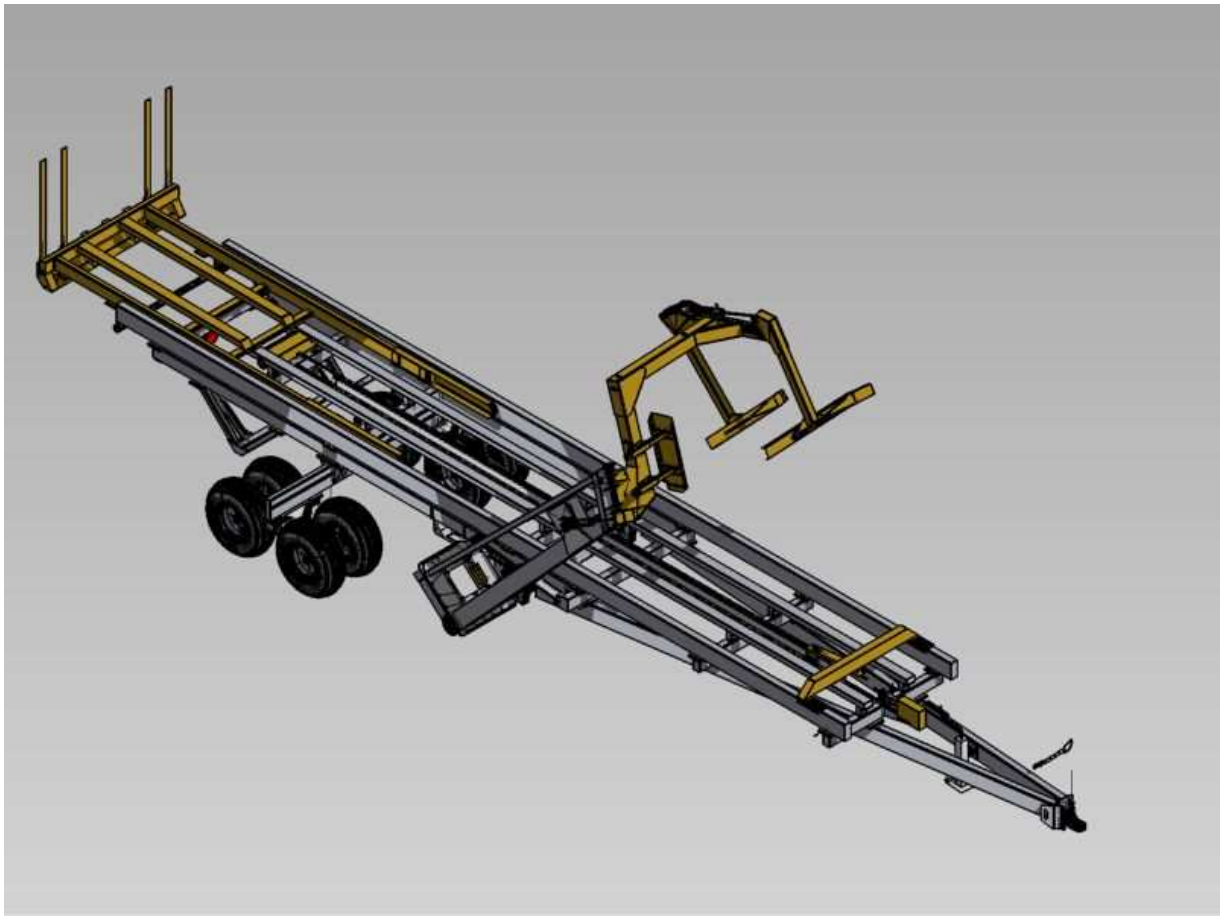
bühler
inland



Model 4500

For serial number 09BM4500001 and later

Operator's and Parts Manual

Square Bale Carrier
08/2009

INLAND WARRANTY POLICY

Buhler Manufacturing products are warranted for a period of twelve (12) months (90 days for commercial application) from original date of purchase, by original purchaser, to be free from defects in material and workmanship under correct, normal agricultural use and proper applications.

Buhler Manufacturing's obligations under this warranty shall be limited to the repair or exchange, at Buhler Manufacturing's option, of any Buhler Manufacturing product or part which proves to be defective as provided. Buhler Manufacturing reserves the right to either inspect the product at the buyer's location or have it returned to the factory for inspection.

The above warranty does not extend to goods damaged or subject to accident, abuse or misuse after shipment from Buhler Manufacturing's factory, nor to goods altered or repaired by anyone other than an authorized Buhler Manufacturing representative.

Buhler Manufacturing makes no Express Warranties other than those, which are specifically described. Any description of goods, including any references and specifications in catalogues, circulars and other written material published, is for the sole purpose of identifying goods and shall conform to such descriptions. Any sample or model is for illustrative purposes only and does not create an Express Warranty that the goods conform to sample or model shown.

The purchaser is solely responsible for determining suitability of goods sold. This warranty is expressly in lieu of all other warranties expressed or implied. Buhler Manufacturing will in no event be liable for any incidental or consequential damages whatsoever. Nor for any sum in excess of the price received for the goods for which liability is claimed.

WARRANTY CLAIMS:
Warranty requests must be prepared on Buhler Manufacturing Warranty Claim Forms with all requested information properly completed. Warranty Claims must be submitted within a thirty (30) day period from date of failure repair.

WARRANTY LABOR:
Any labor subject to warranty **must** be authorized by Buhler Manufacturing. The labor rate for replacing defective parts, where applicable, will be credited at 100% of the dealers posted shop rate. Defective parts will receive an extra 10% discount to assist with freight or other incidental costs.

GOVERNMENT LEGISLATION:
Warranty terms and conditions are subject to Provincial or State legislation.

IMPORTANT FACTS:
Buckets and Bucket Tines Carry No Warranty
Bent Spears Carry No Warranty
Snowblower Fan Shafts Carry No Warranty
Mower Blades Carry No Warranty
Portable Auger Parts Have Two (2) Year Warranty

Printed in U.S.A.

OPERATOR'S AND PARTS MANUAL
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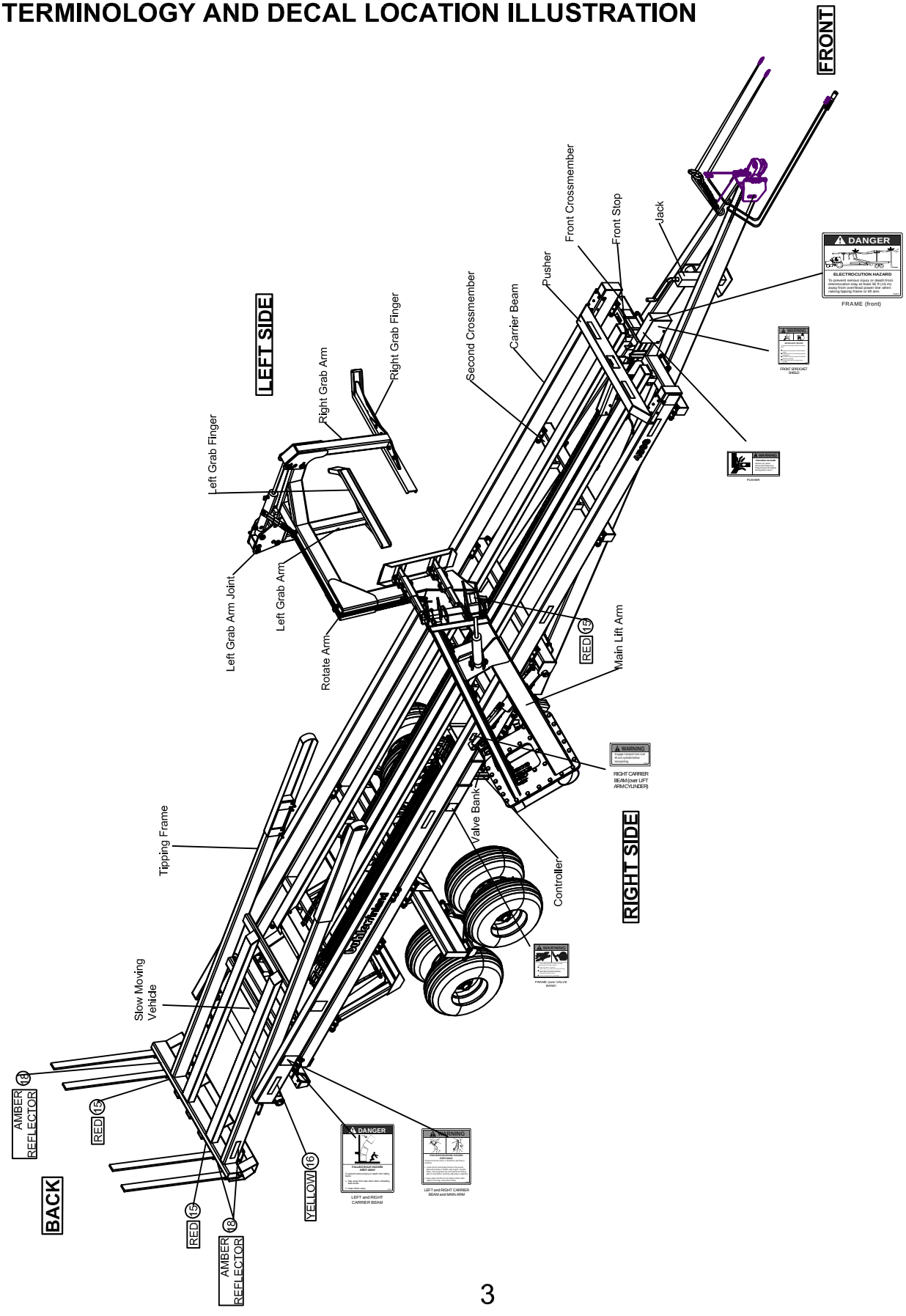
TERMINOLOGY AND DECAL LOCATION ILLUSTRATION



GENERAL SPECIFICATIONS:

DIMENSIONS:

Length: 42’ 8” (13.0 m)
Usable Deck Length: 34’ (10.36 m)
Transport Width: 10’ 2” (3.1 m)
Weight (empty): 9200 lbs. (4181 kg) (approx.)
Hitch Weight (empty): 1950 lbs. (884 kg) (approx.)
Hitch Weight (max.): 7500 lbs. (3402 kg) (approx.)

TIRES:

12.5Lx 15, load range F
Farm Highway Service.
6 bolt hubs, heavy-duty hubs
8 tires

BALE CAPACITY:

GVW: 25 000 lbs. (11340 kg)
8 - 48 x 48 x 96” nominal (1.22 x 1.22 x 2.44 m)
20 - 32 x 35 x 96” nominal (0.81 x0.88 x 2.44 m)
16 - 36 x 48 x 96” nominal (0.91 x 1.22 x 2.44 m) (requires optional second layer kit)

STACKING UP TO 16 feet (4.8 m) HIGH:

example: 48 x 48 x 96” - 4 high Large Bales
32 x 35 x 96” - 5 high Intermediate Bales
36 x 48 x 96” - 4 high Intermediate Bales

HYDRAULICS:

Recommended range - 12 to 25 US gpm (45 to 80 lpm) @ 3000 psi – closed center or open center

1 - LIFT ARM CYLINDER - 4 x 18 – 27” retracted
1 - SQUEEZE CYLINDER - 3 x 16 – 24” retracted
1 - ROTATION CYLINDER - 3 x 16 – 24” retracted
2 - TIPPING CYLINDER – 3-1/2 x 36 – 44” retracted

Max recommended pressure: 3500 psi Min. recommended pressure: 2000 psi
Dual 22.2 cu. in. hydraulic motors.
2-speed valve.
Solid-state valve bank.

Control module - operator initiated automatic loading as well as computer control setting and adjustments.

Electrical - Power 12 volt - neg. ground
Internal fuse protection

TRACTOR POWER REQUIRED:

Minimum 100 hp with adequate braking capacity to safely control 25,000 lbs. (11,340 kg) GVW trailing load. Do not tow over 32 km/h (20 mph). Towing unit should weigh 7575 kg (16,700 lbs) or approximately 67% of GVW.

1 pair remote outlets required with variable flow control setting (system should be set at approximately 13 to 17 gpm). Control valve is restricted to approximately 27 gpm.

INTRODUCTION

CAUTION: Your 4500 Square Bale Carrier requires minimum a 100 hp (75kw) tractor. The maximum loaded transportation speed of 20 mph (32 km/h) and 37,440 LB (16983 kg) must not be exceeded.

This manual has been provided as a reference regarding specifications, safe operation and maintenance of your agricultural 4500 Square Bale Carrier. Read and understand this manual and the tractor manual prior operation to obtain the best use of your 4500 Square Bale Carrier. Keep this manual for reference and forward it to new operators and owners. Contact your local Buhler Inland dealer if you require any assistance, information or additional manuals.

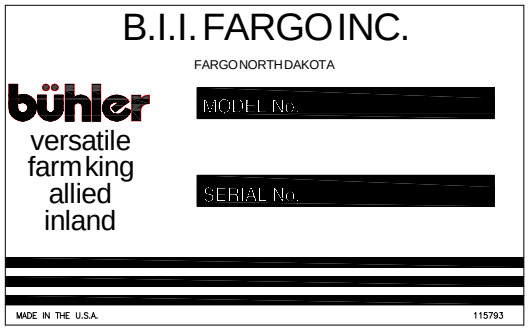
Your new square bale carrier is designed to pickup, transport, and unload a wide range of rectangular hay or straw bales measuring approximately 48” (1.22 m) x 48” (1.22 m) x 96” (2.44 m).

Note: Right and Left designations are determined from the operator's position, facing forward.

Serial Decal Location

The serial decal is located on the left side of the front cross member. Please record the serial number in the space provided for future reference. The serial decal will provide the model and date of manufacture of the Square Bale Carrier and will be required to obtain correct service parts and complete warranty claims.

For your records, record
Serial Number here: _____



Warranty Registration

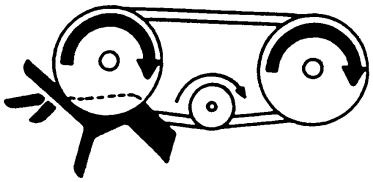
The warranty registration and delivery report MUST be completed within thirty (30) days of delivery to validate the warranty.

SAFETY

Read and understand all the safety messages listed in this manual. For your safety and the safety of others near the machine, learn how to control and operate your 4500 Square Bale Carrier properly. It is your responsibility to inform subsequent operators and owners of these precautions.

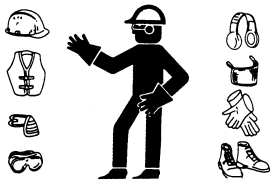
General Safety Notes

- ✓ Keep young children away from machinery and bales at all times.
- ✓ Be aware that accidents often happen when the operator is tired or in a hurry to get finished. Take the time to consider the safest way. Never ignore warning signs of fatigue.
- ✓ Keep hands, feet, clothing and hair away from moving parts. Never attempt to clear obstructions or objects from a machine while the engine is running.



- ✓ Keep all shields in place. Never alter or remove safety equipment.
- ✓ Do not attempt to clear any blockage or reach into the 4500 Square Bale Carrier with your arm or leg unless the tractor engine is stopped.
- ✓ Do not load bales of sizes not outlined in the specifications section
- ✓ Use proper lighting and safety warnings when transporting equipment on public roads and during darkness. The slow moving vehicle emblem must be visible. Check with your local law enforcement agency for specific requirements.
- ✓ Provide a first-aid kit for use in case of emergencies.

- ✓ The safety information in this manual does not replace safety codes, insurance needs, or laws governing your area. Be sure your machine meets the standards set by these regulations.
- ✓ Keep a fire extinguisher with the machine. Be sure the extinguisher is properly maintained and be familiar with its proper use.
- ✓ Wear close-fitting clothing and cover long hair. Never wear dangling items such as scarves or bracelets.



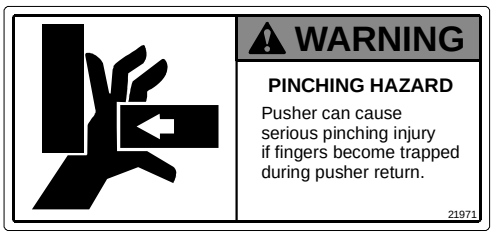
- ✓ Remember that YOU are the key to safety. Good safety practices protect you and the people around you.
- ✓ Follow all safety messages in the manual and on safety signs located on the machine.
- ✓ It is your responsibility to read and understand this manual completely before operating the bale carrier.
- ✓ Never leave the tractor unattended while the 4500 Square Bale Carrier is hooked up, always shut tractor off and remove key before leaving the tractor seat. A child or even a pet could engage an idling machine.
- ✓ Keep the 4500 Square Bale Carrier on solid ground; rocks and holes can be dangerous for operation and movement.
- ✓ Prior to use, check to ensure the attachment is properly hitched.

- ✓ Improper use of the 4500 Square Bale Carrier and tractor can cause serious injury or death.
- ✓ Never operate 4500 Square Bale Carrier with frayed or damaged hoses or leaking fittings. A burst could cause one or more hydraulic components to behave erratically causing serious injury or loss of life.
- ✓ Operate 4500 Square Bale Carrier only while seated in the tractor seat.
- ✓ Do not load bales improperly; always load according to the manual's operation procedures.
- ✓ If for some reason you feel the tractor tipping immediately lower lift arm.
- ✓ Do not raise lift arms to extreme heights while tractor is on an incline. Be alert for terrain changes and adjust accordingly.
- ✓ Allow for 4500 Square Bale Carrier and tractor length when turning.
- ✓ Do not overload the GVW of 37 440 LB (16983 kg) and when loaded keep the speed below 20 mph (32 km/h).
- ✓ Before allowing anyone to operate the machine, for however a short time or distance, make sure they have been instructed in its safe and proper use.
- ✓ Review the manual and all safety related items with all operators annually, correct other operators not using recommended procedures before an accident occurs.
- ✓ When assembling, operating and servicing machinery, wear all the protective clothing and personal safety devices that could be necessary for the job at hand.
- ✓ Never work beneath a raised lift arm unless it is securely supported. The control handle can be moved or a hydraulic leak could cause the arm to drop resulting in serious injury or death.
- ✓ Use only service and repair parts made or approved by the equipment manufacturer, substituted parts may not meet strength, design, or safety requirements.
- ✓ Do not modify the machine. Unauthorized modifications may impair the function and/or safety and affect machine life.
- ✓ Keep the area used for servicing machinery clean and dry. Wet or oily floors are slippery. Wet spots can be dangerous when working with electrical equipment. Be sure all electrical outlets and tools are properly grounded.

- ✓ Keep machinery clean. Straw and chaff on hot surfaces are a fire hazard. Do not allow oil or grease to accumulate on service platforms, ladders or controls. Clean machines before storage.
- ✓ Never use gasoline, naphtha or any volatile material for cleaning purposes. These materials may be toxic and/or flammable.
- ✓ When storing machinery, cover sharp or extending components to prevent injury from accidental contact.

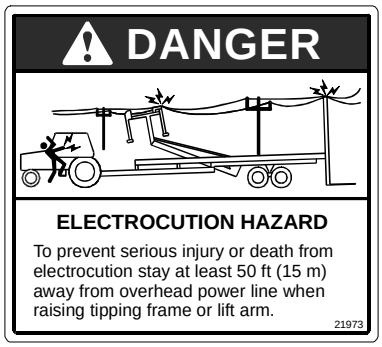
Safety Decals

The ***Terminology And Decal Location Illustration*** shows the approximate location and detail of safety decals. To install safety decals ensure the installation area is clean and dry. Decide on the exact position before you remove the backing paper. Remove the smallest portion of the split backing paper and align over the specified area. Carefully press in place. Slowly peel back the remaining paper and smooth the remaining portion in place. Small air pockets can be pierced with a pin and smoothed out. Keep all decals clean and replace any that are damaged or missing. Replacement decals are available from you local dealer. The following pictorials indicate important precautions to be used during the operation of the 4500 Square Bale Carrier.



PUSHER

FRONT SPROCKET



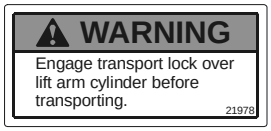
FRAME (front)

LEFT and RIGHT CARRIER FRAME

LEFT and RIGHT CARRIER BEAM and

FRAME (front)

FRAME (over VALVE BANK)



RIGHT CARRIER BEAM (over LIFT ARM CYLINDER)

Important Precautions

The alert symbol is used throughout this manual. It indicates attention is required and identifies hazards and alerts you that your safety is involved. Follow the recommended precautions.

⚠ CAUTION Indicates a potentially hazardous situation, which may result in injury. It may also be used to alert against unsafe practices.

⚠ WARNING The warning symbol indicates a potentially hazardous situation, which could result in death or serious injury and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

⚠ DANGER The danger symbol indicates an imminently hazardous situation, which will result in death or serious injury. This signal word is limited to the most extreme situations, typically for machine components, which for functional purposes, cannot be guarded

PRE-OPERATION CHECKLIST

⚠ CAUTION Make sure the tractor has a 100 hp (75 kw) or greater rating and a mass of 45000 LB (11340 kg). Make sure the drawbar is capable of supporting the 4500 Square Bale Carrier empty or loaded.

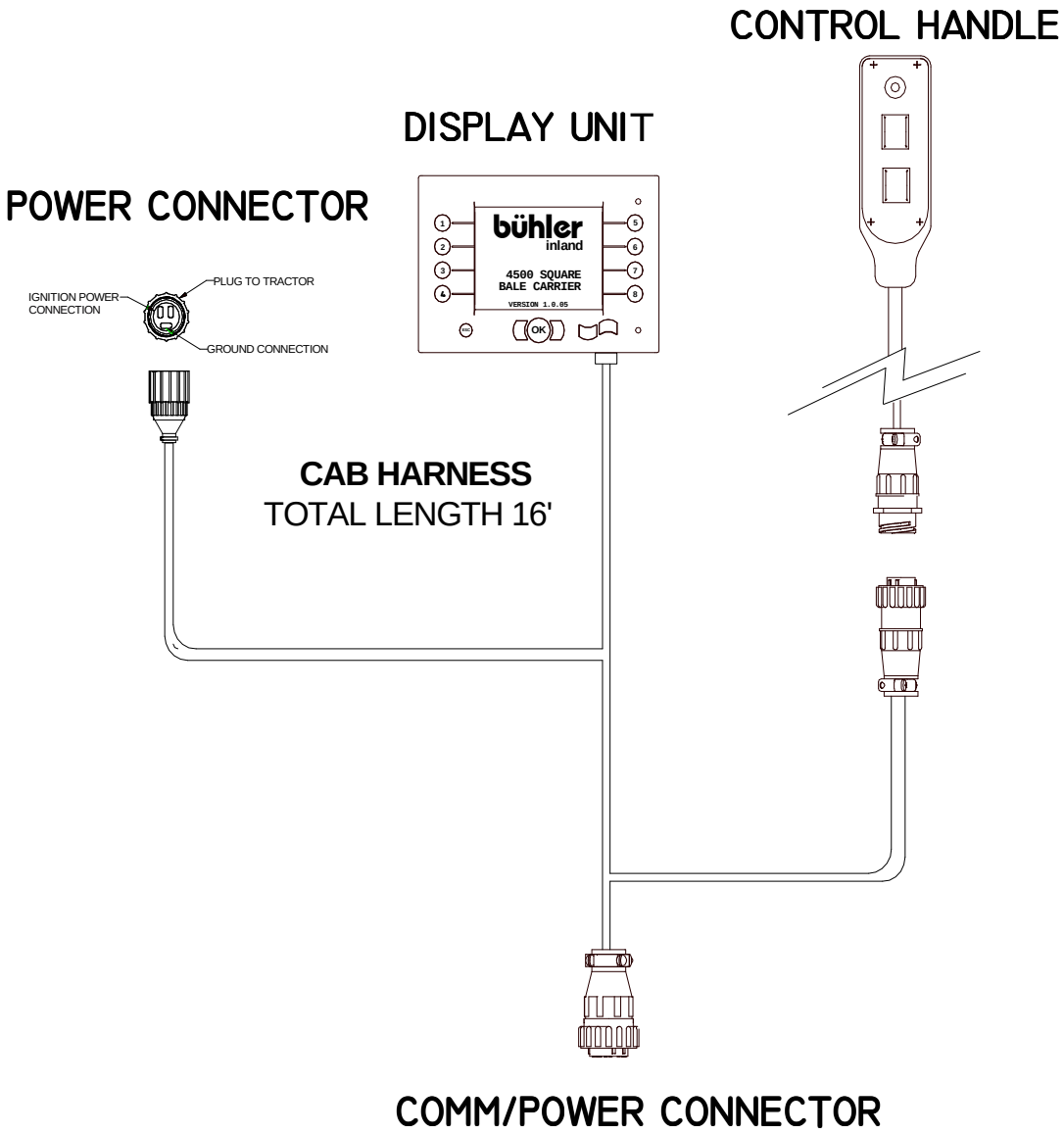
⚠ WARNING The tractor must be equipped with an approved Roll over Protection Structure (ROPS) and safety belts to help prevent personal injury or death caused by tractor roll over.

To ensure safe and proper operation of the 4500 Square Bale Carrier, inspect the following items prior to operation and daily thereafter. Refer to operation, lubrication and maintenance sections for detailed instructions.

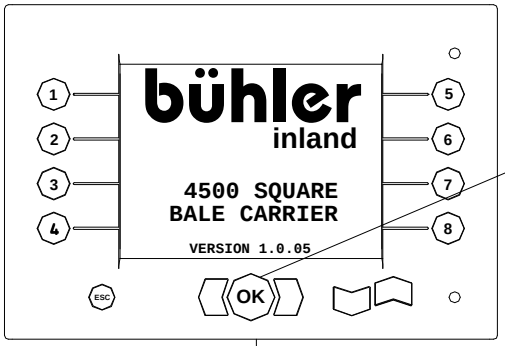
- ✓ Prior to first use verify that the 4500 Square Bale Carrier has been properly assembled and that the operator understands the safety, operating, and maintenance requirements.
- ✓ Check for missing fasteners and replace if necessary. Refer to maintenance section for details.
- ✓ Check and maintain proper tire pressure of 90 psi (620 kpa).
- ✓ Check for loose wheel bolts. Bolts must be torque to 125 ft LB (170 Nm).
- ✓ Clean 4500 Square Bale Carrier of any foreign material that may have accumulated from previous run.
- ✓ Lubricate all points requiring daily lubrication.
- ✓ Check chain tension and adjust if necessary with front sprocket adjusting bolt (approximately 6” (15 cm) of upward slack). This is verified by raising the chain by hand.
- ✓ Ensure top surface of bale carrier beams are properly coated with a graphite coating to reduce bale friction while pushing bales back.
- ✓ Ensure that the tractor used to pull the 4500 Square Bale Carrier is in working order according to the tractor manual.
- ✓ Verify that the 4500 Square Bale Carrier is properly coupled to the tractor with the safety chain.
- ✓ Inspect all safety reflective decals, slow moving vehicle decals and lights where applicable.
- ✓ Inspect the hydraulic system on the 4500 Square Bale Carrier and your tractor for leaks or any other damage.
- ✓ Ensure the control handle actions reflect the movements of the 4500 Square Bale Carrier.
- ✓ Inspect all electrical connections to ensure proper function of the machine
- ✓ Ensure transport safety chain is disengaged from bale lift arm and stored on chain lug located on second cross member. Failure to do so may cause damage to lift arm.

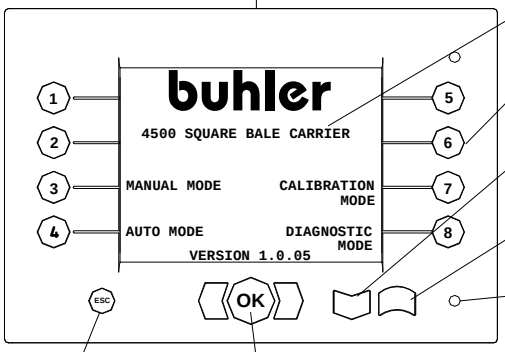
Bale Carrier Controller

Menu and Controller Overview



Power for the Display Box (located in the tractor cab) and the Controller (located near the valve bank) comes from the Power connection connected to your tractor power accessory port. The Controller is turned on by turning the tractor key to “accessory” or by turning on the tractor. The first menu that appears on the Display unit is the **Buhler/Inland** Logo. To by-pass this menu press the “**O.K.**” button located on the front panel. The following flow diagram outlines the menu structure found in the Display unit. There are several common features used to navigate through the menu structure. They are shown in the attached flow diagram. Any unique functionality specific to the menu is described in detail in the corresponding menu.





PRESS O.K. FOR NEXT MENU

MENU HEADING; NAME OF CURRENT MENU

1-8 BUTTON; FUNCTION SELECTION BUTTON

DOWN OR LEFT BUTTON; PRESS AND HOLD TO MOVE FEATURE DOWN OR LEFT

UP OR RIGHT BUTTON; PRESS AND HOLD TO MOVE FEATURE DOWN OR LEFT

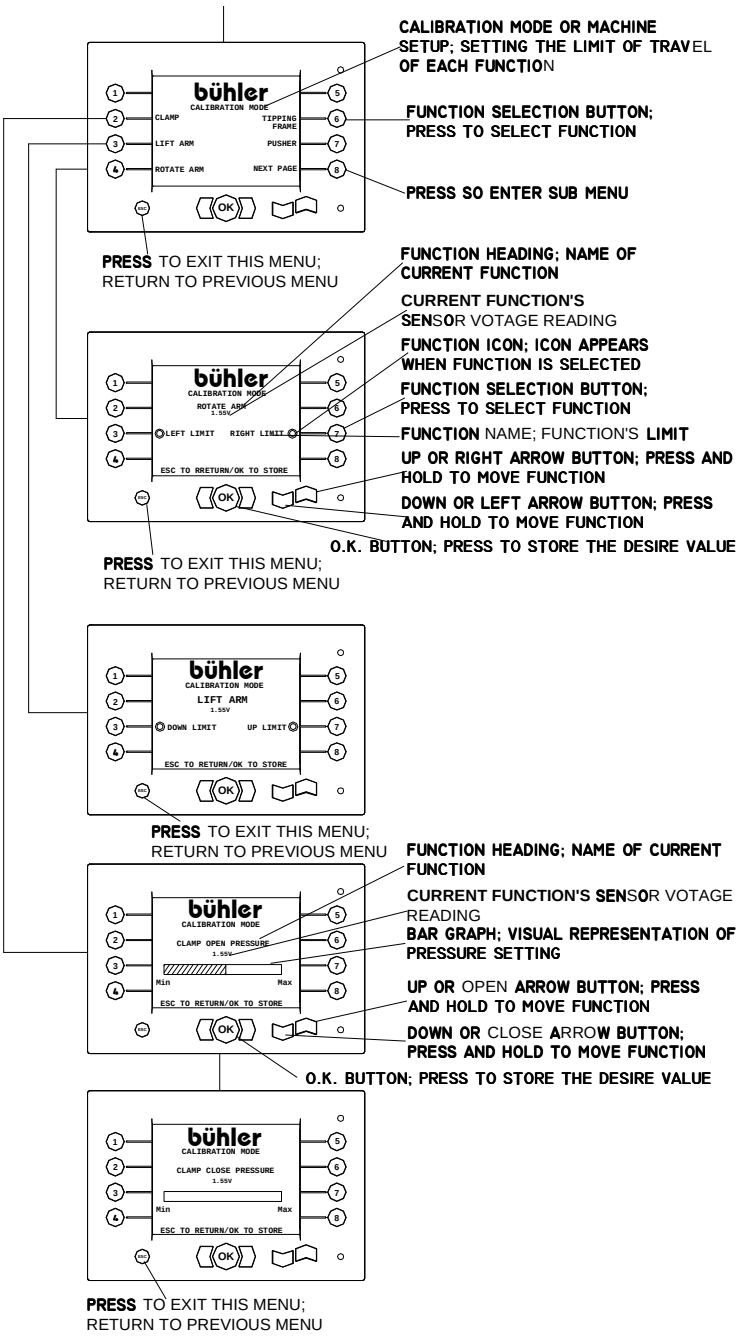
LED; COMMUNICATION STATUS, BLINKING RED LED = COMMUNICATION ERROR. NO LED = COMMUNICATION O.K

O.K. BUTTON; PRESS TO ACCEPT INPUT

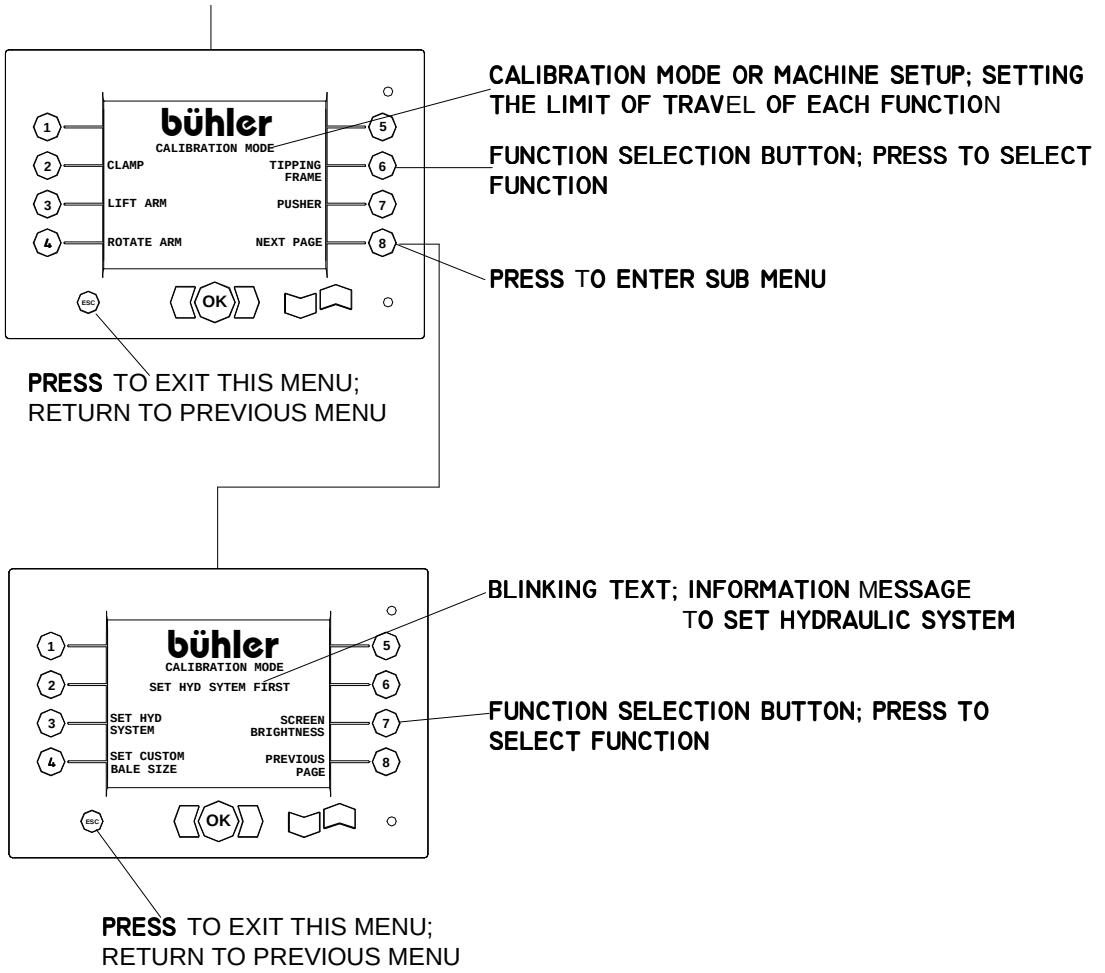
ESC BUTTON; PRESS TO EXIT OUT OF CURRENT MENU AND RETURN TO PREVIOUS MENU

Calibration Mode

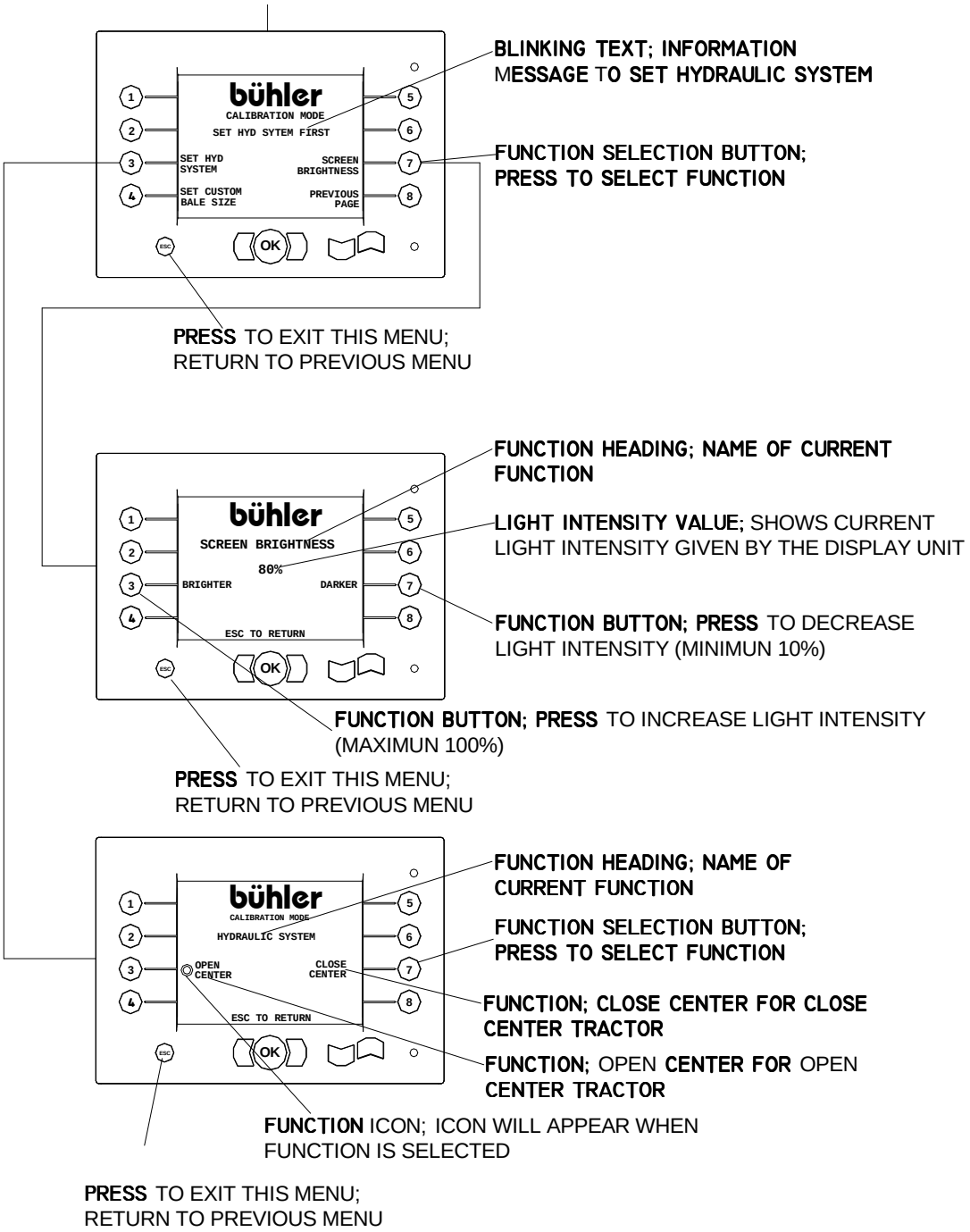
The Calibration Mode is used to calibrate (setup) the full range of motion of the bale carrier. This section is used to define **limits of travel** for all functions as well as setting the Hydraulic Specification, Custom Bale Setup and Screen Brightness levels. **NOTE: Calibration of the unit has been factory set. Calibration is required only if there is a change in sensors, sensor links, tractor and or the controller.** The following flow diagram shows the menu layout for the Calibration mode.



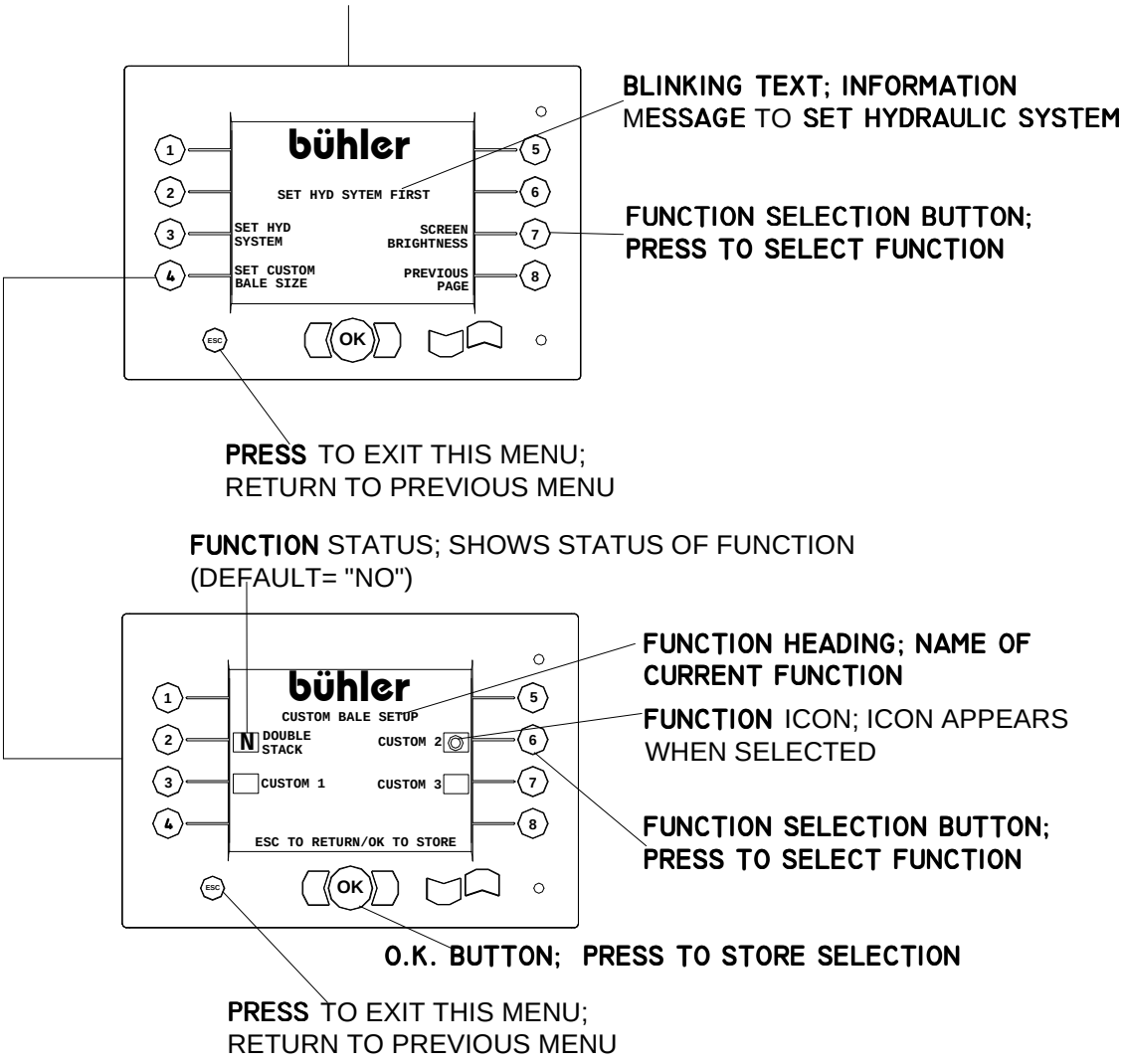
The following flow diagram shows sub-menus required to setup other functions. These functions include the set up of the Hydraulic system, Custom Bale setup and the Screen Brightness level for your Display unit.



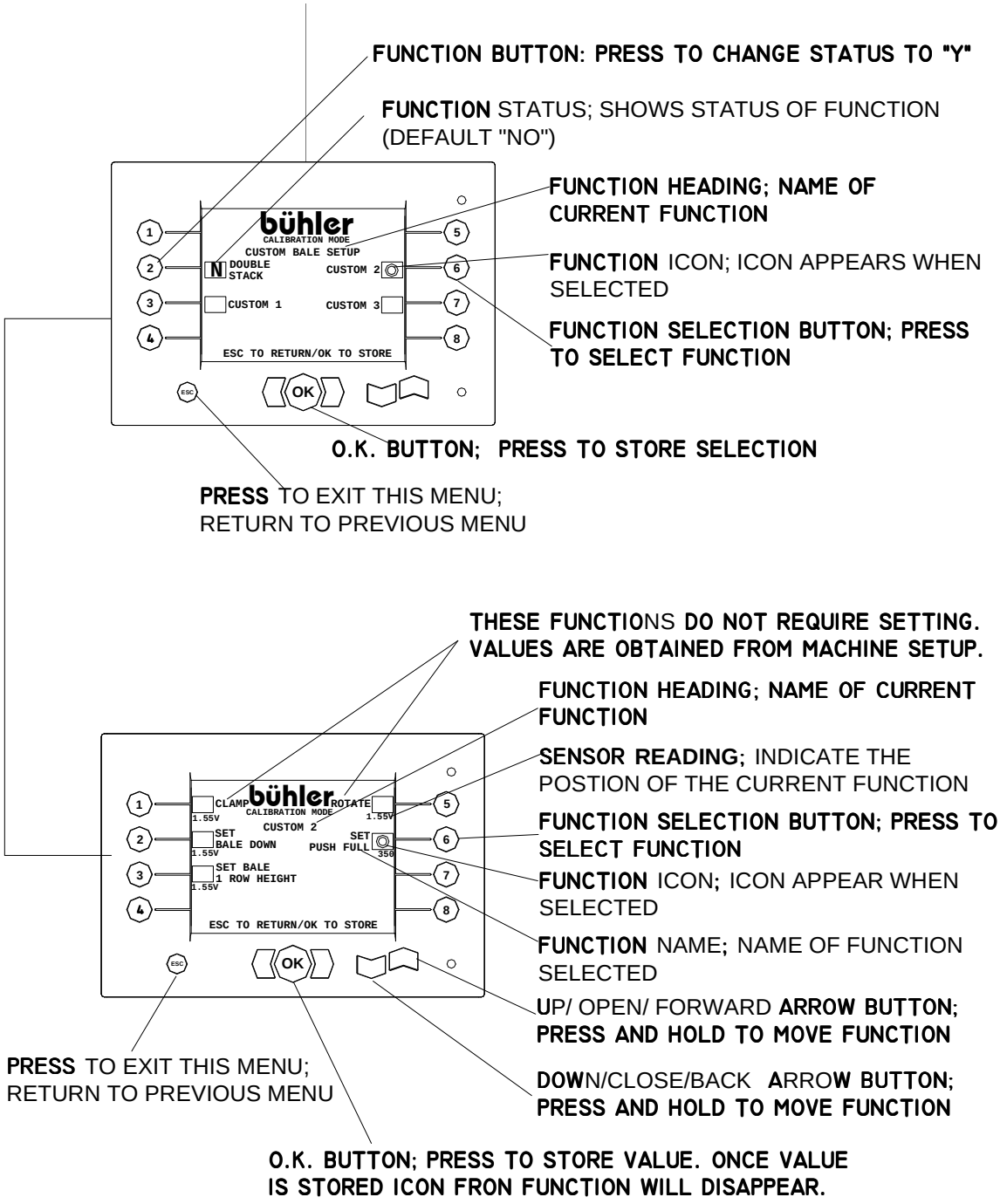
The following flow diagram shows sub-menus of the Brightness Setting and Hydraulic System Setting. The hydraulic Setup allows the operator to match the unit's hydraulic system to the tractor's hydraulic specification. The unit's hydraulic system can operate as an **OPEN CENTER** or **CLOSE CENTER** depending on the attached tractor. To set the Hydraulic system, simply choose the corresponding system. Select **OPEN CENTER** when using tractors with **LOAD SENSING** hydraulic system.



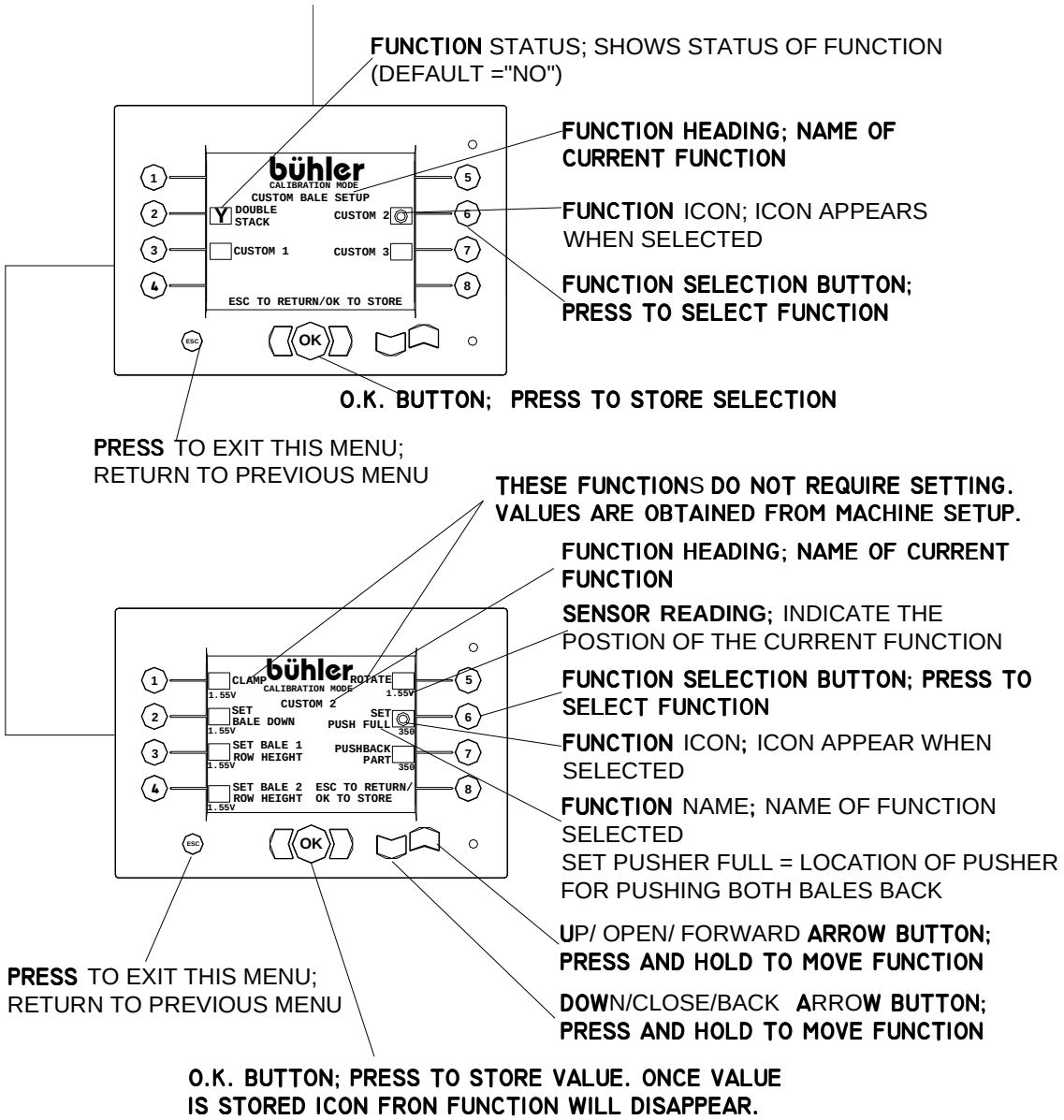
The following flow diagram shows sub-menu for Custom Bale Size setup. Custom Bale Size setup is design so the user can define various parameters to load the bales. It is recommended that this setup be perform using actual bales.



This menu selection allows the user to setup up to three (3) different custom bale sizes for picking. It also gives the user the ability to double stack the custom bale sizes. Follow the menu below to custom setup bale sizes.

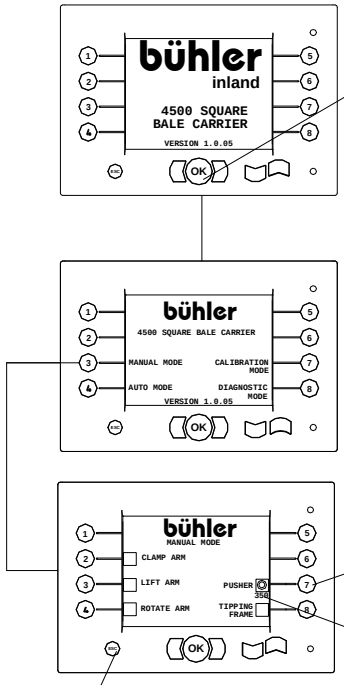


To double stack the bale, the top bale must align with the bottom bale to prevent uneven stacking. It is recommended that setup of double stacking be done in the field with bales. Once set, the system retains all settings until changes are made to it. The system will retain all settings even if power to the controller (and the display unit) is turned off.



Manual Mode

The Manual mode allows the user to only operate one function at a time. To operate, the user simply selects the desired function; a circular light icon will appear beside that function. The UP/DOWN arrow keys are used to activate a function. Press ESC to return to the main menu.



PRESS O.K. BUTTON TO EXIT OUT OF THIS MENU

CLAMP ARM, UP ARROW = OPEN, DOWN ARROW = CLOSE
LIFT ARM, UP ARROW = ARM UP, DOWN ARROW = ARM DOWN
ROTATE ARM, UP ARROW = ROTATE RIGHT, DOWN ARROW = ROTATE LEFT (ROTATE OVER THE DECK)
PUSHER, UP ARROW = PUSHER HOME, DOWN ARROW = PUSHER BACK
TIPPING FRAME, UP ARROW = TIPPING UP, DOWN ARROW = TIPPING DOWN

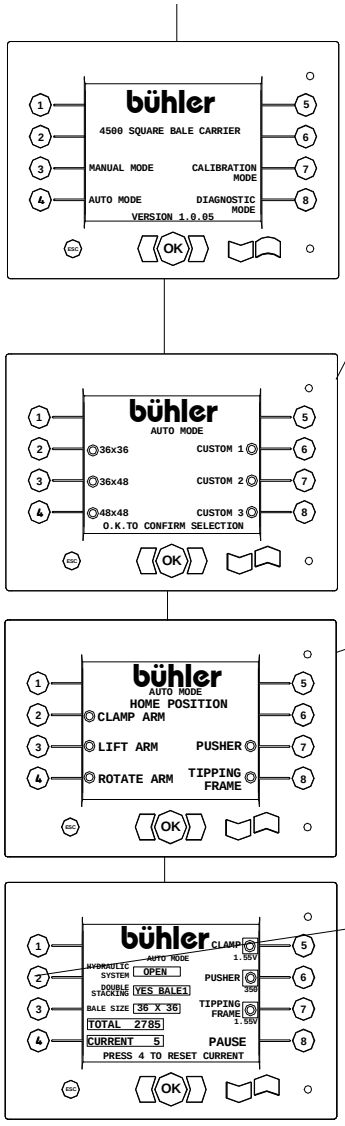
FUNCTION SELECTION BUTTON; PRESS TO SELECT FUNCTION

READING ONLY APPEARS IF FUNCTION IS SELECTED.

PRESS TO EXIT THIS MENU;
RETURN TO PREVIOUS MENU

Auto Mode

The Auto mode automates the picking and stacking of bales with minimal input from the user. Once the unit has been calibrated and the bale size selected, the user simply lets the controller sets all functions to the ready STATE required to enter the Auto- mode. Once in auto-mode, the user is ready to start the picking process. Loading and unloading operations are described later in the section.



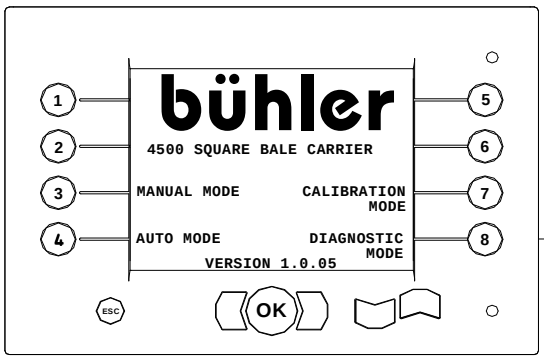
CHOOSE FROM THE THREE (3) PRE-PROGRAM BALES SIZES OR 3 CUSTOM BALE SIZES PROGRAM BY THE USER TO PICK.

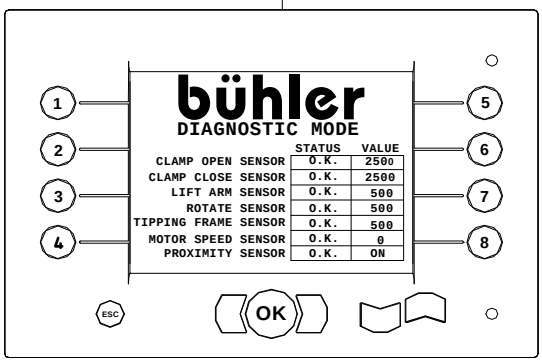
-PRESS THE CORRESPONDING BUTTON TO HAVE THE COMPUTER MOVE THAT FUNCTION TO THE READY POSITION.
-A CIRCULAR LIGHT ICON WILL APPEAR BESIDE THE FUNCTION WHEN IT IS IN THE READY POSTION.
-ONLY WHEN ALL FUNCTIONS ARE IN THE READY POSITION DOES THE MENU CHANGE.
-IF A FUNCTION DOES NOT MOVE WHEN ACTIVATED. AN UNSAFE CONDITION HAS ARISEN, SIMPLY ACTIVATE THE NEXT FUNCTION, THE UNSAFE CONDITION WILL AUTOMATICALLY RESOLVE ITSELF.

THE USER CAN 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.

Diagnostic Mode

The Diagnostic mode is used to determine errors (malfunctions) in all sensors used on the unit. If the status of the sensor shows ERROR, this indicates that the sensor is not working, not connected properly to the wire harness, or a defective wire harness.





THIS SHOULD APPLIED FOR
POSITION SENSOR
STATUS = O.K or ERROR
VALUE = 2500 or 0

MOTOR SENSOR
STATUS = O.K. or ERROR
VALUE = 0

PROXIMITY SENSOR
STATUS = O.K or ERROR
VALUE = ON or OFF

OPERATION

CAUTION Prior to operation, ensure that the operator has read and understood the safety requirements of the 4500 Square Carrier. Ensure the pre-operation checks have been completed prior to operation.

Attaching Bale Carrier To Tractor

CAUTION: Shut off tractor, engage parking brake and remove key before working around hitch.

WARNING: Never attach bale carrier to rear axle or three point hitch arms. Use only the drawbar. Make sure tractor size is adequate (100 hp or greater) and drawbar is capable of supporting the torque whether empty or loaded.

1. CLEVIS adjustment: For most conditions, the hitch height should be adjusted on firm level ground so that, when the TIPPING FRAME is vertical on level ground, there is a 0" to 1" (0 to 2.5 cm) clearance at ground level. Note: For more convenient, adjust CLEVIS so that bottom of HITCH BEAMS (at the point where the beams are joined to each hitch bolt plate) is approximately 17" (43 cm) from the ground.

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.

2. Using TOP WIND JACK, raise BASE HITCH above DRAW BAR. Position tractor so that holes are aligned. Insert pin and secure using retaining clip. Raise JACK and hold it in the transport position.

3. Route SAFETY CHAIN around the hitch clevis, around drawbar support and back hook. IMPORTANT: Adjust CHAIN length to remove all slack except what is needed for turns.

SAFETY CHAIN

4. Do not use intermediate support on drawbar as attaching point.

5. Store SAFETY CHAIN off the ground when not in use. If safety chain is damaged in any way, contact your dealer for a replacement.

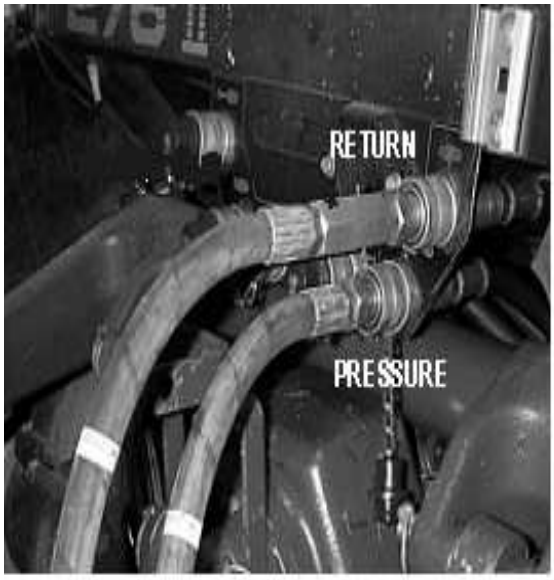
6. The pressure is the "**P**" port on the valve bank; return line is "**T**" port.

7. Connect Power/Communication harness to Cab Harness.

8. Connect lighting coupler.

WARNING: Engage LIFT CYLINDER LOCK over lift arm cylinder before transporting.

NOTE: The LIFT CYLINDER LOCK is installed by extending lift cylinder far enough to insert lock, inserting lock (the notched end fits over the cylinder's rod pin eye and between the pin plates), attaching chain hook to the gusset above the pin plates, and retracting cylinder until lock is secured in place.



HYDRAULIC CONNECTION

LIFT CYLINDER LOCK

Carrier Control Operation

WARNING: When transporting on public roadways, use amber flashers day or night. Do not tow over 20 mph (32 km/h) when loaded.

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.

Built-in Safety Features

1- The Rotate Arm will not rotate toward the deck if it has not been raised above the deck by a minimum of 1 foot.
2- Pusher will not push back toward the Tipping Frame if the Tip Frame is not at “home” position (tipping frame is parallel to the deck).
3- Tipping frame will not lower or rise 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.

Carrier Control

The 3 BUTTON CONTROL HANDLE is supplied as a remote controller to duplicate the *SQUEEZE*, *PUSHER*, and *TIP FRAME* function located on the Display Box **when in Auto mode**. The CONTROL HANDLE is fitted with one (1) plunger style switch and two (2) momentary rocker style switches. Their function are as follows:

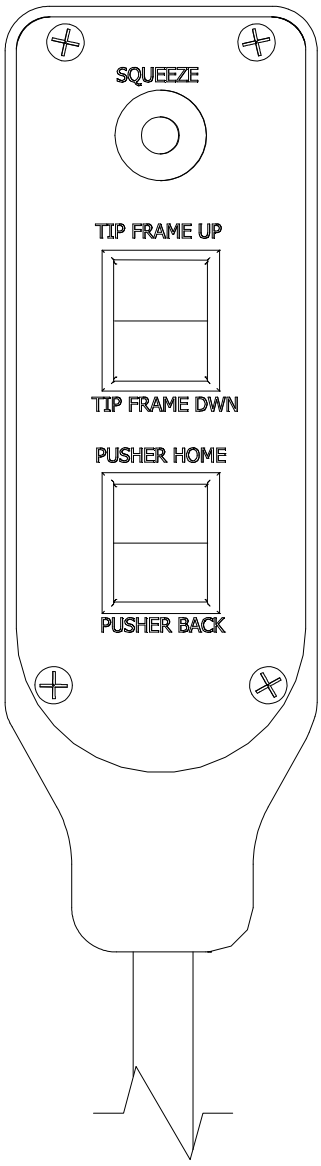
1st (top) button: Depress and hold to capture bale and start automatic loading cycle. Press and release will only jog the Clamp arm closer to each other. Release switch once AUTO cycle is started (loading arm raising).

2nd button: Depress and hold Tipping Frame Up to raise the tipping frame vertically. Release button to stop tipping fame motion. Tipping frame will not move beyond set limit.

2nd button: Depress and hold Tipping Frame Down to lower tipping frame. Release button to stop. Tipping Frame will stop when it reaches “home” position.

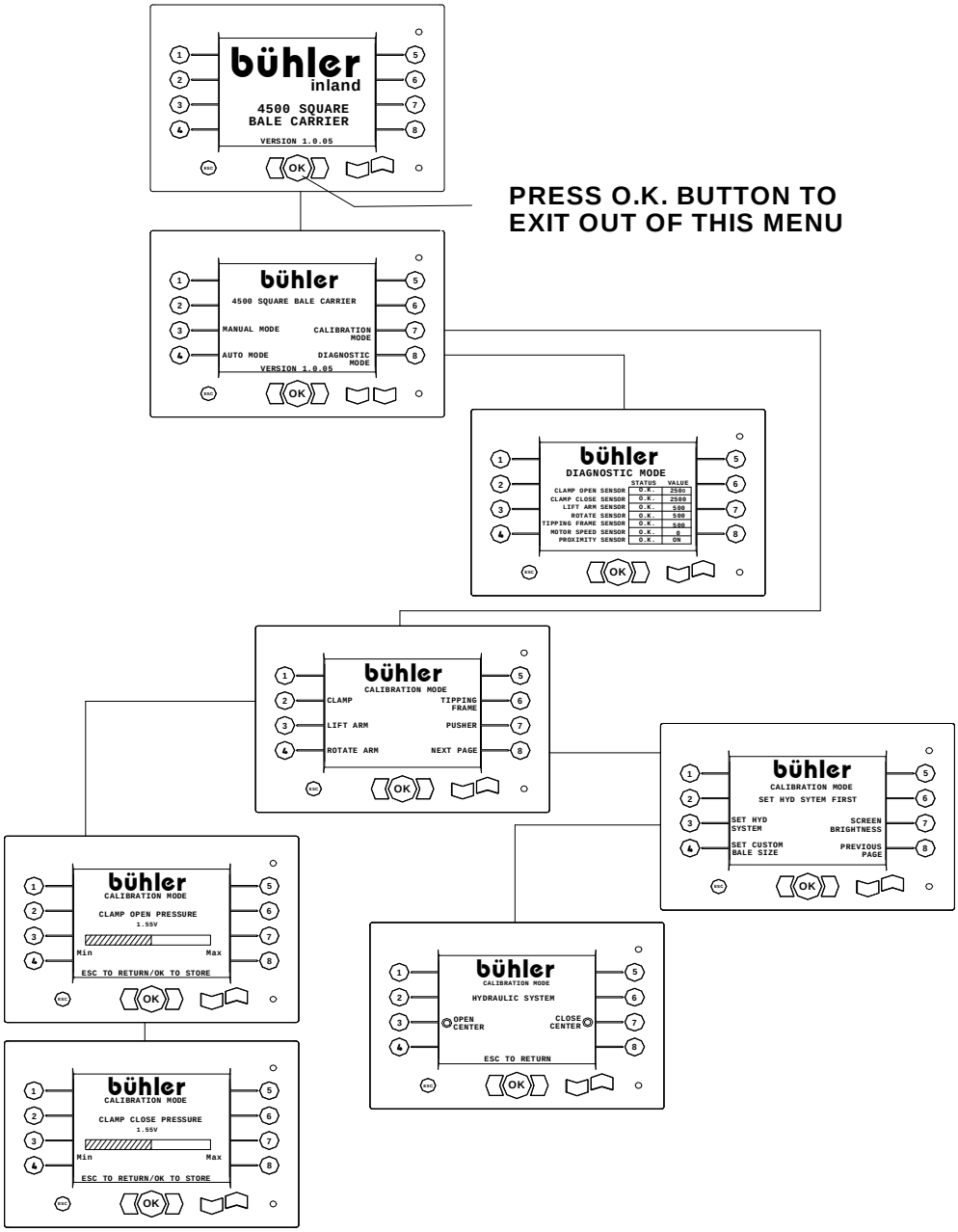
3rd button: Depress “Pusher Home” and hold to move PUSHER home. Release to stop pusher motion. Pusher will also stop when it is in home position.

3rd button: Depress “Pusher Back” and hold to move PUSHER back. Release to stop pusher motion. Pusher will not travel back beyond set limit.



Automatic Sequence Adjustment

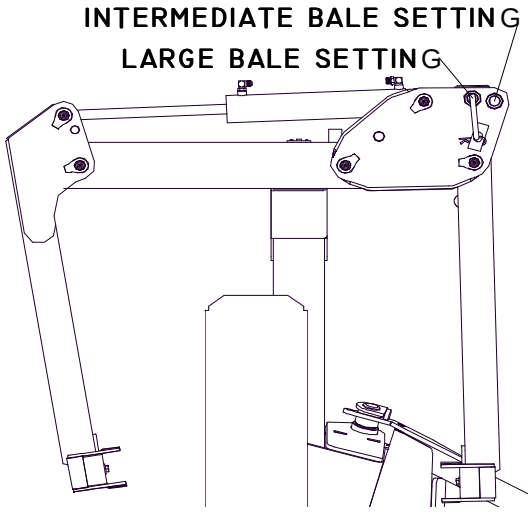
Pressure transducers, proximity sensors, and rotary position sensors are working in concert to control the **Automatic-Sequencing**. The automatic loading cycle has been tested and adjusted for 14.5 US gpm at 2500 psi at the factory. It is necessary to re-adjust the **CLAMP OPEN and CLAMP CLOSE pressure settings** compatible to your tractor to ensure that the automatic loading/unload sequence performs correctly. Follow the flow diagram below to perform this adjustment.



Adjustment for Bale Sizes

Basically, ONE adjustment will allow the carrier to load and unload most intermediate and large square bales:

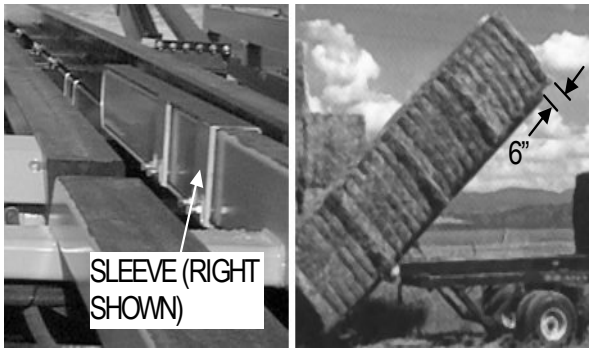
1. The LEFT GRAB ARM has two pin locations. Select the inside location for large bales (4' x 4') and the outside location for intermediate bales.



2. An adjustable BALE STOP is provided to stop the bale at a point where it will be centered on the carrier deck when released. Bales longer than 8' (2.44 m) will require the stop to be fully retracted.

ADJUST BALE STOP

3. The BALE EXTENSION SLEEVES need to be adjusted about 6" (15 cm) shorter than the intended total stack height of the bales.



BALE EXTENSION SLEEVES ADJUSTMENT

Two Speed Control

The **PUSHER** is featured to accommodate different bale types and weights. The Pusher is driven by means of two hydraulic motors connected together. Two directional control valves, **BACK/HOME** and **SERIES/PARALLEL**, control the motion of the two motors. ***"Pusher hydraulic circuit is designed and controlled to PUSH-BACK in PARALLEL, which means low speed and high torque".*** Pushing back in parallel (low speed, and high torque) allows handling heavy wet bales.

If after five seconds at low speed the pusher has not moved, a flashing message **"DECK FULL"** will appear on the display unit indicating that the deck is full and unloading procedure can take place.

Pre-start Check List

Check the following daily before operating the bale carrier. This should ensure that the bale carrier functions properly and avoid breakdowns and accidents.

1. Check that all component and assemblies are complete and that all shields are in place.

2. Check for missing fasteners and replace if necessary (it is normally not necessary to retighten fasteners on a daily basis).

3. Tighten loose wheel bolts, especially if tire has been removed recently (wheel bolts do not normally require daily inspection).

4. Clean bale carriers of any foreign material that may have accumulated from previous runs, especially the areas where sensors are located. The automatic loading cycle will not function properly if there is interference in sensor readings.

5. Lubricate all points requiring daily lubrication.

6. Check and maintain proper tire pressure.

7. Ensure that the bale carrier has been correctly set for the intended bale size (see the section "Adjusting for Bale Size" in this manual).

8. Ensure that the automatic loading cycle has been adjusted for the intended hydraulic flow rate and pressure, especially if a different tractor is used (see the section "Automatic Sequencing Adjustments" in this manual).

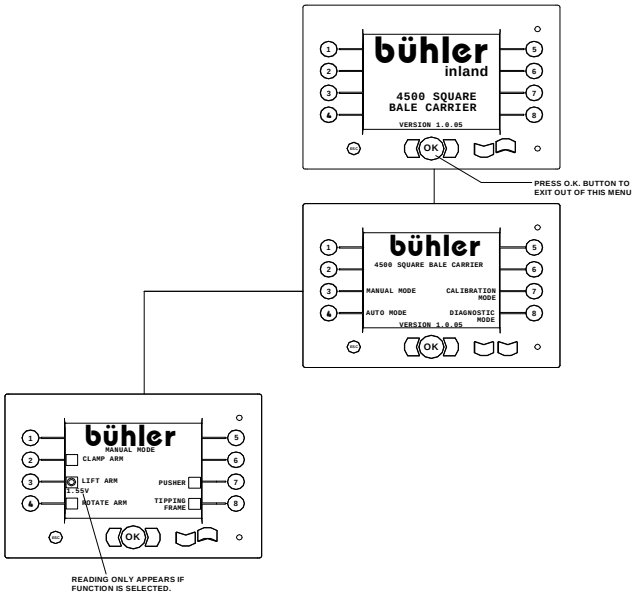
Loading Operations

WARNING: Stay away from lift arm or tipping frame when operating to prevent crushing. Keep others away.

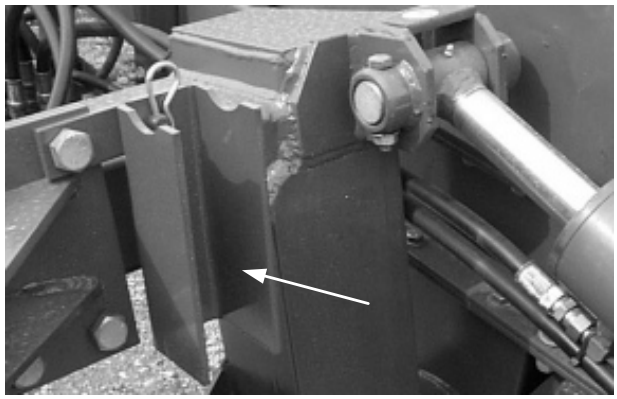
DANGER: Stay away from overhead power lines when rising lift arm or tipping frame to prevent electrocution.

Initial Preparation

To move **arm** from transport to operational position follow the flow diagram below:



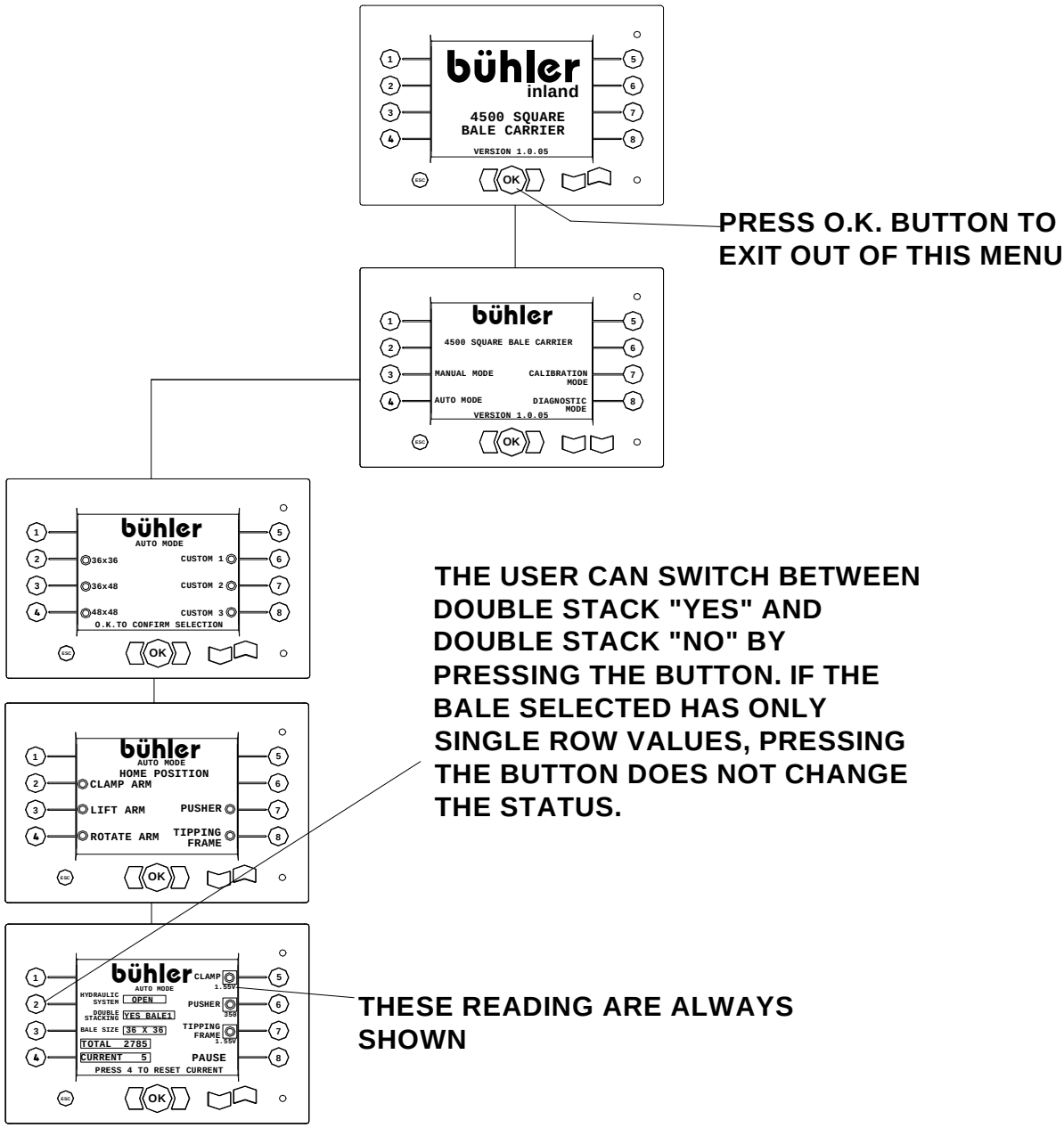
1. To raise the lift arm up, press and hole the Up arrow key until the Transport lock no longer touches the cylinder base, release button.
2. Remove Transport Locker Assembly and stow as follows:



LIFT CYLINDER LOCK (IN STORAGE)

Initial Loading Operation

Follow the flow diagram to set machine for loading operation. **IMPORTANT:** Do not attempt to load two rows of large (4' x 4' x 8') bales. Doing so would exceed the gross vehicle weight of the carrier.



1. After selecting bale size, the “Auto Home Position” screen appears. This menu screen is designed to automatically set (“activate”) all functions to the ready state needed for loading operation. By pressing the button corresponding 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. If a function has not been activated when the corresponding button is pressed, this indicates that an unsafe condition exists. The safety protocol has prevented the function from operating. For example, Lift Arm down cannot be activated until the Rotate Arm has rotated away from the deck. The menu screen will change when all functions are in the ready position (activated).
2. The next screen is the “Auto Mode” screen, this indicates that all functions are ready and loading operation can begin. Loading operation can be started with the “CLAMP” button located on the Display unit or with the “SQUEEZE” button located on the hand held pendent. Pressing and release to jog the clamp arm together. Press and hold to activate the Auto cycle. Once the Lift Arm rises, release Squeeze button.

Loading Operation

1. Approach the bale from the narrow side in a straight line parallel to the bale (baling direction), not at an angle. When rear of bale strikes BALE STOP, ***stop tractor*** and depress and hold **“CLAMP”** button (or the *1st* button on the 3-BUTTON CONTROL HANDLE) until ARM begins to rise, release switch. The automatic loading cycle is now engaged. Lift arm should continue to rise to Row 1 Bale height location, SWING ARM rotates 90° to le ft, and bale is released onto deck. SWING ARM rotates forward (right), and Lift Arm goes down to the loading position. Simultaneously, the Pusher will automatically push the released bale back to a preset location. Proceed with the next bale. You are now ready to load the next bale.

2. If **Double Stacking:** As mentioned above the Pusher will automatically push the first bale back to a predetermined location, approximately 6” to 12”. Then, the DOUBLE STACKING indicator will indicate BALE2. Load the second bale as in step 1 noting that the LIFT ARM goes UP higher than in first step (higher than the bale that is already on the deck). SWING ARM rotates 90° with the second bale coming in perfect alignment with the first bottom bale. The bale is released on top of the bottom bale. The PUSHER will push back both bales, enough to clear the deck for the next set of bales.

DIRECTION OF APPROACH

NOTE: When four bales (if loading a single layer) are picked up (or two layers with five intermediate-sized bales each), push the entire load back against the **TAIL STOPS** at the back of **TIPPING FRAME** to minimize hitch load. This can be done either using the buttons on the Display unit or the handheld control handle. You DO NOT have to exit the "Auto Mode" to perform these functions.

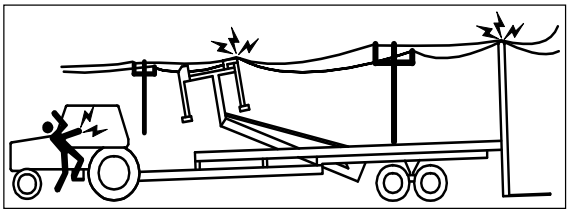
1. Continue loading bales until bale carrier is fully loaded. When the last bale is loaded, you will see the DECK FULL message flashing on the display unit indicating that you are ready for unloading.

Once the loading techniques are mastered, loading can be done on-the-go. Tractor speed should not exceed **10km/hr** when approaching the bale. High speeds result in damage to the bale carrier.

Unloading Operation

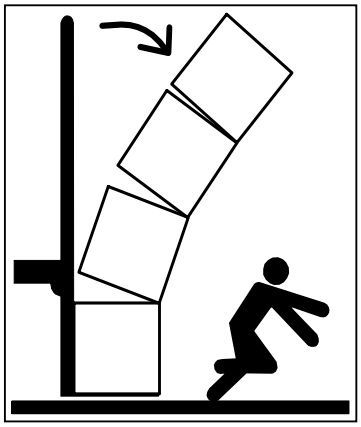
WARNING: Stay away from lift arm or tipping frame when operating to prevent crushing. Keep others away.

DANGER: Stay away from overhead power lines when rising lift arm or tipping frame to prevent electrocution.



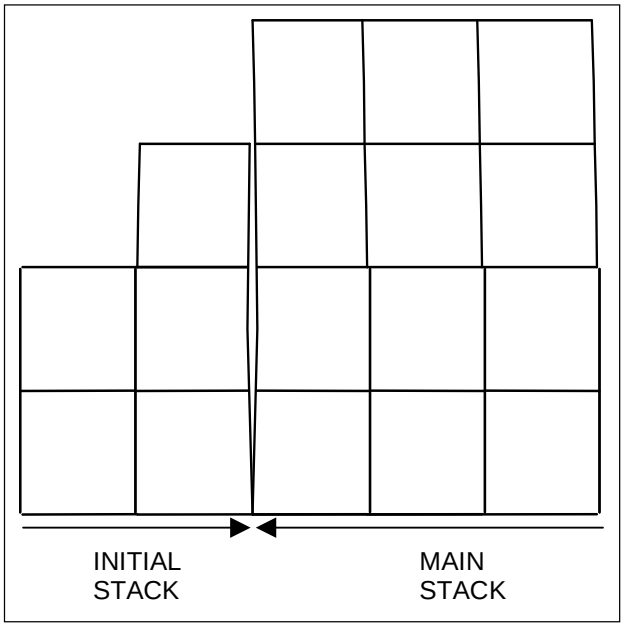
STAY AWAY FROM OVERHEAD POWER LINES

DANGER: Stay away from bale stack when unloading. Bales can tip over. Keep others away. Stacking should be attempted on level ground only.



STAY AWAY FROM BALE STACK

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. As a result, stacked bales being leaned toward the stack.



BALE STACKS

Starting A Stack

If possible, start a stack less than full height for the first load to allow bales to support each other. This is best achieved by loading only 5 bales for the first load (i.e. load 3 bales first, push these all the way to the rear, then load two additional bales. Unload the first stack of 3 bales, drive forward, and then unload the remaining stack of 2 bales against the first stack). Lay the main stack from the opposite end to the direction of the initial stack.

NOTE: The unloading procedure outlined below can be done in the **Auto Mode**.

1. Press and hold *TIP FRAME UP* until TIPPING FRAME is vertical.

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

3. **Second Stage Unloading:** Drive the tractor forward until there is enough room to safely lower the TIPPING FRAME onto the carrier deck. Depress and hold *TIP FRAME DOWN* until TIPPING FRAME is lowered fully onto carrier deck. Depress and hold *PUSHER BACK*. Release switch when rear bale hits TAIL STOPS. Return pusher to the front by pressing and holding the PUSHER HOME button.

RAISE TIPPING FRAME

LOWER TIPPING FRAME

4. Raise the TIPPING FRAME when the pusher is at the home position and repeat the unloading procedure by placing the second stack as close as possible to the first.

NOTE: TIPPING FRAME will go about 5° past vertical position when TIPPING CYLINDERS are fully extended. This feature is useful to straighten out a leaning stack.

Transporting Carrier

1. Use tractor with a minimum of 100 hp and adequate braking capacity to safely control 25,000 lbs. (11,340 kg) GVW trailing load to tow the bale carrier.

2. The towing unit should weigh 16,700 lbs. (7575 kg) or approximately 67% of the carrier's GVW.

3. Do not tow over 20 mph (32 kph) when loaded.

4. Turn on flashing lights when transporting on public roadways.

5. Obey local regulations regarding road transport.

6. Raise lift arm to transport position and engage LIFT CYLINDER LOCK over lift arm cylinder before transporting.

7. If the bale carrier is equipped with the optional second layer kit, close the rear stack stabilizer sufficiently to reduce its width prior to transporting.

LIFT CYLINDER LOCK

MAINTENANCE

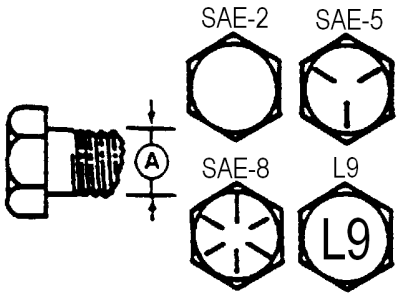
WARNING: Place all tractor controls in neutral, stop engine, set parking brake, remove ignition key and wait for all moving parts to stop before servicing, adjusting or repairing bale carrier.

The following sections explain regular inspections and adjustments. IMPORTANT: Service intervals should be increased when operating in extreme or difficult conditions.

Fasteners

The tables below list the correct torque values for various bolts and cap screws used on the bale carrier. Tighten **all** bolts to specified values unless otherwise noted.

BOLT DIAMETER "A"	BOLT TORQUE							
	SAE 2		SAE 5		SAE 8		L9	
	lb-ft	N.m	lb-ft	N.m	lb-ft	N.m	lb-ft	N.m
1/4"	6	8	9	12	12	17	10	13
5/16"	10	13	19	25	27	36	19	26
3/8"	20	27	33	45	45	63	30	41
7/16"	30	41	53	72	75	100	55	75
1/2"	45	61	80	110	115	155	85	115
9/16"	70	95	115	155	165	220	120	163
5/8"	95	123	160	215	220	298	170	231
3/4"	155	225	290	390	400	540	265	360
7/8"	170	230	420	570	650	880	475	645
1"	225	305	630	850	970	1320	550	746



LOCATION	lb-ft	N.m
WHEEL HUB BOLTS	125	170
HITCH MOUNT 1-1/4” HEX NUT	225	305
ALL CARRIAGE BOLTS	33	45

Check all bolts for tightness after the first 10 hours of operation and every 50 hours thereafter.

Periodically inspect for broken or missing fasteners. Replace with those designated in the “Parts” section of this manual.

Hydraulic System

WARNING: To prevent serious injury or death from high-pressure fluid:

- **Relieve pressure on system before repairing, adjusting or disconnecting hydraulic components.**
- **Wear proper hand and eye protection when searching for leaks. Use wood or cardboard instead of hands.**
- **Seek immediate medical attention if injured by hydraulic fluid piercing the skin.**

1. Keep the hydraulic components clean to prevent contaminants from entering the system.

2. Regularly check the fluid level in the tractor reservoir and follow the maintenance procedures in the tractor Operator's Manual.

3. Regularly inspect cylinders, hoses and fittings for leaks, crimps and abrasions or other signs of wear and tear or impending failure.

4. Replace cut, worn or crimped hoses and metal lines.

5. Check that all components are in good working condition. Tighten any loose components.

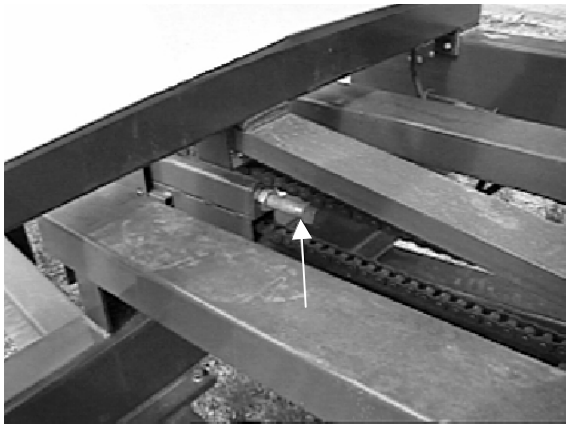
6. Avoid makeshift repairs to the hydraulic system such as clamping or taping fittings or hoses. The system operates at high pressure and failure of such repairs can happen suddenly and without warning resulting in unsafe or hazardous conditions.

7. Hydraulic lines and cylinders must be free of air to function correctly. Air can be bled from the hydraulic system by parking the bale carrier in the field position on a level surface with the tractor engine running and cycling the system.

Chain/Sprocket

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

2. The PUSHER ROLLER CHAIN can be tightened by turning SPROCKET TENSION BOLT clockwise (it should be tightened until there is little or no slack in the CHAIN). If no more adjustment is possible, shorten ROLLER CHAIN by removing one link.



SPROCKET TENSION BOLT

3. Apply a SAE light machine oil (or equivalent) with a brush to ROLLER CHAIN several times during the season and especially before out of season storage.

4. Repaint top of CARRIER BEAMS regularly with Slip Plate™ to reduce friction, especially when handling heavier bales.

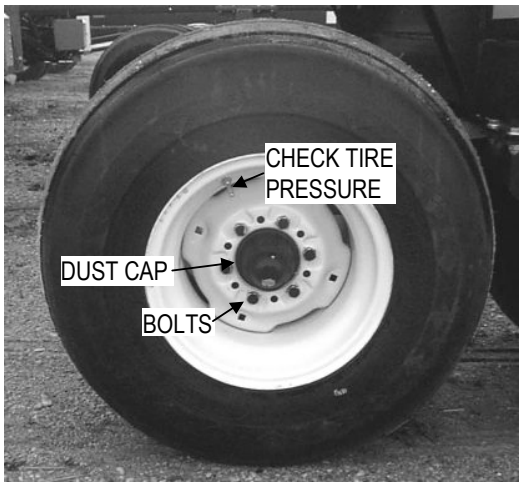
Wheel/Tires

Check HUB BOLTS regularly for tightness.

1. Ensure that DUST CAPS are firmly in place.

2. Check tires pressure regularly: 90 psi (620 kPa).

3. The wheel bearings should be inspected and re-packed annually with SAE multi purpose type grease. When reinstalling the wheels, the HUB BOLTS should be torque to 125 ft-lbs. (note: the valves should be facing away from the HUBS). A thread-locking compound such as *Locktite 271* is recommended for the HUB BOLTS.

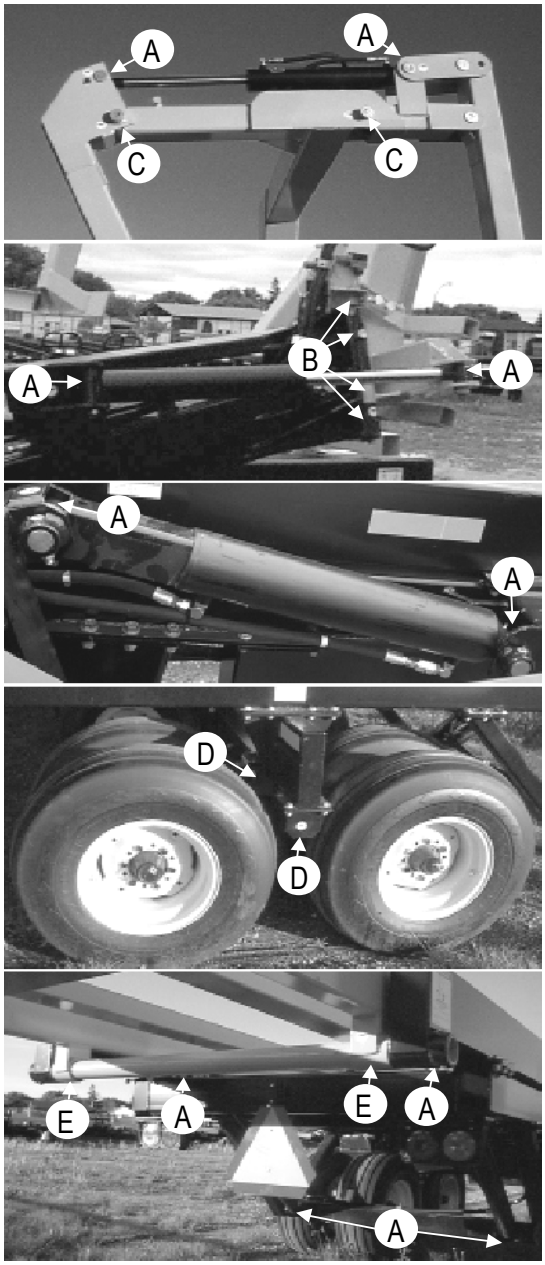


WHEELS AND TIRES

Lubrication

1. All grease fittings should be lubricated before operating the bale carrier at the start of the season and daily during the season. Use a SAE multi purpose lubricant or equivalent. There are 22 fittings to lubricate:

- At both ends of each HYDRAULIC CYLINDER - 10 fittings (A).
- At position where SWING ARM is joined to MAIN ARM - 4 fittings (B).
- At position where GRAB ARMS are joined to SWING ARM - 2 fittings (C).
- On each AXLE BEARING – 4 fittings (D).
- At position where TIPPING FRAME is joined to FRAME - 2 fittings (E).



LUBRICATION POINTS

Special Care Condition

To assure trouble free service, keep the machine free of any build up hay or straw, especially areas where the sensors are located.

Follow the lubrication instructions regularly as indicated.

To prevent rust on the CARRIER BEAMS, repaint regularly with ***graphite*** paint such as **Slip Plate™**. This should be done especially before placing machine in storage and several times during the season.

Storage

End of Season

1. Check for worn or damaged parts and replace, if necessary. To avoid costly delays, please contact your dealer for service parts long enough before starting the next season.

2. Store the bale carrier in a clean, dry, sheltered area.

3. Replace all missing or broken bolts with those designated in the “Parts” section of this manual.

4. Clean the bale carrier. Dirt draws moisture that rusts metal.

5. Repaint chipped or worn areas. Paint is available from your dealer.

6. Clean ROLLER CHAIN and brush with SAE light machine oil (or equivalent) to prevent rust.

7. Repaint the top of the CARRIER BEAMS with graphite paint such as Slip Plate™ to prevent rust.

Start of Season

1. Clean and inspect the bale carrier when taking it out of storage. Ensure that the bale carrier is in optimum condition at the start of the season in order to reduce chances of costly breakdown.

2. Clean and inspect ROLLER CHAIN for excessive wear or stiffness. Check for proper adjustment and alignment.

3. Lubricate the entire bale carrier. Ensure that all grease fittings are in place and taking grease properly.

4. Inspect and repack wheel bearings with a SAE multi purpose type grease.

5. Check that tires are properly inflated.

6. Check all bolts for tightness. Replace lost or worn bolts.

7. Replace and secure safety shields. Review safety regulations.

8. Operate the bale carrier for a short time. Check that all moving parts are operating freely and that automatic loading cycle is operating as expected. Check for hydraulic leaks.

9. Review the Operator's Manual.

During the Season

1. At the end of each day, park the bale carrier in a clean, dry, sheltered area.

2. Lubricate areas requiring daily lubrication.

3. Remove any build up hay or straw, especially in areas where sensors are located.

Stack Storage

1. 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.

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.

2. 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.

APPENDIX LIST

APPENDIX A

Assembly Instructions

Table of Contents

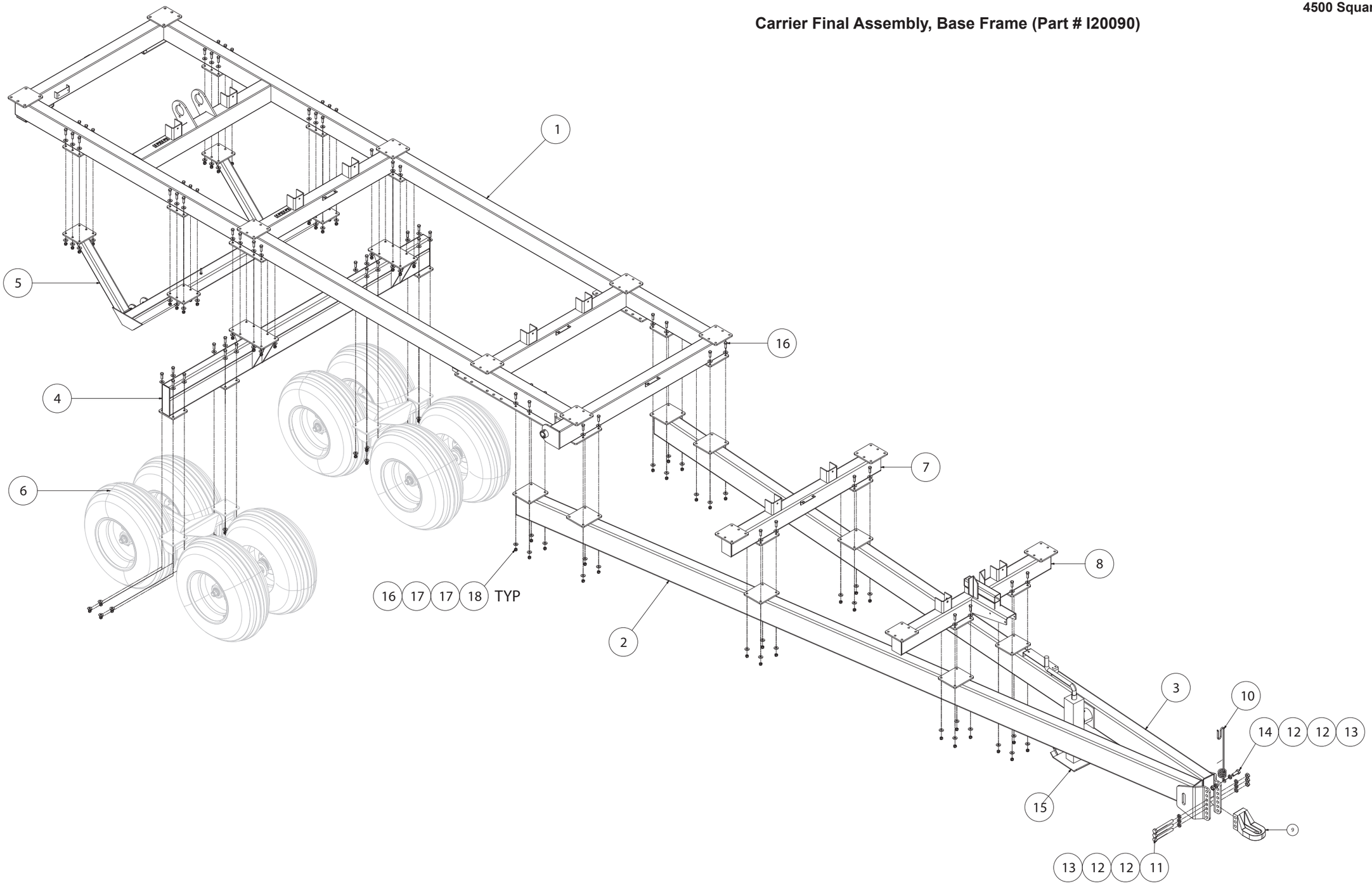
⚠ CAUTION Make sure area is clear of obstructions, well lit, and has sufficient room for safe assembly.

⚠ CAUTION Ensure the 4500 Square Carrier tires and hitch are securely block. Otherwise, verify the 4500 Square Carrier is properly coupled to the drawbar on a tractor with a minimum of 25,000 LB (11340 kg).

NOTE: Hydraulic Assembly methods and layouts are common to the right and left sides. Only one side of each component is shown in this manual.

⚠ CAUTION Stay clear of the arms when testing a finished assembly. Ensure during assembly to keep your entire body out from underneath parts that are being attached to the main frame.

Carrier Final Assembly, Base Frame (Part # I20090)



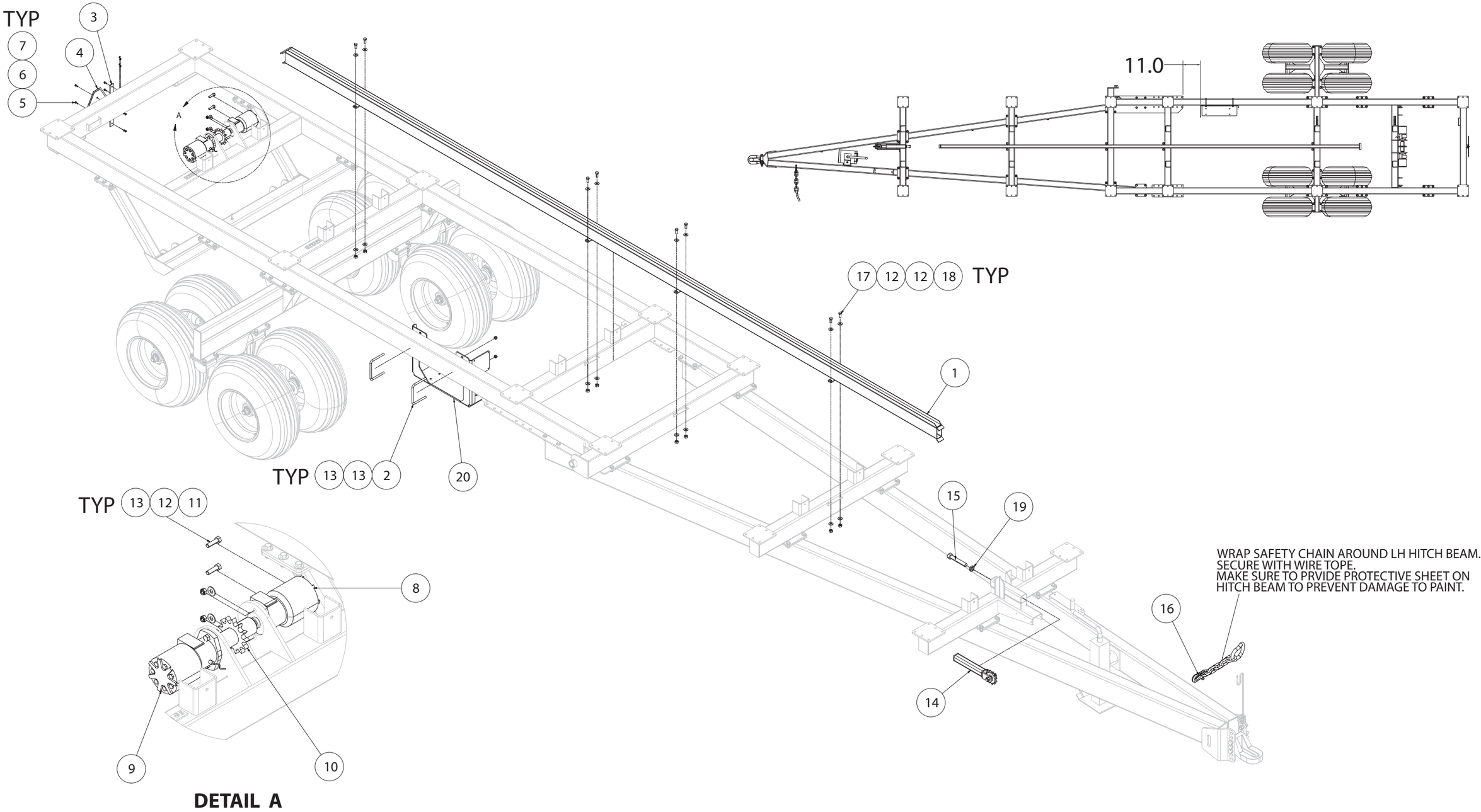
Carrier Final Assembly, Base Frame (Part # I20090)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	C2700-00	MAIN FRAME ASSY
2	1	I20087	HITCH WELDMENT RH
3	1	I20086	HITCH WELDMENT LH
4	1	C2721-00	AXLE BEAM
5	1	C2719-00	REAR CYLINDER MOUNT
6	2	A7004-00	TANDEM AXLE/4000-2500 ASSY
7	1	C2705-00	SECOND CROSS MEMBER ASSY
8	1	I20089	FRONT CROSS MEMBER WELDMENT
9	1	814352	HITCH BASE
10	1	B2363-00	HOSE HOLDER, YELLOW
11	3	9846394	BOLT HEX 0.750NC X 7LG GR8 PL
12	8	813590	WASHER 0.781ID X 1.25OD FL PL
13	4	813648	NUT LOCK (STEEL)0.750NC GRC PL
14	1	967286	BOLT HEX 0.750NC X 2.00 GR8 PL
15	1	813685	SCREW JACK 5 TON
16	86	967274	BOLT HEX 0.500NC X 1.50 GR8 PL
17	172	84048	WASHER 0.500 FLAT SAE Bs PL
18	86	813663	NUT LOCK (STEEL) 0.500NC GRCPL

bühler

4500 Square Carrier

Carrier Final Assembly, Motors and Chain Guide (Part # I20090)



DETAIL A

Carrier Final Assembly, Motors and Chain Guide (Part # I20090)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	I20091	CHAIN GUIDE RAIL WELDMENT
2	2	I100180	U-BOLT VALVE MOUNT 4500
3	1	E2795-00	DECAL MOUNT SMV
4	1	967066	DECAL SLOW MOVING VEHICLE SIGN
5	4	81525	BOLT HEX 0.250NC X 0.750 GR5 PL
6	4	812624	WASHER 0.250 SAE FLAT BS PL
7	4	84498	NUT LOCK (STEEL) 0.25NC GRB PL
8	1	813660	MOTOR 22.2 CU IN
9	1	814106	MOTOR 22.2 CU IN W/SENSOR
10	1	C2770-00	REAR SPROCKET ASSEMBLY
11	4	813686	BOLT HEX 0.500NC X 1.75 GR8 PL
12	20	84048	WASHER 0.500 FLAT SAE Bs PL
13	8	813663	NUT LOCK (STEEL) 0.500NC GRCPL
14	1	A2700-46	SPROCKET ASSEMBLY
15	1	C2768-00	SPROCKET ADJUSTING BOLT FRONT 1NC
16	1	813641	CHAIN SAFETY 40M GVW
17	8	81620	BOLT HEX 0.500NC X 1.25GR5 PL
18	8	812364	NUT LOCK (STEEL) 0.500NC GRB PL
19	1	84051	NUT HEX JAM 1.00NC GR2
20	1	I100202	MOUNTING PLATE

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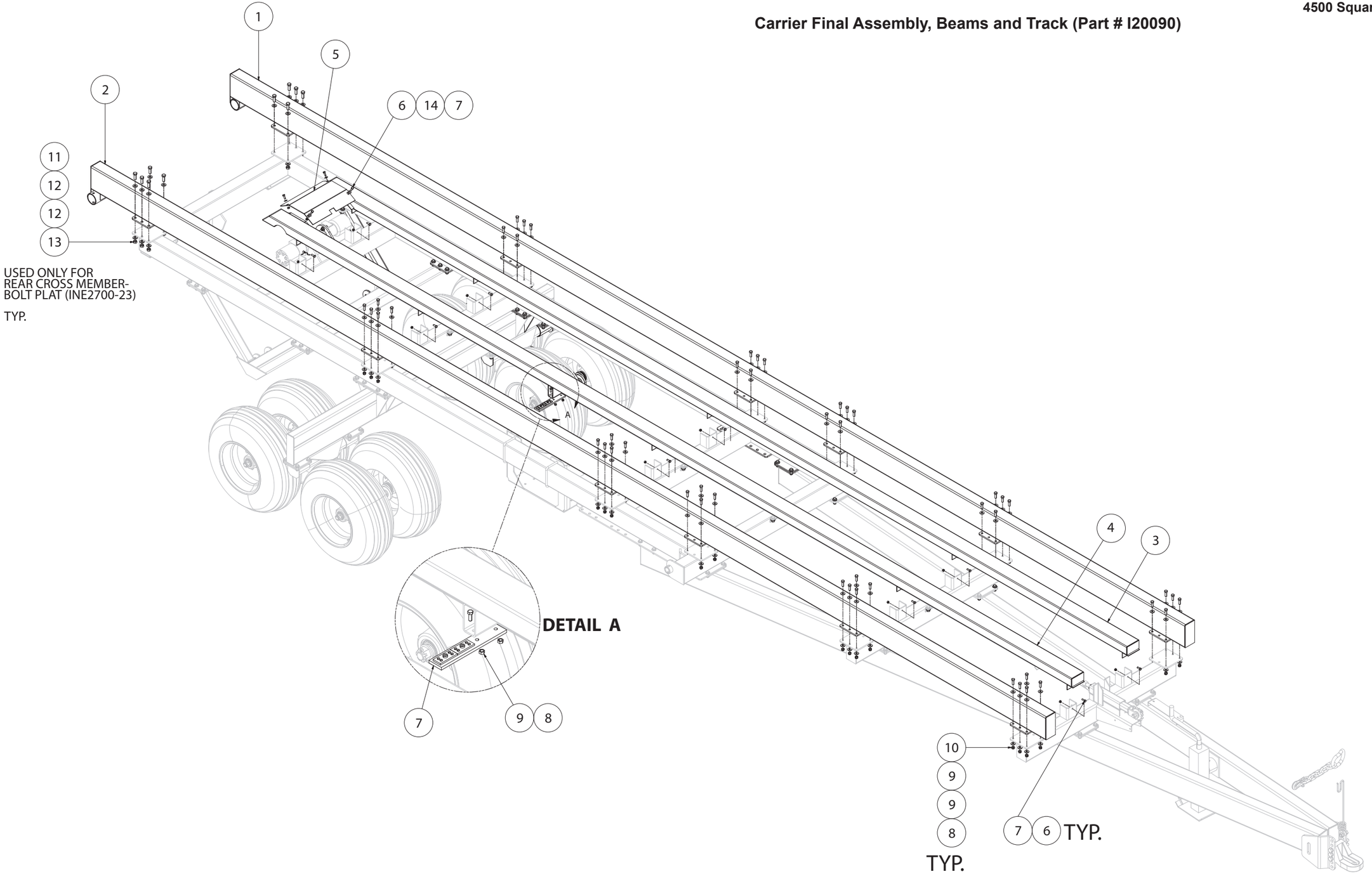
Carrier Final Assembly, Beams and Track (Part # I20090)



Carrier Final Assembly, Beams and Track (Part # I20090)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	I20079	LEFT CARRIER BEAM 4500
2	1	I20078	RIGHT CARRIER BEAM 4500
3	1	C2706-00	LEFT SLIDER BEAM
4	1	C2766-00	RIGHT SLIDER BEAM
5	1	E2776-00	REAR SPROCKET SHIELD
6	16	86170	BOLT HEX 0.375NC X 1.00 GR5 PL
7	16	812363	NUT LOCK (STEEL) 0.375 GRB PL
8	49	967274	BOLT HEX 0.500NC X 1.50 GR8 PL
9	98	84048	WASHER 0.500 FLAT SAE Bs PL
10	49	813663	NUT LOCK (STEEL) 0.500NC GRCPL
11	10	967285	BOLT HEX 0.625NC X 1.75 GR8 PL
12	20	812639	WASHER 0.625 SAE FLAT BS PL
13	10	812482	NUT LOCK (STEEL) 0.625NC GRB PL
14	4	81570	WASHER 0.375 FLAT ST HS PL

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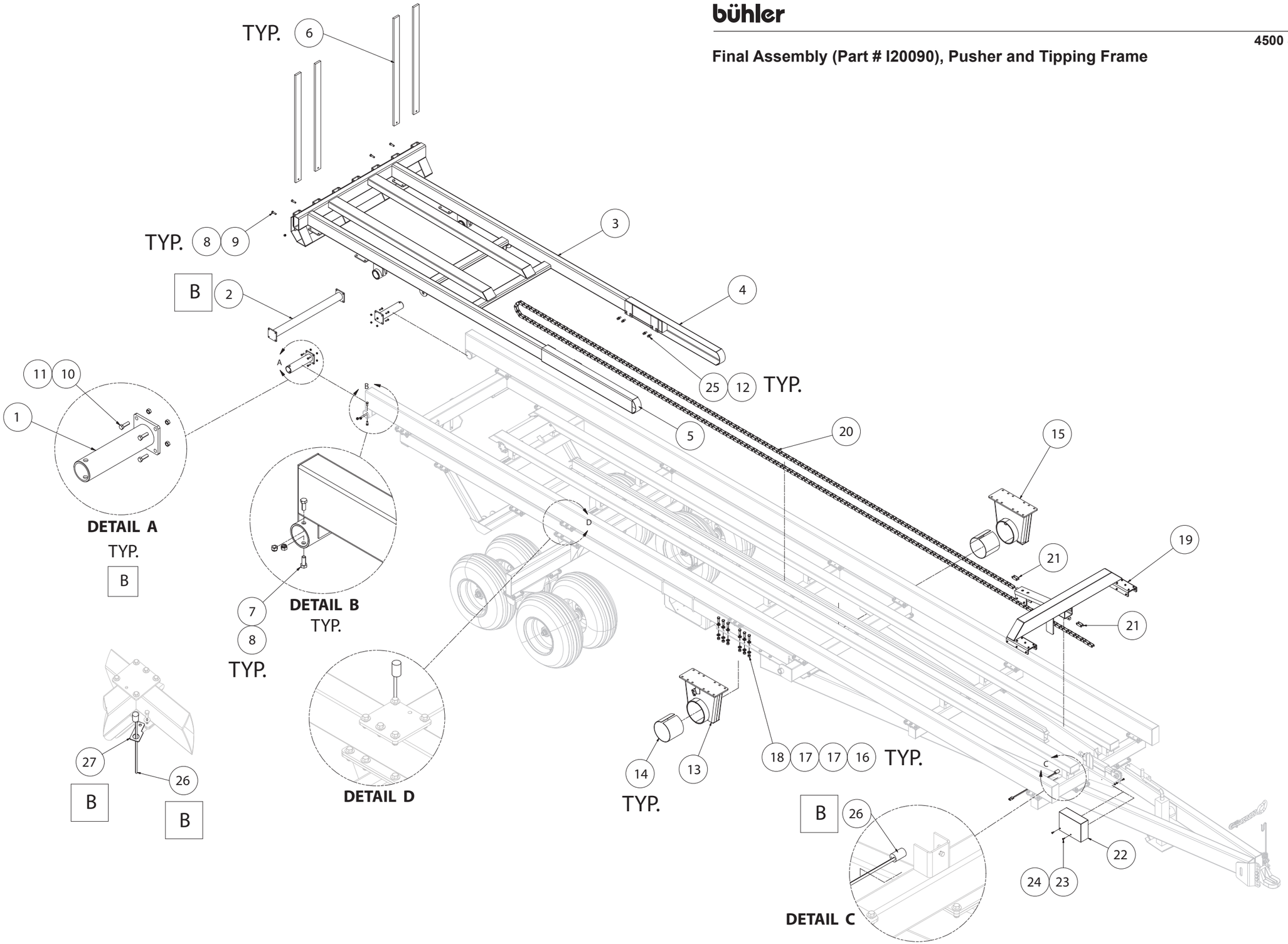
4500 Square Carrier

Final Assembly (Part # I20090), Pusher and Tipping Frame



Final Assembly (Part # I20090), Pusher and Tipping Frame

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	I20094	PIVOT TUBE WELD'T
2	1	I20076	PIVOT CONNECTOR TUBE WELD'T
3	1	I20077	TIPPING FRAME ASSY 4500
4	1	C2736-00	LH BALE EXTENSION SLEEVE
5	1	C2737-00	RH BALE EXTENSION SLEEVE
6	4	E2723-00	TAIL STOP
7	4	812768	BOLT HEX 0.500NC X 1.25 GR8 PL
8	8	813663	NUT LOCK (STEEL) 0.500NC GRCPL
9	4	813686	BOLT HEX 0.500NC X 1.75 GR8 PL
10	8	86171	BOLT HEX 0.375NC X 1.25 GR5 PL
11	8	812363	NUT LOCK (STEEL) 0.375 GRB PL
12	8	984077	NUT HEX JAM 0.500 NC GR2PL
13	1	I20073	PIVOT HOLDER RH
14	2	E2791-00	SPLIT BUSHING UHMW
15	1	C2875-00	PIVOT HOLDER LH
16	24	813729	BOLT HEX 0.625NC X 1.79 L9 BOLT
17	48	813730	WASHER FL 0.325 L9 PL
18	24	813731	NUT LOCK 0.625NC PL
19	1	I20088	BALE PUSHER COMPLETE ASSY 4500
20	1	52959-648	CHAIN ROLLER #80
21	2	813643	CONNECTOR LINK HD C2080
22	1	C2853-00	FRONT SPROCKET SHIELD
23	4	81549	BOLT HEX 0.313NC X 0.75 GR5PL
24	4	812362	NUT LOCK (STEEL) 0.313NC GRBPL
25	8	813547	SET SCREW SQHDCUP 0.500 NC
26	2	814481	PROXIMITY SENSOR HARNESS ASSY
27	1	83000031	PROXIMITY SENSOR BRACKET, TIPPING

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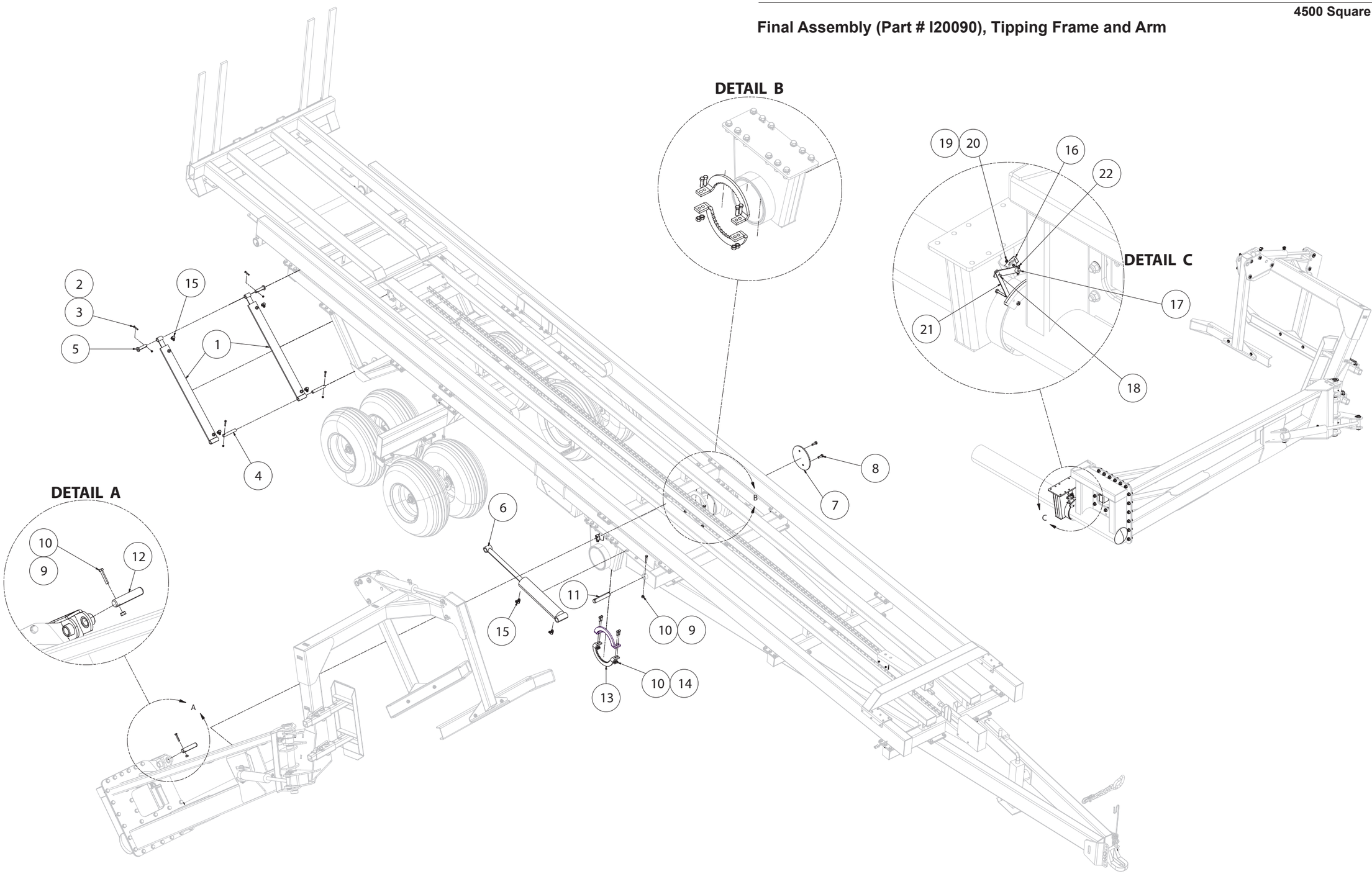
Final Assembly (Part # I20090), Tipping Frame and Arm



Final Assembly (Part # I20090), Tipping Frame and Arm

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	25106	CYL 3.5 X 36.0 INL
2	4	812363	NUT LOCK (STEEL) 0.375 GRB PL
3	4	811795	BOLT HEX 0.375NC X 2.00 GR5 PL
4	2	E2912-00	PIN / HYD. CLY
5	2	C2893-00	HYD CYL PIN
6	1	24879	CYL 4.0 X 18.0 INL
7	1	B2724-00	END CAP LH / PIVOT ARM
8	2	967285	BOLT HEX 0.625NC X 1.75 GR8 PL
9	2	81626	BOLT HEX 0.500NC X 2.75 GR5PL
10	10	812364	NUT LOCK (STEEL) 0.500NC GRB PL
11	1	E2733-00	MAIN CLEVIS PIN
12	1	E2732-00	CYL PIN MAIN ARM LIFT
13	4	I100225	STOP PLATE UHMW PIVOT ARM
14	8	87553	BOLT HEX 0.500NC X 1.75 GR5 PL
15	6	811414	ELBOW 90 3/4 MORB X 3/4 MJIC
16	1	83000028	ROTARY SENSOR
17	1	83000037	ROTARY SENSOR LEVER WELD'T
18	1	83000038	RIVET, FLAT HEAD (STEEL)
19	2	44510	SCREW, M5 X 16
20	2	86511996	NUT LOCK (NYLON) M5 CLASS 8 PL
21	1	83000033	ROTARY SENSOR LINK, LIFT ARM
22	1	50714	SET SCREW, HEX SKT

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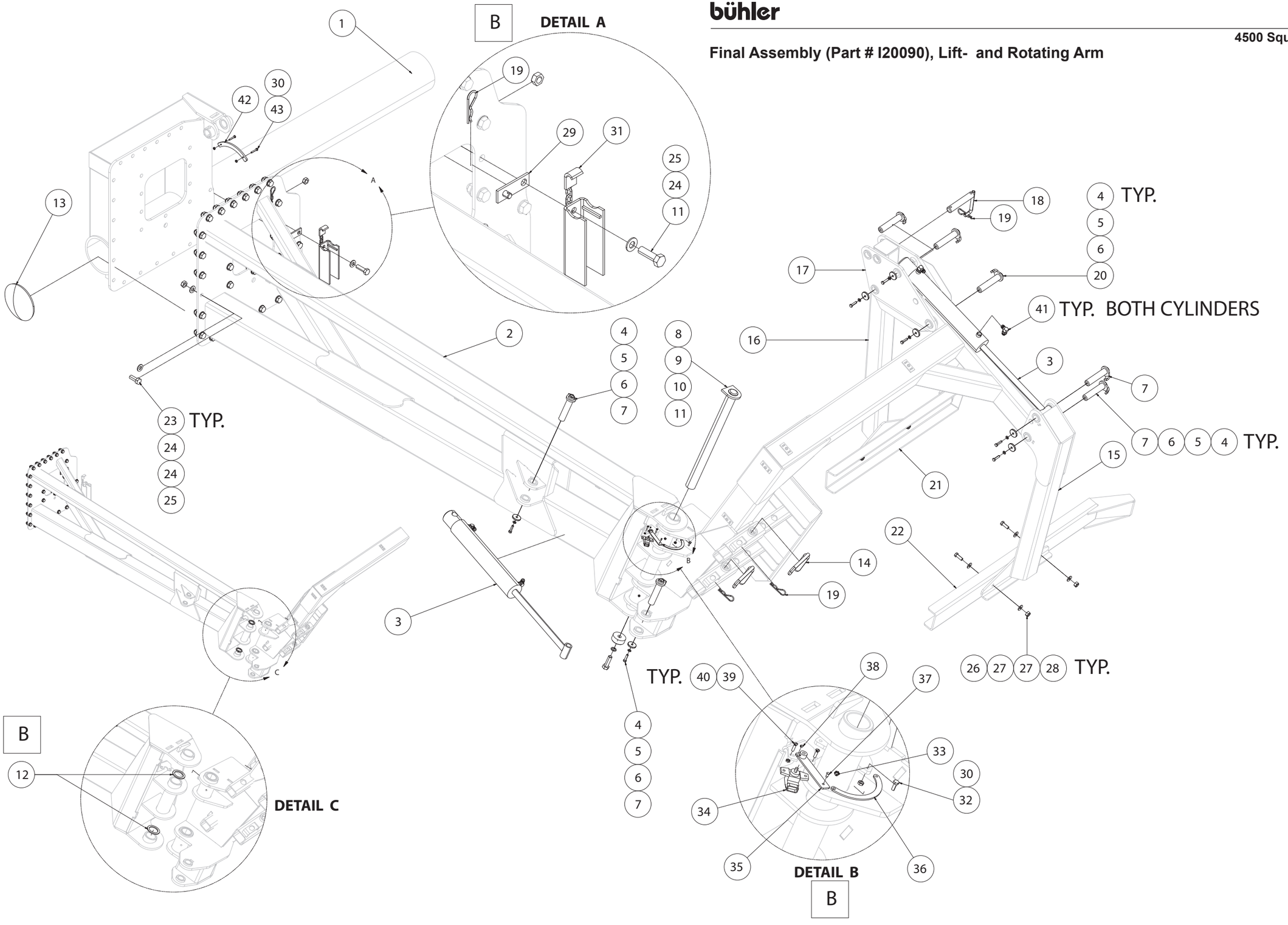
4500 Square Carrier

Final Assembly (Part # I20090), Lift- and Rotating Arm



Final Assembly (Part # I20090), Lift - and Rotating Arm

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	I20067	PIVOT ARM ASSEMBLY 4500
2	1	I20060	LIFT ARM WELD'T
3	2	24968	CYL 3.0 X 16.0 ASSY INLAND
4	7	811792	BOLT HEX 0.375 X 1.50 GR5 PL
5	7	81593	WASHER 0.375 LOCK PL
6	7	114825	PIN CAP 1.75ODX0.41IDX0.25 PL
7	4	I20070	PIN ASSY RH GRAB ARM 4500
8	1	I20075	PIVOT PIN ASSEMBLY 4500
9	1	I100222	CAP BOLT PIVOT PIN ASSEMBLY
10	1	81701	WASHER LOCK 0.750 PL
11	2	813515	BOLT HEX 0.750NC X 2.50 GR8 PL
12	2	814355	SHIM 2.0ID X 2.75OD X 0.188 POLYU
13	1	26026	HUB CAP 8" CHROME
14	2	I20069	LOCKING PIN BALE STOP 4500
15	1	I20062	RH GRAB ARM ASSY 4500
16	1	I20064	LH GRAB ARM ASSY 4500
17	1	I20066	GRAB ARM JOINT 4500
18	1	I20072	PIN ASSY REMOVEABLE 4500
19	4	12779	HAIR PIN
20	3	I20071	PIN ASSY LH GRAB ARM 4500
21	1	I20065	LH GRAB FINGER ASSY 4500
22	1	I20063	RH GRAB ARM ASSEMBLY 4500
23	27	84467	BOLT HEX 0.750NC X 2.00 GR5 PL
24	56	84050	WASHER 0.750 SAE FLAT BS PL
25	28	813648	NUT LOCK (STEEL)0.750NC GRC PL
26	4	84277	BOLT HEX 0.500NC X 1.50 GR5PL
27	8	84048	WASHER 0.500 FLAT SAE Bs PL
28	4	812364	NUT LOCK (STEEL) 0.500NC GRB PL
29	1	C2863-00	CYLINDER LOCK HOLDER
30	3	81922	NUT LOCK (NYLON) 0.25NC GR B PL
31	1	C2862-00	CLYINDER LOCK
32	1	81525	BOLT HEX 0.250NC X 0.750 GR5 PL
33	2	84062	GREASE FITTING 0.250NF STRAIGHT
34	1	83000028	ROTARY SENSOR
35	1	83000037	ROTARY SENSOR LEVER WELD'T
36	1	83000034	ROTARY SENSOR LINK, SWING ARM
37	1	83000038	RIVET, FLAT HEAD (STEEL)

38	1	00050714	SET SCREW, HEX SKT
39	2	00044510	SCREW, M5 X 16
40	2	86511996	NUT LOCK (NYLON) M5 CLASS 8 PL
41	4	811414	ELBOW 90 3/4 MORB X 3/4 MJIC
42	1	I100221	LIFT ARM SENSOR HOLD DOWN
43	2	81529	BOLT HEX 0.250NC X 1.5LG GR2 PL

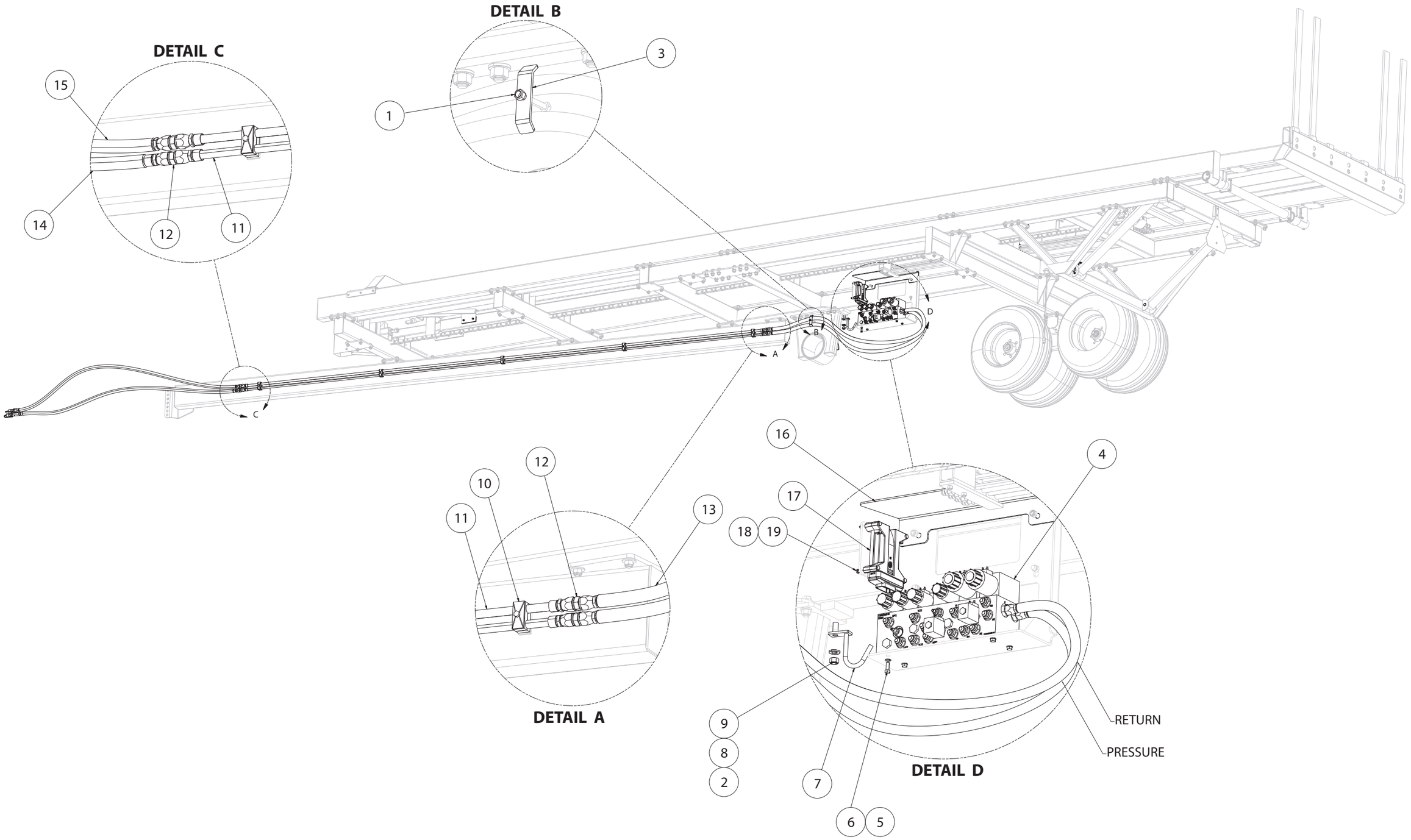
APPENDIX B

Hydraulic Assembly

NOTE: 1) Seal Kits and Service Parts are only listed in the parts lists and are not indicated on the illustrations.

Table of Contents

Carrier Hydraulic Assembly (Part # I20090), Main Lines



Carrier Hydraulic Assembly (Part # I20090), Main Lines

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	812363	NUT LOCK (STEEL) 0.375 GRB PL
2	1	00050133	BOLT HEX 0.625NC X 2.50 GR5 PL
3	1	I100113	HOSE CLAMP 3/4 4500
4	1	83000046	VALVE MANIFOLD ASSEMBLY, 4500
5	4	86170	BOLT HEX 0.375NC X 1.00 GR5 PL
6	4	9812410	WASHER LOCK 0.375 BR
7	1	83000025	HOSE HOLDER WELD'T 4500
8	2	813730	WASHER FL 0.325 L9 PL
9	1	813731	NUT LOCK 0.625NC PL
10	5	A2700-49	3/4 STEEL LINE MOUNT ASSY
11	2	814095	3/4 X 204 HYD HARD LINE
12	4	814140	ADAPTOR STR, 1-1/16 MJIC-MJIC
13	2	115608	HOSE 3/4 X 86" 1-1/16 SWFJIC-SWFJIC
14	1	I20085	HOSE 3/4 X 84" ASSEMBLY (RETURN)
15	1	I20084	HOSE 3/4 X 84" ASSEMBLY (PRESSURE)
16	1	83000047	COVER SHIELD, MANIFOLD 4500
17	1	814100	CONTROLLER 4500
18	4	967193	BOLT HEX 0.250 x 2.50 GR5PL
19	4	84498	NUT LOCK (STEEL) 0.25NC GRB PL

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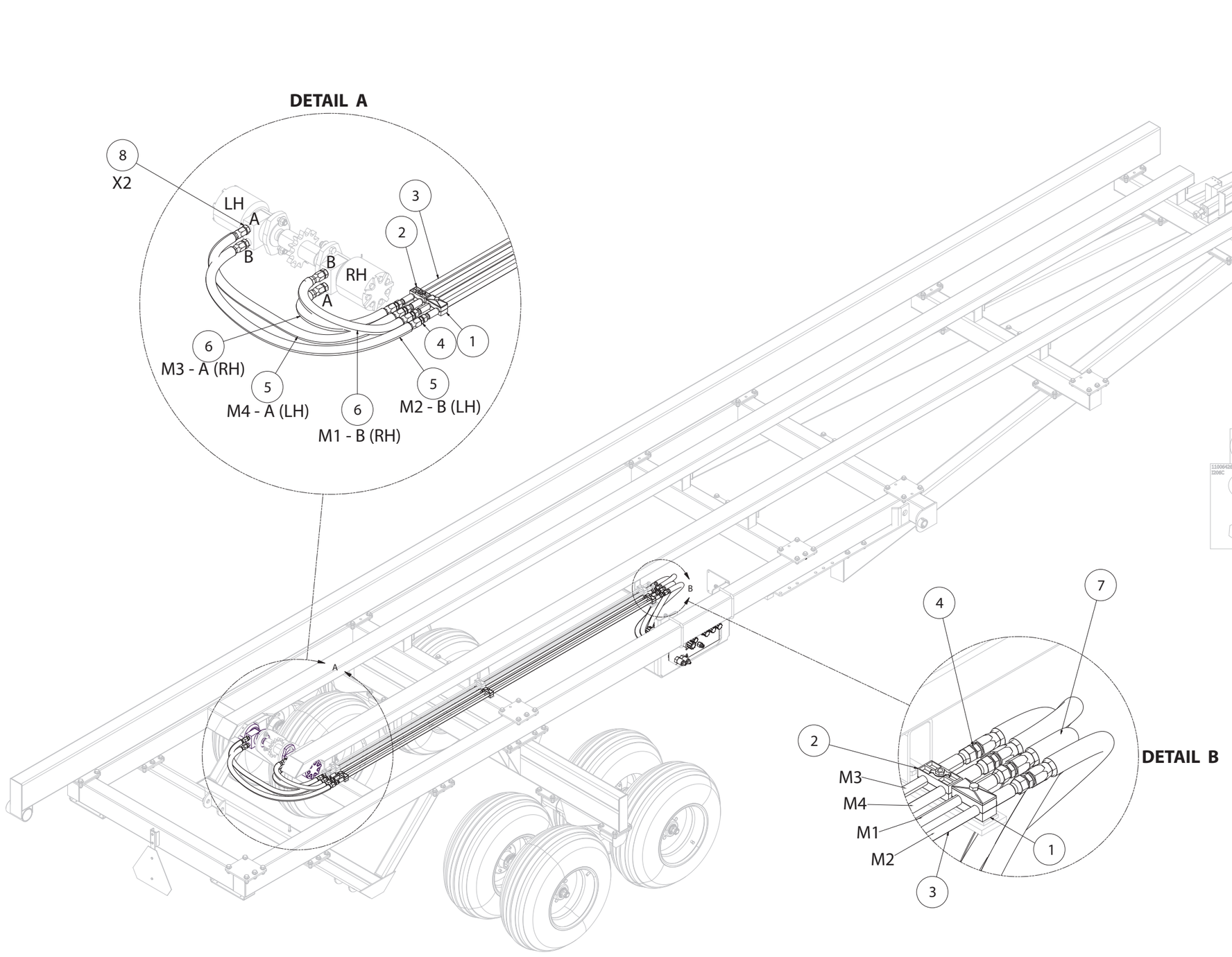
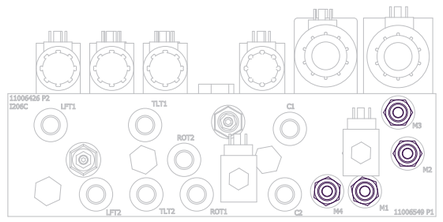
Carrier Hydraulic Assembly (Part # I20090), Motors





DETAIL B

Carrier Hydraulic Assembly (Part # I20090), Motors

ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	A2700-27	1/2" STEEL LINE MOUNT ASSEMBLY
2	3	A2700-28	STACKING MOUNT ASSEMBLY
3	4	81094	1/2 HARDLINE JIC STD
4	8	886704	ADAPTOR STR 3/4 MJIC-MJIC
5	2	812739	HOSE 1/2X40" 3/4 -3/4 SWFJIC
6	2	115448	HOSE 1/2X24" 3/4 -3/4 SWFJIC
7	4	812449	HOSE 1/2X36" 3/4 -3/4 SWFJIC
8	4	813094	ADAPTOR STR 7/8 MORB- 3/4 MJIC

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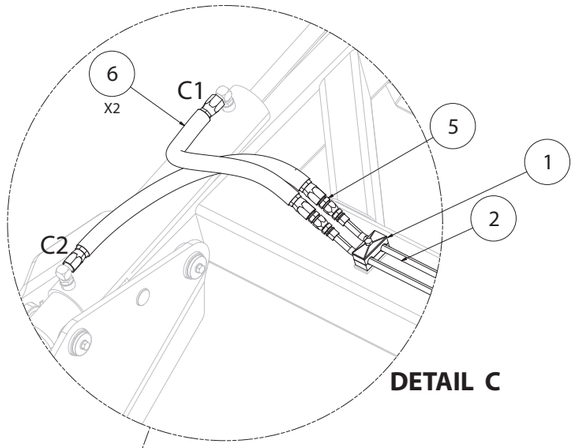
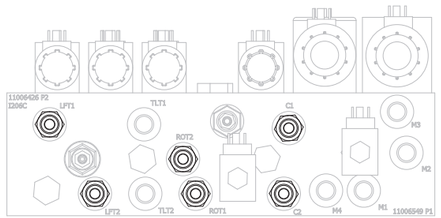
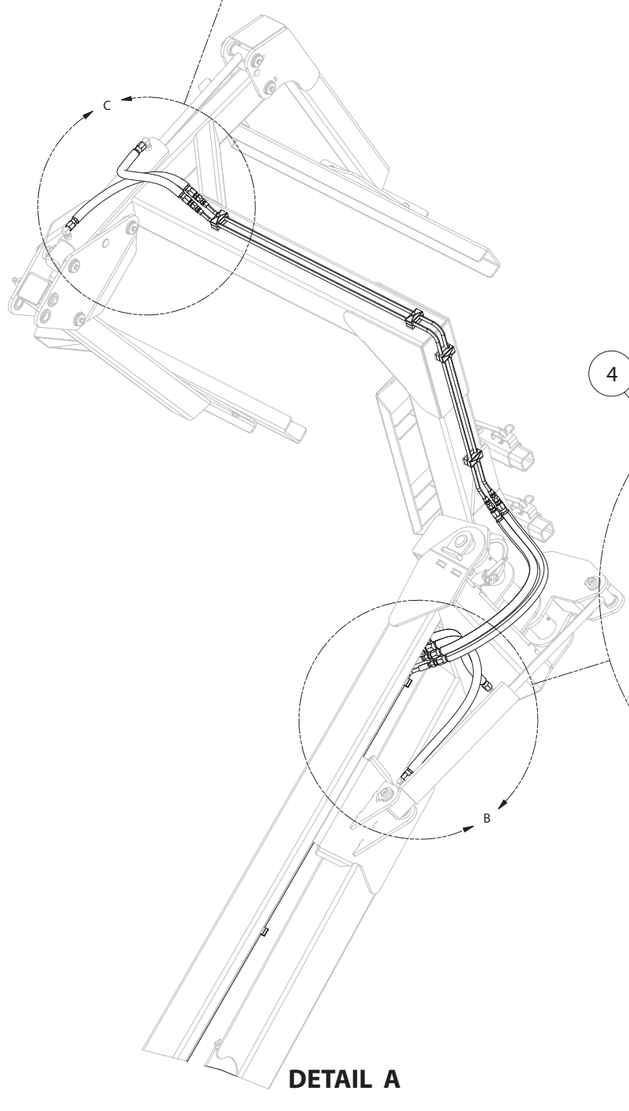
4500 Square Carrier

Carrier Hydraulic Assembly (Part # I20090), Arm

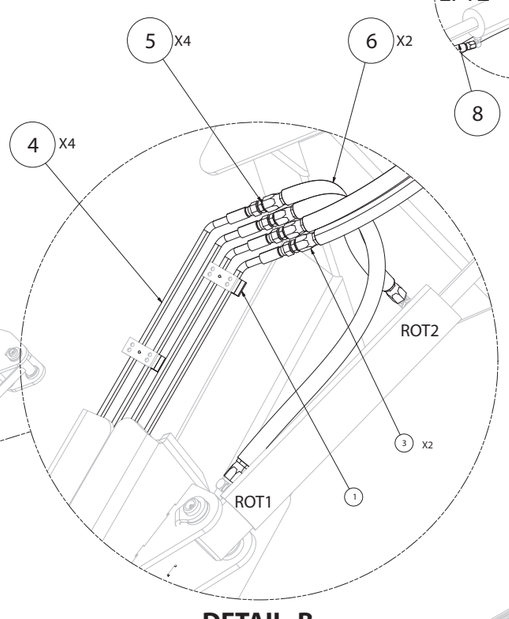


DETAIL C

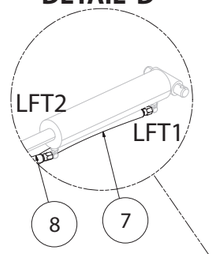




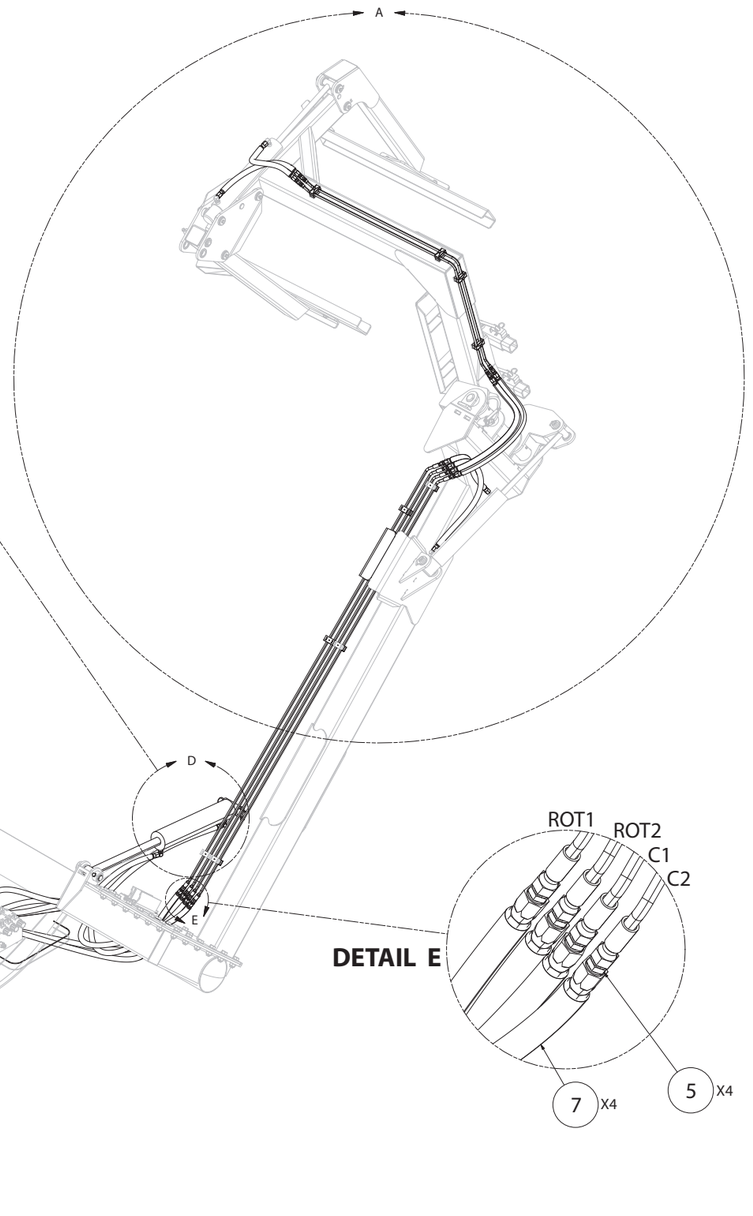
DETAIL A



DETAIL B



DETAIL D

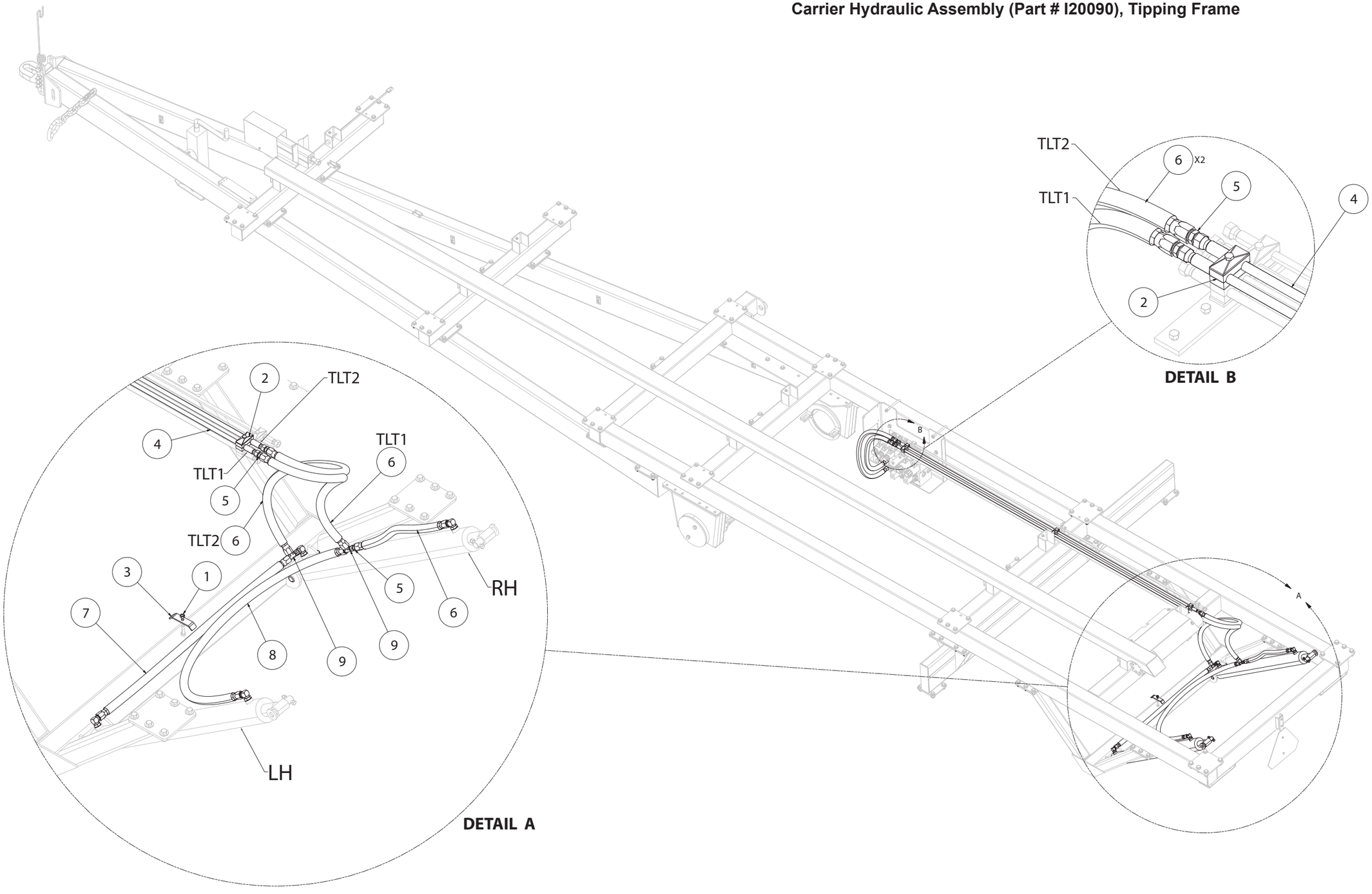


DETAIL E

Carrier Hydraulic Assembly (Part # I20090), Arm

ITEM	QTY	PART NUMBER	DESCRIPTION
1	10	A2700-27	1/2" STEEL LINE MOUNT ASSEMBLY
2	2	814097	1/2 X 108 HYD HARDLINE ROTATE ARM
3	2	29164	HOSE 1/2X44" 3/4 -3/4 SWFJIC
4	4	814098	1/2 X 108 HYD HARDLINE LIFT ARM
5	12	886704	ADAPTOR STR 3/4 MJIC-MJIC
6	4	812449	HOSE 1/2X36" 3/4 -3/4 SWFJIC
7	5	29166	HOSE 1/2X77" 3/4-3/4 SWFJIC
8	1	811749	HOSE 1/2X60" 3/4-3/4 SWFJIC

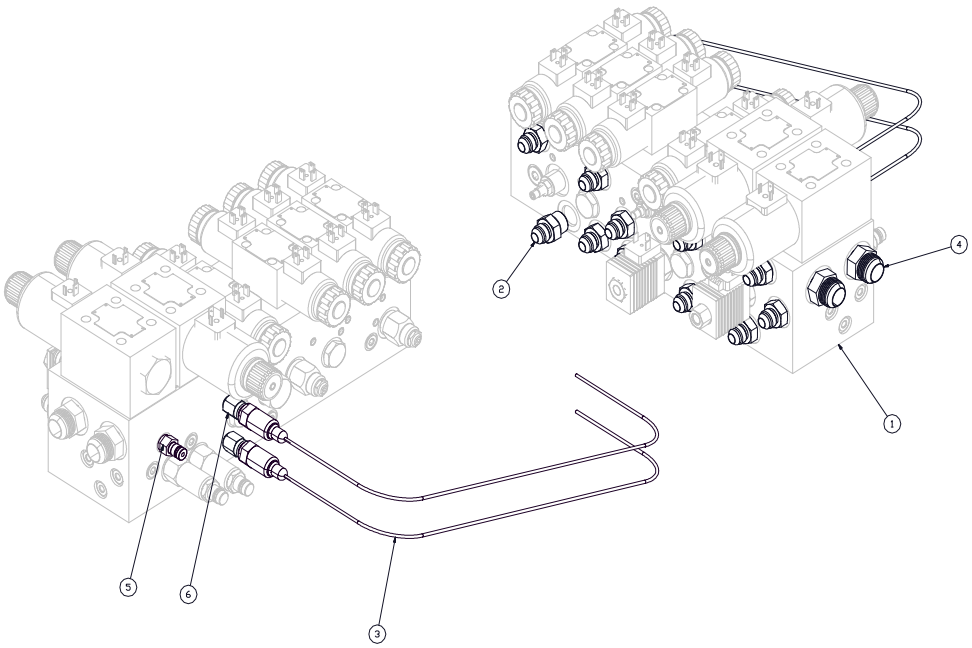
Carrier Hydraulic Assembly (Part # I20090), Tipping Frame



Carrier Hydraulic Assembly (Part # I20090), Tipping Frame

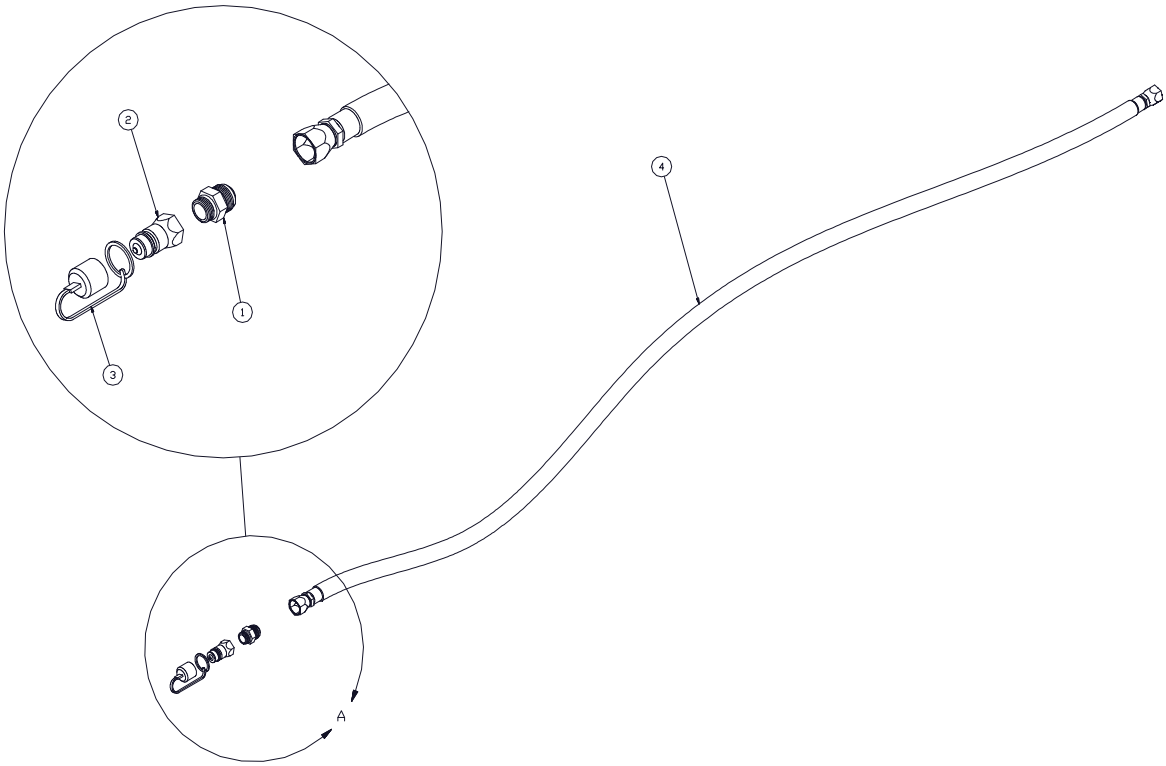
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	812363	NUT LOCK (STEEL) 0.375 GRB PL
2	3	A2700-27	1/2" STEEL LINE MOUNT ASSEMBLY
3	1	I100113	HOSE CLAMP 3/4 4500
4	2	81094	1/2 HARDLINE JIC STD
5	5	886704	ADAPTOR STR 3/4 MJIC-MJIC
6	5	812449	HOSE 1/2X36" 3/4 -3/4 SWFJIC
7	1	29164	HOSE 1/2X44" 3/4 -3/4 SWFJIC
8	1	29166	HOSE 1/2X77" 3/4 -3/4 SWFJIC
9	2	812786	TEE 3/4 MJIC X RUN 3/4SWFJIC

Valve Bank Assembly (Part # 83000046)



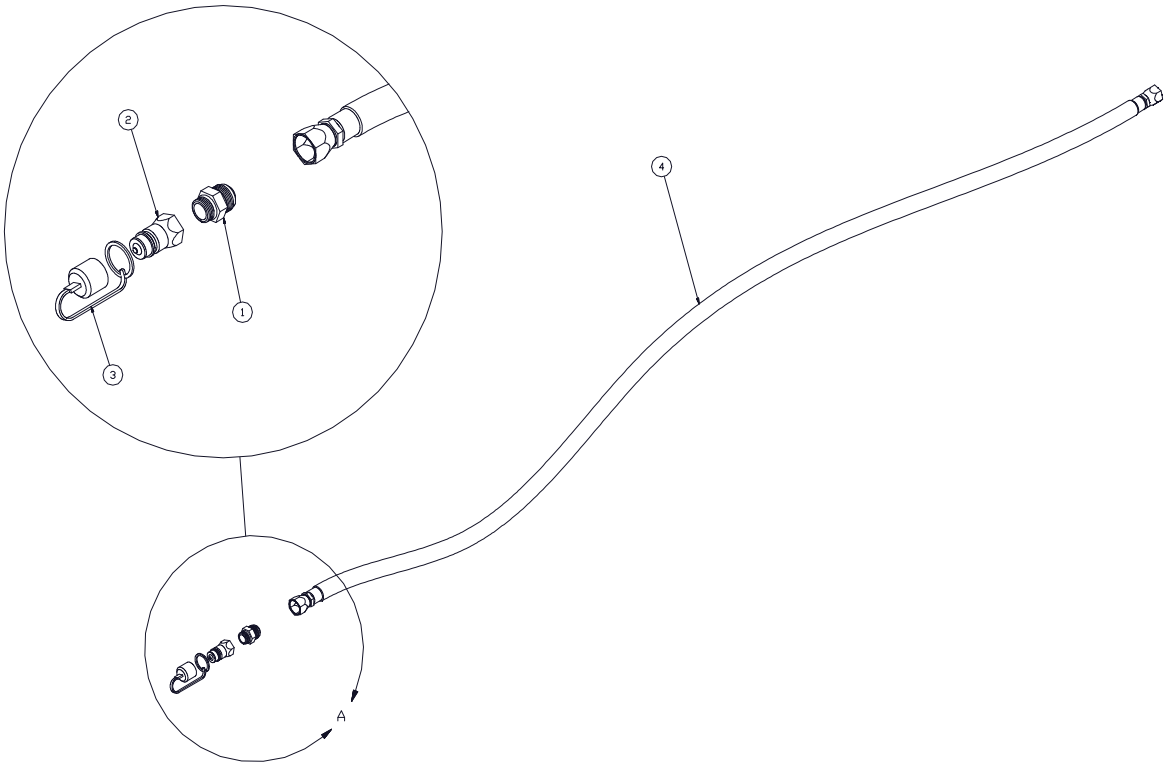
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	814442	VALVE BANK 4500
2	12	886897	ADAPTOR STR 7/8 MORB X 3/4 MJIC
3	2	814203	EPO PRESSURE SENSOR
4	2	812661	ADAPTOR STR 1 1/16MORB X 1 1/6MJIC
5	2	86502603	COUPLER QUICK 7/16 MORB
6	2	83000027	PRESSURE SNUBBER, 1/4" NPT

Hydraulic Pressure Line Assembly (Part # I20084)



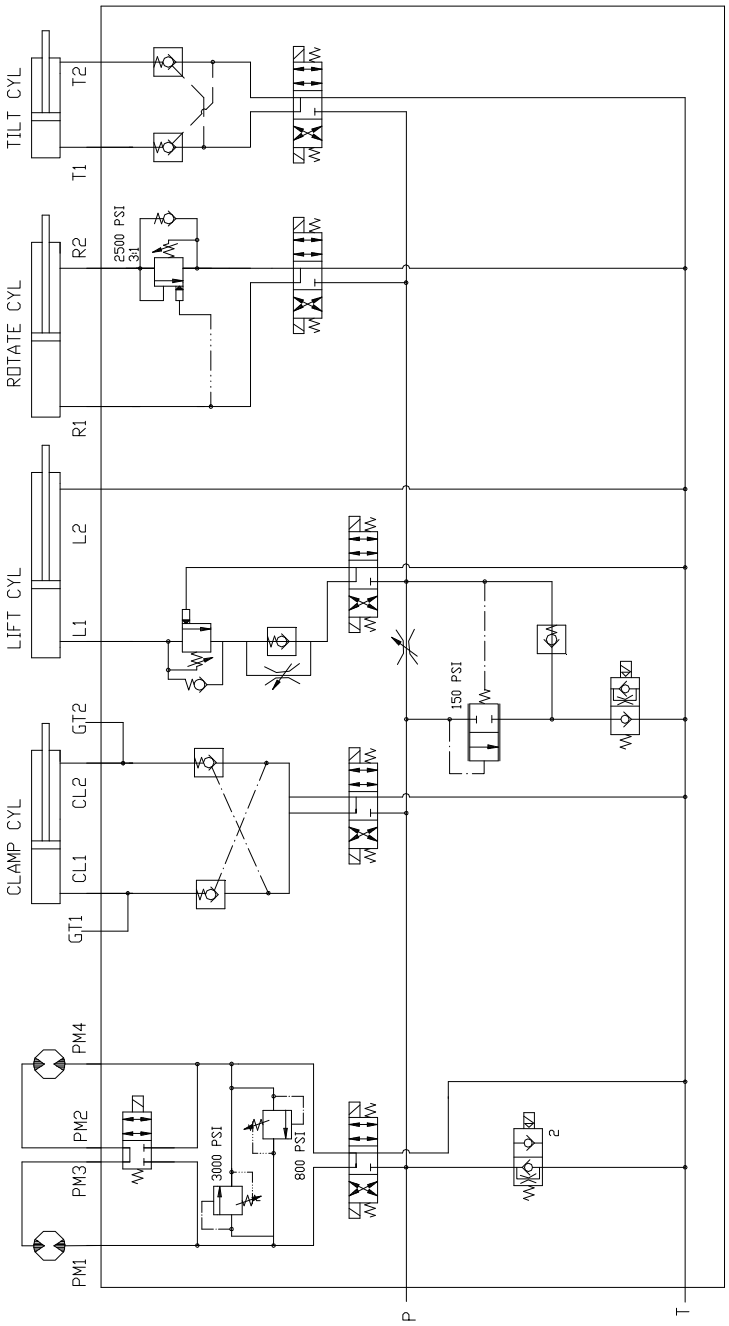
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	813208	ADAPTOR STR 1 1/16 MJIC X 7/8 MORB
2	1	813292	MALE TIP 0.50 BODY 0.88 FORB
3	1	813428	DUST CAP 0.5 RED
4	1	115253	HOSE 3/4X88" 1-1/16 SWFJIC-SWFJIC

Hydraulic Return Line Assembly (Part # I20085)



ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	813208	ADAPTOR STR 1 1/16 MJIC X 7/8 MORB
2	1	813292	MALE TIP 0.50 BODY 0.88 FORB
3	1	813305	DUST CAP 0.5 BLACK
4	1	115253	HOSE 3/4X88" 1-1/16 SWFJIC-SWFJIC

Carrier Hydraulic Schematic



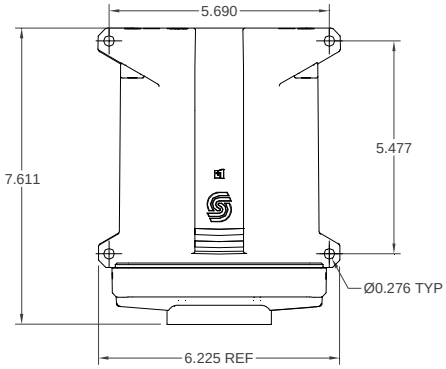
APPENDIX C

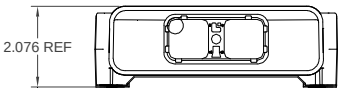
Electrical Assembly

⚠ WARNING Read and understand the safety messages listed in 4500 Square Carrier operator manual. Shut off all power to unit before inspecting, servicing, adjusting or repairing the 4500 Square Carrier.

Table of Contents

Controller (P/N 814100)

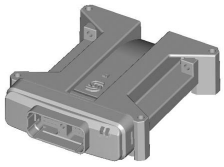




SPECIAL NOTE:
PROGRAM UPLOAD AND UPDATES REQUIRED. UPLOAD AND UPDATE PERFORMED BY BUHLER MANUFACTURING.
LATEST PROGRAM IS "BALE_WAGE_3.lhx" (09-20-2005).

SAUER DANFOSS

MC050-020-00000
PLUS 1™ Controller



MOBILE MACHINE MANAGEMENT

The MC050-020-00000 is an element of the flexible, powerful, expandable, and affordable PLUS 1 family of mobile machine management products. This device is a general-purpose controller that is equally suited for use as a member of a distributed machine control system, with intelligence in every node, or as a stand-alone controller.

The MC050-020-00000 employs a Digital Signal Processor (DSP), providing the controller with extremely fast single cycle processing speed, and 256K internal flash.

APPLICATION DEVELOPMENT

Users develop MC050-020-00000 applications using the PLUS 1 GUIDE. This Microsoft® Windows® based development environment features a user-friendly, field proven, icon-based graphical programming tool, application downloader, and service/diagnostic tool.

PLUS 1 by SAUER-DANFOSS

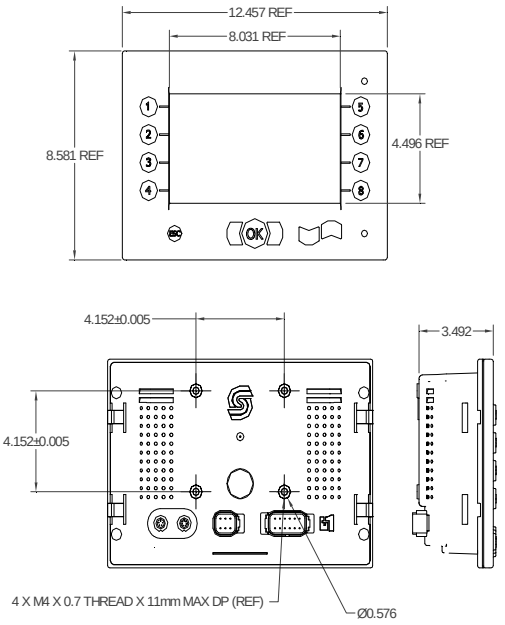
MC050-020-00000 PLUS 1 Controller

Features

- User-programmable with the PLUS 1 GUIDE (Graphical User Integrated Development Environment)
- 50 pins: (1) Deutsch DRC connector
- 16 bit fixed-point DSP running at 150 MHz
- 12 bit analog-to-digital converter
- 24 inputs
- (6) universal (DIN/AIN/FreqIN) that are user-defined as either:
  - *Analog:* with configurable ranges 0 to 5 V DC (with over range protection) or 0 to 36 V DC;
  - *Digital:* pull up (5 V DC) or pull down (0 V DC);
  - *Frequency (timing):* 1 Hz to 10 kHz
- (10) digital (DIN) configurable as: pull up (5 V DC) or pull down (0 V DC)
- (4) digital/analog (DIN/AIN) that are user-defined as either:
  - *Digital:* pull up (5 V DC) or pull down (0 V DC);
  - *Analog:* 0 to 5.25 V DC or 0 to 36 V DC
- (2) analog (AIN/Temp/Rheo) 0 to 5.25 V DC or 0 to 200 ohm rheostat
- (2) fixed range analog (AIN/CAN shield) 0 to 5.25 V DC or CAN shield pin
- 14 outputs
- (6) universal (PWMOUT/DOUT/PVEOUT) that are user-defined as either:
  - *Digital:* (3 A), configurable as source or sink;
  - *PWM:* (33 to 4000 Hz), configurable as open or closed loop with current control;
  - *Analog voltage:* open loop PWM at 4000 Hz (if driving PVE valves, reserve one output for valve power supply; this output can power up to three PVEs)
- (6) digital (DOUT) (3 A), configurable as source or sink
- (2) digital/PVE power supply (DOUT/PVE Pwr) user configurable; one DOUT/PVE Pwr will power up to three PVEs
- 9 to 36 V DC power supply, monitored internally
- 2 CAN 2.0 B ports, the fixed range analog inputs can be configured as the shield pin
- Power supply for external sensors rated at 5 V DC to 500 mA and regulated internally
- 2 LEDs both under user control
- 3 mounting alternatives: stack, end, or side

Note: No salvageable parts inside. Unit is completely sealed and is rated to IP 67 rating. Any physical tampering of the unit will void warranty.

Display Unit (P/N 814101)



SPECIAL NOTE:
UPLOAD AND UPDATE OF PROGRAM REQUIRE. UPLOAD AND UPDATE OF PROGRAM PERFORMED BY BUHLER MANUFACTURING. LATEST PROGRAM IS "DP610S.lhx" (09-20-2005).

SAUER DANFOSS

DP600
Graphical Terminals

INTRODUCTION
The Sauer-Danfoss DP600 Graphical Terminals family provides best performance to fit the needs of mobile machines.
DP600 design allows both in cab and open usage.
Up to two external video inputs gives a good overview and ensure safe operation of your mobile equipment.
High resolution color andmonochrome TFT options fit to your budget limits without losingperformance.

Features
- Small footprint
- Same outside dimensions for both screen variants
- Two mounting options:
  - Flush in into dashboard
  - Stand alone on post according to VESA standard75mm x 75mm [2.953 in x 2.953 in]
- Fully integrated connectors and silicone keypad provide water and dust protection from all sides.
- Designed to withstand high-levels of shock/vibration
- Extremely wide storage and operating temperature range
- GORE-TEX® membrane prevents moisture ingress and fogging up of screen
- Keypad with 14 buttons (8 soft-keys + 6 buttons for navigation)
- All buttons have backlight – night design
- High brightness alarm LED
- Protective glass integrated into keypad provides superior antiglare and contrast under all light conditions
- Integrated light sensor for automatic backlight adjustment
- Inputs for external menu NAV button give the driver full control while driving
- Digital output for external ALARM buzzer

DP600Graphical Terminals

Technical data

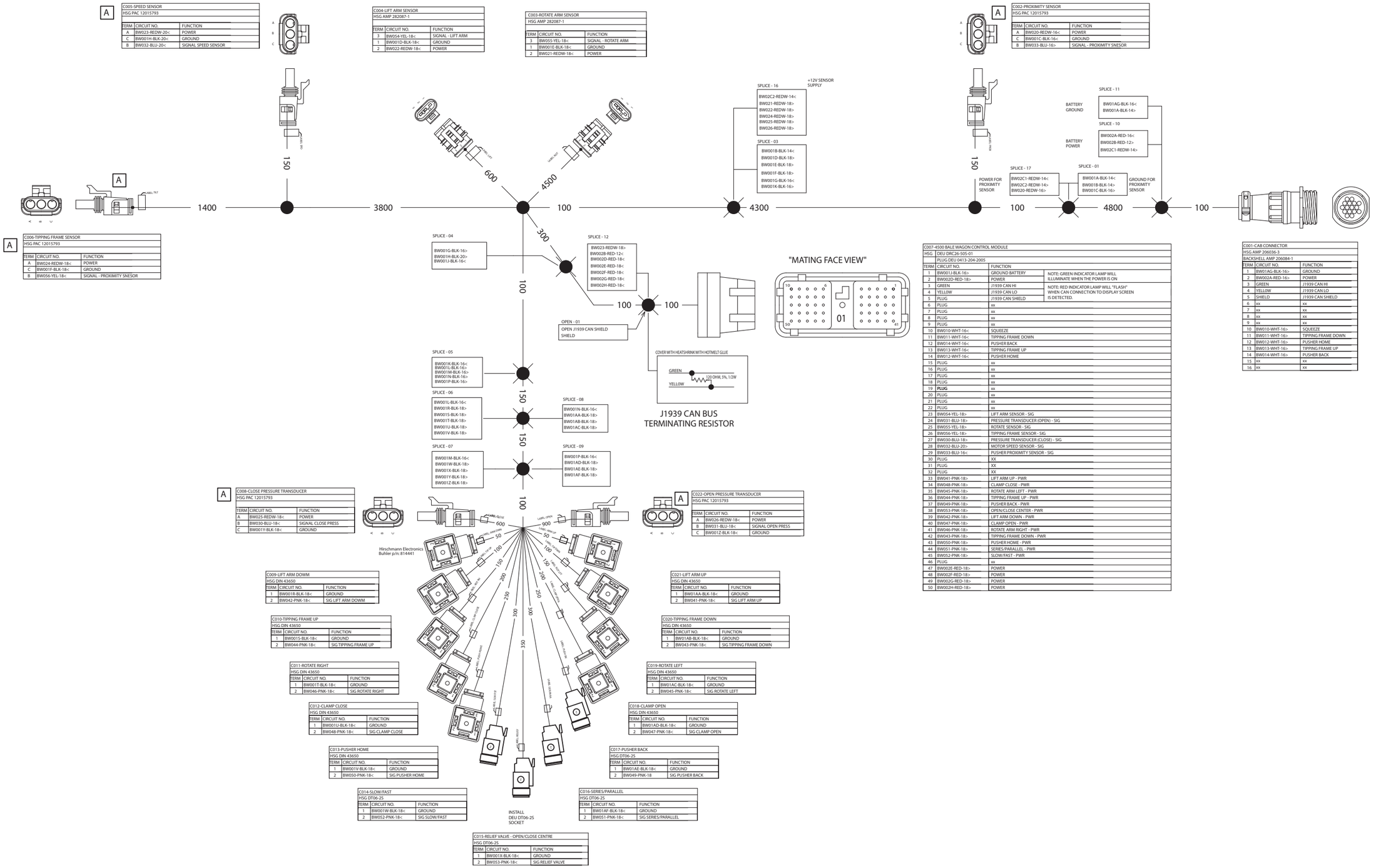
Operating voltage range	9 to 36 VDC, protected against reverse polarity and load-dump	
Power consumption	15 W max	
Digital Inputs (3)	1.5 VDC logical low > U_ > 1.5 VDC logical high2 inputs designed for 90° A/B encoder signals, menu NAV button	
Option: Video inputs (2)	Standard composite video signals	
Output for buzzer (1)	lowside, max 0.5 A	
CAN interface	2 CAN ports according to CAN specification 2.0 B (active).2 pins for CAN shield according to J1939.One CAN port, fully compatible to Sauer-Danfoss RedCAN™ standard.	
Communication	USB, RS-232	
Memory	8MB or 16MB flash, 8MB RAM, 8K FRAM (parameter memory)	
Electrical connections	1 Deutsch DTM 12-pin connector, Code A, 1 Deutsch DTM 6-pin connector1 Binder 7-pin connector for USB/RS-232, 1 Binder 5-pin connector for video-signals	
Operating temperature	color screenmonochrome screen	-30 °C to + 70 °C [-22 °F to + 158 °F] -20 °C to + 70 °C [-4 °F to + 158 °F]
Storage temperature	color screenmonochrome screen	-30 °C to + 80 °C [-22 °F to + 176 °F] -30 °C to + 80 °C [-22 °F to + 176 °F]
Moisture	SS-EN 60 529	
Vibration	IEC 60068-2-64-Fh with severity according toIEC TR 60721-4-5 environmental class 5M3	
Shock	IEC 60068-2-27-Eb with severity according toETS 300 19-2-5 environmental class 5M3; free fall according to IEC 68-2-32Ed	
Electrical EMC emission/immunity	Automotive transients ISO 7637/1-2, Automotive transients ISO 7637/3 EN 61000-6-3/EN 61000-6-2	
High brightness ALARM LED and ambient light sensor integrated into keypad		

Note: No salvageable parts inside. Unit is completely sealed and is rated to IP 67 rating. Any physical tampering of the unit will void warranty.

bühler

4500 Square Carrier

Bale Wagon Wire Harness (P/N 83000045)



bühler

4500 Square Carrier

Extension, Bale Wagon Wire Harness (P/N 83000016)

FUSE BLOCK		
HSG	PAC 12033769 (OR EQUIVALENT)	
CAP	PAC 12033731 (OR EQUIVALENT)	
FUSE	10 AMPS	
TERM		
A	RED-12>	POWER
B	RED-12<	POWER FUSED

B	BATTERY POWER		
	HSG	PAC 15300027	
	TERM		
	A	P1-RED-12>	POWER
	B	P1-BLK-12<	POWER FUSED

CONTROL 1	
HSG	DT04-2P
TERM	
1	C1-BLK/W-16>
2	C1-TAN-16>

SOLENOID 1	
HSG	Hirschmann DIN 43650 Form A
TERM	
1	S1-BLK-16>
2	S1-BRN-16>

SOLENOID 2	
HSG	Hirschmann DIN 43650 Form A
TERM	
1	S2-BLK-16>
2	S2-BRN-16>

CONTROL 2	
HSG	DT04-2P
TERM	
1	C2-BLK/W-16>
2	C2-TAN-16>

SOLENOID 3	
HSG	Hirschmann DIN 43650 Form A
TERM	
1	S3-BLK-16>
2	S3-BRN-16>

SOLENOID 4	
HSG	Hirschmann DIN 43650 Form A
TERM	
1	S4-BLK-16>
2	S4-BRN-16>

CONTROL 3	
HSG	DT04-2P
TERM	
1	C3-BLK/W-16>
2	C3-TAN-16>

CONTROL 4	
HSG	DT04-2P
TERM	
1	C4-BLK/W-16>
2	C4-TAN-16>

RELAY 1	
HSG	BOSCH 3-334-485-008 (OR EQUIVALENT)
CIRCUIT NO.	TERM
R1-RED-16>	30
C1-BLK/W-16<	85
C1-TAN-16<	86
S1-BRN-16<	87

RELAY 2	
HSG	BOSCH 3-334-485-008 (OR EQUIVALENT)
CIRCUIT NO.	TERM
R2-RED-16>	30
C2-BLK/W-16<	85
C2-TAN-16<	86
S2-BRN-16<	87

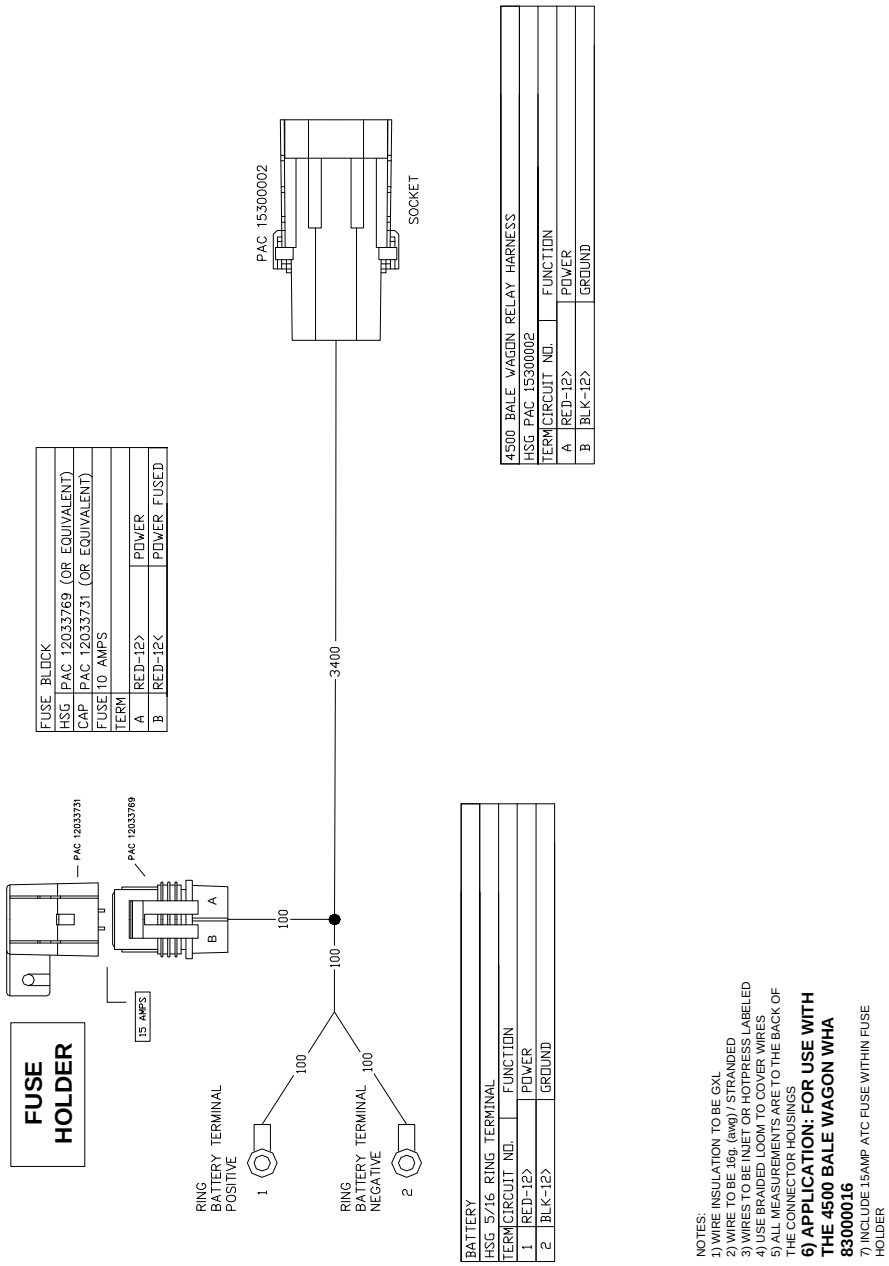
RELAY 3	
HSG	BOSCH 3-334-485-008 (OR EQUIVALENT)
CIRCUIT NO.	TERM
R3-RED-16>	30
C3-BLK/W-16<	85
C3-TAN-16<	86
S3-BRN-16<	87

RELAY 4	
HSG	BOSCH 3-334-485-008 (OR EQUIVALENT)
CIRCUIT NO.	TERM
R3-RED-16>	30
C3-BLK/W-16<	85
C3-TAN-16<	86
S3-BRN-16<	87

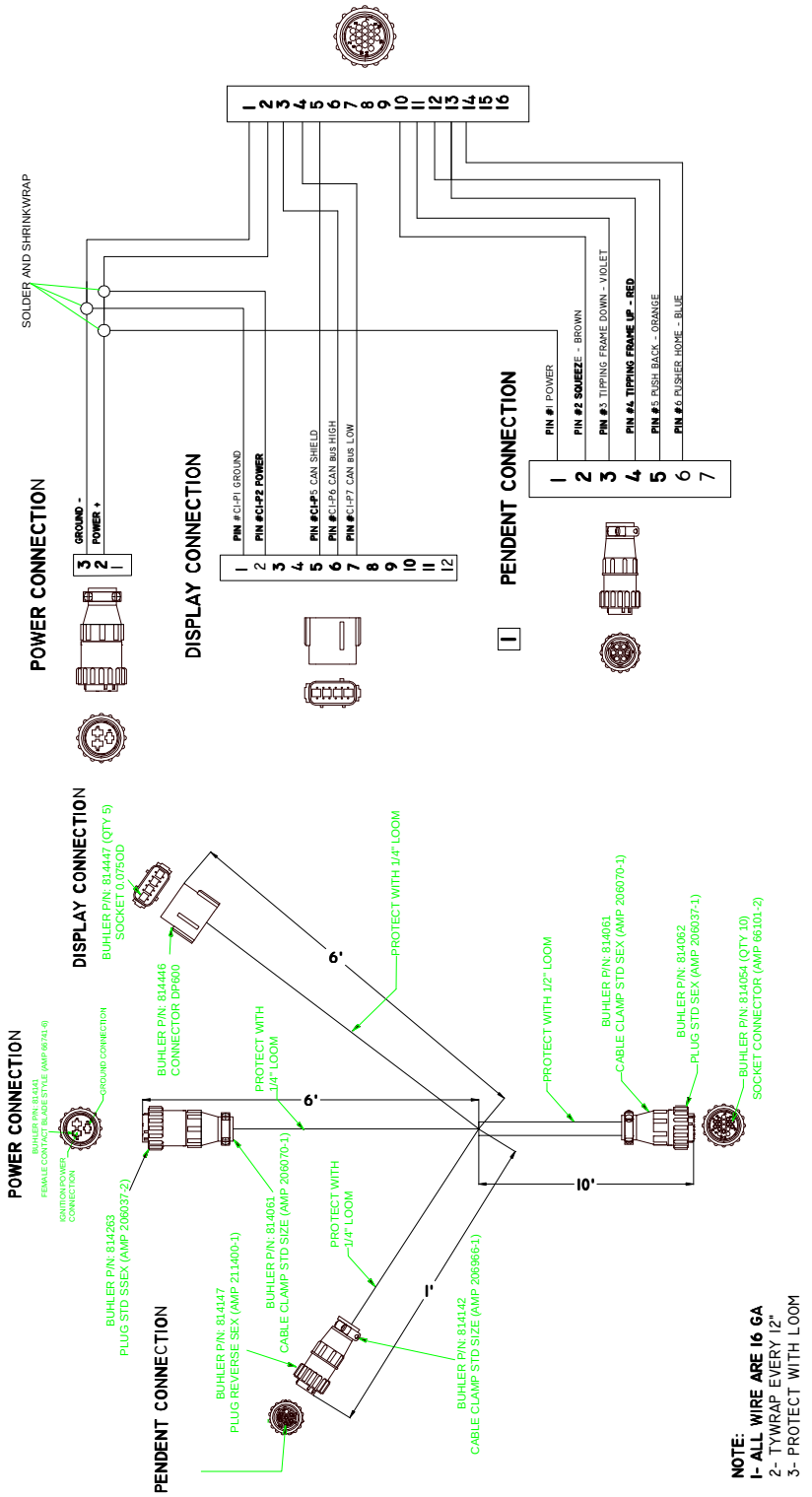
ITEM	QUANT	T NO.	DESCRIPTION
8	1	PAC 15300014	PACKARD LOCK
7	4	61100	RELAY 12VDC BOSCH 0-332-209-137
6	2	PAC 12015360	PACKARD CABLE SEAL
5	2	PAC 12048254	PACKARD TERMINAL
4	1	PAC 15300002	PACKARD 2 TERMINAL CONNECTOR
3	10	DEU 1062-16-0122	DEUTSCH SOCKET TERMINAL
2	4	DEU DT06-2S	DEUTSCH 2 SOCKET CONNECTOR
1	1		15 AMP ATC FUSE

Power Jumper Wire Harness (P/N 83000041)

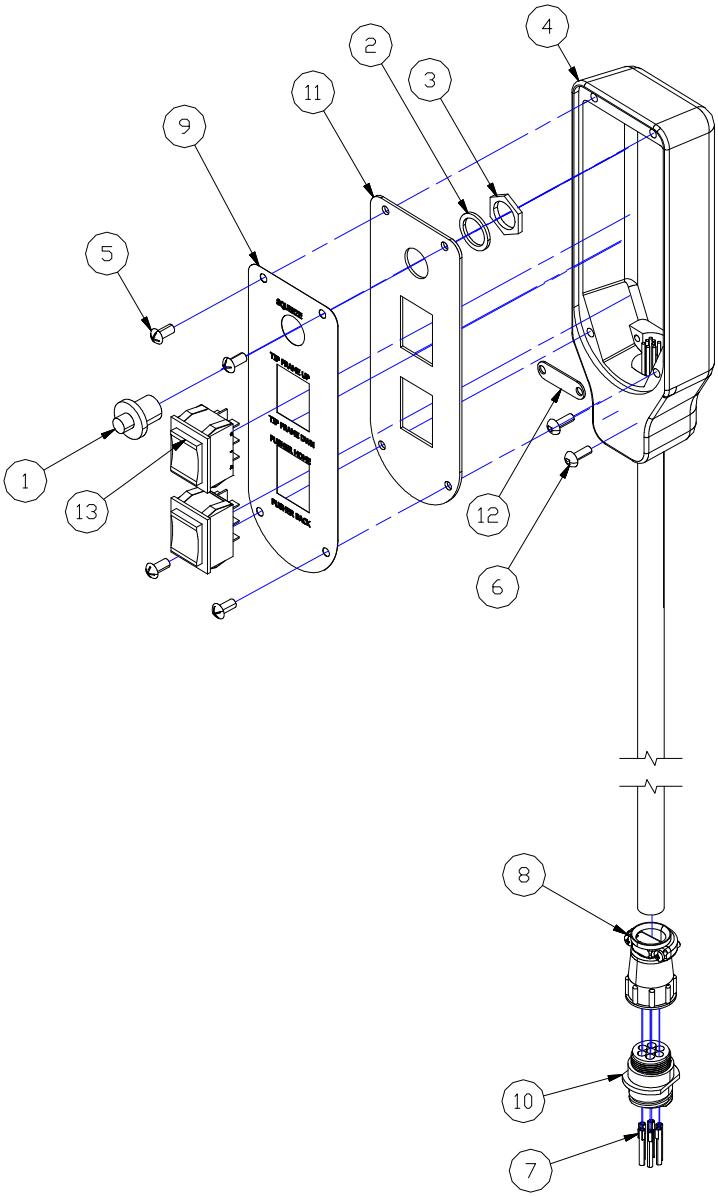
Dimensions are in millimeters

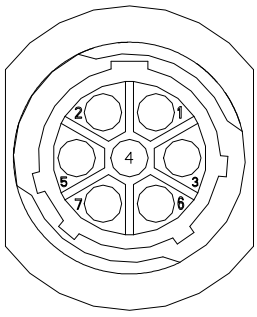


Tractor Cab Wire Harness (P/N 814105)



Control Handle Assembly (Part # I20093)





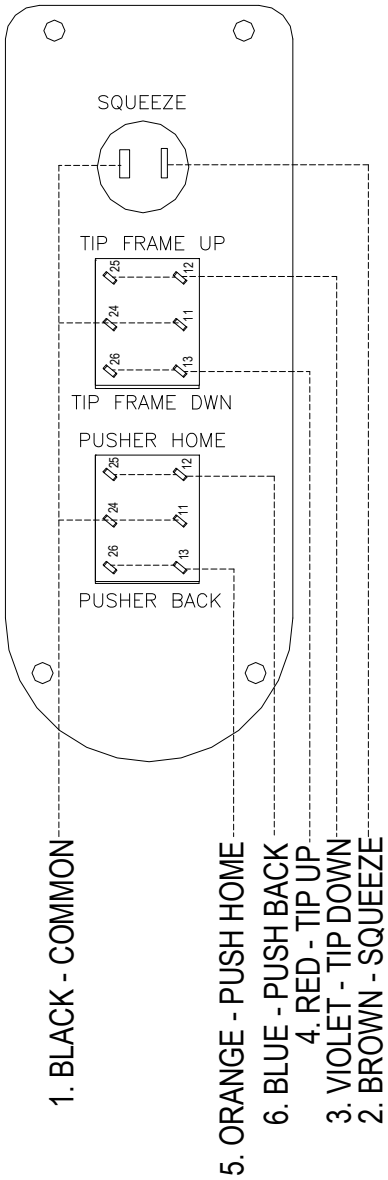
7 PIN
CONNECTOR
END VIEW

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

Control Handle Assembly (Part # I20093)

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	22094	SWITCH HIGH PROFILE 4000
2	1	22094-01	WASHER
3	1	22094-02	NUT
4	1	22105	CONTROL HANDLE
5	4	813539	SCREW MACH 8-32 X 0.375 TR HD
6	2	813540	SCREW MACH 8-32 X 0.50 RD HD
7	6	814054	SOCKET CONNECTOR 0.062 DIA (AMP 66101-2)
8	1	814142	CALBE CLAMP STD SIZE (AMP 206966-1)
9	1	814202	DECAL REMOTE HANDLE 4500
10	1	814262	RECEPTACLE REVERSE SEX (211398-2)
11	1	I100227	COVER PLATE REMOTE CONTROL HANDLE
12	1	INE22105-01	CLAMP PLATE
13	2	814445	APPLIANCE ROCKER SWITCH

Wiring Diagram for Switches



WIRING DIAGRAM FOR SWITCHES

APPENDIX D

General Assembly

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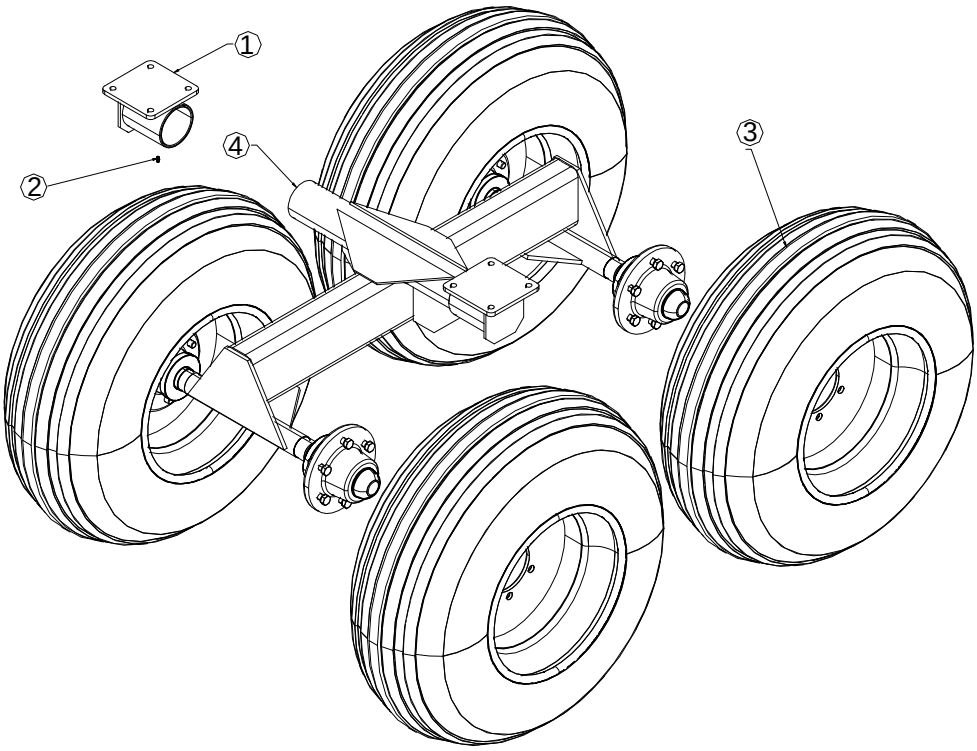
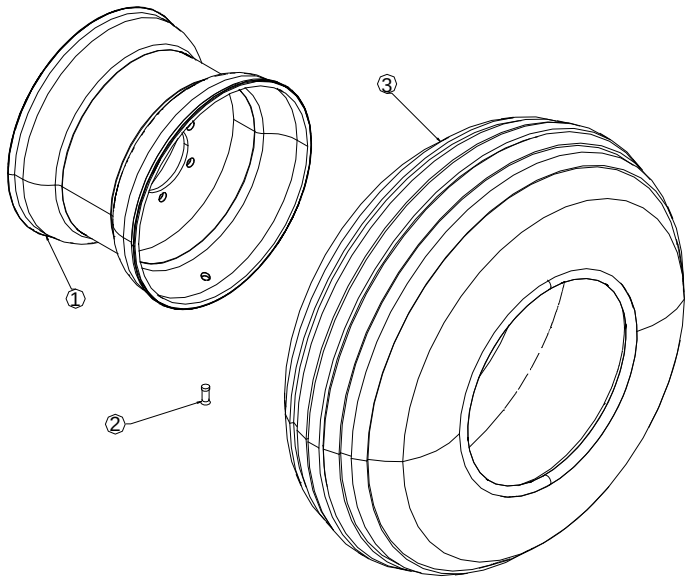
Tandem Axle Assembly (Part # A7004-00)



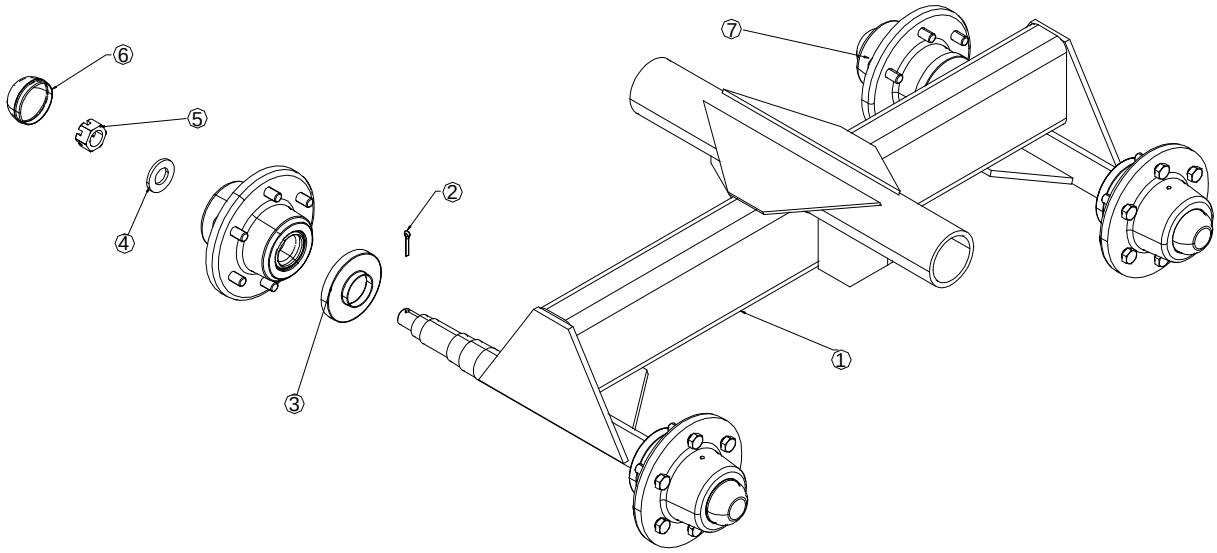
Item	Component Part #	Description	Qty
1	C2322-00	AXLE BEARING WELDMENT	2
2	813646	GREASE ZERK 1/4" SELF TAPPING	2
3	B2700-03	TIRE ASSEMBLY	4
4	B2722-00	TANDEM AXLE 4500 /4000 4500 SQUARE CARRIER	1

Tire Assembly (Part # B2700-03)



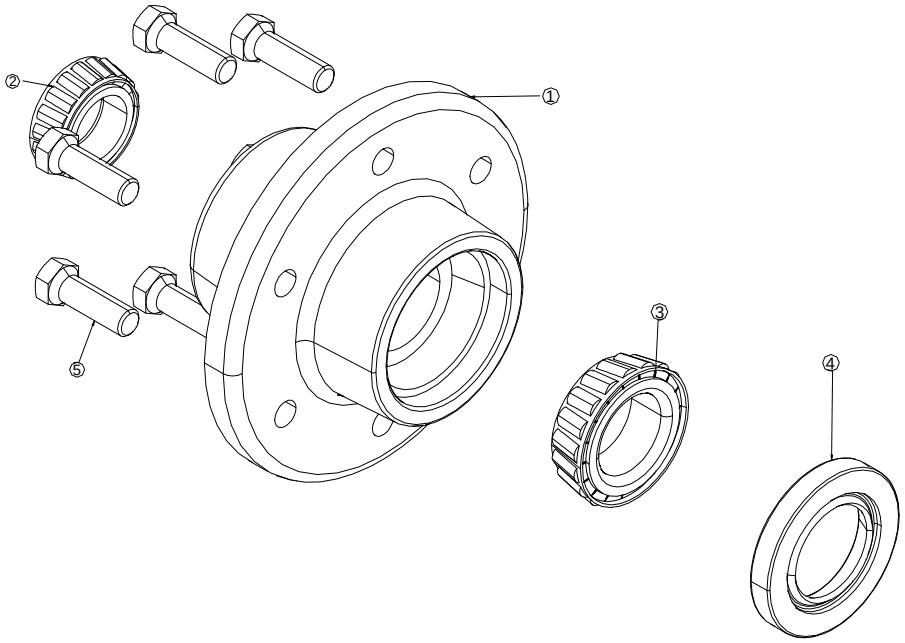
Item	Component Part #	Description	Qty
1	813655	15 X 10lb X 6 BOLT P65 RIM	4
2	813656	TR-416-MS VALVE STEM WITH CAP	1
3	813657	TIRE 12.5 X 15FI 12 PLY RANGE F FARM HWY TIRE	1

Tandem Axle Assembly (Part # B2722-00)



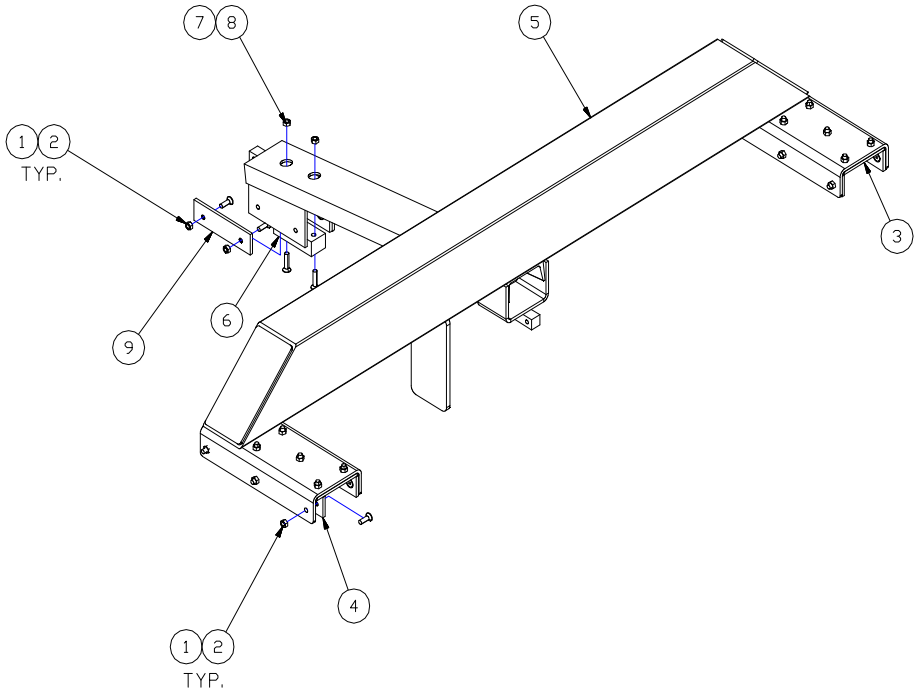
Item	Component Part #	Description	Qty
1	C2722-00	TANDEM AXLE WELDMENT	1
2	81206	3/16" X 1-1/2 " COTTER PIN BLACK	4
3	813649	DUST SHIELD	4
4	813651	WASHER FLAT 1-1/32" X 2" X .188" BLK.	4
5	813673	NUT CASTLE 1.00 NF	4
6	813650	DUST CAP	4
7	C2339-00	HUB ASSEMBLY	4

Hub Assembly (Part # C2339-00)



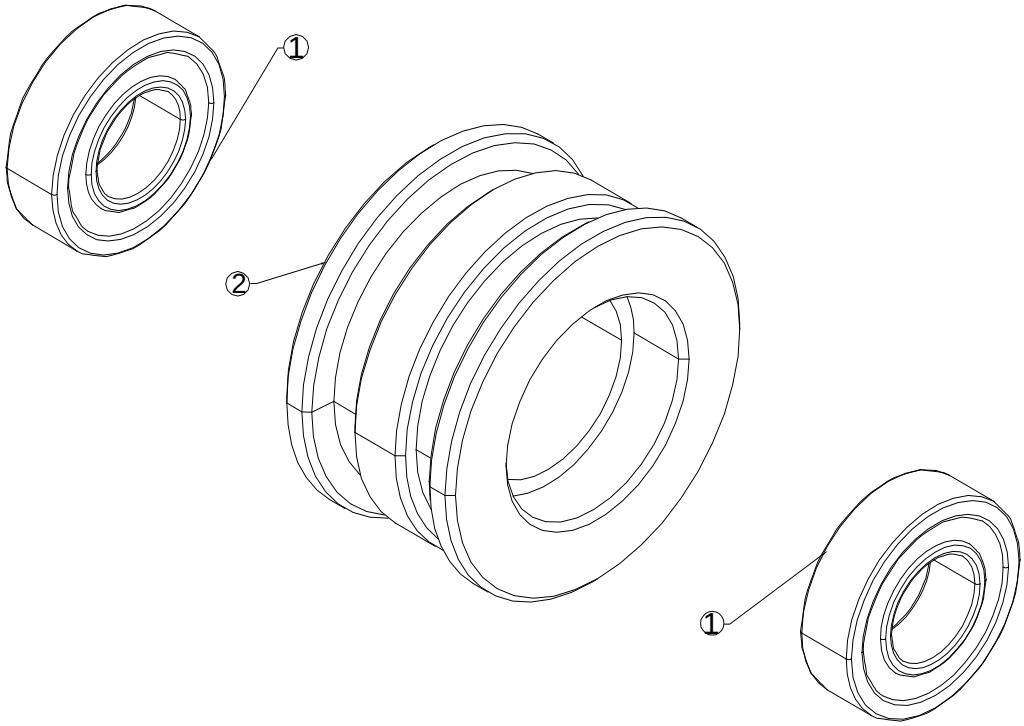
Item	Component Part #	Description	Qty
1	813652	6 BOLT WHEEL HUB	1
2	967205	BEARING CONE OUTER	1
3	967208	BEARING CONE INNER	1
4	967204	OIL SEAL SAE-30	1
5	813653	9/16" HUB BOLT	6

Pusher Assembly (Part # I20088)



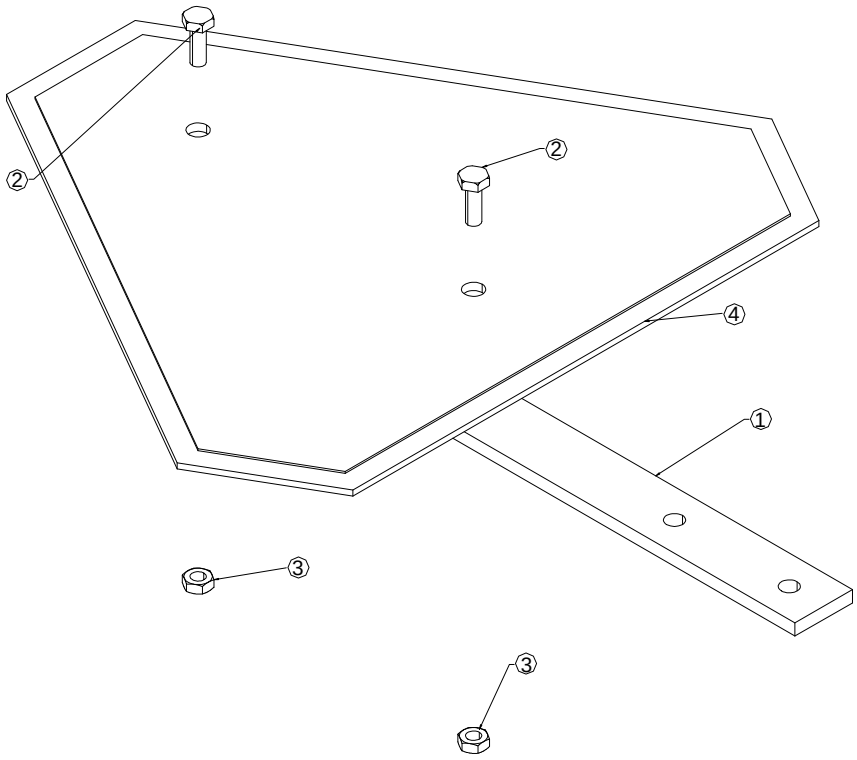
ITEM	PART NUMBER	DESCRIPTION	QTY
1	813558	SCREW MACH M8 X 20 FLHD BRASS	26
2	813561	NUT HEX M8 BRASS	26
3	E2749-00	TOP SLIDER	2
4	E2750-00	SIDE SLIDER	4
5	I20080	BALE PUSHER WELD'T 4500	1
6	E2792-00	TOP SLIDER PUAHER REAR	1
7	813543	SCREW MACH 0.313NC X1.50 FLHD	2
8	812362	NUT LOCK (STEEL) 0.313NC GRBPL	2
9	E2794-00	SIDE SLIDER PUSHER REAR	2

Roller / Chain Guide Assembly (Part # A7008-00)



Item	Component Part #	Description	Qty
1	813645	BEARING / 6205LLU/25.4/3E	2
2	INE7037-00	ROLLER / CHAIN GUIDE	1

Slow Moving Vehicle Sign Assembly (Part # A7017-00)



Item	Component Part #	Description	Qty
1	E2795-00	DECAL MOUNT SLOW MOVING VEHICLE SIGN	1
2	81525	BOLT HEX 0.25 NC X 0.75 GR5PL	2
3	84498	NUT LOCK (STEEL) 0.25 GRBPL	2
4	967066	SLOW MOVING VEHICLE DECAL	1

APPENDIX E

Troubleshooting Guide

Table of Contents

Troubleshooting Guide

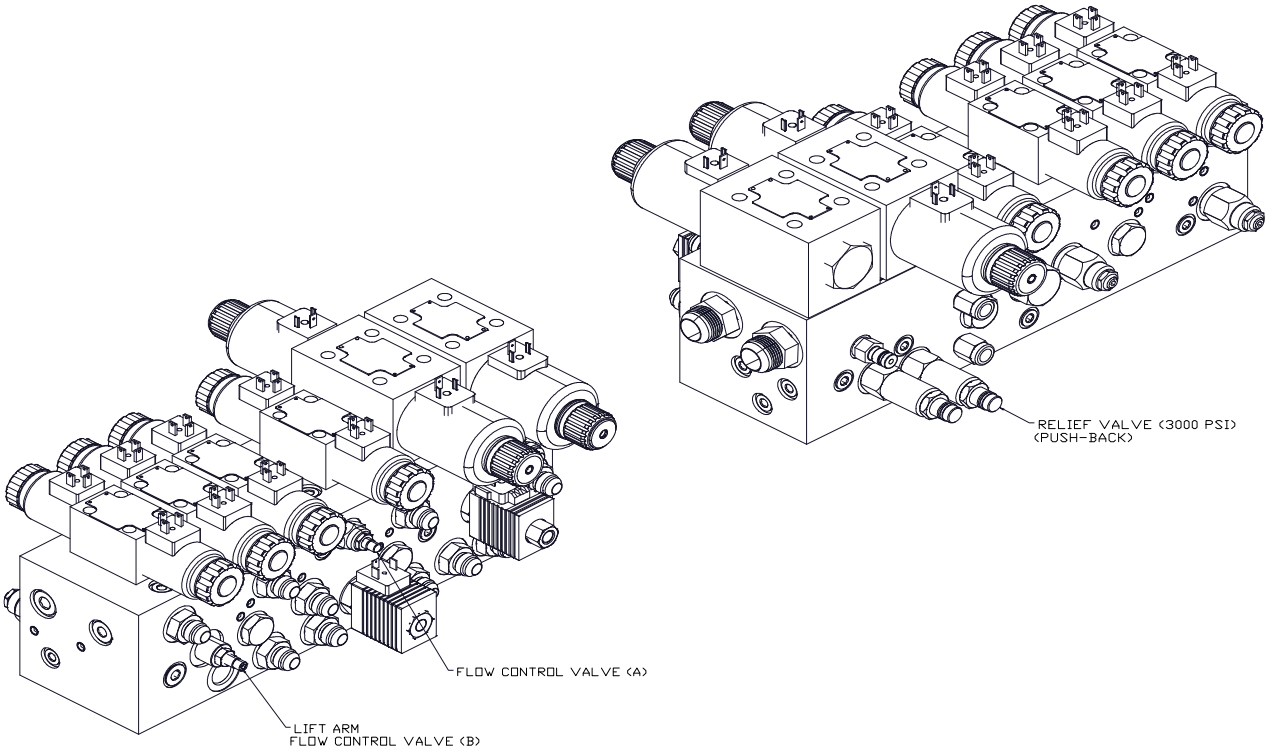
This section contains solutions to common problems or malfunctions. If a problem arises that is not listed in this section, or if a problem remains after trying the recommended solution(s), please contact your dealer for further assistance.

General Problems	Suggested Solutions
1- Display unit does not turn ON	Make sure all connectors are all securely connected.
2- LED blinks Red on Display unit	No communication between Display unit and Controller. Make sure all connections are secure and correctly connected.
3- **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.
4- **Manual Mode,** no function runs.	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). 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. Consult your tractor manual to know the hydraulic system type.
5- **Manual Mode**, Rotate Arm does not rotate toward deck (to the left) when Lift Arm is down	A safety feature prevents this action, must raise Lift Arm up and above deck 1 ft minimum before rotate function is activated.
6- **Manual Mode**, Pusher-Back does not work.	A safety feature prevents this action, must make sure Tipping Frame is at "home" position (all the way down on the deck) before Pusher can be activated.
7- **Manual Mode**, 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. Speed sensor or harness might be defective, replace as required.

Auto Mode Problems	Suggested Solutions
STEP-BY-STEP **1- Press *SQUEEZE button,* no response**	Check PUSHER and TIPPING FRAME positions. PUSHER must be fully forward at home position. If PUSHER is fully forward ("home" - position), check that 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). Also, TIPPING FRAME should be all the way down (check Proximity in the back of the carrier, similar to the pusher).
2- *SQUEEZE* responds but arm will not lift up.	Go to **Calibration Mode** and re-calibrate CLAMP-CLOSE pressure.
3- *SQUEEZE* responds, arm rises too high or too low	Lift Arm height can be adjusted in the CUSTOME BALE setup.
4- Arm *rises* but SWING ARM will not rotate 90°to the left.	A safety feature prevents this action, Lift Arm has not been set high enough to safely rotate arm over deck. Re-adjust BALE 1 ROW HEIGHT in the Custom Bale setup.
5- SWING ARM rotates 90° (left) but GRAB ARMS do not release the bale	Reset Rotate Arm 90° rotation limits. This can be done in the **Calibration Mode** under the Rotate Arm menu. As viewed from the operator facing forward the Rotate 90° is also known as Rotate Left. If adjustment does not work, ensure that sensor is not defective by observing that there is a constant change in the sensor reading as it rotates. NOTE: This check applies to all sensors.
6- GRAB ARMS release bale but SWING ARM does not rotate back to right.	CLAMP OPEN Pressure setting is too high. Re-adjust CLAMP OPEN pressure. This can be done in the **Calibration Mode** under the Clamp pressure setting.
7- Pusher does not push the bale back to the preset location.	Ensure PUSH-BACK location is set properly. This can be done in the CUSTOM BALE Setup.

	Tipping Frame might not be at “home” position (**parallel to the deck**). Verify and reset the Tipping Frame home position. This can be done in the **Calibration Mode** under the Tipping Frame Menu. If getting **“Deck Full”** message on display, speed sensor is not working. Check speed sensor and or sensor harness. Replace sensor and or motor sensor harness, if required.
8- Pusher pushes the bale back toward the Tipping Frame and does not stop at the pre-set location.	Ensure PUSH-BACK location is set properly. This can be done in the CUSTOM BALE Setup. Pusher motor speed sensor might be defective. To verify operational status of sensor, observe change in counter value as pusher moves back and forth on the deck. If there is no count then check speed sensor or senor harness. Replace sensor and or motor sensor harness, if required.
9- PUSHER does not have enough power to push back full load of heavy bales even in high torque and low speed.	**Power is limited by available tractor hydraulics.** With extremely high moisture content silage or alfalfa bales, pusher might not be able to push a full load. When load is a half full, push bale all the way back. Do not attempt to push more than a half load at once. When PUSHING-BACK, system will automatically gear down to low speed and high torque to move bales.
10- Arm rotates slow	Re-adjust flow rate using flow control needle valve **“A”** (*see view in page 92*). Use a ¾ wrench to loosen the jam nut. Use the ¼ Allen key to turn the setting screw **“OUT” to increase oil flow**. Turn the screw in quarter turns. Retighten the jam nut. Valve “A” also controls oil flow to lift arm circuit.

11- Lift arm "jerks" while going down	Re-adjust flow rate using flow control needle valve **"B"** (*page 92*). Similar to #10, turn setting screw **"IN" to reduce oil flow**.
12- Clamp arm does not work	First, close clamp arms and go to **Diagnostic Mode**. Check CLAMP-CLOSE sensor. If ERROR, go to **Calibration Mode** and recalibrate CLAMP-CLOSE pressure. Still not working, check sensor harness and/or replace sensor.
13- Difficulty in pushing back heavy bales	Re-adjust **pressure relief valve (3000 PSI)**. Use a ¾ wrench to loosen the jam nut. Use the ¼ Allen key to turn the setting screw **"IN" to increase pressure setting**. Turn the screw in quarter turns. Retighten the jam nut.
14- Unable to solve a problem.	Contact your local dealer for further assistance



CHECKLIST

Pre-delivery

- ☐ Verify Hardware Torque
- ☐ Verify Rear Wheel Bolt Torque
- ☐ Verify Tire Pressure
- ☐ Inspect Bearing Seals
- ☐ Inspect All Lubrication Points
- ☐ Inspect Chain Drives
- ☐ Inspect Hydraulic Hoses and Electrical Harnesses

Dealer Representative:_____ Date:_____

Customer Delivery

- ☐ Review safety procedures regarding 4500 Square Carrier operation and maintenance.
- ☐ Review *Operator's* and *Part's Manual*.
- ☐ Review proper operating procedures.
- ☐ Review general adjustment and setup procedures.
- ☐ Review chain tensioning procedures.
- ☐ Review importance of regular lubrication.
- ☐ Discuss road and highway transportation requirements and regulations.
- ☐ Review front hitch height.

Dealer Representative:_____ Date:_____

DIVISION LOCATIONS

Allied Division
1201 Regent Ave. W.
Box 1003
Winnipeg, MB R2C 3B2
Ph.: (204) 661-8712
Fax: (204) 654-4331

Farm King Division
301 Mountain Street S.
Morden, MB R6M 1X7
Ph.: (204) 822-4467
Fax: (204) 822-6348

Inland Division
675 Washington Ave.
Winnipeg, MB R2K 1M4
Ph: (204) 667-7854
Fax: (204) 669-2599

B.I.I. Division
1330 43rd Street N.W.
Fargo, ND 58102
Ph: (701) 282-7014
Fax: (701) 282-5865

CANADIAN WAREHOUSES

B.C., Abbotsford
(604) 864-2665

AB, Edmonton
(403) 962-6991

SK, Regina
(306) 781-2300

ON, Woodstock
(519) 539-0435

ON, Jasper
(613) 283-1758

QC, Dorion
(450) 455-4840

U.S. WAREHOUSES

AR, West Memphis
(870) 732-3132

GA, Stone Mountain
(770) 908-9439

IA, Atlantic
(712) 243-5520

IA, Lakeview
(712) 657-8585

ID, Meridian
(208) 887-6006

IL, Hooppole
(815) 948-2591

IL, LeRoy
(309) 962-8414

IN, Clarksville
(812) 284-3376

IN, Crawfordsville
(317) 362-4495

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