

NT Rockpicker

NT78 / NT60 / NT44

Operator Manual



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E14128V3_B

NT Rockpicker

NT78

NT60

NT44

Operator's Manual

From Serial No: NT78000007

From Serial No: NT60000007

From Serial No: NT44000007

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E14128V3_B

Highline Team Message

Congratulations on your purchase of a NT Rockpicker NT78, NT60 & NT44 manufactured by Highline Manufacturing.

This Operator's Manual has been prepared to provide information necessary for the safe and efficient operation of your Rockpicker. In the manual you will find safety procedures, maintenance routines and detailed operational instructions.

If you find that you require information not covered in this manual, please feel free to consult your local dealer. Your dealer is always able to contact Highline for this technical information.

Highline Manufacturing thanks and congratulates you for selecting a NT Rockpicker as your machine of choice.

Highline Manufacturing

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GENERAL DESCRIPTION OF THE ROCKPICKER

The Rockpicker is designed to pick up rocks while driving in a cultivated field without the need to stop to pick up the rocks.

The hitch is hydraulically operated to move from the transport position to the working position. There are 2 hitch working positions. One position is designed for tractors with dual tires and the other position for tractors with single tires. The hitch components are manually changed to accommodate one of the positions. When in working position, the Rockpicker is moved to the right of the tractor so the tractor treads do not push rocks into the soil. When the Rockpicker bucket is full, the operator moves the hitch to the transport position where the Rockpicker follows the tractor to the rock dumping location.

The Rockpicker apron is positioned by the operator to be just above the surface of the soil. The spring loaded pickup bats rotate on a hydraulically operated reel. As the rotating pickup bats encounter rocks, they push the rocks across the apron and into the Rockpicker bucket. The apron and bucket allow any moved soil to fall back to the ground.

For unloading the rocks, the Rockpicker is backed into the dumping location. The hydraulic cylinders are activated to raise the rock bucket. As the bucket is raised, it tilts to dump the rocks out.

When the Rockpicker is picking rocks it uses hydraulic power from the tractor to position the apron and to rotate the reel with the spring loaded rock bats. When the Rockpicker is moving from transport position to working position, a hydraulic cylinder is activated to move the hitch. When the Rockpicker is dumping the rocks, the hydraulic lift cylinders lift the rock bucket and tilt it to dump the rocks.

The operator of the Rockpicker is located in the tractor cab where they drive the tractor, control the speed of driving, the operation of the hitch position, the rotating rock bat reel and the dumping of the rocks.

The Rockpicker is transported on the wheels of the Rockpicker.

INTENDED USE OF THE ROCKPICKER

- The Rockpicker is designed to pick up rocks that are on the surface or near the surface of a cultivated field and then to move those rocks to a storage location.
- The Rockpicker is designed to lift the rocks that have been picked and to dump them.
- The Rockpicker is intended for use in field farming applications.
- The Rockpicker is intended for use in locations that are not near people or animals.
-

Any uses of the Rockpicker other than the above stated Intended Uses shall be considered misuse of the Rockpicker. This misuse shall include (but not limited to):

- Using the Rockpicker in non-farming applications.
- Using the Rockpicker around people or in public places or near animals.
- Moving materials other than rocks from fields.

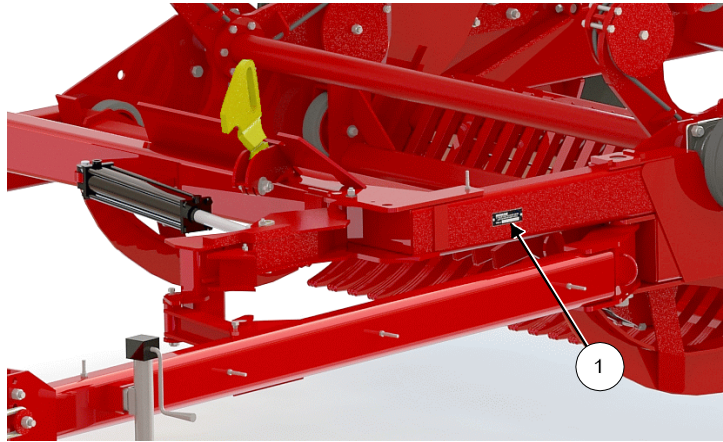
Always use the Rockpicker according to the instructions contained in this Operator's Manual and the safety and instruction decals on the machine.

Perform regular maintenance and repair to ensure that the Rockpicker operates safely and efficiently.

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SERIAL NUMBER

Your serial number is found on the serial number plate (1) attached to the NT Rockpicker on the left front frame member.



Serial Plate Location

215269C

It is important to record the serial number for proof of ownership and for any service or maintenance assistance.

Serial Number

Owner

Model

Date of Purchase

SAFETY SIGN-OFF FORM

Highline Manufacturing follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the machine should read and clearly understand all Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow someone to operate this equipment until this information has been reviewed. This information should be reviewed by all operators before the start-up of the season.

This sign-off sheet is provided for record keeping to indicate that the person working with the equipment has read and understood the information in the Operator's Manual and has been instructed in the safe operation of the equipment.

Date	Employee's Signature	Employer's Signature

SAFETY ALERT SYMBOL

The Safety Alert Symbol means:



**ATTENTION!
BECOME ALERT!
YOUR SAFETY IS INVOLVED!**

The Safety Alert Symbol combined with a Signal Word alert to the presence of a hazard and the degree of possible injury.



Indicates an imminently hazardous situation that, if not avoided, **WILL** result in **DEATH OR SERIOUS INJURY**. The color is Red with White lettering.



Indicates a potentially hazardous situation that, if not avoided, **COULD** result in **DEATH OR SERIOUS INJURY**, and includes hazards that are exposed when guards are removed or unsafe practices. The color is Orange with Black lettering.



Indicates a potentially hazardous situation that, if not avoided, **MAY** result in **MINOR INJURY**. The color is Yellow with Black lettering.

GENERAL SAFETY

1. Ensure that anyone who is going to operate, maintain or work near the NT Rockpicker is familiar with the recommended operating, maintenance procedures and safety information contained in this manual and follows all the safety precautions.
2. In addition to the design and configuration of the equipment, hazard control and accident prevention are dependant upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of the NT Rockpicker.
3. The NT Rockpicker shall not be operated without all the guards in place.

SAFETY DECALS

1. Keep decals and signs clean and legible at all times.
2. Replace decals and signs that are damaged, missing or have become illegible.
3. Replaced parts that displayed a decal should also display the current decal.
4. Decals are available from the Highline Parts Department.
5. Be familiar with the decals, the type of warning and the area or function(s) related to the area(s) that requires your awareness.



DO NOT ENTER THE PICKUP REEL APRON AREA

Contact with the moving pickup reel or spring loaded bats will cause serious injury or death.

The pickup bats are spring loaded. When a rock is lodged, the springs are under pressure. The bats could release rapidly causing serious injury or death.

Do not use hands or feet to remove a lodged rock.

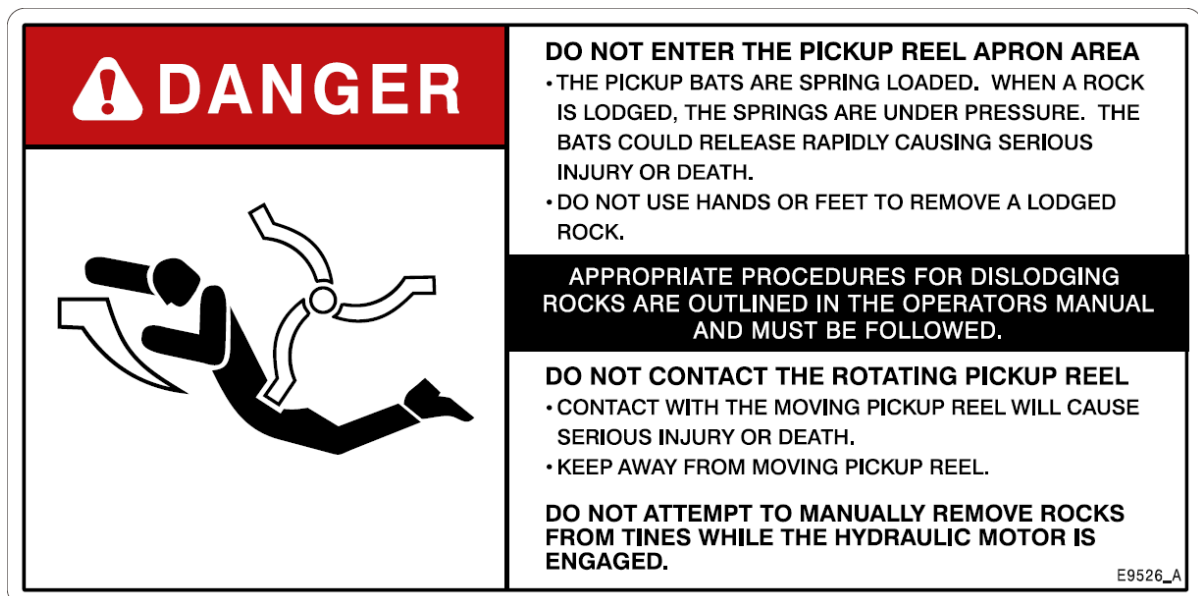
APPROPRIATE PROCEDURES FOR DISLODGING ROCKS ARE OUTLINED IN THE OPERATOR'S MANUAL AND MUST BE FOLLOWED

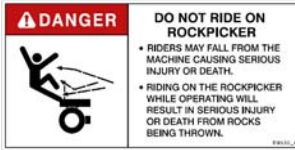
DO NOT CONTACT THE ROTATING PICKUP REEL

Contact with the moving pickup reel will cause serious injury or death. Keep away from the moving pickup reel.

DO NOT ATTEMPT TO MANUALLY REMOVE ROCKS FROM TINES WHILE THE HYDRAULIC MOTOR IS ENGAGED

READ AND FULLY UNDERSTAND THE INSTRUCTIONS ON THIS DECAL





DO NOT RIDE ON ROCKPICKER

Riders can fall from the machine which will cause serious injury or death.

Riding on the Rockpicker while operating will result in serious injury or death from rocks that may be thrown.



STAY BACK FROM ROCKPICKER WHILE IN OPERATION

Rotating bats may throw rocks causing injury or death.

Keep clear of the machine as rocks may bounce off the sides in an unpredictable manner.



KEEP PERSONS BACK WHEN MOVING THE HITCH

The hitch can move quickly.

Contact with the moving hitch can cause serious injury or death.



UPENDING HAZARD

The tongue can rise rapidly when the bucket is lifted.

Use a clevis to attach implement.

Ensure implement is attached to machine before hydraulics are activated.



THE ROCKPICKER IS DESIGNED FOR OFF-ROAD USE ONLY

To transport on public roads consult with local traffic regulations.

DO NOT TRANSPORT THE ROCKPICKER WITH ROCKS IN THE BUCKET

Rocks may fall out of the bucket resulting in an accident.

Deposit the rocks on a pile in the field or load them directly onto a truck or trailer.



DO NOT PLACE HANDS OR FEET IN THE APRON REST AREA

Serious injury could result if hands or feet are clamped in this area.



DO NOT PLACE HANDS IN THIS AREA WHEN RAISING OR LOWERING THE BUCKET

Serious injury could result if hands are placed in this clamping area.



USE PAPER OR CARDBOARD TO CHECK FOR HYDRAULIC LEAKS

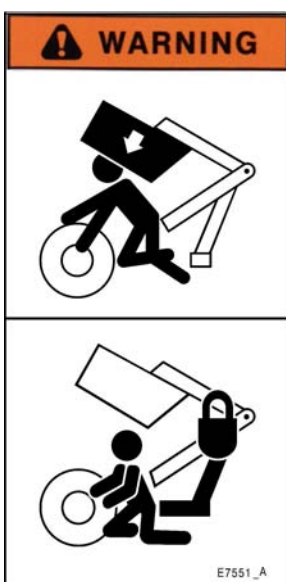
To prevent serious injury or death:

Relieve pressure on hydraulic system before repairing, adjusting or disconnecting.

Wear proper hand and eye protection when searching for leaks.

Use wood or cardboard instead of hands.

Keep all components in good repair.



STAND CLEAR WHEN BUCKET IS BEING RAISED OR LOWERED

The raised bucket could fall causing serious injury or death.

Do not work under a loaded bucket.

Before working under an empty raised bucket, always place both safety locks onto the hydraulic cylinders.

DO NOT TRANSPORT THE ROCKPICKER WITH THE BUCKET RAISED

The rockpicker will be unstable and hard to steer.

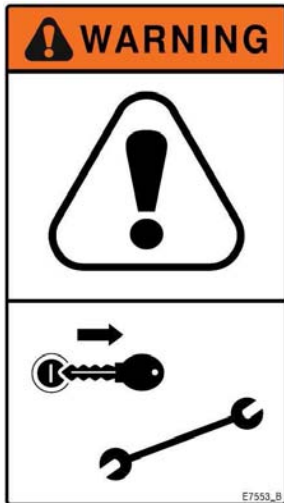
Damage to the machine will occur.



INSTALL APRON LOCKS ON BOTH SIDES

Install the apron locks on both sides when transporting or when servicing the rockpicker.

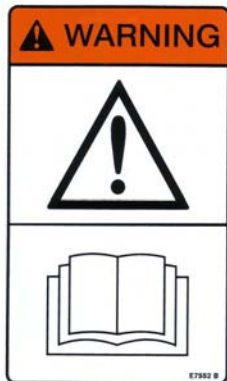
Serious injury from the apron lowering could result if both locks are not installed.



SHUTDOWN THE TRACTOR BEFORE DISMOUNTING TRACTOR

Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the rockpicker.

Relieve all hydraulic pressure in the hoses before going near the rockpicker. Leave the hydraulics in the "float" position.



READ, UNDERSTAND, AND FOLLOW SAFETY INSTRUCTIONS

Read, understand and follow all instructions and safety messages included in this manual and on decals attached to the machine. These instructions and safety messages contain important information.

Allow only responsible, properly instructed individuals to operate and service the machine.

Failure to follow the instructions and safety messages in this manual and on the decals attached to the machine could result in serious injury or death.

Keep all safety and instruction decals in good condition. Replace any missing or damaged decals

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Section 2 - Transporting the Rockpicker

Transporting



Only tow the Rockpicker behind a properly sized and equipped tractor or vehicle which exceeds the weight of the loaded Rockpicker by 50%.



Shut off tractor before attaching the rockpicker or hydraulics.



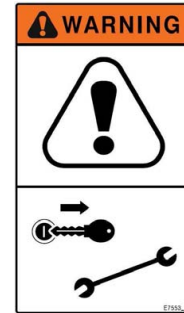
Do not allow children or other people to ride on the tractor or Rockpicker. Falling off can result in serious injury or death. Impact from thrown rocks can result in serious injury or death.



The rockpicker is designed for off road use only. To transport on public roads consult with local traffic regulations.

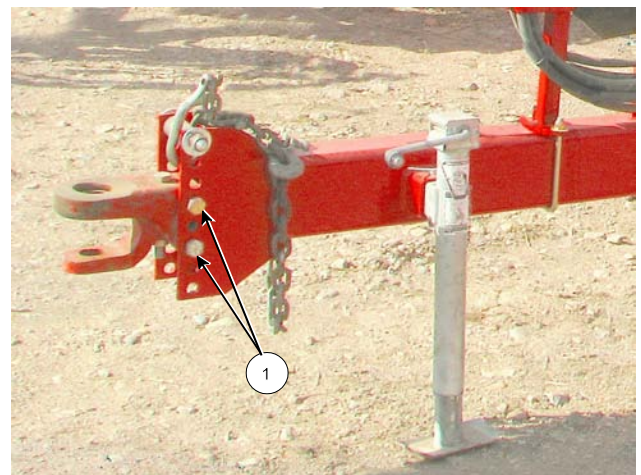


Do not transport the rockpicker with rocks in the bucket.
Do not transport the rockpicker with the bucket raised.



1. Adjust the position of the clevis tongue for the rockpicker to be level.

- Level the rockpicker using the hitch jack.
- Remove the bolts (1) and move the clevis tongue.
- Position the tongue so that the rockpicker is level when connected to the tractor drawbar.
 - Fasten in place.



Adjust Tongue to Level the Rockpicker

216224C

Note: If the clevis hitch is not being used, install the 3 in 1 hitch components. See the installation diagram below.

Section 2 - Transporting the Rockpicker

- Install the 3 in 1 hitch using the following components if not using the clevis hitch.

ITEM	DESCRIPTION	QTY
1	PLATE, TOP, CAST	1
2	BOLT, HEX, 3/4X2-1/2, UNC, GR5, ZP	1
3	CUSHION, POLYURETHANE, 90	2
4	BLOCK, V, CAST, 80-55-06	1

2. Lift the hitch with the jack

- The hitch is heavy. Do not attempt to lift the hitch without using the jack.

3. Connect the hitch to the tractor drawbar.

- Use a 1 1/4" (31.75 mm) pin.
- Use a clevis to attach the hitch.

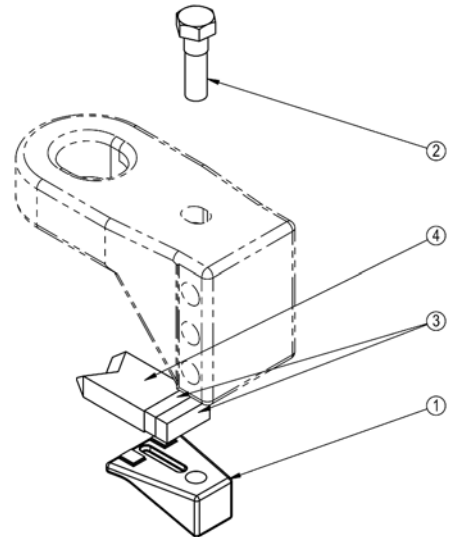


Do not disconnect the hitch when the bucket is lifted. There is an upending hazard at the hitch when the bucket is lifted.

4. Connect the safety chain (1) to the tractor.

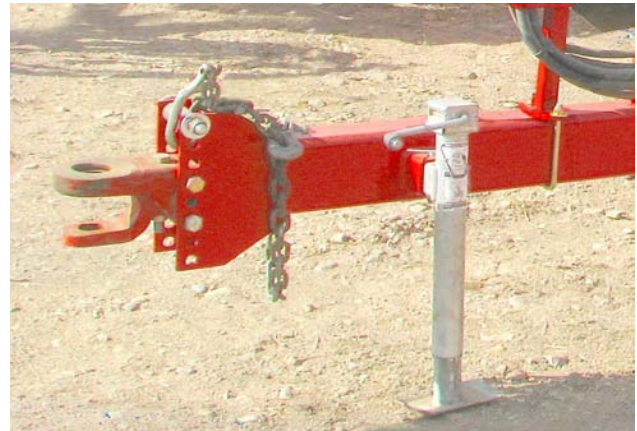
5. Rotate the hitch jack (2) into the storage position.

- Remove all weight from the jack.
- Remove the locking pin holding the jack onto the hitch.
- Rotate the jack to the storage position.
- Fasten the jack in place with the lock pin.



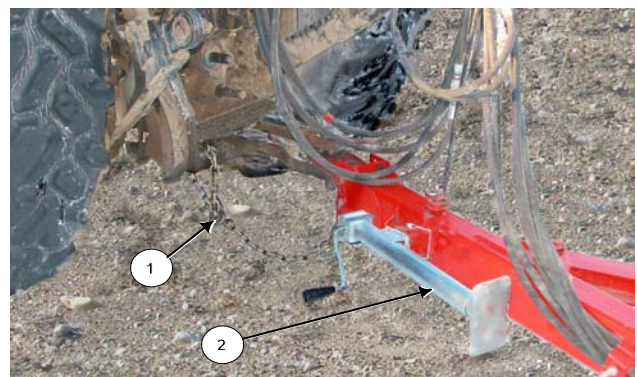
3 in 1 Hitch

42890_A



Lift the Hitch with the Jack

216224



Connect to Tractor. Jack in Storage Position.

214003C

Section 2 - Transporting the Rockpicker

6. Connect the hydraulic hoses.

- One set of hydraulic hoses is used for adjusting the picker's collecting apron height and dumping the bucket when full of rocks.
- The second set of hoses is used to drive the rock picker reel motor.
- The third set is for the hitch hydraulic cylinder.



Connect Hydraulic Hoses

108008

7. Connect the electrical connection for the signal lights.

8. Fully raise the pickup apron.

- Fully retract the bucket dump cylinders (1) to raise the apron.
- As the cylinders retract, they will raise the apron from the ground surface.



Raise the Pickup Apron

217210C

Section 2 - Transporting the Rockpicker

9. Remove the left apron lock (1) from the storage position on the left side of the frame behind the motor.

- Remove the clip pin (2).

10. Install the apron lock (1) on the left side of the apron.



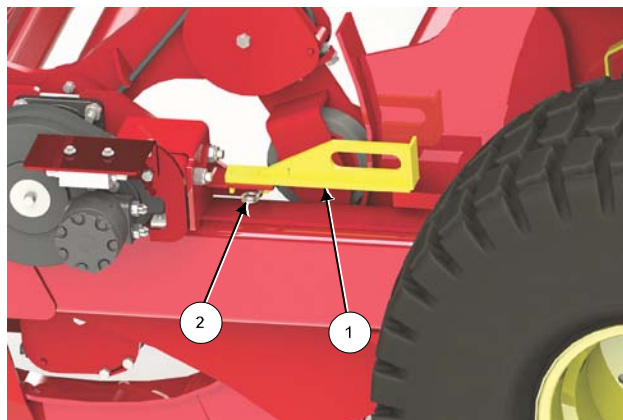
Install the apron locks on both sides when transporting or when servicing the rockpicker. Serious injury from the apron lowering could result if both locks are not installed.

Note: Do not lower the apron or raise the bucket when the apron transport locks are on the apron. Severe damage will occur to the machine.

- Place the pin of the lock into the hole of the apron.
- Fasten with the clip pin.

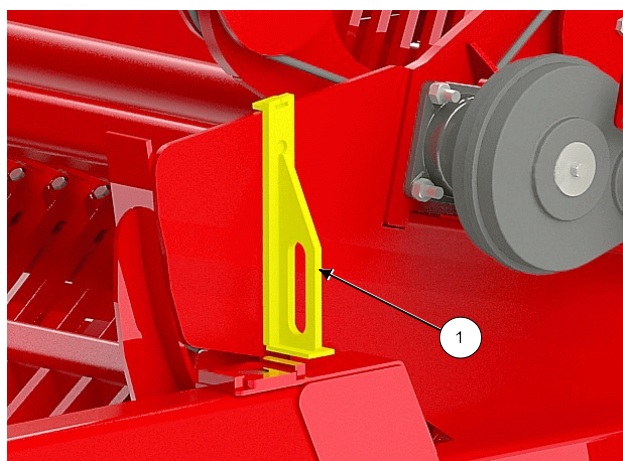
11. Remove the right apron lock (1) from the storage position on the right side of the frame behind the motor.

- Remove the clip pin (2).



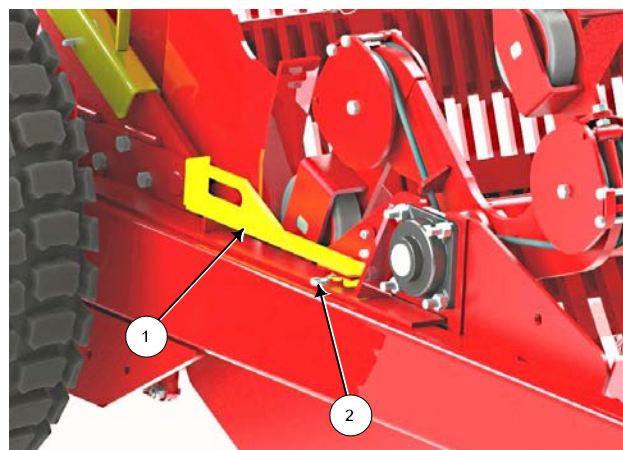
Remove the Left Apron Lock

216234C



Install Apron Lock - Left Side

216239C

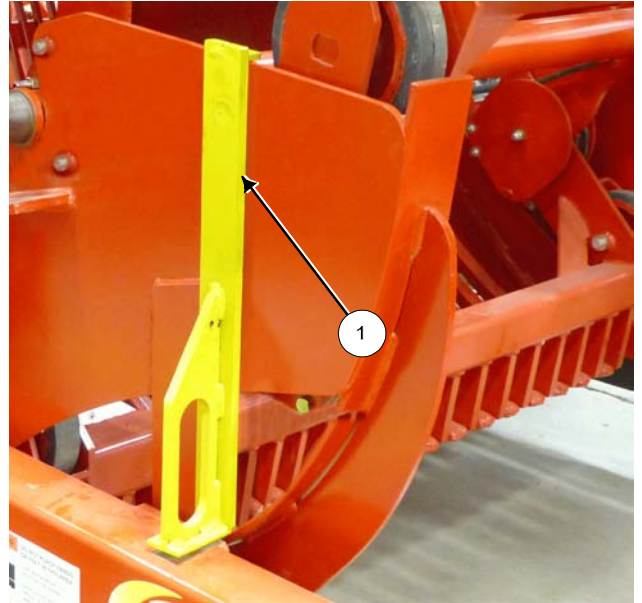


Remove the Right Apron Lock

216235C

Section 2 - Transporting the Rockpicker

12. Install the apron lock (1) on the right side of the apron.
 - Place the pin of the lock into the hole of the apron.



Install Apron Lock - Right Side

216227C

13. Move the hitch into the transport position.



Keep persons back when moving the towing arm. The towing arm can move quickly. Contact with a moving tow arm can cause serious injury or death.

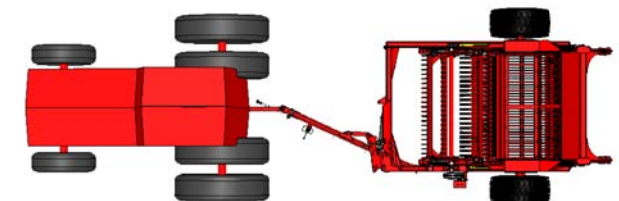


- Retract the hitch cylinder (2) to move the hitch into the transport position. This reduces the travel width of the rock picker.



Hitch In Transport Position

216236C

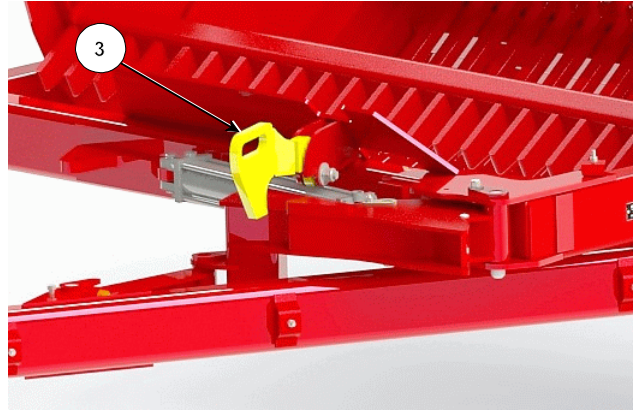


Rockpicker in Transport Position

217007

Section 2 - Transporting the Rockpicker

14. Ensure the hitch lock (3) is lowered and engaged in the hitch linkage before transporting.



Hitch Lock Engaged

216237C

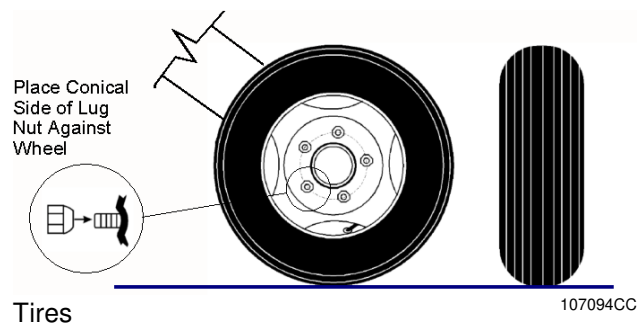
15. Check the condition of the tires.



Check Condition of the Tires

217209

- Ensure that the lug nuts have the cone side of the lug nut against the wheel rim.
- Torque the lug nuts to 170 lbf (230 Nm).



Tires

107094CC



Do not transport the rockpicker with rocks in the bucket.

Do not transport the rockpicker with the bucket raised.

Preparing the Rockpicker



Do not ride on the rockpicker.

Riders can fall from the machine which will cause serious injury or death.

Riding on the Rockpicker while operating will result in serious injury or death from rocks being thrown.



Stay back from the rockpicker while in operation.

Rotating bats may throw rocks causing injury or death.

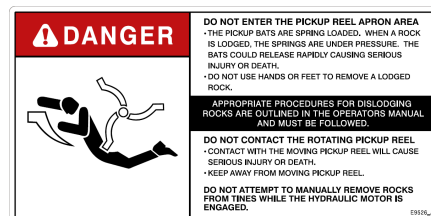
Keep clear of the machine as rocks may bounce off the sides in an unpredictable manner.



Do not enter the pickup reel apron area.

Contact with the moving pickup reel or spring loaded bats will cause serious injury or death.

The pickup bats are spring loaded. When a rock is lodged, the springs are under pressure. The bats could release rapidly causing serious injury or death.



Do not contact the rotating pickup reel.

Contact with the moving pickup reel will cause serious injury or death. Keep away from the moving pickup reel.

Section 3 - Preparing the Rockpicker



Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the machine.

Relieve all hydraulic pressure in the hoses before going near the machine.

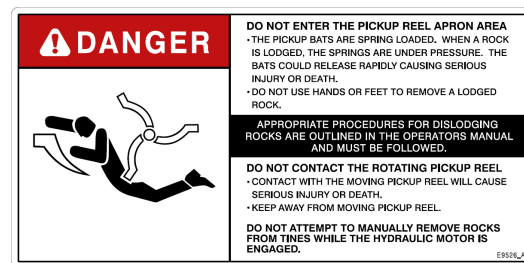


1. Check the condition of the apron and the rock bucket.



Do not enter the reel or apron area while the reel is rotating or rocks are lodged against the bats.

Contact with the moving pickup reel or spring loaded bats under pressure will cause serious injury or death.



2. Check that the upper and lower bolts on each tine are tight.



Install the apron locks on both sides when servicing the rockpicker. Serious injury from the apron lowering could result if both locks are not installed.

- The upper tine bolts have nut keepers. The tines can be tightened from the bolt head.



Check Condition of Apron and Bucket

214010

Section 3 - Preparing the Rockpicker

3. Remove any rocks that are wedged in the bat teeth.



Remove Rocks from Bat Teeth

214021

4. Remove from the bucket any debris or rocks that would hinder soil from exiting.



Remove Debris From Bucket

214022

5. Remove any rocks or debris sitting on the side frame tubes.

Rocks or debris on the frame tubes will prevent the apron from fully lowering onto the frame.

Rocks or debris may wedge between the apron and the frame preventing the apron from lowering.



Remove Rocks from the Frame

216241

Section 3 - Preparing the Rockpicker

6. Inspect the motor, hydraulic cylinders and hoses.



Use a piece of cardboard or heavy paper to check for leaks. Do not use your hand. Wear proper hand and eye protection when searching for leaks.

Relieve pressure on hydraulic system before repairing, adjusting or disconnecting.

Note: If fluid is injected under the skin, it must be removed immediately by a surgeon familiar with this type of injury.

- Visually inspect all the hydraulic hoses and fittings.
 - See Section 5 "Maintaining the Rockpicker" for conditions indicating that replacement is needed.
- Ensure the proper size cylinder pins are in place and secured.

7. Check the condition of the tires.

- Replace any tires that have cuts or bubbles.
- Replace any damaged rims.

8. Torque wheel bolts to 170 lbf (230 Nm).

9. Check and adjust the tire air pressure.



- Do not inflate tire above recommended pressure.
- Maintain tire pressure to avoid possible tire damage.



Check the Condition of the Tires & Pressure

217209

Model	Tire Pressure
NT 78	24 psi (165 Kpa)
NT 60	24 psi (165 Kpa)
NT 44	90 psi (620 Kpa)

Section 3 - Preparing the Rockpicker

Hitch Working Positions

There are 2 possible working positions for the hitch:

Position 1 is for tractors using dual rear tires and for windrow picking.



Hitch Position 1 - Dual Tractor Tires

- This hitch position moves the rockpicker further to the right of the tractor (more than Position 2) to give greater visibility of the picking process.
- This hitch position also moves the rockpicker out of the compression zone left by the dual rear tractor tires.

Position 2 is for tractors using single rear tires.



Hitch Position 2 - Single Tractor Tires

- This hitch position moves the rockpicker to the right of the tractor (less than Position 1) out of the compression zone left by single rear tractor tires.

Parts on the hitch must be moved to set the hitch for the different working positions.

- See the directions below for setting the hitch positions.

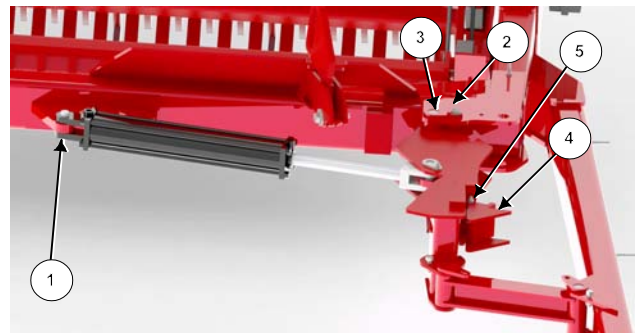
Setting the Hitch for Position 1 - Dual Tractor Tires and Windrow Picking

For NT 78, NT60 and NT44

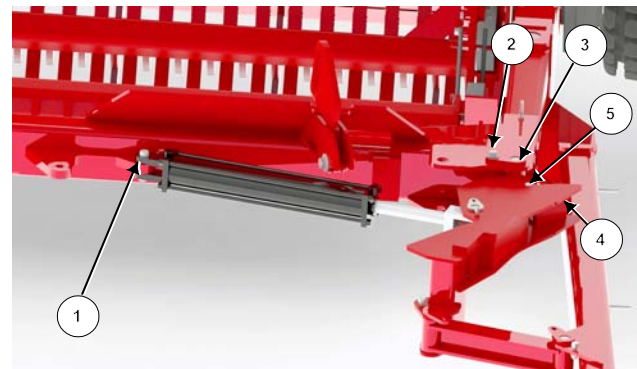
- Remove the cylinder pin from the base of the cylinder (1).
- Remove the locking bolt and locknut (2) from the swing arm pin.
- Remove the swing arm pin (3).
- Rotate the swing arm outward.
- Remove the carriage bolts and locknuts (5) holding the insert (4) in the storage position.
- Remove the insert (4) from the storage position.
- Install the insert (4) into the slot in the swing arm.
 - Fasten the insert with the 2 carriage bolts and locknuts (5).
- Move the swing arm to the hole near the hitch arm.
 - Install the swing arm pin (3) and fasten with the locking bolt and locknut (2).
- Move the cylinder base to the lug (1) near the hitch lock.
 - Fasten with the cylinder pin.
- Adjust the hydraulic hoses as needed.

On the NT44 Only:

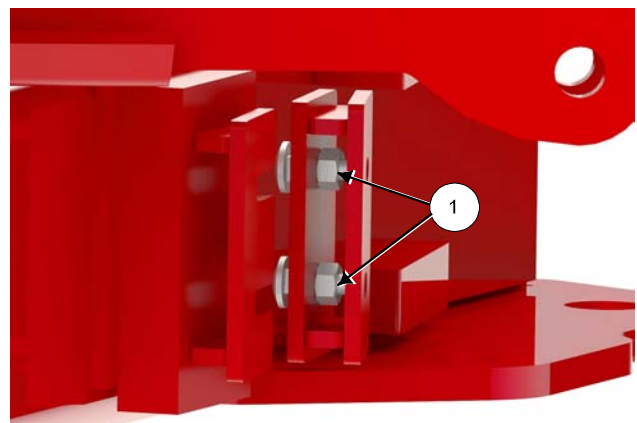
- Remove the hitch wedge by loosening the nuts (1) and sliding the wedge out from the front frame bar.



Remove Pins (Position 2) to Adjust Hitch Position 215255C



Install for Hitch Position 1 - Dual Tractor Tires 215254C



NT 44 Only - Remove Hitch Wedge

215264C

Setting the Hitch for Position 2 - Single Tractor Tires

For NT 78, NT60 and NT44

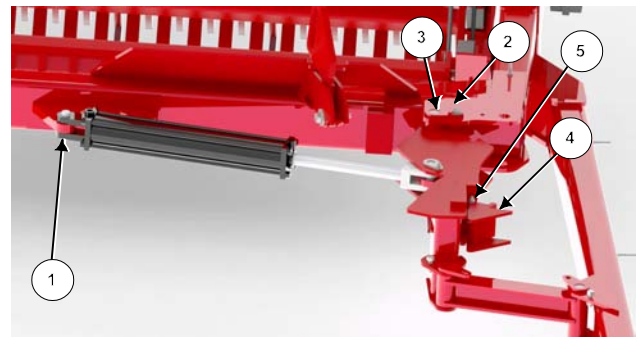
- Remove the cylinder pin from the base of the cylinder (1).
- Remove the locking bolt and locknut (2) from the swing arm pin.
- Remove the swing arm pin (3).
- Rotate the swing arm outward.
- Remove the carriage bolts and locknuts (5) holding the insert (4).
- Remove the insert (4).
- Install the insert (4) into the storage position.
 - Fasten the insert with the carriage bolts and locknuts (5).
- Move the swing arm to the hole near the hitch lock.
 - Install the swing arm pin (3) and fasten with the locking bolt and locknut (2).
- Move the cylinder base to the lug (1) near the center of the machine.
 - Fasten with the cylinder pin.
- Adjust the hydraulic hoses as needed.

On the NT44 Only:

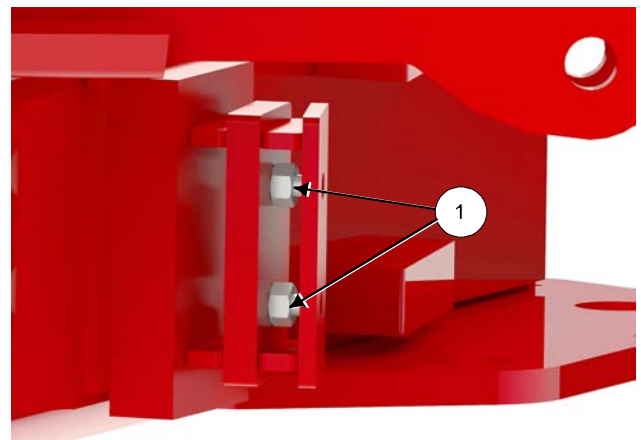
- Install the hitch wedge by sliding the wedge onto the front frame bar and tightening the nuts (1).



Remove Pins (Position 1) to Adjust Hitch Position ^{215254C}



Install for Hitch Position 2 - Single Tractor Tires ^{215255C}



NT44 Hitch Only - Install Hitch Wedge

^{215265C}

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Operating The Rockpicker



Do not ride on the rockpicker.

Riders can fall from the machine which will cause serious injury or death.

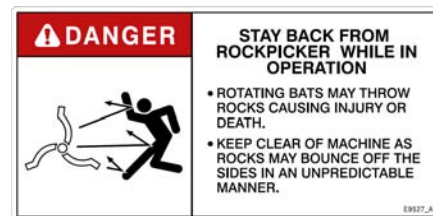
Riding on the rockpicker while operating will result in serious injury or death from rocks being thrown.



Stay back from the rockpicker while in operation.

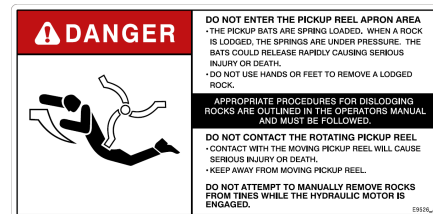
Rotating bats may throw rocks causing injury or death.

Keep clear of the machine as rocks may bounce off the sides in an unpredictable manner.



Do not contact the rotating pickup reel.

Contact with the moving pickup reel or spring loaded bats will cause serious injury or death. Keep away from the moving pickup reel.



Do not enter the pickup reel apron area.

The pickup bats are spring loaded. When a rock is lodged the springs are under pressure. The bats could release rapidly causing serious injury or death.

Section 4 - Operating the Rockpicker

Field Preparation

Field preparation plays a major role in the performance of the rock picker.

- For best picking conditions, the field should be cultivated prior to picking.
- Cultivating brings stones to the surface and buries field residues.



Prepared Field With Rocks Exposed

108184

1. Check the condition of the apron and the rock bucket.

- Refer to Section 3 - "Preparing the Rockpicker" for additional information.



Check Condition of Apron and Bucket

214010

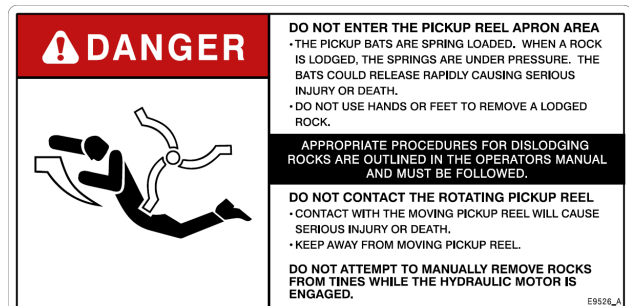


Install both apron locks before doing any work on the apron. Serious injury from the apron lowering could result if both locks are not installed.



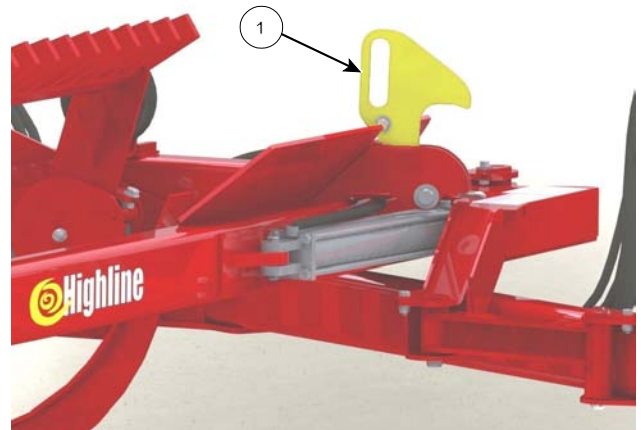
Do not enter the reel or apron area. Contact with the moving pickup reel or spring loaded bats under pressure will cause serious injury or death.

Do not reach into the moving pickup reel or spring loaded bats under pressure. Contact will cause serious injury or death.



Section 4 - Operating the Rockpicker

2. Raise the hitch transport lock (1) from the hitch linkage to allow the hitch to move into the working position.



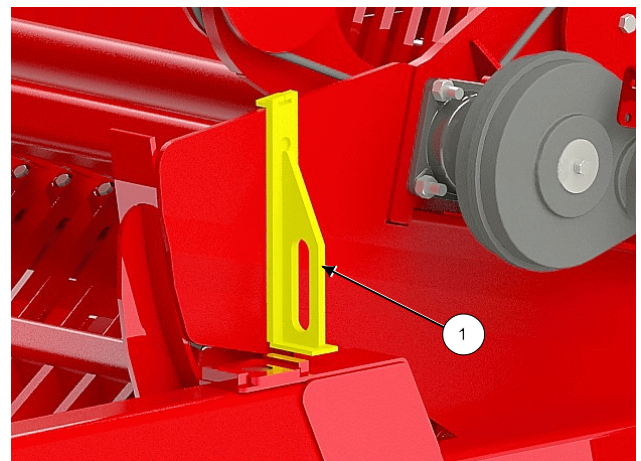
Raise the Hitch Lock

214139-1C

3. Fully raise the apron to remove any pressure on the apron transport locks.
4. Remove the apron lock (1) on the left side of the apron.

Note: Do not lower the apron or raise the bucket when the apron transport locks are on the apron. Severe damage will occur to the machine.

- Remove the clip pin.
- Remove the lock from the apron.

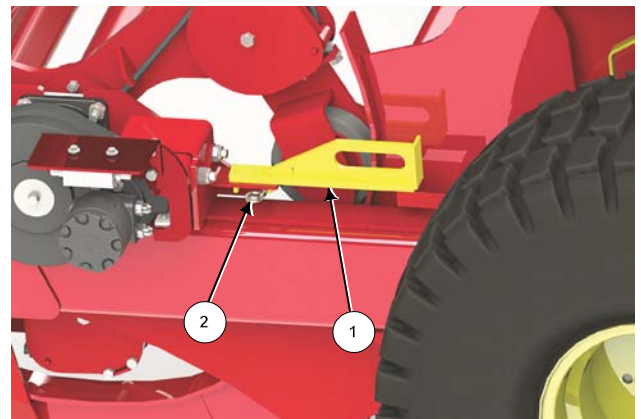


Remove the Apron Lock - Left Side

216239C

5. Place the left apron lock (1) into the storage position on the left side of the frame behind the motor.

- Fasten with the clip pin (2).



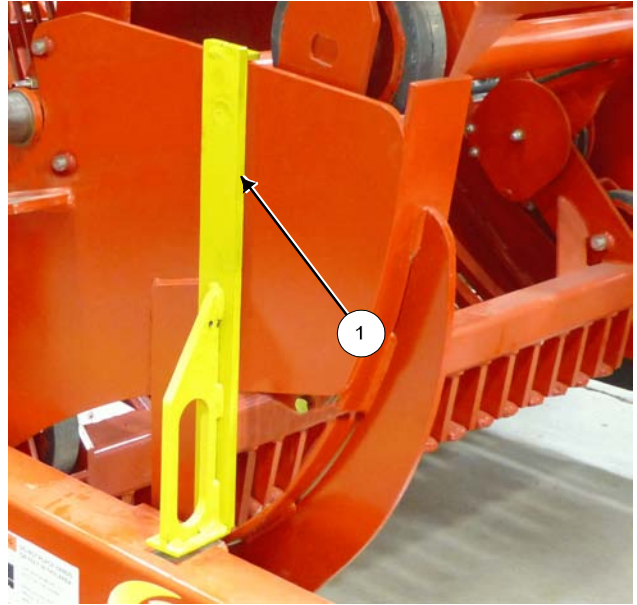
Left Apron Lock in Storage Position

216234C

Section 4 - Operating the Rockpicker

6. Remove the apron lock (1) on the right side of the apron.

- Remove the clip pin.
- Remove the lock from the apron.

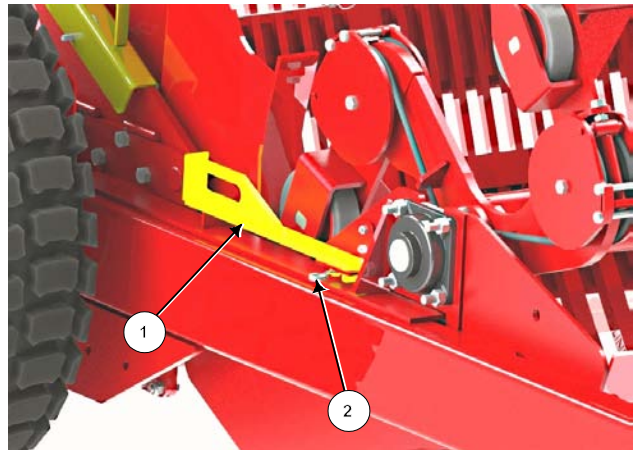


Remove the Apron Lock - Right Side

216227C

7. Place the right apron lock (1) into the storage position on the right side of the frame behind the motor.

- Fasten with the clip pin (2).



Right Apron Lock in Storage

216235C

Section 4 - Operating the Rockpicker

8. Move the hitch into the working position.

Note: There are 2 possible working hitch positions:

Position 1 is designed for use with a tractor having dual rear tires.

- Position 1 can also be used when picking up a windrow of rocks.



Hitch Position 1 -Dual Tractor Tire

215248

Position 2 is designed for use with a tractor having single rear tires.

- Refer to Section 3 "Preparing the Rockpicker - Hitch Working Positions" for information on how to move hitch components for the desired hitch position.



Hitch Position 2 -Single Tractor Tire

215247

To move the hitch into working position:

- Drive ahead slowly.
- Fully extend the hitch cylinder.
- The rockpicker will move to the right side of the tractor.



Keep people back when moving the hitch. The hitch and rockpicker can move quickly. Contact with the moving hitch or rockpicker can cause serious injury or death.



Section 4 - Operating the Rockpicker

9. Lower the apron so that it is just at the surface of the dirt to pick up rocks but does not dig into the dirt.

- The apron height is adjusted through the bucket dump hydraulic cylinders.
- To lower the apron, extend the bucket dump cylinders.
- Note: Continuing to extend the bucket dump cylinders will raise the bucket into dumping position.
- To raise the apron, retract the bucket dump cylinders.
- Note: For larger rocks, it may be necessary to raise the apron.



Set the Apron Height

214011

10. Operate the rockpicker at a field speed of 3 - 4 mph (5 -6 km/h).



Stay back from the rockpicker while in operation.

Rotating bats may throw rocks causing injury or death.

Keep clear of the machine as rocks may bounce off the sides in an unpredictable manner.



- Engage the hydraulic motor to rotate the rock reel.
- When picking large rocks, the field speed should be decreased to reduce possible damage from large impacts.

11. Adjust the rock reel speed so that rocks are pushed into the rock bucket but are not thrown out of the bucket or bounce from the bucket sides.



Rockpicker In Working Position

215248

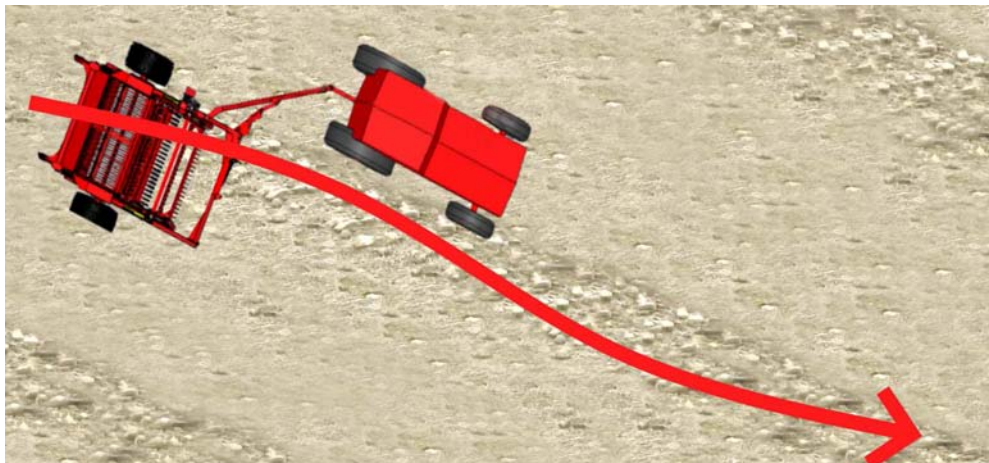
Recommendations for Picking a Windrow

When picking a windrow after a rock raking operation consider these recommendations to adjust the operation.

- Slow the reel speed
 - Slow the reel speed because of the high number of rocks close together.
 - Slowing the reel speed will reduce the impact damage to the reel bats.
- Slow the travel speed

The ratio of reel speed to ground speed is adjusted by changing the travel speed.

 - Slowing the travel speed gives more time for the reel to move the rocks into the bucket.
- Place the hitch into "Position 1"
 - This hitch position increases the distance between the tractor wheel compression zone and the pickup reel to allow for weaving over the windrow.
 - See Section 3 for information on "Hitch Working Positions" for moving the hitch to "Position 1".
- Use a "weaving" pattern of travel
 - By "weaving" over the windrow the rock bucket will be more evenly filled.
 - "Weaving" also spreads the wear on the reel bats over the length of the bats.



Weaving Pattern for Picking a Windrow

221416

Dumping the Rocks



Do not transport the rockpicker on public roadways with rocks in the bucket.

Rocks may fall out of the bucket resulting in an accident.



Stand clear when the bucket is being raised or lowered.

A raised bucket can fall causing serious injury or death.

Do not work under a loaded bucket. Install the bucket lift cylinder locks before doing any work under a raised bucket.



Do not disconnect the hitch when the bucket is lifted. There is an upending hazard at the hitch when the bucket is lifted.



Unloading the Rock Bucket

1. Turn off the rock reel.
2. Back the rockpicker onto level ground near the desired dumping location.
3. Extend the bucket dump cylinders until the apron is resting on the ground.
4. Continue to extend the bucket dump cylinders until the bucket rises to the dumping position and rotates.
5. When the rocks are completely dumped, lower the bucket by retracting the cylinders.
6. Continue retracting the cylinders to raise the apron off the ground.



Rock Bucket in Dumping Position

215261-1

Removing Rocks Lodged in the Apron



Do not enter the pickup reel apron area.

When rocks are lodged against the spring, the springs are under pressure. The bats could release rapidly causing serious injury or death. Do not use hands or feet to remove a lodged rock.

Contact with the moving pickup reel or spring loaded bats will cause serious injury or death.

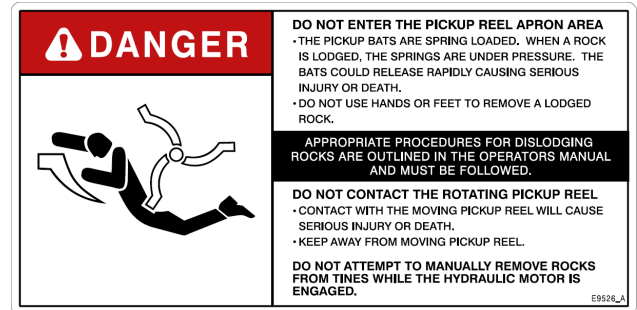


Do not attempt to manually remove rocks while the hydraulic motor is engaged.

- ✓ **Try Rock Removal Approach 1 before attempting Rock Removal Approach 2.**

-Rock Removal Approach 2 increases the level of danger to the operator.

- ✓ **Follow the instructions exactly as given for each Approach because personal safety is involved!**



Reverse Reel & Raise Apron to Remove Rock 214011

Rock Removal Approach 1

Use The Hydraulics to Rotate the Pickup Reel Backwards and Forwards While Raising and Lowering the Apron.

1. Repeatedly try to dislodge the rock from the tines by reversing the direction of the pickup reel while raising and lowering the apron.

Rock Removal Approach 2

Chain the Pickup Reel to Prevent All Movement and Remove the Spring Pressure from the Bat

Note: Try Rock Removal Approach 1 before attempting Rock Removal Approach 2.



Approach 2 involves entering the apron/reel pickup area.

Use extreme caution to prevent harm from moving parts. The spring loaded bats and the rock that is lodged are under spring pressure that may release at any time.

Complete all the instructions carefully in the order they are given.



1. Empty the rock bucket.
2. Park the tractor and rockpicker on level ground.
3. Lower the apron to the ground by extending the dump cylinders.
4. Shut down the tractor and remove the key before doing any work on the rockpicker.

Section 4 - Operating the Rockpicker

5. Disconnect the hydraulic hoses from the tractor.



Disconnect Hydraulics

108008

6. Place a chain around the front top bat and around the front bar of the rockpicker. Tighten to prevent the reel from turning when the spring pressure of the lodged bat is released.

Note: Both free bats must be chained. The pickup reel may rotate in either direction once the spring pressure of the lodged bat is released.



Chain The Front Top Bat

108189

7. Place a chain around the rear top bat and through the grill of the rock bucket.
 - Tighten to prevent the reel from turning when the spring pressure of the lodged bat is released.



Work on the lodged bat from the front of the apron (away from the direction of the bat rotation). This work position is to prevent the spring pressure on the bat from throwing the lodged rock that will cause injury or moving the bat swiftly and causing serious injury.



Chain The Rear Top Bat

217001

Section 4 - Operating the Rockpicker

8. Place a chain winch around the lower bat and the reel center rod.
 - Tighten the winch to move the bat against the spring pressure until the rock is free to be moved.
9. Remove the lodged rock from the apron area.



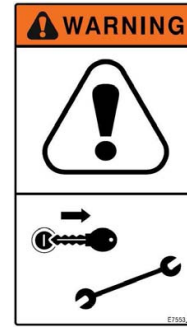
Winch The Lodged Bat-Remove Spring Pressure⁰⁸¹⁹³

10. Loosen the winch to release the pressure on the bat spring.
11. Remove the winch from the bat and the center reel rod.
12. Remove the front and rear chains from the pickup reel.
13. Reconnect the hydraulic hoses.



Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the machine.

Relieve all hydraulic pressure in the hoses. Disconnect the hydraulic hoses from the tractor before going near the machine.



Rock Bucket



Do not work under a loaded bucket. Empty the bucket before doing maintenance under the bucket.

When the bucket is raised, place the bucket locks onto the lift cylinder rods.



Do not disconnect the hitch when the bucket is lifted. There is an upending hazard at the hitch when the bucket is lifted.



Installing the Bucket Lift Locks:

1. Unload the bucket of all rocks.
2. Remove the bucket lift locks (1) which are stored on each side of the machine near the wheels.
 - These locks fit onto the bucket lift cylinder rods to prevent the bucket from falling when raised to perform maintenance.
3. Raise the bucket so the locks will fit onto the cylinder rods.



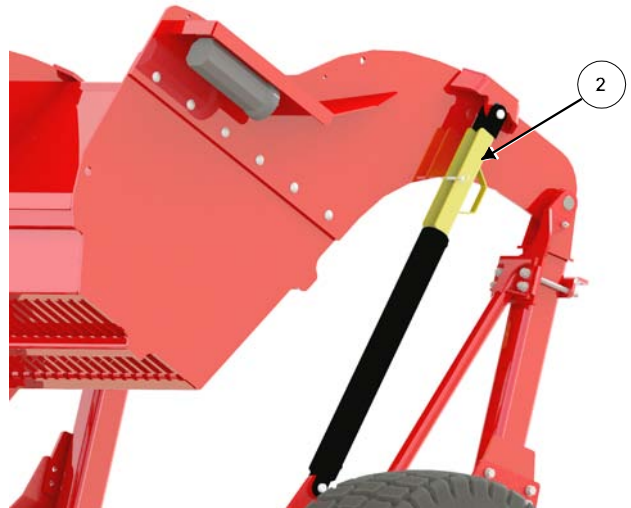
Bucket Lock in Storage Position

217211C

Section 5 - Maintaining the Rockpicker

4. Install one lock (2) on each cylinder rod.

- Secure the lock in place with the retaining pin.



Lock on Bucket Cylinder

217208C

Removing the Bucket Lift Locks:

Both locks must be removed before hydraulic pressure is applied to lower the bucket. Failure to remove both locks may result in damage to the rockpicker.

1. Raise the bucket to remove the pressure on the locks.
2. Remove the retaining pin and locks (2).
3. Store the bucket lift locks (1) on each side of the machine near the wheels.
 - Secure with the retaining pins.



Bucket Lock in Storage Position

217209C

Section 5 - Maintaining the Rockpicker

Lubrication

Lubricate all grease fittings with a lithium soap compatible E.P. grease meeting the N.L.G.I. #2 specifications and containing no more than 1% molybdenum disulfide.

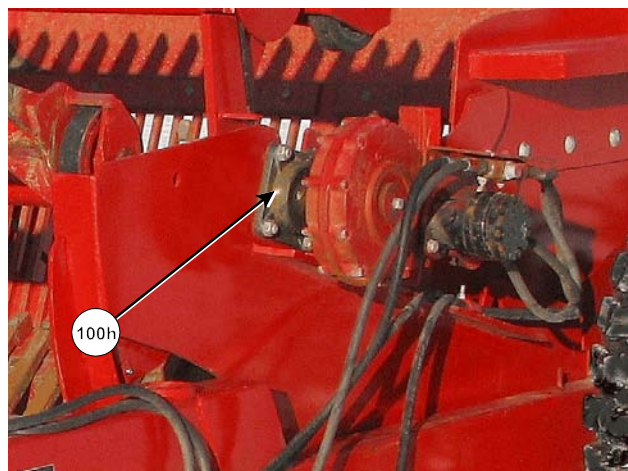
Every 100 Hours

- Lubricate the pickup reel bearings - 2 points.



Grease the Reel Bearing - Right Side

217211C2



Grease the Reel Bearing - Left Side

214025C

- Lubricate the wheel hubs - 2 points.



Grease Wheel Hubs

214026C

Check the Gearbox Oil

Remove the lower plug (1) on the face of the gearbox to check the oil level.

- The oil should be at the bottom of the plug.

If additional oil is needed, remove the top vent plug (2) and add #90 gear oil until the oil is at the bottom of the lower plug.

Replace the top vent (2) and the lower plug (1).

Changing the Gearbox Oil

Remove the plug at the bottom of the gearbox (3) to drain the oil.

- Replace the plug.

To add oil, remove the top vent plug (2). Remove the lower plug (1) on the face of the gearbox for checking oil level.

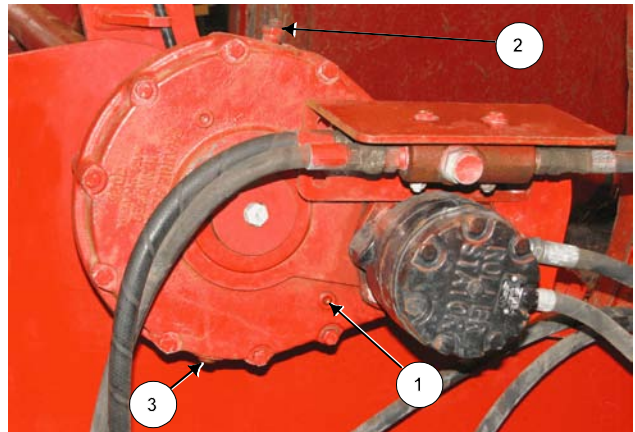
Add #90 gear oil until the oil is at the bottom of the lower plug (1).

- Oil amount is about 1 liter (34 ounces).

Replace the lower plug (1) and the top vent (2).

Check the Motor Mount Bolts

Check that all the motor mount bolts (1) are tight and the motor is securely fastened to the gearbox.



Check Gearbox Oil

214027C



Check that Motor Mount Bolts Are Tight

214027C2

Visually Inspect Hydraulic Hoses/Fittings

Shut down the machine and replace the hydraulic hose assembly if any of the following conditions exist:

- Fitting slippage on hose.
- Damaged, cracked, cut or abraded cover (any reinforcement exposed).
- Hard, stiff, heat cracked or charred hose.
- Cracked, damaged or badly corroded fittings.
- Leaks at fitting or in hose.
- Kinked, crushed, flattened or twisted hose.
- Blistered, soft, degraded or loose cover

Check and Adjust Tire Air Pressure

If tire pressure is not maintained, severe tire damage may result.

Model	Tire Pressure
NT 78	24 psi (165 Kpa)
NT 60	24 psi (165 Kpa)
NT 44	90 psi (620 Kpa)

Torque wheel bolts to 170 lbf (230 Nm).

Check the Bolts On Each Apron Tine

Check that the upper and lower bolts on each apron tine are tight.



Install the apron locks on both sides when servicing the rockpicker. Serious injury from the apron lowering could result if both locks are not installed.

- The upper tine bolts have nut keepers. The tines can be tightened from the bolt head.



Check and Adjust Tire Pressure

217209



Tighten Upper and Lower Tine Bolts

214010

Changing the Reel Springs



Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the machine.

Relieve all hydraulic pressure in the hoses. Disconnect the hydraulic hoses from the tractor before going near the machine.



Removing the Springs

- Before proceeding, ensure there is no spring pressure on any of the bats.

Note: As the spring pressure is released, the bat may sag slightly. Be in a position so that this movement will not cause personal harm.

1. Remove the leading edge impact bolt (6).
Note: Some machines will not have the edge impact bolt.

2. Remove the bolt (5) that prevents the tension bolt (3) from moving up.

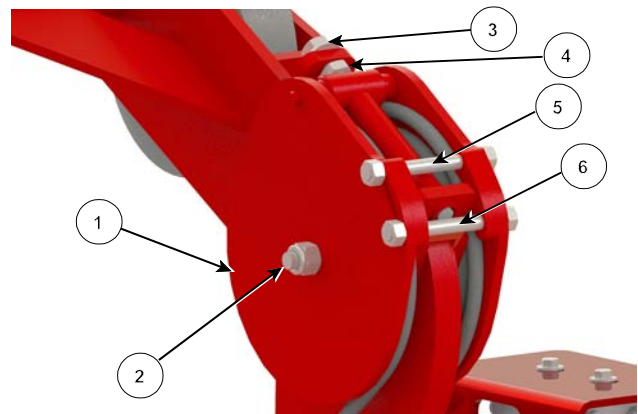
3. Loosen the bolt (2) holding the spring cover plates.
 - Do not remove the bolt at this time.
 - Loosen the bolt enough to allow movement of the springs between the plates.

4. Loosen the jamnut (4) on the spring tension bolt.

5. Loosen the spring tension bolt (3) to remove tension from the spring.
 - Completely loosen the bolt to remove all pressure from the spring.

6. Remove the spring cover plate bolt (2).

7. Remove the cover plates (1) and springs.



Remove The Springs

215266C

Installing the Springs

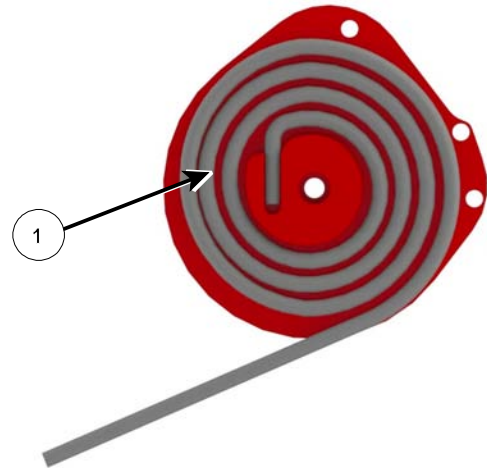
Note: There are 2 types of spring holding assemblies:

- One type has 3 bolts on the spring plates.
- The other type has 2 bolts on the spring plates.

The installation procedure is different depending on the type of spring holding assembly. Find the type of assembly on the machine and following the appropriate instructions below.

Spring Plate Assembly with 3 Bolts

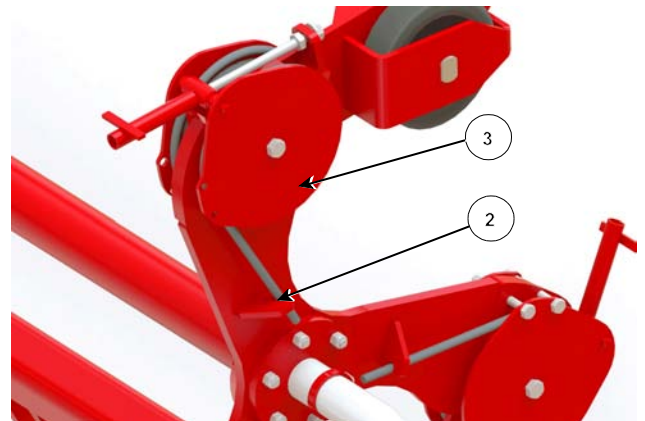
1. Place the curled end of the spring into the spring holder plate.
 - Place the straight short end (1) into the slot of the holder.



Spring Placed into Spring Holder

214031C

2. Place the cover plates (3) with springs onto the reel arm.
3. Fasten the long straight end of the spring into the spring tab (2) located on the reel arm.

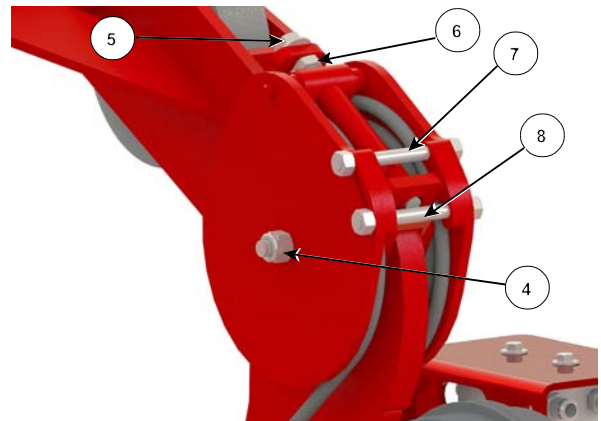


Spring Into Tab On Reel Arm

214032C

Section 5 - Maintaining the Rockpicker

4. Insert the cover plate bolt (4) and nut. (Do not fully tighten at this time.)
5. Lubricate the threads of the spring tension bolt (5).
6. Fully tighten the spring tension bolt (5) to place tension onto the springs.
7. Tighten the tension bolt jamnut (6).
8. Tighten the cover plate bolt (4).
9. Install the bolt (7) to prevent the tension bolt from moving up. Tighten just until snug.
10. Install the leading edge impact bolt (8). Tighten until snug.

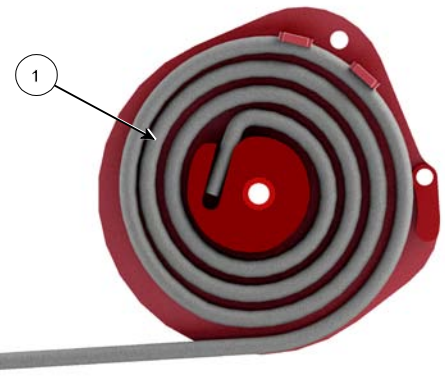


Replace The Spring Cover Plates

215266C2

Spring Plate Assembly with 2 Bolts

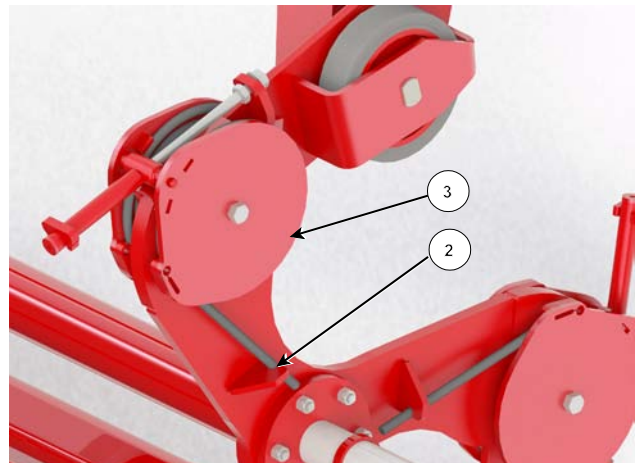
1. Place the curled end of the spring into the spring holder plate.
 - Place the straight short end (1) into the slot of the holder.
 - Place the curl of the spring inside the tabs.



Spring Placed In Holder and Tabs

217205C

2. Place the cover plates (3) with springs onto the reel arm.
3. Fasten the long straight end of the spring into the spring tab (2) located on the reel arm.

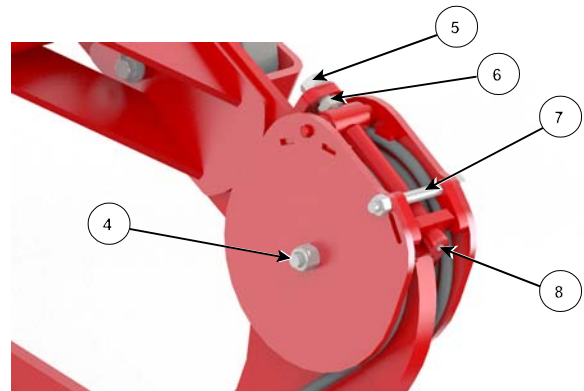


Spring Into Tab On Reel Arm

217206C

Section 5 - Maintaining the Rockpicker

4. Insert the cover plate bolt (4) and nut. (Do not fully tighten at this time.)
5. Lubricate the threads of the spring tension bolt (5).
6. Fully tighten the spring tension bolt (5) to place tension onto the springs.
7. Tighten the tension bolt jamnut (6).
8. Tighten the cover plate bolt (4).
9. Install the bolt (7) to prevent the tension bolt from moving up. Tighten just until snug.
10. After the spring is tensioned, fill the tube around the threads with grease through the flush grease zerk (8).
 - Use a flush type grease coupler (or a needle nozzle) to fill the tube with grease.
 - Fill until the grease comes out near the locking nut (6) or no more grease can be injected through the zerk.



Replace Spring Cover Plates & Grease

217207C

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Storing the Rockpicker

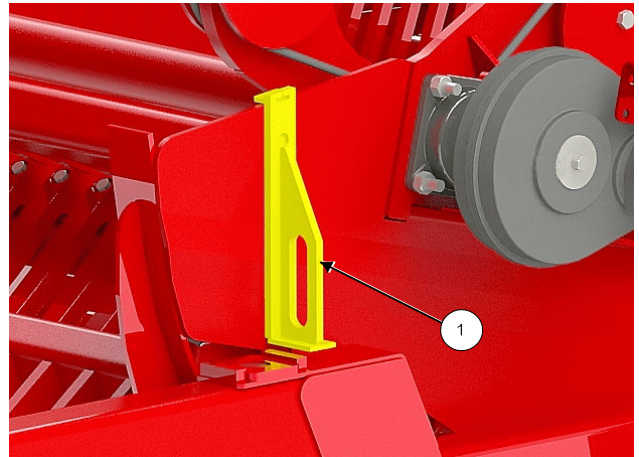
Instructions for storing longer than a week:

1. Remove the apron locks (if installed) to allow lifting of the rock bucket.
 - The apron locks will be re-installed later.
 - Fully raise the apron to remove any pressure on the apron transport locks.

Note: Do not lower the apron or raise the bucket when the apron transport locks are on installed or severe damage will occur to the machine.

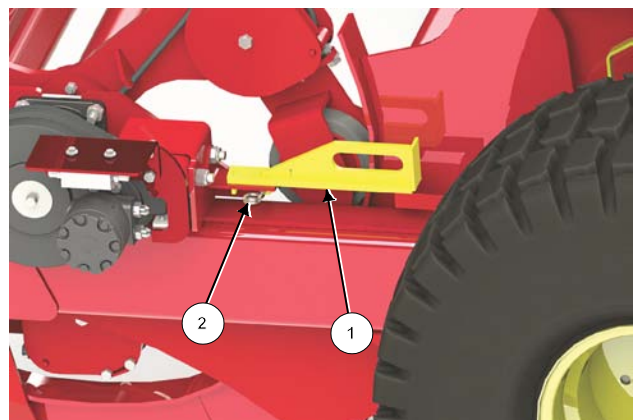
Left Lock

- Remove the apron lock (1) on the left side of the apron.
 - Remove the clip pin.
 - Remove the lock from the apron.
- Place the left apron lock (1) into the storage position on the left side of the frame behind the motor.
 - Fasten with the clip pin (2).



Remove the Apron Lock - Left Side

216239C



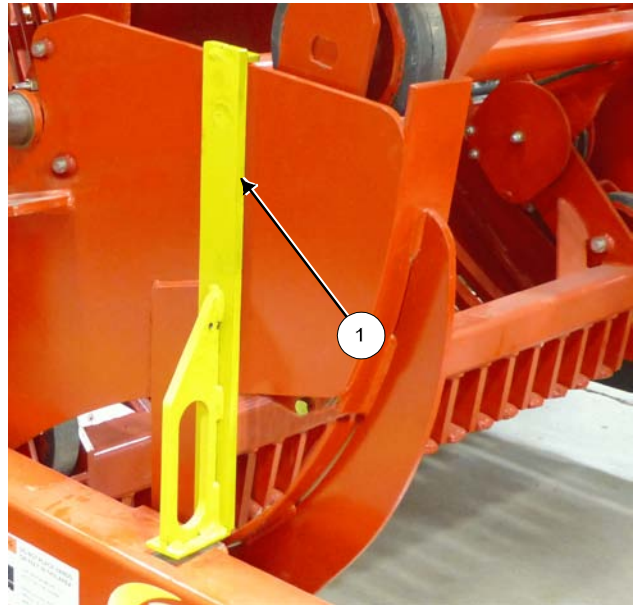
Left Apron Lock in Storage Position

216234C

Section 6 - Storing the Rockpicker

Right Lock

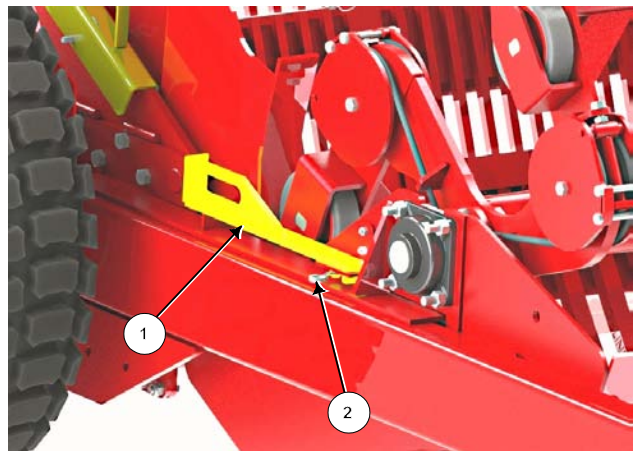
- Remove the apron lock (1) on the right side of the apron.
- Remove the clip pin.
- Remove the lock from the apron.



Remove the Apron Lock - Right Side

216227C

- Place the right apron lock (1) into the storage position on the right side of the frame behind the motor.
- Fasten with the clip pin (2).



Right Apron Lock in Storage

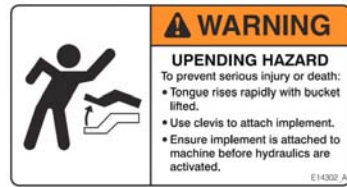
216235C

Section 6 - Storing the Rockpicker

2. Empty the bucket of all the rocks.



Do not disconnect the hitch when the bucket is lifted. There is an upending hazard at the hitch when the bucket is lifted.



Empty The Bucket of All Rocks

215261-1

3. Clean all the debris from the bucket area and off the rockpicker.



Clean Out All Debris

214022

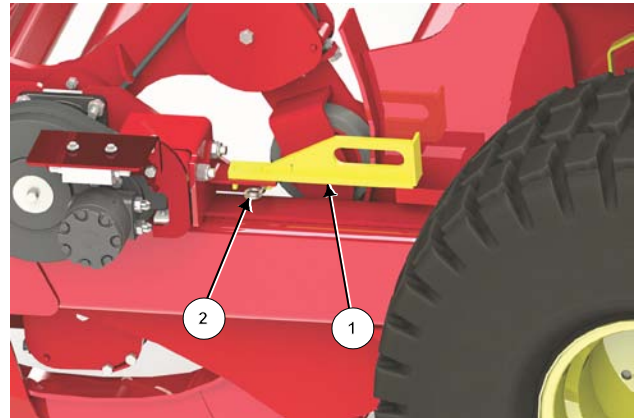
Section 6 - Storing the Rockpicker

4. Park the rockpicker on level ground.
5. Move the hitch to the transport position with the hitch cylinder completely retracted.
 - Lower the hitch lock onto the hitch.
6. Raise the apron until the bucket lift cylinders are completely retracted.



Move Hitch to Transport Position, Raise Apron 217212

7. Remove the left apron lock (1) from the storage position on the left side of the frame behind the motor.
 - Remove the clip pin (2).



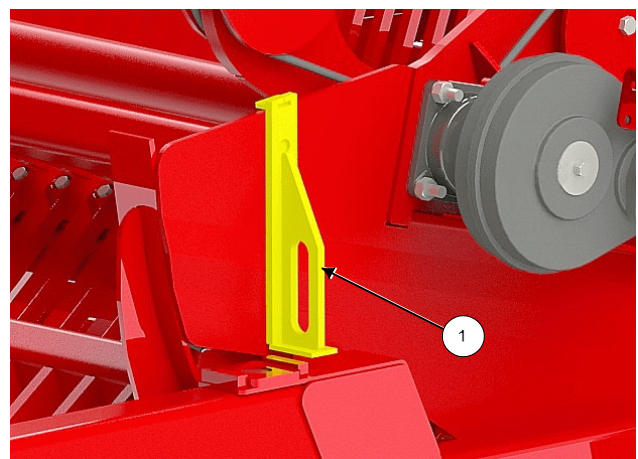
Remove the Left Apron Lock 216234C

8. Install the apron lock (1) on the left side of the apron.



Install the apron locks on both sides when transporting or when servicing the rockpicker. Serious injury from the apron lowering could result if both locks are not installed.

- Place the pin of the lock into the hole of the apron.
- Fasten with the clip pin.

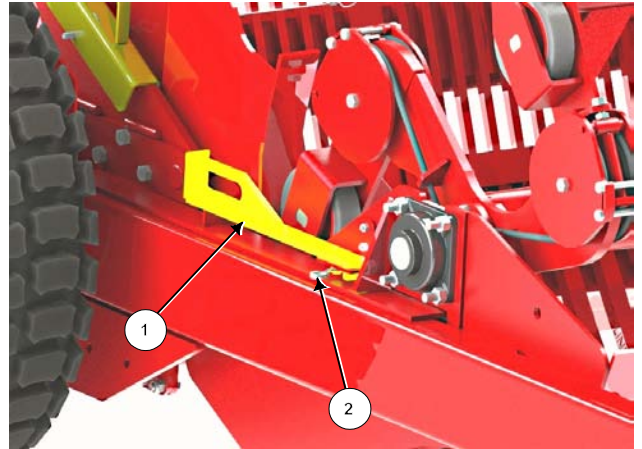


Install Apron Lock - Left Side 216239C

Section 6 - Storing the Rockpicker

9. Remove the right apron lock (1) from the storage position on the right side of the frame behind the motor.

- Remove the clip pin (2).

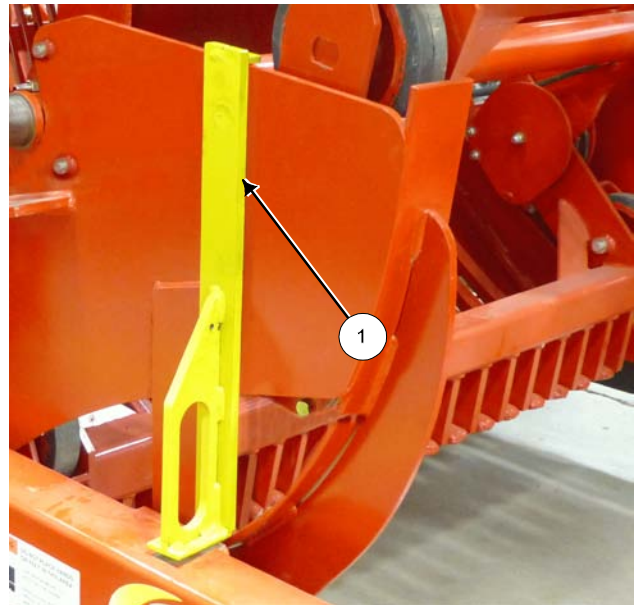


Remove the Right Apron Lock

216235C

10. Install the apron lock (1) on the right side of the apron.

- Place the pin of the lock into the hole of the apron.
- Fasten with the clip pin.

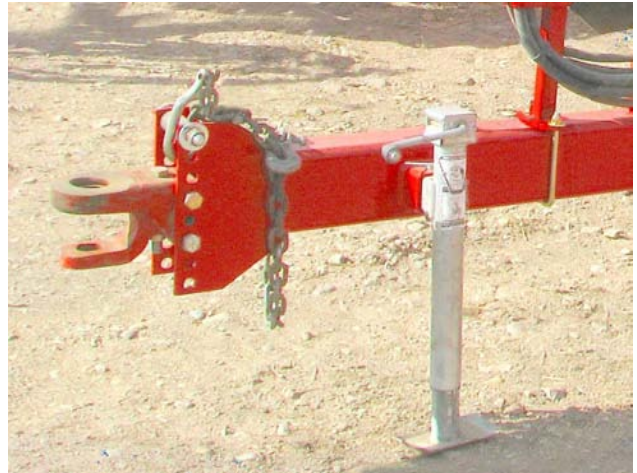


Install Apron Lock - Right Side

216227C

Section 6 - Storing the Rockpicker

11. Place the jack onto the hitch.
 - Rotate the jack from the storage position.
 - Pin the jack in place on the hitch.
 - Ensure that the jack is resting on solid level ground or resting on a wood block.
 - Raise the hitch until the weight is supported by the jack.



Place the Jack Onto the Hitch

216224

12. Disconnect the hydraulic hoses from the tractor.
 - Relieve the pressure on the hydraulic hoses and disconnect them.



Disconnect Hydraulic Hoses & Electrical

108008

13. Secure the hydraulic hoses to the hose holder on the hitch to keep them off the ground and clean.
14. Disconnect the hitch from the tractor.
 - Disconnect the safety chain.
 - Remove the hitch pin.

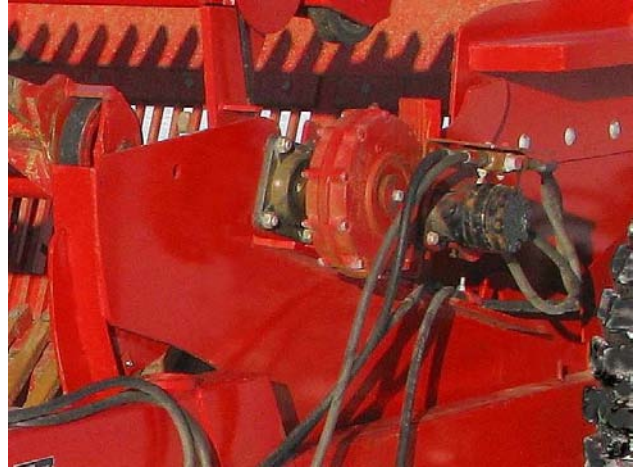


Disconnect Chain and Hitch,
Store Hoses

216223-2

Section 6 - Storing the Rockpicker

15. Lubricate the right and left reel bearings. (See Section 5).
16. Change the oil in the gearbox.
 - See Section 5 for the oil changing procedures.
 - Fill the gearbox to the oil level as outlined in the Maintenance Section.
17. Check the rockpicker for worn and damaged parts. Replace as needed.
18. Touch-up the paint to prevent rusting.



Grease Reel Bearings, Change Gearbox Oil

214025

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7.0 Troubleshooting

Hitch

Symptom	Problem	Solution
Hitch not moving into working position	Hitch transport lock engaged	Lift hitch transport lock
	Hydraulic cylinder	Check hydraulic connections and lines. Check hydraulic cylinder is working
	Not moving into Position 1 (Dual Tractor Tires)	Move hitch parts for Position 1 (See Section 3 - "Setting the Hitch for Position 1")
	Not moving into Position 2 (Single Tractor Tires)	Move hitch parts for Position 2 (See Section 3 - "Setting the Hitch for Position 2")
Hitch not moving into transport position	Hydraulic cylinder	Check hydraulic connections and lines. Check hydraulic cylinder is working
Hitch does not stay in transport position when moving the rockpicker	Transport lock not engaged	Ensure transport lock has fallen into position into the hitch

Rock Reel

Symptom	Problem	Solution
Reel not turning	Hydraulic motor	Check hydraulic connections and lines
	Rock is lodged in a reel bat	Remove the lodged rock using rock removal Approach 1 or Approach 2. See Section 4 for instructions. Carefully follow all instructions

Section 7 - Troubleshooting

Symptom	Problem	Solution
	Drivebox	Check that the drivebox is able to turn. Check the connection between the hydraulic drive motor and the gearbox. Check the oil level in the drive box.
Bogie wheel running off center	Bogie wheel bushings	Change the bogie wheel bushing. Check that the bogie wheel connection is tight.
	Bogie wheel worn	Replace bogie wheel. Use Highline parts
Rock bat not moving rocks	Bat springs	Check tension on the bat springs. Tighten to full tension.
	Cushion valve	Cushion valve not allowing for hydraulic pressure to build. Replace valve with Highline part
Rock bat is flopping	Bat springs	Check for loose or broken springs. Tighten springs to full tension. Replace broken spring with Highline part
	Reel bolts loose	Tighten bolts

Apron

Symptom	Problem	Solution
Apron does not lower	Apron Transport Locks	Remove both apron transport locks. Place in the storage positions
Apron lowers while transporting	Apron Transport Locks	Fully raise the apron by retracting lift cylinders. Install both apron transport locks
Tines are loose	Tine Bolts	Tighten upper and lower tine bolts

Section 7 - Troubleshooting

Rock Bucket

Symptom	Problem	Solution
Bucket will not raise	Hydraulic	Check hydraulic connections, lines and cylinders
	Too much weight	Remove some rocks
	Apron Locks	Remove the apron locks to allow the apron to fully lower so the bucket can rise
	Rocks on Frame	Rocks on frame preventing the apron from fully lowering. Remove rocks and lower the apron to raise bucket
Bucket does not fully lower	Bucket lift locks	Remove both bucket lift locks from the lift cylinder
	Rocks or debris lodged between bucket and apron	Remove the rocks or debris
	Apron Locks	Remove the apron locks to allow the apron to fully lower so bucket can lower

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Section 8 - Specifications

Specifications

	NT78	NT60	NT44
Weight - Empty (Calculated)	7850 lbs (3532 kg)	6910 lbs (3109 kg)	6170 lbs (2776 kg)
Tongue Weight	940 lb (423 kg)	820 lb (369 kg)	720 lb (324 kg)
Length - Transport	242" (6147 mm)	245 1/4" (6229 mm))	247 3/4" (6292 mm)
Length Working Position 1 (Tractor Duals)	228" (5791 mm)	228" (5791 mm)	228" (5791 mm)
Length Working Position 2 (Tractor Singles)	238 (6045 mm)	238 (6045 mm)	238 (6045 mm)
Width - Picking	78" (1981 mm)	60" (1524 mm)	44" (1118 mm)
Width Transport	144 1/2" (3670 mm)	121 3/4" (3092 m)	91 3/4" (2330 mm)
Width Working Position 1 (Tractor Duals)	186 1/2" (4737 mm)	165" (4191 mm)	141 1/4" (3588 mm)
Width Working Position 2 (Tractor Singles)	167 1/2" (4254 mm)	147 1/4" (3740 mm)	123 1/4" (3131 mm)
Height	71 1/4" (1810 mm)	71 1/4" (1810 mm)	71 1/4" (1810 mm)
Dumping Height	84" (2134 mm)	84" (2134 mm)	84" (2134 mm)
Bucket Capacity	3.35 cubic yards (2.56 cubic meters)	2.57 cubic yards (1.97 cubic meters)	1.89 cubic yards (1.45 cubic meters)
Tires:	21.5L x 16.1	16.5L x 16.1	11L-15
Tire Pressure	24 psi (165.5 kPa)	24 psi (165.5 kPa)	90 psi (620.6 kPa)
Power Required	90-150 Horsepower (67 - 112 kW)	70-135 Horsepower (52 - 101 kW)	50-120 Horsepower (37 - 90 kW)

Section 8 - Specifications

Hydraulic Outlets	3	3	3
Pressure	2500 psi (17237 kPa)	2500 psi (17237 kPa)	2500 psi (17237 kPa)
Flow Required	18 gpm (68 l/min)	18 gpm (68 l/min)	18 gpm (68 l/min)
Minimum Rock Diameter Pickup	2" (51 mm)	2" (51 mm)	2" (51 mm)
Maximum Rock Diameter Pickup	24" (609.6 mm)	24" (609.6 mm)	24" (609.6 mm)

Highline New Equipment Limited Warranty Policy

One (1) Year / 12 Months - Parts and Labour

Highline Mfg. (hereinafter "Highline") warrants this new product of Highline's manufacturer to be free from defects in material and workmanship, under normal use and service for one (1) full year after initial purchase/retail sale. Highline will warrant its product for one (1) year parts and labour, if performed by a qualified Dealer. This Limited Warranty shall apply only to complete machines of Highline's manufacture. Parts are covered by a separate Limited Warranty.

EQUIPMENT AND ACCESSORIES NOT OF HIGHLINE'S MANUFACTURE ARE WARRANTED ONLY TO THE EXTENT OF THE ORIGINAL MANUFACTURER'S WARRANTY AND SUBJECT TO THEIR ALLOWANCE TO HIGHLINE ONLY IF FOUND DEFECTIVE BY SUCH MANUFACTURER.

During the Limited Warranty period specified above, any defect in material or workmanship in any warranted item of Highline Equipment not excluded below shall be repaired or replaced at Highline's option without charge by any authorized independent Highline Dealer. An authorized Dealer must make the warranty repair or replacement. Labour in accordance with Highline's labour reimbursement policy. Highline reserves the right to supply remanufactured replacement parts as it deems appropriate.

RETAIL PURCHASER RESPONSIBILITY

This Limited Warranty requires proper maintenance and periodic inspections of the Equipment as indicated in the Operator's Manual furnished with each new Equipment. The cost of routine or required maintenance and services is the responsibility of the retail purchaser. The retail purchaser is required to keep documented evidence that these services were performed. This Highline New Equipment Limited Warranty may be subject to cancellation if the above requirements are not performed.

EXCLUSIONS AND LIMITATIONS

The warranties contained herein shall NOT APPLY TO:

1. Any defect which was caused (in Highline's sole judgement) by other than normal use and service of the Equipment, or by any of the following:
 - a. accident
 - b. misuse or negligence
 - c. overloading
 - d. of reasonable and proper maintenance
 - e. improper repair or installation
 - f. unsuitable storage
 - g. non-Highline approved alteration or modification
 - h. natural calamities
 - i. vandalism
 - j. parts or accessories installed on Equipment which were not manufactured or installed by Highline authorized Dealers
 - k. the elements
 - l. collision or other accident
2. Any Equipment whose identification numbers or marks have been altered or removed.
3. Any Equipment which any of the required or recommended periodic inspection or services have been performed using parts not manufactured or supplied by Highline or meeting Highline Specifications including, but without limitation, lubricants (oil, grease), belt lacings, and hydraulic fluids.
4. Any Equipment used in demonstrations not performed by a Highline Dealer. Warranty will be at the discretion of Highline for all other demonstration warranty.
5. New Equipment delivered to the retail purchaser in which the warranty registration has not been completed and returned to Highline within thirty (30) days from the date of purchase.
6. Any defect that was caused (in Highline's sole judgement) by operation of the Equipment not abiding by standard operating procedures outlined in the Operator's Manual.
7. Tire Limited Warranties and support are the responsibility of the respective product's manufacturer.
8. Transportation costs, if any, of transporting to the Highline Dealer.
9. In no event shall Highline's liability exceed the purchase price of the product.
10. Highline shall not be liable to any person under any circumstances for any incidental or consequential damages (including but not limited to, loss of profits, out of service time and damage to equipment which this equipment may be attached) occurring for any reason at any time.

11. Diagnostic and overtime labour premiums are not covered under this Limited Warranty Policy.
12. Depreciation damage caused by normal wear, lack of reasonable and proper maintenance, failure to follow operating instructions, misuse, and/or lack of proper protection during storage.
13. Accessory systems and electronics not of Highline's manufacture are warranted only to the extent of such manufacturer's respective Limited Warranty if any.
14. Wear items which are listed by product group below:

COMMON WEAR ITEMS

Roller chain, sprockets, clutches, shear bolts, clutch components, chains, gearbox housings bolts/torqued parts, flails, feed roller belting, coupler chain, DRV couplers, bogie wheels, apron tines and hoses, blades and blade pans, blade bolts and nuts, skid shoes, chain guards, clutches and clutch components.

PARTS WARRANTY

Parts replaced in the warranty period will receive the balance of the one year New Equipment Limited Warranty. Replacement parts after the original machine warranty are warranted to be free from defects of material for ninety (90) days or the part will be repaired or replaced, without labour coverage for removal and reinstallation.

EXCLUSION OF WARRANTIES

UNLESS OTHERWISE REQUIRED BY LAW, AND EXCEPT FOR THE WARRANTIES EXPRESSLY AND SPECIFICALLY MADE HEREIN, HIGHLINE MAKES NO OTHER WARRANTIES, AND ANY POSSIBLE LIABILITY OF HIGHLINE HEREIN UNDER IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANT ABILITY OR FITNESS FOR A PARTICULAR PURPOSE. HIGHLINE RESERVES THE RIGHT TO MODIFY, ALTER AND IMPROVE ANY PRODUCT WITHOUT INCURRING ANY OBLIGATION TO REPLACE ANY PRODUCT PREVIOUSLY SOLD WITH SUCH MODIFICATION. NO PERSON IS AUTHORIZED TO GIVE ANY OTHER WARRANTY, OR TO ASSUME ANY ADDITIONAL OBLIGATION ON HIGHLINE'S BEHALF.