Bale Pro®

Complete Feed Ration

CFR960

Operators Manual

Highline MANUFACTURING LTD.

E14364V1

BalePro®
Complete Feed Ration 960
Bale Processor

Operator's Manual

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Highline Team Message

Congratulations on your purchase of the Complete Feed Ration 960 *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 960 (CFR 960). 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 960 as your machine of choice.

Highline Manufacturing Ltd.

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GENERAL DESCRIPTION OF THE COMPLETE FEED RATION 960 (CFR 960)

The Complete Feed Ration 960 (CFR 960) is a machine to process square and round bales of hay or other animal feed materials. When the CFR 960 is engaged, it uses power from the tractor PTO to rotate a flail drum. The flails strike the bale and process it into feed size materials or animal bedding sized materials.

The Complete Feed Ration (CFR 960) has forks on the rear of the machine that allows the CFR 960 to pick up and self-load a square or round bale into the processing tub. When square bales are picked up the bale is rotated to fit into the processor 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 bale. The bale is rotated by feed rollers 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 960 on the right side of the machine. The height and distance of discharge is adjusted by moving the discharge door. A top discharge deflector door allows the processed material to be laid down into a feed bunk or spread to different distances.

The Complete Feed Ration 960 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 measured amounts to the feed mix to achieve the feed ration needed for the animals.

The operator of the CFR 960 is located in the tractor cab to control the speed of driving and the speed of operation of the CFR 960.

INTENDED USE OF THE COMPLETE FEED RATION 960 (CFR 960)

The CFR 960 is designed to process animal feed and bedding materials from a square or round bale.
The CFR 960 is intended for use in farming applications.
The CFR 960 is intended for off road use only.
The CFR 960 is intended for use in locations away from people who could be harmed by the discharged materials.

Any uses of the CFR 960 other than the above stated Intended Uses shall be considered misuse of the CFR 960. This misuse shall included (but not limited to):

- Using the CFR 960 in non-farming applications
- Using the CFR 960 on public roads
- Using the CFR 960 around people or in public places
- Processing materials other than animal feed materials

Always use the CFR 960 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 960 operates safely and efficiently.

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SERIAL NUMBER

The serial number is found on the serial number plate attached to the Complete Feed Ration 960 on the top left hand side of the front tub wall.

Serial Plate Location 215087C

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 the machine should read and clearly understand all Safety, Operating and Maintenance information presented in this manual.

Do not operate or allow someone to operate this equipment until this information has been reviewed. This information should be reviewed by all operators before the 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 960 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 960 shall not be operated without all the guards in place.

SAFETY DECALS

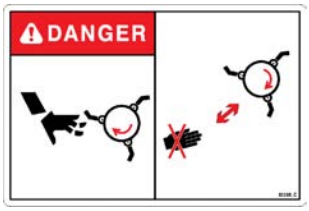
1. Keep decals and signs clean and legible at all times.
2. Replace decals and signs that are damaged, missing or have become illegible.
3. Replaced parts that displayed a decal should also display the current decal.
4. Decals are available from the Highline Parts Department.
5. Be familiar with the 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 CONTACT ROTATING FLAILS

Contact with moving parts can cause serious injury or death.

Keep hands out of the cutting area and processor tub when the flail drum is rotating.

Always disengage tractor power takeoff, set park brake, lower loader forks to the ground, shut off tractor engine, remove key, and wait for PTO to stop turning before unplugging by hand or servicing.

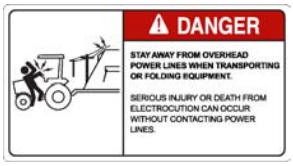
Stay out of the processor tub when the PTO is connected to the tractor.

Keep guards in place and in good condition.

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.

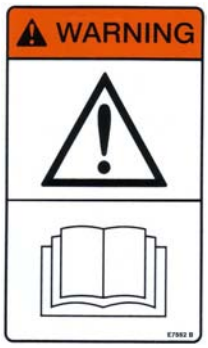
ENSURE SLOW MOVING VEHICLE SIGN IS IN PLACE

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 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.



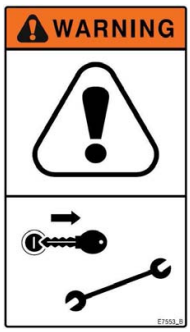
READ, UNDERSTAND, AND FOLLOW SAFETY INSTRUCTIONS

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.

ACCUMULATORS CONTAIN HIGH PRESSURE OIL

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

Shut off the machine, lower the bale lift and rotate forks to the home position before performing any maintenance on the hydraulic system.

THIS 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

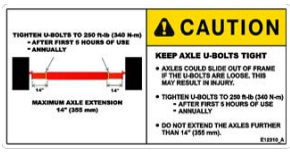
Do not operate the Constant Velocity (CV) driveline at greater than 80° to prevent damage to the driveline.

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

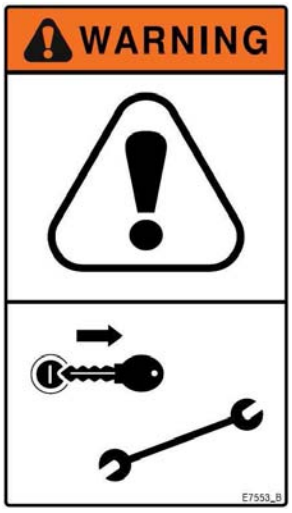
Lock forks in the upright position before going under the raised forks.
Lock the flail drum to ensure no movement of the flail drum will occur while cutting twine or netwrap.



KEEP THE AXLE U-BOLTS TIGHT

Axles could slide out of the frame if the u-bolts are loose.
Tighten u-bolts after first 5 hours of use and then annually.

Do not extend the axles further than 14".

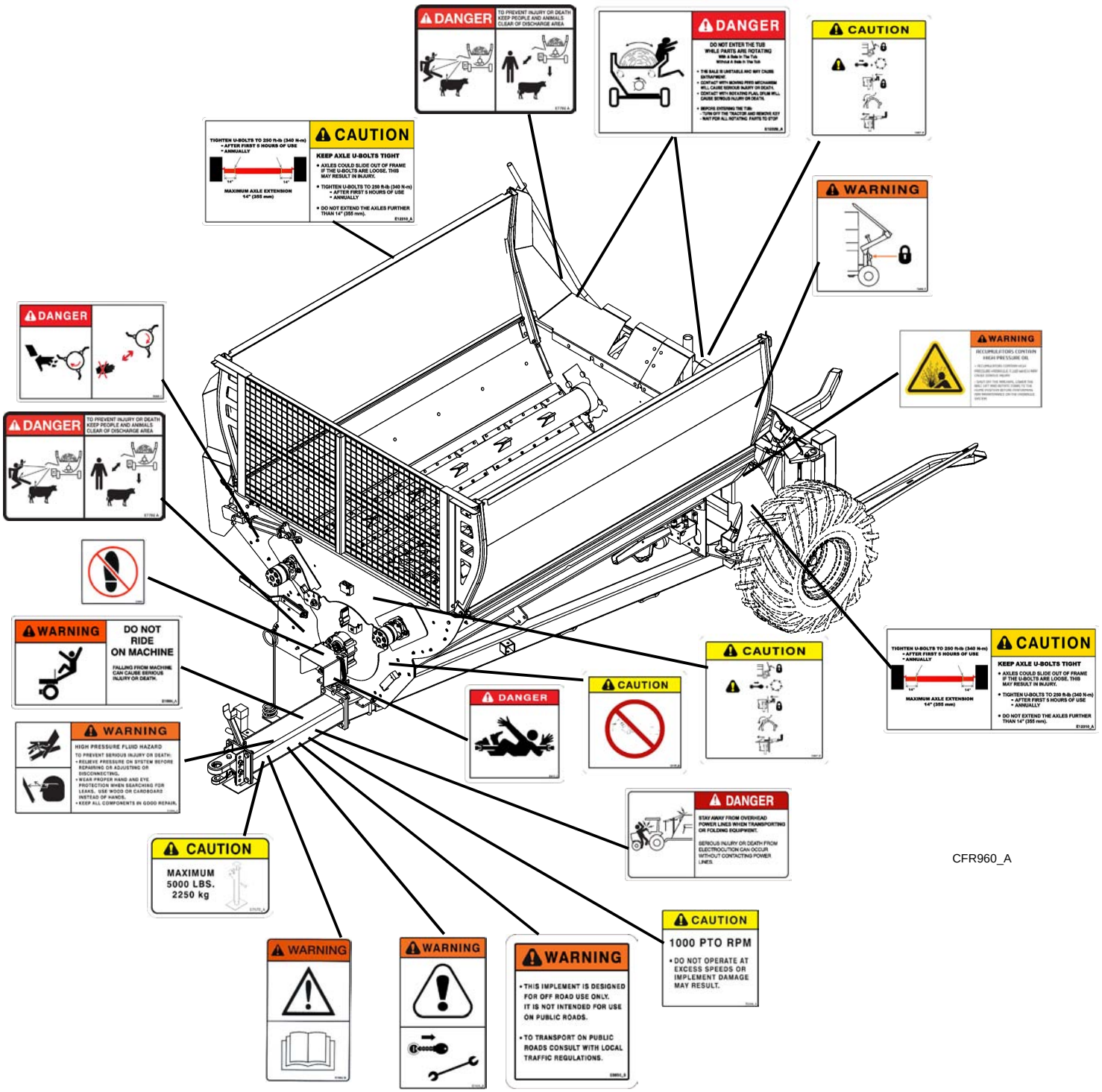


SHUTDOWN PROCEDURE

For your safety and the safety of others, this shutdown procedure must 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



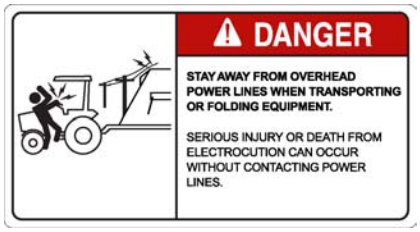
2.0 TRANSPORTING THE CFR 960

Only tow the CFR 960 behind a properly sized and equipped tractor which exceeds the loaded weight of the CFR 960 by 50%. Do not tow behind a truck or other type of vehicle.

The CFR 960 is designed for off road use only.

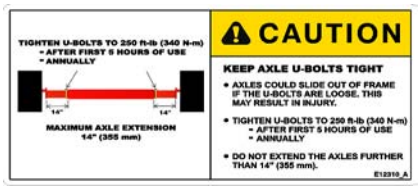
Do not transport on public roads with bales in the processor tub.
Do not transport on public roads with a bale loaded on the forks.
Check with local traffic regulations to transport on public roads.

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 960. Falling off can result in serious injury or death.

Keep the Axle U-Bolts Tight. Injury could result if axles come out.
Torque the axle u-bolts to 250 lb-ft (339 Nm) to ensure the axles do not slide out of the frame. Maximum axle extension is 14" (355 mm).



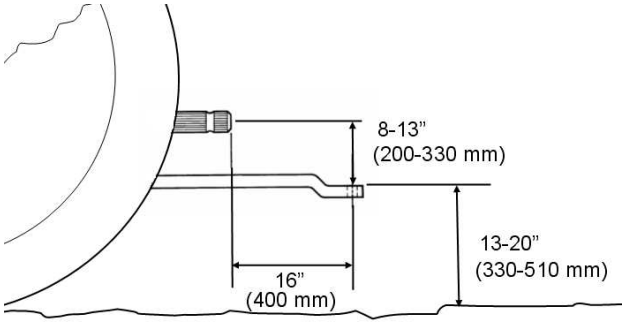
1. Tractor Requirements
   - Roll Over Protection System (ROPS)
   - Working seatbelts
   - 1 3/8" 21 spline PTO
   - PTO requirement
     - refer to the “Specifications” Section for the PTO requirements.
   - 3 Spool Control Valves (SCV)
     - An optional solenoid valve is available for tractors with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

2. Ensure the correct PTO speed.
   - Ensure that the tractor PTO speed matches the CFR 960’s gearbox speed of 1000 rpm.
   - Do not attempt to operate the CFR 960 at a different PTO speed.

Note: Do not use PTO adapters. PTO adapters will cause a driveline failure and possible tractor damage. Your CFR 960 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.)

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



Tractor Drawbar Adjustment

PTO Dimensions

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 214074

5. Connect the hitch to the tractor clevis drawbar.

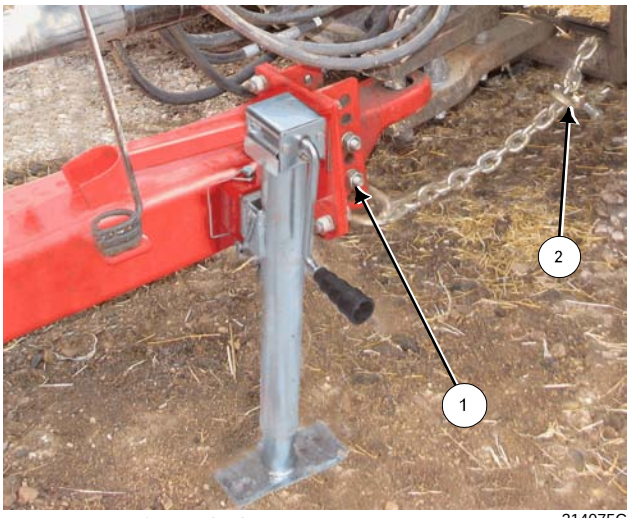
   - Use a 1" (25 mm) pin.

   - Secure with a hitch pin clip.

Connect Hitch to Tractor Clevis Drawbar 214073

6. Connect the safety chain.

   - Ensure the safety chain rating is equal or greater than the gross weight of the CFR 960.
   - Route the safety chain around the lower safety chain bolt (1).
   - Attach the chain to a secure location on the tractor.
   - Fasten the chain hook with the hook lock (2).



214075C
Connect Safety Chain

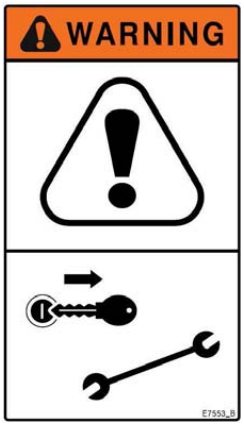
7. Route the hydraulic hoses and wiring harness through the hose support arm.


215150
Hoses and Electrical in Support Arm

8. Attach driveline to PTO.

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

The CFR 960 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 960 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 214076C

9. Attach the hydraulics.

    - Clean the end of the hoses (1) 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.

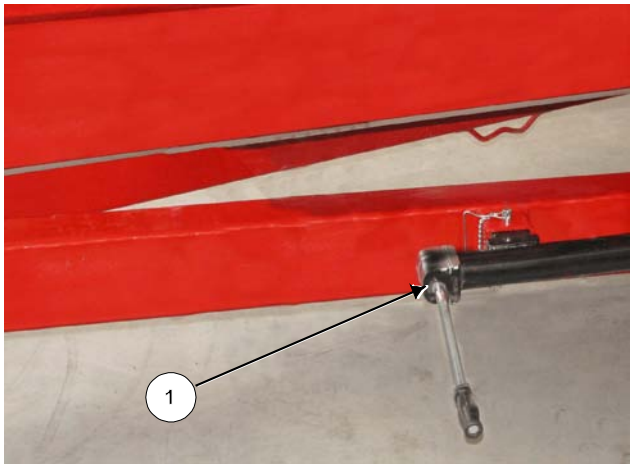
Attach Hydraulics 201199

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 (1) in the storage location.



Hitch Jack in Storage Location 215125C

12. Adjust wheel stance settings.

- Increase the rear 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.

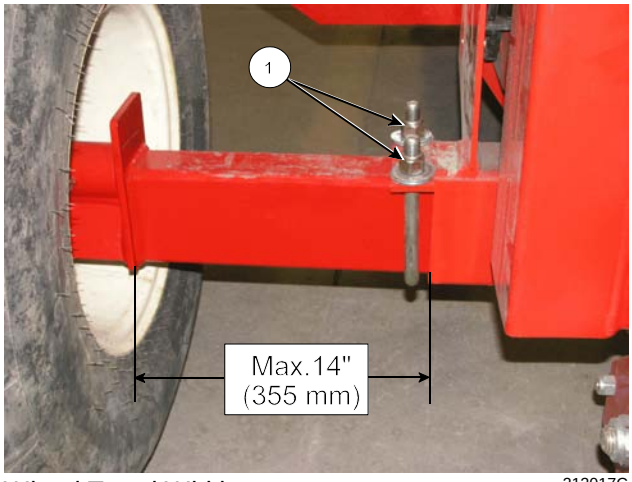
- Raise the main axle under the cylinder mount and support.

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

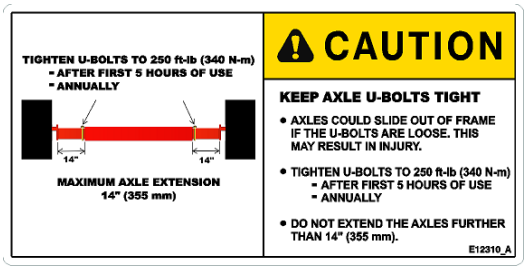
- Slide the axle to achieve the desired wheel stance setting.

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

- Tighten the u-bolts (1) that hold the axle tubes in place to 250 lb-ft (339 Nm).



Wheel Tread Width 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 85 lb-ft (115 Nm).

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


Check the Tires 216058

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 Locked 216070C

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

    - Flip the rubber deflector onto the top of the door before raising the door. This will secure the rubber between the tub wall and the door.

    - The discharge door is operated by a hydraulic cylinder.

    Note: This door cylinder may be linked to the feed roller hydraulic circuit through an optional electric solenoid.

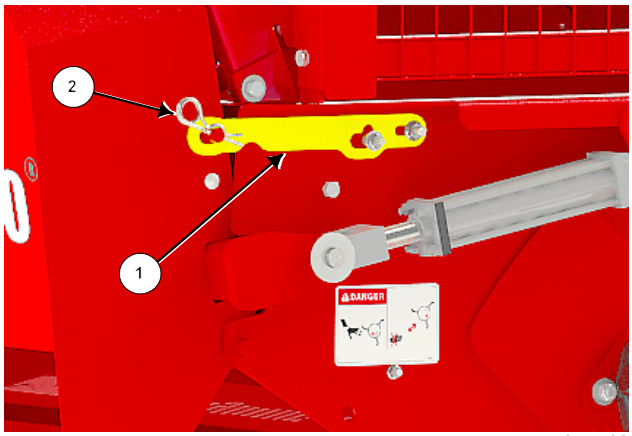
Discharge Door Raised - Rubber Secured 215155

17. Install the discharge deflector door transport lock.

    - Rotate the lock (1) toward the door.

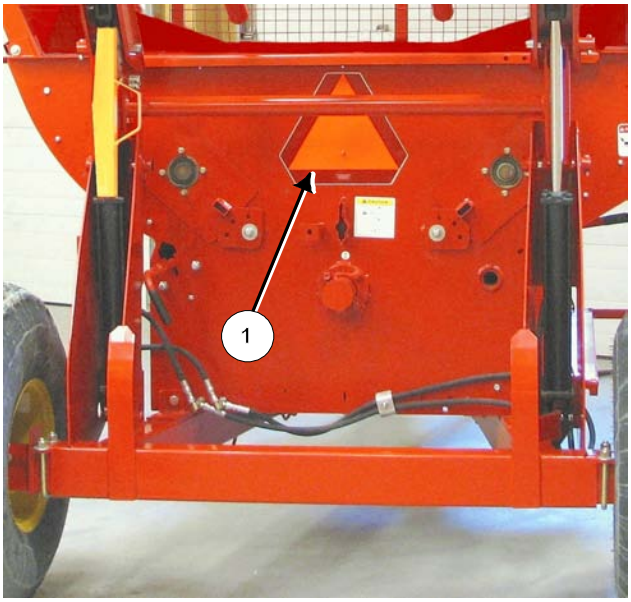
    - Place the lock onto the pin on the door.

    - Secure with the clip pin (2).



Deflector Door Lock 215156C

18. Ensure that the Slow Moving Vehicle (SMV) sign (1) is clean and visible.



Ensure SMV is Visible 215127C

19. 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.

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

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3.0 CFR 960 PREPARATION

Check these items each time before using the machine.

1. Park the tractor and CFR 960 on level ground.
   - Engage the tractor parking brake and shut down the tractor.

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

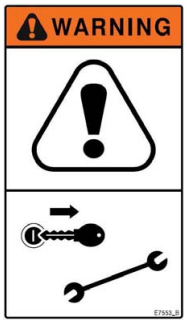
3. Ensure that the Slow Moving Vehicle (SMV) sign is clean and visible.

Park on Level Ground 214080

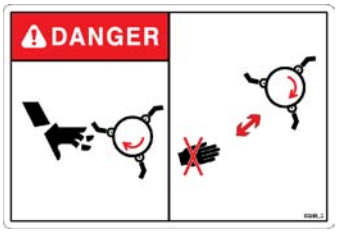
4. Check the condition of the flail drum.

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 960 when it is rotating. Contact with exposed rotating flails will cause serious injury or death.



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.


Check and Clean Flail Drum Area 214081

6. Check the condition of the flails.

   - Inspect the flails daily.

   Spin the drum by hand to check all the flails.
   - Check that the flails swing freely.
   - Check if they are broken or worn to the point that they would not properly process the material.
   - See the Section 5 - "Maintaining the CFR 960" 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.

Check Flails 214082

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

   Note: Remove the 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 "Twine Removal Procedure" at the end of this Section.

Remove Twine 214083

8. Adjust the height of the hitch tongue.
   Note: Do this procedure on level ground.

   - Level the frame of the CFR 960 to ensure the bale forks can lower for loading 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 214076

9. Set the level of the lower discharge deflector.

   - To adjust the bottom deflector, stand in front of the machine, pull the lower handle and raise or lower the door as required.

   - To increase the height of discharge, raise the door to the one of the upper slots.

   - To lessen the height discharge, position the door to one of the lower slots.

Set Level of Lower Discharge Deflector 214084-2

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

For Square Bales

- If processing only square bales, place the forks to the widest position.

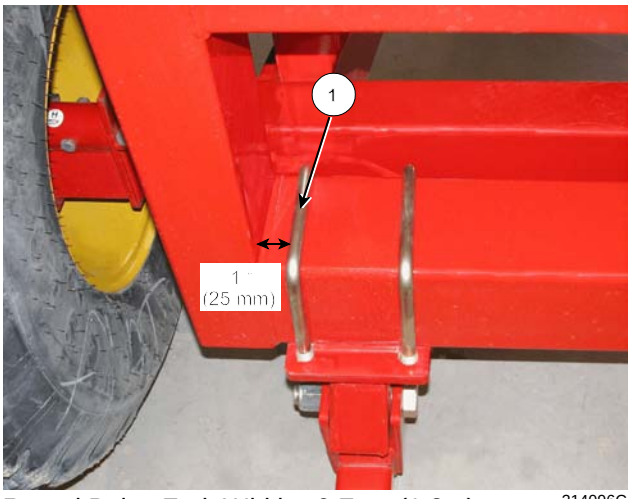
For Square and Round Bales

- If processing both square and round bales, place the fork width at the diameter setting for the round bales used. Use the same fork width for square bales.

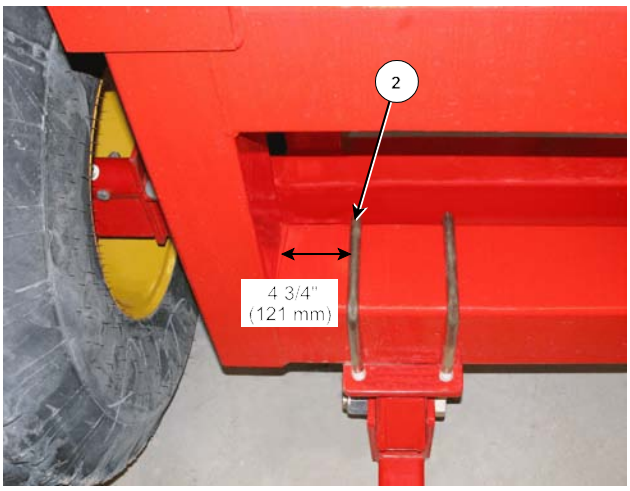
- For round bales 6 feet (1.8 m) in diameter.
  - Place both fork outer u-bolts (1) a distance of 1" (25 mm) from the frame upright.

- For round bales 5 feet (1.5 m) in diameter.
  - Place both fork outer u-bolts (2) a distance of 4 3/4" (121 mm) from the frame upright.

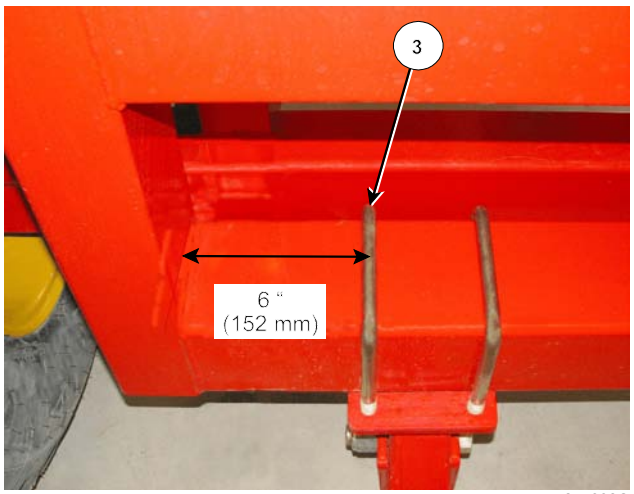
- For round bales 4 feet (1.2 m) in diameter.
  - Place both outer u-bolts (3) 6" (152 mm) from the edge of the vertical frame post.



Round Bales Fork Width - 6 Foot (1.8m) 214096C



Round Bales Fork Width - 5 Foot (1.5m) 214097C



Round Bales Fork Width - 4 Foot (1.2m) 214098C

11. 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 the hydraulic system before repairing, adjusting or disconnecting.

- Visually inspect all the hydraulic hoses and fittings.
  - See Section 5 "Maintaining the CFR 960" for conditions indicating that replacement is needed.
- Ensure the proper size cylinder pins are in place and secured.


Check All Hydraulics 214086

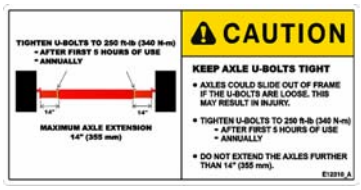
12. Inspect the wheels and tires for damage or foreign objects. Repair or replace as necessary.

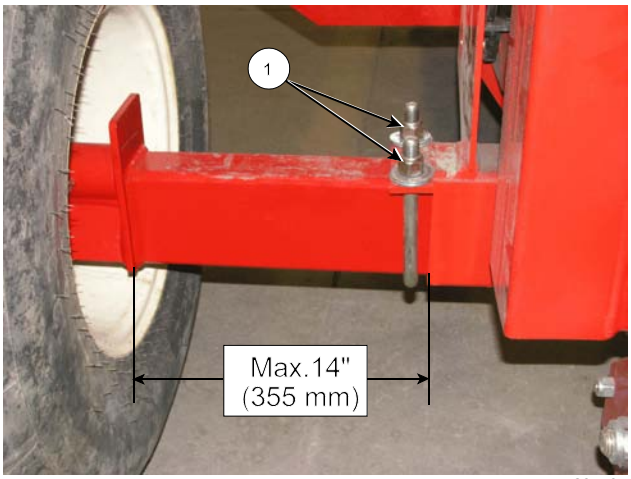

Inspect Wheels and Tires 216058

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

    - Torque the axle u-bolts (1) to 250 lb-ft (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 201195

14. 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

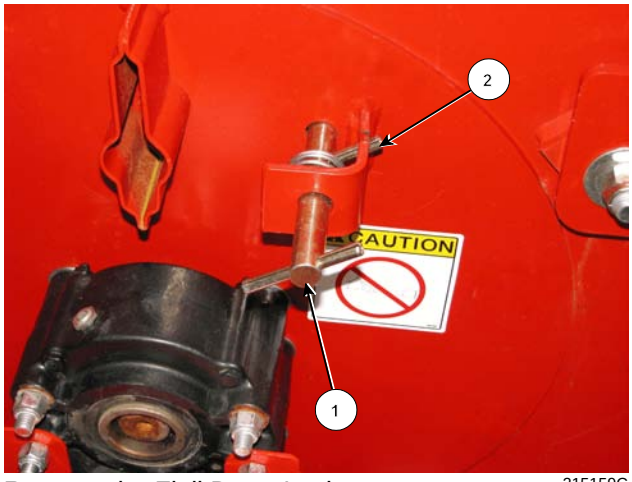
15. Ensure the driveline shields are lowered into place and are in good repair to prevent injuries.

    The CFR 960 shall not be operated without the driveline shields in place.

Ensure Driveline Shield is in Place 214085

16. Unlock the flail drum.

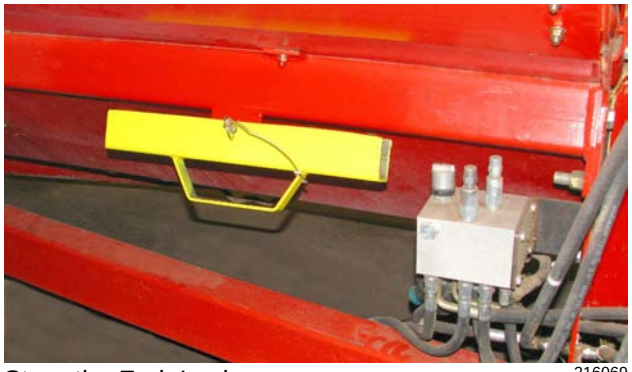
- Disengage the drum clutch pin from the flail drum drive plate.
  - Pull the spring loaded pin (1) out of the processing chamber.
  - Rotate the pin so that the roll pin (2) is in the lock out slot.
- Failure to unlock the flail drum will result in damage to the machine during start up.



Remove the Flail Drum Lock 215159C

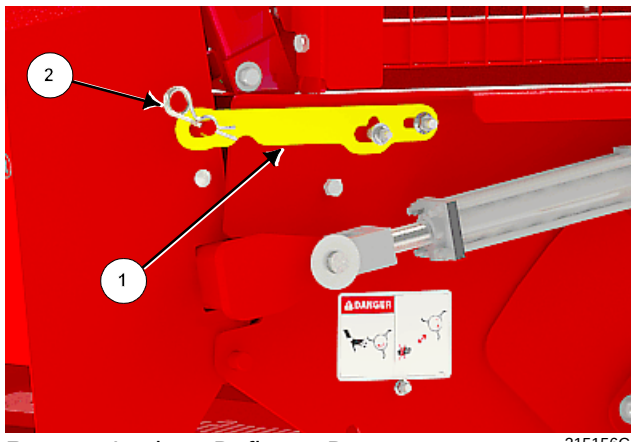
17. Remove the fork lock from the hydraulic cylinder.
    - Store the lock on the storage tab on the side of the machine.

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


Store the Fork Lock 216069

18. Remove the lock pin on the discharge deflector door to allow the door to be operated by the hydraulic cylinder.
    - Remove the clip pin (2).
    - Remove the lock (1) from the pin on the door.

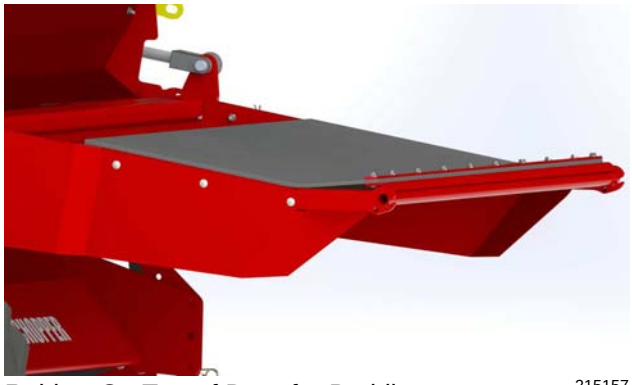
Note: The door may need to be moved with the hydraulic cylinder to remove the weight from the lock.



Remove Lock on Deflector Door 215156C

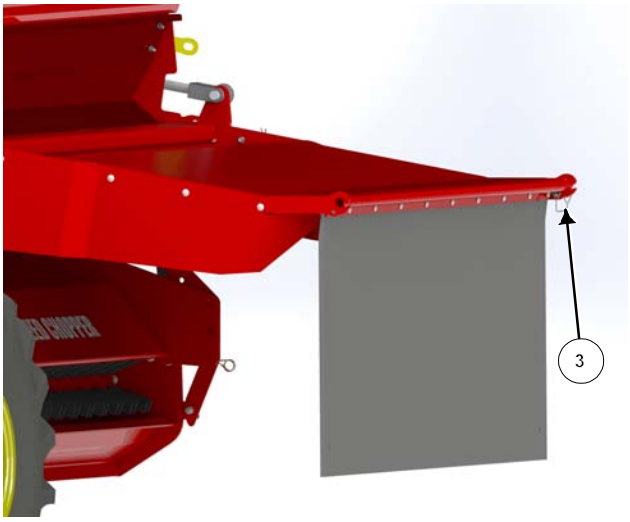
19. Position the rubber deflector.

    - For bedding have the rubber laying on the top of the door.



Rubber On Top of Door for Bedding 215157

    - For bunk or windrow feeding have the rubber hanging down.
        - Pin (3) the rubber in place.
            - There are 3 possible pin positions to give adjustment to feed distribution.



Rubber Down for Bunk/Windrow Feeding 215158C

20. Lubricate all grease fittings and check the fluid level in the gear box.

    - See the Maintenance Section for information.

21. Ensure all fasteners are tightened.

Twine Removal Procedure

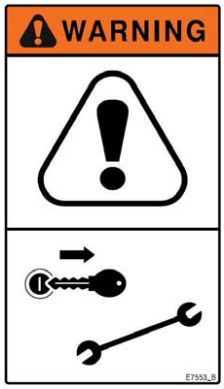
Remove twine that is around the flail drum.

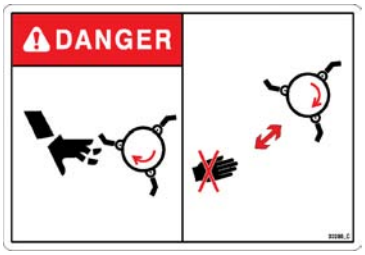
Note: Remove the twine from the flail drum and feed rollers every 25 bales. Premature bearing failure can occur if twine is allowed to build up.

Shutdown 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 960 when it is rotating. Contact with exposed rotating flails will cause serious injury or death.





1. Raise the forks to the fully raised position.

Raise Forks and Lock 215127

2. Install the cylinder locks onto the fork cylinders.

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

3. Move the flail guard rod adjustment lever to a number between 1 and 4.

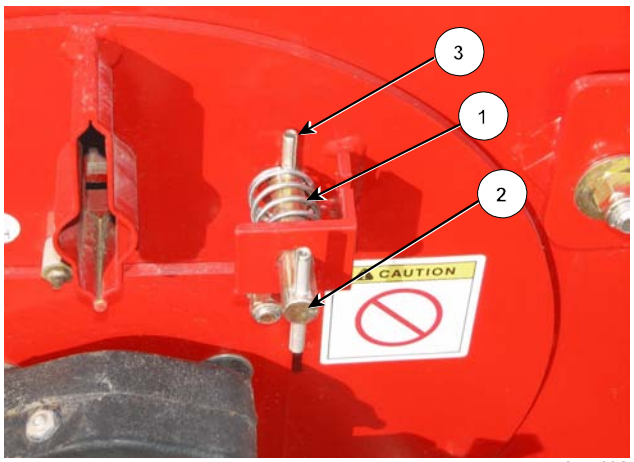
   Note: Having the lever at position 5 will result in damage to the twine cutter blade.

Move Flail Guard Rod Lever (to less than 5) 214087-2

4. Align the flail drum knife path with the tub opening on the rear wall.

5. Engage the flail drum lock.

   - Turn the lock pin (2) to release the roll pin (3) from the slot.
   - Allow the spring (1) to push the lock pin into the processing chamber.
   - Manually rotate the driveline until the lock pin snaps into place locking the flail drum.



Engage Flail Drum Lock 215162C

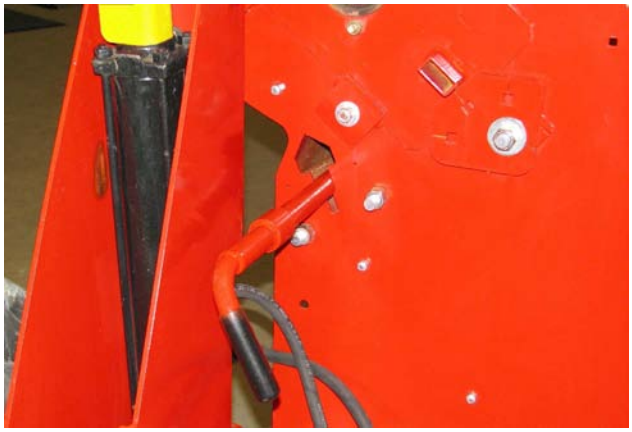
6. Move flails blocking the knife path.

   - Failure to do so will result in damage to the twine cutter blade.

Move Flails Blocking the Knife Path 215135

7. Remove the twine cutter from the storage position.

    - The twine cutter is located on the non-discharge side of the rear bale tub wall.



Remove Twine Cutter from Storage Position 201231

8. Insert the twine cutter with the blade up.

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

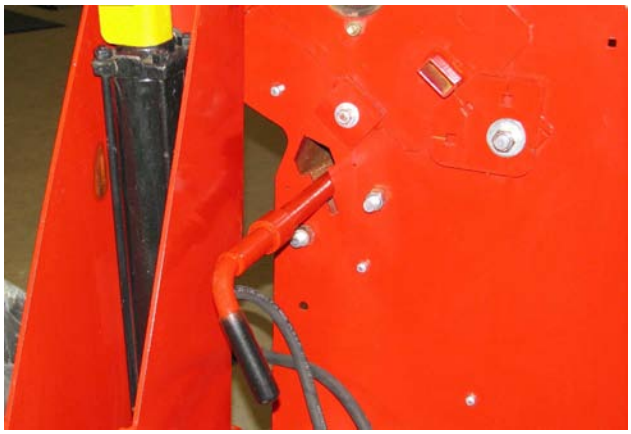
Insert Twine Cutter with Blade Up 215163

9. Cut through the twine.

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

10. Place the 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 201231

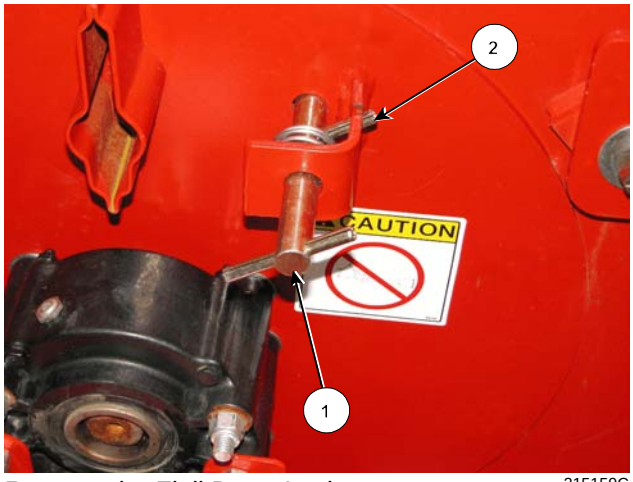
11. Unlock the flail drum.

    - Disengage the drum clutch pin from the flail drum drive plate.

        - Pull the spring loaded pin (1) out of the processing chamber.

        - Rotate the pin so that the roll pin (2) is in the lock out slot.

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

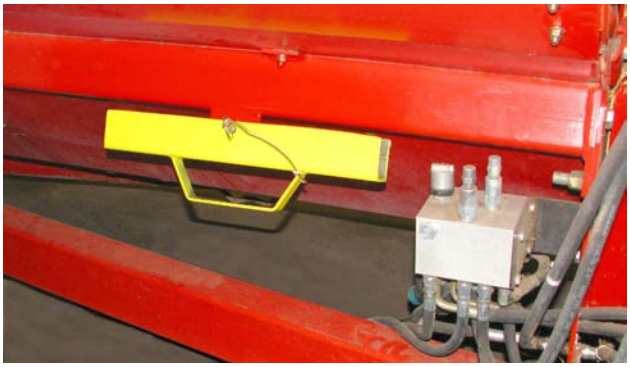


Remove the Flail Drum Lock 215159C

12. Remove the cut twine from the flail drum.


Remove Twine 214083

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


Fork Lock in Storage Location 216069

4.0 OPERATING THE CFR 960

Do not allow anyone to ride on the CFR 960.

- 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.

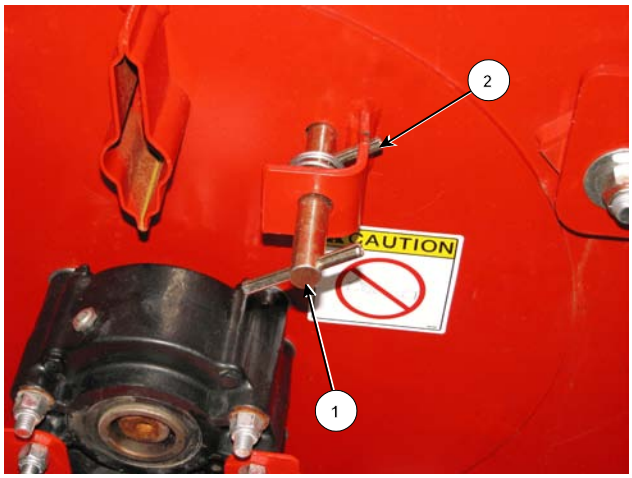
Stay back from an operating machine which can discharge objects several feet.

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 (1).

   - Disengage the drum clutch pin from the flail drum drive plate.
   - Pull the spring loaded pin (1) out of the processing chamber.
   - Rotate the pin so that the roll pin (2) is in the lock out slot.
   - Failure to unlock the flail drum will result in damage to the machine during start up.



Unlock the Flail Drum 215159C

Discharge Rate Settings

There are 2 settings that determine the rate at which material is discharged:

- The aggression level of the flails acting on the bale.
- The speed of the feed rollers which feed 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 rests on 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 upper handle out of the handle lock.
   - Raise or lower the handle to the desired discharge setting.
   - Lock the handle in the notch.

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

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

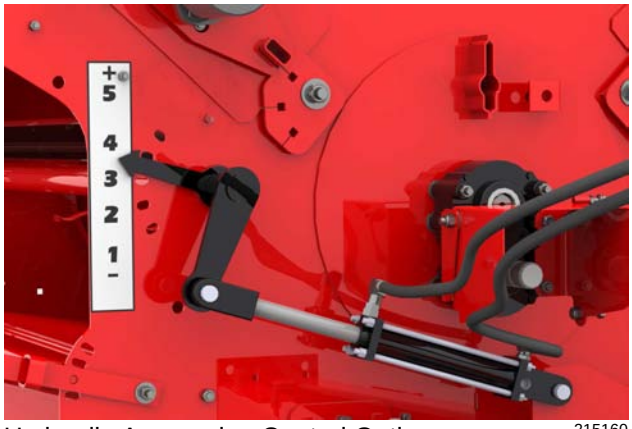
Set the Aggression Level of the Flails 214084-2

If the Hydraulic Aggression Control Option is installed:

- Activate the hydraulic cylinder to change the position of the guard rods.

To Increase the discharge rate:
- Raise the pointer to a higher number.

To Decrease the discharge rate:
- Lower the pointer to a lower number.



Hydraulic Aggression Control Option 215160

2. Set the speed of the feed rollers.

   Adjust the feed roller speed to a maximum of 40 rpm.

   - Adjust using the tractor flow control settings.

   - Faster feed roller speeds will result in a faster discharge of material.

     Note: Running the feed rollers too fast may cause the feed rollers to dig into the bale to the point where the bale will no longer be turned in the tub.

   - Slower feed roller speeds will result in a slower discharge of material.


Set Feed Roller Speed 215132

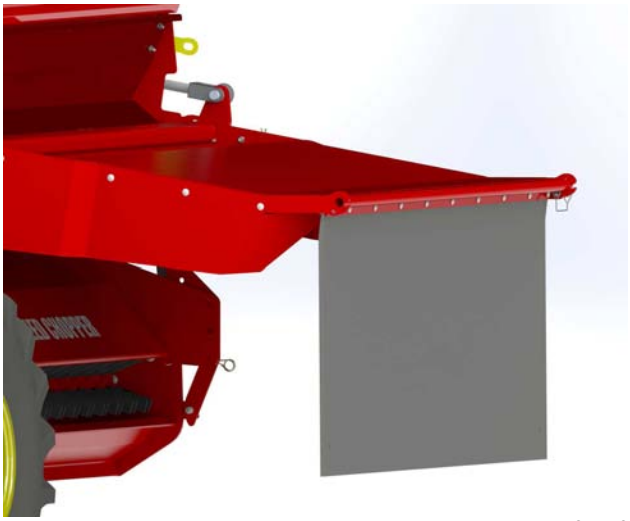
3. Set the upper deflector door and rubber deflector.

    - Raise or lower the upper deflector door to adjust the amount of spreading of material.
        - Use the hydraulic cylinder to adjust the door.
        - Place the rubber deflector according to the information below.

    Door Lowered - the material will be left in a windrow or directed into a feed bunk.
        - Allow the rubber deflector to hang down.
        - Adjust the rubber to one of the three settings.

    Door Midway - deflector door will control the height and distance of discharged material.
        - Place the rubber deflector onto the top of the door.

    Door Raised - material will be spread out over a wide area such as for bedding materials.
        - Place the rubber deflector onto the top of the door.



Set the Upper Deflector Door 215158

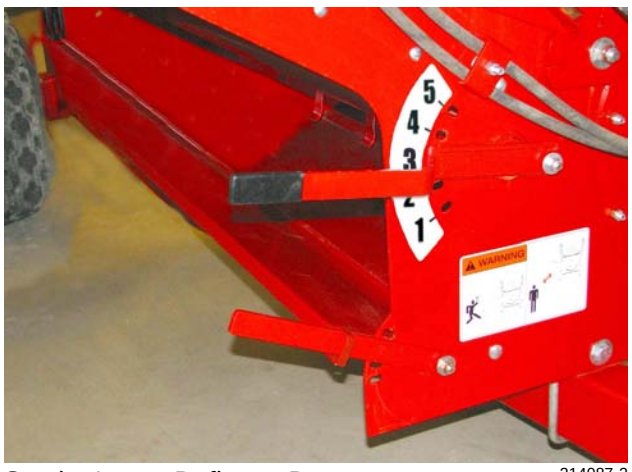
Door Lowered for Windrow Feeding 214088

4. Set the lower deflector door.

    - Raise or lower the lower deflector door to adjust the discharge height and distance of material travel.

    - To increase discharge height and distance, move the door up.

    - To decrease discharge height and distance, move the door down.



Set the Lower Deflector Door 214087-2

Loading Square Bales

1. Select the square bale setting on the hydraulic block located near the left rear wheel to enable the auto-rotate function on the bale forks.

   There are 2 types of hydraulic blocks.
   - Block with 2 valves and a round selector knob.
   - Block with 3 valves and a round selector knob.

   - Rotate the selector fully to "Square" on the 2 valve block.

   - Rotate the selector fully to "SQ" on the 3 valve block.

Select "Square" on 2 Valve Hydraulic Block 215129-1

Select "SQ" on 3 Valve Hydraulic Block 217043

2. Lower the forks to the ground.

   Ensure people are not near the machine when lowering the forks and backing up to bales.

   - The dump fork indicator rod (1) gives a visual indication if the forks are raised or lowered.

Fork Indicator Rod 215123C

3. Ensure the forks are in the "home" position before backing into a bale.

   Note: The "home" position is defined as the forks fully lowered, rotated and resting against the lift mechanism so that the forks are in line with the tub sidewalls.

   - Damage to the machine may occur if the rotating mechanism is not in the "home" position when backing in to a bale.

   - The dump indicator rod does not show if the forks are rotated back to the "home" position.

Forks Lowered and in "Home" Position 216060

Normal Bale Lift Cycle

The normal bale lifting cycle for square bales is to fully lift a bale, dump it into the processor tub and lower the lift forks to the ground.

If the forks do not return to the "home" position when the forks are lowered refer to adjusting the pressure sequence valves in Section 7 - "Auto-Rotate for Square Bales - Pressure Sequence Valves."

Note: If the lift cycle is stopped before completing the normal lift cycle or a bale is lowered back to the ground, the forks may not have had time to rotate back to the "home" position.

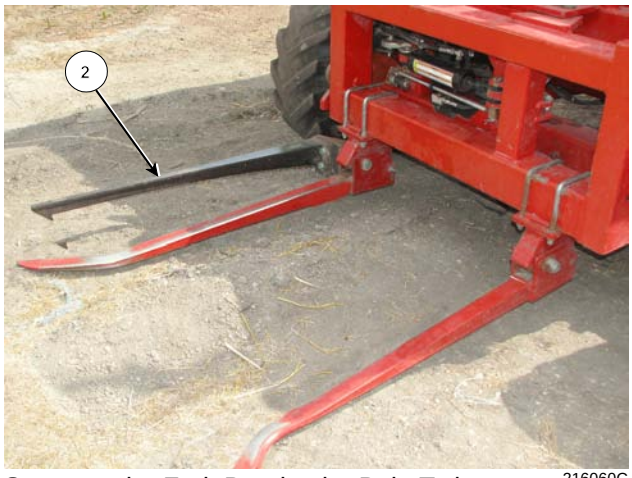
- To ensure the rotation of the forks has completed back to the "home " position, hold the hydraulic lever for lowering for an additional 30 seconds.

4. Back up to the long side of a bale.

   - Align the center of the 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.

Center The Bale on the Forks 214089

Note: The spear (2) that is bolted onto the forks is designed to catch the square bale twine and break it as the bale falls into the tub.



Spear on the Fork Breaks the Bale Twine 216060C

5. 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.

Bale Rotating as Being Lifted 214090

6. Continue to press the hydraulic lever to rotate and raise the bale into the tub.

Ensure people are not near the machine when rotating and loading bales.

- As the forks are raised about 24" from the ground, the auto-rotation of the bale will begin.

- Continue to press the hydraulic lever during the rotation process to fully rotate the bale. The bale is to be in line with tub walls.

Long Side of Bale In Line With Tub Wall 214091

7. Load the bale into the processor tub.

- Press the hydraulic lever so that the forks will fully rise and the bale will fall into the tub.

Note: Ensure the feed rollers are not turning while loading the first bale.

Load the Bale Into the Tub 214092

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

   - Lower the forks to load a second bale.

Ensure people are not near the machine when backing up to bales.

- Note the position of the fork indicator rod. Do not back into the bale until the indicator rod shows the forks are fully lowered.

Fully Lower Forks - Indicator Rod 215123

- Ensure the forks are rotated to the "home" position before backing into the bale.

  - Damage to the rotating mechanism may occur if it is not fully rotated.

  - The dump indicator rod does not show if the forks are rotated back to the "home" position.

  - If unsure if the forks are in the "home" position, press and hold the hydraulic lever for lowering for an additional 30 seconds.

Forks Lowered and in the "Home" Position 216060

There are 2 ways to carry a second bale on the forks:

Non Rotated Bale Position

- Raise the bale 12"-15" from the ground.
- Release the hydraulic lever to avoid starting the bale auto-rotate sequence.

Second Bale On Forks - Non Rotated Position 214093

Rotated Bale Position

Ensure people are not near the machine when rotating bales.

- Raise the bale and hold the hydraulic lever so that the rotation sequence is started.
- Hold the lever until the bale is rotated to be in line with the tub.
- Release the hydraulic lever before the forks start to load the bale into the tub.
- Ensure the bale on the forks does not interfere with the bale already in the tub.

Second Bale On Forks - Rotated Position 214099

Loading Round Bales

1. Have the forks set for the size of round bale being loaded.

   - Refer to Section 3 “Adjust the bale loader forks - For Square and Round Bales.”

2. Select the round bale setting on the hydraulic block located near the left rear wheel to disable the auto-rotate function on the bale forks.

   There are 2 types of hydraulic blocks.
   - Block with 2 valves and a round selector knob.
   - Block with 3 valves and a round selector knob.

   - Rotate the selector fully to “Round” on the 2 valve block.

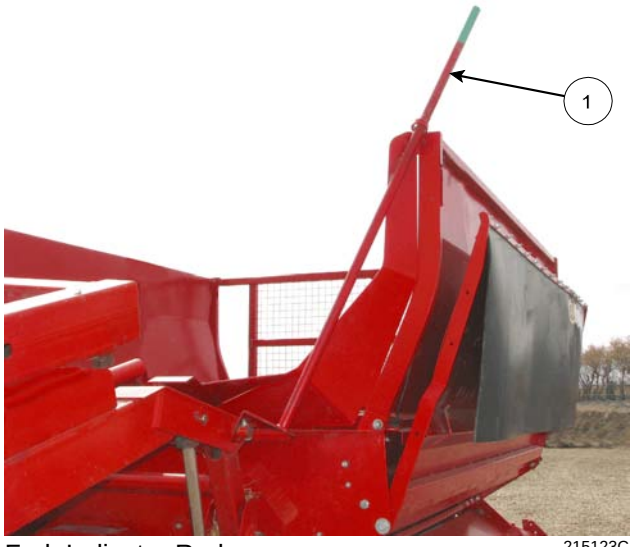
   - Rotate the selector fully to “RD” on the 3 valve block.

Select “Round” on 2 Valve Hydraulic Block 215130-1


Select “RD” on 3 Valve Hydraulic Block 217041

3. Lower the forks to the ground.

   - The dump fork indicator rod (1) gives a visual indication if the forks are raised or lowered.



Fork Indicator Rod 215123C

4. Back up to the bale.

Ensure people are not near the machine when backing up to bales.

- Align the center of bale with the center of the processor.
- Slowly back up to the bale until the forks are completely under the bale.

Center the Bale on the Forks 215166

5. 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.

Ensure people are not near the machine when loading bales.

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

   Note: Ensure the feed rollers are not turning while loading the first bale.

Raise the Bale into the Processor Tub 214101

Processing the Bale

1. 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.

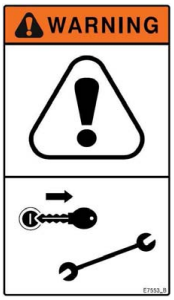
The CFR 960 shall not be operated without the guards in place or in good condition.

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

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

2. Begin processing material.

- Slowly start rotating the bale with the feed rollers.
  - Bring the feed rollers up to a speed where the material is being fully processed.



Note: If the feed rollers are rotating to fast they may dig into the bale. This may cause grooves resulting in the bale not being turned.

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.

3. Adjust the direction of bale rotation.

    - Rotate the bale with the feed rollers so that the top of the bale moves toward the discharge side of the processor.

    - If material begins to bunch up near the top of the bale, reverse the direction of bale rotation.

    - If the bale stops rotating, reverse the direction of the feed rollers.

Adjust Direction of Bale Rotation 215132

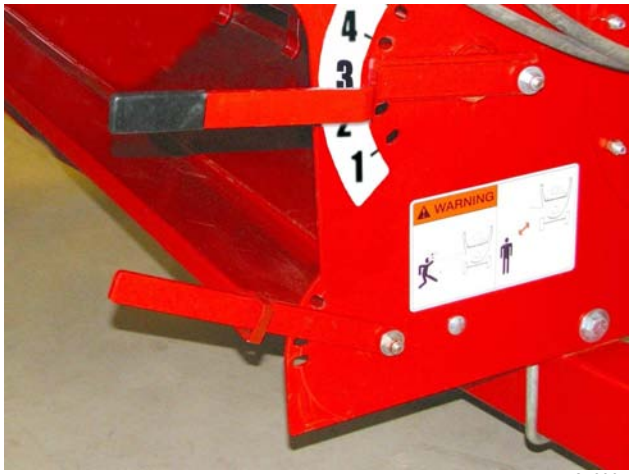
4. Re-adjust the discharge rate lever (if needed).

    - If a 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

Re-Adjust Discharge Rate Lever (If needed) 214084-2

5. Re-adjust the level of the lower discharge deflector (if needed).

    - To increase the discharge height, raise the door to the one of the upper slots.
        - Pull the lower handle and raise or lower the door as required.



Re-Adjust Lower Deflector (If needed) 216061

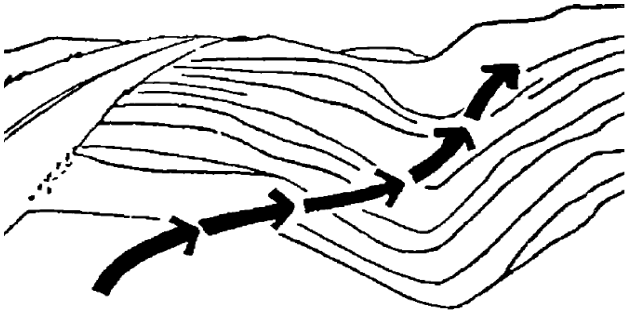
6. Stop the feed rollers before loading another bale into the processor.

Stop the Feed Rollers Before Loading Bale 214100

Stop Feed Rollers Before Loading Bale 214101

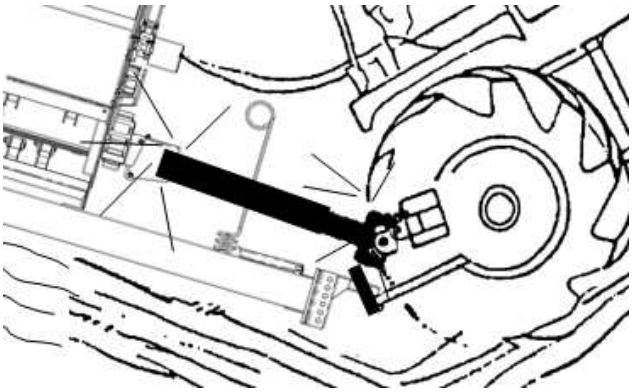
7. Crossing Ditches and Steep Inclines

   - 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 on the hitch arm or downward onto the PTO shaft, breaking it off.

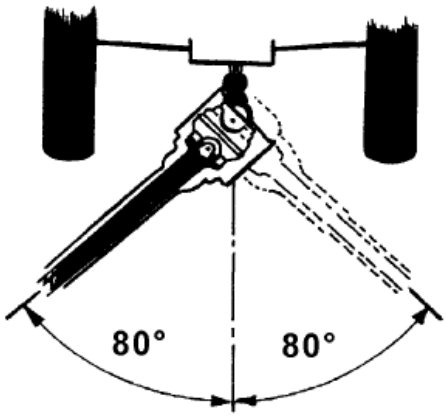


Driveline Collapsed in Steep Ditch 201221

8. 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 tractor tire does not contact the CFR 960 deck or tongue.

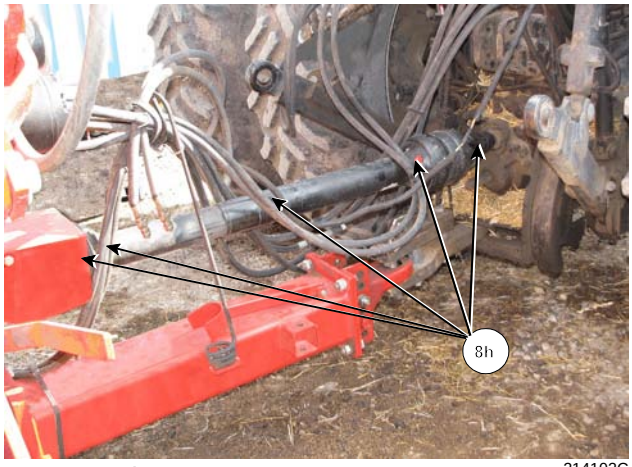


Turn Less Than 80° 109040

5.0 MAINTAINING THE CFR 960

Lubrication

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



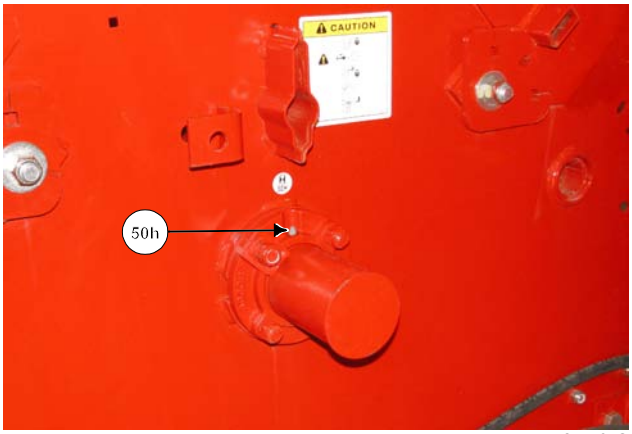
214102C
Grease Points on PTO

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

Every 50 Hours

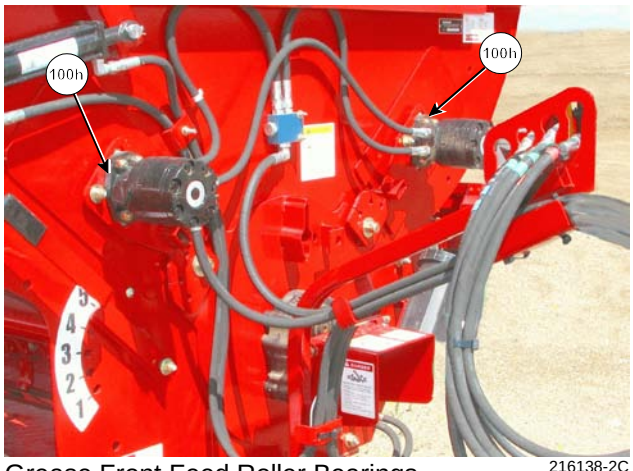
- Lubricate 1 point on the rear flail drum bearing at the back of the machine.



215167C
Grease Rear Flail Drum Bearing

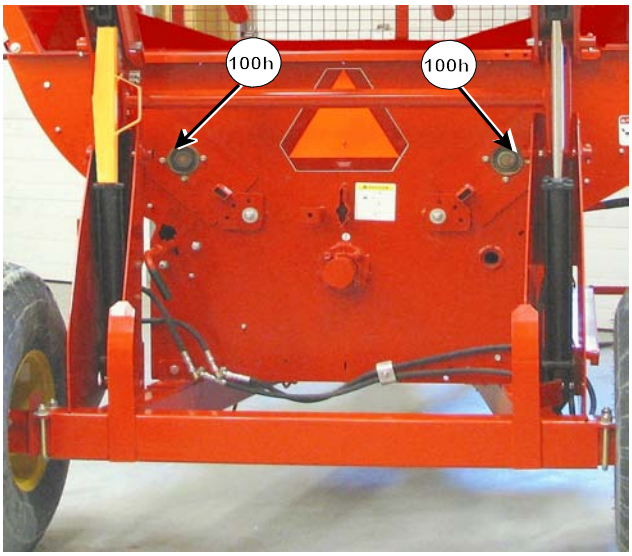
Every 100 Hours

- Lubricate 1 point at the front of each feed roller.



216138-2C
Grease Front Feed Roller Bearings

- Lubricate 1 point at the rear of each feed roller.



Grease Rear Feed Roller Bearings 215127C2

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

Grease Hubs on Both Spindles 215133C

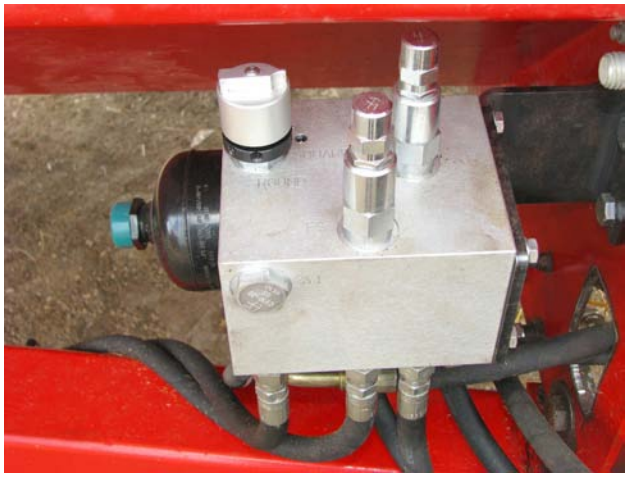
Hydraulic Accumulator

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 215129

Visually Inspect Hydraulic Hoses/Fittings

The accumulator contains high pressure hydraulic oil.

Lower the bale lift and rotate the forks to the home position before performing any maintenance on the hydraulic system.

Shut down the machine. Relieve the pressure on the hydraulic hoses and disconnect them.

Disconnect Hydraulic Hoses 201199

Replace the hydraulic hose assembly if any of the following conditions exist:

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

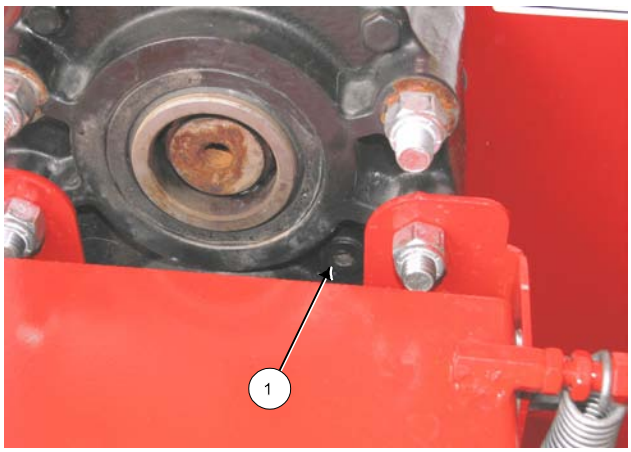
Check the Fluid Level in the Gearbox

- Check the oil fluid level by removing the oil level plug (1) in the center of the gearbox.

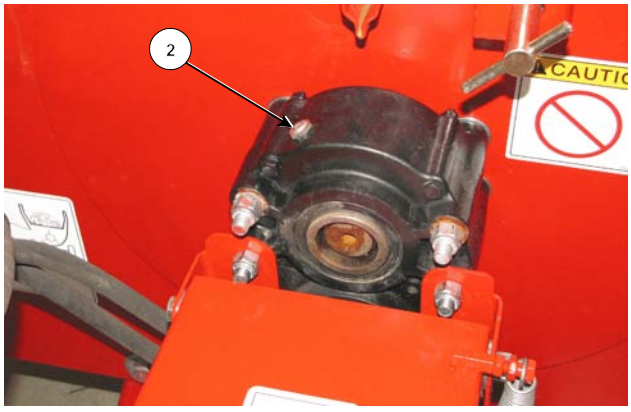
  - The oil should be at the level of the plug.

  - 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)



Check Gearbox Oil Level 201225C



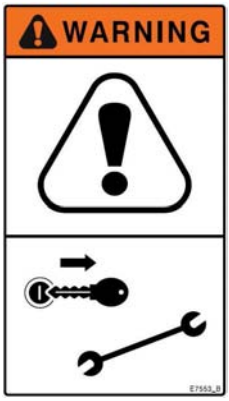
Add Oil at Top of Gearbox 215168C

Gearbox Oil Changing Procedures

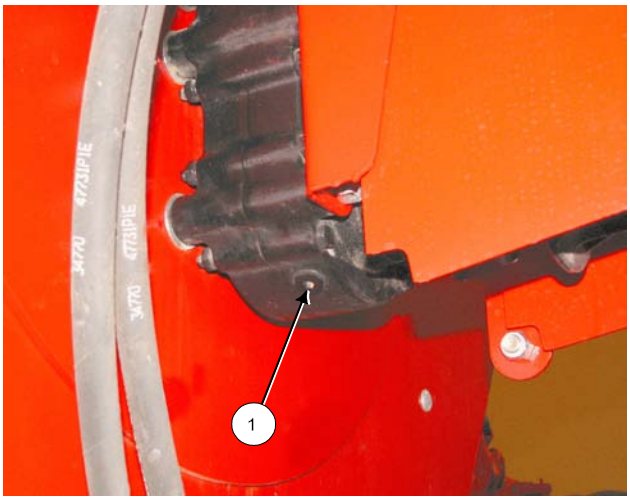
Change the oil annually and before storing the CFR 960 for the season.

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 960 before any work is done to prevent the CFR 960 from moving during servicing.



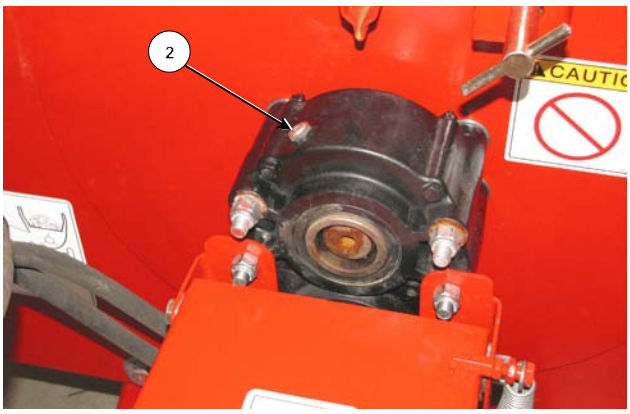
1. Drain the oil from the gearbox.
   - Remove the drain plug on the bottom of the gearbox.
   - Allow the oil to drain completely from the gearbox.
   - Catch the oil in a container.



Drain Oil From Gearbox 215169C

2. Replace the drain plug 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.



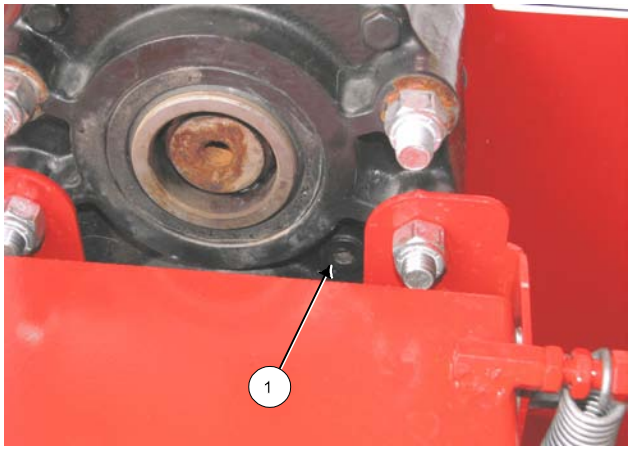
Add Oil at Top of Gearbox 215168C

4. Check the oil level in the gearbox.

   - Removing the oil level plug (1) in the center of the gearbox.

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

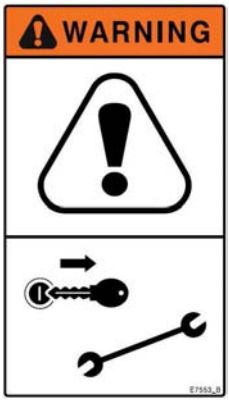
   - If oil needs to be added, add through the plug on the top of the gearbox.



Check Gearbox Oil Level 201225C

Flail Replacement Procedure

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

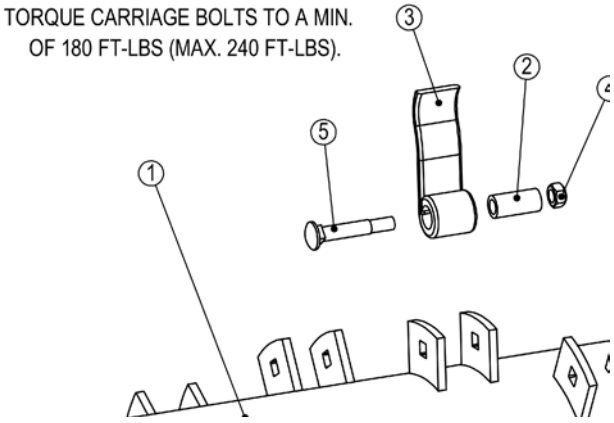


Before beginning, make sure the tractor is off and the PTO is disengaged. Disconnect the driveline from the tractor before doing any work.

Securely block the CFR 960 before any work is done to prevent the CFR 960 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

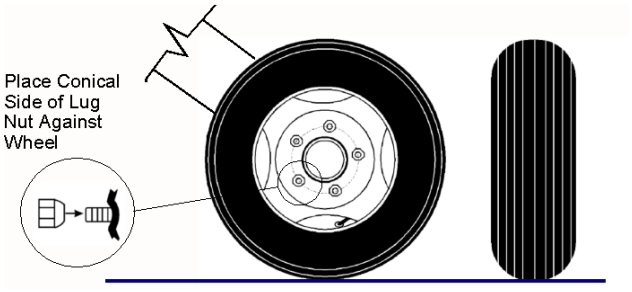
Tires

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 960.

Tires 216058

- Place the cone side of the lug nut against the wheel rim. Torque to 85 lb-ft (115 Nm).



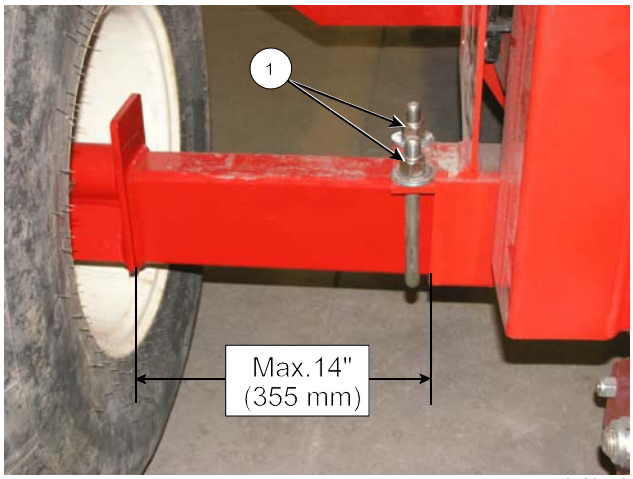
Tire Mounting 107094CC

- Tire Pressure - Fill the tires to 24 psi (165 Kpa).
- Transport speed for 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 are tight.

- Torque the axle u-bolts (1) to 250 lb-ft (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

6.0 STORING THE CFR 960

1. Clean all the debris from the tub area and off the CFR 960.

2. Park the CFR 960 on level ground.

3. Lubricate all CFR 960 grease points (See Section 5).

4. Tighten all bolts to the recommended torque.

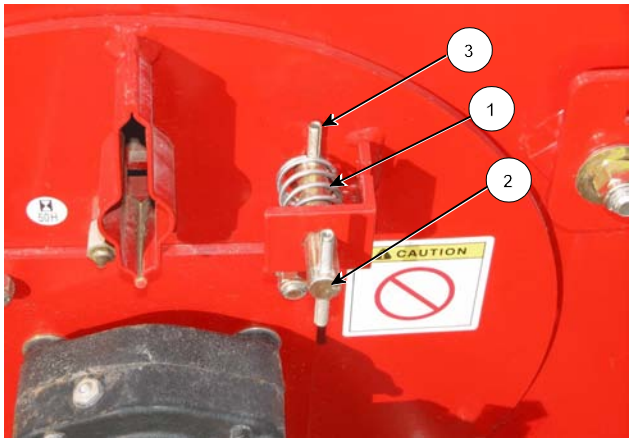
Clean Debris from the CFR 960 214080

5. Check the CFR 960 for worn and damaged parts. Replace as needed.

6. Touch-up the paint to prevent rusting.

7. Lock the CFR 960 flail drum.

   - Engage the flail drum lock.
   - Turn the lock pin (2) to release the roll pin (3) from the slot.
   - Allow the spring (1) to push the lock pin into the processing chamber.
   - Manually rotate the driveline until the lock pin snaps into place locking the flail drum



Lock the Flail Drum 215162C

8. Lower the forks to the ground.

   - Ensure the forks are fully lowered, rotated and resting against the lift mechanism so that the forks are in line with the tub sidewalls.

9. Remove debris built up around the forks and the rotator area.

Lower Forks to the Ground 216060

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

    - Flip the rubber deflector onto the top of the door before raising the door. This will secure the rubber between the tub wall and the door.

    - The discharge door is operated by a hydraulic cylinder.

    Note: This door cylinder may be linked to the feed roller hydraulic circuit through an optional electric solenoid.

Raise Deflector Door to Transport Position 215155-2

11. Install the discharge deflector door transport lock.

    - Place the lock onto the pin on the door.

    - Fasten with the clip pin.

Install Deflector Door Transport Lock 215156

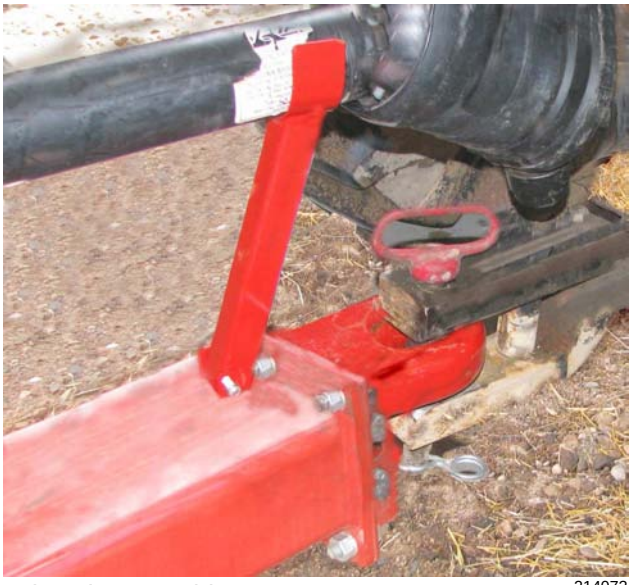
12. Place the jack onto the hitch.

    - 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.

13. Remove the driveline from the tractor PTO shaft.

Jack on Hitch, Disconnect Driveline & Chain 214076

14. Place the driveline in the driveline holder.



Drive Line In Holder 214073

15. Disconnect the safety chain from the tractor.

16. Disconnect the hitch from the tractor.

    - Remove the hitch pin.

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

The accumulator contains high pressure hydraulic oil.

Lower the bale lift and rotate the forks to the home position before performing any maintenance on the hydraulic system.

Disconnect Hydraulic Hoses & Electrical 108008-1

18. Disconnect the electrical connection.

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

Hoses and Electrical in Holder 216138

20. Change the oil in the gearbox. See the Maintenance Section for procedures.

- Fill the gearbox to the oil level as outlined in the Maintenance Section.

7.0 TROUBLESHOOTING

General

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 feed rollers left to right to pull bale into tub
	Auto-Rotate for square bales not working	Check the Section on “Auto-Rotate for Square Bales” below
Plugging in discharge area	Snow and ice on bales causes 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
Material builds up on one side of bale in tub	Bale unwrapping in tub	Reverse direction of feed rollers to consume material buildup
Difficult to rotate bale in tub	Feed rollers not fully engaging bale	Increase aggression of flails to help rotate bale
		Roll bale into the direction of the discharge area
	Bale on forks contacting bale in tub	Lower the forks
Bale Not Rotating	Feed rollers not engaged	Slowly engage the feed rollers to get the bale rotating
	Grooves cutting into bale	Slowly engage the feed rollers. Slow down the rotating speed of the rollers

Symptom	Problem	Solution
PTO and flail drum not turning	Flail drum lock engaged	Disengage drum lock
	Driveline shear bolt	Replace shear bolt on drive line
Feed rollers not turning	SCV not supplying enough hydraulic flow	Increase the flow rate at the SCV
	Electric solenoid valve	Check the electrical connection to the solenoid
		Check that hydraulic fluid passes through the solenoid 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

Auto-Rotate for Square Bales

The lift and rotate functions are controlled by 2 manual valves and 2 pressure sequence valves.

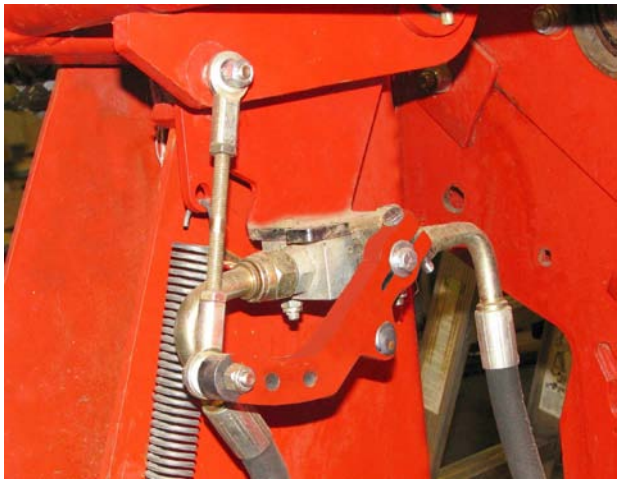
Manual Valves

There are 2 manual actuated valves in the lift circuit.

Stop Lift/Begin Rotate Valve

As the dump lifts, the valve located near the top of the dump cylinder is actuated by a link.

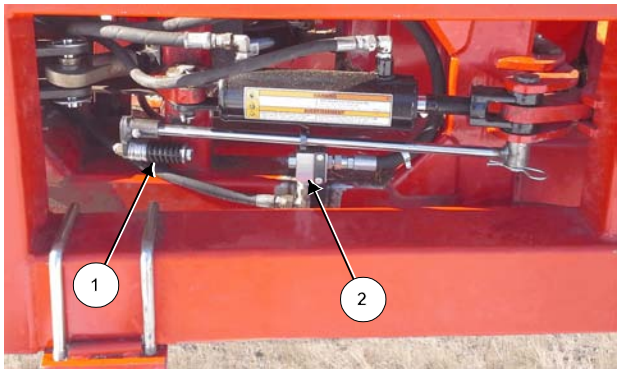
When this valve is actuated, the dump stops lifting. The lift pressure sequence valve opens causing the rotate cylinder near the forks to begin the bale turn.



Stop Lift/Begin Rotate Valve 216072

Stop Rotate/Resume Lift Valve

When the cylinder on the bale rotate mechanism has rotated the bale, a spring loaded bolt (1) pushes a plunger into a valve (2) to stop the rotation and resume the lift of the dump.



Stop Rotate/Resume Lift Valve 215147C

Pressure Sequence Valves

There are 2 type of pressure sequence systems used on the CFR960:

- System with a hydraulic block and a valve located on the fork support.

- System with only a hydraulic block.

Determine which system is on the machine before making any adjustments.

Hydraulic Block and Valve System

This system is identified by a sequence valve located on the lift pivot of the forks.

There are 2 pressure sequence valves in the lift circuit. These valves determine when the forks rotate from the "home" position while lifting and when the forks return to the "home" position when lowering.

Note: The "home" position is defined as the forks fully lowered, rotated and resting against the lift mechanism so that the forks are in line with the tub sidewalls.

- Rotation When Lifting
  (Lifting Pressure Sequence Valve)

The pressure sequence valve located on the lift pivot keeps the forks from rotating until they are lifted to the point that the Stop Lift/Begin Rotate Valve is activated.

If the forks rotate before lifting 18-24" (457-610 mm) from the ground, loosen the locking nut and screw the adjustor in by ½ turn increments. Tighten the locking nut.

When adjusting, if no fork rotation occurs, then the adjustor has been screwed in to far. Back it out by ½ turns until rotation is as desired.

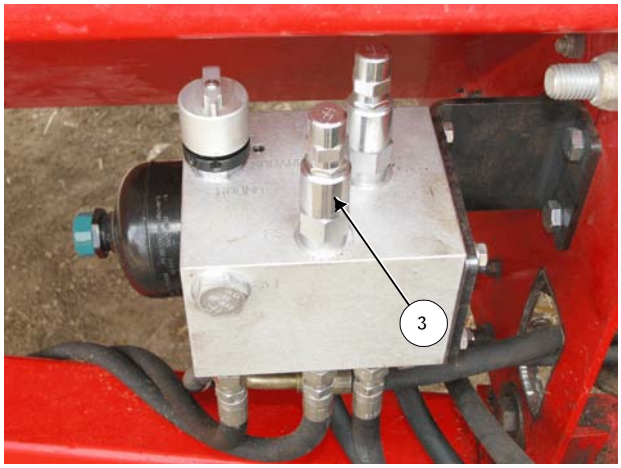
Lift Pressure Sequence Valve on Fork Pivot 216128

- Rotation When Lowering
  (Lowering Pressure Sequence Valve)

The pressure sequence valve “PS” (3) in the hydraulic block with 2 valves ensures the forks are rotated before being fully lowered to the ground.

If the forks rotate too late, turn the pressure sequence valve into the block by ½ turn increments to achieve rotation to the "home" position.

The pressure sequence valve also can be used to compensate for temperature effects and differences between tractors.



Pressure Sequence Valve 215130C

Hydraulic Block Only System

This system is identified by the presence of 3 valves located in the hydraulic block.

There pressure sequence valves are located in the hydraulic block. These valves determine when the forks rotate from the "home" position while lifting and when the forks return to the "home" position when lowering.

Note: The "home" position is defined as the forks fully lowered, rotated and resting against the lift mechanism so that the forks are in line with the tub sidewalls.

- Rotation When Lowering

Pressure Sequence Valve 1 "PS1" (1) controls rotation of the forks as they are being lowered to the ground.

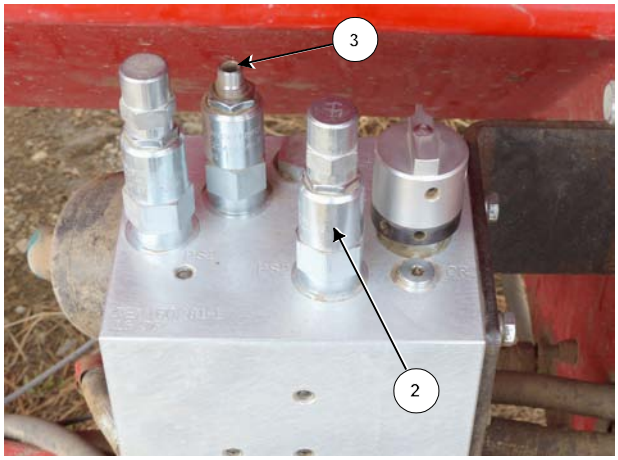
Adjust "PS1" For Rotation When Lowering 217041C

- If the forks rotate too late:
  - Remove the cap to access the adjustment set screw.
  - Turn the adjustment screw in by ½ turn and retest.
    - Standard setting is 2 turns out from being seated.
  - Replace the cap.

- Rotation When Lifting

Pressure Sequence Valve 2 "PS2" (2) controls rotation of the forks during the lift cycle. The forks should lift 18-24 inches (457 - 610 mm) before turning.

- If the forks turn too soon:
  - Remove the cap to access the adjustment set screw.
  - Turn the adjustment screw in by ½ turn and retest.
    - Standard setting is 2-1/2 turns out from being seated.
  - Replace cap.



Adjust "PS2" For Rotation When Lifting 217041C2

- System Pressure Relief

The system pressure relief "RV" (3) is factory preset to 3000 psi (20,684 Kpa). There is no adjustment of this relief valve.

Symptom	Problem	Solution
No Rotate Function	Selector Knob on the Hydraulic Block	Move the knob on the hydraulic block fully to the "Square" or "SQ" position.
	Stop Lift/Begin Rotate Valve	Check hydraulic pressure
		Replace broken or bent rod
		Replace the valve
Dump Lifts and Rotates But Does Not Lift Bale Into Tub	Plunger of the Stop Rotate/Resume Lift Valve	Check hydraulic pressure
		Plunger not able to be depressed. Repair plunger
		Plunger not fully depressed. Shift washers on spring to ensure plunger fully depresses.
		Replace the valve
Dump Lowered Before Forks are Rotated Back into Loading Position	<u>Hydraulic Block + Valve System</u> Pressure Sequence Valve "PS" Adjustment	Adjust the "PS" valve in the hydraulic block. Remove the cap and turn the valve in by using an allen key. Only turn in by ½ turn increments and check rotate function. Note: Turning in will also cause the dump to lower more slowly. Adjust for an acceptable balance. (See Section 7 - "Pressure Sequence Valves" for more Information.)
	<u>Hydraulic Block Only System</u> Pressure Sequence Valve "PS1" Adjustment	Remove cap on "PS1" and turn the adjustment set screw in by ½ turn and check the rotate function. Replace the cap. (See Section 7 - "Pressure Sequence Valves" for more Information.)

Symptom	Problem	Solution
Forks Rotate When Being Lowered But Dump Lowers Slowly	Hydraulic Block + Valve System Pressure Sequence Valve (PS) Adjustment	Adjust the PS valve in the hydraulic block. Remove the cap and turn the valve out by using an allen key. Only turn in small amounts and check rotate function. Note: Turning out will also cause the rotate to occur later during lowering. Adjust for an acceptable balance. (See Section 7 - "Pressure Sequence Valves" for more Information.)
Forks Rotate Too Soon When Lifting	Hydraulic Block + Valve System Pressure Sequence Valve on Fork Pivot	Loosen the locking nut and turn in adjusting screw by ½ turn increments. Check the rotate function. Tighten locking nut. (See Section 7 - "Pressure Sequence Valves" for more Information.)
	Hydraulic Block Only System Pressure Sequence Valve "PS2" Adjustment	Remove cap on "PS2" and turn the adjustment set screw in by ½ turn and check the rotate function. Replace the cap. (See Section 7 - "Pressure Sequence Valves" for more Information.)

8.0 CFR 960 SPECIFICATIONS

Width

Base CFR Width	107 3/4" (2737 mm)
CFR With Feed Chopper™	108" (2743 mm)
CFR With MGIS™	131 1/4" (3334 mm)
CFR With Feed Chopper™ and MGIS™	131 1/4" (3334 mm)

Length

Overall Length (To end of tires)	204" (5182 mm)
To End of Forks Down	263 ½" (6693 mm)

Height

Height (Forks Up)	136" (3454 mm)
Lifting Bale	164" (4166 mm)

Weight

Base CFR Weight	6580 lb (2961 kg)
Tongue weight (Unloaded)	2020 lb (909 kg)
CFR With Feed Chopper™ Weight	7240 lb (3258 kg)
Tongue weight (Unloaded)	2400 lb (1080 kg)
CFR With MGI™ Weight	7820 lb (3519 kg)
Tongue weight (Unloaded)	2280 lb (1026 kg)
CFR With Feed Chopper™ and MGI™	8480 lb (3816 kg)
Tongue weight (Unloaded)	2660 lb (1197 kg)

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

PTO

	Minimum	Recommended
Base CFR	100 (75kW)	115 (86kW)
CFR With Feed Chopper™	125 (94kW)	140 (105kW)
CFR With MGI™	100 (75kW)	125 (94kW)
CFR With Feed Chopper™ and MGIS™	125 (94kW)	140 (105kW)

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 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.