

NT Rockpicker

NT60E

Operator's Manual



www.highlinemfg.com



A DIVISION OF BOURGAULT INDUSTRIES LTD.

E15756V1_C

EC DECLARATION OF CONFORMITY

This Declaration of Conformity is issued under the sole responsibility of the manufacturer

MANUFACTURER

Company name: Highline Manufacturing, a Division
of Bourgault Industries Ltd.
Full address: Box 307, Hwy 27
Postal code: S0K 4N0
Place: Vonda, SK
Country: Canada

EUROPEAN AUTHORISED REPRESENTATIVE

Which is established in the European Union and has access to the Technical File

Company name: Certification Experts
Full address: Amerlandseweg 7
Postal code: 3621 ZC
Place: Breukelen
Country: The Netherlands

DESCRIPTION AND IDENTIFICATION OF THE MACHINERY

Generic name: Rock Picker
Function: The intended use of Rock Picker is to pick up rocks while
driving in a cultivated field without the need to stop to
pick up the rocks.
Model: NT60E
Type: Agricultural Implement
Serial number: NTXXXXXX
Where XXXXXXX stands for a unique number for each
machine.
Commercial name: Rock Picker NT60E

COMPLIANCE

The manufacturer declares that the above mentioned machinery fulfills all relevant provisions of

Machinery Directive 2006/42/EC
Regulation 167/2013 concerning agricultural vehicles

In conjunction with the following harmonised standards and where appropriate other technical standards and specifications

EN-ISO 12100:2010; EN 349:1993+A1:2008
ISO 4254-1:2015 ; ISO 4254-5:2018

Place: Vonda, SK
Canada

Name: Robert Cochran
Function: General Manager

Date: January, 21, 2020

Signature:

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NT Rockpicker NT60E

Operator Manual

Original Instructions

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HWY #27, P.O. Box 307
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Highline Team Message

Congratulations on your purchase of a NT Rockpicker NT60E 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.

The pickup bats guide the rocks into the rock bucket. The screen guards at the front of the machine prevent contact with the moving rock pickup reel. The guarding on the rock bucket keeps rock from bouncing out of the bucket.

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.

If access to the non-rotating rock pickup reel area is required the operator will stop all hydraulic flow to the pickup reel by stopping the tractor. A mechanical reel lockout is then manually placed onto the reel and the front guarding manually unlocked before entering the area. For additional safety, as the front guarding is raised, a valve is closed to prevent any hydraulic pressure accidentally getting to the reel motor.

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 operating of the rotating rock reel and the dumping of the rocks.

The rockpicker is a low-noise machine. As per clause 4.2 of EN ISO 4254-1:2015 the main source of noise when using the rockpicker is the tractor and engagement tools with soil. The tractor noise is not under the control of Highline. An appropriate hydraulic motor and gearbox are used on the rockpicker which generates minimal noise. The rockpicker minimizes the rock-impact noise through the use of low speed rotating bats that follow an elliptical path which aid in guiding the rocks into the rock bucket. The noise generated from the initial contact when engaging the rocks in the soil is dependant on the size of the rocks and the speed at which the operator is driving which are factors not under the control of Highline.

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 dumping 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.

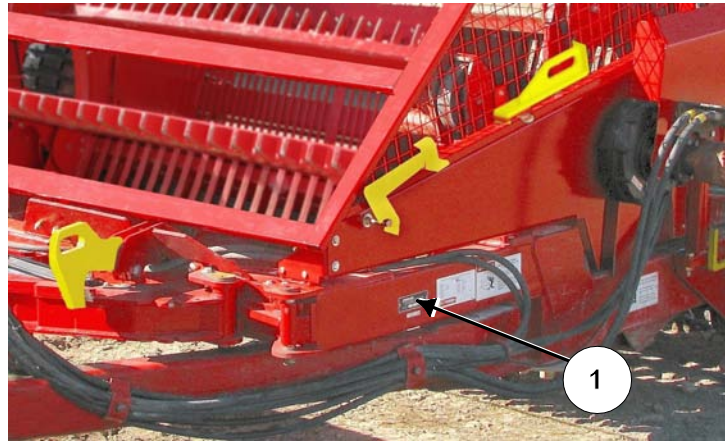
Always use the Rockpicker according to the instructions contained in this Operator's Manual and the safety and instruction decals on the machine.

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 NT60E Rockpicker on the left front frame member.



Serial Plate Location

220019C

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 _____

Section 1 - Safety

SAFETY SIGN-OFF FORM

Highline Manufacturing has followed the Safety Standards specified by the ISO Standards adopted by the European Union. The Rockpicker NT is CE certified.

Anyone who will be operating and/or maintaining the Highline NT60E Rockpicker 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.

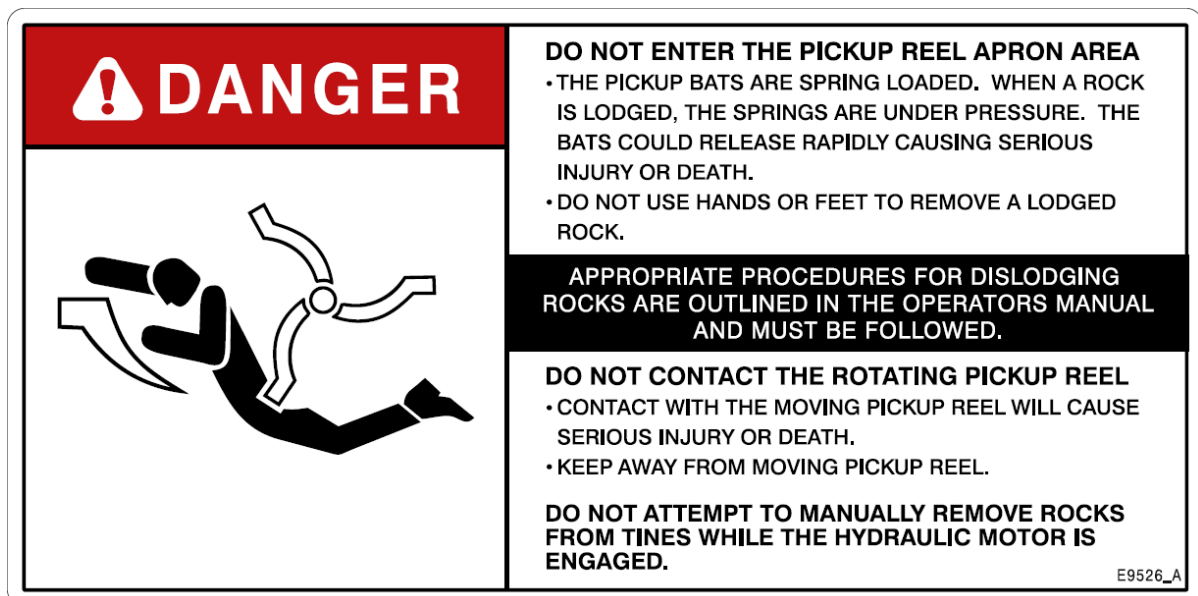
APPROPRIATE PROCEDURES FOR DISLODGING ROCKS ARE OUTLINED IN THE OPERATOR'S MANUAL AND MUST BE FOLLOWED

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

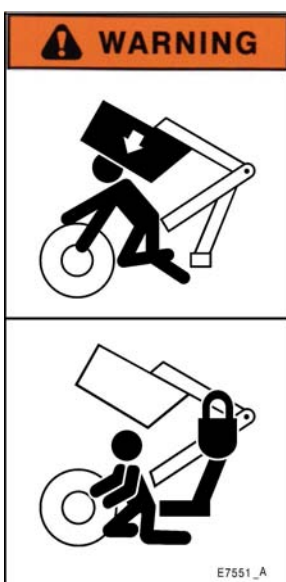
To prevent serious injury or death:

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.

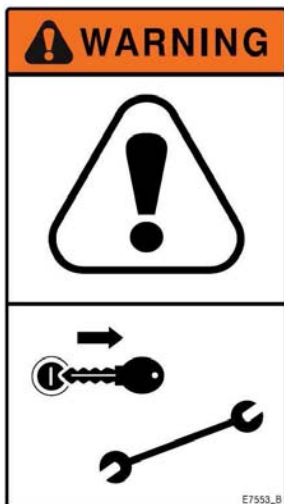
Serious injury from the apron lowering could result if both locks are not installed.



ACCUMULATORS CONTAIN HIGH PRESSURE OIL

Accumulators contain high pressure hydraulic fluid which may cause serious injury.

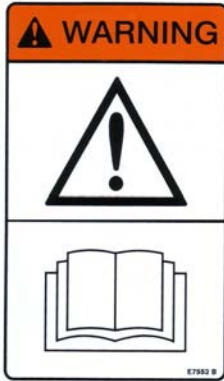
Shut off the tractor, remove the key, disconnect the hydraulic hoses and safely drain accumulators before performing any maintenance on the hydraulic system.



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

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.



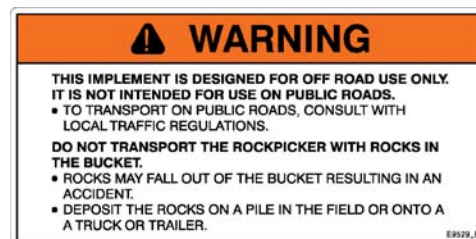
The rockpicker is designed for off road use only. To transport on public roads consult with local traffic regulations.



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



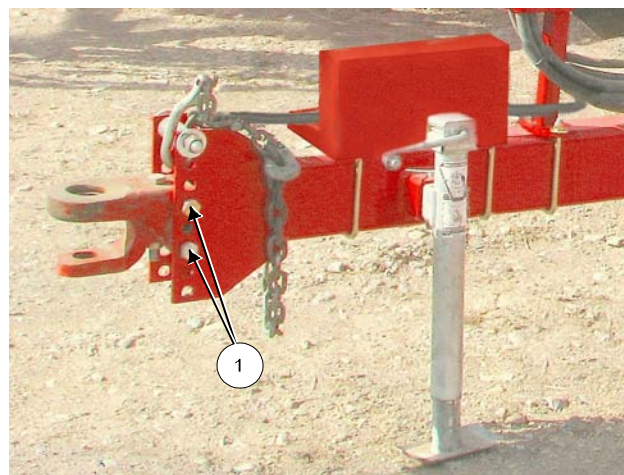
Do not transport the rockpicker with the reel guard cage in the raised position.



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 plate so that the rockpicker is level when connected to the tractor drawbar.
 - Fasten in place.

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



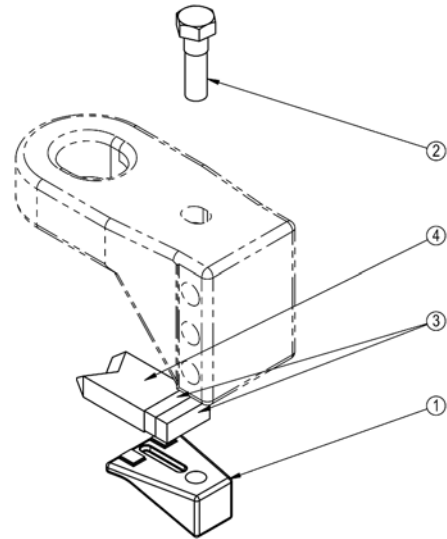
Adjust Tongue to Level the Rockpicker

216224-1C

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



3 in 1 Hitch

42890_A

2. Lift the hitch with the jack

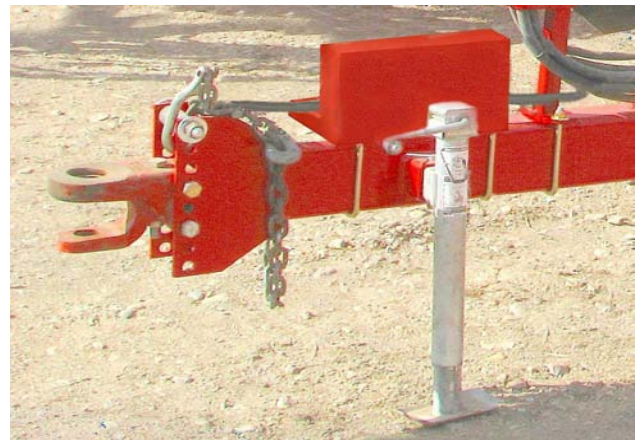
- The hitch is heavy. Do not attempt to lift the hitch without using the jack.

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.



Lift the Hitch with the Jack

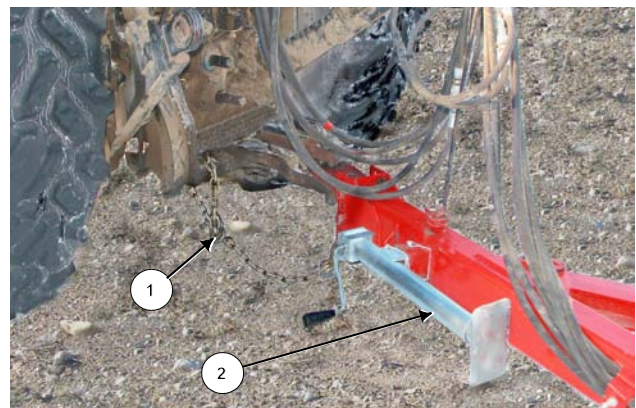
216224-1

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.



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 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 & Electrical

108008

7. Connect the electrical connection for the signal lights.

8. Connect the rockpicker brake line (1) to the tractor.

9. Connect the emergency break away chain (2) to the tractor.



Accumulators contain high pressure hydraulic fluid which may cause serious injury.

- This chain will activate the rockpicker brakes if the rockpicker should become disconnected from the tractor.
- Ensure there is enough chain slack to allow turning the machine without activating the break away system.



Connect Breakaway Chain to the Tractor
(Guard Removed for Clarity)

217214C

10. Fully raise the pickup apron.

- Fully retract the bucket dump cylinders (3) to raise the apron.
- As the cylinders retract, they will raise the apron from the ground surface.



Raise the Pickup Apron

220025C

Section 2 - Transporting the Rockpicker

11. Remove the apron locks (1) from the storage position on the left and right side of the reel cage by removing the clip pin.
12. Unlatch (2) the reel cage and lift it.



Remove Left & Right Apron Locks

220027C

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



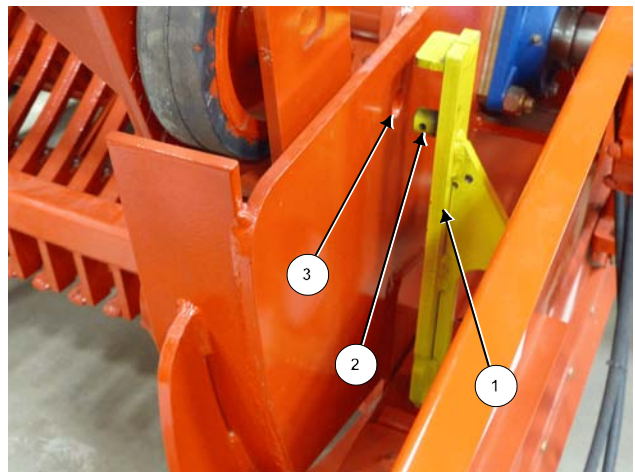
Install the apron locks on both sides when transporting or when servicing the rockpicker. Serious injury from the apron lowering could result if both locks are not installed.



The locks prevent the apron from lowering by limiting the movement to resting on the rockpicker frame.

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 (2) of the lock into the hole of the apron (3).
- Fasten with the clip pin.

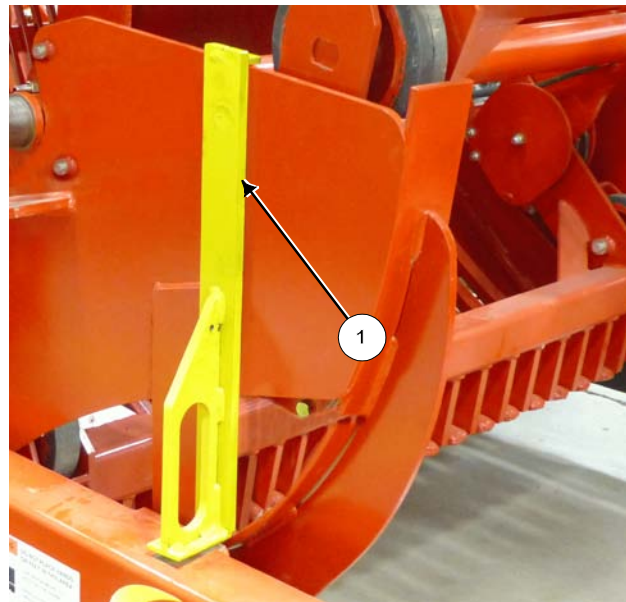


Install Apron Lock - Left Side

216226C

Section 2 - Transporting the Rockpicker

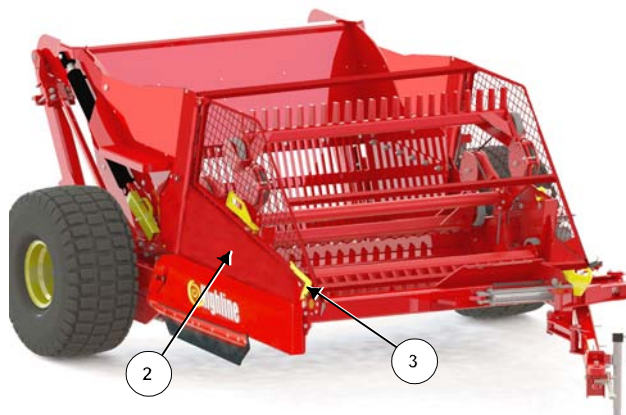
14. Install the apron lock (1) on the right side of the apron.
 - Place the pin of the lock into the hole of the apron.
 - Fasten with the clip pin.



Install Apron Lock - Right Side
(Reel Access Panel Shown Open)

216227C

15. Ensure the reel lockout access panel (2) is closed and latched.
16. Lower and lock the reel cage.
 - Ensure the cage locks (3) are engaged on both sides.



Lower and Lock Reel Cage

220025C2

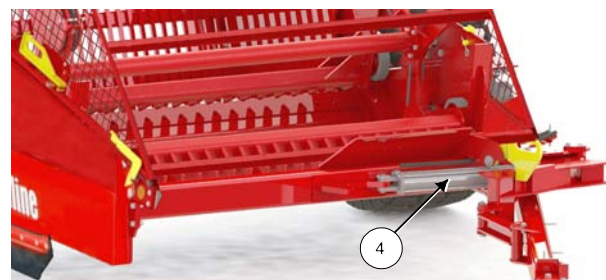
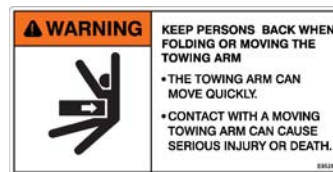
17. Move the hitch into the transport position.



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 (4) to move the hitch into the transport position. This reduces the travel width of the rock picker.



Hitch In Transport Position

220028C

Section 2 - Transporting the Rockpicker

18. Ensure the hitch lock (4) is lowered and engaged in the hitch linkage before transporting.



Engage Hitch Transport Lock

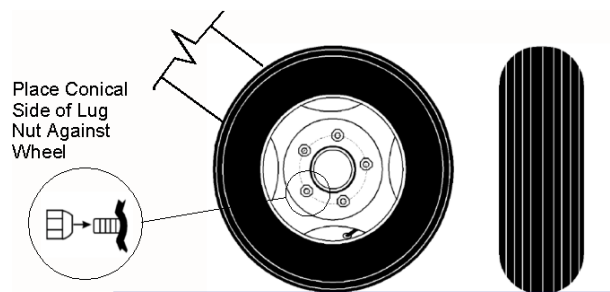
216240C

19. Check the condition of the tires.
- Ensure that the lug nuts have the cone side against the wheel rim.
 - Torque the lug nuts to 200-214 lbs ft (270 -290 Nm) .
 - Ensure the tire pressure is at 62 psi (427 Kpa).

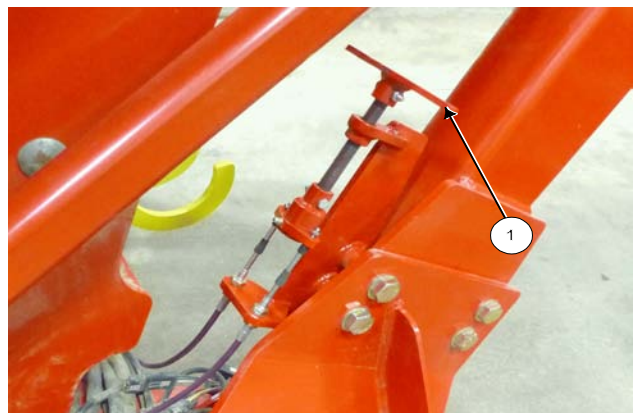


Check Condition of the Tires

216182



20. Disengage the parking brake actuator located on the left rear upright.
- Rotate the handle (1) to loosen the brake cables.



Disengage the Parking Brake

217213C

Section 2 - Transporting the Rockpicker

21. Check that the signal and brake lights are working.
22. Check that the brakes are working by pressing on the brake pedal in the tractor.



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



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Preparing the Rockpicker



Do not ride on the rockpicker.

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

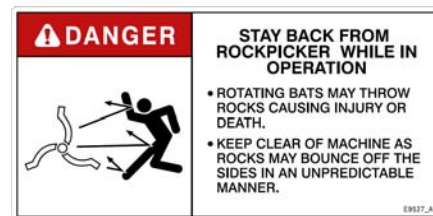
Riding on the Rockpicker while operating will result in serious injury or death from rocks being thrown.



Stay back from the rockpicker while in operation.

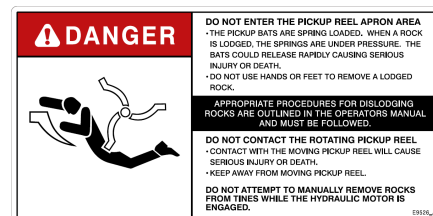
Rotating bats may throw rocks causing injury or death.

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.

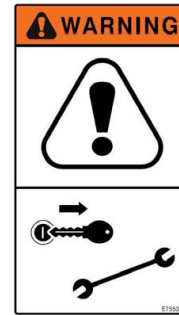
Contact with the moving pickup reel will cause serious injury or death. Keep away from the moving pickup reel.

Section 3 - Preparing the Rockpicker



Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the machine. Engage the parking brake (if equipped).

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



1. Ensure the reel hydraulic lockout valve (1) is properly connected to the reel cage and will rotate the valve when the cage is opened.

- Check that the clamping bolt is tight on the valve rotate arm.

The hydraulic lockout valve is a safety device that closes to cut off hydraulic flow to the reel motor if the reel cage is lifted. The lockout valve also prevents accidental activation of the motor while in the reel area.

Note: Do not depend on this device alone for personal safety. Shut down the tractor and remove the key before lifting the reel cage.

See Section 5 for "Adjusting the Reel Lockout Valve".

2. Unlock the cage lock (2) and lift the reel cage.

- Stop the reel from rotating before lifting the cage.



Reel Hydraulic Lockout Valve

220029C



Unlock and Lift Reel Cage

220030C

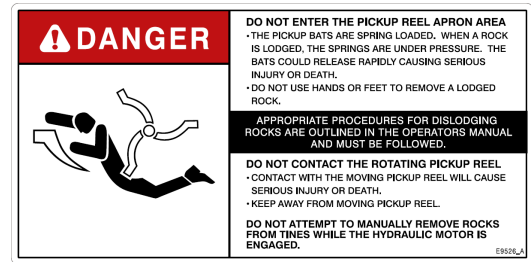
Section 3 - Preparing the Rockpicker

3. 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.



4. 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.

See Section 2 for information on installing the apron locks.

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



Check Condition of Reel, Apron and Bucket

216081

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



Remove Rocks from Bat Teeth

214021

Section 3 - Preparing the Rockpicker

6. Clear the bucket of any debris or rocks that would hinder soil from exiting the bucket.



Remove Debris From Bucket

214022

7. 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.

- On the left side, look along the shielding for any rock or debris resting on the frame.



Remove Rocks from the Frame - Left Side

216086

- On the right side, open the reel lockout access door and remove any rock or debris on the frame.

8. Remove the apron transport locks and place in the storage position.

- See Section 4 "Operating the Rockpicker" for information.



Remove Rocks from the Frame - Right Side

220031

Section 3 - Preparing the Rockpicker

9. Check the condition of the tires.

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

10. Torque wheel bolts to 200-214 lbs ft (270 -290 Nm) dry.



Check the Condition of the Tires

216182

11. Check and adjust the tire air pressure.

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

Model	Tire Pressure
NT60E	62 psi (427 Kpa)



Check the Tire Pressure

216182

12. Lower and lock the reel cage.

- Ensure the cage latches (1) are engaged on both sides.

13. Ensure the reel lockout access door (2) is closed and latched.

14. Ensure the lower reel side guarding (3) is in place and in good condition.

15. Ensure the bucket guarding (4) is in place and in good condition.

- Check the bucket sides, back and the top.

16. Visually inspect all the hydraulic hoses and fittings.

- See Section 5 "Maintaining the Rockpicker" for conditions indicating that replacement is needed.



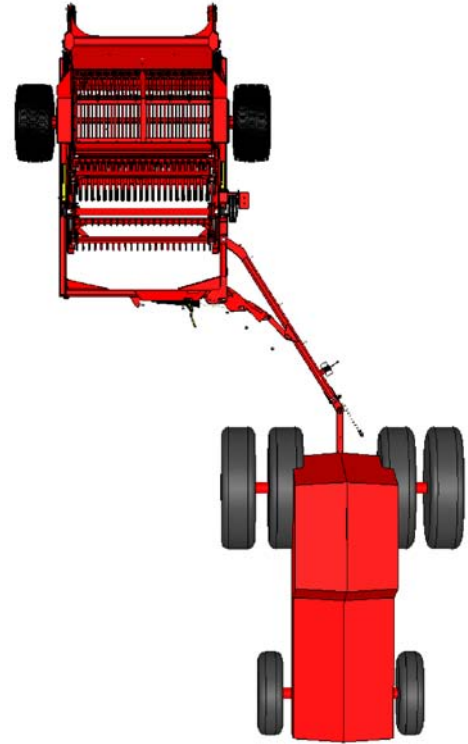
Lower and Lock The Reel Cage
Check Reel and Bucket Guarding

220025C3

Hitch Working Positions

There are 2 possible working positions for the hitch:

- Position 1 is for tractors using dual rear 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.

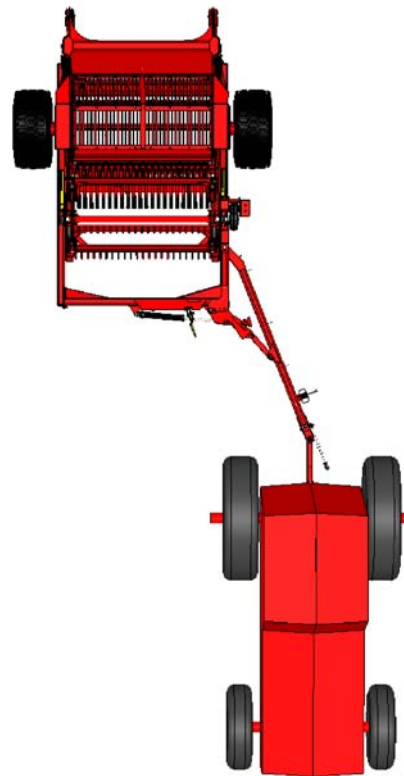


Hitch Position 1 - Dual Tractor Tires²¹⁷⁰⁰⁸

- Position 2 is for tractors using single rear 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.

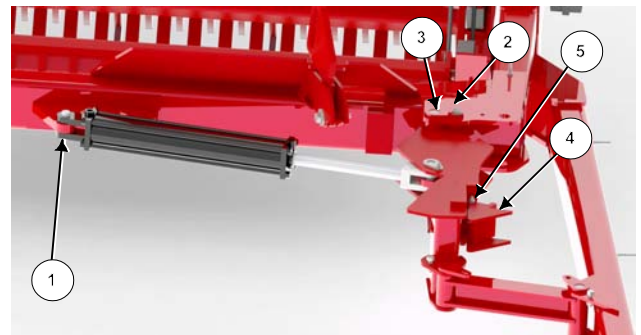
- See the directions below for setting the hitch positions.



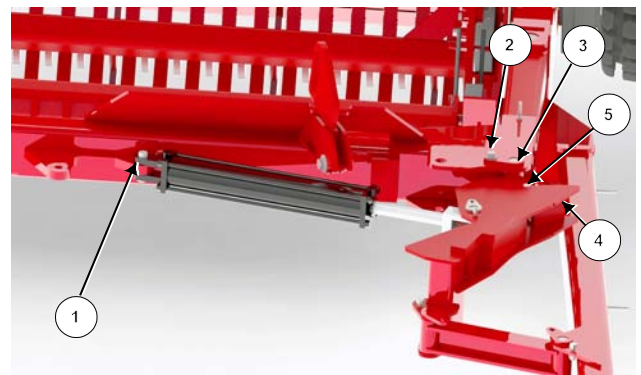
Hitch Position 2 - Single Tractor Tires²¹⁷⁰⁰⁹

Setting the Hitch for Position 1 - Dual Tractor Tires

- 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.



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



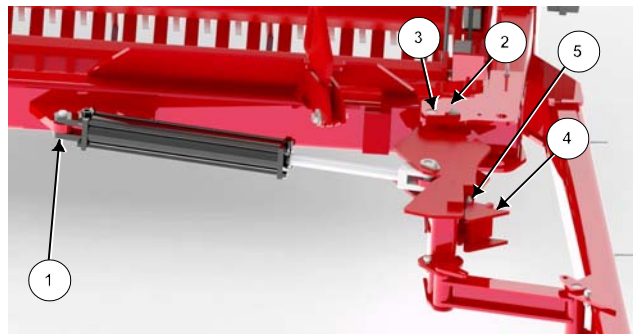
Install for Hitch Position 1 - Dual Tractor Tires 215254C

Setting the Hitch for Position 2 - Single Tractor Tires

- 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.



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



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

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.

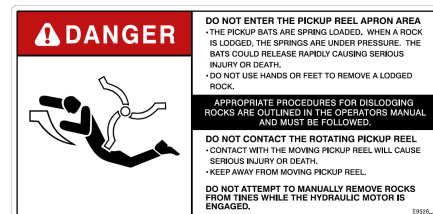
Rotating bats may throw rocks causing injury or death.

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.



Keep the reel cage closed and locked when the reel is turning and when operating the machine.



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.

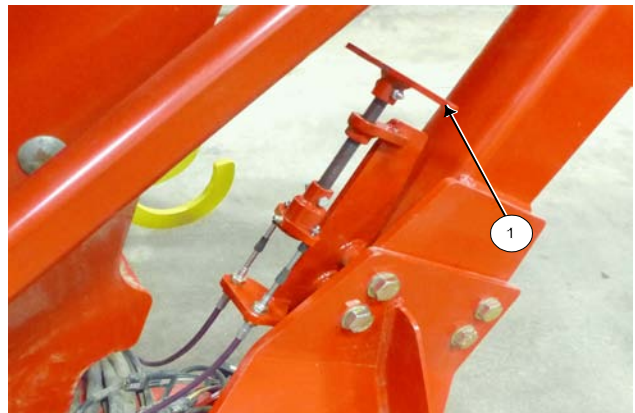
- For best picking conditions, the field should be cultivated prior to picking.
- Cultivating brings stones to the surface and buries field residues.



Prepared Field With Rocks Exposed

108184

1. Engage the parking brake actuator located on the left rear upright.
 - Rotate the handle (1) to tighten the brake cables.



Engage the Parking Brake

217213C

2. Unlock the cage lock and lift the reel cage.



Unlock and Lift the Reel Cage

220030

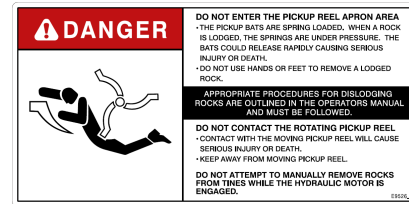
Section 4 - Operating the Rockpicker

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



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.



Check Condition of Reel, Apron and Bucket

216081

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



Raise the Hitch Lock

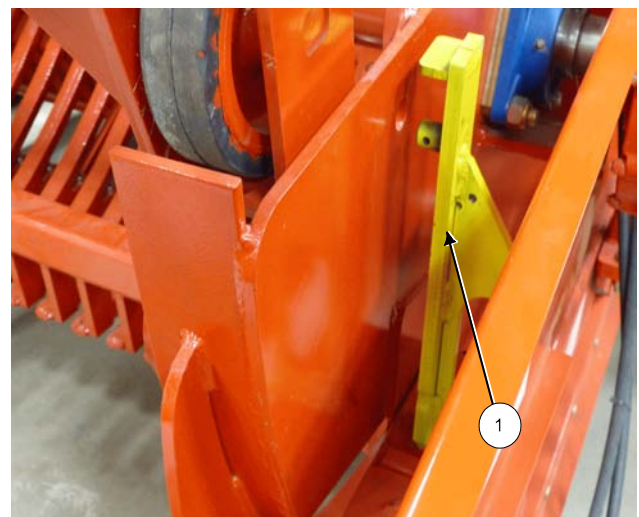
220033C

5. Remove the apron transport locks from left and right side of the apron.

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

Left Side

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



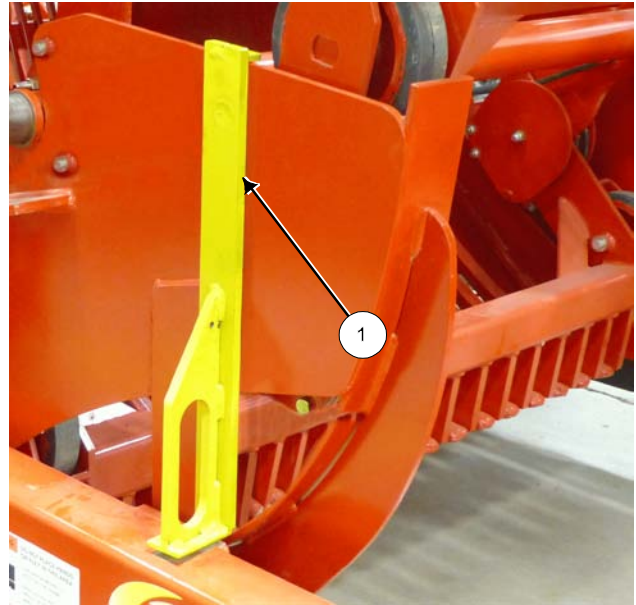
Remove Left Apron Transport Lock

216226C2

Section 4 - Operating the Rockpicker

Right Side

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

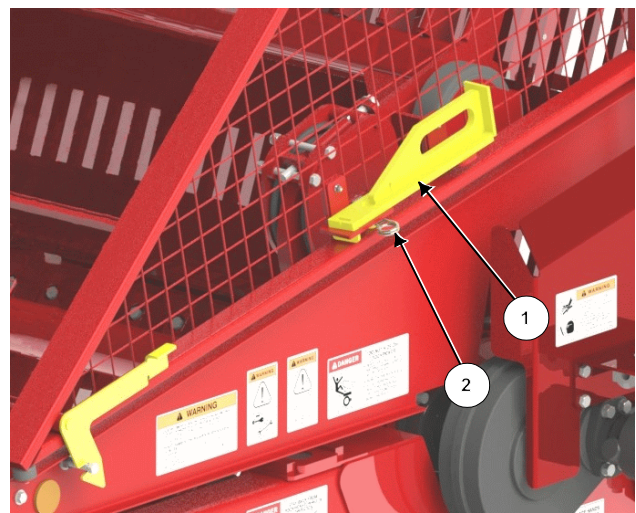


Remove Right Apron Transport Lock

216227C

6. Place the transport locks (1) into the storage brackets on the outside of the reel cage.

- Fasten in place with the clip pin (2)



Transport Lock in Storage - Left Side

220034C



Transport Lock in Storage - Right Side

220035C

Section 4 - Operating the Rockpicker

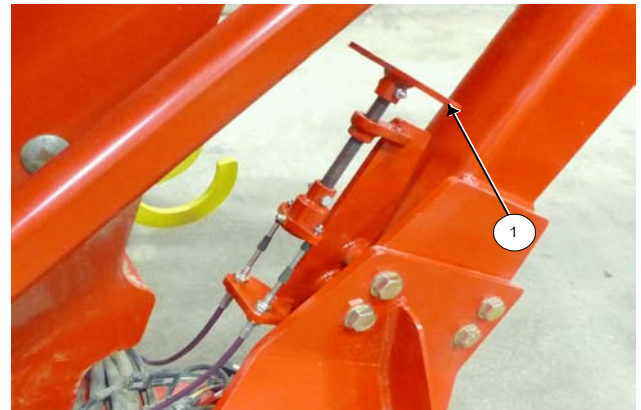
7. Close the reel lockout access panel.
 - Ensure the lock (2) at the front of the panel is engaged.
8. Lower and lock the reel cage.
 - Ensure the cage locks (1) are engaged.



Close Panel, Lower and Lock the Reel Cage

220036C

9. Disengage the parking brake actuator located on the left rear upright.
 - Rotate the handle (1) to loosen the brake cables.
10. Check that the rockpicker brake line (1) is connected to the tractor.



Disengage the Parking Brake

217213C



Accumulators contain high pressure hydraulic fluid which may cause serious injury.



11. Check that the emergency break away chain (2) is connected to the tractor.
 - This chain will activate the rockpicker brakes if the rockpicker should become disconnected from the tractor.
 - Ensure there is enough chain slack to allow turning the machine without activating the break away system.



Connect Breakaway Chain to the Tractor
(Guard Removed for Clarity)

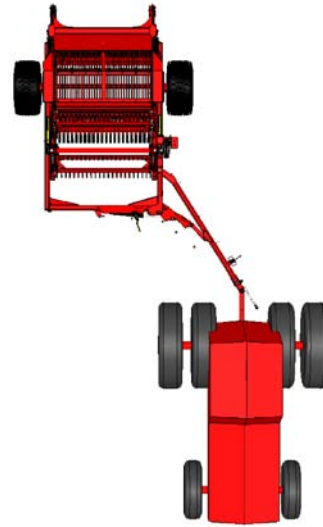
217214C

Section 4 - Operating the Rockpicker

12. 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 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 1 - Dual Tractor Tires 217008



Hitch Position 2 - Single Tractor Tires 217009

To move the hitch into working position:



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.

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



Section 4 - Operating the Rockpicker

13. 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.

14. Operate the rockpicker at a field speed of 3 - 4 mph (5 -6 kmh).



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.
15. Adjust the rock reel speed so that rocks are pushed into the rock bucket but are not thrown or bounced from the bucket sides.



Set the Apron Height

220037



The Emergency Breakaway Braking System



Accumulators contain high pressure hydraulic fluid which may cause serious injury.

Shut off the tractor, remove the key, disconnect the hydraulic hoses and safely drain accumulators before performing any maintenance on the hydraulic system.

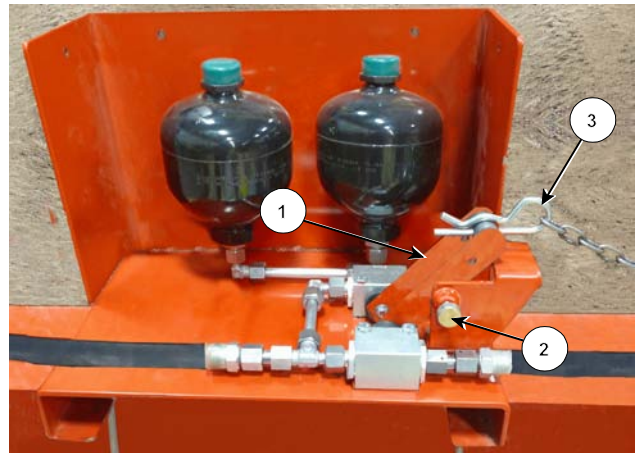
If the rockpicker should disconnect from the tractor while transporting or picking rocks, the chain (3) on the breakaway will pull against the spring loaded valve actuation lever (1).

When the lever passes a certain point a pin (2) will lock the actuator open. This will release the pressure from the accumulators to activate the rockpicker brakes.

The spring pin on the chain will then disconnect from the actuator as the tractor moves away from the rockpicker.

To Reset the Breakaway Braking System

1. Reconnect the rockpicker to the tractor.
2. Reconnect the safety chain to the tractor.
3. Hold the actuation lever (1) and pull the pin (2) from the lever.
4. Slowly allow the springs to move the lever back.
5. Reinstall the spring pin/chain (3) onto the actuation lever.



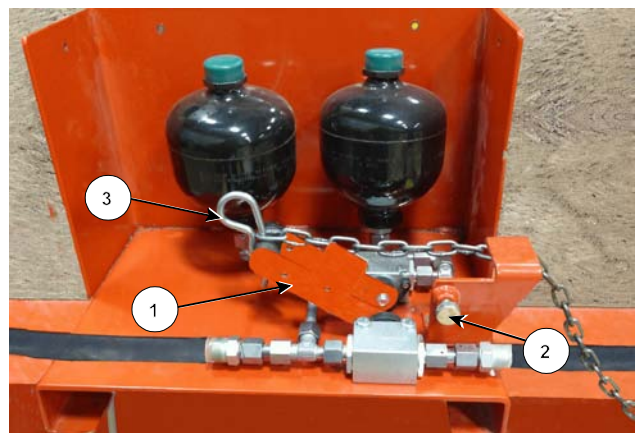
Lever Releases Accumulator Pressure

217215C



Chain Disconnects From Breakaway

217216



Reset Breakaway and Connect Chain

217214C2

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.



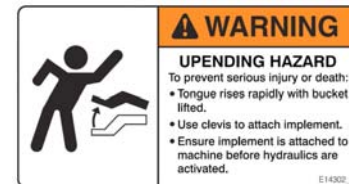
Stand clear when the bucket is being raised or lowered.

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

220038

Removing Rocks Lodged in the Apron



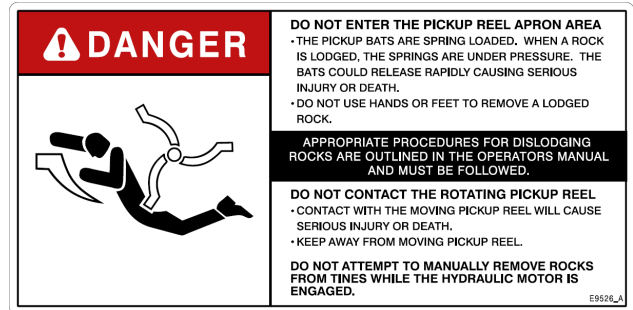
Do not enter the pickup reel apron area!

When rocks are lodged against the reel bat, the springs are under pressure. The bat 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!**

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.



Reverse Reel & Raise Apron to Remove Rock 220039

Rock Removal Approach 2

- **Lockout the Pickup Reel to Prevent All Movement**
- **Remove the Spring Pressure from the Bat Using the Reel Bat Compressor.**

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.



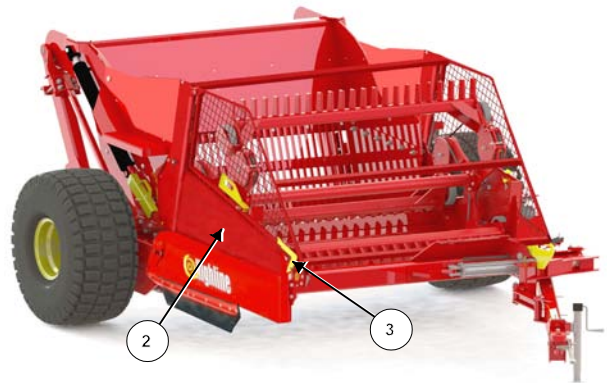
Disconnect Hydraulics

108008

6. Unlock the reel lockout access panel.

- Lift the reel cage release handle (3).
- Lift the reel cage just enough to allow the access panel (2) to be swung outward.

Note: Do not lift the cage all the way at this point. The cage will be fully lifted once the reel lockout is in place.



Unlock the Reel Lockout Access Panel

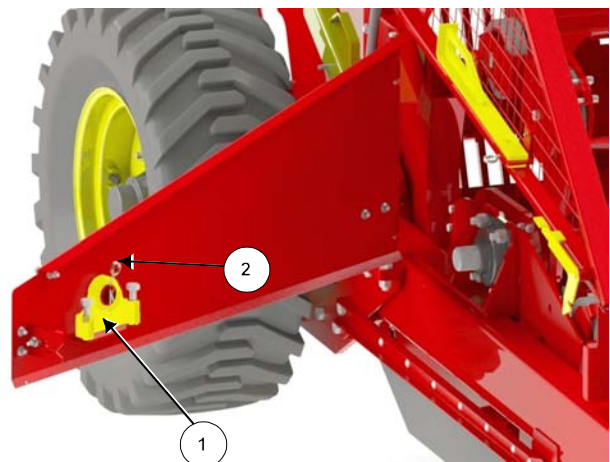
220025C2

- Lift the panel release lever located at the front of the panel (2).

7. Open the reel lockout panel.

8. Remove the reel lockout (1) from the storage position on the panel.

- Remove the clip pin (2) holding the lock.



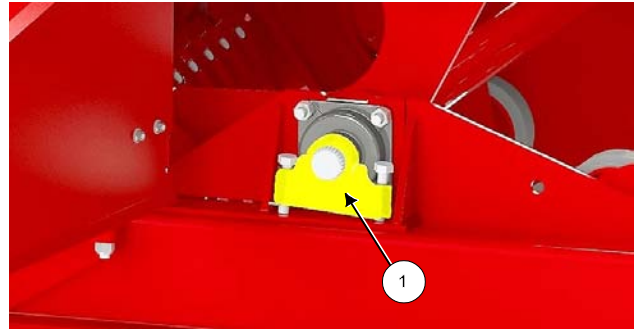
Remove the Reel Lockout from Storage

220031C

Section 4 - Operating the Rockpicker

9. Place the reel lockout (1) onto the reel shaft.

- Loosen the bolts on the lockout to allow for positioning.
- Place the lockout (1) onto the splines of the reel shaft.



Place Reel Lockout Onto Splined Reel Shaft

217004C

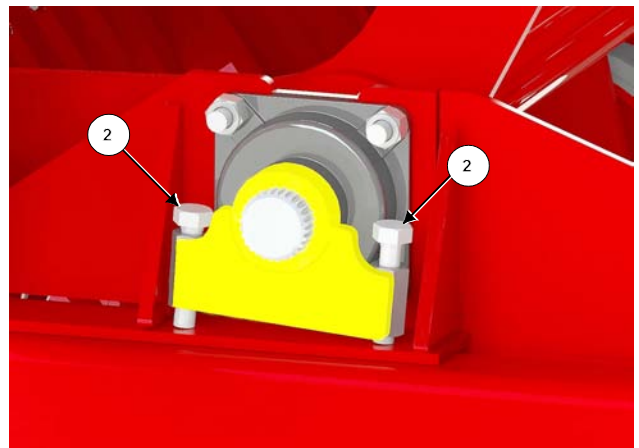
10. Tighten the bolts (2) of the lockout against the rockpicker apron.

- Tighten the bolts so that the reel will not move.



Check that the reel is securely fastened and that there is no movement of the reel.

Removing the lodged rock requires entry into the reel area. Ensure the reel is secure and will not move causing injury when the spring pressure is released.



Tighten the Bolts to Prevent Reel Rotation

217005C

11. Unlock the cage lock and fully lift the reel cage.



Unlock and Lift the Reel Cage

220030

Section 4 - Operating the Rockpicker

12. Remove the reel bat compressor from the storage area on the back of the rock bucket.

- Remove the pin (1) in the upper support.

13. Place the reel bat compressor tool on the center of the lodged bat and on the reel center tube.



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.

- Position the lower clamps (1) of the compressor over the bat with the clamps facing to the front of the machine.
- Place the upper clamps (2) of the compressor over the round center bar with the clamps facing the back of the machine.

14. Slowly tighten the bat compressor tool to remove the bat spring pressure.

15. Use a bar to work the lodged rock from the bat.

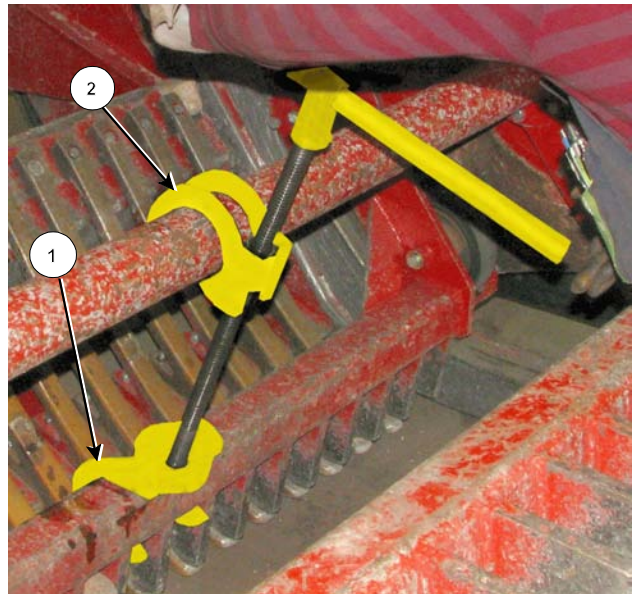
- Continue to tighten the bat compressor tool to release spring pressure as needed.

16. Remove the lodged rock from the apron area.



Compressor Tool in Storage Location

216185-1C



Position the Compressor Tool Clamps

216121C

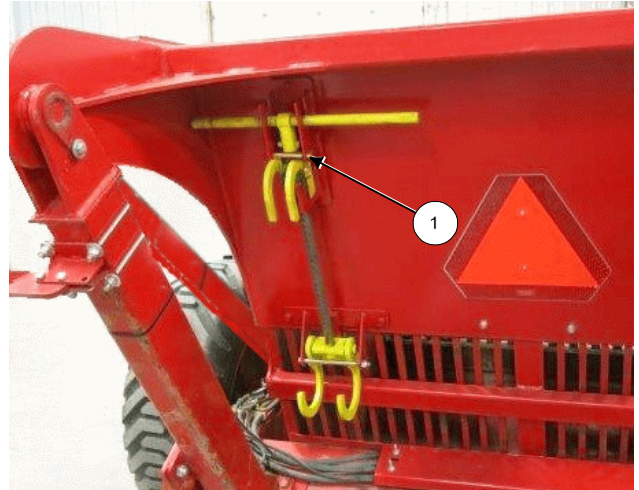


Compressor Tool on Bat

216120

Section 4 - Operating the Rockpicker

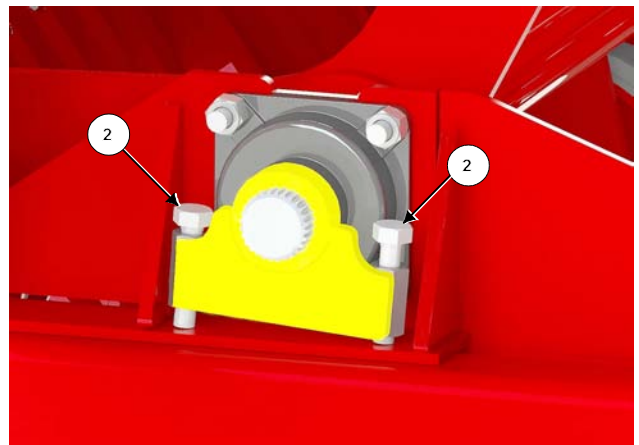
17. Slowly loosen the bat compressor tool to restore the bat spring pressure.
18. Remove the compressor tool from the bat and the center reel rod.
19. Place the compressor tool into the storage location on the back of the bucket.
 - Fasten in place with the pin (1) in the upper support.



Compressor Tool in Storage Location

216185-1C

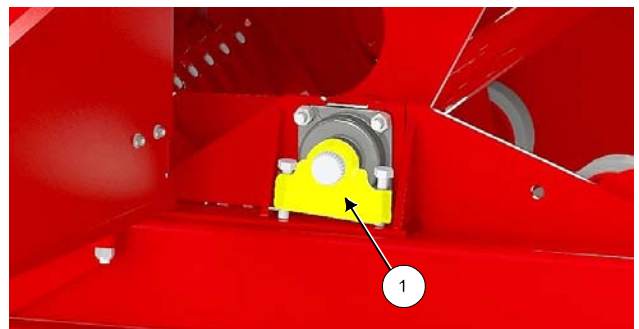
20. Loosen the bolts (2) of the reel lockout from against the rockpicker apron.



Loosen the Bolts of the Reel Lockout

217005C

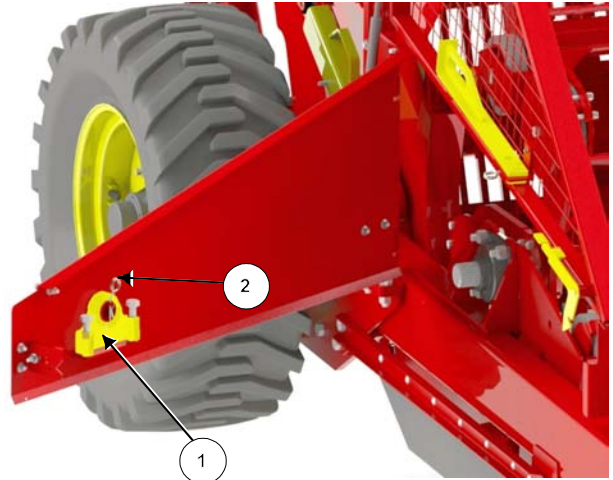
21. Remove the reel lockout (1) from the reel shaft.



Remove Reel Lockout From Splined Reel Shaft^{217004C}

Section 4 - Operating the Rockpicker

22. Place the reel lockout (1) into the storage position on the inside of the access panel.
 - Fasten with the clip pin (2) to hold the lock.



Place the Reel Lockout Into Storage

220031C

23. Close the reel lockout access panel (1) and lock in place.
24. Lower the reel cage (2) and lock in place.



Close Access Panel, Lower Cage

220025C4

25. Reconnect the hydraulic hoses to the tractor.



Reconnect Hydraulics

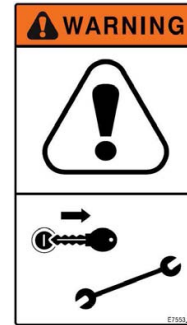
108008

Maintaining the Rockpicker

Note: Replacement parts for the Rockpicker are identified in the NT60E Rockpicker Parts Manual. The Parts information can be viewed at www.highlinemfg.com



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. Engage the parking brake while working on the machine.



Rock Bucket

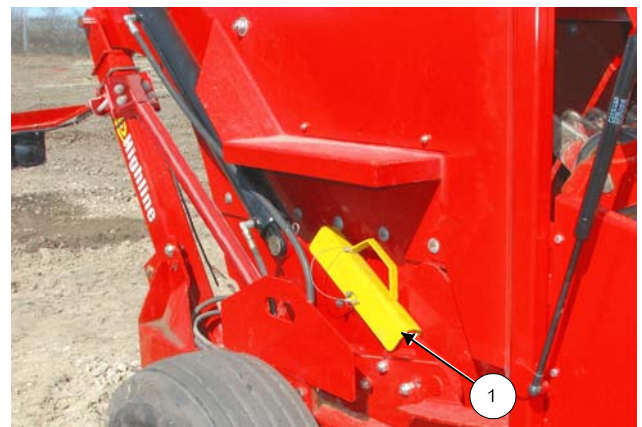


Do not work under a loaded bucket. Empty the bucket before doing maintenance under the bucket.

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.



Bucket Lock in Storage Position

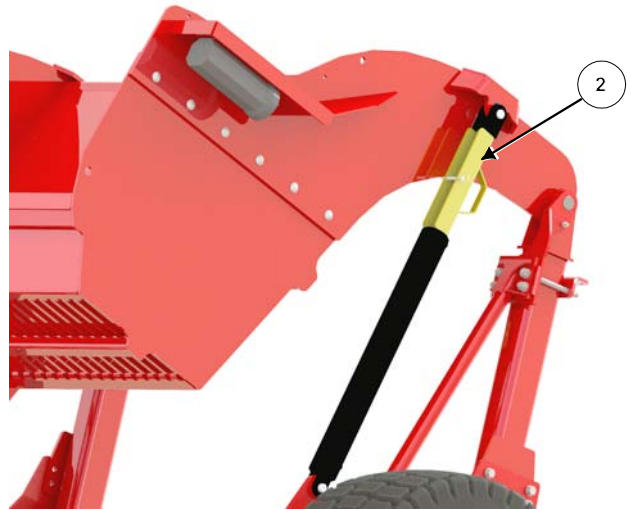
216093-1C

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.

Section 5 - Maintaining the Rockpicker

3. Raise the bucket so the locks will fit onto the cylinder rods.
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.
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

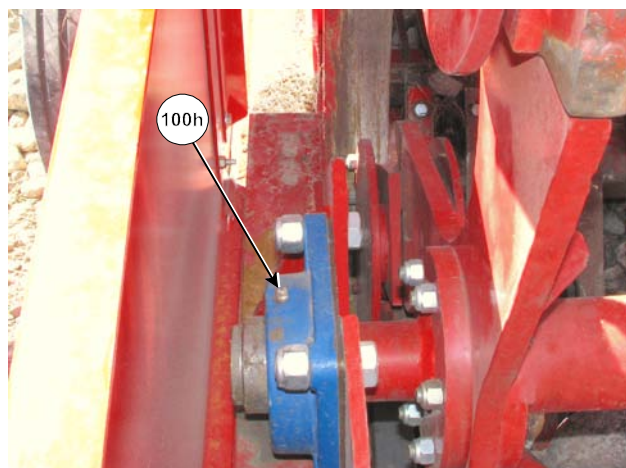
216093-1C

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.

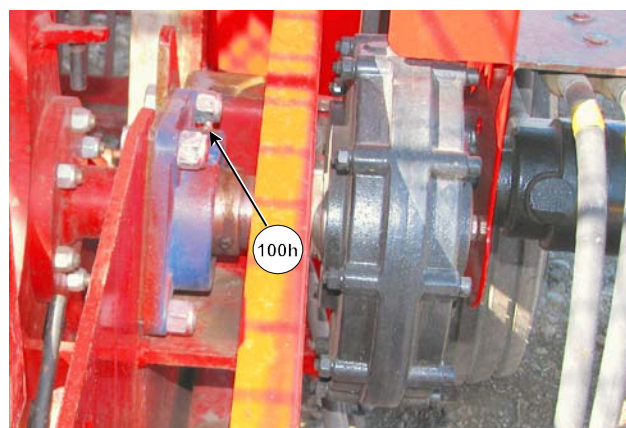
Every 100 Hours

- Lubricate the pickup reel bearings
 - 2 points.



Grease the Reel Bearing - Right Side

216095C



Grease the Reel Bearing - Left Side

216096C

- Lubricate the wheel hubs - 4 points.

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).

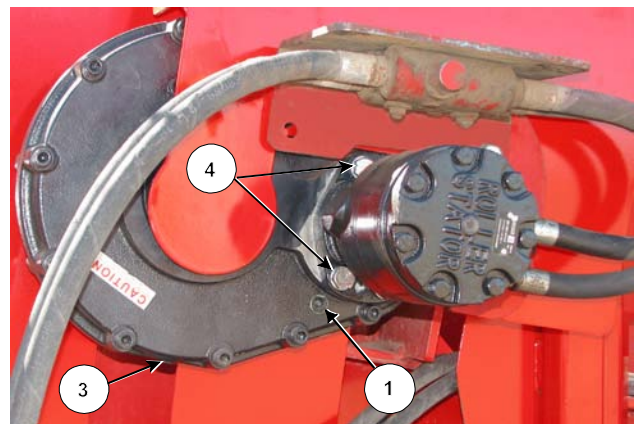
Check the Motor Mount Bolts

Check that all the motor mount bolts (4) are tight and the motor is securely fastened to the gearbox.



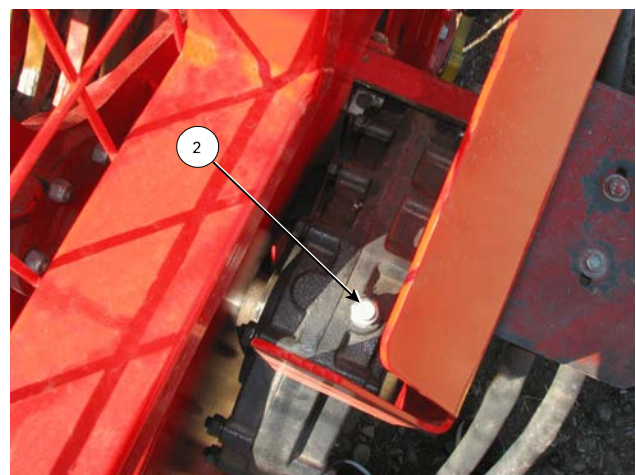
Grease Wheel Hubs

216182C



Check Gearbox Oil & Motor Bolts

216190C



Add Oil Through Top Vent

216191C

Check and Adjust Tire Air Pressure

Maintain tire pressure to avoid possible tire damage.

- Do not inflate tires above the recommended pressure.

Model	Tire Pressure
NT60E	62 psi (427 Kpa)

- Torque the wheel bolts to 200-214 lbs ft (270 -290 Nm) dry.



Check the Tire Pressure

215256

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 transporting or 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.



Tighten Upper and Lower Tine Bolts

216081

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, loose cover

Hydraulic Accumulators

Hydraulic Accumulators are pressure vessels that contain very high pressure compressed nitrogen gas.

Only qualified personnel should perform maintenance on the accumulator and recharging of the pressure using dry nitrogen.



Do not use compressed air or oxygen for the precharge as this may result in an explosion.



Do not weld on the accumulator shell.



Only Qualified Personnel Should Service Accumulators

217214

Changing the Reel Springs



Shut down the tractor and remove the key before repairing, servicing. Engage the parking brake (if equipped) while working on the machine.

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



Removing the Springs

1. Release the cage lock (2) and lift the reel cage.

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

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

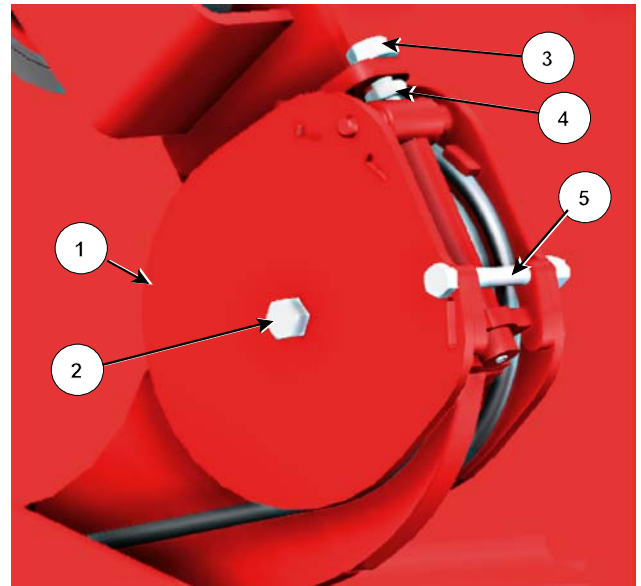


Unlock and Lift Reel Cage

220030C

Section 5 - Maintaining the Rockpicker

2. Remove the bolt (5) that prevents the tension bolt (3) from moving up.
3. Loosen the bolt (2) holding the spring cover plates enough to allow movement of the springs between the plates.
 - Do not remove the bolt at this time.
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.

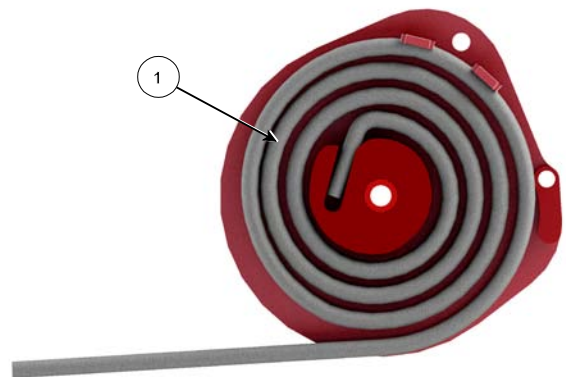


Remove The Springs

222212C

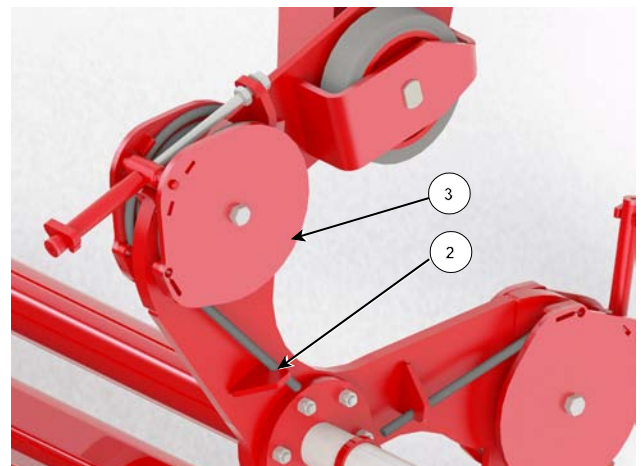
Installing the Springs

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.
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 Placed In Holder and Tabs

217205C

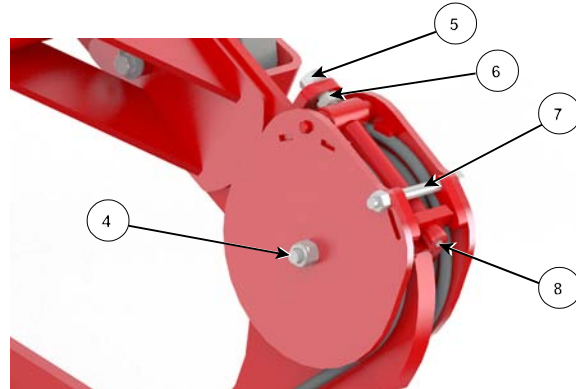


Spring Into Tab On Reel Arm

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

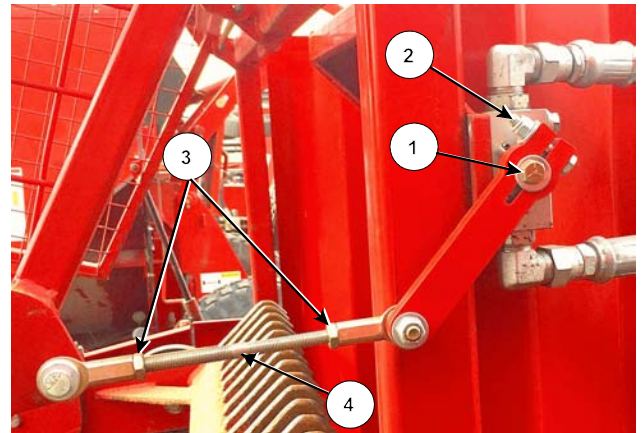
217207C

Adjusting the Reel Hydraulic Lockout Valve

The hydraulic lockout valve is a secondary safety device that cuts off hydraulic flow to the reel motor if the reel cage is lifted. The lockout valve also prevents accidental activation of the motor while in the reel area.

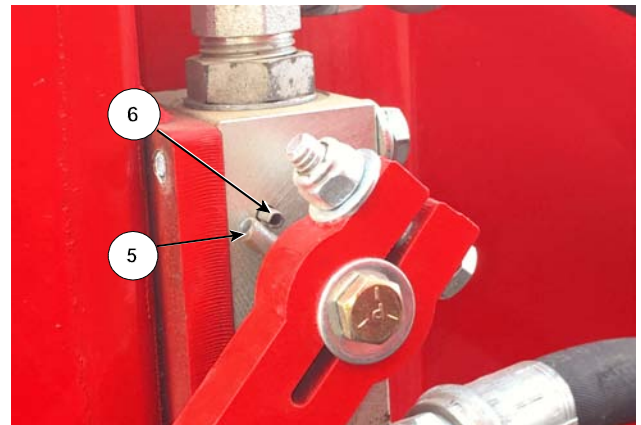
The valve should move between the roll pin stops in the valve body.

1. Ensure the valve stem bolt (1) is tight.
2. Ensure the clamping bolt (2) is tight.
3. Adjust the valve movement:
 - Loosen the locknuts (3) on the adjustment rod (4).
 - Turn the adjustment rod (4).
 - Lift and lower the cage while checking the movement of the valve stem roll pin (5).
 - When the cage is lifted the valve stem pin (5) should rotate near to the upper (6) roll pin stop.
 - Ensure that the valve stem roll pin (5) does not put pressure on the upper roll pin stop (6).
 - When the cage is lowered the valve stem pin (5) should rotate near to the lower (7) roll pin stop.
 - Ensure that the valve stem roll pin (5) does not put pressure on the lower roll pin stop (7).
- Tighten the locknuts (3) on the adjustment rod (4).



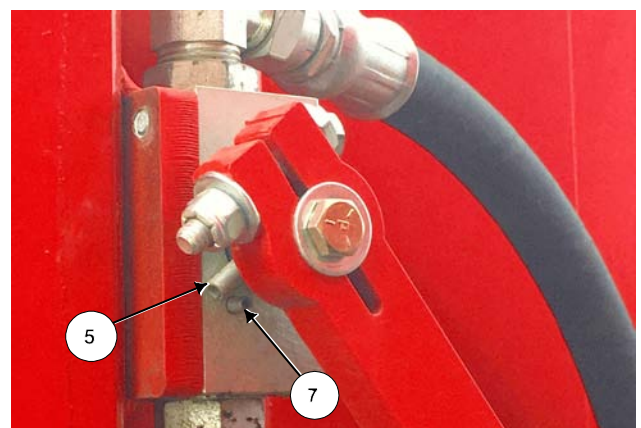
Lockout Valve Adjustment Rod

216204C



Upper Valve Stop When Cage is Lifted

216203C



Lower Valve Stop When Cage Is Lowered

216205C

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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.

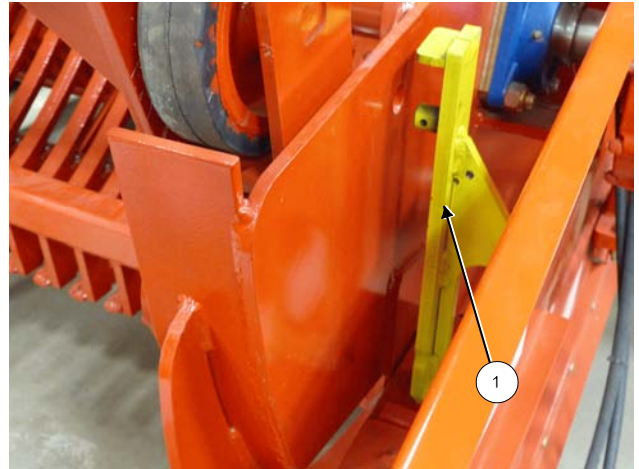
Note: Do not lower the apron or raise the bucket when the apron transport locks are on the apron or severe damage will occur to the machine.

Left Side

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

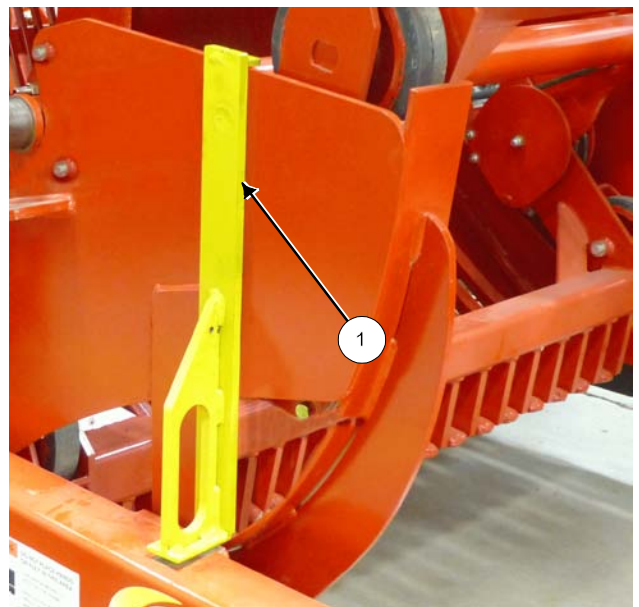
Right Side

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



Remove Left Apron Transport Lock

216226C2

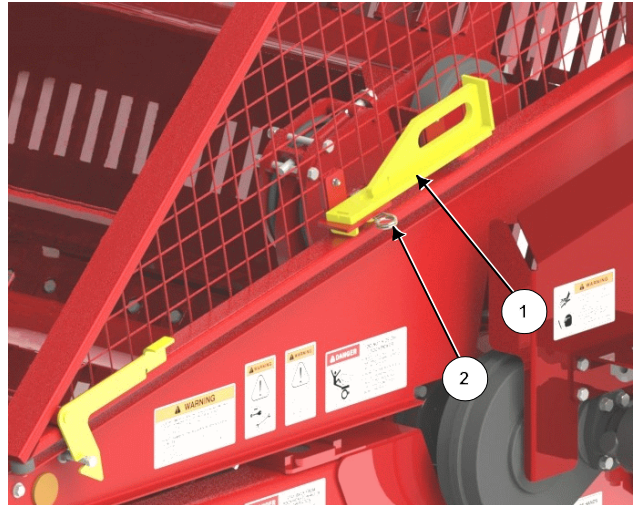


Remove Right Apron Transport Lock

216227C

Section 6 - Storing the Rockpicker

2. Place the transport locks (1) into the storage brackets on the outside of the cage.
 - Fasten in place with the clip pin (2)



Transport Lock in Storage - Left Side

220034C



Transport Lock in Storage - Right Side

220035C

3. 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.



Rock Bucket in Dumping Position

220038

Section 6 - Storing the Rockpicker

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



Clean Out All Debris

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.

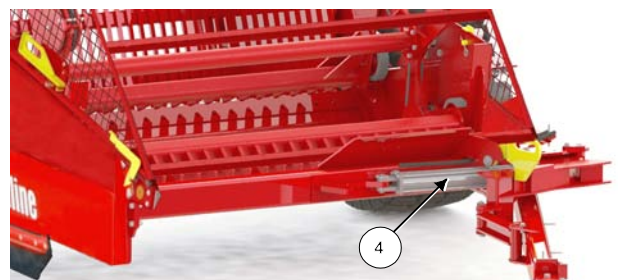
Rocks or debris may wedge between the apron and the frame preventing the apron from lowering.



Remove Rocks from the Frame

216086

6. Lower the bucket.
7. Park the rockpicker on level ground.
8. Move the hitch to the transport position with the hitch cylinder (4) completely retracted.
 - Ensure the hitch lock is lowered and engaged into the hitch.



Hitch In Transport Position

220028C

Section 6 - Storing the Rockpicker

9. Raise the apron until the bucket lift cylinders are completely retracted.

10. Unlock and lift the reel cage.

11. Install the apron transport locks.

The locks prevent the apron from lowering by limiting the movement to resting on the rockpicker frame.

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

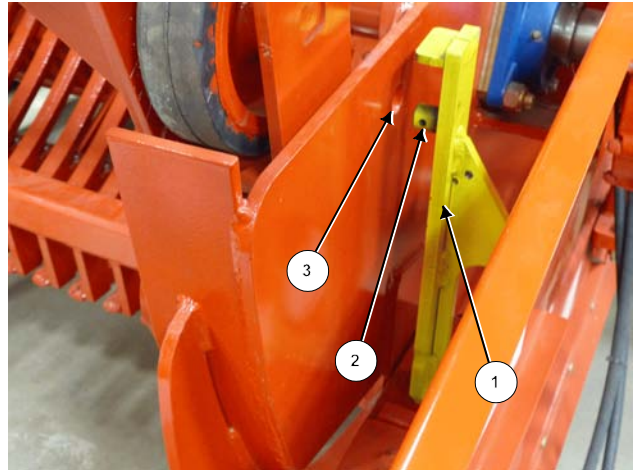
- Place the pin (2) of the lock into the hole of the apron (3).

- Fasten with the clip pin.

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.

- Fasten with the clip pin.



Install Apron Lock - Left Side

216226C



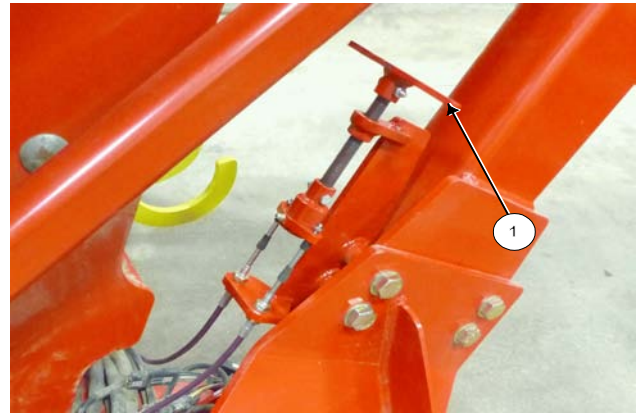
Install Apron Lock - Right Side
(Reel Access Panel Shown Open)

216227C

Section 6 - Storing the Rockpicker

13. Engage the parking brake actuator located on the left rear upright.

- Rotate the handle (1) to tighten the brake cables.

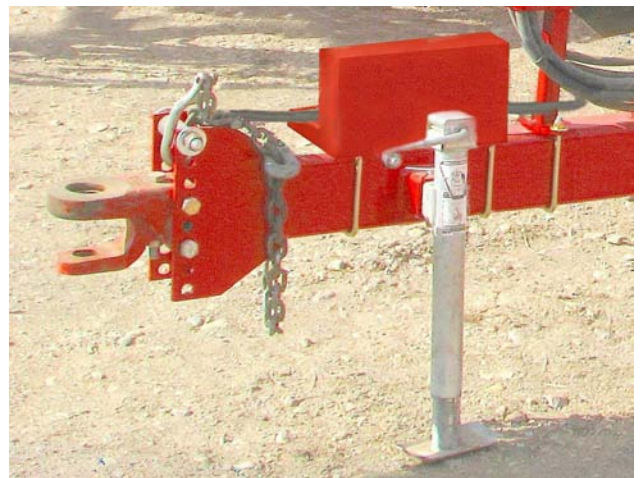


Engage the Parking Brake

217213C

14. 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.



Lift the Hitch with the Jack

216224-1

15. Disconnect the hydraulic hoses from the tractor.

- Relieve the pressure on the hydraulic hoses and disconnect them.

16. Disconnect the electrical connection.



Disconnect Hydraulic Hoses & Electrical

108008

Section 6 - Storing the Rockpicker

17. Disconnect the rockpicker brake line (1) to the tractor.
18. Disconnect the emergency break away chain (2) to the tractor.



Disconnect Breakaway from the Tractor
(Guard Removed for Clarity)

217214C

19. Secure the hydraulic hoses, brake line and electrical connector to the holder on the hitch to keep them off the ground and clean.
20. Disconnect the hitch from the tractor.
 - Disconnect the safety chain.
 - Remove the hitch pin.



Disconnect Safety Chain and Hitch

220040

Section 6 - Storing the Rockpicker

21. Lubricate the right and left reel bearings.
- See Section 5 for the greasing procedures.



Lubricate Both Reel Bearings (Right Shown)

216095

22. Lower and lock the reel cage.



Lower and Lock the Reel Cage

220025

23. 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.



Change Gearbox Oil

216190

24. Check the rockpicker for worn and damaged parts. Replace as needed.
25. Touch-up the paint to prevent rusting.

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Section 7 - Troubleshooting

Troubleshooting

Note: Replacement parts for the Rockpicker are identified in the NT60E Rockpicker Parts Manual. The Parts Manual can be viewed at www.highlinemfg.com

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")
	Parking Brake	Release the parking brake
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 is engaged into position into the hitch

Rock Reel

Symptom	Problem	Solution
Reel not turning	Reel Lockout	Remove the reel lockout from the shaft of the reel
	Hydraulic motor	Check hydraulic connections and lines
	Reel Cage Lifted	When the cage is lifted it closes a valve to prevent oil getting to the reel motor. Close the cage

Section 7 - Troubleshooting

Symptom	Problem	Solution
	Reel Motor Safety Valve Closed	A valve connected to the cage prevents oil getting to the reel motor if the cage is lifted. Check that this valve is open when reel cage is closed.
	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
	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 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

Section 7 - Troubleshooting

Apron

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

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.
	Rocks on Frame	Rocks on frame preventing the apron from fully lowering. Remove rocks and lower the apron
Bucket does not fully lower	Bucket lift locks	Remove both bucket lift locks from the lift cylinders
	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

Brakes

Symptom	Problem	Solution
Brakes will not operate	Brake line to tractor	Ensure the brake line to the tractor is connected
	Tractor brake system	Check that the brake system of the tractor is operational
	Brake line on the rockpicker	Check the rockpicker brake lines to the brake cylinders
	Brake cylinder	Check that the brake cylinder has good hydraulic connections. Check that the cylinder is activated when the brake pedal is depressed
Brakes will not release	Brake spring	Check that the spring on the brakes pulls the brake cylinder to release the brakes
	Parking brake	Release the parking brake by turning the parking brake actuator lever to release the cables pulling on the brakes
	Breakaway system	Ensure the breakaway system lever is in the open position so that the pressure from the accumulators is not activating the brakes

Section 8 - Specifications

Specifications

	NT60E
Weight - Empty	3752 kg
Tongue Weight	535 kg
Length - Transport	6228 mm
Length Working Position 1 (Tractor Duals)	5842 mm
Length Working Position 2 (Tractor Singles)	6102 mm
Width - Picking	1524 mm
Width Transport	2972 mm
Width Working Position 1 (Tractor Duals)	4188 mm
Width Working Position 2 (Tractor Singles)	3727 mm
Height	1868 mm
Dumping Height	2134 mm
Bucket Capacity	1.97 cubic meters
Tires	400/60-22.5
Tire Pressure	427 kPa
Power Required	52 - 101 kW
Hydraulic Outlets	3
Pressure	17237 kPa
Flow Required	68 l/min
Minimum Rock Diameter Pickup	51 mm
Maximum Rock Diameter Pickup	610 mm

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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.