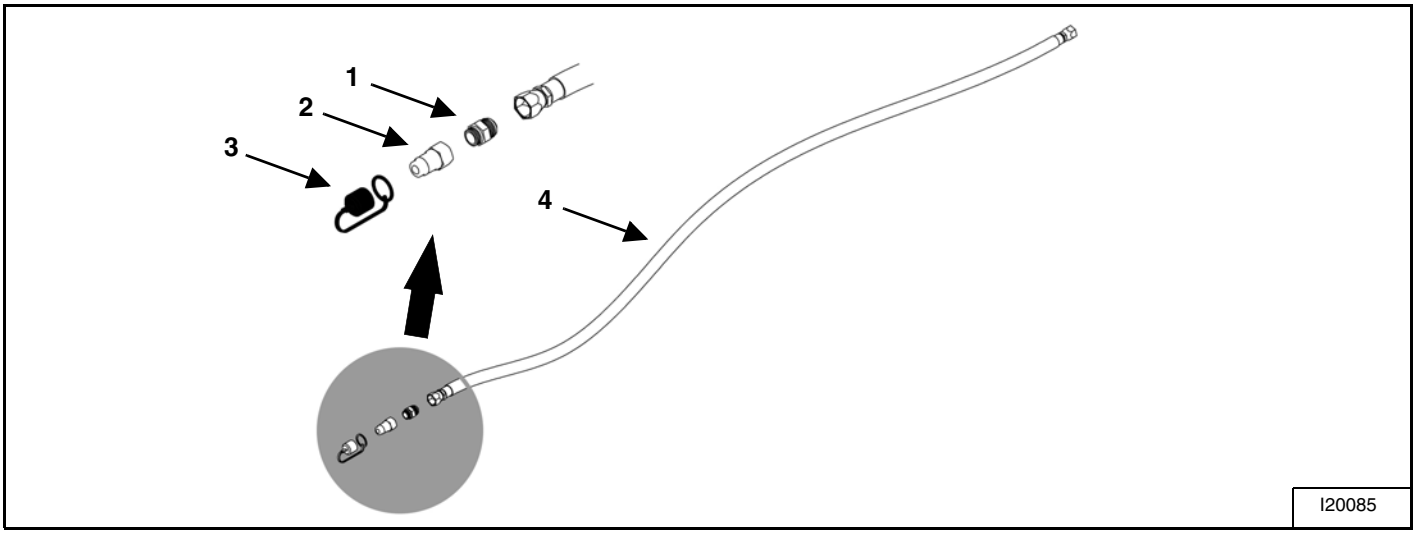
ITEM	PART NUMBER	DESCRIPTION	QTY
1	SZ000526	DCV05-2C11 / 01200E1	1
	SZ000527	COIL	
	SZ000528	COIL NUT KIT	
	SZ000515	SEAL KIT	
	SZ000529	MTG SCREW KIT (1/4”-20 x 1.625” SHCS)	
2	SZ000530	DCV05-3Y11 / 01200E1	1
	SZ000527	COIL	
	SZ000528	COIL NUT KIT	
	SZ000515	SEAL KIT	
	SZ000529	MTG SCREW KIT (1/4”-20 x 1.625” SHCS)	
3	SZ000538	CV10-NP-5-B	2
	SZ000539	SEAL KIT	
4	SZ000531	DCV03-3Y11 / 01200E1	3
	SZ000532	COIL	
	SZ000533	COIL NUT KIT	
	SZ000514	SEAL KIT	
	SZ000534	MTG SCREW KIT (10-24 x 1.75” SHCS)	
5	SZ001142	DCV03-3Z11 / 01200E1	1
	SZ000529	MTG SCREW KIT	

Hydraulic Pressure Line Assembly



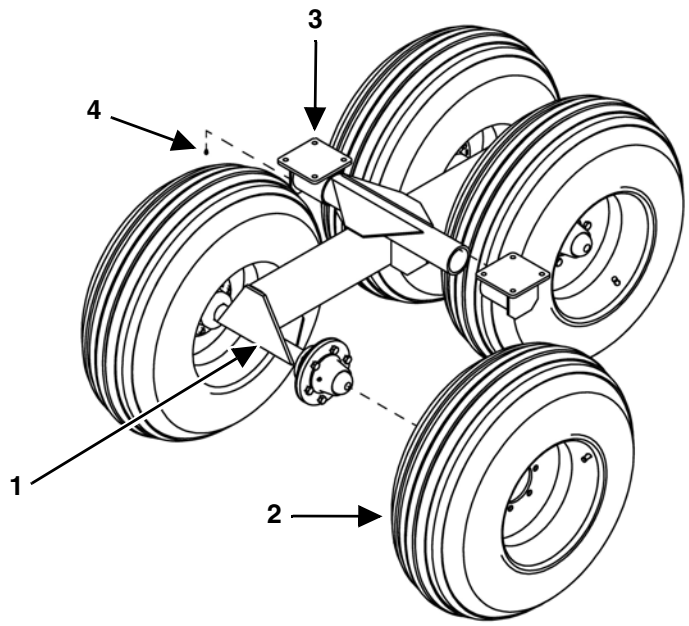
ITEM	PART NUMBER	DESCRIPTION	QTY
1	813208	ADAPTOR, STRAIGHT 1 1/16 MJIC x 7/8” MORB	1
2	815177	MALE TIP, 0.5 BODY 0.88” FORB BALL	1
3	813303	RED DUST CAP, 0.5”	1
4	115253	HOSE, 3/4” x 88” - 1-1/16 SWFJIC - SWFJIC	1

Hydraulic Return Line Assembly



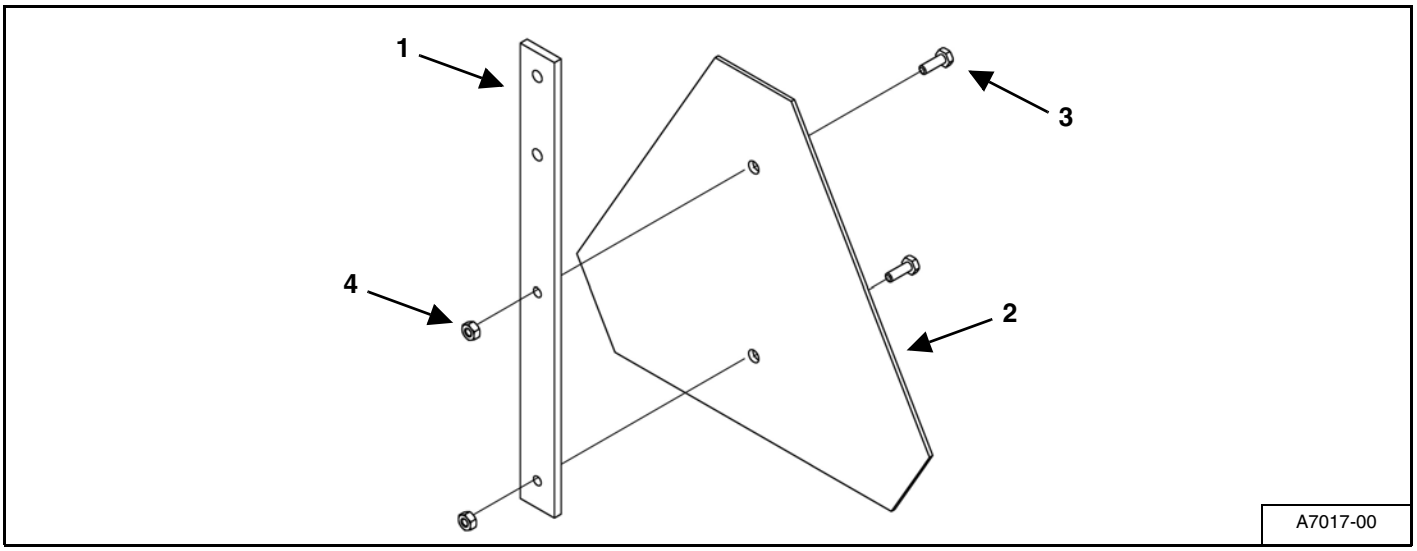
ITEM	PART NUMBER	DESCRIPTION	QTY
1	813208	ADAPTOR, STRAIGHT 1 1/16 MJIC x 7/8” MORB	1
2	815177	MALE TIP, 0.5 BODY 0.88 FORB BALL	1
3	813305	BLACK DUST CAP, 0.5”	1
4	115253	HOSE 3/4” x 88” 1-1/16 SWFJIC - SWFJIC	1

Tandem Axle Assembly



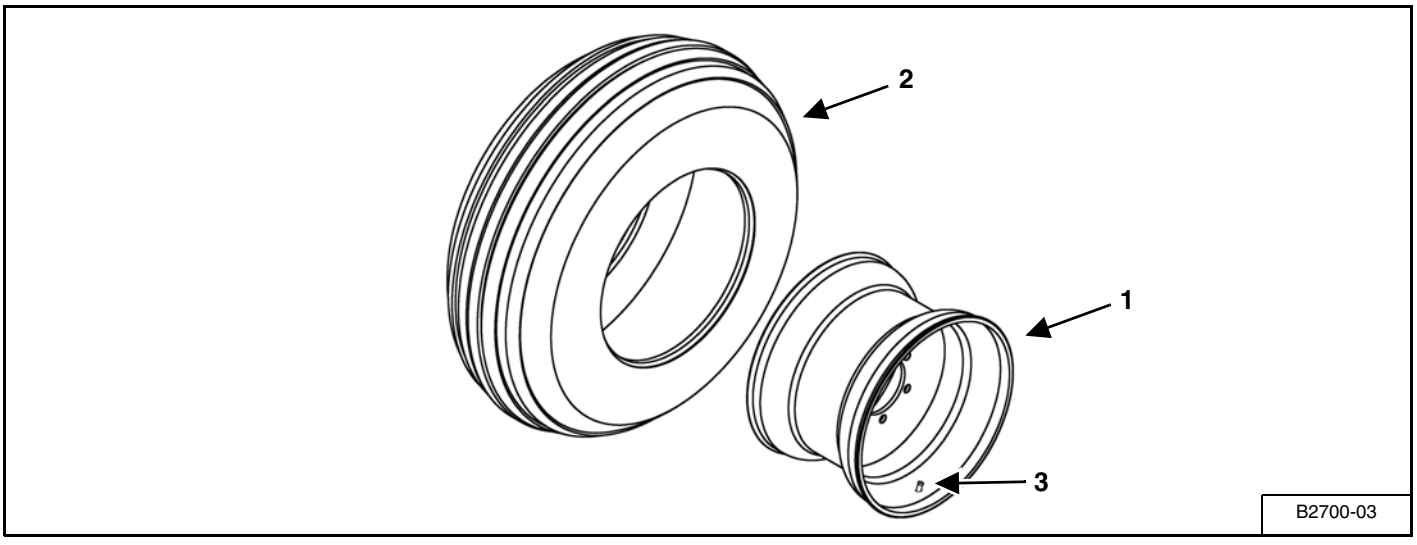
ITEM	PART NUMBER	DESCRIPTION	QTY
1	B2722-00	TANDEM AXLE ASSEMBLY	1
2	B2700-03	TIRE ASSEMBLY	4
3	C2322-00	BEARING AXLE WELDMENT	2
4	813646	GREASE FITTING 1/4” NF DRIVEN	2

SMV Sub-Assembly



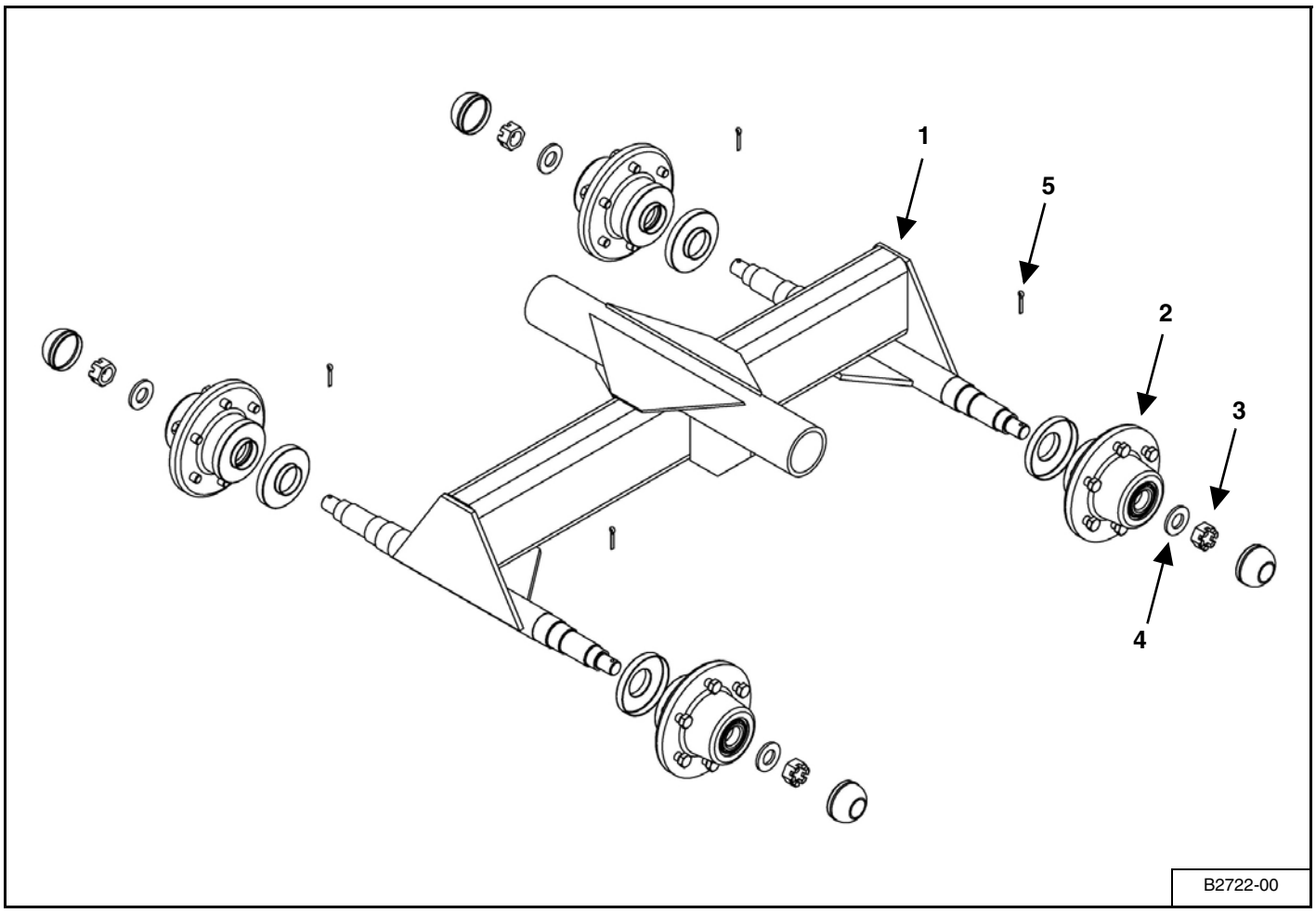
ITEM	PART NUMBER	DESCRIPTION	QTY
1	E2795-00	DECAL MOUNT SMV	1
2	967066	DECAL, SLOW MOVING VEHICLE SIGN	1
3	81525	BOLT, HEX 0.250” NC x 0.750” GR5 PL	2
4	84498	LOCK NUT, 1/4” (PL)	2

Tire Assembly / Hayliner



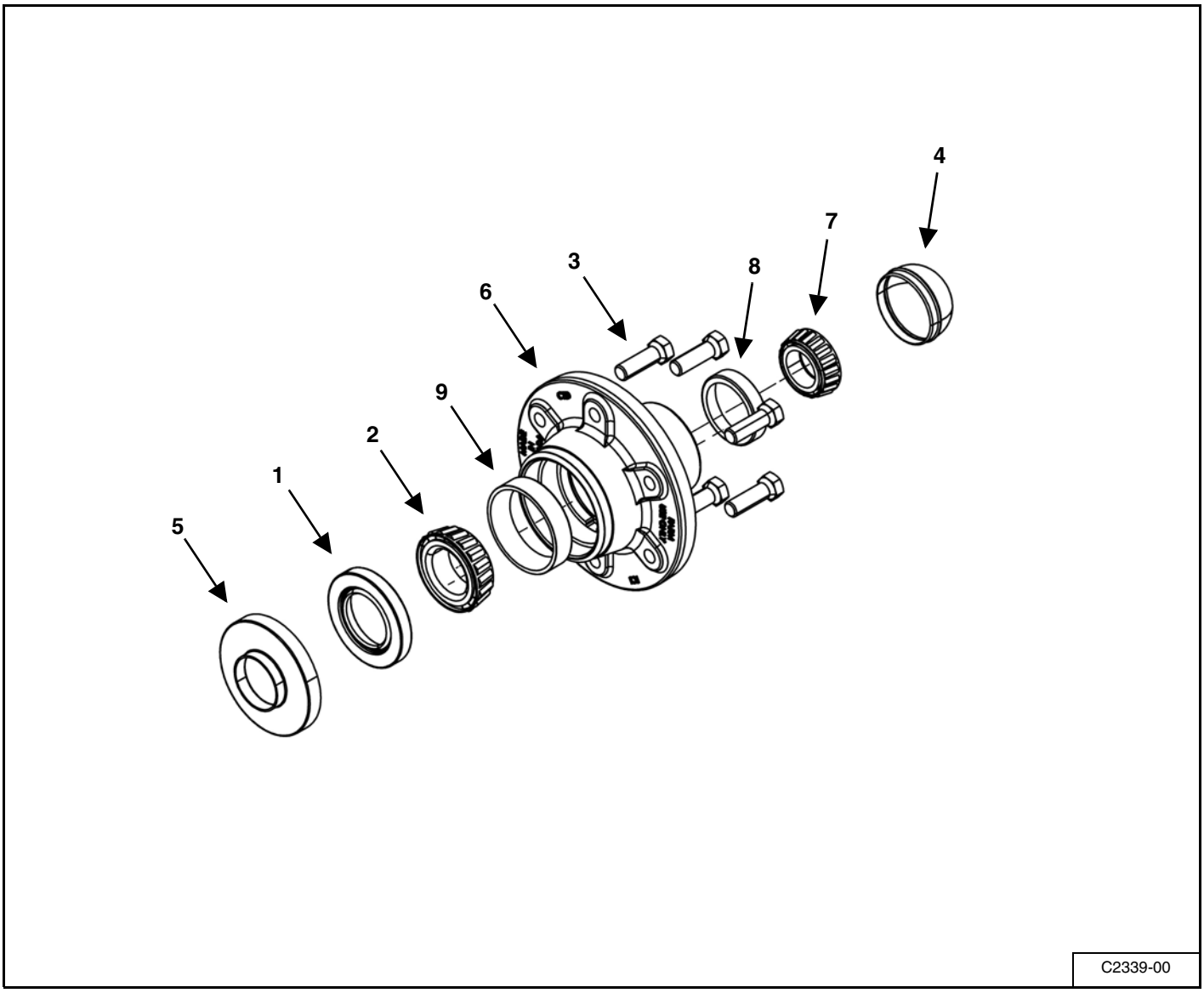
ITEM	PART NUMBER	DESCRIPTION	QTY
1	813655	RIM, 15 x 10LB x 6 BOLT P65	1
2	813657	TIRE, 12.5L x 15FI	1
3	813656	VALVE STEM / TUBELESS RIM	1

Tandem Axle Assembly



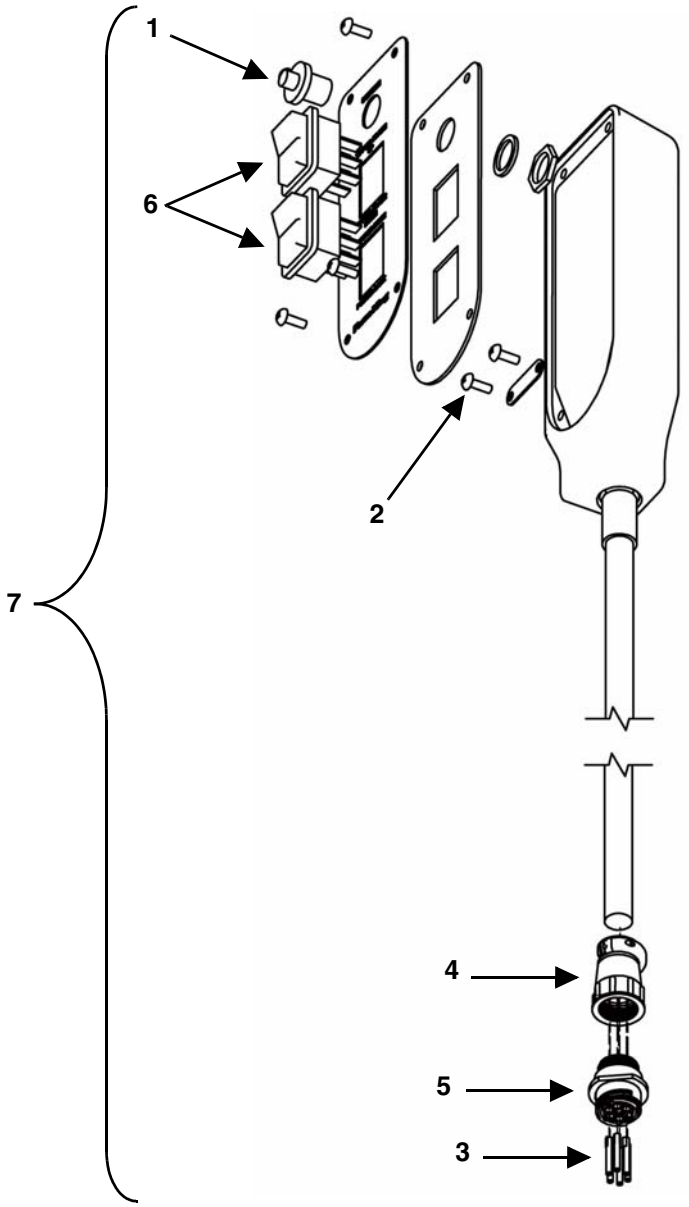
ITEM	PART NUMBER	DESCRIPTION	QTY
1	C2722-00	TANDEM AXLE WELDMENT	1
2	C2339-00	HUB, 6 BOLT	4
3	813673	CASTLE NUT, 1.00 NF (813654)	4
4	813651	FLAT WASHER, 2.0” X 1.03” X 0.19” W / HUB	4
5	81206	COTTER PIN, 0.188” x 1.50” BR	4

6 Bolt Hub Assembly



ITEM	PART NUMBER	DESCRIPTION	QTY
1	967204	OIL SEAL CTD-SE30	1
2	967208	BEARING CONE, (LM48548) OUTER	1
3	813653	BOLT, 0.563” NF x 1.75” (WB12) / HUB	6
4	813650	DUST CAP DC15	1
5	813649	DUST SHIELD DC16	1
6	813652	6 BOLT WHEEL HUB, (HA-618) W / BEARING CUP	1
7	967205	BEARING CONE, (25580) INNER	1
8	SZ100152	BEARING CUP, (LM48510), OUTER	1
9	SZ625520	BEARING CUP, 1-3/4” (25520), INNER	1

Control Handle Wiring Diagram

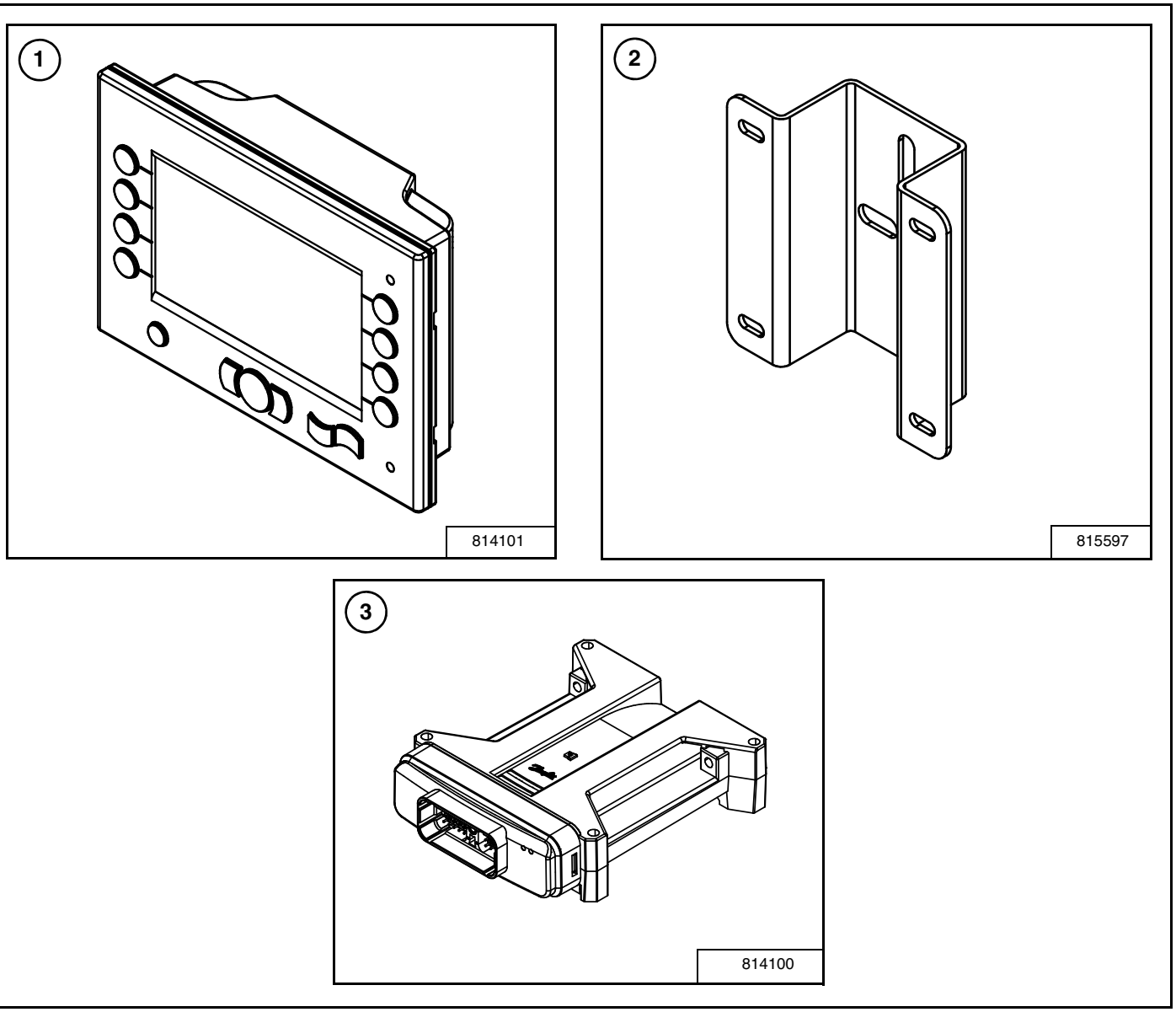


PIN	WIRE COLOR	FUNCTION
1	BLACK	COMMON
2	BROWN	SQUEEZE
3	VIOLET	TIP UP
4	RED	TIP DOWN
5	ORANGE	PUSH HOME
6	BLUE	PUSH BACK
7	N/A	N/A

I20093

ITEM	PART NUMBER	DESCRIPTION	QTY
1	22094	SWITCH HIGH PROFILE	1
2	-	SCREW, MACH 8-32 x 0.50” RD HD	6
3	-	6 814054 SOCKET CONNECTOR, 0.062 DIA (AMP 66101-2)	6
4	-	814142 CABLE CLAMP, STD SIZE (AMP 206966-1) 1	1
5	-	814262 RECEPTACLE, REVERSE SEX (211398-2)	1
6	815383	ROCKER SWITCH (ON) - OFF - (ON)	2
7	I20093	COMPLETE CONTROL HANDLE	1

Controller Components



ITEM	PART NUMBER	DESCRIPTION	QTY
1	814101	DISPLAY	1
2	815597	DISPLAT MOUNT	1
3	814100	CONTROLLER	1

NOTE: When ordering one of these for parts, provide the software revision level of the bale carrier. There are no serviceable or salvageable parts inside the controller or display.

SPECIFICATIONS

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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)
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)

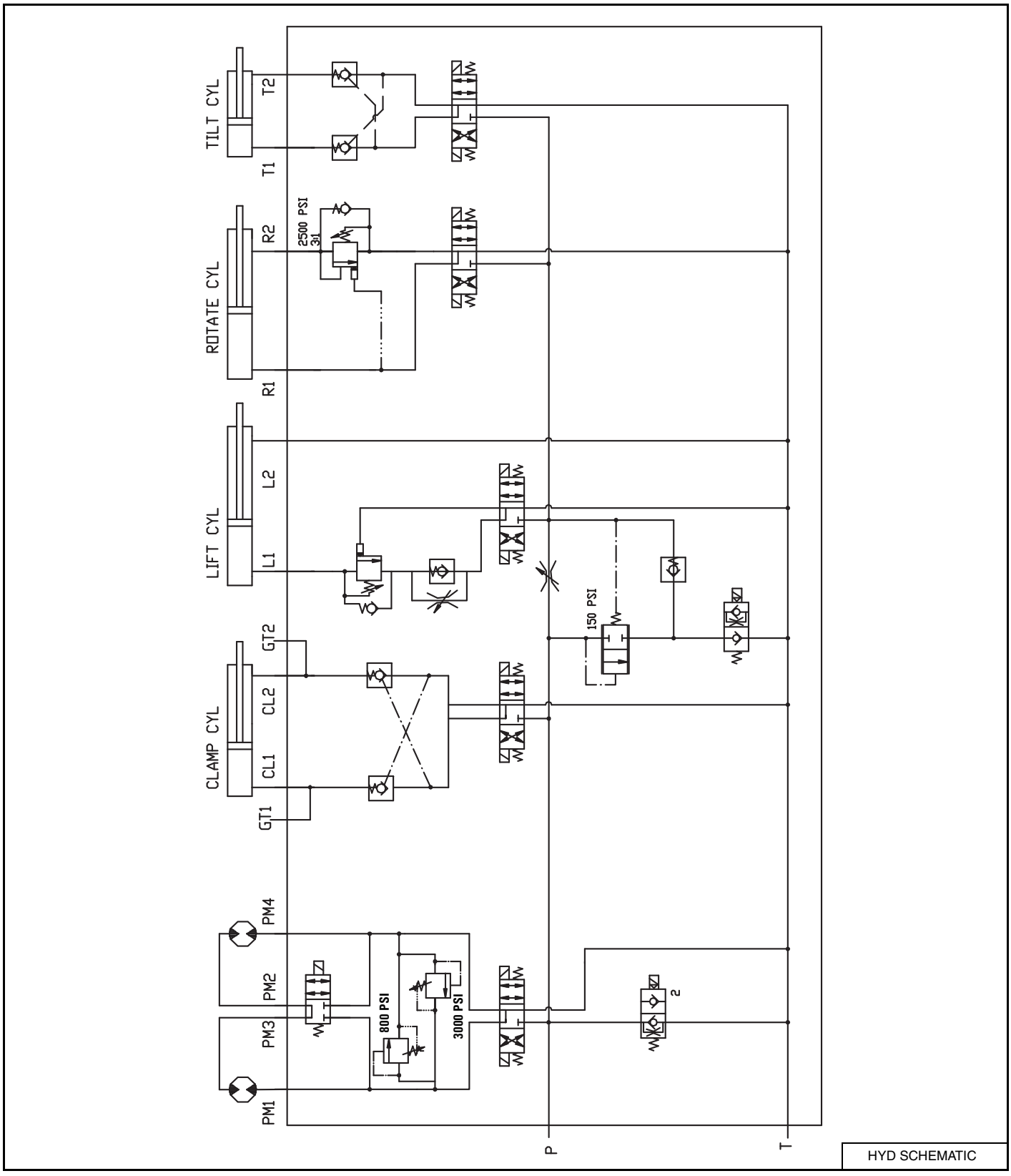
Performance

DESCRIPTION	4480
Weight (empty)	9200 lb. (4181 kg) (approx.)
Hitch Weight (empty)	1950 lb. (884 kg) (approx.)
Hitch Weight (maximum)	7500 lb. (3402 kg) (approx.)
Tires	12.5L x 15 - Load Range F
Hubs	6 Bolt Heavy Duty
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
Squeeze 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)

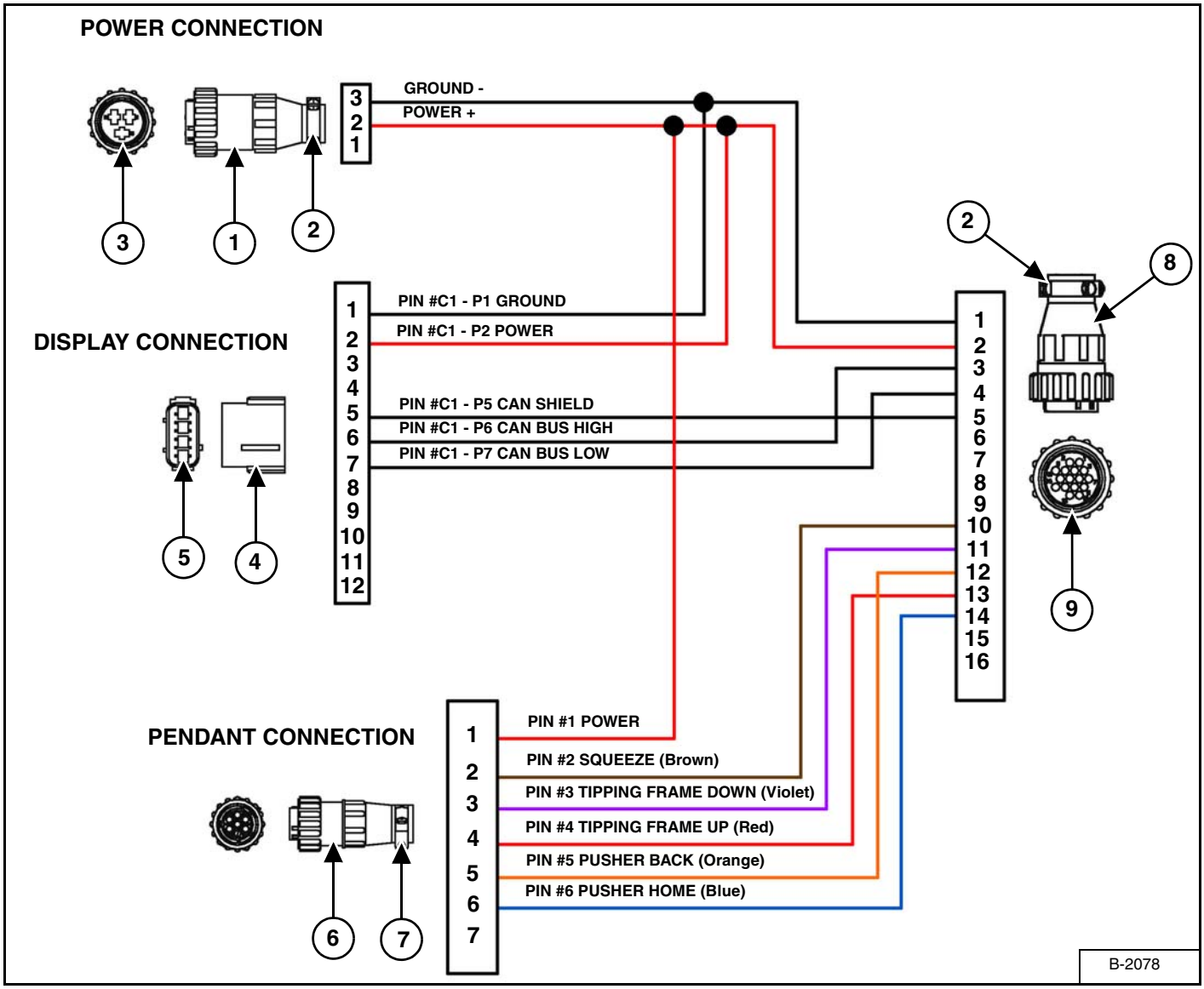
Load Capacity

DESCRIPTION	4480
Maximum Load	25,000 lb. (11,300 kg)
48” x 48” (122 x 122 cm) Bales	8 Bales (single row on carrier)
32” x 35” (81 x 90 cm) Bales	20 Bales (double row on carrier)
36” x 48” (91 x 122 cm) Bales	16 Bales (double row on carrier)

HYDRAULIC SCHEMATIC

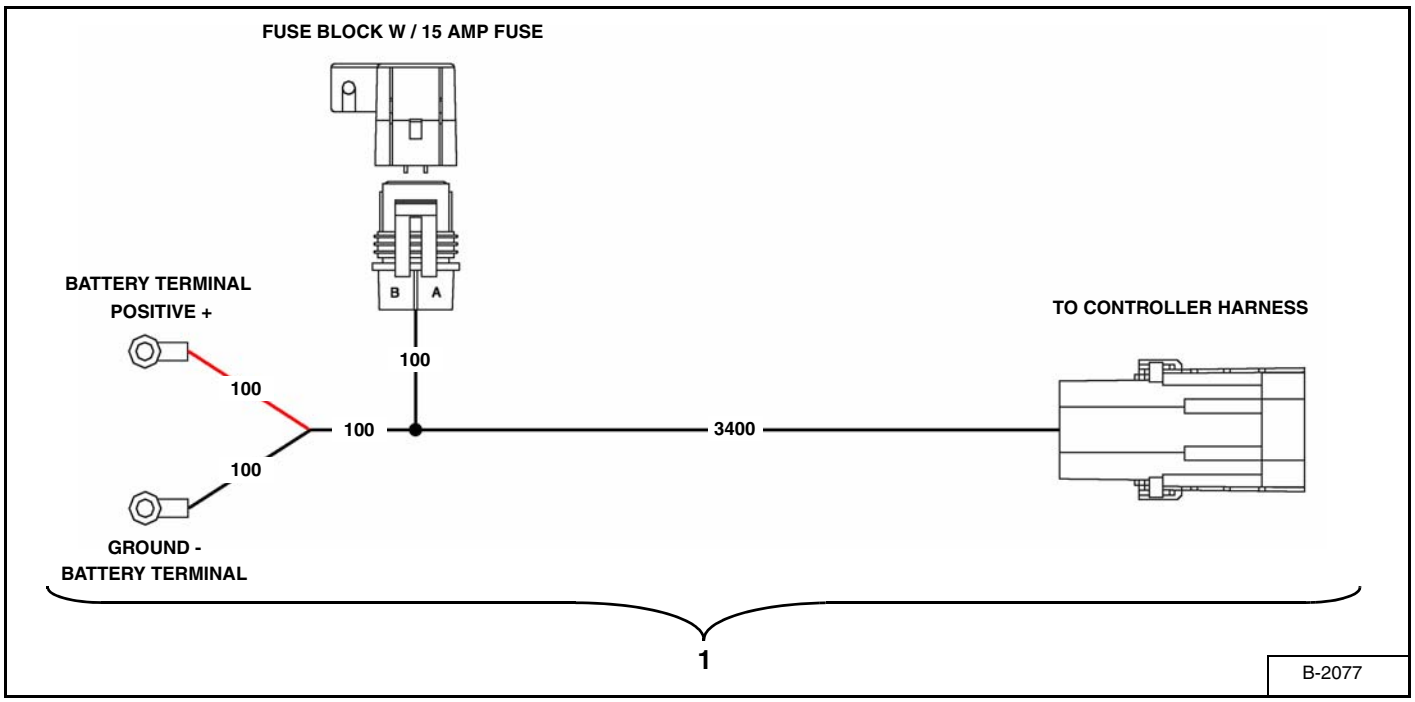


CAB HARNESS DIAGRAM



ITEM	PART NUMBER	DESCRIPTION	QTY
-	814105	COMPLETE CAB HARNESS	1
1		PLUG, STD SEX (AMP 206037-2)	1
2		CABLE CLAMP, STD SIZE (AMP 206070 - 1)	1
3		FEMALE CONTACT BLADE, STYLE (AMP 66741 - 6)	3
4		CONNECTOR, DP600	1
5		SOCKET, 0.075 IN. OD	5
6		PLUG REVERSE SEX (AMP 211400 - 1)	1
7		CABLE CLAMP, STD SIZE (AMP 206966 - 1)	1
8		PLUG, STD SEX (AMP 206037 - 1)	1
9		SOCKET CONNECTOR (AMP 66101 - 2)	10

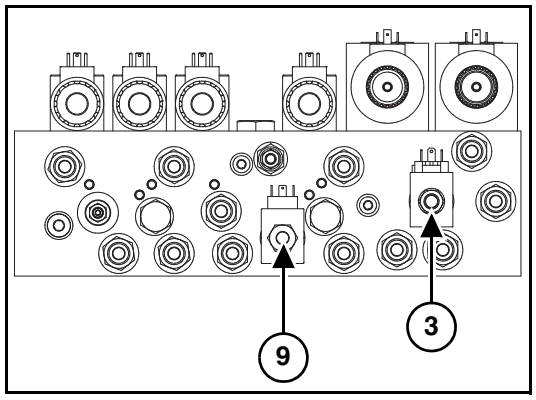
POWER JUMPER WIRE HARNESS DIAGRAM

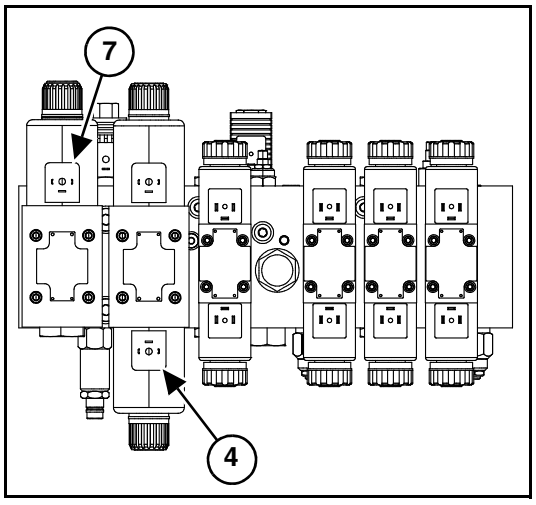


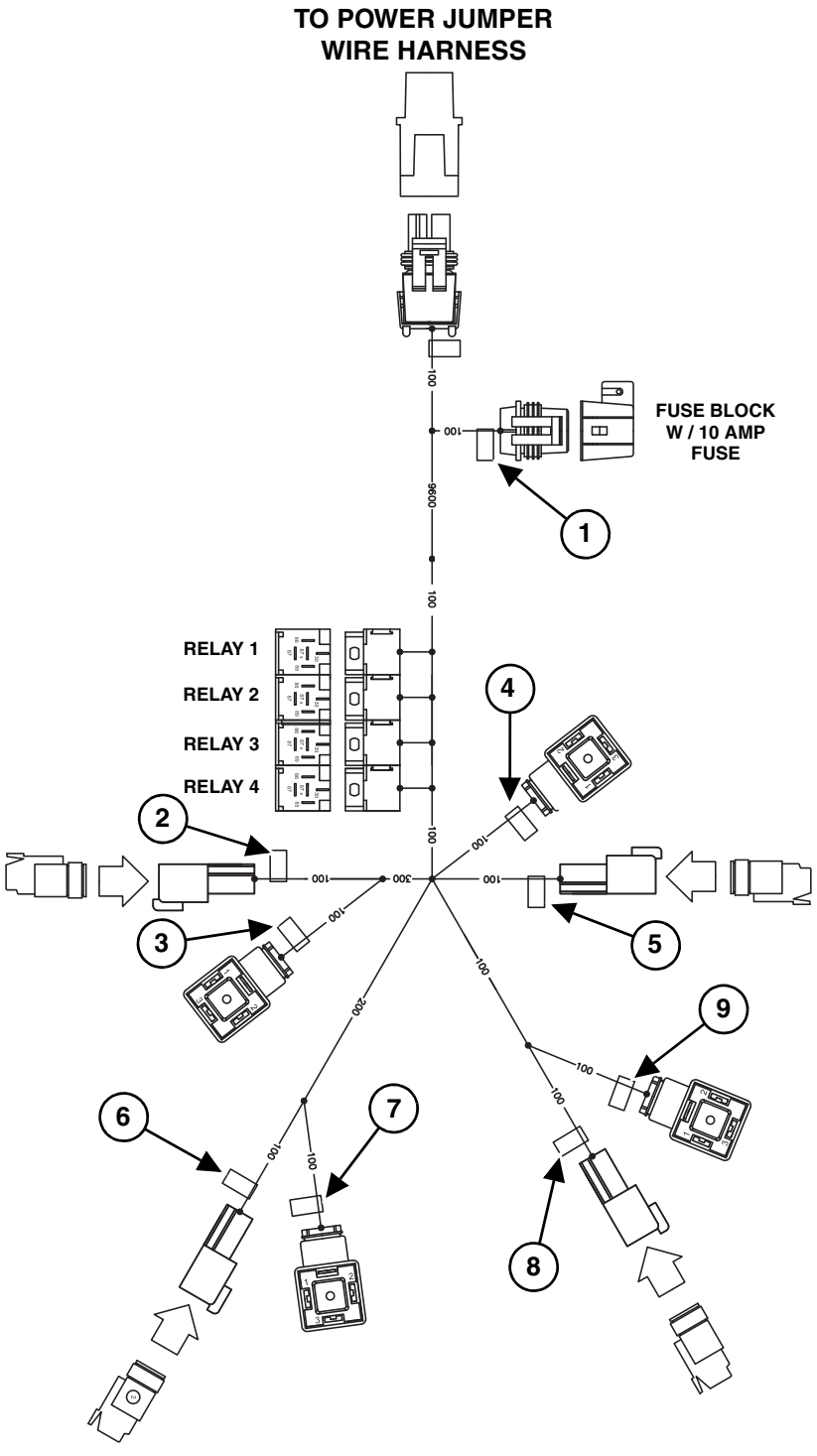
ITEM	PART NUMBER	DESCRIPTION	QTY
1	83000041	COMPLETE POWER JUMPER WIRE HARNESS	1

BALE CARRIER RELAY HARNESS DIAGRAM

ITEM	DESCRIPTION
1	LABEL, 10 AMP
2	LABEL, RELIEF
3	LABEL, RELIEF
4	LABEL, PUSH BK
5	LABEL, PUSH BK
6	LABEL, SER / PARA
7	LABEL, SER / PARA
8	LABEL, SLW / FST
9	LABEL, SLW / FST

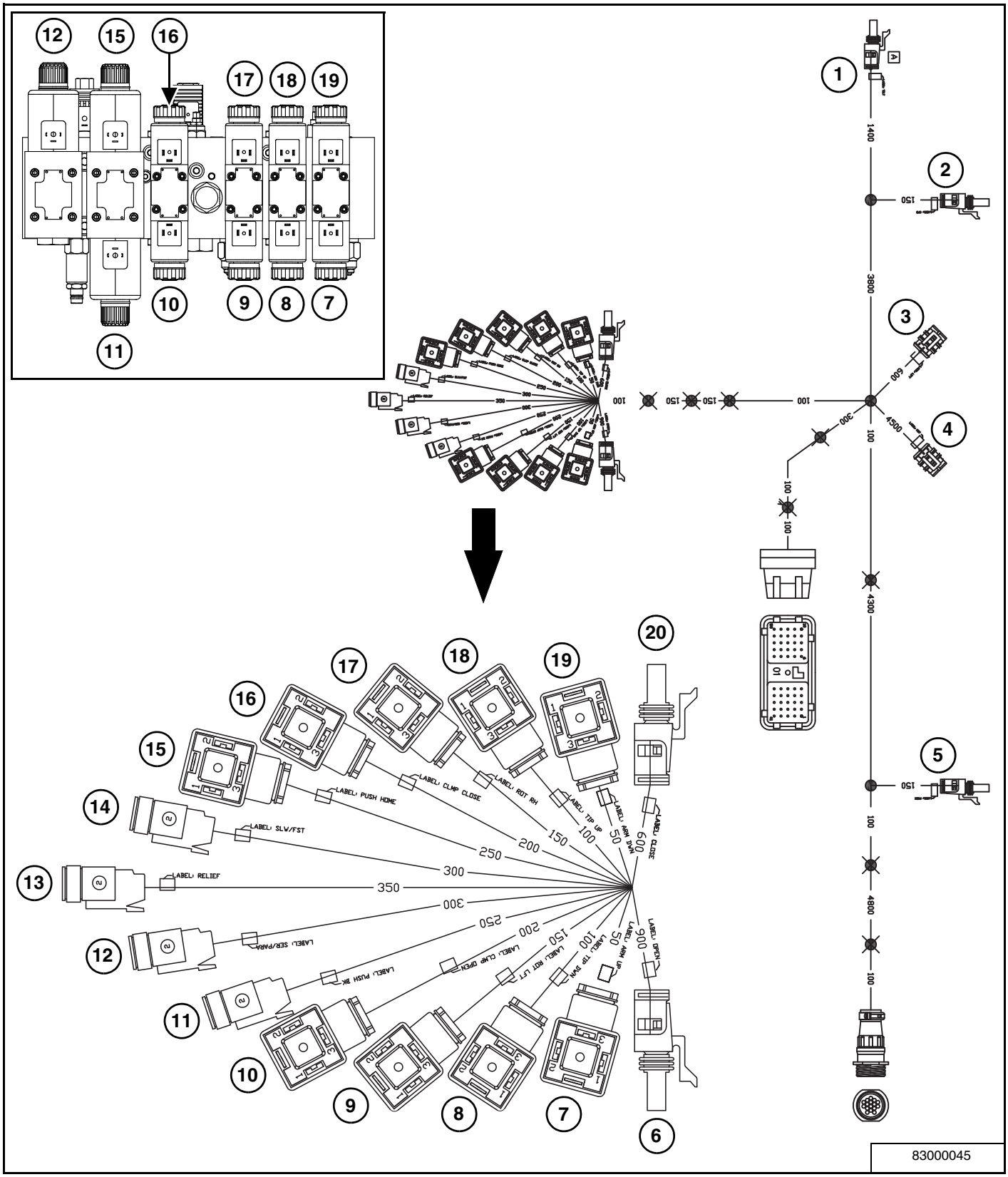






83000016

BALE CARRIER HARNESS / VALVE BLOCK DIAGRAM



ITEM	DESCRIPTION
1	LABEL, TILT
2	LABEL, SPD (SPEED)
3	LABEL, LIFT
4	LABEL, ROT (ROTATE)
5	LABEL, PROX (PROXIMITY)
6	LABEL, OPEN
7	LABEL, ARM UP
8	LABEL, TIP DWN (TIP DOWN)
9	LABEL, ROT LFT (ROTATE LEFT)
10	LABEL, CLMP OPEN (CLAMP OPEN)
11	LABEL, PUSH BK (PUSH BACK)
12	LABEL, SER / PARA (SERIES PARALLEL)
13	LABEL, RELIEF
14	LABEL, SLW / FST (SLOW / FAST)
15	LABEL, PUSH HOME
16	LABEL, CLMP CLOSE (CLAMP CLOSE)
17	LABEL, ROT RH (ROTATE RIGHT)
18	LABEL, TIP UP
19	LABEL, ARM DWN (ARM DOWN)
20	LABEL, CLOSE

HARDWARE TORQUE VALUES

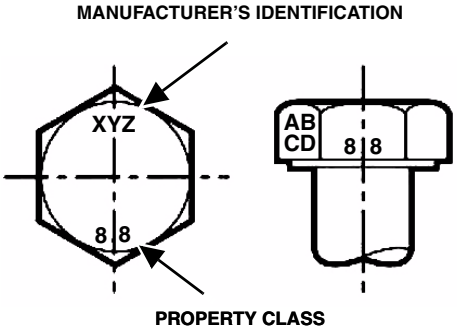
Metric Chart

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.

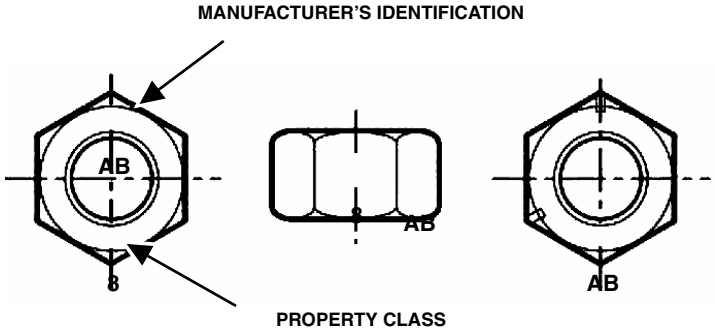
Use the following charts to determine the correct torque when checking, adjusting or replacing hardware. **Torque values are listed in newton-meters (inch* or foot pounds) for normal assembly applications.**

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

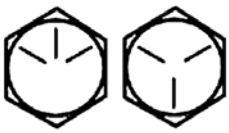
NOTE: Do not use the values listed in the charts if a different torque value or tightening procedure is specified in this manual for a specific application. Torque values listed are for general use only.

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

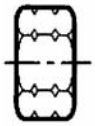
SAE GRADE 8 BOLTS

SAE GRADE 2 NUTS

SAE GRADE 5 NUTS

SAE GRADE 8 NUTS

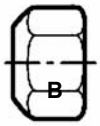
Identification of Hex Nuts and Lock Nuts



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 113

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 114

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 114]** 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 115

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.

WARRANTY

WARRANTY 127

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.

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