Bale Pro®

Complete Feed Ration

CFR651

Operators Manual

Highline
MANUFACTURING LTD.

E12033V3

BalePro®
Complete Feed Ration 651
Bale Processor

Operator's Manual

From Serial No: CFR6510013 To Serial No: CFR6510518

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E12033V3

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Highline Team Message

Congratulations on your purchase of the Complete Feed Ration 651 *manufactured by Highline Manufacturing Ltd.*

This Operator's Manual has been prepared to provide information necessary for the safe and efficient operation of your Complete Feed Ration 651 (CFR 651). 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 Ltd. thanks and congratulates you for selecting a Complete Feed Ration 651 as your machine of choice.

Highline Manufacturing Ltd.

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GENERAL DESCRIPTION OF THE COMPLETE FEED RATION 651 (CFR 651)

The Complete Feed Ration 651 (CFR 651) is a machine to process round bales of hay or other animal feed materials. When the CFR 651 is engaged, it uses power from the tractor PTO to rotate a flail drum. The flails strike the round bale and process it into feed size materials or animal bedding sized materials. The bale is rotated against the flails by a feeder chain.

The Complete Feed Ration (CFR 651) has forks on the rear of the machine that allow the CFR 651 to pick up and self-load a round bale into the processing tub. An additional bale may be carried on the forks while the bale in the tub is being processed.

The amount of processing and chopping of material in the processing tub is adjusted by setting the height of the guard rods. The height of the guard rods determine the level of aggression of the flails acting on the round bale. The round bale is rotated by a feeder chain while the flail drum turns to process the material. The rotation of the bale assists in the bale being processed in an even manner.

The processed material is discharged from the CFR 651 on the right side of the machine. The height and distance of discharge is adjusted by moving the lower discharge door. A top discharge deflector door allows the processed material to be laid down into a feed bunk, windrow or spread to different distances.

The Complete Feed Ration 651 has the option of adding a Feed Chopper for additional processing of the feed materials. There is also the option of adding a Grain Tank to add feed grains in a measured amount to the feed mix to achieve the feed ration needed for the animals.

The operator of the CFR 651 is located in the tractor cab to control the speed of driving and the speed of operation of the CFR 651.

INTENDED USE OF THE COMPLETE FEED RATION 651 (CFR 651)

- The CFR 651 is designed to process animal feed and bedding materials from a round bale.
- The CFR 651 is intended for use in farming applications.
- The CFR 651 is intended for off road use only.
- The CFR 651 is intended for use in locations away from people who could be harmed by the discharged materials.

Any uses of the CFR 651 other than the above stated Intended Uses shall be considered misuse of the CFR 651. This misuse shall include (but not limited to):

- Using the CFR 651 in non-farming applications
- Using the CFR 651 on public roads
- Using the CFR 651 around people or in public places
- Processing materials other than animal feed materials

Always use the CFR 651 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 CFR 651 operates safely and efficiently.

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SERIAL NUMBER

Your serial number is found on the serial number plate attached to the tub wall of the Complete Feed Ration 651.

Serial Plate Location 215120C

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 Ltd. follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining this equipment 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 season start-up.

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 Complete Feed Ration 651 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 dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of the machine.

3. The CFR 651 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 CONTACT ROTATING DRIVELINE

Contact with rotating driveline will cause serious injury or death.
Keep all driveline guards in place.
Securely attach drivelines at both ends.
Check that the driveline guards turn freely on the driveline.

DO NOT OPERATE WITH SHIELDS MISSING

Stop engine and ensure the PTO driveline is stopped before working on driveline

DO NOT REMOVE SIDE PANELS WHILE FLAIL DRUM IS ROTATING

Contact with rotating parts can cause serious injury or death.

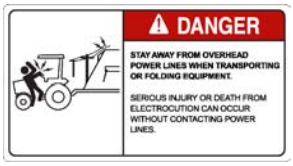
Before removing the side panels:
- Turn off the tractor and remove key.
- Wait for all rotating parts to stop.

Ensure the side panels are in place and secured during operation.

DO NOT ENTER TUB WHILE PARTS ARE ROTATING
- With a bale in the tub
- Without a bale in the tub

Before entering the tub
- Turn off the tractor and remove the key.
- Wait for rotating parts to stop

The bale is unstable and may cause entrapment.
Contact with the moving feed mechanism or rotating flail drum will cause serious injury or death.



STAY AWAY FROM OVERHEAD POWER LINES

Stay away from overhead power lines when transporting equipment.

Serious injury or death from electrocution can occur without contacting power lines.

STAY BACK FROM AN OPERATING MACHINE WHICH CAN DISCHARGE OBJECTS SEVERAL FEET

Stay clear from discharge side when PTO is engaged.

Thrown material or objects leaving the discharge area can cause serious injury or death.

Do not operate within 100 ft (30m) of any person.
Keep all shields and guards in place.

ENSURE SLOW MOVING VEHICLE SIGN IS IN PLACE

Ensure the Slow Moving Vehicle sign is in place, clean and easily visible.

Ensure the reflectors are in place, clean and easily visible.

DO NOT OPERATE WITH SHIELDS MISSING

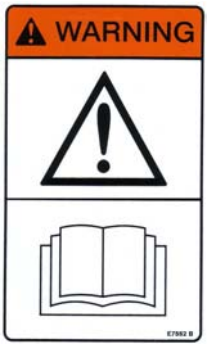
Contact with the moving belt/sheaves or moving chain/sprockets may cause serious injury or death.

Keep shields fastened in place.
Keep away from moving parts.
Do not stand or climb on the machine when operating.

DO NOT RIDE ON MACHINE

Falling from the moving machine can cause serious injury or death.
Falling from the operating machine can cause being entangled under the machine or being injured by the machine.

READ, UNDERSTAND, AND FOLLOW SAFETY INSTRUCTIONS

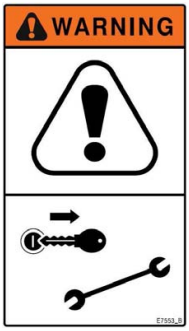


Read, understand and follow all instructions and safety messages included in this manual and on decals attached to the machine. These instructions and safety messages contain important information.

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



SHUT DOWN THE TRACTOR BEFORE DISMOUNTING TRACTOR

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. Leave the hydraulics in the “float” position.

INSTALL CYLINDER LOCK BEFORE GOING UNDER RAISED BALE FORKS

Install and secure the cylinder lock before going under raised bale forks.

Install and secure cylinder lock before using the twine cutter.

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.

IMPLEMENT IS DESIGNED FOR OFF ROAD USE ONLY.

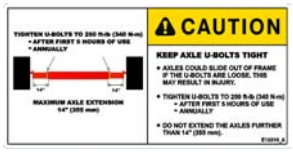
Do not transport with bales in the processor tub.
Do not transport with a bale loaded on the forks.

DO NOT EXCEED PTO SPEED

Do not operate at excess speeds or damage to the machine may result.

DO NOT EXCEED 80° TURNS IN OPERATION

Do not operate the Constant Velocity (CV) driveline at greater than 80° to prevent damage to the driveline.



KEEP AXLE U-BOLTS TIGHT

axles could slide out of the frame if the u-bolts are loose. This may result in injury/

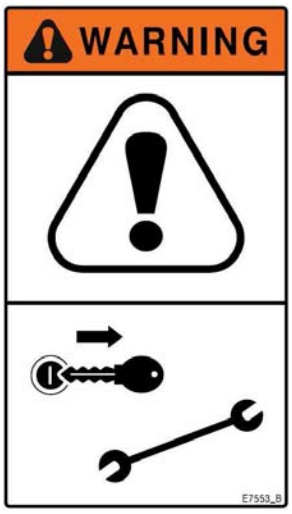
Tighten u-bolts after first 5 hours of use.
Tighten u-bolts annually.

SHUT DOWN TRACTOR BEFORE USING TWINE CUTTER

Use the shutdown procedure to ensure no movement of the flail drum will occur while cutting twine or netwrap.

LOCK FORKS AND FLAIL DRUM BEFORE USING TWINE CUTTER

Lock forks in the upright position before going under the raised forks.
Lock the flail drum to ensure no movement of the flail drum will occur while cutting twine or netwrap.

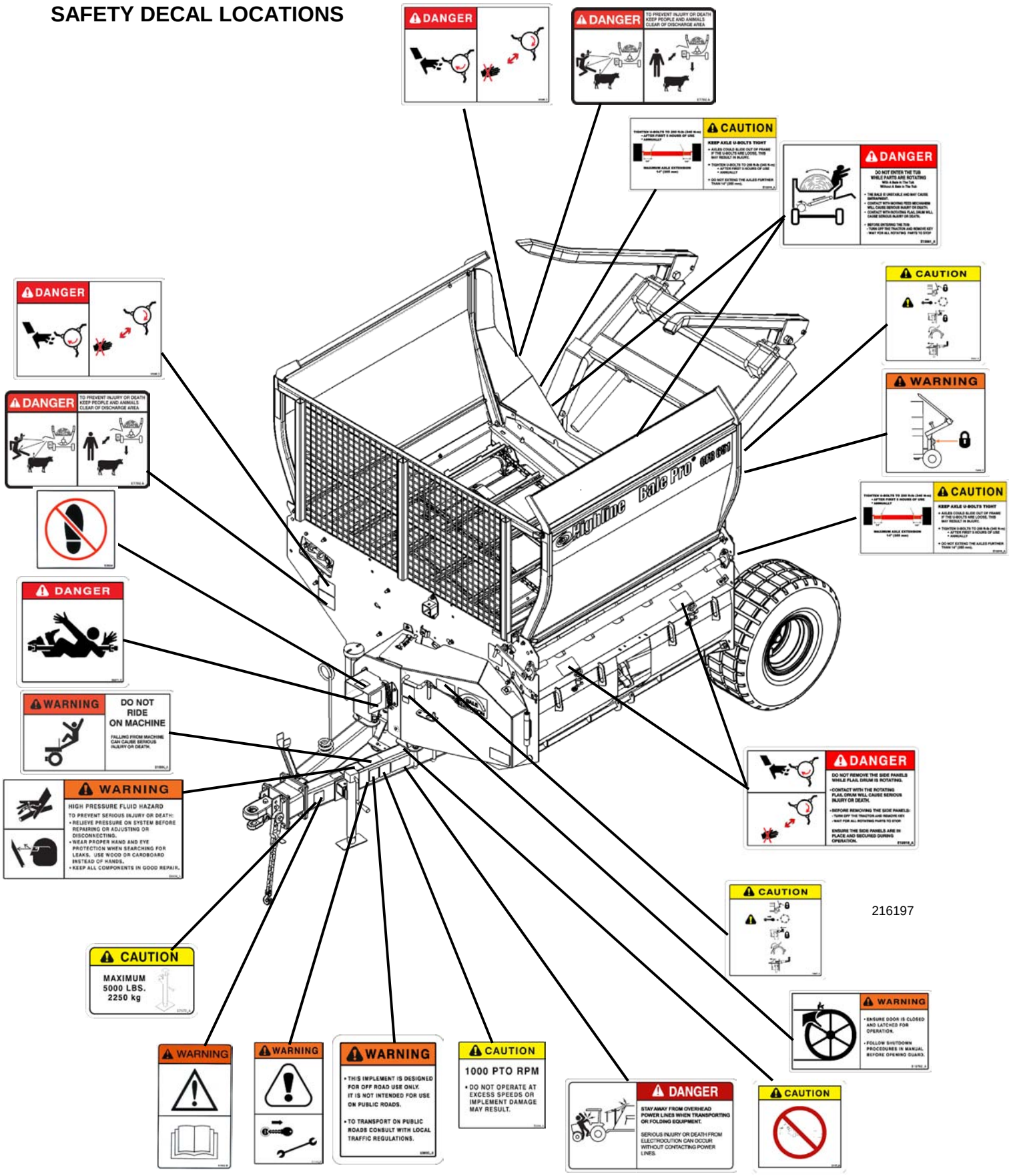


SHUTDOWN PROCEDURE

For your safety and the safety of others, this shutdown procedure mzust be followed before dismounting from the tractor for inspecting, repairing, servicing, cleaning, or lubricating the machine.

Step 1: Reduce the engine speed to idle.
Step 2: Disengage tractor power takeoff.
Step 3: Set tractor park brake.
Step 4: Lower bale loader forks to the ground.
Step 5: Shut off tractor engine and remove key.
Step 6: Cycle tractor controls to relieve any residual circuit pressure.
Step 7: Wait for drum to stop turning.

SAFETY DECAL LOCATIONS



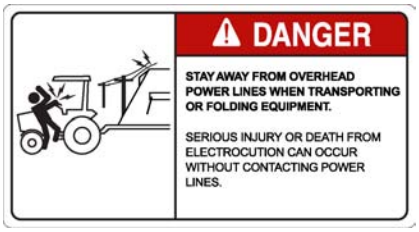
2.0 TRANSPORTING THE CFR 651

Only tow the CFR 651 behind a properly sized and equipped tractor which exceeds the loaded weight of the CFR 651 by 50%. Do not tow behind a truck or other type of vehicle.

The CFR 651 is designed for off road use only.

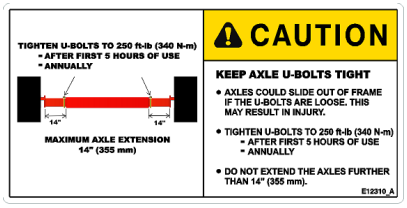
Do not transport on public roads with bales in the processor tub.
Do not transport on public roads with a bale loaded on the forks.
Check with local traffic regulations to transport on public roads.

Stay away from overhead power lines when transporting equipment. Electrocution can occur without contacting power lines.



Do not allow any person to ride on the tractor or CFR 651. Falling off can result in serious injury or death.

Keep the Axle U-Bolts Tight. Injury could result if axles come out.



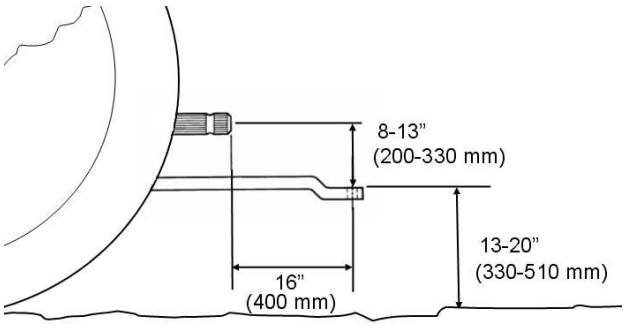
1. Tractor Requirements
   - Roll Over Protection System (ROPS)
   - Working seatbelts
   - 1 3/8" 21 spline PTO
   - PTO requirement
     - refer to the "Specifications" Section for the PTO requirements.
   - 3 Selective Control Valves (SCV)
     - An optional solenoid valve is available for tractors with 2 SCV.

2. Ensure the correct PTO speed.
   - Ensure that the tractor PTO speed matches the CFR 651's gearbox speed of 1000 rpm.
   - Do not attempt to operate the CFR 651 at a different PTO speed.

Note: Do not use PTO adapters. PTO adapters will cause a driveline failure and possible tractor damage. Your CFR 651 warranty will also be invalid.

3. Adjust the tractor drawbar length.

   - Set the drawbar length to 16" (406 mm) for a 1 3/8" 21 spline PTO.
   - This length is measured from the tip of the PTO shaft end to the center of the drawbar hole. (Refer to your tractor's operator manual for drawbar adjustment procedures.)



Tractor Drawbar Adjustment PTO Dimensions

Note: To prevent damage to the tractor drawbar, avoid traveling at high speeds and over rough terrain.

4. Lift the hitch.

   - Lift the Hitch with the jack (1).
     - The hitch is heavy. Do not attempt to lift it without using the jack.

Lift Hitch with the Jack 213174C

5. Connect the hitch to the tractor clevis drawbar.

   - Use a 1" (25 mm) pin.
   - Secure with a hitch pin clip.

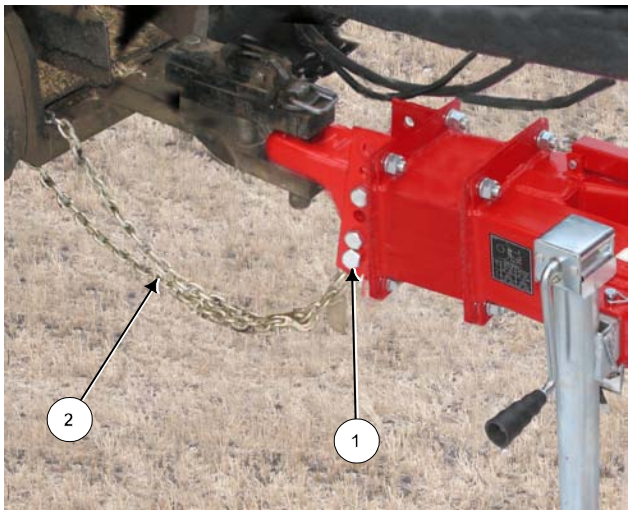
6. Connect the safety chain (if this option is on the machine).

   - Ensure the safety chain rating is equal or greater than the gross weight of the loaded CFR 651.

   - Route the safety chain around the lower safety chain bolt (1).

   - Attach the chain to a secure location on the tractor (2).

   - Fasten the chain hook with the hook lock.



Connect Hitch & Safety Chain to Tractor 213175C

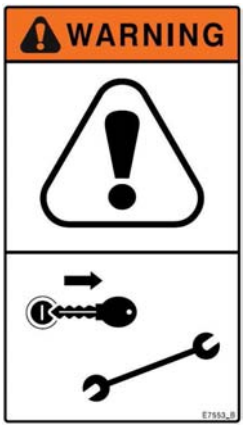
7. Route the hydraulic hoses and wiring harness through the hose support arm.


Hoses and Electrical in Support Arm 211217

8. Attach driveline to PTO.

Note: Use the Category 6 drive line with the Feed Chopper Option.

Shut off the tractor engine before attaching PTO driveline. Entanglement in the rotating driveline can cause serious injury or death.



The CFR 651 shall not be operated without the driveline shields in place.

- Shut off the tractor engine and remove the key.
- Check that the driveline telescopes easily and that the shields are in good condition and rotate freely.
- Lift the tractor PTO shield.
- Support the driveline, pull back on the yoke collar, align the splines by rotating the CFR 651 driveline and push the driveline into the tractor PTO shaft until the collar snaps into place.
- Push and pull the yoke several times to ensure the driveline is locked. Do not pull on the collar as this will release the lock.
- Lower the tractor & hitch PTO shields into place.
- Fold down the PTO support holder (1).
  - Failure to fold down the support may result in damage to the driveline.

Connect Driveline to PTO 213176C

9. Attach hydraulics.

    - Clean the end of the hoses and the connection.
    - Firmly push the hoses into the tractor receptacle according to user preference.
    - Route the hoses so they do not interfere with moving parts.

Attach Hydraulics 201199

10. Connect the lights.

    - Connect the light plug into the appropriate tractor receptacle.

    - Ensure the light cable does not interfere with or contact moving parts.

11. Place the hitch jack in the storage location on the front tub wall.

Hitch Jack in Storage Location 213014

12. Adjust wheel stance settings.

- Increase the wheel stance to maintain stability when working on hilly terrain or rough ground.

Note: Ensure the bale processing tub is empty before adjusting wheel stance.

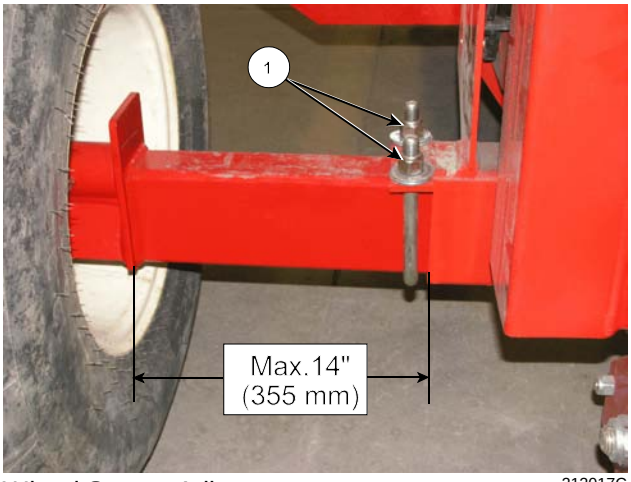
- Jack up the main axle under the cylinder mount and support.

- Loosen the u-bolts (1) that hold the axle tubes in place.

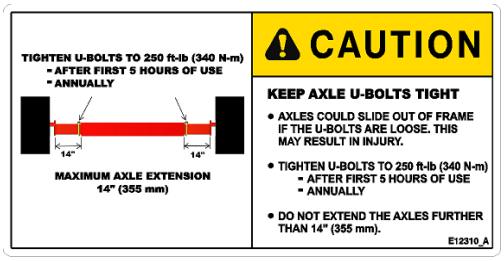
- Slide the axle to achieve the desired wheel stance setting.

Note: Maximum axle extension is 14" (355 mm). Axles may bend if extended beyond this amount.

- Tighten the u-bolts (1) to 250 lbf (339 Nm).



Wheel Stance Adjustment 212017C



13. Check the condition of the tires.

- Ensure that the lug nuts have the cone side of the lug nut against the wheel rim.
- Torque the lug nuts to 121 lbf (164 Nm).

- Fill the tires to 24 psi (165 kPa).


Check the Tires 215126

14. Raise the bale loading forks to the highest position.

15. Install the cylinder lock (1) on the cylinder of the bale loading forks.

    - Fasten the cylinder lock in place with the pin (2).

Fork Cylinder Resting on Lock 216193C

16. Raise the discharge deflector door to the transport position.

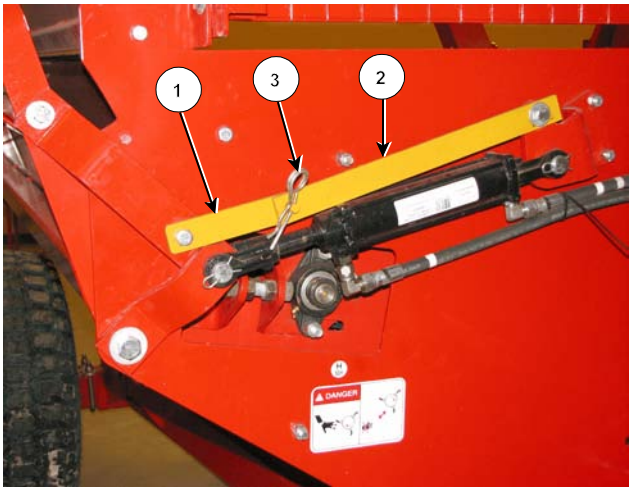
    - The discharge deflector door is operated by a hydraulic cylinder.

17. Install the discharge deflector door transport lock.

    - Rotate the short link (1) toward the cylinder.

    - Join the flats by inserting the pin of the short flat into the longer flat (2).

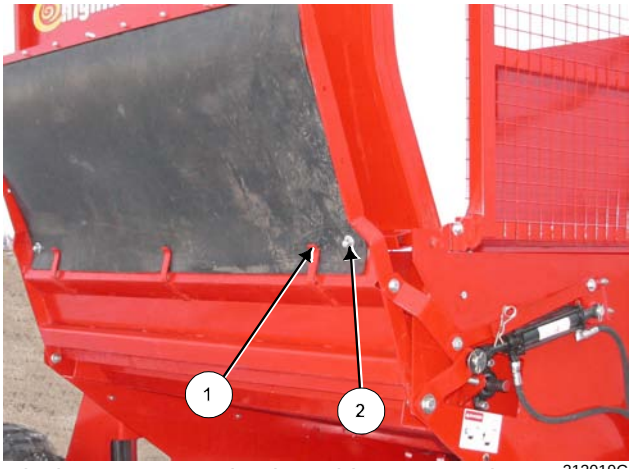
    - Install the clip pin (3).



Deflector Door Lock 212040C

18. Secure the rubber panel on door.

    - Place the rubber panel into the tabs (1) and fasten with a washer and nut (2) to prevent the wind from blowing the rubber panel from the tabs during transport.



Discharge Door Raised - Rubber Secured 212019C

19. Ensure that the Slow Moving Vehicle (SMV) sign is clean and visible.

Ensure SMV is Visible 216192

20. Transport

Do not transport on public roads with bales in the processor tub.

Do not transport on public roads with a bale loaded on the forks.

Do not transport on public roads with the forks in the lowered position.

21. Transport Speed
- Do not exceed 25 mph (40 km/h).

3.0 PREPARING THE CFR 651

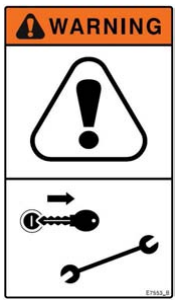
Check these items each time before using the machine.

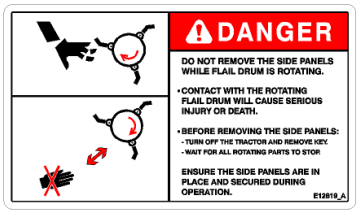
1. Park the tractor and CFR 651 on level ground.
   - Engage the tractor parking brake and shut down the tractor.

2. Ensure that all decals are clean and in place.

3. Ensure that the Slow Moving Vehicle (SMV) sign is clean and visible.

Park on Level Ground 216194





Shut down the tractor completely and set the parking brake.

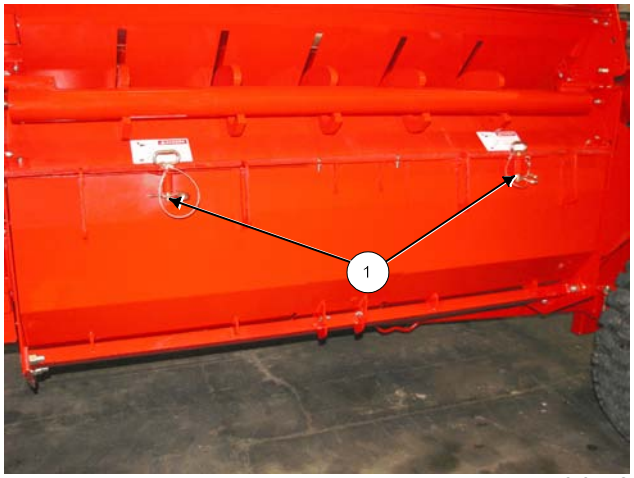
Disconnect the PTO from the tractor before doing any work near the flail drum.

Do not place hands in the CFR 651 when it is rotating. Contact with exposed rotating flails will cause serious injury or death.

4. Check the condition of the flail drum.

   - Remove the flail drum access panels.

     - Remove the clip pins.
     - Remove the panel pins (1). Lift the panels out.



Remove Flail Drum Access Panels 213177C

5. Clean debris and material buildup from the flail drum area and the processor tub.

   - Do not use the twine cutter tool to dislodge jammed material.

   - Check the condition of the drum.

Clean Debris and Check Drum and Flails 212043

6. Check the condition of the flails.

   Spin the drum by hand to check all the flails.
   - Inspect the flails daily.
   - Check that the flails swing freely.
   - Check if they are broken or worn to the point that they would not process the material properly.
   - See Section 5 - "Maintaining the CFR 651" for flail replacement information.
     -- Replace the flails in pairs.
     -- Replace on opposite sides of the drum to maintain drum balance.
   - Check the condition of the flail mounting bolts. Ensure the mounting bolts are tight.

7. Remove twine, netwrap or other materials that is around the flail drum or drum bearings.

   Note: Remove the netwrap or twine from the flail drum every 25 bales.

   Premature bearing failure can occur if twine is allowed to build up on the flail drum.

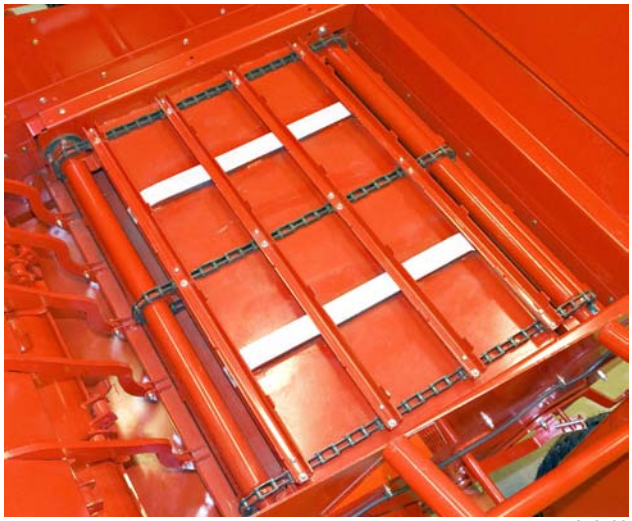
   See "Netwrap or Twine Removal Procedure" at the end of this Section.

Remove Netwrap & Twine 212044

8. Check the condition of the feeder chain.

   - Remove any debris in the tub area that would interfere with the operation of the feeder chain.
   - Remove any twine or netwrap caught in the feeder chain bars.
   - Remove any twine or netwrap caught in the chain.

   - Check that the bars are attached to the chains.
   - Operate the feeder chain hydraulic motor to ensure the chain/bars rotate freely.

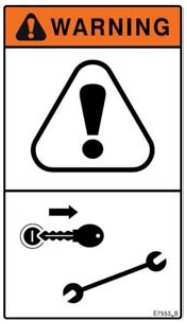


Check Condition of Feeder Chain 216100

9. Check the tension of the feeder chain.

Shut down the tractor completely and set the parking brake.

Disconnect the PTO from the tractor before doing any work near the flail drum.



   - Stand in the tub and hold the center of one of the feeder bars.

   - Lift the bar.
     - The bottom of the bar should be 1" from the plastic slider.

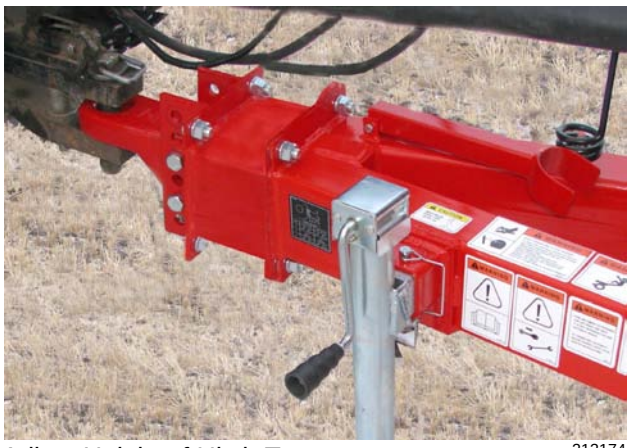
   - See Section 5 -“Adjust The Feeder Chain Tension” for adjustment information.

Check Tension of the Feeder Chain 212054

10. Adjust the height of the hitch tongue.

Note: Do this procedure on level ground.

- Level the frame of the CFR 651 to ensure the bale forks can be lowered to load a bale.
- Adjust the hitch tongue height to connect with the tractor drawbar while keeping the frame level .
- Fasten the tongue in place and torque the bolts to 210 ft-lbs (285 Nm).

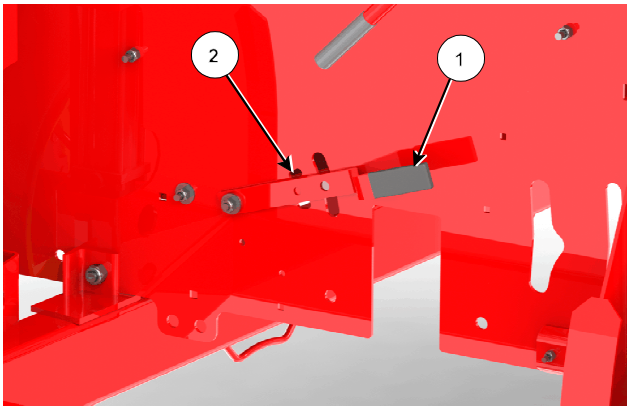


Adjust Height of Hitch Tongue 213174

11. Set the level of the lower discharge door. (No Feed Chopper Present)

- The lower discharge door adjustment handle (1) is located on the rear tub wall.
- There are 3 door positions:
  - The lowest position is often used for wet material or for a shorter throw distance.
  - The middle position is often used for average material or medium throw distance.
  - The highest position is often used for dry material, longer throw and also for bunk feeding.
- Snap the handle into a slot (2).

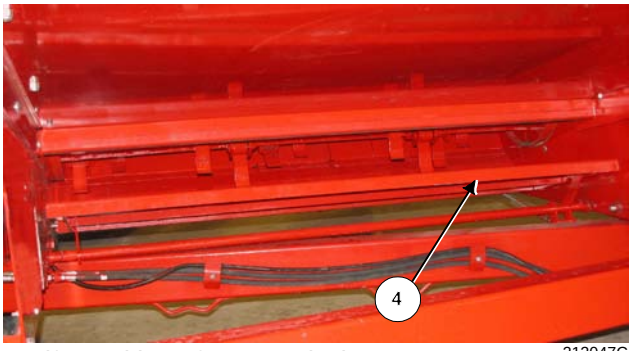
Note: When a Feed Chopper is present, there are other settings that must be adjusted. Refer to the Feed Chopper Operator's Manual for these adjustments.



Lower Discharge Door 213182C

12. Verify the position of the lower discharge door (4).

    - Look under the tub at the discharge area to verify the position of the lower discharge door (4).



Verify Position of Lower Discharge Door 212047C

13. Remove any material that has built up around the feeder chain bearings.

    - These are accessed from the tub sidewalls.

    - Remove material from the upper feeder chain bearing.


Remove Material - Upper Chain Bearing 212016

    - Remove material from around the lower feeder chain bearing.

    - Remove material from the channel between the upper and lower feeder chain bearings.


Remove Material - Lower Chain Bearing 212015

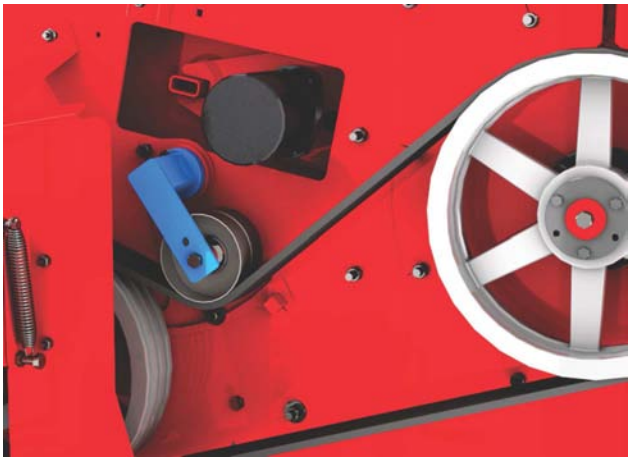
14. Check the condition and tension of the flail drum drive belt.

    - Release the belt drive shield and swing out of the way.

    - Check the condition of the drive belt.

    - Check the tension of the drive belt.
        - The tensioner should be set to the 25 degree mark.

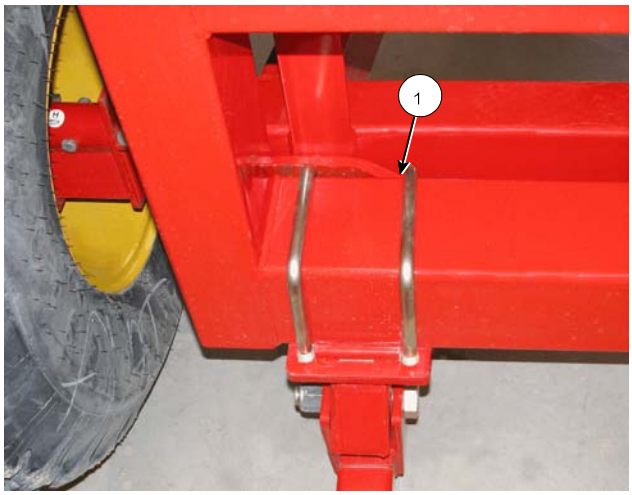
    - For the procedures to adjust the tension of the drive belt, see Section 5 - “Adjust the Belt Tension for the Flail Drum Drive”



Check Condition and Tension of the Drive Belt 213181

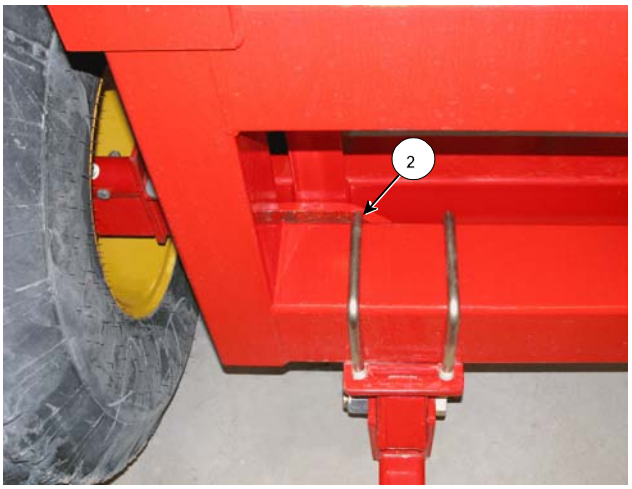
15. Adjust the bale loader forks for the width of bale being processed.

- For bales 6 feet (1.8 m) in diameter
  - Place both fork inner u-bolts against the brace (1).



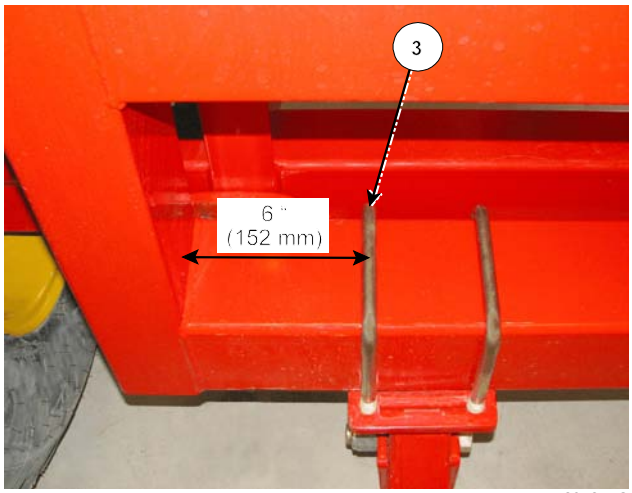
Fork Width - 6 Foot (1.8m) Bales 201209C

- For bales 5 feet (1.5 m) in diameter
  - Place both fork outer u-bolts against the inside of the brace (2).



Fork Width - 5 Foot (1.5m) Bales 201210C

- For bales 4 feet (1.2 m) in diameter
  - Place both outer u-bolts (3) a distance of 6" (152 mm) from the edge of the vertical frame post.



Fork Width - 4 Foot (1.2m) Bales 201211C

16. Inspect all the hydraulic motors, 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.

- Visually inspect all the hydraulic hoses and fittings.
  - See Section 5 "Maintaining the CFR 651" for conditions indicating that replacement is needed.

- Ensure the proper sized cylinder pins are in place and secured.


Check All Hydraulics 213178

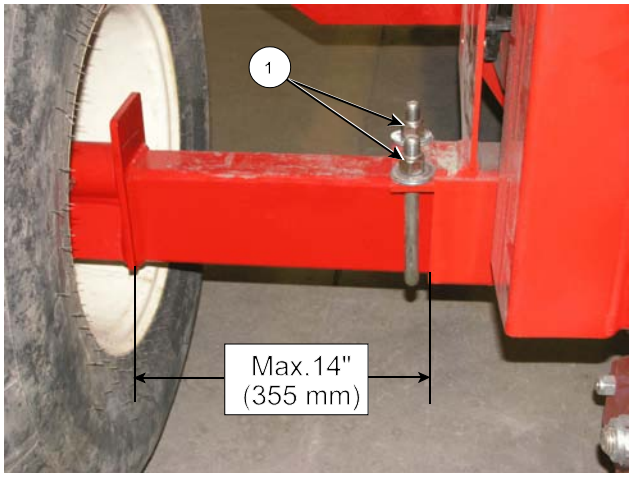
17. Inspect the wheels and tires for damage or foreign objects. Repair or replace as necessary.


Inspect Wheels and Tires 215126

18. Check that the axle u-bolts (1) are tight.

    - Torque the axle u-bolts (1) to 250 lbf (339 Nm) to ensure the axles do not slide out of the frame.

    - Maximum axle extension is 14" (355 mm) from the main tube edge to the inside face of the spindle plate.



Check That Axle U-bolts Are Tight 212017C

19. Remove any twine that is built up around the axle spindle and hub.

    - Be careful to not damage the bearing grease seal while removing twine.


Remove Twine from the Spindle and Hub 212021

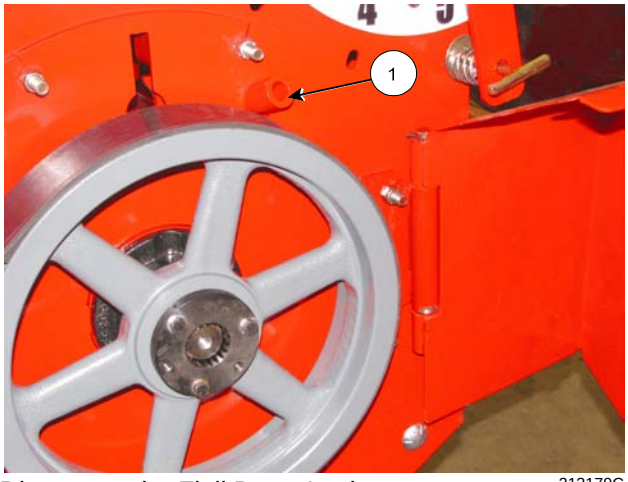
20. Ensure the driveline shields are in place and are in good repair to prevent injuries.

    The CFR 651 shall not be operated without the driveline shields in place.


Ensure Driveline Shields are in Place 212050

21. Remove the flail drum lock pin from the tube (1) on the flail drum plate.

Note: Failure to unlock the flail drum will result in damage to the machine during start up.



Disengage the Flail Drum Lock 213179C

- Place the drum lock pin into the storage holder on the outside of the drive shield. Fasten with the clip pin.

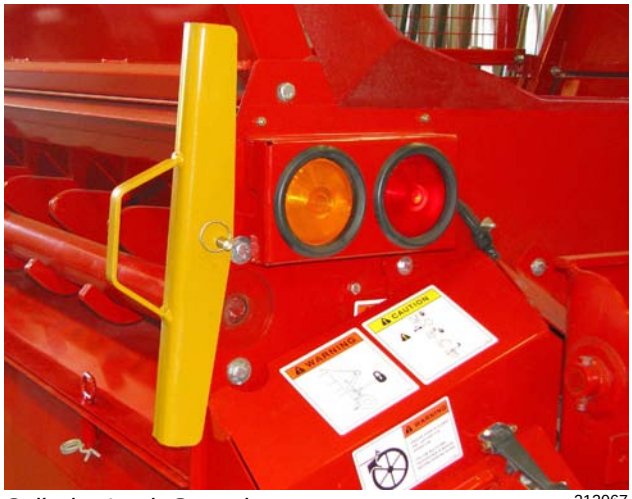

Store Lock Pin on Outside of Shield 213186

22. Remove the fork cylinder lock and fasten onto the storage tab.

Note: The forks may need to be raised with the hydraulics to remove the weight from the lock.


Remove & Store Cylinder Lock (No Feedchopper) 212066

Note: If the Feed Chopper is installed, the cylinder lock is to be stored in the hole of the tub end wall.



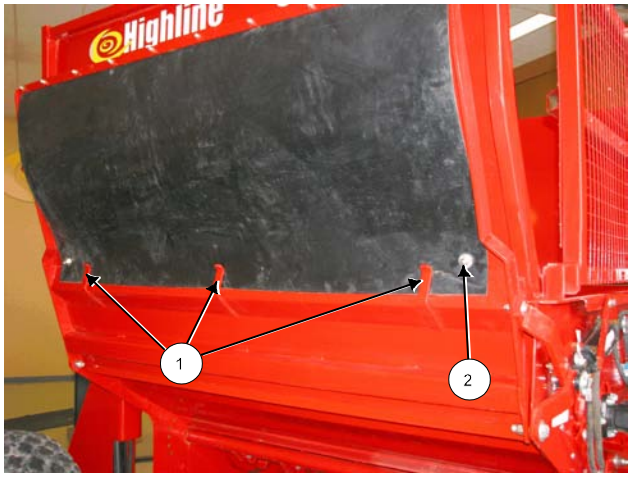
Cylinder Lock Stored (With Feedchopper) 212067

Note: If the Grain Tank is installed, the cylinder lock is to be stored in the hole in the Grain Tank support.

Cylinder Lock Stored (With Grain Tank) 212120

23. Remove the 2 nuts and washers (2) from the rubber panel.

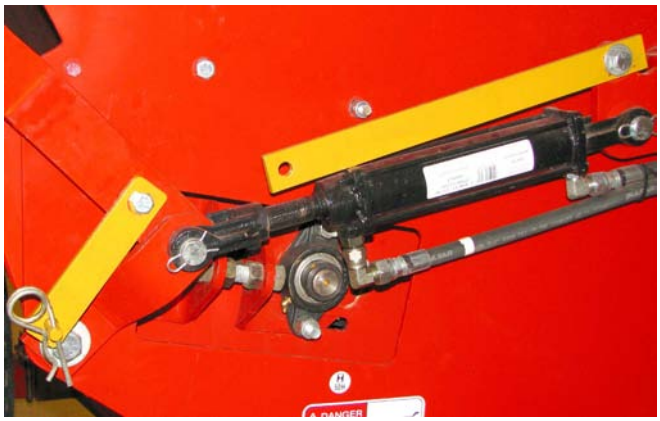
24. If the rubber deflector is going to be used in processing material, remove the rubber panel from the tabs (1) on the deflector door.



Remove Rubber Panel Fasteners 201198C

25. Remove the clip pin and lock pin on the discharge deflector door to allow the door to be operated by the hydraulic cylinder.

    Note: The cylinder may need to be moved with the hydraulics to remove the weight of the door from the lock.



Remove Lock Pin on Deflector Door 212068

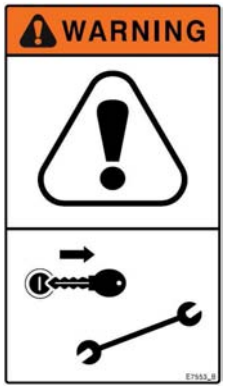
26. Lubricate all grease fittings and check the fluid level in all gear boxes. See the Maintenance Section.

27. Ensure all fasteners are tightened.

NetWrap or Twine Removal Procedure

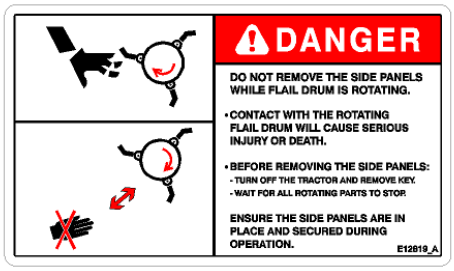
Remove netwrap or twine that is around the flail drum.

Note: Remove the twine from the flail drum and feed rollers every 25 bales. Premature bearing failure can occur if twine is allowed to build up on the flail drum.



Shutdown tractor completely and set the parking brake.

Disconnect the PTO from the tractor before doing any work near the flail drum.



Do not remove the side panels while flail drum is rotating.
Contact with rotating flail drum will cause serious injury or death.

Ensure the side panels are in place an secured during operation.

1. Raise the forks to the fully raised position.

Raise Forks and Lock 216195

2. Install the cylinder lock onto the left fork cylinder.

Install and secure the cylinder lock before going under raised bale forks.

3. At the front of the machine, move the flail guard rod adjustment lever to a number between 1 and 4.

   Note: Having the lever at position 5 will result in damage to the twine cutter blade.

Move Flail Guard Rod Lever (to less than 5) 213018

4. Open the front drive shield.

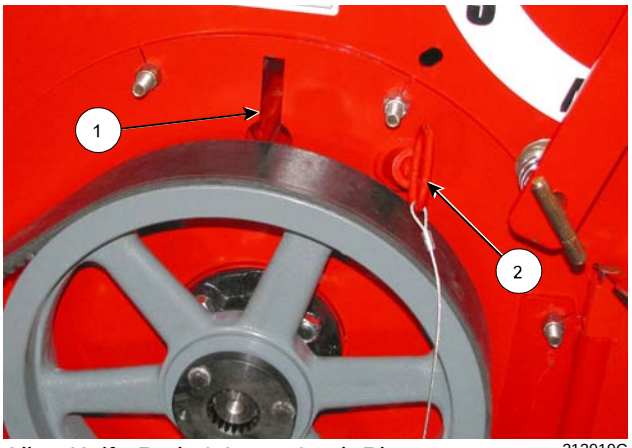
5. Rotate the flail drum to align the knife path with the tub opening (1).

6. Place the flail drum lock pin (2) into the tube on the front tub wall.

   - Allow the lock pin to slid into the processing chamber.

   - Manually rotate the flail drum until the lock pin drops into place locking the flail drum.

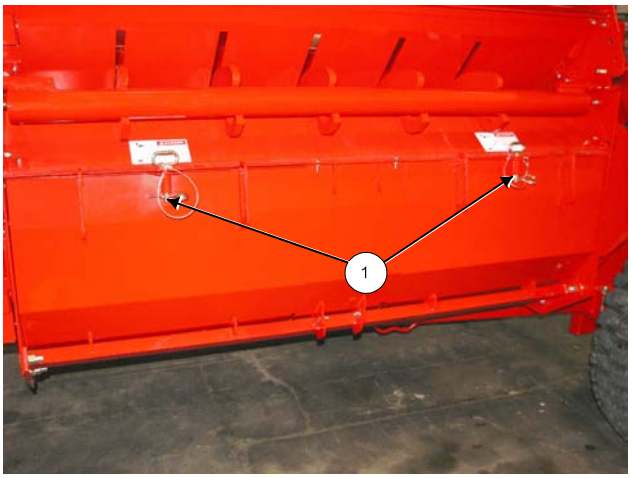
   - Push the lock pin down firmly to ensure it is fully engaged into the flail drum.



Align Knife Path & Insert Lock Pin 213019C

7. Remove the flail drum access panels.

   - Remove the clip pins.
   - Remove the panel pins (1). Lift the panels out.



Remove Flail Drum Access Panels 213177C

8. Move any flails blocking the knife path.

   - Reach through the drum access panels and move any flails that are lying across the knife path.

   - Failure to move flails on the knife path will result in damage to the twine cutter blade.

Move Flails Blocking the Knife Path 212072

9. Remove the twine cutter from the storage position.

   - The twine cutter is located on the rear of the bale tub.

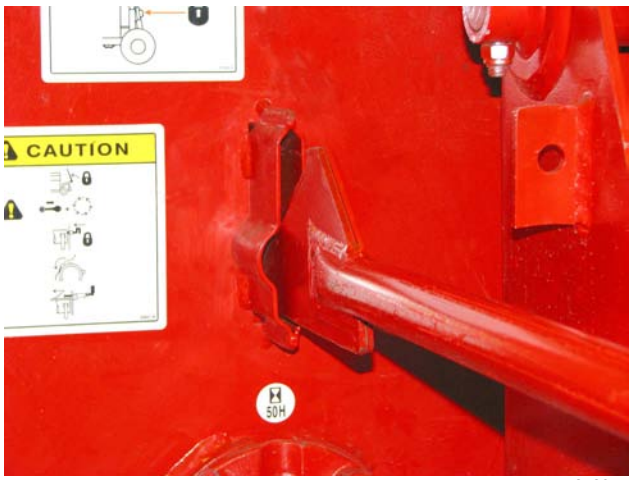
Remove Twine Cutter from Storage 212070

10. Insert the twine cutter with blade up.

    - Insert the twine cutter into the guide at the rear of the processor tub.

11. Cut through the netwrap or twine.

    - Use a “saw” like action along the entire length of the drum.



Insert Twine Cutter with Blade Up 212071

12. Place twine cutter back into the storage position.

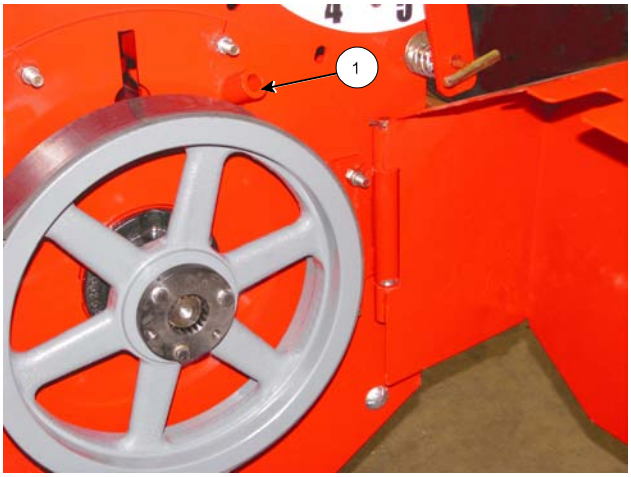
    - Ensure the handle is facing down and is locked into the key hole slot.

Replace Twine Cutter Into Storage Position 212070

13. Unlock the flail drum.

    - Remove the drum lock pin from the flail drum drive plate tube (1).

    Note: Failure to unlock the flail drum will result in damage to the machine during start up.



Remove the Flail Drum Lock 213179C

    - Place the drum lock pin into the storage holder on the outside of the drive shield.

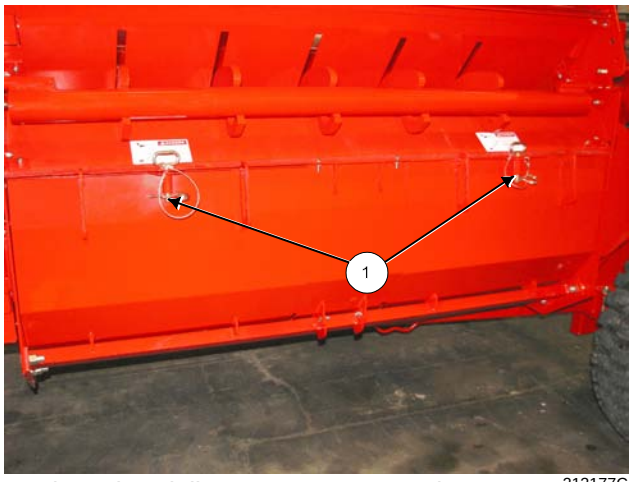
Store Lock Pin on Outside of Shield 213186

14. Remove the netwrap or twine from the flail drum.

Remove Netwrap & Twine 212043

15. Replace the flail drum access panels.

    - Fasten in place with the panel pins (1).
    - Secure with the clip pins.



Replace the Flail Drum Access Panels 213177C

16. Remove the fork lock from the hydraulic cylinder and place in the storage location.

Remove Fork Lock 201228

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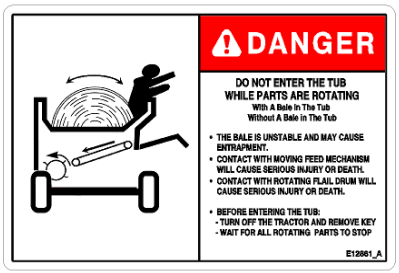
4.0 OPERATING THE CFR 651

Do not allow anyone to ride on the CFR 651.

- Falling from the machine can cause injury



Do not enter the tub while parts are rotating.

- With Bale in Tub
- Without Bale in Tub

The bale is unstable and may cause entrapment.

Contact with the moving feed mechanism will cause serious injury or death.

Contact with the rotating flail drum will cause serious injury or death.

Note: Use caution if entering the tub with a bale in it, even <u>after</u> all rotation has stopped. The bale is unstable.

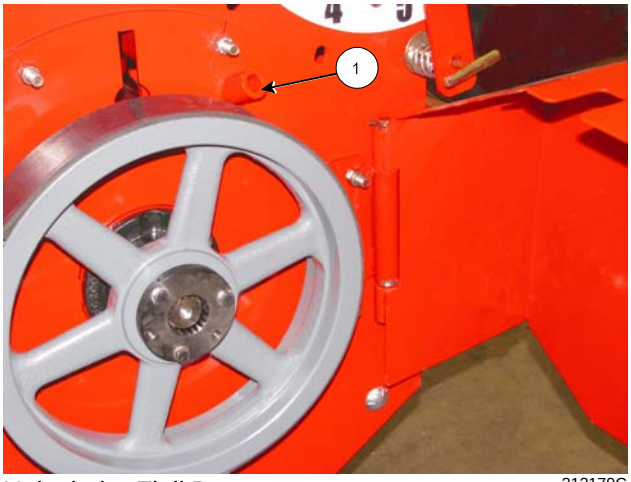
Stay back from an operating machine which can discharge objects a long distance.
Thrown material or objects leaving the discharge area can cause serious injury or death.

Do not operate within 100 ft (30m) of any person.

1. Unlock the flail drum.

   Remove the drum lock pin from the lock pin tube (1) at the front of the machine.

   Fasten the lock pin to the outside of the shield.



Unlock the Flail Drum 213179C

Discharge Rate Settings

There are 2 settings that determine the discharge rate of material and the time it takes to process a bale:

- The aggression level of the flails acting on the bale.
- The speed of the feeder chain which feeds the bale into the flail drum.

1. Set the aggression level of the flails.

   Adjusting the aggression level is done with the guard rod adjustment handle.

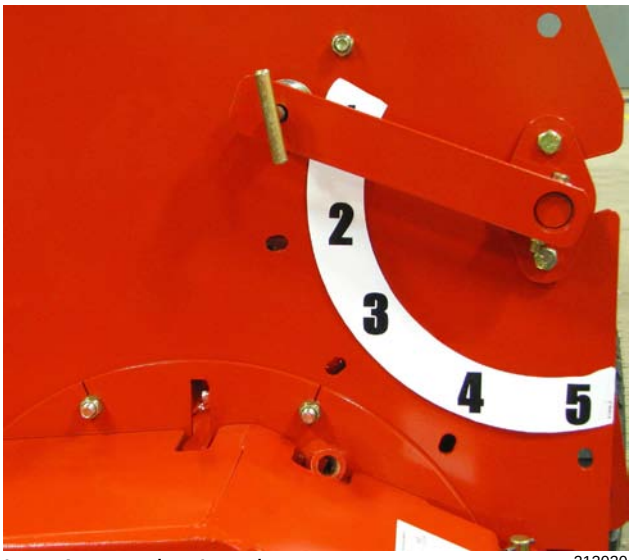
   The bale is fed up against the guard rods. The amount of contact between the bale and the flails is determined by the guard rod setting.

   There are five guard rod settings.
   - Pull the handle out of the handle lock.
   - Raise or lower the handle to the desired discharge setting.
   - Lock the handle in the hole.

   To Increase the discharge rate:
   - Move the handle to a higher number.

   To Decrease the discharge rate:
   - Move the handle to a lower number.

High Aggression Level 213021



Low Aggression Level 213020

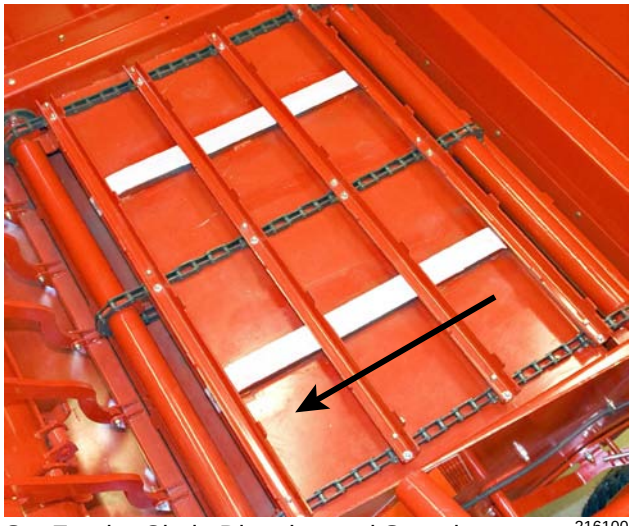
If the optional hydraulic aggression control is installed, the aggression is adjusted by moving the hydraulic cylinder.

Optional Hydraulic Aggression Control 212055

2. Set the speed of the feeder chain.

   Set the direction of the feeder chain so that the chain bars move toward the flail drum. This will keep the bale against the flails and rotate the bale. It will also cause the bottom of the bale to move against the flail guard rods.

   Adjusting the feeder chain speed will influence the discharge rate and the time to process a bale.
   - Adjust the feeder chain speed using the hydraulic flow control.



Set Feeder Chain Direction and Speed 216100

Recommended Speed Range:
10 - 25 chain revolutions per minute.

Chain Speeds
- Faster feeder chain speeds (at the same aggression level setting) will result in a faster discharge of material.

- Slower feeder chain speeds (at the same aggression level setting) will result in a slower discharge of material.

Loose Material Build Up
- If loose material builds in the tub:
  - slow down the feeder chain to allow the flail drum to process the material.
  - slow down the feeder chain to avoid removing material with the feeder chain.

- To remove loose material buildup, reverse the feeder chain for a short time and then restore the direction of moving the bottom of the bale towards the flail drum.

3. Set the upper deflector door.
   - Raise or lower the upper deflector door to adjust the amount of spreading of material.
     - Use the hydraulic cylinder to adjust the door.

Set the Upper Deflector Door (Windrowing Shown) 212005

Raised - material will be spread out over a wide area - such as for bedding materials.
   - Place the rubber deflector into the tabs on the door.

Midway - deflector door will control the height and distance of discharged material.
   - Place the rubber deflector into the tabs on the door.

Lowered - the material will be left in a windrow or directed into a feed bunk.
   - Allow the rubber deflector to hang down.

Windrow Feeding 212121

4. Set the level of the lower discharge door.
   (No Feed Chopper Present)

   - The lower discharge door adjustment handle (1) is located on the rear tub wall.

   - There are 3 door positions:

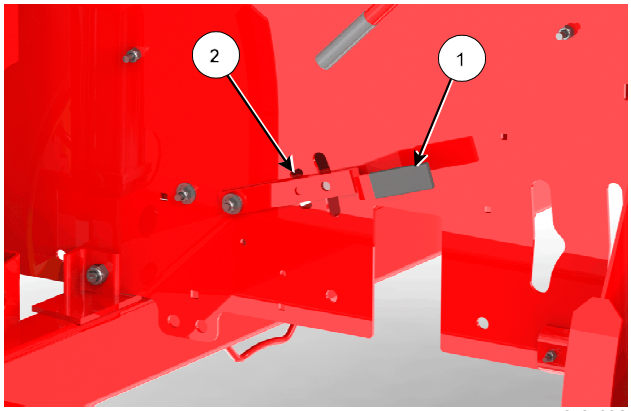
     - The lowest position is often used for wet material or for a shorter throw distance.

     - The middle position is often used for average material or medium throw distance.

     - The highest position is often used for dry material, longer throw and also for bunk feeding.

   - Snap the handle into a slot (2).

   Note: When a Feed Chopper is present, there are other settings that must be adjusted. Refer to the Feed Chopper Operator's Manual for these adjustments.



Lower Discharge Door 213182C

   - Visually check on the door position, by looking at the discharge side of the machine.


Visually Check the Door Position 212047

Stay back from an operating machine which can discharge objects a long distance.

5. Load the bale into the processor tub.

   - Align the center of a bale with the center of the processor.

   - Lower the forks completely.

   - Slowly back up to the bale until the forks are completely under the bale.

   - Raise the forks enough to lift the bale off the ground.

   Note: If a bale is frozen to the ground, dislodge it by rocking the machine to impact the bale and loosen it.

   Note: Flail drum and feeder chain should not be not turning while loading a bale.

   - Raise the lift forks until the bale falls into the processor.

Align Bale to be Loaded 212006

Raise Bale into Processor Tub 216196

6. Lower the forks and load a second bale (optional).

   Another bale may be loaded onto the forks while a bale is in the processor.

   If a bale is loaded onto the forks, raise the forks as high as possible. Make sure the bale on the forks does not interfere with the bale already in the tub.

Second Bale Loaded on Forks 212061

7. Start the PTO to engage the flail drum.

   Stay clear from discharge side when PTO is engaged.

   Do not operate within 100 ft (30m) of any person.

   Discharged material or objects leaving the discharge area can cause serious injury or death.

   The CFR 651 shall not be operated without the guards in place or in good condition.

   - Engage the tractor PTO at an idle.
   - Increase the tractor RPM until a 1000 PTO speed is reached.

Note: Ensure that the carried bale does not interfere with the bale in the tub.

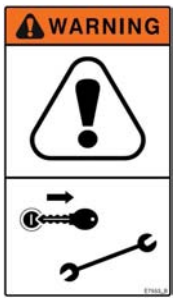
8. Begin processing material.

   - Start the feeder chain to move the bale towards the flail drum.

   Note: If the processor vibrates excessively, immediately disengage PTO and stop the tractor.

Wait for all flail drum rotation to stop before approaching the processor.

Inspect for blockages, missing flails or other causes of the vibration.



9. Adjust the feeder chain speed and direction.

   - If loose material builds up near the top of the bale in the tub:
     - slow down the feeder chain to allow the flail drum to process the material.
     - slow down the feeder chain to avoid the feeder chain from removing material from the bale.

   - To remove loose material buildup, reverse the feeder chain for a short time and then restore the chain direction to move the bottom of the bale towards the flail drum.

Adjust Feeder Chain Speed and Direction 216100

10. Adjust the aggression level (if needed).

    - If the different rate of material discharge is desired:

        - Stop the tractor and remove the key.

        - Wait until all flail drum rotation has stopped.

        - Move the discharge rate lever.

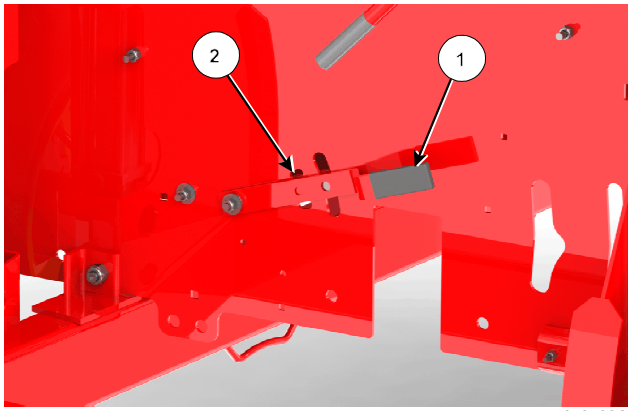
            - Higher Number = more material discharged.

            - Lower Number = less material discharged.

Adjust Aggression Level 213021

11. Re-adjust the level of the lower discharge door (if needed).

    - Snap the handle into a slot (2) to fasten it in position.



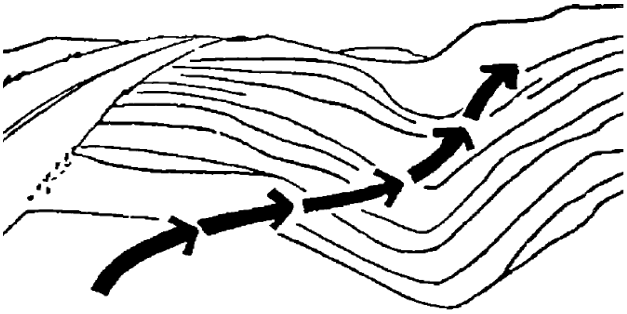
Lower Discharge Door 213182C

12. Stop the feeder chain before loading another bale into the processor.

Stop the Feeder Chain When Loading 216196

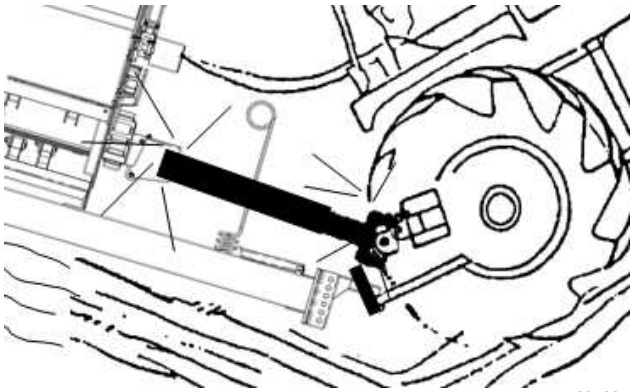
13. Crossing ditches and steep inclines.

- Cross ditches or inclines at about a 30° approach angle.



Cross Ditch at 30° Angle 107072

- Do not approach a ditch or steep incline straight on as this may collapse the driveline to its shortest length, causing damage by pushing the PTO into the tractor or into the drivebox or downward onto the PTO shaft, breaking it off.

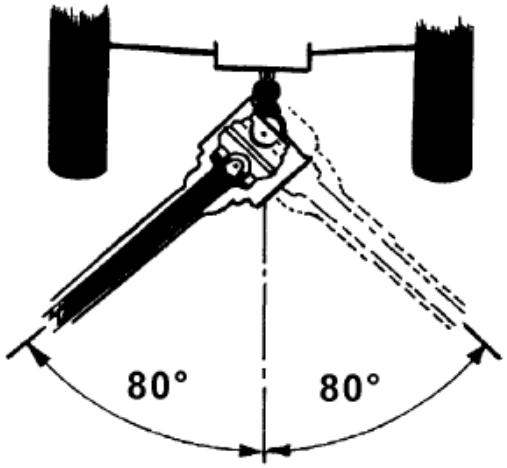


Driveline Collapsed in Steep Ditch 201221

14. Making turns.

- Do not make turns sharper than 80°.
- Angles greater than 80° can result in damage to the constant velocity joint and other driveline components.

- Ensure that the tracor tire does not contact the CFR 651 tub or frame.

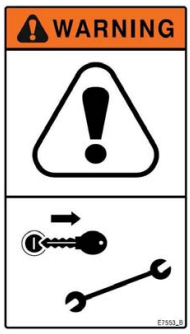


Turn Less Than 80° 109040

5.0 MAINTAINING THE CFR 651

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.

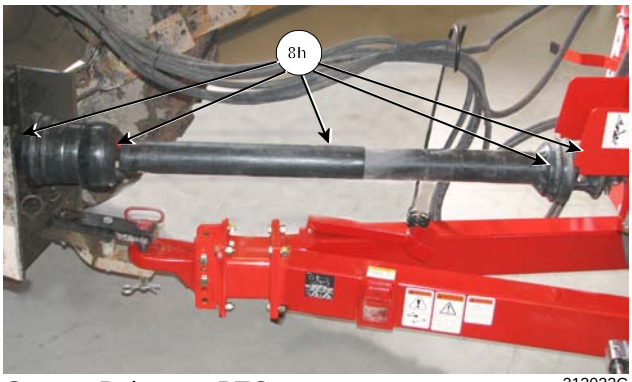


Lubrication

Lubricate all grease fittings with a quality lithium complex, extreme pressure NLGI Grade 2 grease.

Every 8 Hours

- PTO - Lubricate 5 points on the PTO every 8 hours.
  - 1 point each constant velocity joint. *Continued angled operation will require lubrication every 4 hours.
  - 1 point on each joint collar
  - 1 point at the telescoping section



Grease Points on PTO 213022C

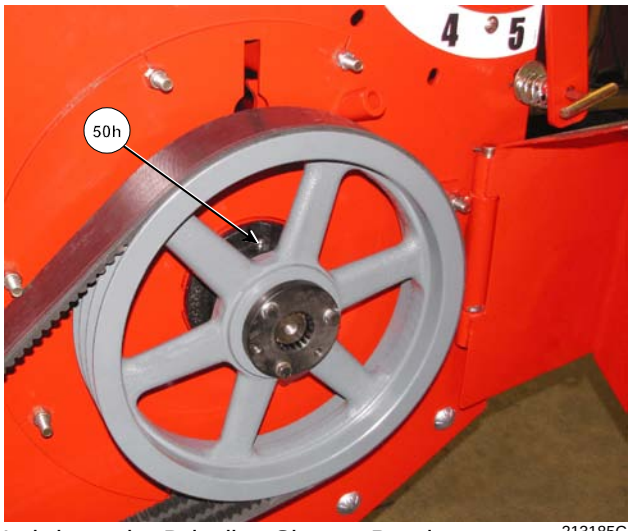
Every 50 Hours

- Lubricate 1 point on the rear flail drum bearing at the back of the machine.

Note: When the Feed Chopper is present refer to the Feed Chopper Operator's manual "Maintaining the Feed Chopper" for information on greasing the rear flail drum bearing.

Grease Rear Flail Drum Bearing 212007C

- Lubricate 1 point on the front flail drum bearing.



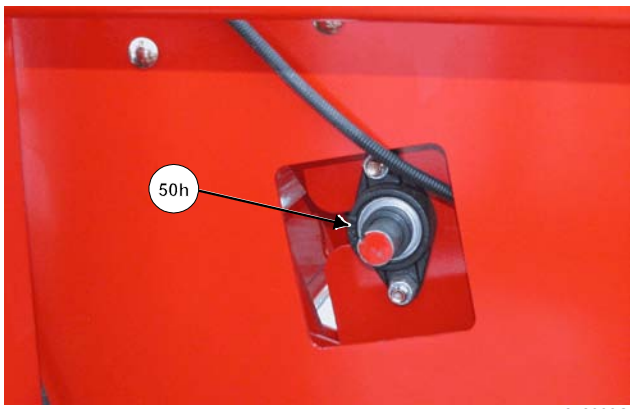
Lubricate the Driveline Sheave Bearing 213185C

- Lubricate 2 points on the upper feeder chain bearings
  - One the front tub wall and one on the back tub wall.

Grease Upper Feeder Chain Bearings 212008C

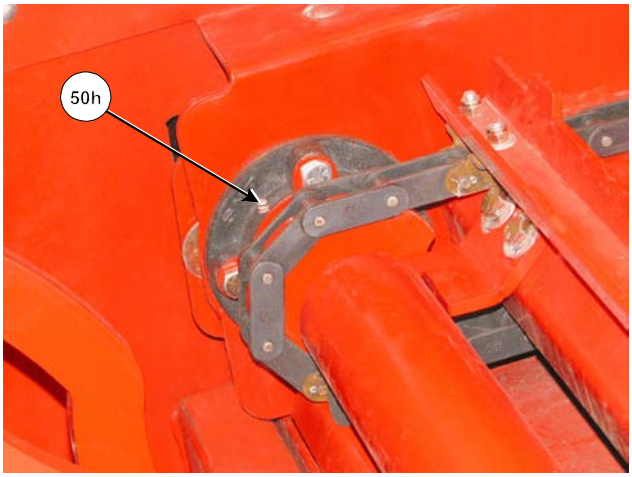
- Lubricate 1 point on the lower feeder chain bearing on the outside rear of the tub.

Note: When the Feed Chopper is present, refer to the Feed Chopper Operator's manual "Maintaining the Feed Chopper" for information on greasing the feeder chain bearing.



Grease Feeder Chain Bearing (Outside of Tub) 212009C

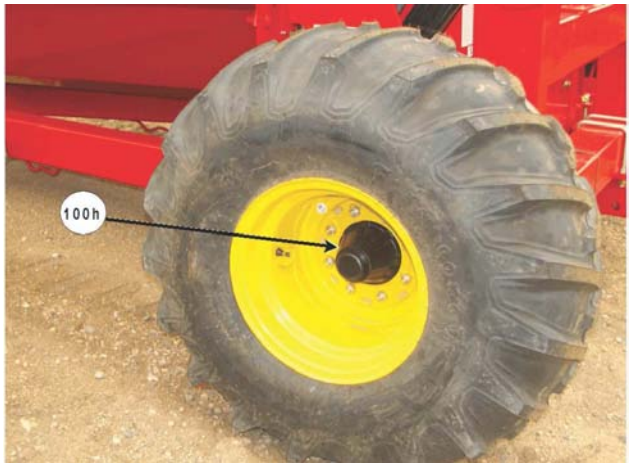
- Lubricate 1 point on the lower feeder chain bearing on the inside front of the tub.
  - This bearing is connected to the hydraulic feeder chain motor.



Grease Lower Chain Bearing (Inside Tub) 212073C

Every 100 Hours

- Hubs on spindles - Lubricate the hubs every 100 hours.



Grease Hubs on Both Spindles 215133C

Visually Inspect Hydraulic Hoses/Fittings

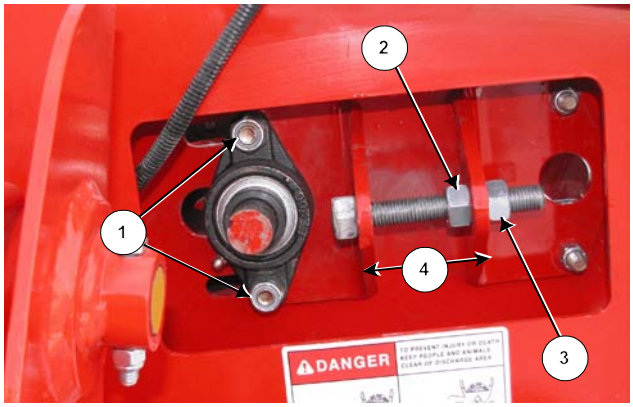
Shut down the machine and replace the hydraulic hose assembly if any of the following conditions exist:

- 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

Adjust the Feeder Chain Tension

- Loosen the bolts on the front and rear upper feeder chain bearings (1).
- Loosen the jam nut (2) on front and rear adjustment bolt.

- Turn the adjustment nut (3) to change the chain tension.



Adjust The Feeder Chain Tension 212008C2

  - Stand in the tub and hold the center of one of the feeder bars.

  - Lift the bar.
    - The bottom of the bar should be 1" from the plastic slider.

- Verify the adjustment is the same at the front and back by measuring the distance between the bolt tabs (4).

- Tighten the jam nuts (2).

Check Tension of the Feeder Chain 212054

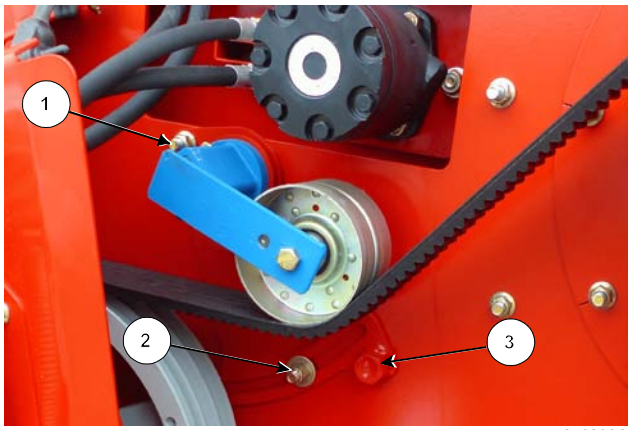
Adjust the Belt Tension for the Flail Drum Drive

The belt tension adjuster will adjust to keep the belt tight within a range of tension.

The tensioner should be set to a tension of 25 degrees.

To Adjust the Belt Tension:

- Loosen the top nut (1).
- Place a socket wrench onto the nut (3) on the tension adjustment arm.
  - Take up the tension of the belt when the lower nut is loosened.
- Loosen the lower nut that is within the curved adjustment arc.(2).



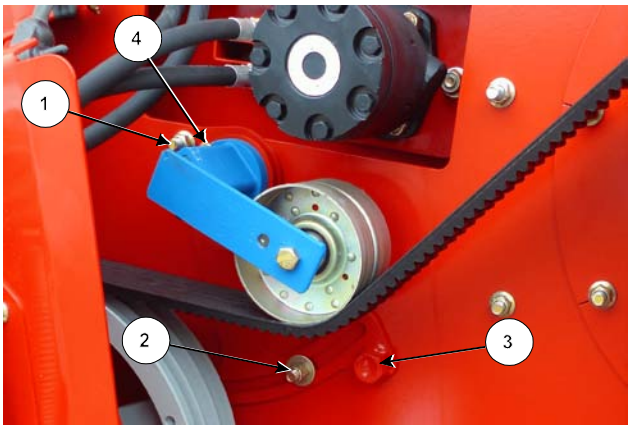
Adjust Belt Tension 216206C

- Move the socket wrench to set the belt tension to 25 degrees.
- Tighten the lower nut (2) to keep the tension.
- Tighten the upper nut (1).


Set Tension to 25 Degrees 212025

To get more adjustability from the tensioner, move the anti-rotation bolt.

- Loosen the top nut (1).
- Place a socket wrench onto the nut (3) on the tension adjustment arm.
    - Take up the tension of the belt when the lower nut is loosened.
- Loosen the lower nut that is within the curved adjustment arc. (2)
- Remove the drive belt from the tension pulley.
- Move the anti-rotation bolt (4) into one of the other holes in the mount bracket. Tighten in place.
- Replace the drive belt onto the tensioner pulley.
- Move the wrench to set the belt tension to 25 degrees.
- Tighten the lower nut (2) to keep the tension.
- Tighten the upper nut (1).

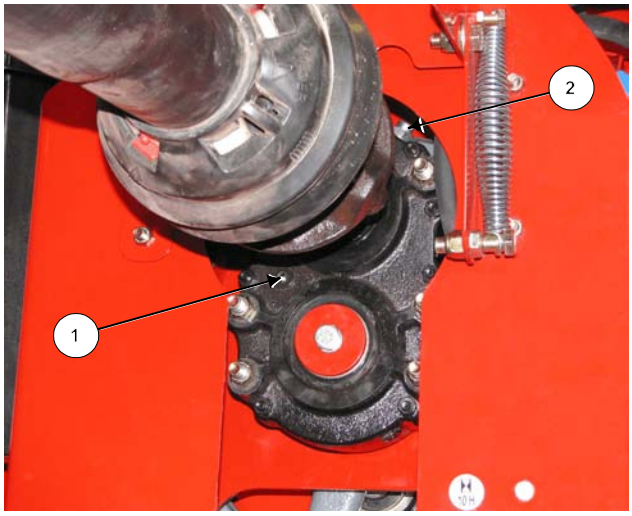


Move Anti-Rotation Bolt for More Adjustment 216206C2


Set Tension to 25 Degrees 213025

Check the Fluid Level in the Gearbox

- Check the oil fluid level by removing the oil level plug (1) in the center of the gearbox.
    - The oil should be at the level of the plug.
    - If oil needs to be added, add through the plug (2) on the top of the gearbox.
        - Use gear oil Grade 80W90 that meets or exceeds API service classification GL-4.
    - Annually change the oil in the gearbox. (See Gearbox Oil Changing Procedures in this Section.)



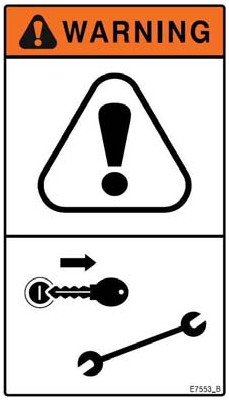
Check Gearbox Oil Level 213026C

Gearbox Oil Changing Procedures

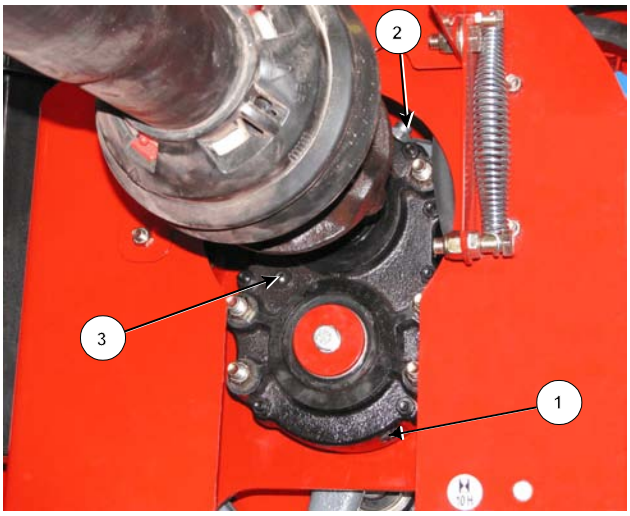
Change the oil annually and before storing the CFR 651 for the season.

Before beginning, make sure the tractor is off and the PTO is disengaged. Disconnect the driveline from the tractor before doing any work.

Securely block the CFR 651 before any work is done to prevent the CFR 651 from moving during servicing.



1. Drain the oil from the gearbox.
   - Remove the drain plug on the bottom of the gearbox (1).
   - Catch the oil in a container.
   - Allow the oil to drain completely from the gearbox.
2. Replace the drain plug (1) and tighten.
3. Fill the Gearbox.
   - Remove the top fill plug (2).
   - Fill with 300 ml of 80W90 gear oil that meets or exceeds API service classification GL-4.
4. Check the oil level in the gearbox.
   - Remove the oil level plug (3) in the center of the gearbox.
   - The oil should be at the level of the plug.
5. Replace the top fill plug (2).



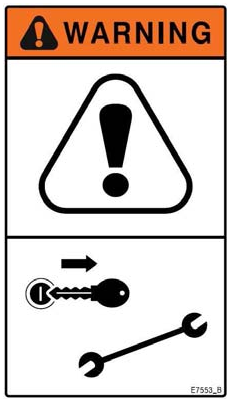
Changing the Gearbox Oil 213026C2

Flail Replacement Procedure

Replace flails that are broken or worn to the point that they will not process material properly.

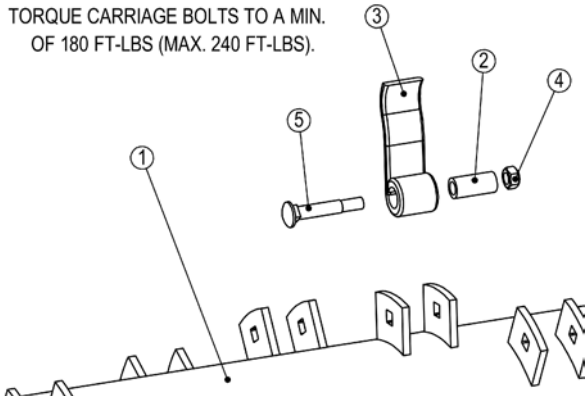
Before beginning, make sure the tractor is off and the PTO is disengaged. Disconnect the driveline from the tractor before doing any work.

Securely block the CFR 651 before any work is done to prevent the CFR 651 from moving during servicing.



1. Remove the flail to be replaced.
   - Remove the nut (4) and bolt (5) that holds the flail (3) to the drum (1).
2. Remove the pipe (2) inside the flail.
   - This pipe will be used again.
3. Remove the flail that is on the opposite side of the flail drum.

   Note: To maintain rotary balance, the flail on the opposite side of the drum must be replaced at the same time.
4. Install the 2 new flails with the pipe, bolt and nut between the tabs on the drum.
   - Ensure that the bent portion of the flail leads into the rotation of the drum.
5. Torque the nuts to minimum of 180 ft-lb (244 Nm) - maximum of 240 ft-lb (325 Nm).
6. Check that the flail freely moves between the tabs on the drum.



Flail Replacement 40524_B

Tires

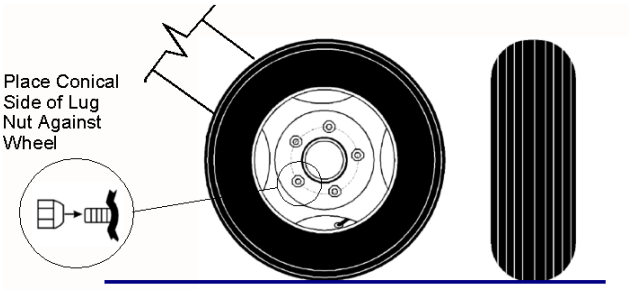
Note: It is recommended to have the tires mounted by a tire technician.

- Check the condition of the tires.

- Mount the rim so that the air valve will be facing outward when mounted on the CFR 651.

Tires 215126

- Place the cone side of the lug nut against the wheel rim. Torque to 121 ft-lb (164 Nm).



Tire Mounting 107094CC

- Tire Pressure - Fill the tires to 24 psi (165 kPa).

- Transport speed should not exceed 25 mph (40 kmh).

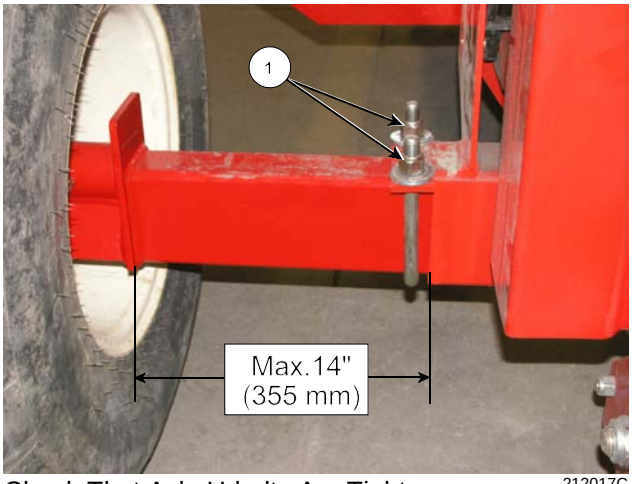
- When replacing the tires, refer to the Specification Section for the size and type of tires.

Axles

- Check that the axle u-bolts (1) are tight.

  - Torque the axle u-bolts (1) to 250 ft-lb (339 Nm) to ensure the axles do not slide out of the frame.

  - Maximum axle extension is 14" (355 mm) from the main tube edge to the inside face of the spindle plate.



Check That Axle U-bolts Are Tight 212017C

- Remove any twine that is built up around the axle spindle and hub.

    - Be careful to not damage the grease seal on the bearing while removing twine.

Remove Twine From the Spindle and Hub 212021

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6.0 STORING THE CFR 651

Instructions for storing longer than a week:

1. Clean all the debris from the tub area and off the CFR 651.

2. Park the CFR 651 on level ground.

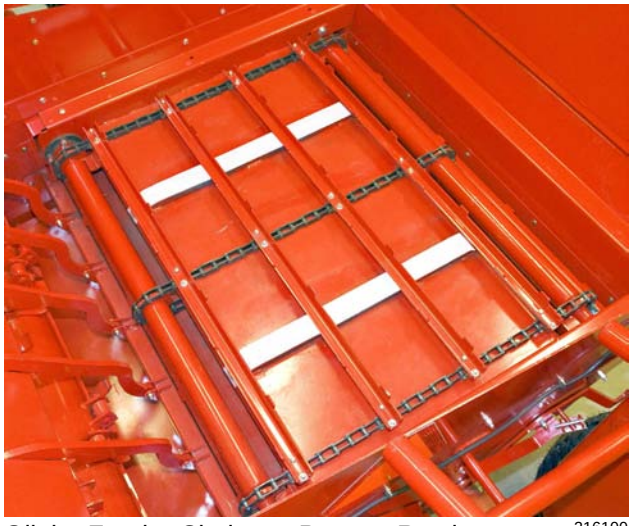
3. Lubricate all CFR 651 grease points (See Section 5).

Clean Debris from the CFR 651 216194

4. Oil the feeder chains with a rust inhibiting oil or coating to prevent weathering.

Do not enter the tub while the feeder chains are moving. Injury and possible entrapment could occur from moving feeder chains,

- Stop the tractor and remove the key.
- Disconnect the driveline to prevent accidental starting of the flail drum.
- Enter the tub and oil the exposed chains.
- Exit the tub and advance the feeder chains to expose the non-coated portion of the chains.
- Stop the tractor and remove the tractor key.
- Enter the tub and oil the exposed portion of the chains.


Oil the Feeder Chains to Prevent Rusting 216100

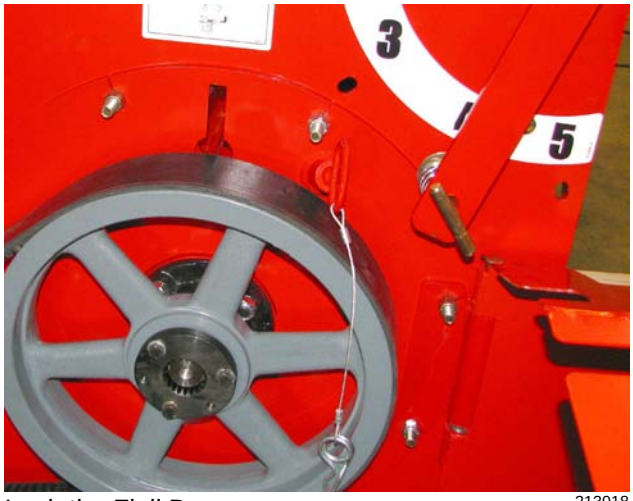
5. Lock the CFR 651 flail drum.

    - Place the flail drum lock pin into the tube on the front tub wall.

    - Allow the lock pin to slid into the processing chamber.

    - Manually rotate the flail drum until the lock pin drops into place locking the flail drum.

    - Push the lock pin down firmly to ensure it is fully engaged into the flail drum.



Lock the Flail Drum 213018

6. Remove any material that has built up around the feeder chain bearings.

    - Remove any material from the upper feeder chain bearing.


Remove Material - Upper Chain Bearing 212016

    - Remove any material from around the lower feeder chain bearing.


Remove Material - Lower Chain Bearing 212015

    - Remove any material from the channel between the upper and lower feeder chain bearings.

7. Lower the forks to the ground.

    - Fasten the fork lock in the storage position.

Lower Forks to the Ground 215126

8. Raise the discharge deflector door to the transport position.

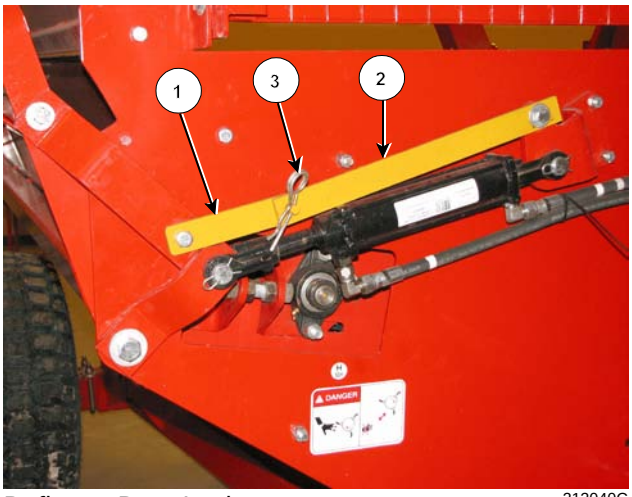
    - The top discharge deflector door is operated by a hydraulic cylinder.

9. Install the discharge deflector door transport lock.

    - Rotate the short link (1) toward the cylinder.

    - Join the flats by inserting the pin of the short flat into the longer flat (2).

    - Install the clip pin (3).



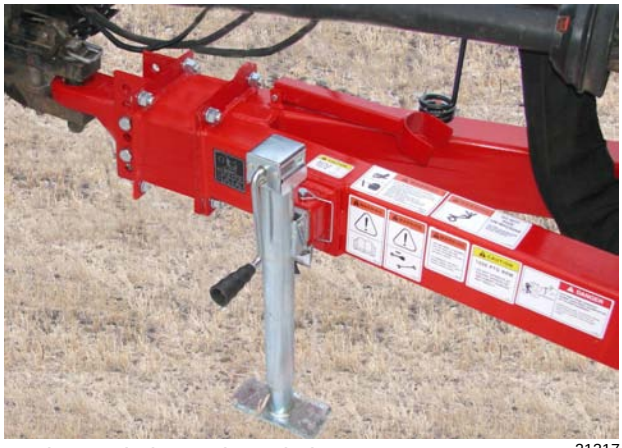
Deflector Door Lock 212040C

10. Place the rubber into the tabs and fasten with the bolts.

Raise Deflector Door to Transport Position 201198

11. Place the jack onto the hitch.

    - Remove 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.

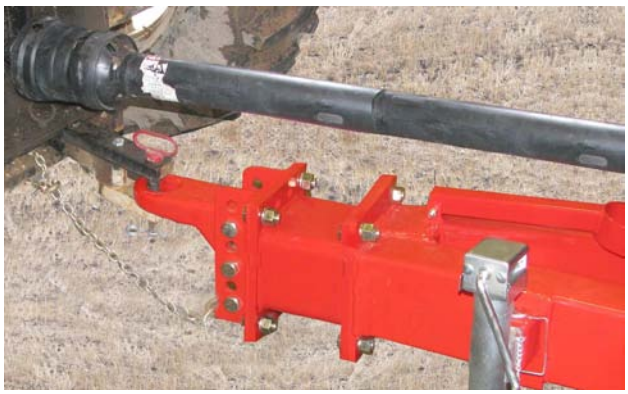


Jack on Hitch - Raise Hitch 213174

12. Remove the driveline from the tractor PTO shaft.

    - Rest the driveline in the drive holder.

13. Disconnect the safety chain from the tractor (if present).



Remove Driveline and Safety Chain 213176

14. Disconnect the hitch from the tractor.

    - Remove the hitch pin.

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

16. Disconnect the electrical connection.

Disconnect Hydraulic Hoses & Electrical 201199

17. Secure the hydraulic hoses and electrical connector to the hose holder on the hitch to keep them off the ground and clean.

18. Place the driveline into the driveline support.

Hoses and Driveline in Supports 216114

19. 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.

20. Check the CFR 651 for worn and damaged parts. Replace as needed.

21. Touch-up the paint to prevent rusting.

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7.0 TROUBLESHOOTING

Symptom	Problem	Solution
Bale lifting problems	Forks do not raise	Check hydraulic connections and lines
	Bale tips off back of forks	Narrow forks for a better lift on bale
	Bale hung up on forks - not going into the tub	Cycle feeder chain left to right to pull bale into tub
		Ensure forks are fully lowered prior to backing into the bale to prevent stabbing the bale. The bale wrap would then prevent the bale from falling into the tub
	Bale falls through forks	Adjust forks for bale size
Plugging in discharge area	Snow and ice on bales causing blockage in tub	Have flail drum rotating while loading bale to clear out discharge area
	Trying to “lift” thrown material too much	Reduce the lower discharge door height
		Reduce the speed of the feeder chain
Material builds up on one side of bale in tub	Bale unwrapping in tub	Reverse direction of feeder chain to consume material buildup
Difficult to rotate bale in tub	Feeder chain not fully engaging bale	Increase aggression of flails to help rotate bale
		Direct feeder chain to move the bottom of the bale toward the flail drum
	Bale on forks contacting bale in tub	Lower the bale on the forks

Symptom	Problem	Solution
Flail drum not turning	Flail drum lock engaged	Disengage drum lock
	Driveline shear bolt	Replace shear bolt on drive line
	Drive belt slipping	Adjust drive belt tension
Feeder chain not turning	Tractor selective control valve not supplying enough hydraulic flow	Increase the flow rate at the tractor selective control valve
Not able to get sufficient throw distance	Discharge door at bottom is not raised	Raise the lower discharge door
		Throw with the direction of wind
	Upper deflector door preventing “lift” of material	Raise upper deflector door
Upper deflector door not operating	Hydraulic cylinder	Check hydraulic connections
		Check electric solenoid (if present)
	Discharge door transport lock	Remove door transport lock

8.0 CFR 651 SPECIFICATIONS

Width

Base CFR Width	101 5/8"" (2581 mm)
CFR With Feed Chopper™	112 1/2" (2857 mm)
CFR With MGIS™	137 5/8" (3495 mm)
CFR With Feed Chopper™ and MGIS™	137 5/8" (3495 mm)

Overall Length (To end of tires)	173 3/4" (4413 mm)
To End of Forks Down	221 7/8" (5635 mm)
Height (Forks Up)	126 1/4"" (3206 mm)
Lifting Bale	154 1/2" (3924 mm)

Weight

Base CFR Weight	5496 lbs (2493 kg)
Tongue weight (Unloaded)	1870 lbs (848 kg)
CFR With Feed Chopper™ Weight	6141 lbs (2786 kg)
Tongue weight (Unloaded)	2050 lbs (930 kg)
CFR With MGIS™ Weight	6181 lb (2804 kg)
Tongue weight (Unloaded)	2190 lbs (993 kg)
CFR With Feed Chopper™ and MGIS™	6826 lb (3096 kg)
Tongue weight (Unloaded)	2370 lbs (1075 kg)

Gearbox rating	180 hp rating (134 kilowatt)
Input drive	Cat.4/ 1000 rpm (Cat. 6 with Feed Chopper)
Constant Velocity Turning Range	Maximum 80 degrees

PTO

	Minimum	Recommended
Base CFR	85 (63kW)	100 (75kW)
CFR With Feed Chopper™	125 (93kW)	140 (104kW)
CFR With MGIS™	100 (75kW)	125 (93kW)
CFR With Feed Chopper™ and MGIS™	125 (93kW)	140 (104kW)

Tires	16.5LX 16.1 ANS (Inflate to 24 psi)

Gearbox Oil Capacity	300 ml

Highline New Equipment Limited Warranty Policy

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

Highline Mfg. Ltd. (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 ten (10) 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.