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SECTION 1 – INTRODUCTION

A WORD FROM HAGIE MANUFACTURING COMPANY

Congratulations on the purchase of your STS Nitrogen Toolbar (NTB)! We recommend that you review this operator's manual and become familiar with operating procedures and safety precautions before attempting to operate your NTB.

As with any piece of equipment, certain operating procedures, service, and maintenance are required to keep your NTB 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 user is responsible for inspecting the NTB 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 NTB without obligation to existing units.

Thank you for choosing a Hagie NTB and we ensure you of our continued interest in it's satisfactory operation for you. We are proud to have you as a customer!

ABOUT THIS MANUAL

 **CAUTION**

Read operator's manual. Be alert. Learn to operate this machine safely. Observe all safety practices. Machines can be hazardous in the hands of an unfamiliar, untrained, or complacent operator. Shut off engine before servicing. When mechanism becomes clogged, shut off engine before cleaning. Do not risk injury or death.

NOTICE

Any pictures contained within this operator's manual that depict situations with shields, guards, rails, or lids removed are for demonstration only. Hagie Manufacturing Company strongly urges the operator to keep all shields and safety devices in place at all times.

This manual will aid you in the proper operation and service of your Nitrogen Toolbar (NTB). 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 NTB.

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.


Keep this manual in a convenient place for easy reference, should problems arise. This manual is considered a permanent fixture of the product. In the event of resale, this manual should accompany the NTB.


If you do not understand any part of this manual or require additional information or service, contact Hagie Customer Support for assistance.

SAFETY MESSAGES USED IN THIS MANUAL

The following safety messages found throughout this manual alert you to situations that could be 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 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

For service and assistance, please contact:

Hagie Manufacturing Company
721 Central Avenue West
P.O. Box 273
Clarion, IA 50525-0273
(515) 532-2861 OR (800) 247-4885
www.hagiehelp.com

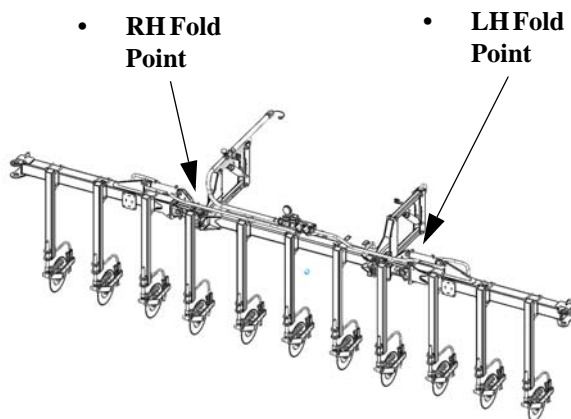
SPECIFICATIONS

Hagie Manufacturing Company offers it’s Nitrogen Toolbar (NTB) in 12-row, 16-row, 18-skip row, 24-skip row, and 36-skip row configurations, depending on model. The 6-ft. clearance allows growers to side-dress nitrogen later in the growing season, in some situations, after tassels have topped.

NTB units are set for 30” rows, but some can accommodate 20, 22, or 36-inch rows. They are capable of applying 80 to 100 lbs. of nitrogen at 14 to 16 mph, which is approximately twice the speed of tractor-pulled units.

Specification	12-Row NTB	16-Row NTB	18-Row NTB	24-Row NTB	36-Row NTB (60-ft. only)
Skip Row	N/A	N/A	X	X	X
Standard Coulter Row Units	11	15	9	12	N/A
Electro-Hydraulic Fold/Lift/Level	X	X	X	X	X
100 PSI Glycerin-Filled Pressure Gauge	X	X	X	X	X

Fold Points (30-ft. NTB)

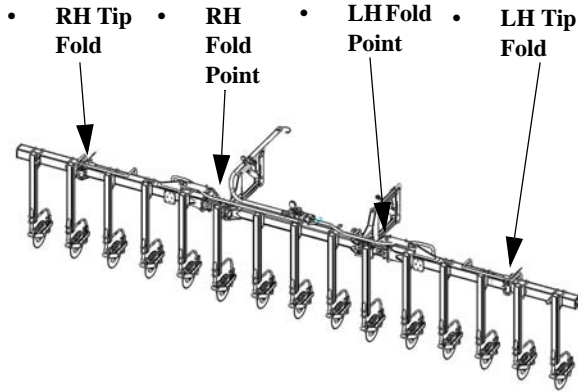


30-ft. NTB Fold Points
-Typical View

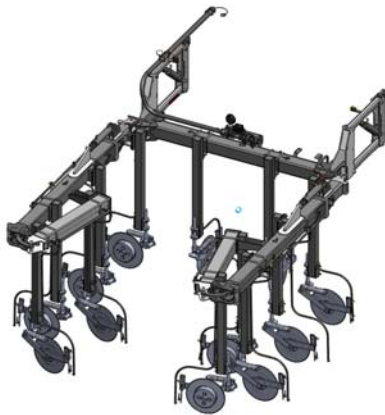


30-ft. NTB Fold Points
(Folded position shown)
-Typical View

Fold Points (40-ft. NTB)

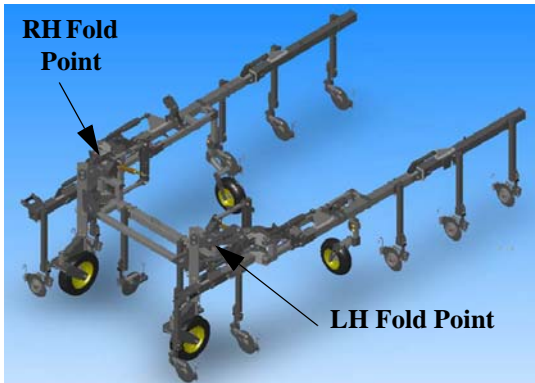


40-ft. NTB Fold Points
-Typical View

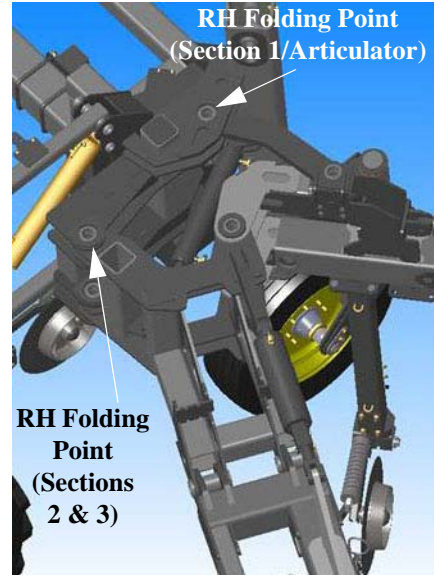


40-ft. NTB Fold Points
(Folded position shown)
-Typical View

Fold Points (60-ft. NTB)



60-ft. NTB Fold Points
(Folded position shown)
-Typical View



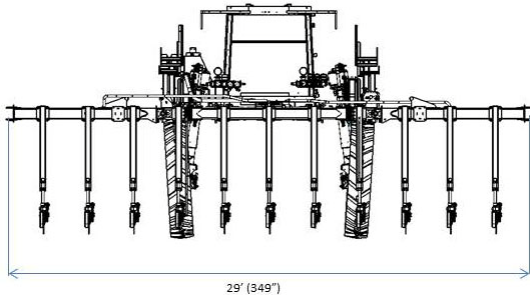
60-ft. NTB Folding Mechanism
(Mid-way fold position)
* Right-hand side shown



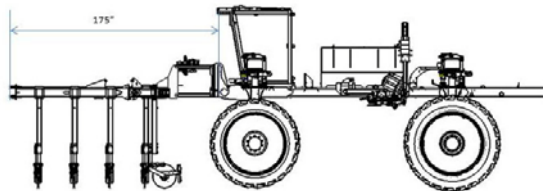
60-ft. NTB Folding Mechanism
(Complete fold position)
* Right-hand side shown

NTB Transport Dimensions

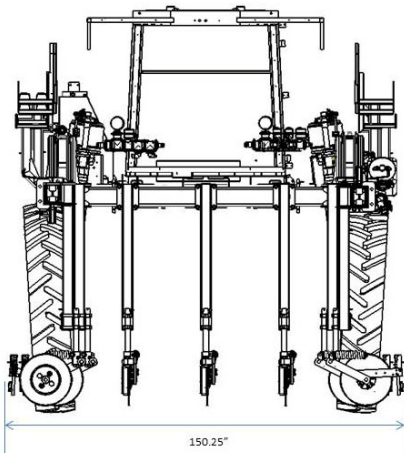
30-ft. NTB Dimensions



30' NTB
(Complete unfolded width)
* 29' (349")

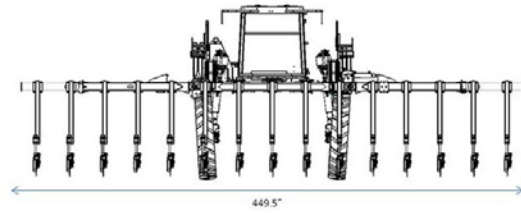


30' NTB
(Length - front of machine
to front of folded NTB)
* 14.5' (175")

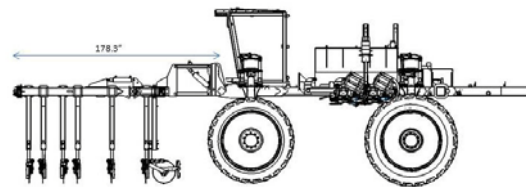


30' NTB
(Complete folded width)
* 12.5' (150.25")

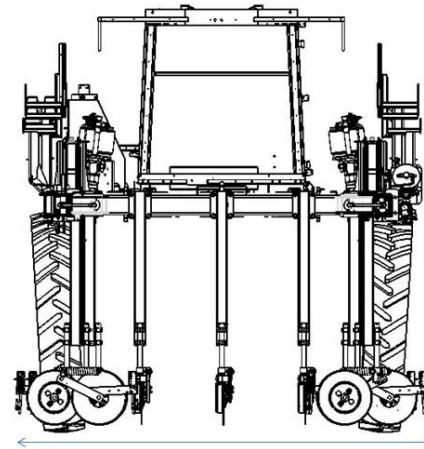
40-ft. NTB Dimensions



40' NTB
(Complete unfolded width)
* 37.5' (449.5")

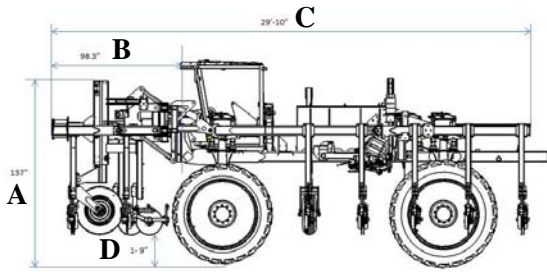


40' NTB
(Length - front of machine
to front of folded NTB)
* 178.3"



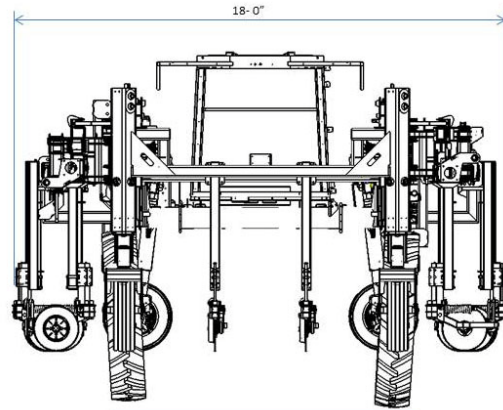
40' NTB
(Complete folded width)
* 12.5' (150.25")

60-ft. NTB Dimensions



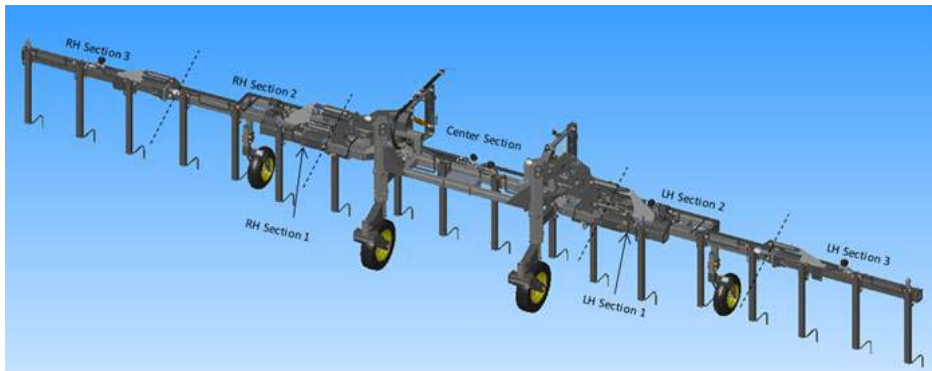
60' NTB

- **A** - NTB Height (raised position), 137"
- **B** - Length (front of cab to front of folded NTB), 98.3"
- **C** - Length (overall NTB) - 29'-10"
- **D** - Height (bottom of raised coulters to ground), 1', 9"



60' NTB
(Complete folded width)
* 18' (216")

The following illustration defines the 60-ft. NTB design and will help in identifying terminology used throughout this manual.



60' NTB Layout

2013 PRODUCT WARRANTY

Hagie Manufacturing Company Product Warranty

Hagie Manufacturing Company warrants each new Hagie product to be free under normal use and service from defects in workmanship and materials for a period of lesser of: two (2) years or 1000 hours from the date of delivery on all Agricultural Products. Hagie Manufacturing Company makes this warranty from the original delivery date and is transferable to a purchaser from the original purchaser of this equipment, given there is remaining time left under the year and hour warranty standard stated above. This warranty shall be fulfilled by repairing or replacing free of charge any part that shows evidence of defect or improper workmanship, provided the part is returned to Hagie Manufacturing Company within thirty (30) days of the date that such defect or improper workmanship is discovered, or should have been discovered. Labor to repair said items will be covered by standard labor time rates. Freight charges of defective parts are not covered by this warranty and are the responsibility of the purchaser. No other express warranty is given and no affirmation of Hagie Manufacturing Company, by words or action, shall constitute a warranty.

Hagie Manufacturing Company limits its warranty to only those products manufactured by Hagie Manufacturing Company and does not warrant any part or component not manufactured by Hagie Manufacturing Company, such as parts or components being subject to their manufacturer's warranties, if any. Excluded from this warranty are parts subjected to accident, alteration, or negligent use or repair. This warranty does not cover normal maintenance such as engine tune ups, adjustments, inspections, nor any consumables such as tires, rubber products, solution system valves, wear parts, wiper blades, etc.

Hagie Manufacturing Company shall not be responsible for repairs or replacements which are necessitated, in whole or in part; by the use of parts not manufactured by or obtainable from Hagie Manufacturing Company nor for service performed by someone other than Hagie authorized personnel, unless authorized by Hagie Manufacturing Company. Customer acknowledges that it is not relying on Hagie Manufacturing Company's skill or judgment to select finish goods for any purpose and that there are no warranties which are not contained in this agreement.

In no event shall Hagie Manufacturing Company's tort, contract, or warranty liability exceed the purchase price of the product. The foregoing limitation will not apply to claims for personal injury caused solely by Hagie Manufacturing Company's negligence.

Hagie Manufacturing Company shall not be liable for damages, including special, incidental or consequential damages or injuries (damage and repairs of equipment itself, loss of profits, rental or substitute equipment, loss of good will, etc.) arising out of or in connection with performance of the equipment or its use by customer, and Hagie Manufacturing Company shall not be liable for any special, incidental or consequential damages arising out of or in connection with Hagie Manufacturing Company's failure to perform its obligation hereunder. HAGIE MANUFACTURING COMPANY'S ENTIRE LIABILITY AND THE CUSTOMER'S EXCLUSIVE REMEDY SHALL BE REPAIR OR REPLACEMENT OF PARTS COVERED UNDER THIS WARRANTY. THIS WARRANTY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.



SECTION 2 – SAFETY AND PRECAUTIONS

Most accidents occur as the result of failure to follow simple and fundamental safety rules. For this reason, most accidents can be prevented by recognizing the real cause and doing something about it before the accident occurs.

Many conditions cannot be completely safeguarded against without interfering with efficient operation and/or reasonable accessibility. Therefore, you must study this operator's manual and learn how to use the Nitrogen Toolbar (NTB) for safe operation. Likewise, never let anyone operate the machine without proper instruction.

DO NOT make modifications such as weldments, add-ons, adaptations, or changes from the original design of the NTB. Such changes and/or modifications may become safety hazards to you and to others and **will void all warranties**.

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

SAFETY PRECAUTIONS

NOTICE

The purpose of this manual is to guide you in operating the Nitrogen Toolbar (NTB). Be sure to read this manual in addition to the sprayer operator's manual, and all other literature that is included with the machine.

This manual is ONLY intended to cover the NTB attachment and any differences in the operation of the sprayer controls. Complete instructions on the operation of the basic sprayer functions are discussed in the sprayer operator's manual.

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

General Safety

- 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 the Hagie Customer Support Department 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 clothes in the cab. Clean off as much mud and dirt from your shoes as you can before entering the cab.

SECTION 2 – SAFETY AND PRECAUTIONS



Be Prepared

- Be prepared for an emergency. Keep a fire extinguisher handy. Keep a first aid kit and clean water in the cab.
- Make sure to service the fire extinguisher regularly. Keep an accurate inventory of supplies in the first aid kit and dispose of anything that has expired.



General Repair/Maintenance Safety

- Turn off sprayer engine before checking, adjusting, repairing, lubricating, or cleaning any part of the attachment.
- Disconnect the battery ground cable and turn the Battery Disconnect Switch OFF before servicing the electrical system or welding on an attachment.



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



Oil-Over-Air Scenarios

- Upon initial startup of the NTB, be ready for possible rapid movement, should some air become trapped in the cylinders. **DO NOT ALLOW PEOPLE TO STAND IN LOCATIONS WHERE THE NTB COULD STRIKE THEM!**



- Open and close right and left toolbars two (2) times, simultaneously to force out any air in the system.
- Operate all attachment functions (i.e. main lift, main fold, up/down movement of outer sections, outer folds, and left and right-hand wings) two (2) times simultaneously to force out any air in the system.

Handle Agricultural Chemicals Safely

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

- 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 tank. Always fill tank half full of water first.
- Dispose of empty chemical containers properly.



- Wash spilled chemicals or residue away 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 protective equipment 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 the Hagie Customer Support Department.

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

30/40-ft. NTB

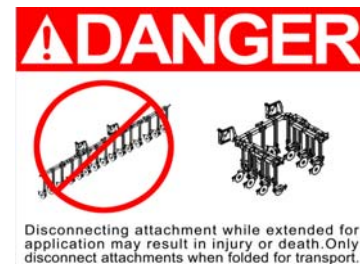
650219

(2) - One located on each lower lift arm weld



650137

(Located to the right of the electrical box cover)



60-ft. NTB

650339

(Located on left and right front cross-member near hydraulic manifolds)



650204

Section 1

- Located on Section 1 tubes, locks, and fold joint

SECTION 2 – SAFETY AND PRECAUTIONS

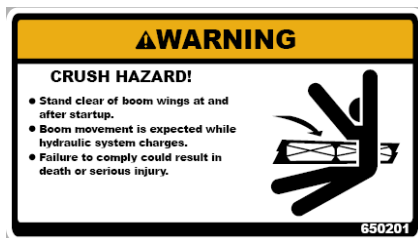


Section 2

- Located between Section 2 articulator and center section.
- Located between Section 2 rear tube.
- Section 2 fold joint.



650201
(Located on Sections 1, 2, and 3; located on Section 1 articulator)



650208
(Located on Section 3)



650178
(Located near Quick-Attach system)



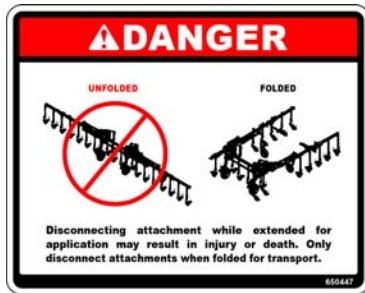
650205
(Located near the pins/rotary joints)



650206
(Located near hubs/spindles)



650447
(Located to the right of the electrical box
cover)





SECTION 3 – OPERATING YOUR NTB

MD3 MONITOR WARNING MESSAGES - 60' NTB

When operating machine functions, such as Tread Adjustment, All-Wheel Steer (AWS), and Float operation, various warning and confirmation messages will appear on your MD3 Monitor to avoid property damage.

NOTE: These warning and confirmation messages will reset and the operator must acknowledge these messages again any time the NTB is installed and the Left and Right Boom Switches (located on the Hydrostatic Drive Control Handle) are pressed in the “Fold-In” position, the machine’s drive state is changed from Road to Field Mode, the AWS (F3) or Float (F4) Buttons (located on the MD3 Monitor) are pressed, or each time the ignition key is cycled.

Tread Adjustment

When any of the Tread Adjust Switches (located on the side console) are activated, a warning message will appear stating that before Tread Adjustment will be allowed, ensure the NTB is in the UNFOLDED position.

- Press the F2 Button (Enable) on the MD3 Monitor to acknowledge.



Tread Adjustment Warning Message

After the first warning message has been acknowledged, a second confirmation message will appear, which is an assurance confirming that the NTB is unfolded and you want to proceed.

- Press the F2 Button (Yes) on the MD3 Monitor to accept and activate Tread Adjustment.

NOTE: If you run the wheels into the NTB after you have pressed “Yes” on the confirmation message, the warranty will be voided.



Tread Adjustment Confirmation Message

Refer to your machine operator’s manual for further information on Tread Adjustment.

All-Wheel Steer (AWS)

When AWS is activated, a warning message will appear stating that before AWS will be allowed, ensure the NTB is in the UNFOLDED position.

- Press the F2 Button (Enable) on the MD3 Monitor to acknowledge.



AWS Warning Message



Float Warning Message

After the first warning message has been acknowledged, a second confirmation message will appear, which is an assurance confirming that the NTB is unfolded and you want to proceed.

- Press the F2 Button (Yes) on the MD3 Monitor to accept and activate AWS.

NOTE: If you run the wheels into the NTB after you have pressed “Yes” on the confirmation message, the warranty will be voided.



AWS Confirmation Message

Refer to your machine operator’s manual for further information on AWS.

Float Operation

When Float operation is activated, a warning message (cradle hazard) will appear stating that before Float will be allowed, ensure the NTB is in the UNFOLDED position.

- Press the F2 Button (ACK) on the MD3 Monitor to acknowledge.

Refer to “Float Operation - 60’ NTB” elsewhere in this manual for further information.

UNFOLD/FOLD PROCEDURE - 30’/40’ NTB

WARNING

Before proceeding, check the area around the machine for bystanders, overhead objects, and power lines. Failure to comply will result in serious injury or death.

Unfold Nitrogen Toolbar (from storage position)

1. Ensure the Hydrostatic Drive Control Handle (located on the side console) is in the NEUTRAL position. See Figure A-1.



Hydrostatic Drive Control Handle
(Located on side console)
-Typical View

2. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's Drive State reads FIELD. See Figure B-1.

NOTE: The machine's drive state cannot be changed unless the Hydrostatic Drive Control Handle is in the NEUTRAL position.



3. Press the F4 Button (located on the MD3 Monitor) and turn Float operation OFF.
4. Raise the NTB attachment up off ground. See Figure C-1.
 - * Press and hold the Raise Switch (located on the Hydrostatic Drive Control Handle) UP to raise the entire lift.
 - * Press and hold the Left and Right Boom Switches UP to raise/DOWN to lower.



NOTE: Ensure coulters clear the ground.

5. Unfold the NTB by pressing and holding the Left and Right Boom Switches (located on the Hydrostatic Drive Control Handle) OUTWARD. See Figure D-1.



Section 2 (40-ft. NTB only)

6. Unfold each Section 2 attachment by pressing and holding the Boom Ext (80/90/100) Switch (located on the side console) in the UP (“Out”) position. See Figure E-1.



Boom Ext. (80/90/100) Switch
(Located on the side console)
-Typical View

Fold Nitrogen Toolbar (to storage position)

1. Ensure the Hydrostatic Drive Control Handle (located on the side console) is in the NEUTRAL position. See Figure A-2.



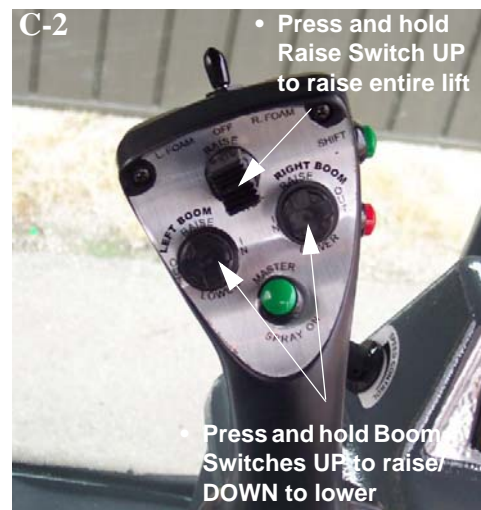
Hydrostatic Drive Control Handle
(Located on side console)
-Typical View

2. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's Drive State reads FIELD. See Figure B-2.

NOTE: The machine's drive state cannot be changed unless the Hydrostatic Drive Control Handle is in the NEUTRAL position.



3. Press the F4 Button (located on the MD3 Monitor) and turn Float operation OFF.
4. Raise the NTB attachment up off ground. See Figure C-2.
 - * Press and hold the Raise Switch (located on the Hydrostatic Drive Control Handle) UP to raise the entire lift.
 - * Press and hold the Left and Right Boom Switches UP to raise/DOWN to lower.



NOTE: Ensure coulters clear the ground.

SECTION 3 – OPERATING YOUR NTB



Section 2 (40-ft. NTB only)

NOTICE

Fold each Section 2 attachment IN before folding in Toolbar Arms to prevent damage to the NTB during fold procedure.

5. Fold in each Section 2 attachment by pressing and holding the Boom Ext (80/90/100) Switch (located on the side console) in the DOWN (“In”) position. See Figure D-2.



Boom Ext. (80/90/100) Switch
(Located on the side console)
-Typical View

6. Fold in the NTB by pressing and holding the Left and Right Boom Switches (located on the Hydrostatic Drive Control Handle) INWARD. See Figure E-2.



UNFOLD/FOLD PROCEDURE - 60' NTB

! WARNING

Before proceeding, check the area around the machine for bystanders, overhead objects, and power lines. Failure to comply will result in serious injury or death.

NOTE: Refer to the “60’ NTB Layout” illustration provided in the Introduction Section of this manual to aid in identifying the various sections of the NTB.

Unfold Nitrogen Toolbar (from storage position)

1. Ensure the Hydrostatic Drive Control Handle (located on the side console) is in the NEUTRAL position. See Figure A-1.



A-1
Hydrostatic Drive Control Handle
(Located on side console)
-Typical View

2. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's drive state reads ROAD. See Figure B-1.

NOTE: The machine's drive state cannot be changed unless the Hydrostatic Drive Control Handle is in the NEUTRAL position.



3. Press and hold the RR Tread Adjust Switch (located on the side console) in the DOWN position to lower the gauge wheels. See Figures C-1 and D-1.



C-1
RR Tread Adjust Switch
(Located on side console)
-Typical View



D-1
Gauge Wheel
(One located on each side of NTB)
-Typical View

4. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's drive state reads FIELD. See Figure E-1.

NOTE: The machine's drive state cannot be changed unless the Hydrostatic Drive Control Handle is in the NEUTRAL position.

**SECTION 3 –
OPERATING YOUR NTB**



5. Raise NTB out of cradles by pressing and holding the corresponding Left and Right Boom Switches (located on the Hydrostatic Drive Control Handle) in the UPWARD position. See Figure F-1.



6. Unfold the NTB by pressing and holding the corresponding Left and Right Boom Switches in the OUTWARD position. See Figure G-1.

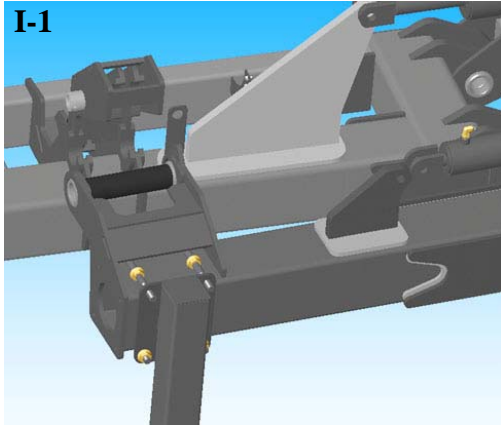


NOTE: When each outer Section 3 attachment is nearing the fully unfolded position, ensure that Section 1 does not interfere with the Lock Assembly (located on Section 2).

7. Lower each Section 1 attachment into the Lock Assembly Receptacle by pressing and holding the corresponding LF/LR Tread Adjust Switches (located on the side console) in the DOWN (“In”) position. See Figures H-1 and I-1.



LF/LR Tread Adjust Switches
(Located on side console)
-Typical View

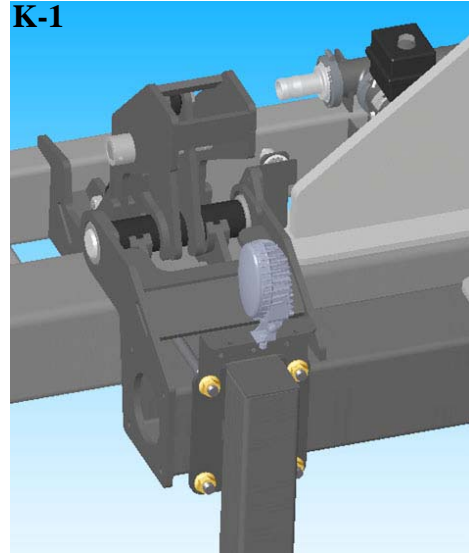
I-1

Lower each Section 1 attachment
into Lock Assembly Receptacle

- Engage the Lock Assembly by pressing the RF Tread Adjust Switch (located on the side console) in the DOWN (“In”) position. See Figures J-1 and K-1.

J-1

RF Tread Adjust Switch
(Located on side console)
-Typical View

K-1

Lock Assembly Engagement

Fold Nitrogen Toolbar (to storage position)

- Ensure the Hydrostatic Drive Control Handle (located on the side console) is in the NEUTRAL position. See Figure A-2.

A-2

Hydrostatic Drive Control Handle
(Located on side console)
-Typical View

- Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's drive state reads FIELD. See Figure B-2.

SECTION 3 – OPERATING YOUR NTB

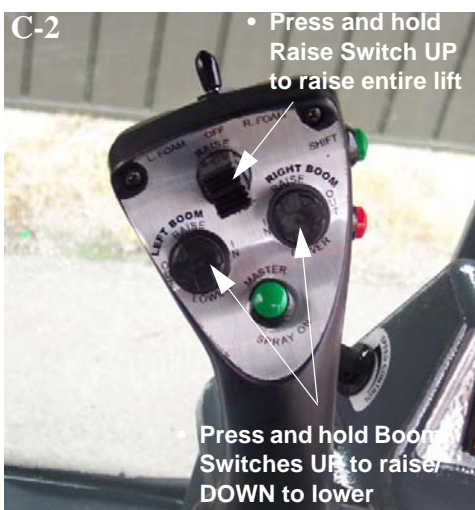


NOTE: The machine's drive state cannot be changed unless the Hydrostatic Drive Control Handle is in the NEUTRAL position.



3. Press the F4 Button (located on the MD3 Monitor) and turn Float operation OFF.
4. Raise the NTB attachment up off ground. See Figure C-2.
 - * Press and hold the Raise Switch (located on the Hydrostatic Drive Control Handle) UP to raise the entire lift.
 - * Press and hold the corresponding Left and Right Boom Switches UP to raise/DOWN to lower.

NOTE: Continue to raise lift until it comes to a complete stop.



5. Using the Boom Fold Switches (located on the side console), ensure each outer Section 3 attachment is level with the rest of the bar. See Figures D-2 and E-2.



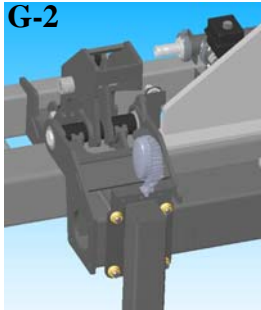
Boom Fold Switches
(Located on side console)
-Typical View



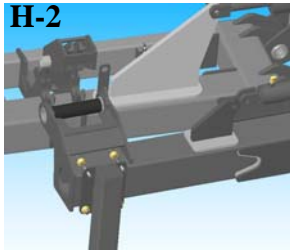
6. Disengage the Lock Assembly by pressing and holding the RF Tread Adjust Switch (located on the side console) in the UP ("Out") position. See Figures F-2, G-2, and H-2.



RF Tread Adjust Switch
(Located on side console)
-Typical View



Lock Assembly
"Engaged"
Position Shown



Lock Assembly
"Disengaged"
Position Shown

- Using the corresponding LF/LR Tread Adjust Switches, raise each Section 1 attachment out of the Lock Assembly receptacle. See Figure I-2.

NOTE: Take caution when raising each Section 1 out of the Lock Assembly Receptacle. Raising the section too high may interfere or catch with the Lock Assembly.



LF/LR Tread Adjust Switches
(Located on side console)
-Typical View

NOTE: Before proceeding to fold the NTB, ensure each Section 2 attachment is level with each Section 1 attachment. See Figure J-2.



- Fold in the NTB by pressing and holding the Left and Right Boom Switches in the INWARD position. See Figure K-2.



- Guide the NTB into cradles using the corresponding Left and Right Boom Switches.

NOTE: Ease attachment into cradles by "tapping" the Left or Right Boom Switch - one side at a time, which will allow you to view each cradle in the mirror.

- Once NTB makes contact with each cradle backstop, lower slightly into position by pressing the corresponding Left or Right Boom Switches in the LOWER position. See Figures L-2 and M-2.





11. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's drive state reads ROAD. See Figure N-2.

NOTE: The machine's drive state cannot be changed unless the Hydrostatic Controller is in the NEUTRAL position.



Gauge Wheel
(One located on each side of NTB)
-Typical View

NOTE: Ensure the gauge wheels are straight and do not come in contact with the coulters.



12. Press and hold the RR Tread Adjust Switch (located on the side console) in the UP position to raise the gauge wheels. See Figures O-2 and P-2.



RR Tread Adjust Switch
(Located on side console)
-Typical View

FLOAT OPERATION - 30'/40' NTB

Float operation allows the NTB coulters to raise up and down while riding through the field to avoid machine damage due to uneven ground.

Float operation may be enabled using various methods. In all options, Float must be activated through the MD3 Monitor and the machine must be in Field Mode.

NOTICE

Ensure that Float operation is enabled when operating the NTB in Field Mode. Failure to comply may result in property damage.

Master Spray Switch (Default Setting)

The Master Spray Switch (located on the Hydrostatic Drive Control Handle) controls both the spray pump and the Float DOWN functions when in Float Mode.

1. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's Drive State reads FIELD. See Figure A.

NOTE: The machine's drive state cannot be changed unless the Hydrostatic Drive Control Handle is in the NEUTRAL position.



MD3 Monitor
-Typical View

2. Press the F4 Button (located on the MD3 Monitor) to turn Float operation ON. See Figure B.



Float operation will now be activated when the Master Spray Switch (located on the Hydrostatic Drive Control Handle) is pressed and a green indicator light will illuminate on the MD3 Monitor. See Figures C and D.



- Transom Up/Down Switch
- Master Spray Switch

Hydrostatic Drive Control Handle
(Located on side console)
-Typical View



Float Indicator Light
(Located on the MD3 Monitor)
-Typical View

Set Float to Transom Switch

This procedure allows the operator to turn the spray pump on separately from Float operation.

Press and hold the Transom Up/Down Switch (located on the Hydrostatic Drive Control Handle) in the UP position to raise the mid and outer sections simultaneously. Release the switch when desired height is reached.

1. Press the Menu Button (located to the far bottom right of the MD3 Monitor). See Figure E.



2. Press the F1 Button (Adjust) to take you to the “Operator Adjustments” screen. See Figure F.



3. Using the Arrow Buttons (located on the right-hand side of the MD3 Monitor), toggle down until “Float Not Separated” is selected, then press OK.
4. Set the value to “0” to run Float with the Transom Down Switch.

NOTE: A value of “1” will set Float back to activating with the Master Spray Switch.

Transom Up/Down Switch (Default Setting)

The Transom Up/Down (Raise) Switch (located on the Hydrostatic Drive Control Handle) must be held in the UP position until all sections have reached desired level.

One Tap Transom

The One Tap Transom feature allows the operator to fully raise the transom by pressing the Transom Up/Down Switch (located on the Hydrostatic Drive Control Handle) UP once, to raise the entire lift.

To set up the One Tap Transom feature:

1. Press the Menu Button (located to the far bottom right of the MD3 Monitor). See Figure G.



2. Press the F1 Button (Adjust) to take you to the “Operator Adjustments” screen. See Figure H.



3. Using the Arrow Buttons (located on the right-hand side of the MD3 Monitor), toggle down until “Not One Tap Up Function” is selected, then press OK.
4. Set the value to “0” to allow the transom rise completely with one tap of the Transom Up Switch.

NOTE: A value of “1” will require the Transom Up Switch to be held the entire time that the cylinders are raising the transom.

Set Transom Override Timer

The timer controls how long the outer sections raise with the transom during Float operation.

1. Press the Menu Button (located to the far bottom right of the MD3 Monitor). See Figure I.



2. Press the F1 Button (Adjust) to take you to the “Operator Adjustments” screen. See Figure J.



3. Using the Arrow Buttons (located on the right-hand side of the MD3 Monitor), toggle down until “T-Override TMR Setting-NTB” is selected, then press OK.
4. Adjust the value to desired amount of the outer lift using the dial that can set values from 100 to 10,000 milliseconds.

FLOAT OPERATION - 60' NTB

Float operation allows the NTB coulters to raise up and down while riding through the field to avoid machine damage due to uneven ground.

Float operation may be enabled using various methods. In all options, Float must be activated through the MD3 Monitor and the machine must be in Field Mode.

NOTICE

Ensure that Float operation is enabled when operating the NTB in Field Mode. Failure to comply may result in property damage.

Master Spray Switch

The Master Spray Switch (located on the Hydrostatic Drive Control Handle) controls both the spray pump and the Float DOWN functions while in Float Mode.

1. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine’s Drive State reads FIELD. See Figure A.



2. Press the F4 Button (located on the MD3 Monitor) to turn Float operation ON. See Figure B.



SECTION 3 – OPERATING YOUR NTB



NOTE: A green indicator light will illuminate on the MD3 Monitor when Float operation is enabled. See Figure C.



When Float operation is activated, a warning message (cradle hazard) will appear stating that before Float will be allowed, ensure the NTB is in the UNFOLDED (extended) position.

- Press the F2 Button (ACK) on the MD3 Monitor to acknowledge. See Figure D.



Float Warning Message

Float Adjust

In an effort to help make your 60-ft. NTB ride through the field and apply as desired, Hagie Manufacturing Company has designed each up and down function on the tool bar adjustable, due to varying ground conditions and personal preference from one operator to the next.

These adjustments will allow each bar to run slightly different and allow the operator to choose the depth in which the NTB will ride in Float operation. An example of when this may be desired is if the bar is not engaging the ground at the desired depth, but only occurring on the outer sections. The operator can then choose to add

down pressure via the hydraulic cylinders that control those sections by changing parameters on the MD3 Monitor.

1. Press the Menu Button (located on the MD3 Monitor). See Figure E.



2. Press the F1 (Adjust) Button (located on the MD3 Monitor). See Figure F.



3. Toggle down to “NTB Float Adjust” using the Down Arrow Button (located on the right-hand side of the MD3 Monitor), then press OK. See Figure G.



- Using the Up/Down Arrow Buttons, toggle to desired selection on the NTB Float Adjust page, then press OK. See Figure H.

NOTE: Refer to the “60’ NTB Layout” illustration provided in the Introduction Section of this manual to aid in identifying the various sections of the NTB.



- **“R Sec 3 Para”** (outer right section adjustment).
 - **“L Sec 3 Para”** (outer left section adjustment).
 - **“R Sec 2 Para”** (first right section of main lift adjustment).
 - **“L Sec 2 Para”** (first left section of main lift adjustment).
 - **“Main Lift Para”** (center section adjustment).
- Adjust value using the Up/Down Arrow Buttons. See Figure I.

Adjust this value above “0” to help raise the NTB out of the ground. Adjust this value below “0” to help push the NTB into the ground.

NOTE: The greater the value, the greater the pressure setting.



- Press OK when desired value is entered.

Forced Float Operation

If the NTB will not enter a Float state, there may be a sensor malfunction and the green indicator light (located on the upper left-hand corner of the Home page) will not appear. Therefore, Float state may be forced for field operation.

NOTE: Reset this value to “0” for road transportation and to avoid unwanted toolbar movement.

- Using the Down Arrow Button, toggle down to “Force Float Sec 1” on the NTB Float Adjust page, then press OK.
- Press the Up Arrow Button and adjust value to “1” to force Float. Press the Down Arrow Button to adjust value to “0” for road transportation.
- Press OK when desired value is entered.

APPLICATION

NOTE: The spray system rate controller will need to be programmed for NTB use before operating.

The spray system is a constantly monitored and continuously adjusted computer-controlled system. The cab-mounted spray system rate controller receives information from various inputs to help determine GPM (gallons per minute) and GPA (gallons per acre).

The following information explains the components of the spray system and is not intended to replace the manufacturer’s operation

SECTION 3 – OPERATING YOUR NTB



guide and numbers used may not reflect your specific situation. Read all manuals before operating the equipment.

NOTICE

Never attempt to operate the spray system without solution in the tank. Failure to comply will cause system damage and void the warranty.

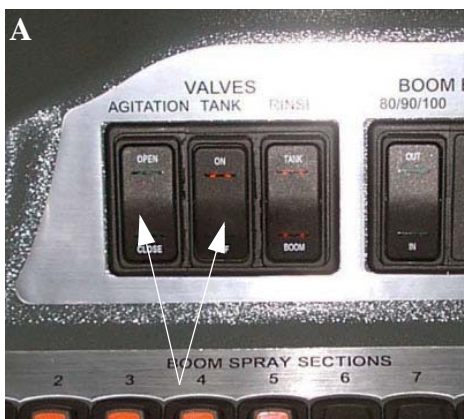
Refer to the operator's manual of the machine being used to operate the Nitrogen Toolbar (NTB) for information on the following:

- Solution System
- Rinse System
- Foam Marker System

NTB Application

1. Calibrate the spray system rate controller for use of the NTB.
2. Ensure there is adequate amount of solution in the tank.
3. Start the engine.
4. Press the Tank Valve Switch (located on the side console) in the UP (“On”) position. See Figure A.

If desired, press the Agitation Valve Switch in the UP (“Open”) position.



Tank and Agitation Valves
(Located on the side console)
-Typical View

5. Press the F1 Button (located on the MD3 Monitor) and toggle until the machine's Drive State reads FIELD. See Figure B.

NOTE: The machine's drive state cannot be changed unless the Hydrostatic Drive Control Handle is in the NEUTRAL position.



MD3 Monitor
-Typical View

6. Press the F4 Button (located on the MD3 Monitor) and turn Float operation ON. See Figure C.



7. Press the Master Spray Switch (located on the Hydrostatic Drive Control Handle) to activate the spray system. See Figure D.



Master Spray Switch
(Located on the Hydrostatic
Drive Control Handle)
-Typical View

8. Press the individual Boom Solution Valve Switches for the NTB (located on the side console) to the UP (“On”) position. See Figure E.

NOTE: Number of sections available will depend on the number of section valves equipped on your NTB.



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

9. Move the Hydrostatic Drive Control Handle forward (slowly) to obtain desired ground speed.

NOTE: Observe the pressure gauge frequently. When pressure drops below zero, or spray pattern deteriorates, turn the Master Spray Switch, Tank Valve Switch, and Agitation Valve Switch OFF, and refill solution.



SECTION 4 – MAINTENANCE AND STORAGE

SERVICE

Perform Grease Point inspection/application every 10 hours of operation or daily, whichever occurs first. Apply grease (such as Mobilgrease XHP™ 220-Series) as required.

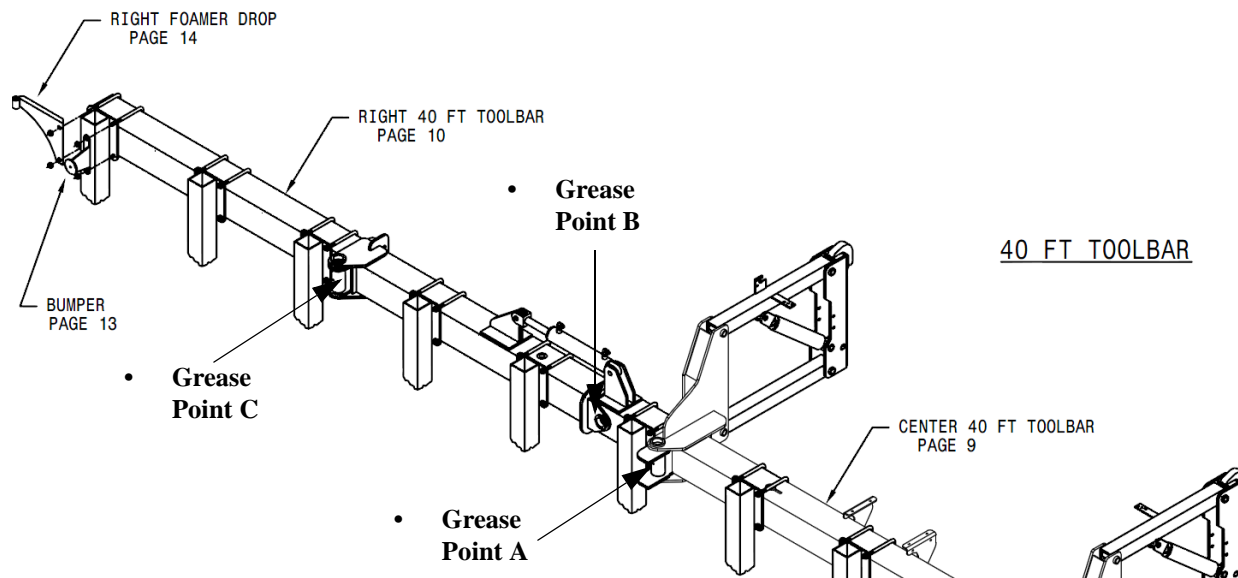
NOTICE

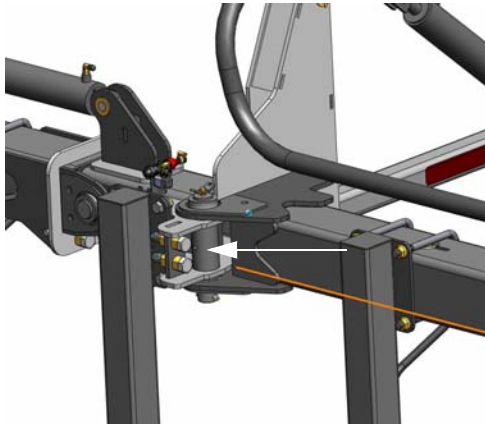
Failure to properly lubricate pivot and friction points may result in unnecessary wear and damage.

Grease Points (Zerks)

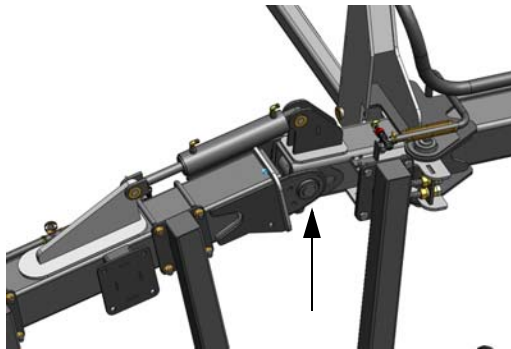
- 30-ft. NTB has four (4) Grease Points (A and B) - two (2) per side.
- 40-ft. NTB has six (6) Grease Points (A, B, and C) - three (3) per side.
- 60-ft. NTB has twelve (12) Grease Points (A, B, C, D, E, and F) - six (6) per side.

30-ft. and 40-ft. NTB (Typical View)

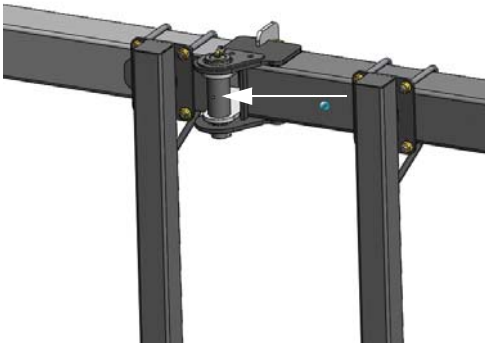




Grease Point A
(Main Toolbar Fold)



Grease Point B
(Inside Fold)



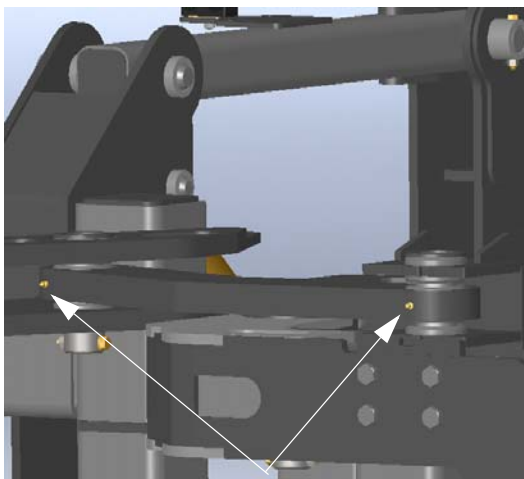
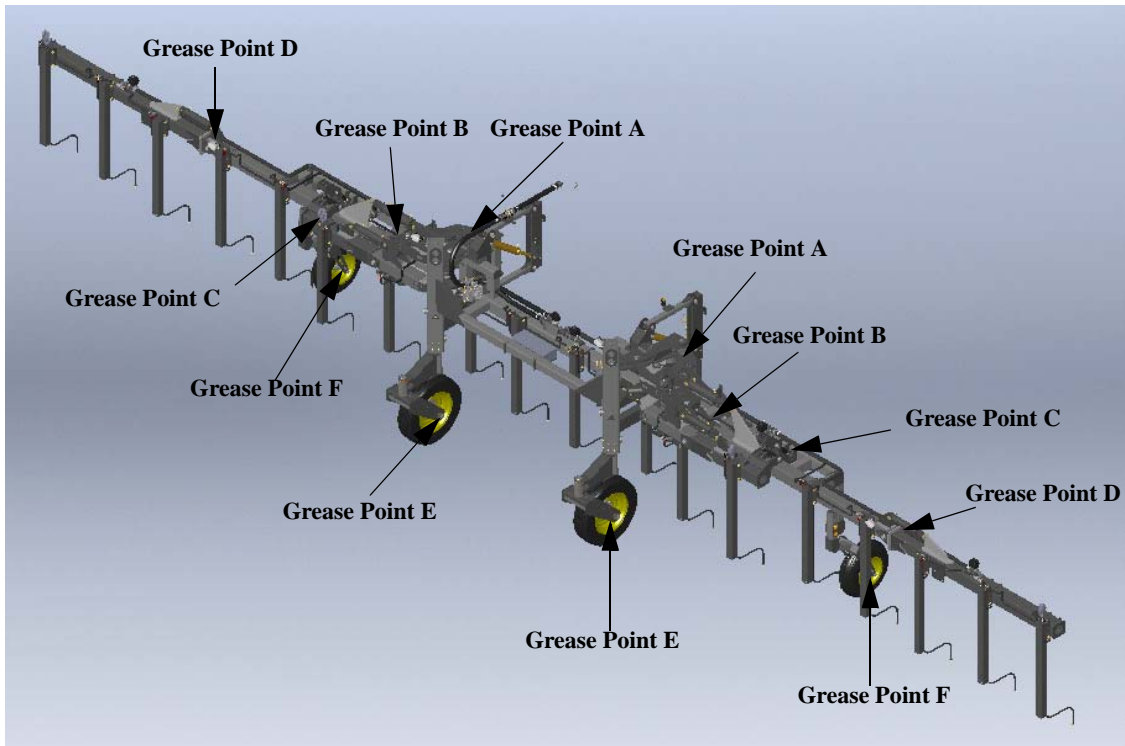
Grease Point C
(Outer Fold)
** 40-ft. NTB only*

**SECTION 4 –
MAINTENANCE AND STORAGE**

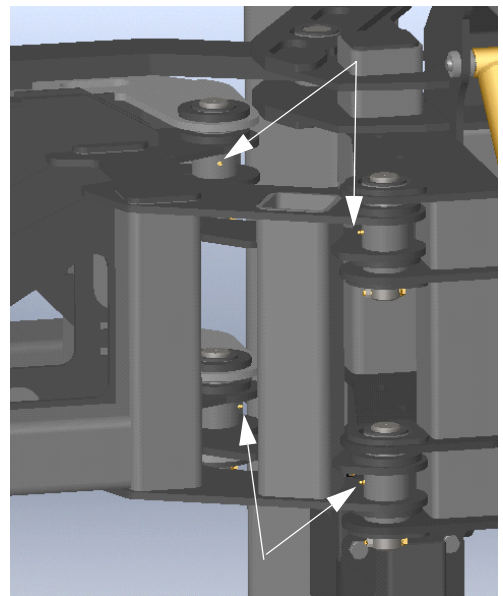


60-ft. NTB

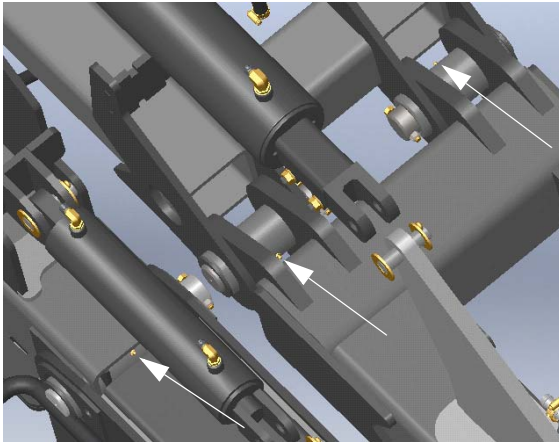
(Typical View)



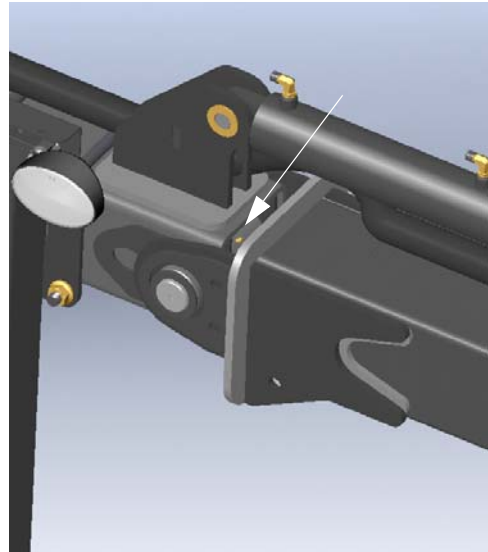
Grease Point A - View 1
(Left-hand side shown)



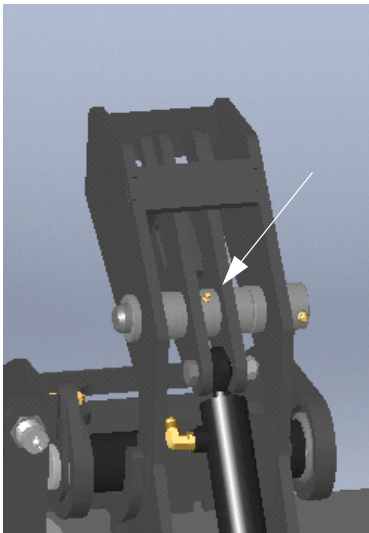
Grease Point A - View 2
(Left-hand side shown)



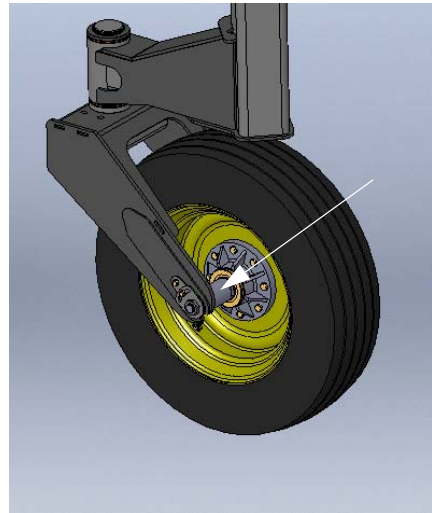
Grease Point B
(Left-hand side shown)



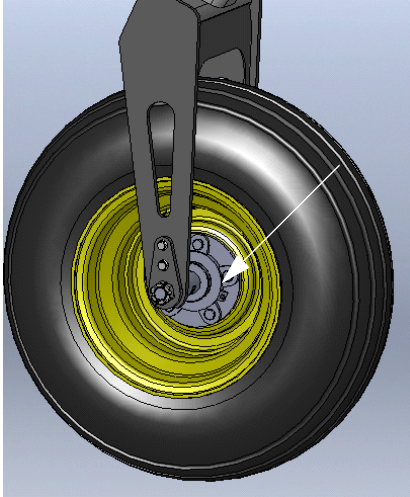
Grease Point D
(Left-hand side shown)



Grease Point C
(Left-hand side shown)



Grease Point E
(Left-hand side shown)



Grease Point F
(Left-hand side shown)

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

NOTE: Contact Hagie Customer Support for paint touch-up recommendations and decal replacement.

6. Apply multi-purpose grease to hydraulic cylinder rods.
7. Refer to the Raven user guide for detailed information on monitor and flow meter storage procedures.
8. If the Nitrogen Toolbar (NTB) attachment will be stored separately, ensure that all open ends are capped or covered with a suitable covering.

Winterization Procedure

To winterize the NTB, 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

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

ATTACHMENT SYSTEM

Attaching Nitrogen Toolbar to Machine

1. Disengage the Quick-Attach lock assemblies by pulling the Lock Pin out as far as it will go until it is in the “lock-out” position. See Figure A.

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



Lock Pin
-Typical View

2. Lower the front of the machine by turning the Air Bag Dump Valve (located on the left front leg) and deflating the front airbags. See Figure B.

NOTE: Refer to the “Air Suspension Exhaust” information provided in the Miscellaneous Section in the operator’s manual of the machine being used for instructions on manually inflating and deflating the air bags.



Air Bag Dump Valve
-Typical View

3. Pull machine up to the NTB attachment and slowly align up with the attachment hooks.
4. Continue to pull machine up to the attachment until hook openings are high enough to clear the Mounting Pins. See Figure C.



Attachment Clearing Mounting Pins
-Typical View

5. Turn Air Bag Dump Valve to inflate the front airbags.

NOTE: Ensure attachment hooks are engaged onto Mounting Pins and Quick-Attach holes line up.

6. Turn the engine OFF.

! WARNING

Turn the engine OFF before connecting or disconnecting any hoses or electrical lines. Failure to comply may result in serious injury or death.

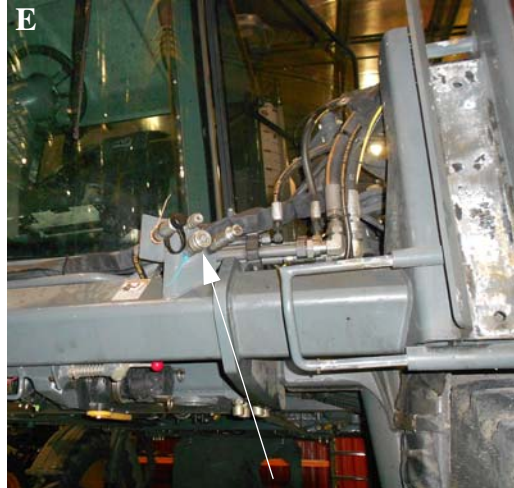
- Engage Quick-Attach lock assemblies. See Figure D.

! CAUTION

Do not operate attachments without full engagement of Quick-Attach lock assembly.



- Connect hydraulic, electrical, solution, and foamer lines (if equipped). See Figures E and F.



Hydraulic Connections
(Located on front left-hand side of machine)
-Typical View

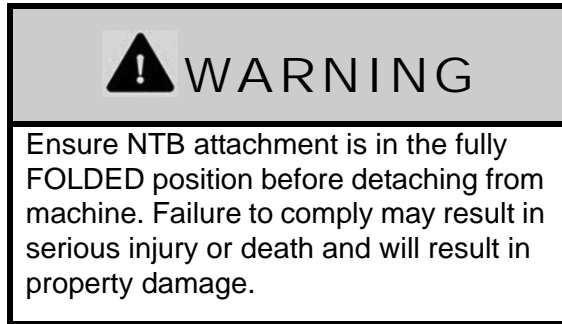


Electrical/Foamer Connections
(Located on front right-hand side of machine)
-Typical View

- Start up machine and raise attachment off level surface.
- Slowly and carefully, back machine (with attachment) out of storage location.

**Detaching Nitrogen Toolbar from
Machine**

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



Before detaching the NTB, determine a proper storage location. When choosing a place to store the attachment, 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 while in storage and ease of attachment hook-up.

Is there enough space?

The NTB is folded up 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 NTB needs to be positioned so you can connect the attachment easily.

If temporarily storing the attachment on a soft surface (such as grass), it is recommended to put blocks or wood under the coulters to prevent the attachment from sinking into the ground.

NOTE: It is NOT recommended to store the NTB 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.

1. Lower the NTB attachment down to level storage location.
2. Disengage the Quick-Attach lock assemblies by pulling the Lock Pin out as far as it will go until it is in the “lock-out” position. See Figure G.



Lock Pin
-Typical View

3. Lower the front of the machine by turning the Air Bag Dump Valve (located on the left front leg) and deflate front airbags until the attachment hooks clear the Mounting Pins. See Figures H and I.

NOTE: Refer to the “Air Suspension Exhaust” information provided in the Miscellaneous Section in the operator’s manual of the machine being used for instructions on manually inflating and deflating the air bags.




Air Bag Dump Valve
-Typical View



4. Turn the engine OFF.

NOTE: Ensure the Solution Valves are turned OFF before disconnecting any hoses or electrical lines.

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



5. Disconnect the hydraulic, electrical, solution, and foamer lines (if equipped), ensuring not to leave the ends in a place where they may become damaged or contaminated. See Figures J and K.

Electrical/Foamer Connections
(Located on front right-hand side of machine)
-Typical View

6. Re-engage the Quick-Attach lock assemblies, keeping it safe from damage if no other attachment will be installed.

NOTE: Be sure to unlock the Quick-Attach lock assemblies when installing an attachment.

7. Start up machine and slowly back away from the attachment. See Figure L.

NOTE: Alarms may sound notifying you of modules being off-line.



-Typical View

8. Turn the Air Bag Dump Valve to inflate front airbags.

TRANSPORTING

Driving the Machine with an Attachment

When driving on a roadway or elsewhere, be aware of any situation where the machine will be traveling near an object with a clearance less than the transporting height and width of the overall machine and attachment.

Refer to “Specifications and Capacities” in the *Introduction Section* in this manual for dimensions on your model.

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

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

CAUTION

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

CAUTION

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

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 NTB attachment.

NTB

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