

# **BOOMS**

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### A WORD FROM HAGIE MANUFACTURING COMPANY

Congratulations on the purchase of your spray boom attachment! Read this operator's manual and become familiar with operating procedures and safety precautions before attempting to operate your spray boom.

As with any piece of equipment, certain operating procedures, service, and maintenance are required to keep your spray boom in top running condition. We have attempted herein to cover all of the adjustments required to fit varying conditions. However, there may be times when special care must be considered.

*NOTE: The operator is responsible for inspecting the spray boom and having parts repaired or replaced when continued use of the product causes damage or excessive wear to other parts.*

Hagie Manufacturing Company reserves the right to make changes in the design and material of any subsequent spray boom without obligation to existing attachments.

Thank you for choosing a Hagie spray boom and we ensure you of our continued interest and support in its optimal performance for you. We are proud to have you as a customer!

### ABOUT THIS MANUAL

#### NOTICE

The purpose of this manual is to guide you in the proper operation of the spray boom attachment, as well as provide you with pertinent safety precautions and maintenance information. Refer to your sprayer operator's manual and all other literature that is included with the machine for complete instructions on machine operation.

#### NOTICE

Any pictures or illustrations contained within this manual that depict situations with shields, guards, rails, or lids removed are for demonstration only. Keep all shields and safety devices in place at all times.

This manual will aid you in the proper operation and service of your spray boom attachment. It is the responsibility of the user to read the operator's manual and comply with the correct and safe operating procedures, as well as maintain the product according to the service information provided in the *Maintenance and Storage Section* elsewhere in this manual.

Photographs and illustrations used in this manual are of general nature only. Some of the equipment described and/or shown may or may not be available on your spray boom.

Information described in this manual was correct at the time of printing. Because of Hagie Manufacturing Company's continuous product improvement, certain information may not be included in this manual. To obtain the most

current operator's manual for your attachment, please visit [www.hagiehelp.com](http://www.hagiehelp.com).

Keep this manual in a convenient place for easy reference. This manual is considered a permanent fixture of the product. In the event of resale, this manual must accompany the spray boom.

If you do not understand any part of this manual or require additional information or service, contact your local John Deere dealer for assistance.

## SAFETY MESSAGES USED IN THIS MANUAL

The following safety messages found throughout this manual alert you of situations that could become potentially dangerous to the operator, service personnel, or equipment.

### DANGER

This symbol indicates a hazardous situation which, if not avoided, will result in serious injury or death.

### WARNING

This symbol indicates a potentially hazardous situation which, if not avoided, could result in moderate/serious injury or death.

### CAUTION

This symbol 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.

## NOTICE

This symbol indicates operator awareness which, if not avoided, may result in personal or property damage.

*NOTE: A "Note" is intended to make special mention of, or remark on.*

## SERVICE AND ASSISTANCE

Please contact your local John Deere dealer for service and assistance.

## PRODUCT WARRANTY

Please contact your local John Deere dealer for further information.

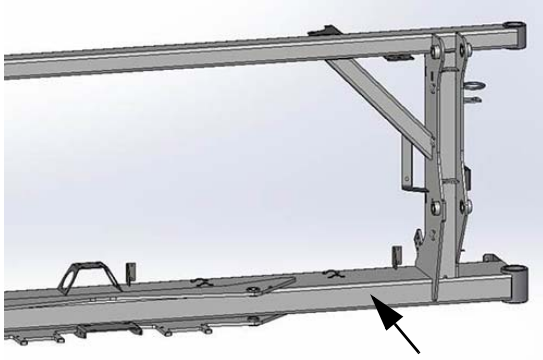
## IDENTIFICATION

## NOTICE

Reference to right and left-hand used throughout this manual refers to the position when seated in the operator's seat facing forward.

The spray boom is identified by means of a serial number stamped on the lower right-hand side of the transom. This serial number denotes the model, year in which it was built, and the number of the attachment.

To ensure prompt, efficient service when ordering parts or requesting service repairs, record the serial number in the following space provided.

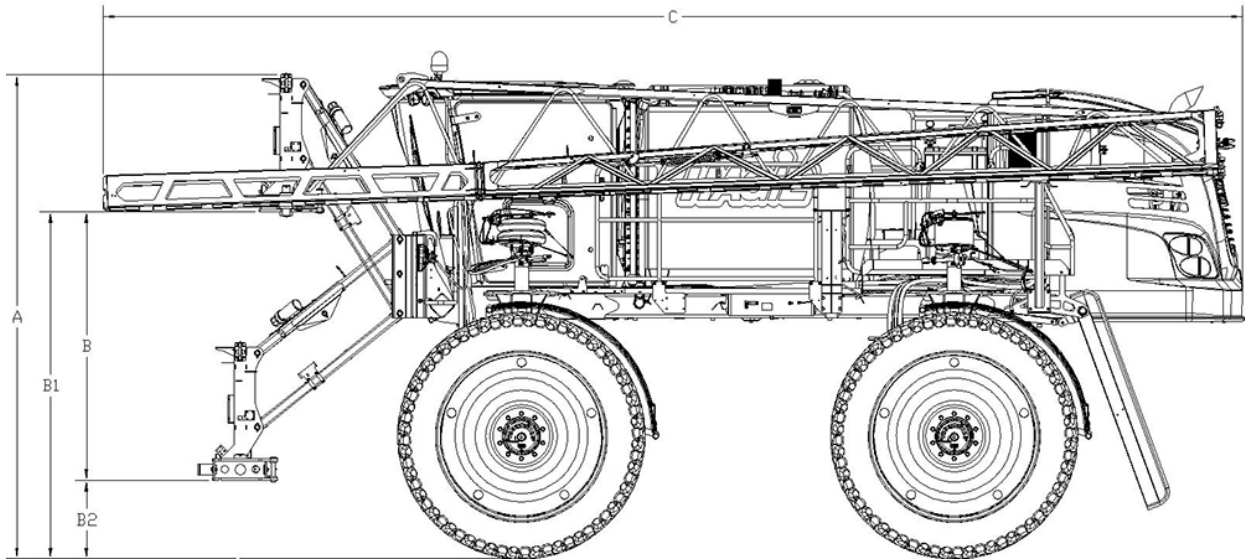


Spray Boom Serial Number  
(Located on the lower  
right-hand side of transom)  
-Typical View

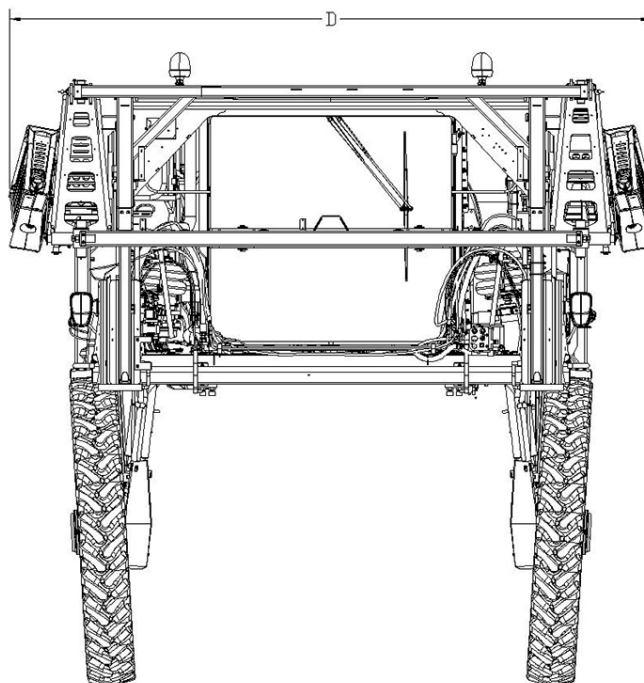
Serial No. \_\_\_\_\_

**SPECIFICATIONS**

*NOTE: Dimensions may vary, depending on tire size.*



Detail	Description	Specification
A	Raised Transom Height	<ul style="list-style-type: none"> <li>• 153"/388.6 cm* (from top of transom)</li> <li>• 155.5"/395 cm* (from top of solution hose)</li> </ul>
B	Transom Lift Range (B1 minus B2)	87" (110" - 23") 221 cm (279.4 - 58.4 cm)
C	Overall Length (from front of boom to rear hood)	<ul style="list-style-type: none"> <li>• 371.3"/943.1 cm (Short Frame - STS10/STS12)</li> <li>• 397.3"/1009.1 cm (Long Frame - STS14/STS16)</li> </ul>
D	Width (booms folded, 120"/304.8 cm tread)	168"/426.7 cm



*\* Refer to "Tire Specifications" provided in the machine operator's manual for a complete listing of tire options when configuring machine specifications on your model.*

### **Boom Weight (Approximate)**

- 4,080 lbs./1,850 kg

## NOTICE

Because Hagie Manufacturing Company offers a variety of options, the illustrations in this manual may show a machine equipped other than standard. Height and weight do not consider options. Values may vary, depending on available equipment.

Item	Specification
<b>General</b>	
Spray Booms	120-ft. (9 sections)
Type	1" (2.5 cm) schedule 5 stainless wet boom plumbing
Controls	Electro-hydraulic (fold/lift/level)
Level Shock Absorber	Gas charged accumulator
Inner Boom Breakaway	Hydraulic, manual reset
Outer Boom Breakaway	Mechanical with spring, auto reset
Pressure Gauge	100 PSI (6.9 bar), glycerin filled
Fence Row Nozzle	Remote activated (left and right)
Boom Solution Valves	Ball valves, electric actuation, stainless ball and stem, PTFE seats
<b>Electrical (Lights)</b>	
Transom	2 trapezoidal headlights
Transom Mount	2 trapezoidal headlights (high/low beam), 2 oval amber lights (combined)
Boom Cradle	2 trapezoidal floodlights (1 on each cradle), 2 oval amber lights (1 on each cradle)
Spray Section Indicators (located on boom, if equipped)	1 oval white, 2 oval amber, 9 oval red

### INTENDED USE

#### NOTICE

This attachment is designed for and intended to be used for the application of chemicals and fertilizers to field crops. Use in any other way or for any other purpose is considered misuse of this attachment.

Most accidents occur as the result of failure to follow basic and fundamental safety rules and precautions. Recognizing potential safety hazards, following correct and safe operating procedures described in this manual, and complying with safety warnings located throughout the machine and attachment may reduce the risk of accidents.

There is no way to completely eliminate the potential for danger when operating agricultural equipment. Therefore, you must study this operator's manual and understand how to operate the attachment controls for safe operation before using the attachment. Likewise, never let anyone operate the attachment without proper instruction.

Do not operate the attachment for anything other than its intended use. Hagie Manufacturing Company shall not be liable for any damage, injury, or death associated with improper use of the attachment.

Do not make any modifications such as, but not limited to, weldments, add-ons, adaptations, or changes from the original design of the attachment. Such modifications may become safety hazards to you and others and **will void all warranties**.

Replace missing, faded, or damaged safety signs. Refer to "Safety Decals" elsewhere in this section for correct sign and placement.

### SAFETY PRECAUTIONS

#### General Safety

- Before operating the attachment, ensure there are no obstacles or persons in the path of travel.
- The hydraulic and electrical control systems are optimized for use with this attachment. Any modification to these systems may lead to unintended or uncontrolled motion. Do NOT install add-on control systems that are not approved by Hagie Manufacturing Company.
- Some conditions cannot be completely safeguarded against without interfering with efficient operation of the machine and/or reasonable accessibility. In these cases, decals have been installed to provide the operator with hazard information. Do NOT remove decals for any reason. If a decal is damaged or missing, contact your local John Deere dealer for replacement.



#### Wear Protective Clothing

- Do not wear loose fitting clothing that could get caught in moving parts. Wear safety equipment that is appropriate for the job.



- Do not store chemical-soaked clothing in the cab. Clean off as much mud and dirt from



your shoes as you can before entering the cab.

### Protect Against Noise

- Wear suitable hearing protection. Prolonged exposure to loud noise may result in loss of hearing.



### Be Prepared

- Be prepared for an emergency. Keep a fire extinguisher, first aid kit, and clean water in the cab at all times.
- Service the fire extinguisher regularly.
- Keep an accurate inventory of supplies in the first aid kit and dispose of any items that have expired.



### General Repair/Maintenance Safety

- Turn off sprayer engine before checking, adjusting, repairing, lubricating, or cleaning any part of the attachment.
- Remove all chemical residue from the work area before performing service/maintenance.
- Disconnect the battery ground cable and turn the Battery Disconnect Switch OFF before servicing the electrical system or welding on an attachment.



### Remove Paint Before Welding or Heating

- Avoid toxic fumes and dust. Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch.



- Do not use chlorinated solvents in areas where welding will take place.
- Perform all work in an area that is well ventilated to carry toxic fumes and dust away.
- Dispose of paint and solvents properly.

### Avoid Heating Near Pressurized Lines

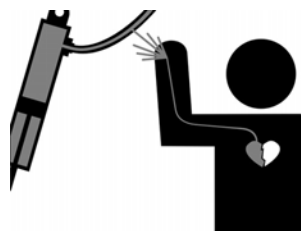
- Avoid torching, welding, and soldering near pressurized hydraulic lines. Pressurized lines may accidentally burst when heat goes beyond the immediate flame area.



### Safe Hydraulic Maintenance

- Always practice personal safety when performing service or maintenance on the hydraulic system.

- Use caution when working around hydraulic fluid under pressure. Escaping fluid can have sufficient force to penetrate your skin, causing serious injury. This fluid may also be hot enough to burn.



- Always lower the load or relieve pressure before repairing a hydraulic leak.

### General Spray Boom Safety

- Select a safe area before unfolding/folding the booms.
- Clear area of personnel.
- Booms must be folded and in cradles when driving the machine on a roadway or when near power lines.
- Cradle booms when leaving sprayer unattended.
- Ensure booms are folded when cradled.
- Do not unfold/fold boom extensions when main boom is in the cradle.
- Do not operate sprayer with one boom wing out of cradle and the other boom wing in cradle.
- Check for overhead obstructions.
- Do not fold or unfold booms near power lines. **Contact with power lines can result in serious injury or death.**



- A warning message will appear on the Machine Display before extending the outer boom extensions or when operating in Auto Fold. Press ACKNOWLEDGE showing that you have acknowledged that there are no over-

head power lines or obstructions before proceeding.

### Cold Oil Scenarios

- If the oil temperature is less than 50°F, the operator may experience control loss on the 90-ft. and 100-ft. fold cylinders. These cylinders are the main cylinders affected by over-running loads due to the weight rotation of the boom during unfold/fold situations. When the oil is cold, the valve response is not as fast or accurate. Therefore, when having to lift the weight, the cylinder will move slower, but in trying to suspend the weight, the weight may cause faster movement, as the valve is not dampening the flow like it normally would.

*NOTE: This situation requires the operator to clear area of personnel.*

### Handle Agricultural Chemicals Safely

Agricultural chemicals used in applications can be harmful to your health and the environment if not used properly.

- Always follow the manufacturer's label for directions of use.
- Never allow chemicals to come in contact with your skin or eyes. Always use the proper Personal Protective Equipment (PPE).
- Never pour chemicals into an empty solution tank. Always fill tank half full of water first.
- Dispose of empty chemical containers properly.



- Wash spilled chemicals or spray residue from the sprayer to prevent corrosion and deterioration.

- Select safe areas to fill, flush, calibrate, and clean sprayer where chemicals will not run off to contaminate people, animals, vegetation, or water supply.
- Never place a spray nozzle to your lips in an attempt to unclog it.
- Do not spray when wind is in excess of chemical manufacturer’s recommendation.
- Store chemicals in their original containers with the label intact.
- Store chemicals in a separate, locked building.
- Wear Personal Protective Equipment (PPE) as recommended by the chemical manufacturer.

## SAFETY DECALS

Decals warning you of avoidable danger are located on various parts of the attachment. They are there for your personal safety and protection. **DO NOT** remove them. They will fracture upon attempted removal and therefore, must be replaced.

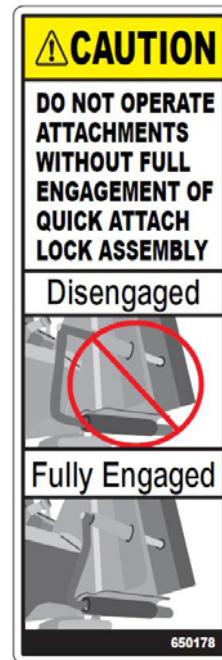
Following are locations of important safety decals. Replace them if they are damaged or missing. All safety decals, instructional decals, or machine striping may be purchased through your local John Deere dealer.

To replace safety decals, ensure the installation area is clean and dry and decide on exact position before you remove the backing paper.

## Safety Decal Locations

**650178**

**(2) - Located near each quick-tach lock pin assembly**



**HXE28534**

**(1) - Located on front left-hand cross member near quick connect multi-coupler**

**(1) - Located on inside of transom**



**N204628**

(Located on front left-hand cab post)



**650204**

(4) - Located near each fold point



**650210**

(5) - Located on each NORAC® sensor



# BOOMS

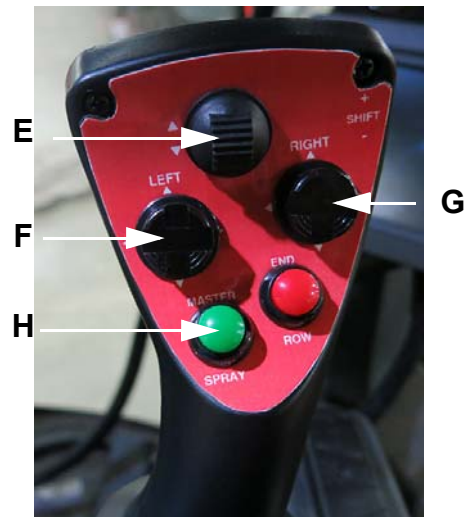
## SECTION 3 – OPERATING YOUR SPRAY BOOM

### OPERATOR'S STATION

*NOTE: Refer to your machine operator's manual for a full description of cab functions and spray system operation.*

#### Side Console

- (A) - Boom Solution Valve Switches
- (B) - Fence Row Switch (Left)
- (C) - Fence Row Switch (Right)
- (D) - Boom Extension Switches (Left/Right Outer Fold)
- (E) - Transom Switch - Up/Down
- (F) - Left-Hand Boom Switch
- (G) - Right-Hand Boom Switch
- (H) - Master Spray Switch



-Typical View

#### Boom Solution Valve Switches

The Boom Solution Valve Switches (located on the side console) each control a valve located on the boom or transom. The valves control the flow of solution through the boom.

The boom is divided into sections, with the far left tip being the beginning of the first section. Each Boom Solution Valve Switch is equipped with an indicator light and will illuminate red when manually turned off.

- Press the Boom Solution Valve Switches to turn ON. Press again to turn OFF.



-Typical View



-Typical View



Boom Solution Valve Switches  
(Located on the side console)  
-Typical View

### Fence Row Switches

The Fence Row Switches (located on the side console) are used in the selection of either the right or left fence row spray nozzle.

- Press the desired Fence Row Switch (left or right) to turn ON. Press switch again to turn OFF.

*NOTE: The corresponding Fence Row Switch will illuminate when active.*



Fence Row Switches - Left/Right  
(Located on the side console)  
-Typical View

### Boom Extension Switches (Outer Fold)

**! WARNING**

When operating or positioning the booms, observe the following safety precautions to avoid serious injury or death:

- Select a safe area before unfolding/folding booms.
- Clear area of personnel.
- Check for overhead obstructions.
- Do not unfold/fold booms near power lines. Contact with power lines can result in serious injury or death.



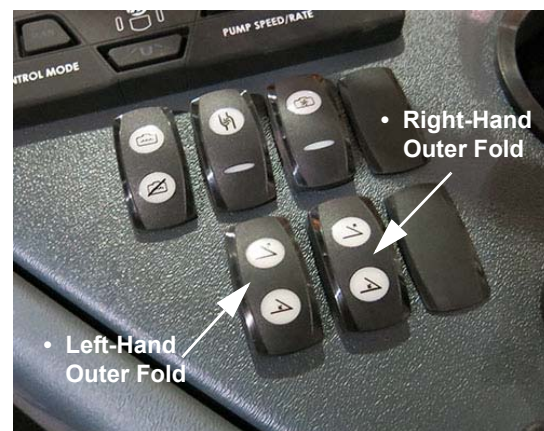
**! CAUTION**

When operating or positioning the booms, observe the following safety precautions. Failure to comply may result in injury or equipment damage.

- Do not unfold/fold boom extensions when main boom is in cradle.
- Do not operate machine with one boom out of cradle and the other boom in cradle.
- Ensure booms are folded and in cradle before transporting the machine.

The Boom Extension Switches (located on the side console) are used to extend or retract the outer boom sections.

- Press and hold the desired Boom Extension Switch (left or right) in the UP position to unfold boom extension OUT.
- Press and hold the desired Boom Extension Switch (left or right) in the DOWN position to fold boom extension IN.



Boom Extension Switches - Left/Right  
(Located on the side console)  
-Typical View

**Left and Right-Hand Boom Switches**

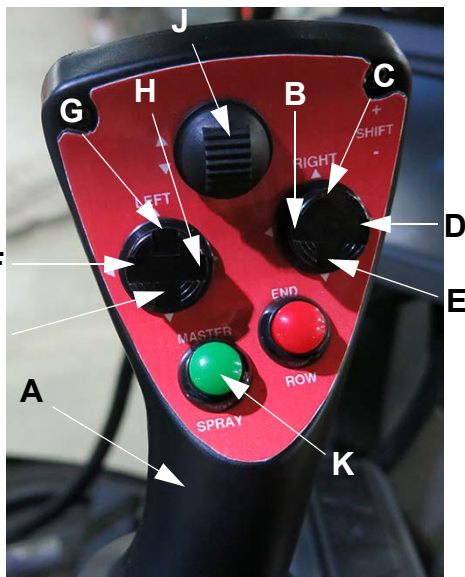
The Left and Right-Hand Boom Switches (located on the Hydrostatic Drive Control Handle) are used to raise, lower, extend, and retract the spray booms.

**Transom Switch - Up/Down**

The Transom Switch (located on the Hydrostatic Drive Control Handle) is used to raise and lower the main lift.

**Master Spray Switch**

The Master Spray Switch (located on the Hydrostatic Drive Control Handle) activates the boom solution valves.



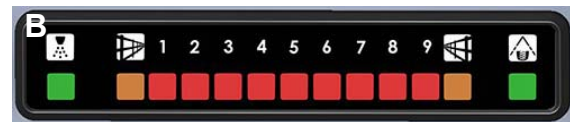
- (A) - Hydrostatic Drive Control Handle
- (B) - Right-Hand Boom IN
- (C) - Right-Hand Boom UP
- (D) - Right-Hand Boom OUT
- (E) - Right-Hand Boom DOWN
- (F) - Left-Hand Boom OUT
- (G) - Left-Hand Boom UP
- (H) - Left-Hand Boom IN
- (I) - Left-Hand Boom DOWN
- (J) - Transom Switch - Up/Down
- (K) - Master Spray Switch

**Overhead Monitors and Controls**

- (A) - NORAC® Monitor
- (B) - Section Indicator Display
- (C) - Machine Display



-Typical View



-Typical View



-Typical View

**NORAC Monitor****-If Equipped**

The NORAC Monitor controls the automatic boom leveling system.

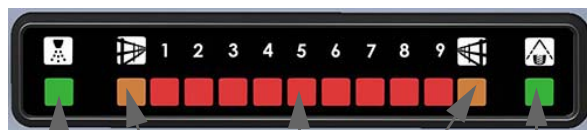
NORAC Monitor  
-Typical View

Refer to the manufacturer's operation manual for complete operating instructions and programming information.

### Section Indicator Display

The Section Indicator Display (located on the cab headliner) allows you to view system status for the following:

- (1) - Master Spray Indicator (illuminates when ON).
- (2) - Fence Row Indicators (illuminate when ON).
- (9) - Spray Section Indicators (illuminate when OFF).
- (1) - Rear Wheel Nozzle Indicator (illuminates when ON).



- Master Spray
- Left Fence Row
- Spray Section
- Right Fence Row
- Rear Wheel Nozzle

Section Indicator Display  
(Located on the cab headliner)  
-Typical View

### Machine Display

The Machine Display is the central control center of the machine. It controls many of the machine's electronically-driven functions, including attachment operation and adjustments.



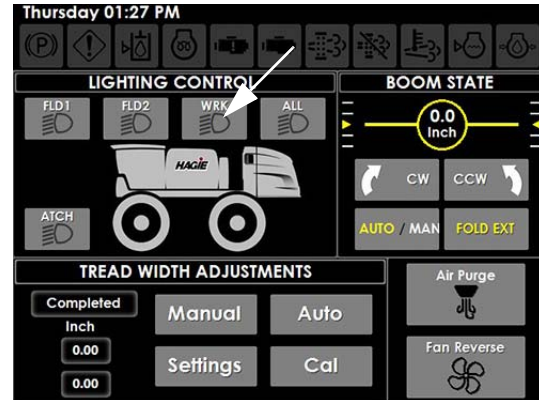
Machine Display  
-Typical View

### Boom Lighting

#### Work Lights

The Work Lights are located on each of the boom cradles.

- Press the Work Lights Button (WRK) (located on the Machine Display Auxiliary Controls Page) to turn Work Lights ON. Press button again to turn Work Lights OFF.



Work Lights Button  
(Located on the Machine Display  
Auxiliary Controls Page)

*NOTE: Turn Work Lights OFF before entering a public roadway.*

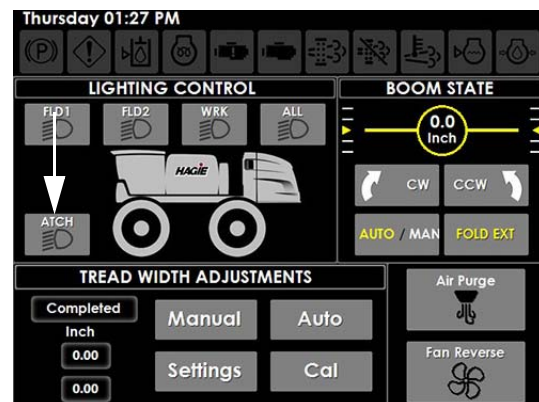
*NOTE: The ignition key must be in the ON position to operate the Work Lights.*

### Attachment Lights

#### -If Equipped

The Attachment Lights are located on the front of the transom.

- Press the Attachment Lights Button (ATCH) (located on the Machine Display Auxiliary Controls Page) to turn Attachment Lights ON. Press button again to turn Attachment Lights OFF.



Attachment Lights Button  
(Located on the Machine Display  
Auxiliary Controls Page)



*NOTE: Turn Attachment Lights OFF before entering a public roadway.*

*NOTE: The ignition key must be in the ON position to operate the Attachment Lights.*

### Boom Speed Adjustments

#### Main Lift Speed

Main Lift Speed is the speed in which the transom travels up and down.

*NOTE: The higher the percentage, the faster the main lift will move. The lower the percentage, the slower the main lift will move.*

#### Level Speed

Level Speed is the speed in which the boom wings travel up and down.

#### Lifted Height

Lifted Height is the raised boom height position measured from nozzle to ground.

#### Spray Height

Spray Height is the height that the operator would like the boom to be when spraying (spray nozzle-to-ground distance).

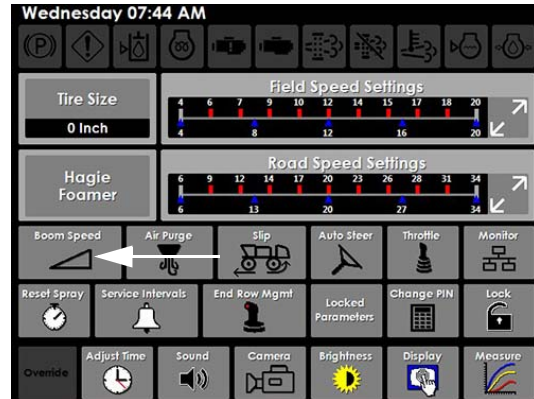
#### Attachment to Ground

Attachment to Ground is the height from the spray nozzle-to-ground with the boom in its lowest position.

*NOTE: Attachment to ground is measured by the operator to better dial in the system if the tires are changed on the machine.*

#### To Adjust Boom Speed:

- Press the Boom Speed Button (located on the Settings Page).



Boom Speed Button  
(Located on the Settings Page)

- On the “Boom Speed Adjustments” screen, press EDIT (next to the desired boom adjustment).

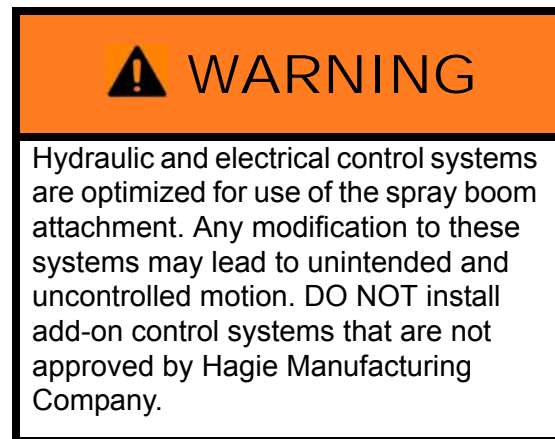
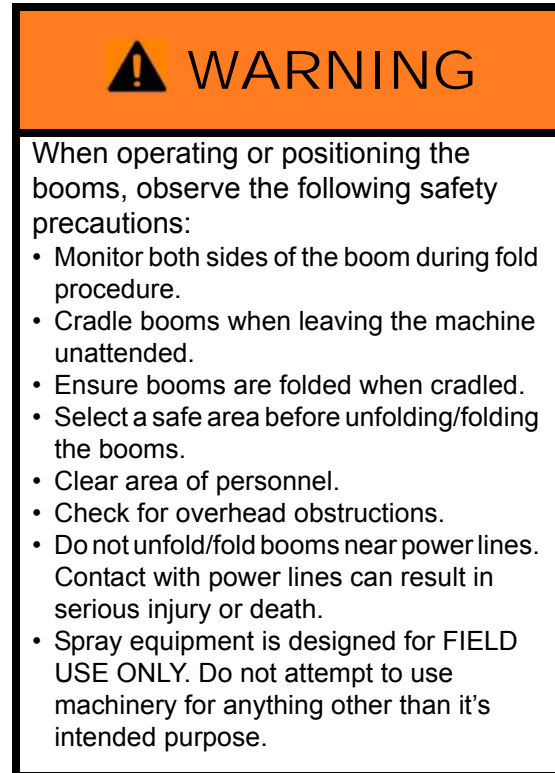



Boom Speed Adjustments Screen  
(Located on the Settings Page)

- Enter desired value, then press OK.
- Press OK.

## SPRAY BOOMS

The spray booms are controlled by an electro-hydraulic system. This system consists of operator-manipulated switches (located on the side console and the hydrostatic drive control handle) and hydraulic cylinders (attached to the booms), which provide lift, level, and horizontal extension.




CAUTION

When operating or positioning the booms, observe the following safety precautions. Failure to comply may result in injury or equipment damage.

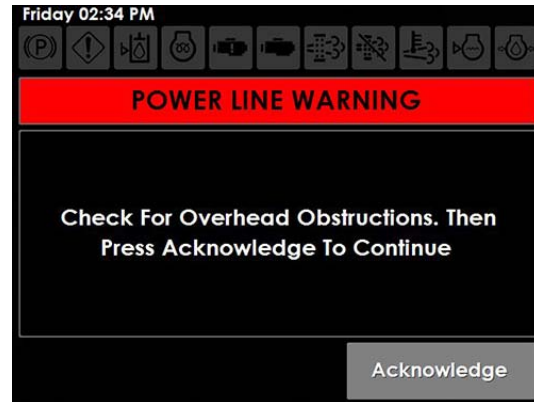
- Do not unfold/fold boom extensions when main boom is in cradle.
- Do not operate machine with one boom wing out of cradle and the other boom wing in cradle.
- Ensure booms are folded and in cradle before transporting the machine.

### Power Lines

Hagie Manufacturing Company cannot stress enough that extreme caution must be taken when operating equipment near power lines. Ensure there is more than sufficient clearance when transporting, unfolding and folding the boom, or spraying near power lines.

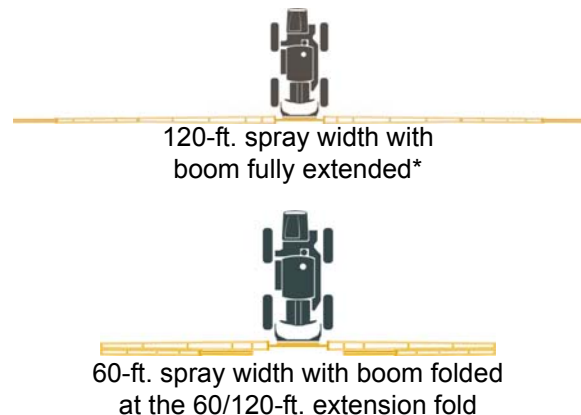


As a safety precaution, a Power Line Warning Message will appear on the Machine Display before extending the outer boom extensions or when operating in Auto Fold. Press ACKNOWLEDGE showing that you have acknowledged that there are no overhead power lines or obstructions before proceeding.



Power Line Warning Message  
(Located on the Machine Display)

Hydraulically folding the extensions of a 120-ft. spray boom and shutting off the outer section valves (Boom Solution Valve Switches 1, 2, 8, and 9) essentially turns it into a 60-ft. boom (see the following illustrations).



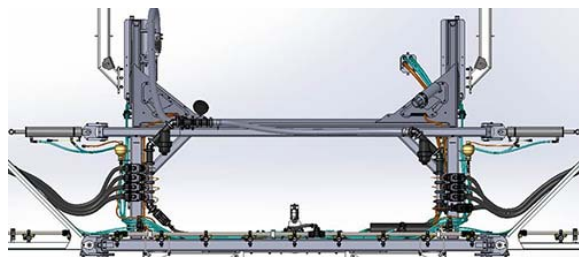
*\* Recommended spray width*

### Spray Boom Components

- Fixed Transom
- Level Cylinders
- Proximity Sensors
- NORAC® Sensors
- Position Sensors
- Accumulators
- Main Fold/Breakaway Cylinders
- Outer Breakaway (Tip)

### Fixed Transom

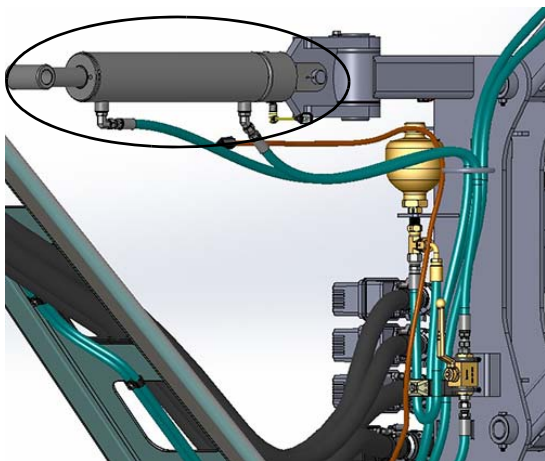
The Fixed Transom and lift arm house the lift cylinders, pressure gauge, roll lock cylinders, boom stands, fold control manifold, Hagie-installed modules, NORAC center sensor, and the NORAC lift/level hydraulic manifold.



Fixed Transom  
-Typical View

### Level Cylinders

The Level Cylinders (located on each side of the transom) are responsible for the up and down movement of the boom wings when the level controls are activated.



Level Cylinder  
-Typical View

### Proximity Sensors

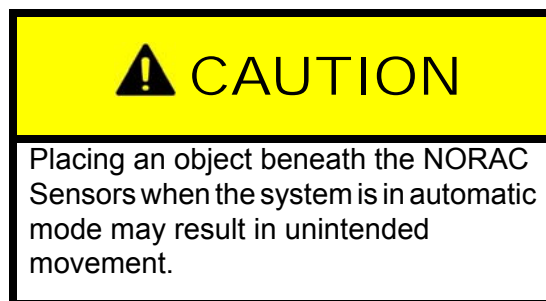
The Proximity Sensors (located at each outer fold latch assembly) sense if the latches are fully engaged. The sensors send a signal and alert the operator by a warning message on the Machine Display if the latches are not in the correct position.

*NOTE: The Proximity Sensors are factory-preset and should not require calibration. Contact your local John Deere dealer if boom positioning assistance is needed.*



Proximity Sensors  
-Typical View

### NORAC Sensors



The boom is equipped with five (5) NORAC Sensors (two located on each outer boom fold extension and one located on the transom) that measure boom height above ground. The sensors send a signal to the NORAC control system allowing for position corrections to keep the boom parallel to the ground and the crop, giving you a more consistent spray pattern.



NORAC Sensors  
-Typical View

### Position Sensors

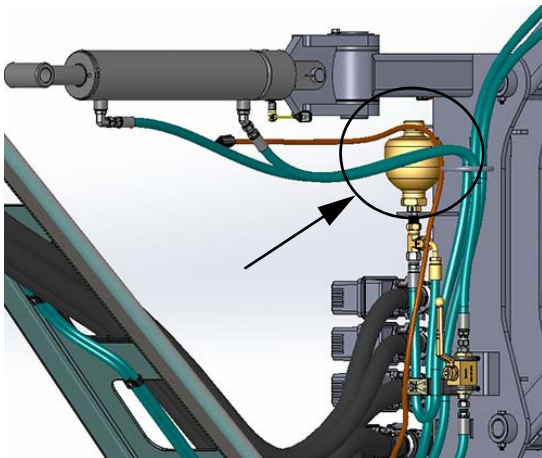
The level cylinders, main fold, and outer fold cylinders are equipped with internal Position Sensors. These sensors measure the linear stroke of the cylinder, allowing the boom to be positioned correctly when in Auto Fold mode.

The required specific motions exist to provide smooth, efficient operation. The programmed positions help prevent mechanical damage to the boom due to severe imbalance, unintended contact with the ground, or improper fold sequence.

*NOTE: The Position Sensors are factory-preset and should not require calibration. Contact your local John Deere dealer if boom positioning assistance is needed.*

### Accumulators

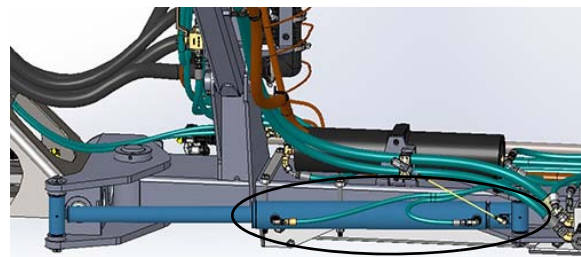
The level cylinders (located on each side transom) are equipped with an Accumulators, which act as a “shock absorber” for the booms.



Accumulator  
-Typical View

### Main Fold/Breakaway Cylinders

The Main Fold/Breakaway Cylinders are responsible for the horizontal extension of the booms to the spray position. They also provide breakaway protection for the boom. These breakaway cylinders will move backward in the event that the section encounters an obstacle.



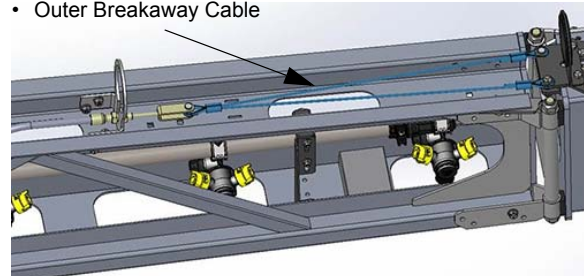
Main Fold/Breakaway Cylinder  
-Typical View

### Outer Breakaway (Tip)

A spring breakaway (located at the tip of the boom) moves forward, backward, and up to provide protection of the boom by allowing the boom to fold forward or backward in the event that it were to come into contact with another object.



• Outer Breakaway Cable



Outer Breakaway  
-Typical View

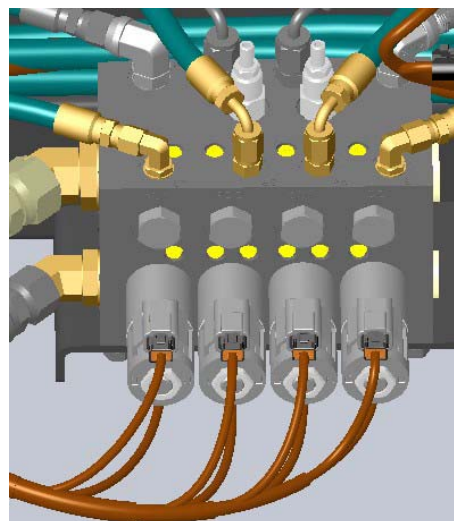
## Recharging Breakaway Circuits

### Main Breakaway

#### To Reset the Main Breakaway

- Once the boom has broken away, press the corresponding Left or Right-Hand Boom Switch (located on the Hydrostatic Drive Control Handle) in the IN position momentarily to stop movement and reset the hydraulic kick-down relief (located on center of transom).

*NOTE: Hydraulic kick-down relief breaks at 4350 psi (300 bar).*



Hydraulic Kick-Down Relief  
- Main Breakaway  
(Located on center of transom)  
-Typical View



Left and Right-Hand Boom Switches  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

- Press and hold the corresponding Left or Right-Hand Boom Switch in the OUT position until the main fold section has resumed spray position.



Left and Right-Hand Boom Switches  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

*NOTE: The main boom breakaways cannot be folded unless machine speed is less than 5 mph (8 km/h).*

### Outer Breakaway

The Outer Breakaway is self-resetting and will return to the normal operating position after it has cleared the hazard.

### Adjusting Breakaway Tension

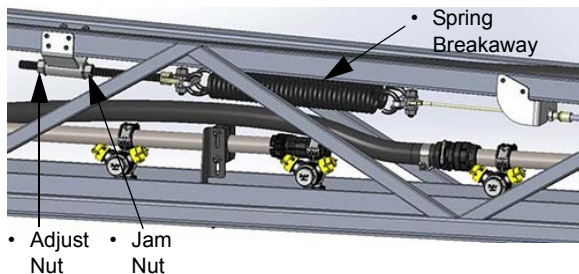
*NOTE: Recommended tension for the spring breakaway is 15.5"/39.4 cm (distance from the first coil to last coil, as shown).*



Spring Breakaway  
-Typical View

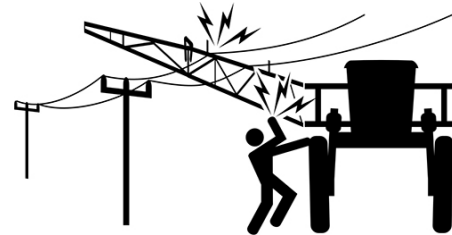
### To increase/decrease spring tension:

- Using a 15/16" wrench or socket, loosen the Jam Nut.
- Using a 15/16" wrench or socket, tighten the Adjust Nut to extend the spring, or loosen the Adjust Nut to retract the spring.
- Re-tighten Jam Nut.



Spring Breakaway Adjust/Jam Nuts  
(Located near the outer end of the spring breakaway)  
-Typical View

### Auto Fold

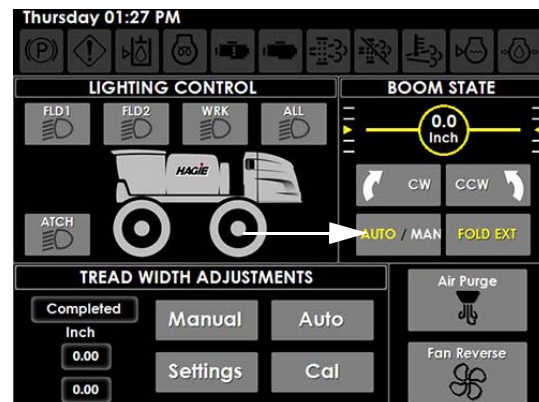


The Auto Fold feature is the preferred method for unfolding/folding the spray boom and makes operation of the machine easier for the operator.

*NOTE: Ensure the Hydrostatic Drive Control Handle is in the NEUTRAL position. If the machine is put in gear during fold operation, boom movement will stop.*

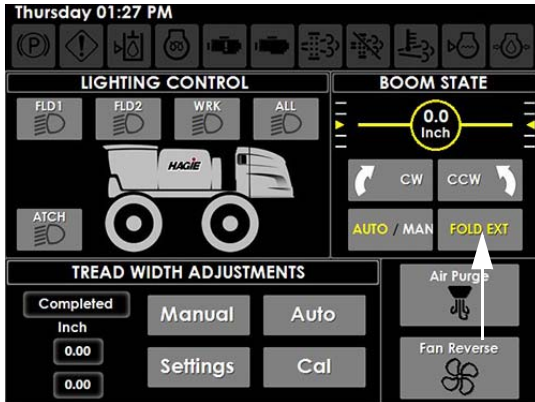
1. Press the Boom State Button (located on the Machine Display Auxiliary Controls Page) to the AUTO position.

*NOTE: The selected boom state will illuminate.*



Boom State Button - Auto/Manual  
(Located on the Machine Display Auxiliary Controls Page)

2. Press the Fold Extension Button (located on the Machine Display Auxiliary Controls Page) to the ON (illuminated) position to enable Auto Fold operation of the outer boom extensions.

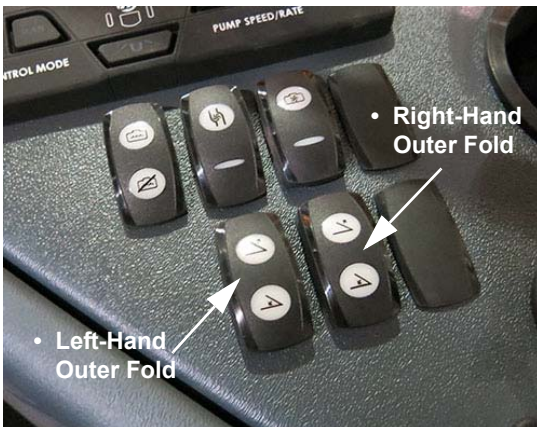


Fold Extension Button  
(Located on the Machine Display  
Auxiliary Controls Page)

When the boom state displays AUTO and the Fold Extension Button is enabled, the boom will operate with the Boom Extension Switches (located on the side console).

*NOTE: When the Fold Extension Button is disabled, the main boom will unfold/fold, but the outer boom extensions will not.*

3. Press and hold **both** Left and Right Boom Extension Switches (located on the side console) UP to unfold the boom to the fully extended position on all sections.



Boom Extension Switches - Left/Right  
(Located on the side console)  
-Typical View

4. Press and hold **both** Left and Right Boom Extension Switches (located on the side console) DOWN to fold the boom in to the fully retracted position.

## Manual Fold

### NOTICE

Do not move the transom up or down during boom fold procedure. Failure to comply may result in severe damage to the boom wing structures.

### NOTICE

Do not lower the main lift while the boom is in cradle. Failure to comply will result in property damage.



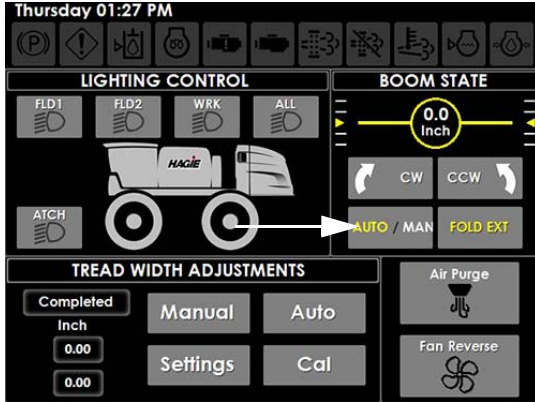
## Manual Unfold (Extend)

*NOTE: Ensure the Hydrostatic Drive Control Handle is in the NEUTRAL position. If the machine is put in gear during fold operation, boom movement will stop.*

1. Press the Boom State Button (located on the Machine Display Auxiliary Controls Page) to the MANUAL position.

*NOTE: The selected boom state will illuminate.*





Boom State Button - Auto/Manual  
(Located on the Machine Display  
Auxiliary Controls Page)

2. Press and hold the corresponding Left and Right-Hand Boom Switches (located on the Hydrostatic Drive Control Handle) in the UP position to raise the level cylinders all the way up.



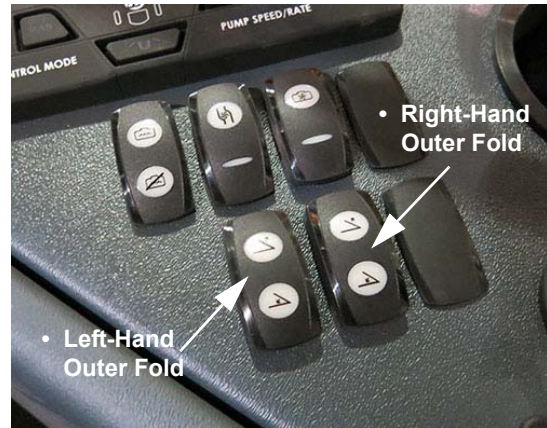
Left and Right-Hand Boom Switches  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

3. Press and hold the Left and Right-Hand Boom Switches in the OUT position to unfold the main boom sections until they come to a complete stop.

*NOTE: Unfold booms simultaneously to prevent weight imbalance.*

4. Lower the level cylinders until the boom is parallel with the ground.

5. Press and hold the Left and Right Boom Extension Switches (located on the side console) in the UP position to unfold the boom extensions all the way OUT.



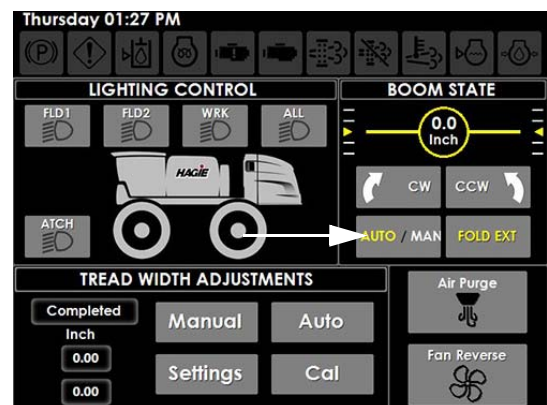
Boom Extension Switches - Left/Right  
(Located on the side console)  
-Typical View

### Manual Fold (Retract)

*NOTE: Ensure the Hydrostatic Drive Control Handle is in the NEUTRAL position. If the machine is put in gear during fold operation, boom movement will stop.*

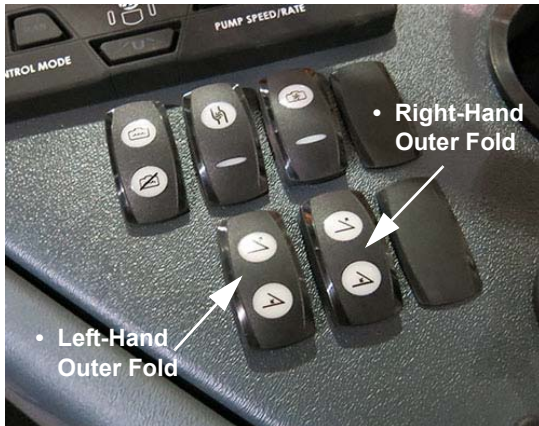
1. Press the Boom State Button (located on the Machine Display Auxiliary Controls Page) to the MANUAL position.

*NOTE: The selected boom state will illuminate.*



Boom State Button - Auto/Manual  
(Located on the Machine Display  
Auxiliary Controls Page)

- Lower the level cylinders until the boom is parallel with the ground.
- Press and hold the Left and Right Boom Extension Switches (located on the side console) in the DOWN position to fold the boom extensions all the way IN.



Boom Extension Switches - Left/Right  
(Located on the side console)  
-Typical View

- Press and hold the Transom Switch (located on the Hydrostatic Drive Control Handle) in the UP position to raise the main lift all the way up.

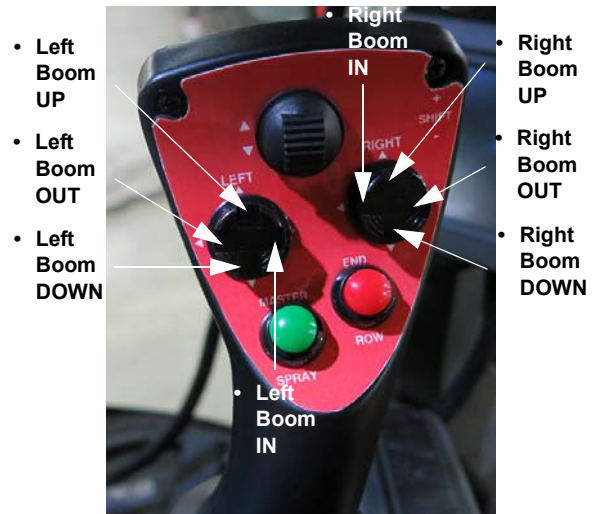


Transom Switch - UP  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

- Raise the level cylinders all the way up.
- Press and hold the Left and Right-Hand Boom Switches (located on the Hydrostatic Drive Control Handle) in the IN

position until the main boom wings are aligned with cradles.

*NOTE: Fold booms simultaneously to prevent weight imbalance.*



Left and Right-Hand Boom Switches  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

- Lower the level cylinders until the boom sections are seated in the boom cradles.

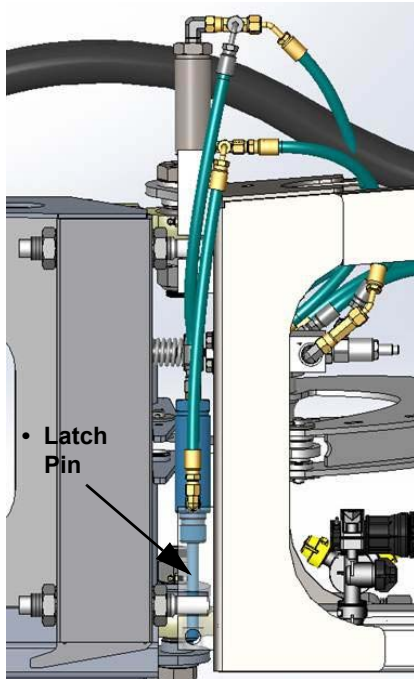
### Outer Fold Latches

The spray boom is featured with Outer Fold Latches (located between the inner and outer boom sections on each side of attachment) to provide stronger joint structure and greatly extend the life of the boom.

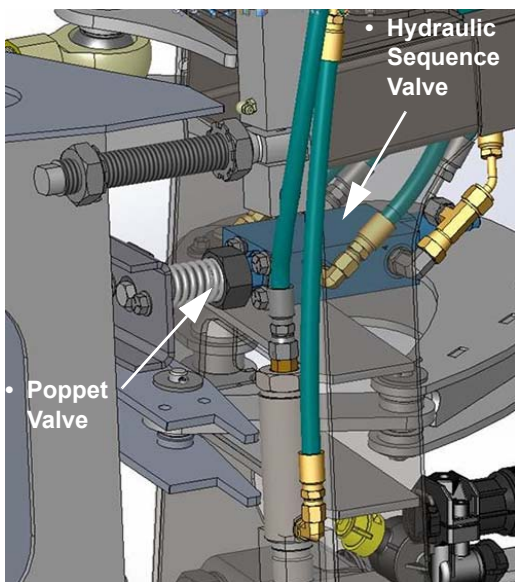
Each Outer Fold Latch works in conjunction with the outer fold cylinder and hydraulic sequence valve to latch the inner and outer boom sections together after the boom is fully extended. These latches engage and disengage automatically when the outer fold extensions are extended and retracted by depressing the corresponding left and right Boom Extension Switches (located on the side console). Once the booms have fully extended, the outer wing pushes a poppet valve in the hydraulic sequence valve to extend the latch pins. This requires no additional input from the operator. Conversely, once the booms are

folded again using the Boom Extension Switches, the hydraulic sequence valve retracts the latch pins before extending the outer fold cylinder to fold the boom.

*NOTE: The Outer Fold Latches operate in both manual and auto fold.*



Outer Fold Latch Assembly (2)  
(Located between the inner and outer boom sections on each side of attachment)  
-Typical View



Hydraulic Sequence/Poppet Valves  
-Typical View

NOTICE

Do not operate the boom without full engagement of the outer fold latches. Failure to comply may result in severe structural damage of the attachment.

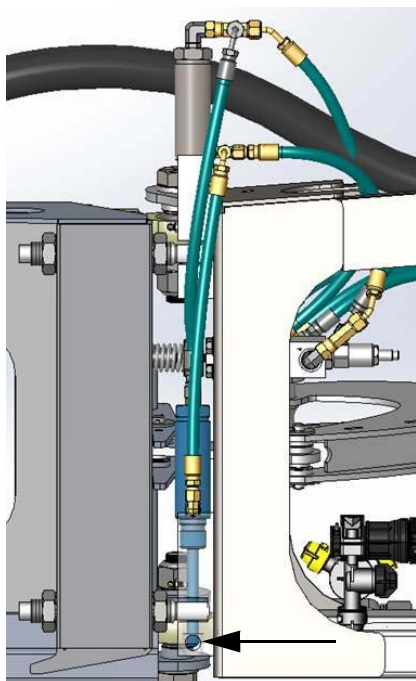
In the event of a latch malfunction, a warning message will appear on the Machine Display inside the cab. The operator should visually inspect the latch pin through the access hole (located near the bottom of the inner and outer boom fold) and ensure the pin is fully engaged. Press OK (on the Machine Display warning message screen) to acknowledge before proceeding.



Outer Fold Latch "Not Engaged"  
Malfunction Warning



Outer Fold Latch "Engaged"  
Malfunction Warning



Access Hole  
(Located near the bottom of  
the inner and outer boom fold)  
-Typical View

## Enabling/Disabling NORAC® in the Pulse Display

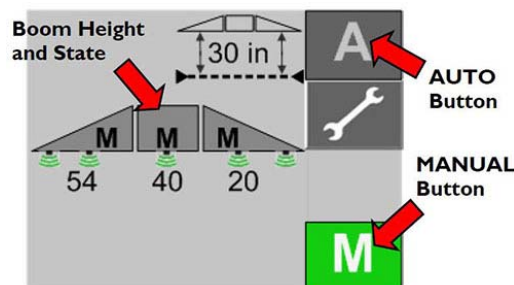
-If Equipped

*NOTE: Hagie Manufacturing Company recommends turning the NORAC Monitor OFF when traveling from one field to the next. A power switch is located on the back side of the monitor.*



NORAC Monitor  
-Typical View

- **To Enable**, press the corresponding Auto or Manual Button (located on the main “Run Screen”) to the ON (green illuminated position).



Auto/Manual Buttons - NORAC  
(Located on the main “Run Screen”)  
-Typical View

*\* Your monitor may vary in  
appearance, depending on model*

- **To Disable**, press the corresponding Auto or Manual Button to the OFF (gray) position or press any one of the following boom control switches (located on the Hydrostatic Drive Control Handle):
  - Transom Switch (Up/Down)
  - Left or Right-Hand Boom Switch (Up/Down)

*NOTE: If the NORAC System becomes inoperable, the Auto and Manual Fold functions will still operate.*

## Enabling/Disabling NORAC in the Ag Leader® Display

-If Equipped

- **To Enable**, press the Auto/Manual Button (located on the main “Run Screen”) to the ON (green illuminated position).

*NOTE: When the system is engaged, the boom image will change from black to blue.*



Auto/Manual Button - Ag Leader  
(Located on the main “Run Screen”)  
-Typical View

*\* Your monitor may vary in appearance, depending on model*

- **To Disable**, press the Auto/Manual Button to the OFF (white) position or press any one of the following boom control switches (located on the Hydrostatic Drive Control Handle):
  - Transom Switch (Up/Down)
  - Left or Right-Hand Boom Switch (Up/Down)

*NOTE: When the system is disabled, the boom image will change from blue to black.*

*NOTE: If the NORAC System becomes inoperable, the Auto and Manual Fold functions will still operate.*

## NORAC/Ag Leader System Settings

**-If Equipped (Soil/Crop Mode, Target Height, and Sensitivity)**

*NOTE: Settings may be adjusted through the main Run Screen by pressing the Boom Image or the Settings Button (wrench icon), depending on model. Refer to the NORAC or Ag Leader manufacturer’s operation manual for further information.*

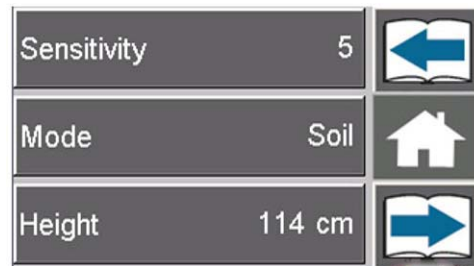
## Soil/Crop Mode

Soil Mode allows the sensors to read the height from the spray nozzles to the ground. Crop Mode allows the sensors to read the height from the spray nozzles to the top of the crop canopy.

### On the NORAC Pulse Monitor:

- Press the Settings Button (wrench icon) (located on the main “Run Screen”) to navigate to the Settings Screen.
- Press the Next Button (located next to “Mode”) and select Soil, Crop, or Hybrid Mode.

*NOTE: Hybrid Mode is an improved Crop Mode, which uses a combination of the crop and soil readings to improve control. This setting is recommended in place of Crop Mode.*

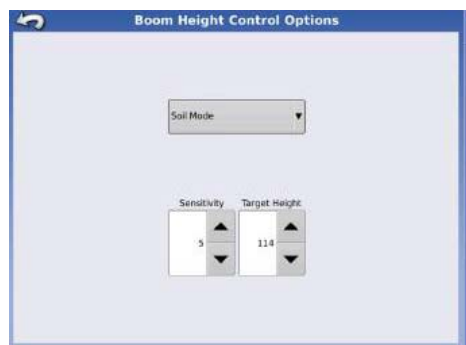


Settings Screen  
(NORAC)  
-Typical View

*\* Your monitor may vary in appearance, depending on model*

### On the Ag Leader Monitor:

- Press the Boom Image (located on the main “Run Screen”).
- Press the top drop-down arrow (located on the Boom Height Control Options Screen) and select Soil or Crop Mode.



Boom Height Control Options Screen  
(Ag Leader)  
-Typical View

*\* Your monitor may vary in appearance, depending on model*

### Sensitivity

Sensitivity is how responsive the system is. The lower the number, the lower the sensitivity. The higher the number, the higher the response time and hydraulic demand.

*NOTE: Default sensitivity setting is 5.*

#### On the NORAC Pulse Monitor:

- Press the Settings Button (wrench icon) (located on the main “Run Screen”) to navigate to the Settings Screen.
- Press the Next Button (located next to “Sensitivity”) and increase or decrease system sensitivity values from 1-10.

#### On the Ag Leader Monitor:

- Press the Boom Image (located on the main “Run Screen”).
- Press the Sensitivity Buttons (located on the Boom Height Control Options Screen) and increase or decrease system sensitivity values from 1-10.

### Target Height

Target Height is the height you desire the boom to be set at when spraying.

*NOTE: When operating in Soil Mode, the Target Height is measured from the spray nozzles to the soil. In Crop Mode, the target height is measured from the crop canopy to the spray nozzles.*

#### On the NORAC Pulse Monitor:

- Press the Settings Button (wrench icon) (located on the main “Run Screen”) to navigate to the Settings Screen.
- Press the Next Button (located next to “Height”) and increase or decrease values to desired boom height.

#### On the Ag Leader Monitor:

- Press the Boom Image (located on the main “Run Screen”).
- Press the Target Height Buttons (located on the Boom Height Control Options Screen) and increase or decrease values to desired boom height.

### Further Information

Refer to the NORAC or Ag Leader manufacturer’s operation manual for complete operating/calibration instructions, troubleshooting information, and safety precautions.

Refer to “Specifications” provided in the *Introduction Section* of your machine operator’s manual for information on GPS dimensions on your machine.

### Enabling NORAC through the End Row Management Switch

**-If Equipped**  
*(Typical View - appearance may vary, depending on model)*

1. Program the End Row Management Switch (located on the Hydrostatic Drive Control Handle) through the Machine Display.  
Refer to “Machine Display” provided in the *Cab Section* of your machine operator’s manual for initial setup instructions.



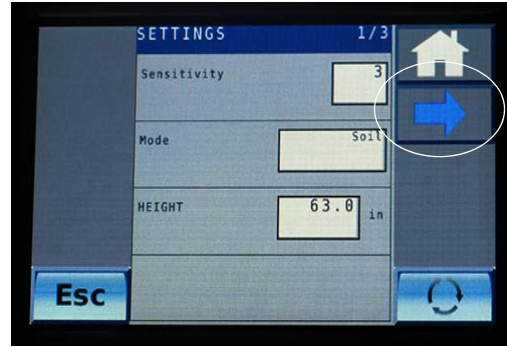
End Row Management Switch  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

2. On the NORAC or Ag Leader main “Run Screen”, press the “wrench” icon.



Main Run Screen  
-Typical View

3. On the Settings Screen (1/3), press the “right/forward” blue arrow icon to navigate to the next screen.



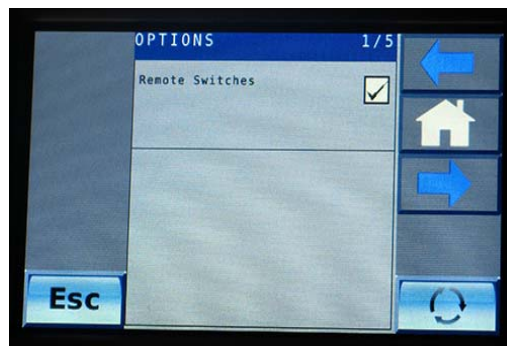
Settings Screen (1/3)  
-Typical View

4. On the Settings Screen (2/3), press the “right/forward” blue arrow icon to navigate to the next screen.
5. On the Settings Screen (3/3), press the “check page” icon.



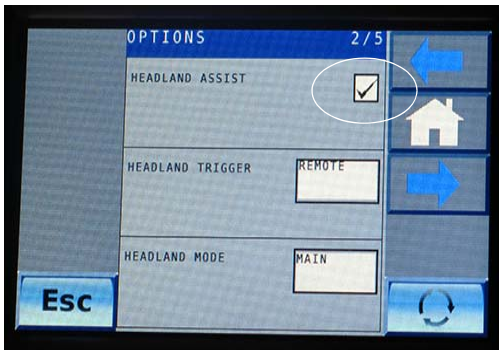
Settings Screen (3/3)  
-Typical View

6. On the Options Screen (1/5), ensure the “Remote Switches” option is selected and press the “right/forward” blue arrow icon to navigate to the next screen.

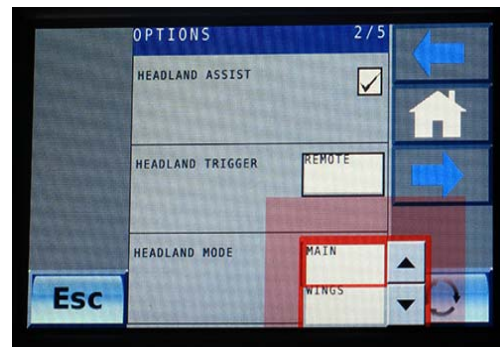


Options Screen (1/5)  
-Typical View

7. On the Options Screen (2/5), select “Headland Assist”.

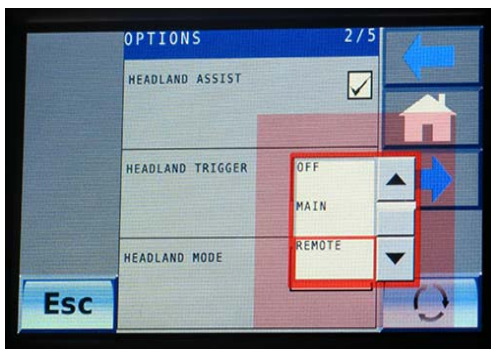


Options Screen (2/5)  
-Typical View



Options Screen (2/5)  
-Typical View

8. On the Options Screen (2/5), press the selection area (next to “Headland Trigger”) and select REMOTE to enable NORAC through the End Row Management Switch.



Options Screen (2/5)  
-Typical View

9. On the Options Screen (2/5), press the selection area (next to “Headland Mode”) and select MAIN or WINGS.



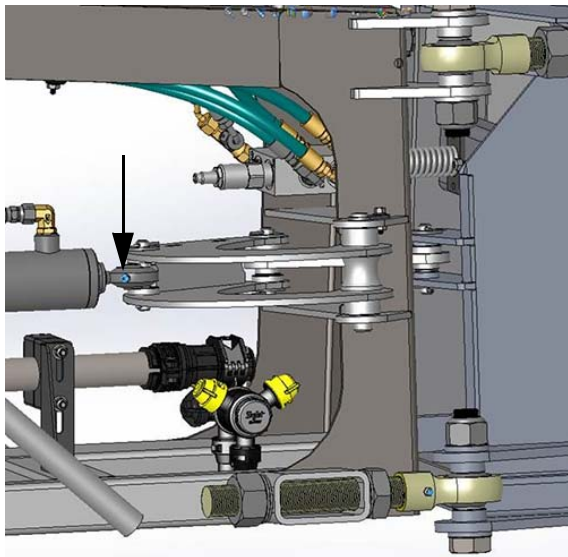
### SERVICE - LUBRICATION

#### NOTICE

Failure to properly lubricate pivot and friction points may result in unnecessary wear and damage to the attachment.

#### Outer Fold Cylinder

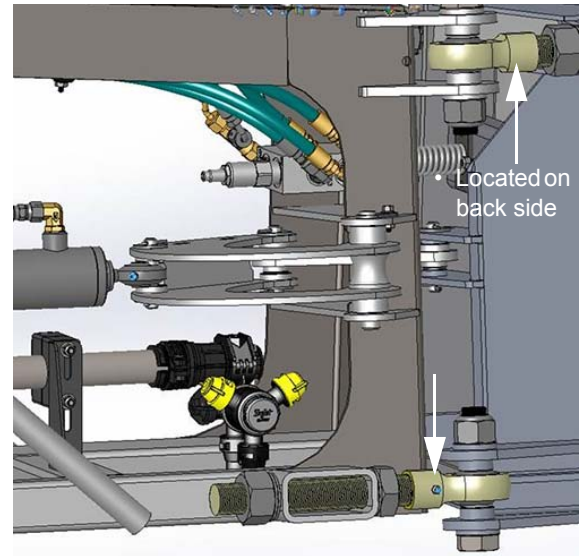
Lubricate the Outer Fold Cylinder Grease Zerks (one per side) weekly, or as needed.



Outer Fold Cylinder Grease Zerk (2)  
-Typical View

#### Outer Fold Joint (Top/Bottom)

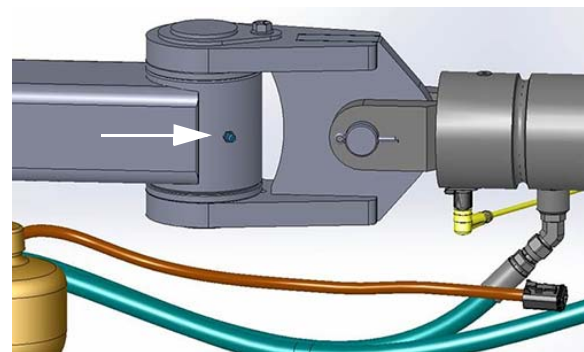
Lubricate the Outer Fold Joint Grease Zerks - Top/Bottom (two per side) weekly, or as needed.



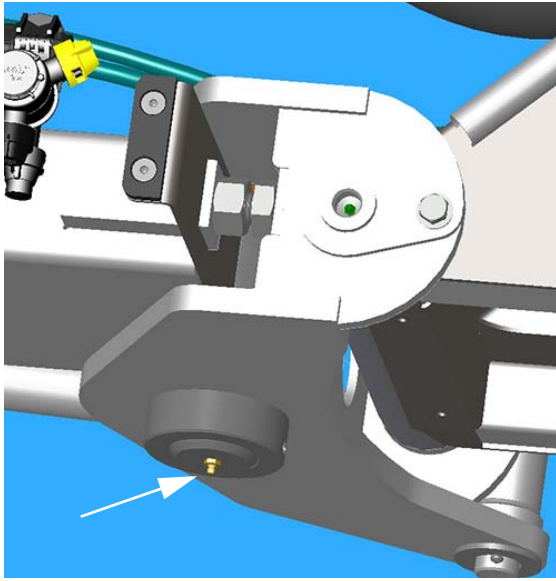
Outer Fold Joint Grease Zerks (4)  
(Top/Bottom)  
-Typical View

#### Main Fold Pivot (Upper/Lower)

Lubricate the Main Fold Pivot Grease Zerks - Upper/Lower (two per side) weekly, or as needed.



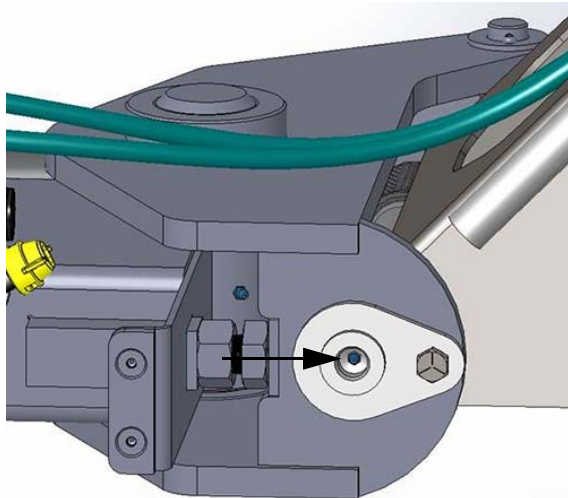
Main Fold Pivot Grease Zerk - Upper (2)  
-Typical View



Main Fold Pivot Grease Zerk - Lower (2)  
-Typical View

### Level Pin

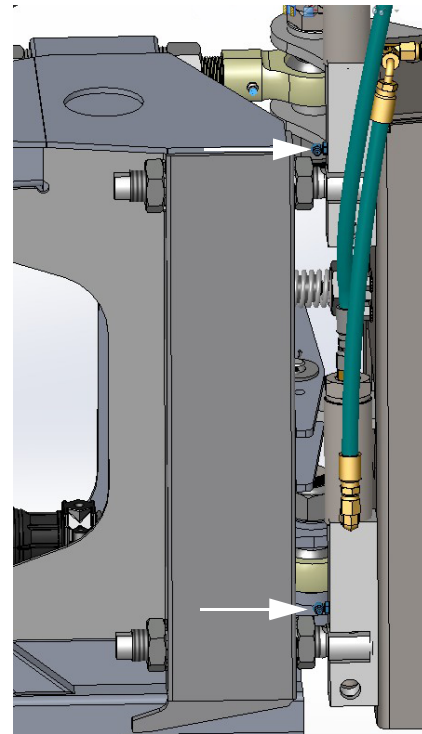
Lubricate the Level Pin Grease Zerks (two per side) weekly, or as needed.



Level Pin Grease Zerk (4)  
-Typical View

### Outer Fold Latches

Lubricate the Outer Fold Latch Grease Zerks - Top/Bottom (two per side) weekly, or as needed.



Outer Fold Latch Grease Zerks (4)  
(Top/Bottom)  
-Typical View

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## SERVICE - MISCELLANEOUS

### Spray Booms

#### Nozzle Diaphragms

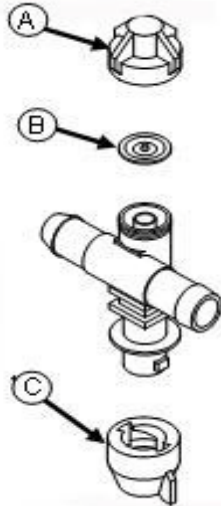
At the beginning of each season, remove each nozzle body cap (A) and inspect the diaphragm (B) for wear or fit. Replace diaphragms every 1,000 hours of operation, or as necessary.

#### Spray Tips

**⚠ CAUTION**

Never place a spray tip/nozzle to your mouth in an attempt to unplug it.

At the beginning of each season (or as required), remove a random sample of spray tip caps (C) and inspect the nozzle tips. If the tips are plugged or worn, clean or replace them. Replace spray tips every 1,000 hours of operation, or as necessary.



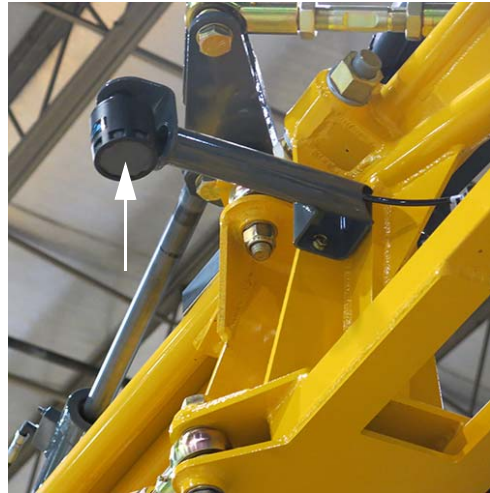
Nozzle Diaphragms and Spray Tips  
-Typical View

### **NORAC® Sensor Foam Pads**

Inspect the NORAC Sensor Foam Pads daily. Remove the foam pad from each sensor, blow out with compressed air, and reinstall.

*NOTE: Ensure foam pads are clean and dry to ensure optimal performance.*

*NOTE: DO NOT blow the foam pad out while still installed on the sensor. Always remove foam pad before cleaning to avoid sensor damage.*



NORAC Sensor Foam Pad  
(Located on the bottom of each sensor)  
-Typical View

Replace foam pads as necessary.  
Contact your local John Deere dealer for replacement.

**SERVICE INTERVALS**

Service Point	Daily/ Before Each Use	Weekly	As Required	1000 Hrs.
Inspect/Clean NORAC® Sensor Foam Pads	X			
Lubricate Outer Fold Cylinder Grease Zerks		X		
Lubricate Outer Fold Joint Grease Zerks		X		
Lubricate Main Fold Pivot Grease Zerks		X		
Lubricate Level Pin Grease Zerks		X		
Lubricate Outer Fold Latch Grease Zerks		X		
Check Spray Nozzle Diaphragms and Tips			X	
Replace NORAC Sensor Foam Pads			X	
Change Spray Nozzle Diaphragms and Tips				X

---

## STORAGE

### Preparing For Storage

1. Perform daily and weekly lubrication and maintenance inspections, as required.
2. With the engine at normal operating temperature, cycle all the hydraulic functions.
3. Thoroughly rinse the spray system.

*NOTE: Refer to your machine operator's manual for further information.*

4. Thoroughly wash the attachment and touch up any chipped or damaged paint.
5. Replace any damaged or missing decals.

*NOTE: Contact your local John Deere dealer for paint touch-up recommendations and decal replacement.*

6. Apply multi-purpose grease to hydraulic cylinder rods.
7. Refer to the spray system console manufacturer's operation manual for detailed information on monitor and flow meter storage procedures.
8. If the boom attachment will be stored separately, ensure that all open ends (e.g. hydraulic, electrical, solution, and foam marker, if equipped) are capped or covered with a suitable covering.

### Winterization Procedure

To winterize the boom, it is recommended that you use an environmentally safe type of antifreeze and water mixture that will give you adequate protection to -30 degrees.

Drain any remaining solution in the system and rinse thoroughly. Run antifreeze mixture through the system until it comes out all attachment openings.

## Removal From Storage

### NOTICE

Protective compounds such as grease can harden under exposure to weather conditions. Be sure to remove any dried grease and reapply new, if necessary.

1. Remove any dried grease from the cylinder rods and re-apply, if necessary.
2. Thoroughly clean the boom attachment.
3. Carefully unseal any openings that were sealed for storage.
4. Attach boom to the sprayer and manually cycle the hydraulics two or three times to adequately lubricate components.

### TRANSPORTING

#### Transporting Your Machine with an Attachment

#### ⚠ CAUTION

Ensure there is adequate clearance when transporting the sprayer near an object with clearance less than the transporting height and width of the overall machine and boom attachment.

#### ⚠ CAUTION

Hagie Manufacturing Company does not recommend any form of transportation other than driving the sprayer. Loading the sprayer onto a trailer may result in sprayer rollover.

#### ⚠ WARNING

- Never operate the sprayer on a public roadway with solution in the tank.
- Never load or unload the sprayer with solution in the tank.
- Stopping the sprayer on trailer ramps may result in the sprayer to tip over.

#### ⚠ CAUTION

DO NOT operate the machine at speeds exceeding 20 mph (32 km/h) with solution in the tank. Operating speeds exceeding 20 mph (32 km/h) with a fully loaded tank may result in tire blow-out or wheel hub damage and will void the warranty.

#### ⚠ WARNING

When transporting the sprayer, observe the following to avoid serious injury or death:

- Check for adequate clearance before driving under any overhead obstructions.
- Contact with power lines may result in serious injury or death.



#### ⚠ CAUTION

Do not transport the machine without the booms folded and in cradle. Failure to comply may result in injury or equipment damage.

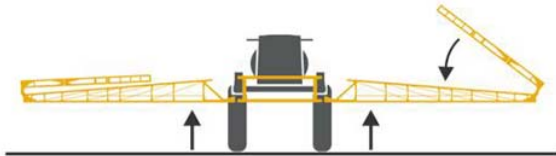
## Cradling the Booms

### ⚠ CAUTION

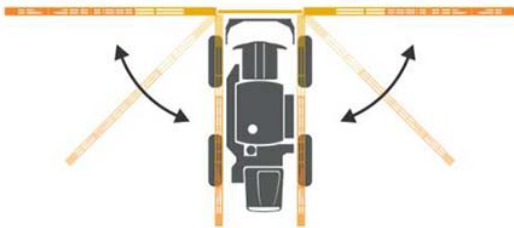
Booms must be in the FOLDED position when cradled. Failure to comply will result in property damage.

*NOTE: Always cradle the booms before traveling, transporting, or parking for an extended period of time.*

- Fold the outer boom extensions IN.



- Raise the transom all the way UP.
- Fold main boom sections IN toward the machine.



*NOTE: When boom reaches the last 8-10 degrees of travel, it will automatically slow down to avoid impact with the cradle.*

- Raise each individual boom until it clears the outer cradle stop.
- Fold the boom IN toward cradle back-stop.
- When boom touches the back-stop, lower until the full weight of the boom rests in the cradle.

## Loading

### ⚠ WARNING

Keep all persons away from trailer when loading or unloading the sprayer. Failure to comply may result in serious injury or death.

### NOTICE

Read and understand the trailer manufacturer's operation manual. Hitch the trailer to the pulling vehicle according to their recommendations.

### NOTICE

The loaded height and width of the trailer must conform to state law in which it is being used. Do not exceed the trailer manufacturer's recommendations on loaded weight.

1. Pull the trailer to flat ground.
2. Apply the pulling vehicle's parking brake and turn the engine OFF.
3. Use tire chocks to keep the trailer from moving.
4. Fold the booms and lower into cradles.
5. Lower the trailer ramps and set the ramp spacing for the machine's tread width setting.
6. Have an attendant help guide you onto the trailer.
7. Allow enough room between the sprayer and the pulling vehicle for turning.
8. Secure the sprayer onto the trailer using the recommended securement restraints (see trailer manufacturer's operation manual).
9. Cover or remove the SMV (Slow Moving Vehicle) and SIS (Speed Indicator Sym-

bol) emblems when traveling over 35 mph (55 km/h).

### Unloading

1. Pull the trailer to flat ground.
2. Apply the pulling vehicle's parking brake and turn the engine OFF.
3. Use tire chocks to keep the trailer from moving.
4. Lower the trailer ramps and set the ramp spacing for the machine's tread width setting.
5. Carefully release the securement restraints.
6. Have an attendant help guide you off of the trailer.
7. Uncover or replace the SMV and SIS emblems.

### Towing

<h2>NOTICE</h2>
Sprayer should never be towed under any circumstances. Machine damage will occur and will void the power train warranty.

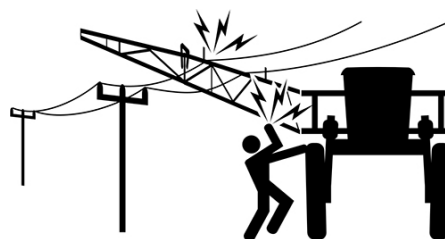


Contact your local John Deere dealer if towing is unavoidable.

### QUICK-TACH SYSTEM

<h2>⚠ CAUTION</h2>
When operating or positioning the booms, observe the following safety precautions. Failure to comply may result in injury or equipment damage. <ul style="list-style-type: none"><li>• Do not unfold/fold boom extensions when main boom is in cradle.</li><li>• Do not operate machine with one boom out of cradle and the other boom in cradle.</li><li>• Ensure booms are folded and in cradle before transporting the machine.</li></ul>

<h2>⚠ WARNING</h2>
When connecting or disconnecting the booms, observe the following safety precautions: <ul style="list-style-type: none"><li>• Monitor both sides of the boom during fold procedure.</li><li>• Select a safe area that is solid and level before unfolding/folding the booms.</li><li>• Clear area of personnel.</li><li>• Check for overhead obstructions.</li><li>• Do not unfold or fold booms near power lines. Contact with power lines can result in serious injury or death.</li></ul>

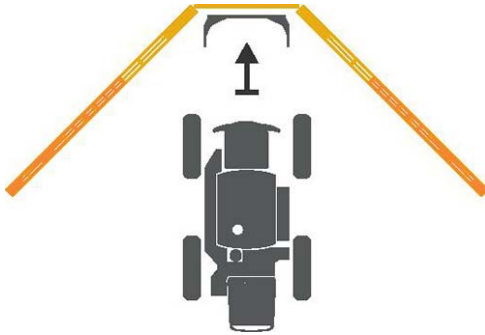


<h2>⚠ WARNING</h2>
Turn the engine OFF before connecting/disconnecting any hoses or electrical lines. Failure to comply may result in serious injury or death.



## Connecting the Boom

1. Square up to the boom.



2. Disengage the Quick-Tach Lock Assemblies by pulling the Lock Pins (located on the front left and right-hand side of machine) OUT as far as it will go until it is in the “lock-out” position.

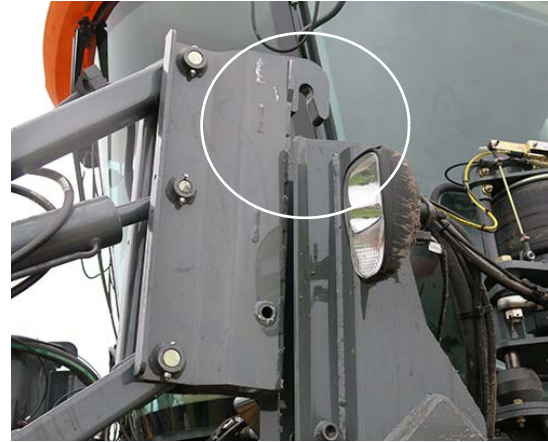
*NOTE: “Lock-out” position prevents re-locking while attaching or detaching the attachment.*



Lock Pin  
(Located on the front left and right-hand side of machine)  
-Typical View

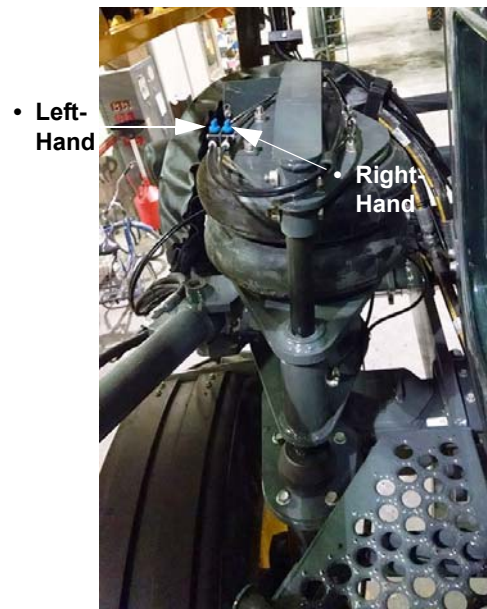
*\* Disengaged position shown*

3. Slowly pull into the attachment.
4. Ensure the Attachment Hooks are high enough to clear the Mounting Pins.



Attachment Clearing Mounting Pin  
-Typical View

5. If necessary, lower the machine by rotating the corresponding Air Suspension Valves (located on the left-hand front air bag) in the COUNTER-CLOCKWISE (Deflate) position.



Air Suspension Valves  
(Located on the left-hand front air bag)  
-Typical View

6. Engage the parking brake.
7. **Turn the engine OFF before connecting any hoses or electrical lines!**
8. Connect all Solution, NORAC® (if equipped), Hydraulic, and Electrical Connections.

### Solution Connection



Solution Connection  
(Located on the front  
right-hand side of machine)  
-Typical View

### NORAC Connection

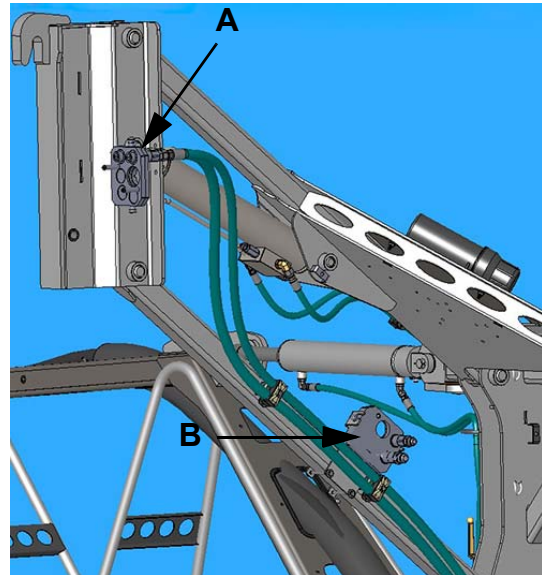
-If Equipped



NORAC Connection - *if equipped*  
(Located on the front  
right-hand side of machine)  
-Typical View

### Quick Connect Multi-Coupler

- Remove Hydraulic/Electric Multi-Coupler (A) from the Multi-Coupler Storage Receptacle (B) (located on the left-hand boom lift arm) and install on the front left-hand side of machine (as shown).



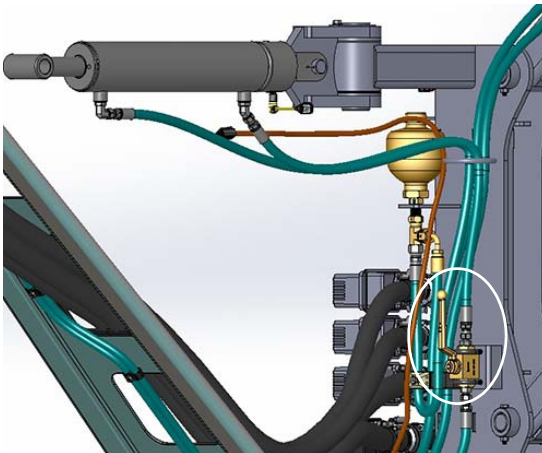
Multi-Coupler Storage Assembly  
(Located on the left-hand boom lift arm)  
-Typical View

- Install the Hydraulic/Electrical Connections (located on the left-hand side of attachment) into the Multi-Coupler Receptacle (located on front left-hand side of machine), ensuring full engagement.
- Push the Quick Connect Handle (located on the Hydraulic/Electric Multi-Coupler Assembly) OUT to engage hydraulic/electrical connections.



Hydraulic/Electric Multi-Coupler Assembly  
(Located on the front  
left-hand side of machine)

9. Rotate each NORAC Hand Valve - *if equipped* (located near the level cylinder on each side of transom) in the OPEN (counter-clockwise) position.



NORAC Hand Valve (2) - *if equipped*  
(Located near the level cylinder  
on each side of transom)  
-Typical View

10. Start the engine.
11. If the air bags were previously deflated, raise the machine by rotating the corresponding Air Suspension Valves in the CLOCKWISE (Inflate) position.
12. Press and hold the Transom Switch (located on the Hydrostatic Drive Control Handle) in the UP position to raise the boom until the Attachment Hooks fully engage.

*NOTE: Press and hold the Transom Switch only until the Attachment Hooks become fully engaged.*

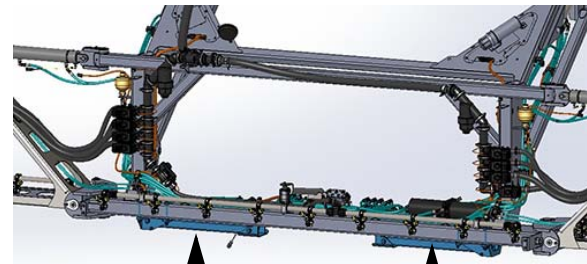
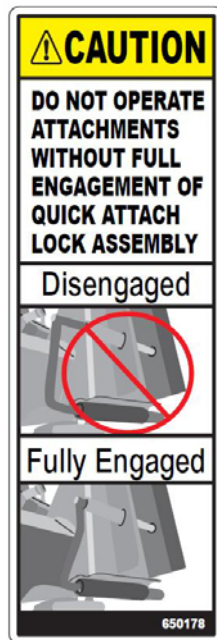


Transom Switch - UP  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

*NOTE: Raising the attachment will allow the weight of the boom to pull the Attachment Hooks over the Mounting Pins. You will notice a change of weight as the machine begins to support the attachment.*

13. Engage the Quick-Tach Lock Assemblies by pushing the Lock Pins IN, ensuring full engagement.

*NOTE: If necessary, adjust the level cylinders to free the Lock Pins.*



Boom Stands  
(Travel Position Shown)  
-Typical View

### Disconnecting the Boom

Before disconnecting the boom, determine a proper storage location. When choosing a place to store the boom, there are three important things to keep in mind:

#### Is the ground level?

The ground must be level to help prevent the attachment from falling over. Level ground will also minimize stress on the frame of the attachment when in storage.

#### Is there enough space?

The attachment needs to be partially open for it to stand properly, but be aware of the room that is needed for the attachment and adequate space to travel around it safely.

#### Is it accessible?

The attachment needs to be positioned so you can connect easily. Ensure there is enough room and that the attachment is not blocked, or blocking other items.

If temporarily storing the attachment on a soft surface (such as grass), it is recommended to place blocks or wood beneath the stand's feet to prevent the attachment from sinking into the ground.

*NOTE: It is NOT recommended to store the attachment on a soft surface for an extended period of time, due to the risk of settling soil, even when blocks or wood are used.*



Lock Pin  
-Typical View  
*\* Engaged position shown*

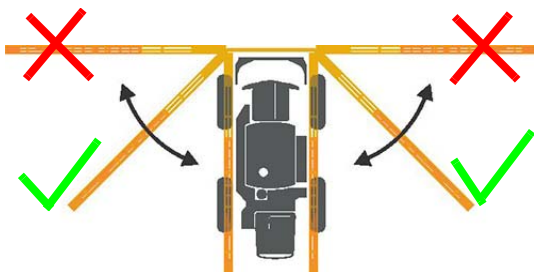
14. Place boom stands in the TRAVEL position.  
Refer to “Boom Stands” elsewhere in this section for further information.

NOTICE

Do not operate the boom while the boom stands are in the lowered position. Failure to comply may result in property damage.

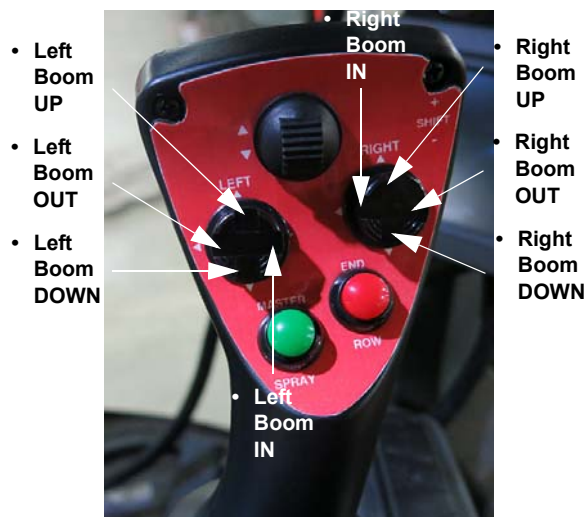
## Unfolding the Boom for Storage

The booms must be partially open for stability when unattached from the machine. Unfold the booms approximately 45-degrees while maintaining sufficient clearance for repositioning during reattachment. This position will allow the booms to sit level with the transom without causing excessive stress on either part. It will also keep the weight from shifting too much in either direction (rearward or forward), which could cause the boom to tip over and/or difficulty in connecting or disconnecting the attachment.



-Typical View

1. Press and hold the corresponding Left and Right Boom Switches (located on the Hydrostatic Drive Control Handle) in the UP position to remove boom wings from cradles.



Left and Right-Hand Boom Switches  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

2. Press and hold the corresponding Left and Right Boom Switches in the OUT

position to unfold the boom wings until **partially** open.

*NOTE: Booms only need to be unfolded far enough to clear the boom cradles and lower (e.g. enough to clear the front tires and allow room for steering to line up the boom). Do NOT fully extend.*

3. Lower the boom and secure the boom stands in the DOWN position. See “Boom Stands” elsewhere in this section for further information.

## WARNING

Lower boom to the ground before disengaging the Quick-Tach Lock Assemblies.

4. Press and hold the corresponding Left and Right Boom Switches in the DOWN position to point boom tips down (until tips touch the ground).
5. Disengage the Quick-Tach Lock Assemblies by pulling the Lock Pins (located on the front left and right-hand side of machine) OUT as far as it will go until it is in the “lock-out” position.

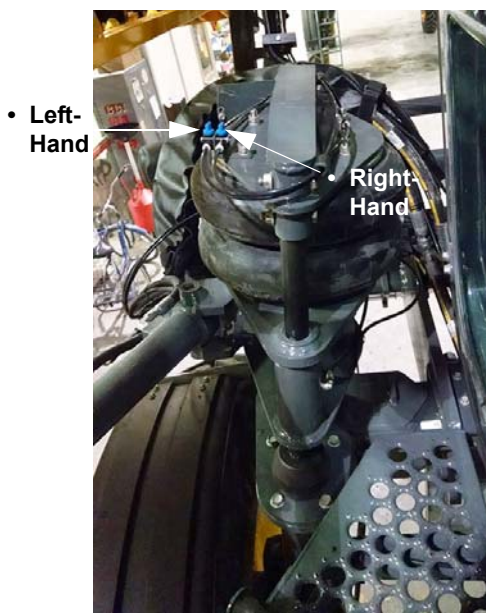
*NOTE: “Lock-out” position prevents re-locking while attaching or detaching the attachment.*

*NOTE: If necessary, adjust the level cylinders to free the Lock Pins.*



Lock Pin  
(Located on the front left and  
right-hand side of machine)  
-Typical View  
*\* Disengaged position shown*

6. If necessary, lower the machine by rotating the corresponding Air Suspension Valves (located on the left-hand front air bag) in the COUNTER-CLOCKWISE (Deflate) position.



Air Suspension Valves  
(Located on the left-hand front air bag)  
-Typical View

7. Ensure the Boom Solution Valve Switches (located on the side console) are in the OFF position.



Boom Solution Valve Switches  
(Located on the side console)  
-Typical View

8. Disconnect the Solution and NORAC (if equipped) Connections, ensuring not to leave the ends in an area where they may become damaged or contaminated.

### Solution Connection



Solution Connection  
(Located on the front  
right-hand side of machine)  
-Typical View

**NORAC Connection****-If Equipped**

NORAC Connection - *if equipped*  
(Located on the front  
right-hand side of machine)  
-Typical View

9. Press the Transom Switch (located on the Hydrostatic Drive Control Handle) in the DOWN position and slowly lower the boom/transom assembly until Attachment Hooks clear the Mounting Pins.



Transom Switch - DOWN  
(Located on the Hydrostatic  
Drive Control Handle)  
-Typical View

*NOTE: If the air bags are inflated, a “bounce back” effect may be felt when the weight of the boom has been relieved from the machine. Once the air bags have cycled, the machine will adjust to the new weight.*



Attachment Clearing Mounting Pin  
-Typical View

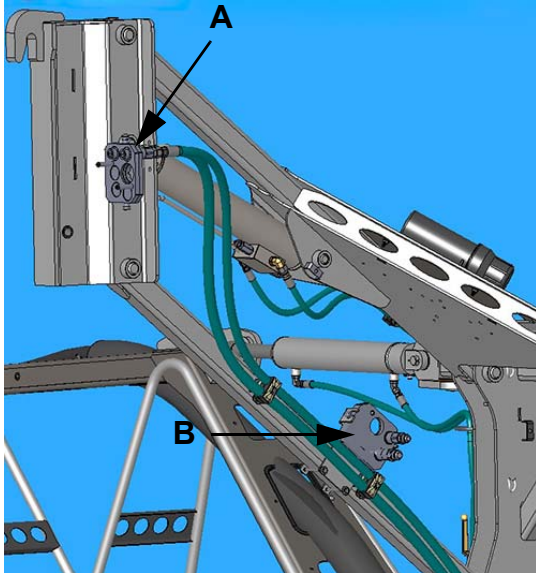
10. Engage the parking brake.  
11. **Turn the engine OFF before disconnecting any hoses or electrical lines!**  
12. Push the Quick Connect Handle (located on the Hydraulic/Electric Multi-Coupler Assembly) IN to disengage hydraulic/electrical connections.



Hydraulic/Electric Multi-Coupler Assembly  
(Located on the front  
left-hand side of machine)

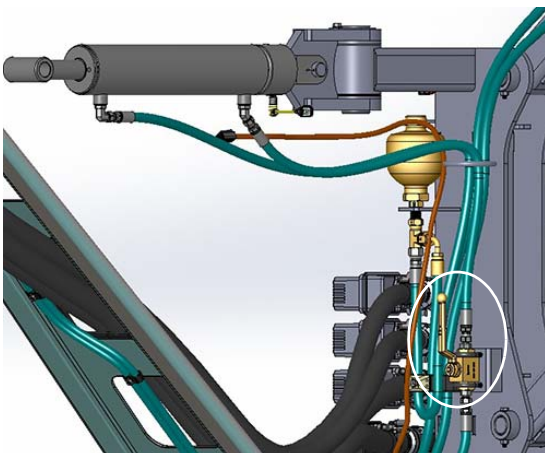
13. Remove Hydraulic/Electrical Connections from the Multi-Coupler Receptacle.

14. Remove Hydraulic/Electric Multi-Coupler (A) from the front left-hand side of machine and reinstall on the Multi-Coupler Storage Receptacle (B) (located on the left-hand boom lift arm).



Multi-Coupler Storage Assembly  
(Located on the left-hand boom lift arm)  
-Typical View

15. Rotate each NORAC Hand Valve - *if equipped* (located near the level cylinder on each side of transom) in the CLOSED (clockwise) position.

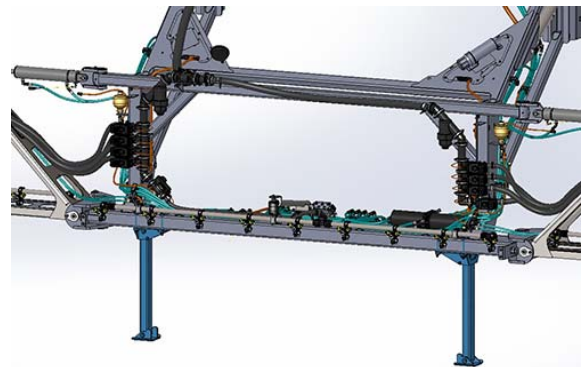


NORAC Hand Valve (2) - *if equipped*  
(Located near the level cylinder  
on each side of transom)  
-Typical View

16. If no other attachment is going to be installed, re-lock the Quick-Tach Lock Assemblies by pushing the Lock Pins IN.
17. Start the machine.
18. Disengage the parking brake and slowly back away from the boom.
19. If the air bags were previously deflated, raise the machine by rotating the corresponding Air Suspension Valves in the CLOCKWISE (Inflate) position.

### Boom Stands

Your boom is featured with two (2) boom stands that swing downward from the bottom of the transom.

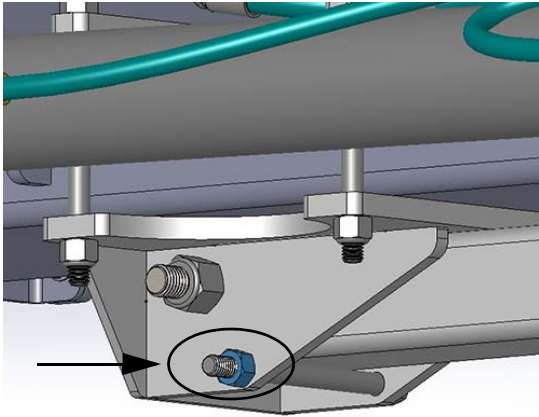


Booms Stands  
-Typical View

### To Extend Booms Stands:

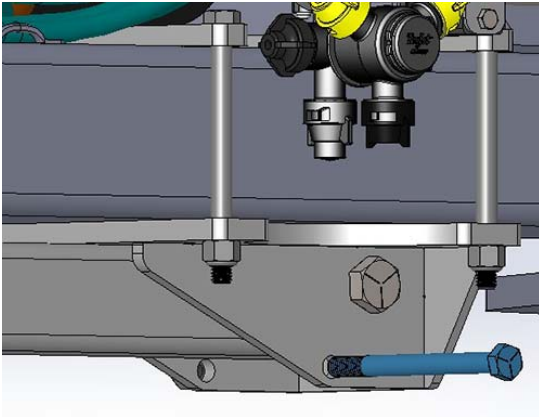
1. Remove 1/2" nut from end of lock bolt (located on the outward side of boom stand) and set aside.





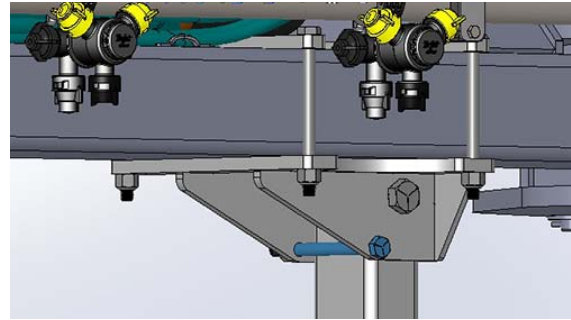
Lock Bolt/Nut Assembly  
(Located on the outward  
side of boom stand)  
-Typical View

2. While supporting the bottom “foot” end of boom stand, remove the lock bolt and slowly lower boom stand to desired position.



Lock Bolt Removed  
-Typical View

3. With the boom stand at desired position, reinstall the lock bolt on the opposite side of boom stand tube.



Lock Bolt Reinstalled  
-Typical View

4. Reinstall nut (that was previously removed in Step 1) to lock bolt.
5. Repeat Steps 1-4 on opposite side of boom.
6. Reverse steps to store booms stands in “travel” position.

## TROUBLESHOOTING

Problem	Possible Cause	Suggested Remedy
Boom sections will not fold in	<ul style="list-style-type: none"> <li>• Operating the manual boom switches when boom state is in Auto Mode</li> <li>• Position sensor error (Auto Mode is inoperable)</li> </ul>	<ul style="list-style-type: none"> <li>• Use the proper switches for the selected boom state</li> <li>• Use manual boom switches</li> <li>• Contact your local John Deere dealer for assistance</li> </ul>
Boom will not recharge	<ul style="list-style-type: none"> <li>• Proximity/Position Sensor error</li> <li>• Software bug</li> </ul>	<ul style="list-style-type: none"> <li>• Check for error message on Machine Display</li> <li>• Unfold each section in Manual Mode</li> <li>• Contact your local John Deere dealer for assistance</li> </ul>
Boom will not operate when manual boom switches are pressed	<ul style="list-style-type: none"> <li>• Acknowledge power line warning on Machine Display</li> </ul>	<ul style="list-style-type: none"> <li>• Contact your local John Deere dealer for assistance</li> </ul>
Boom up/down functions inoperable	<ul style="list-style-type: none"> <li>• NORAC system not functioning properly/ communication error</li> </ul>	<ul style="list-style-type: none"> <li>• Check NORAC system status</li> <li>• Restart machine</li> <li>• Contact your local John Deere dealer for assistance</li> </ul>

# **BOOMS**

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