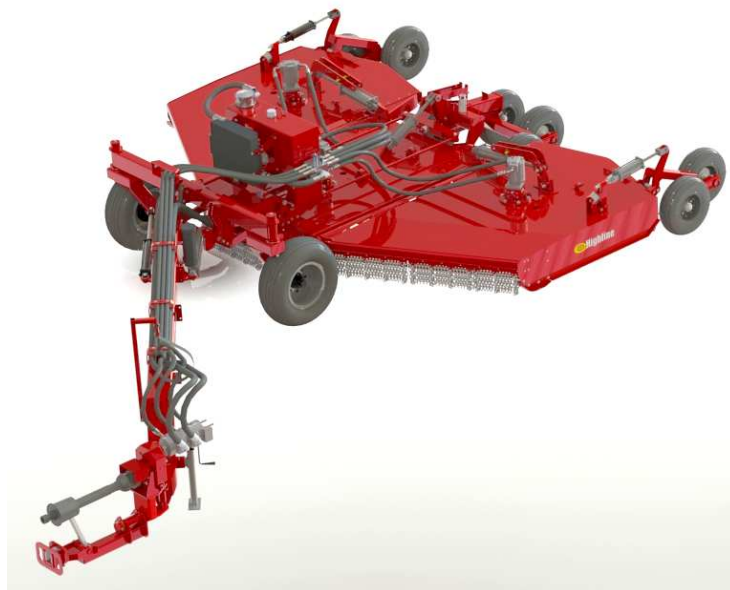


Rotary Mower RCH Hydro TM Radial Contouring Hitch TM

O P E R A T O R ' S M A N U A L



Rotary Mower

RCH Hydro TM

Radial Contouring Hitch TM

Operator's Manual

Highline Manufacturing Limited
HWY #27, P.O. Box 307
Vonda, SK S0K 4N0
Canada
Phone: 306.258.2233
Fax: 306.258.2010
Toll Free: 1.800.665.2010

E14362V1

Highline Team Message

Congratulations on your purchase of the Rotary Mower RCH Hydro manufactured by Highline Manufacturing Ltd. We are excited about your endeavor into cutting with the most technically advanced rotary cutter known to date. You will find flexibility and maneuverability of operation with this product that has never been experienced before. Welcome to the elite group of Highline Rotary Mower owners.

This Operator's Manual has been prepared to provide information necessary for the safe and efficient operation of your Rotary Mower. 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 Rotary Mower as your machine of choice.

Highline Manufacturing Ltd.

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Radial Contouring Hitch Hydro

RCH Hydro 15 Foot - has a center deck and two wing decks. The cutting width is 15 feet (4.6 m). This model can be configured for Right Hand Slope (With Traffic) cutting and Level Ground cutting.



Operating in Ditch

214064



Winged Up

214106

RCH Hydro 10 Foot - has a center deck and a right wing deck. The cutting width is 10 feet (3.0 m). This model can be configured for Right Hand Slope (With Traffic) cutting and Level Ground cutting.



Operating In Ditch

215069



Winged Up

215070

SERIAL NUMBER

Your serial number is found on the serial number plate (1) attached to a bracket on the oil tank.



Serial Plate Location

215071C

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

Be Trained Before Operating Mowers! Safety Training Makes a Difference.



The Association of Equipment Manufacturers offers the 22 minute video, *"Industrial and Agricultural Mower Safety Practices: A Safety Training Program for Operators of Rotary-Type Mowing Equipment"*.

This video reinforces the proper procedures to follow while operating rotary mowing equipment.

To view the video on the Internet or to order a copy, please visit the Association of Equipment Manufacturers website at www.aem.org and go the Safety & Training section.

The video does not replace the information contained in this Operator's Manual. Please read and understand this manual before operating the mower.

SAFETY SIGN-OFF FORM

Highline Manufacturing Ltd. follows the general Safety Standards specified by the American Society of Agricultural and Biological Engineers (ASABE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Highline Rotary Mower 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 operator's 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 Rotary Mower is familiar with the recommended operating, maintenance procedures and safety information contained in this manual and follows all the safety precautions.
2. "In addition to the design and configuration of the equipment, hazard control and accident prevention are dependant upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of the mower."
3. The mower 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.

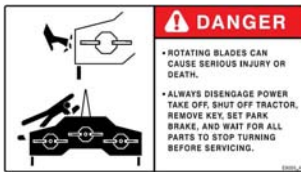


DO NOT CONTACT ROTATING DRIVELINE

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 driveline.



DO NOT OPERATE WITH SHIELDS MISSING



DO NOT CONTACT ROTATING BLADES

Rotating blades can cause serious injury or death.
Always disengage power take off, shut off tractor, remove key, set park brake and wait for all parts to stop turning before servicing.
Keep guards in place and in good condition.



DO NOT OPERATE MOWER WITH WINGS RAISED

Contact with exposed rotating blades may cause injury or death.
Rotating blades may throw objects, causing injury or death



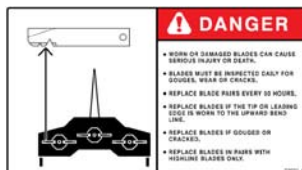
STAND CLEAR OF WINGS

Falling wings can cause serious injury or death.
Wing cylinders must be fully retracted and wing lock pins in place before servicing.
Never stand under wings when lowering or raising.



STAY BACK FROM MOWER IN OPERATION WHICH CAN DISCHARGE OBJECTS SEVERAL HUNDREDS OF FEET

Thrown objects can cause serious injury or death.
Stand clear of mower when PTO is engaged.
Do not operate within 300 ft (100m) of any person.
Keep all shields and guards in place.
Clear mowing area of debris.



INSPECT BLADES FOR DAMAGE

Worn or damaged blades can cause serious injury or death.
Blades must be inspected daily for gouges, wear or cracks.



Replace blade pairs at maximum of 50 hours.
Replace the blade pair if the tip or leading edge is worn so that only 2" (51 mm) of the blade remains.
Replace blades if gouged or cracked.
Blades must be changed in sets.
Use only Highline replacement parts.

Do not repair blades.



STAND CLEAR OF ROTATING DECK

Contact with rotating deck can cause serious injury or death.
Stand clear of mower deck. Mower deck can rotate rapidly.



DO NOT SWING DECK AND HITCH ARM NEAR BYSTANDERS OR INTO TRAFFIC

The deck and hitch arm can swing rapidly from left to right causing serious injury or death.
Do not swing the mower near bystanders.
Do not swing the mower into following or oncoming traffic.





ENSURE SLOW MOVING VEHICLE SIGN IS IN PLACE

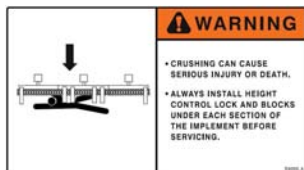
Ensure the Slow Moving Vehicle sign is in place, clean and easily visible.

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

READ AND FULLY UNDERSTAND THE INSTRUCTIONS ON THIS DECAL

 DANGER 	
PREPARING <ol style="list-style-type: none">1. Read and fully understand the Operator's Manual.2. Inspect for defective, loose or damaged parts.3. All shields must be in place before operating.4. Blades must be inspected daily for gouges, wear or cracks.5. Replace blade pairs every 50 hours.6. Replace blades if the tip or leading edge is worn to the upward bend line.7. Replace blades if gouged or cracked.8. Replace blades in pairs with genuine <i>Highline</i> blades only.9. Ensure the SMV sign and reflectors are visible and that the warning lights are in working order.10. Clear the mower decks of debris.11. Clear the mowing area of debris and objects that might be picked up and thrown. TRANSPORTING <ol style="list-style-type: none">1. Tractor must be equipped with ROPS (Roll Over Protection Structure). Wear seatbelts when operating tractor.2. Check that the transport safety chain and hitch components are securely attached and in proper working order.3. Do not allow riders on the mower or tractor.4. Engage the transport safety lock before transporting the mower.5. Before leaving tractor: set the brake, disengage the PTO, stop engine, remove key and wait until all moving parts have stopped.	OPERATING <ol style="list-style-type: none">1. Do not operate on side hill with wings raised to avoid roll over. Decrease speed when turning.2. Do not operate mower with wings raised.3. Stand clear of wings. Never stand under wings when lowering or raising.4. Keep people out of the deck rotation area.5. Stand clear of mower when PTO is engaged. Stay clear of all rotating and moving parts.6. Keep hands and feet away from rotating blade.7. Do not allow blades to hit solid objects which will cause damage to blades.8. Do not operate within 300 feet (100 m) of any person to avoid being hit by thrown objects. SERVICING <ol style="list-style-type: none">1. Always disengage power take off (PTO), shut off tractor, set park brake, remove ignition key and wait for all parts to stop turning before servicing.2. Purge air from the hydraulic system before raising or lowering the mower.3. Relieve hydraulic pressure on system before repairing or adjusting or disconnecting.4. Wear proper hand and eye protection when searching for hydraulic leaks. Use a piece of cardboard or wood.5. Always ensure wing lift cylinders are fully retracted when servicing.6. Install height control lock and securely block up each section of the mower on firm ground before working under it.7. Use only genuine <i>Highline</i> replacement parts.

E9017_A



STAND CLEAR WHEN MOWER IS BEING RAISED OR LOWERED

Crushing can cause serious injury or death.

Always install height control lock and blocks under each section of the implement before servicing.



DO NOT OPERATE ON SIDE HILL WITH WINGS RAISED

Tractor or mower roll over can cause serious injury or death.

Tractor must be equipped with Roll Over Protection System. (ROPS)

Always wear seat belts when operating tractor.



USE PAPER OR CARDBOARD TO CHECK FOR HYDRAULIC LEAKS

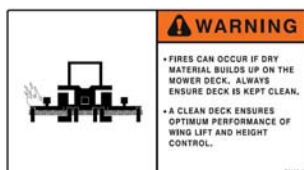
To prevent serious injury or death:

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.



KEEP MOWER DECK CLEAR OF DEBRIS

Fires can occur if dry material builds up on the mower deck.

Always ensure deck is kept clean.

A clean deck ensures optimum performance of wing lift and height control.



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.



DO NOT EXCEED PTO SPEED

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

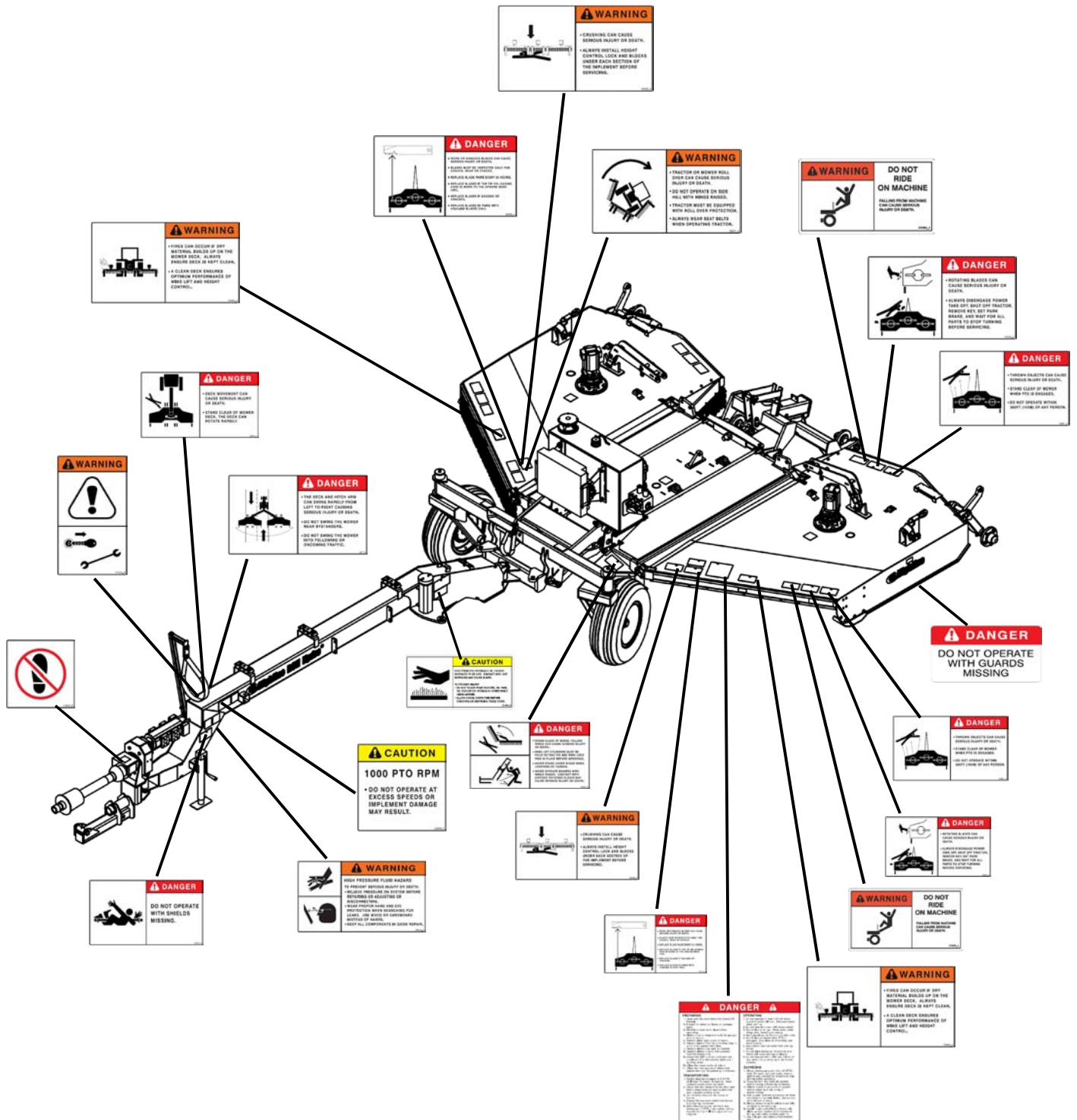


DO NOT TOUCH HOT SURFACES

Heat from the hydraulic oil causes surfaces to be hot.
Do not touch pump, motors, oil tank, oil cooler or hydraulic hoses while using mower.

Allow a cool down time before touching or servicing these items.

SAFETY DECAL LOCATIONS



2.0 TRANSPORTING THE MOWER



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



Do not allow children or other people to ride on the tractor or mower. Falling off can result in serious injury or death.



1. Tractor requirements.

- Roll Over Protection System (ROPS)
- Working seatbelts
- 1 3/8" 21 spline PTO
- Recommend 115 PTO HP

2. Ensure correct PTO speed.

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

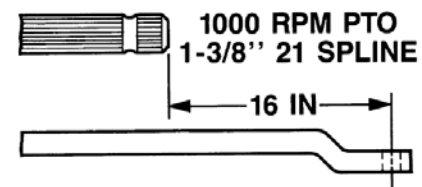


Note: Do not use PTO adapters. PTO adapters will cause a driveline failure and possible tractor damage. Your mower warranty will also be invalid.

3. Adjust 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.



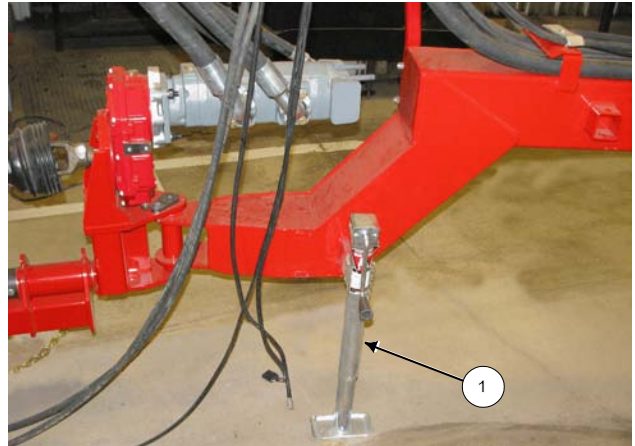
Tractor Drawbar Adjustment for 1000 RPM

108005

Section 2 - Transporting the Mower

4. Lift the hitch.

- Lift the hitch arm with the jack (1).
- The hitch arm is very heavy. Do not attempt to lift it without using the jack.
- Adjust the hitch to connect the drawbar.

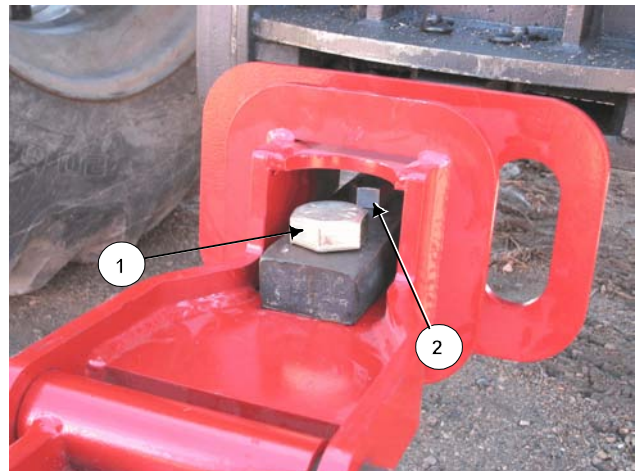


Lift Hitch with Jack

213044C

5. Connect the single point hitch.

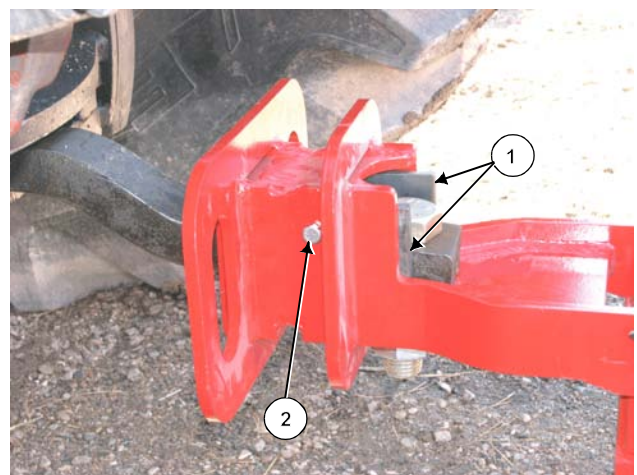
- Connect the tractor drawbar to the drawbar connector with:
 - 1 1/4" x 5" bolt, washer, locknut and nut (1). Torque to 600 lbf (813 Nm)
 - 3/4" x 3 1/2" bolt, washer, lockwasher and nut (2). Torque to 260 lbf (352 Nm).



Connecting Drawbar Connector

107082C

- Place a 1/2" thick shim plate (1) on each side of the drawbar and fasten in place with 3/8" x 5" bolt and locknut (2).



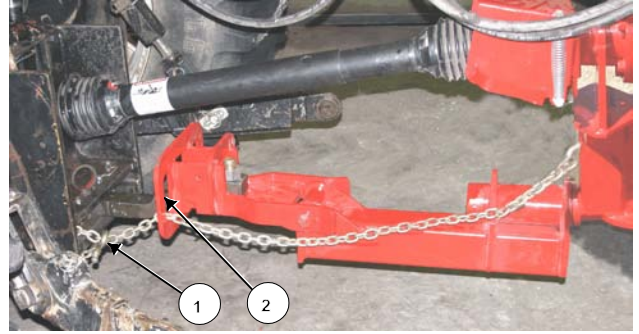
Drawbar Shims

107083C

Section 2 - Transporting the Mower

6. Connect the safety chain to the tractor.

- Ensure the safety chain rating is equal or greater than the gross weight of the mower.
- Route the safety chain (1) through the large slot (2) in the drawbar connector. Securely fasten the chain to the tractor and lock in place with the hook lock.

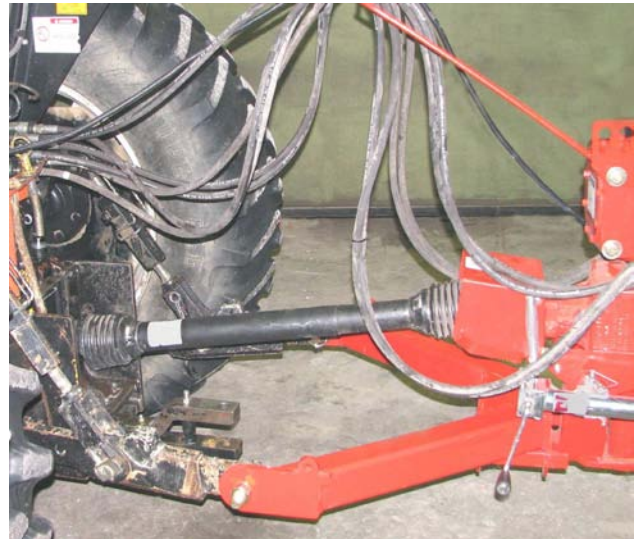


Connect the Safety Chain

108167C

7. Connect the 2 Point Hitch (if applicable)

- Adjust the lift links so that the PTO is relatively level.
- Insert the 2 point hitch pins into the hitch member and fasten in place with D-ring pins.



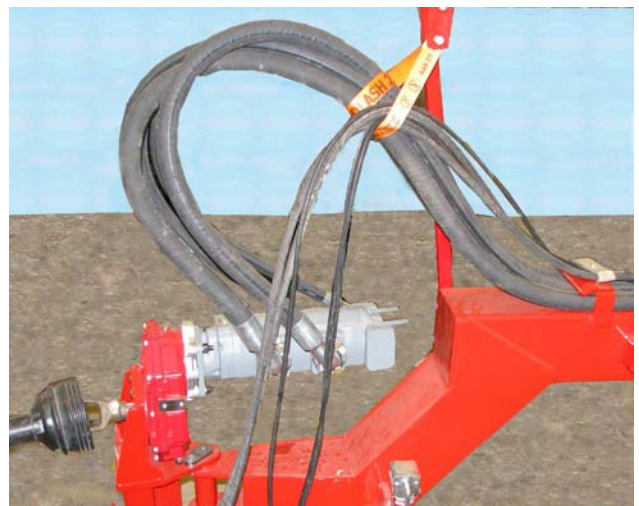
2 Point Hitch Connection

108007-1

8. Tractor wheel tread width settings.

- Increase the tractor rear wheel widths to maintain tractor stability when working on inclines or rough ground.

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



Route Hoses Through Holder

214034

Section 2 - Transporting the Mower

10. Attach the driveline to the PTO.



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



The mower 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 mower 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.



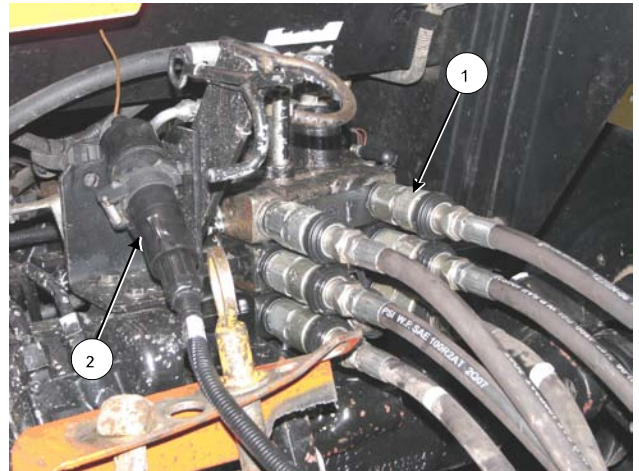
Attach Driveline to PTO

108167

11. Attach the hydraulics.

The mower requires 3 remote connections.

- If the optional joystick is included, then only 1 remote connection is required.
- For the joystick option, the hydraulic lever will work in only one direction. There is a check valve on the valve manifold. If the hydraulics are not working, move the lever in the opposite direction.
- 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 and Lighting

108008C

12. Connect the lights.

- Connect the light plug (2) into the appropriate tractor receptacle.
- Ensure the light cable does not interfere with or contact moving parts.

13. If the optional joystick is on the machine, route the joystick cable.

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

14. Place the hitch jack in the storage location.

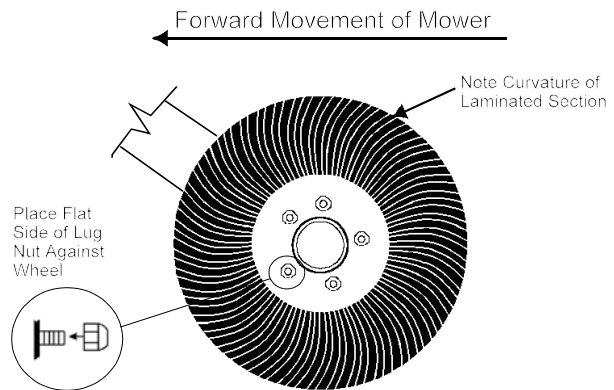
Section 2 - Transporting the Mower

15. Check on the condition of all the tires.

- Ensure that the lug nuts have the flat side of the lug nut against the wheel rim.
- Torque the lug nuts to 75 lbf (101 Nm).

Laminated Tires:

- Do not transport the mower on roadways for long distances with laminated tires.

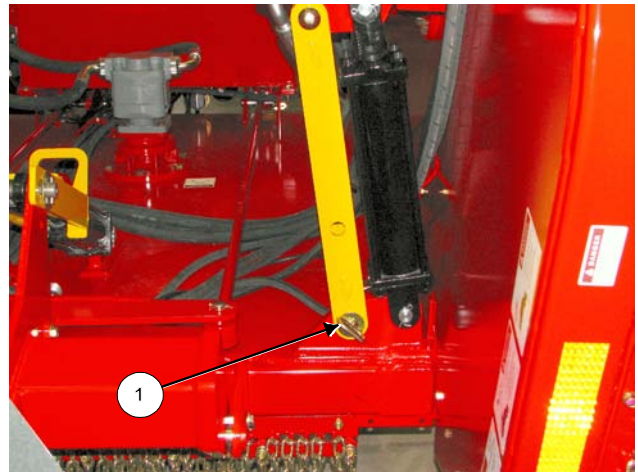


Laminated Tires

107074C

16. Raise the wings until they rest in place.

17. Install the wing transport lock pins (1) on both wings and clip the pins into place.



Install the Wing Transport Lock Pins

216047C

18. Lower the mower until the hydraulic height control cylinder is resting on the height cylinder transport lock (2).

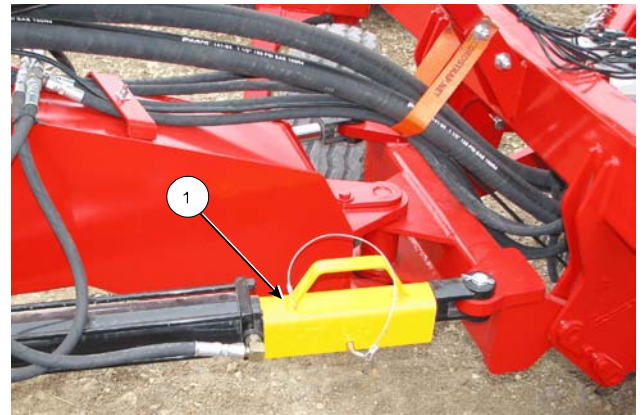


Height Cylinder Resting on Transport Lock

216048C

Section 2 - Transporting the Mower

19. Install the hitch transport locks (1) over both hitch hydraulic cylinders and pin into place.



Hitch Transport Locks

214067C

20. Ensure that the Slow Moving Vehicle (SMV) sign (1) is clean and visible.
21. Ensure that the taillights (2) are clean, visible and in good working order.



Ensure SMV is Visible & Lights are Working

214107C

22. Transport speed.
 - Do not exceed 20 mph (32 km/h).



Transport Speed

214106

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3.0 MOWER PREPARATION

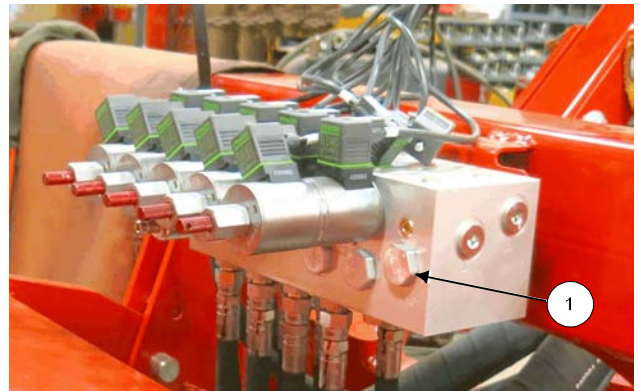
1. Park the tractor and mower on level ground.
 - Engage the tractor parking brake.
2. Ensure that all decals are clean and in place.
3. Ensure that the Slow Moving Vehicle (SMV) sign is clean and visible.
4. Ensure the lighting is working properly.
5. Connect the electrical power for the mower to an outlet that is rated for 30 amps or more to ensure sufficient power for the cooling fan.
 - The power can also be taken directly from the tractor battery.
6. For mowers with the optional joystick control, confirm that the hydraulic control block is configured for the type of circuit that is on the tractor.
 - If the tractor has a Closed-loop circuit, then the mower control block should have a plug (1) in the last port.
 - If tractor has an Open-loop circuit,
 - Remove the plug from the mower control block.
 - Install the solenoid valve (2) that came with the joystick.
 - Connect the wiring harness connector marked "F1".

If the mower will be used with both open-loop system and closed-loop system tractors, then run the control block with the solenoid valve installed.



Clean SMV and Lights

214107



Block with Plug - Closed Loop Tractors

214118C



Block with Solenoid - Open Loop Tractors

214119C

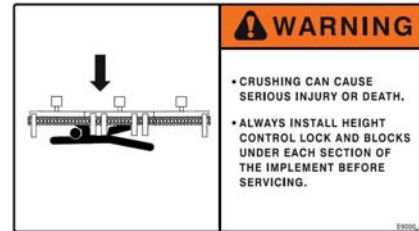
Section 3 - Mower Preparation

7. Check the condition of the blade pans.



Securely block-up the mower before any work is done under the mower when lifted up. This is to prevent the mower from dropping due to inadvertent operation of controls, hydraulic leaking or failure of any components.

- Clean debris and material buildup from the blade pan area and from the pans.
- Check that no wire or other materials are wrapped around the shaft or pan.
- Inspect the pan for damage caused by contact with an object.
- Inspect blade pan mounting hardware for damage.
- Inspect blade mounting bolts for damage.



Inspect Blades & Hardware

201059

Section 3 - Mower Preparation

8. Check the condition of the blades.

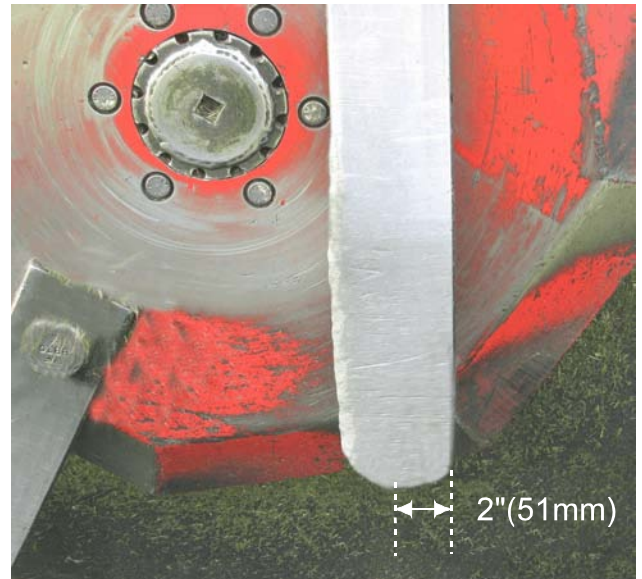
- Inspect the blades daily.
- Check that the blades swing freely.

Note: Do not sharpen the blades. Replace them with Highline blades.

- Replace the blade pair at a maximum of 50 hours regardless of the wear because of the possibility of metal fatigue and non-visible cracks in the blades. Replace with Highline blades.
- Replace the blade pair if the tip or leading edge is worn so that only 2" (51 mm) of the blade remains. Replace with Highline blades.
- Replace the blade pair if a blade is gouged, has visible cracks or is bent. Replace with Highline blades.

Replace blades in pairs with only Highline blades.

-See "Blade Replacement Procedure" in the Maintenance Section.



Replace Blade When Tip/Leading Edge Worn 1070802C

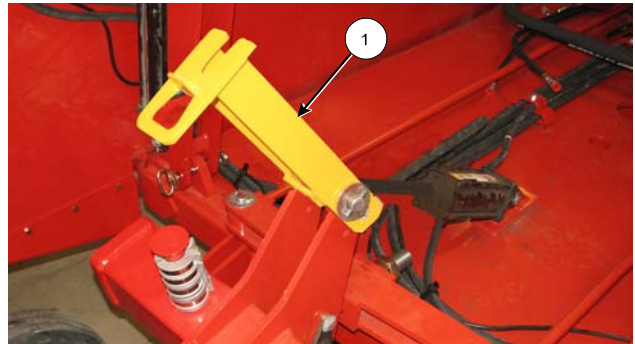


Replace Blade When Gouged 107080

Section 3 - Mower Preparation

6. Lift the height control transport lock.

- Raise the mower center section by extending the lift cylinder.
- Shut off the tractor and remove the ignition key.
- Lift the height control cylinder lock (1).

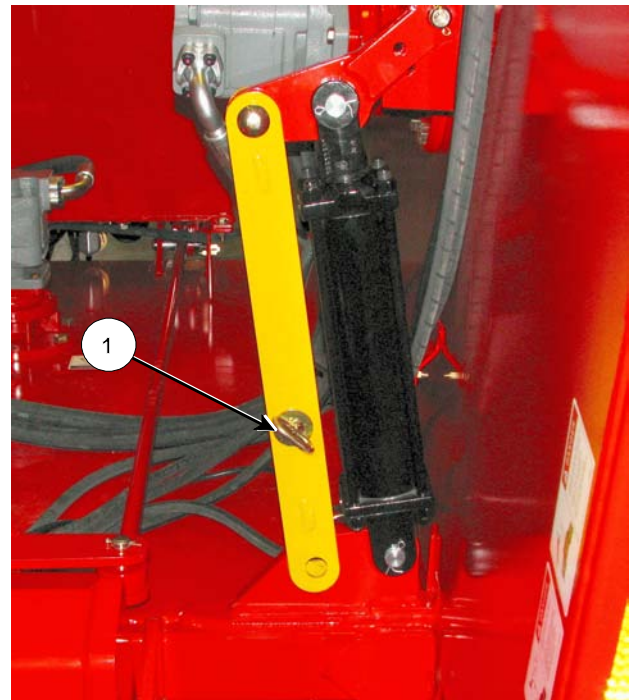


Lift the Height Control Transport Lock

216009C

7. Remove the wing transport lock pins.

- Place the pins into the pin storage position (1).



Remove Wing Transport Lock Pins

216049C

8. Remove the hitch transport locks from the hitch cylinders.

- Store the transport locks in the toolbox.



Remove Hitch Cylinder Locks

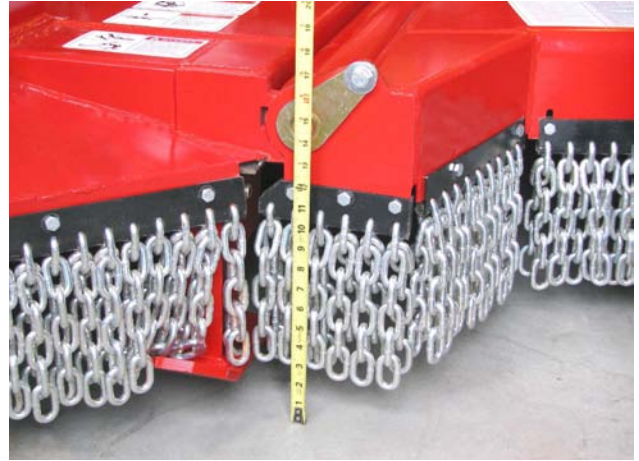
214039

Section 3 - Mower Preparation

9. Lower the wings on level ground.
10. Level the mower center section deck front to back.

Note: Do this procedure on level ground.

- Raise the mower to full height by extending the height cylinders. Hold the lever for a few seconds to ensure the phasing cylinders are synchronized.
- Lower the mower to the preferred cutting height.
- Measure the left side from the center of the front wing pivot to the ground.
 - Verify this measurement at the left back wing pivot to the ground.
- Compare this height to the right front and the right back at the center of the wing pivots to the ground.



Height from Front Wing Pivot to Ground

201061



Height from Back Wing Pivot to Ground

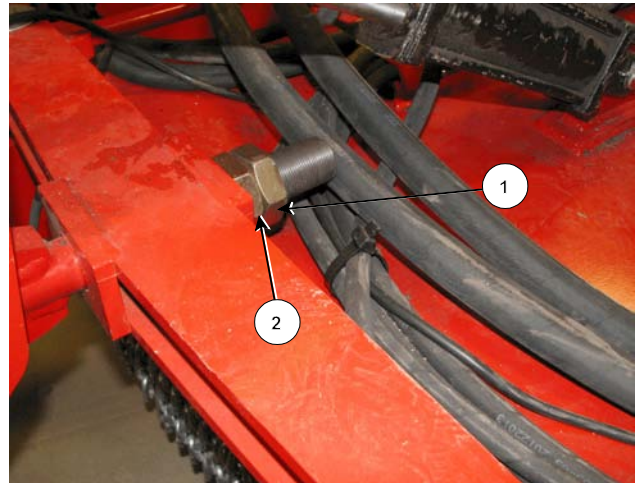
201062

Section 3 - Mower Preparation

- Use the level adjuster near the rear center lift cylinder to adjust the center section for front to back level.

Note: The tie rod does not adjust for left to right leveling of the center deck. The rear wheels are on pivot joints to allow for right to left self-levelling.

- Loosen the tie rod jam nut (1).
- Turn the adjuster nut (2) to raise or lower the center rear wheels.
 - To lower the mower, loosen the adjuster nut.
 - To raise the mower, tighten the adjuster nut.
- Tighten the tie rod jam nut (1) to lock in place.
- Measure and compare the level from the front to back.
- Adjust further if required.



Level Adjuster & Jam Nut

214040C

Section 3 - Mower Preparation

Primary Mowing Operating Conditions

There are 2 primary operating conditions:

- Mowing on Slopes such as roadway ditches when traveling with traffic.
- Mowing on Level Ground.

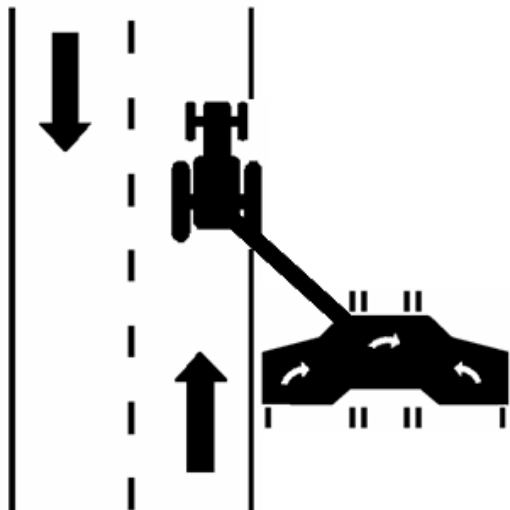
11. Verify the blade direction rotation.

- Direction of blade rotation is indicated by decals near the motor on the deck of the center and wing sections.
 - Verify that the blades turn in the direction of the decal.
 - Verify that the leading edge of the blade moves into the direction of rotation.



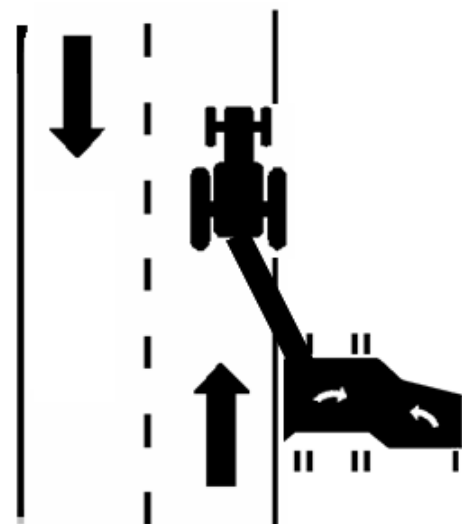
- Compare the blade directions to the diagram below.

RCH Hydro 15 Foot



Blade Direction for Right Hand Slope or Level Ground 107106

RCH Hydro 10 Foot



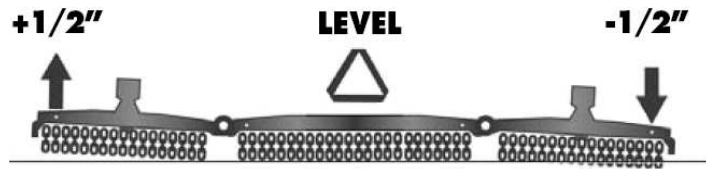
Blade Direction for Right Hand Slope or Level Ground 108225R

13. Determine the wing height adjustment.

15 Foot Mower

- Slope Operation

- Confirm the Wing Height according to the diagram.
- As needed, use the Wing Adjustment Procedure (listed below):
 - Raise the outer edge of the left wing (road side) $\frac{1}{2}$ " (12 mm) up from the leveled center section.
 - Lower the outer edge of the right wing (ditch side) $\frac{1}{2}$ " (12mm) down from the leveled center section.
 - This will enable the wings to contour to the ditch.



←Roadway

Wing Adjustment for Slopes- From Behind

107016

- Level Ground Operation

- Confirm the Wing Height according to the diagram.
- As needed, use the Wing Adjustment Procedure (listed below) to level the left wing and right wing with the leveled center section.



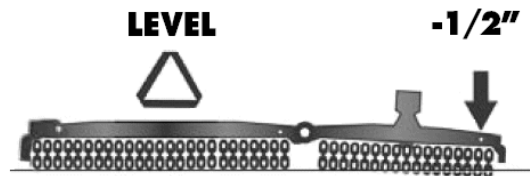
Level Ground Wing Adjustment - From Behind

107101

10 Foot Mower

- **Slope Operation**
 - Confirm the Wing Height according to the diagram.
 - As needed, use the Wing Adjustment Procedure (listed below):
 - Lower the outer edge of the right wing (ditch side) $\frac{1}{2}$ " (12mm) down from the leveled center section.
 - This will enable the wings to contour to the ditch.

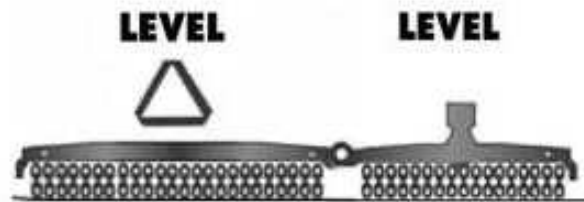
- **Level Ground Operation**
 - Confirm the Wing Height according to the diagram.
 - Right Wing - level with the center section.
 - As needed, use the Wing Adjustment Procedure(see below).



←Roadway

Wing Adjustment for Slopes - From Behind

108169



Level Ground Wing Adjustment - From Behind

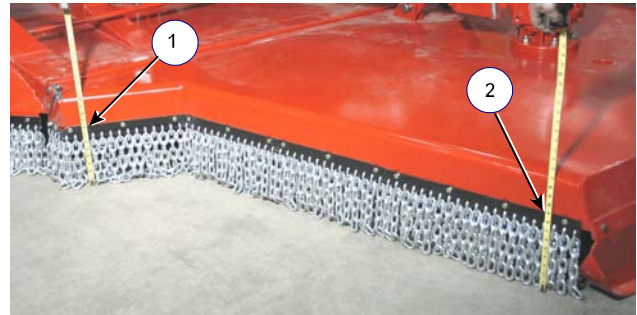
215072

Section 3 - Mower Preparation

13. Wing height adjustment procedure.

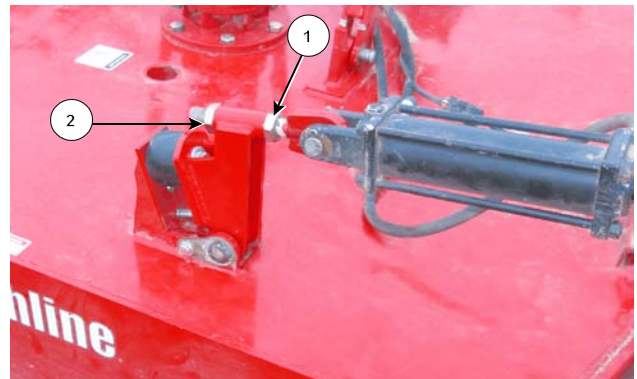
Note: Level the center section before adjusting wing height.

- Fully raise the mower by extending the lift cylinders. Hold the lever open for 30 seconds or until the phasing cylinders are synchronized.
- On a level surface, lower the mower to the preferred cutting height.
- On one wing, measure the height from the top of the chain mount strap near the center section (1) to level ground. Compare the measurement to a location on the outer wing section (2).
- Loosen the wing height adjustment jam nut (1).
 - Adjust the height of the wing using the adjustment nut (2).
 - Use the Wing Height Adjustment diagram (shown above) for the heights.
 - Measure and compare.
- Tighten the jam nut (1).
- Repeat the procedure on the other wing.



Measure Wing Heights

107032C



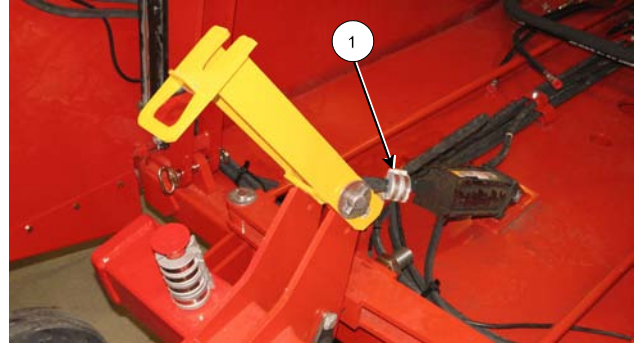
Adjust Wing Height

214137C

Section 3 - Mower Preparation

14. Set the preferred cutting height.

- Lower the wings.
- Raise the mower to the preferred cutting height.
- Install height stops (1) around the cylinder rod to maintain the preferred cutting height



Height Stops Installed

214041C

15. Inspect all the hydraulic cylinders, pump, motors 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.

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

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



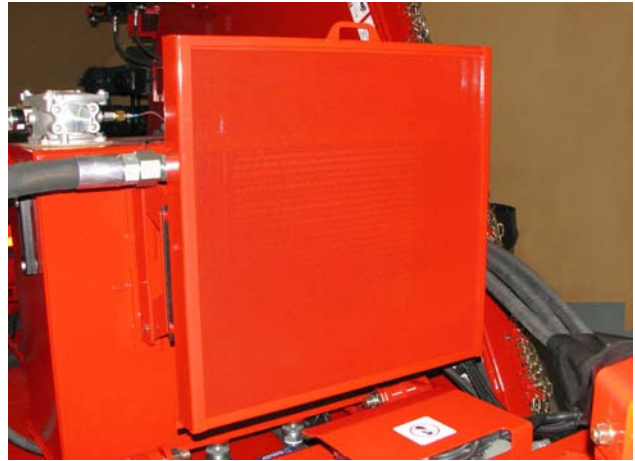
Inspect Hydraulic Components and Hoses

214107

Section 3 - Mower Preparation

16. Clear debris from the removable chaff screen.

- Remove the screen to clean the both sides of the screen.
- Use a broom, low pressure air and water to clean the screen.



Clear Debris from the Chaff Screen

216050

17. With the chaff screen removed, clear the debris from the oil cooling tank and the radiator.

- Use a broom and a low pressure air hose to remove the debris.



Clear Debris from Radiator

216051

18. Clear debris from the fan on the backside of the oil tank .

Note: When the fan initially starts up, the fan will blow in reverse for a short time to remove some of the debris in the radiator.

- If additional material needs to be removed, blow air through the fan and through the radiator.
- If dirt is stuck in the fins or core of the radiator, clean out with a low pressure water hose.



Clear Debris from Fan

216052

19. Check the oil level in the oil tank.

Maintaining a proper level of oil is very important in the operation of the mower.

- When the oil is cold, check that the oil level is showing in the middle of the sight glass (1) which is on the side of the oil tank.

Low Oil Level

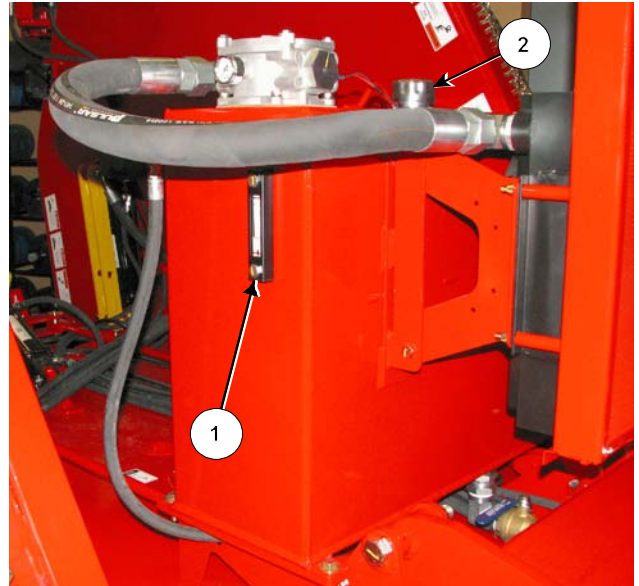
Low oil level in the tank is caused by a leakage of oil. Locate the leak at once. Loss of oil can cause severe damage to the hydraulic pump and motors.

- To fill the oil tank
 - Clean the top of the tank to prevent contamination of the oil.
 - Remove the top breather cap (2) and fill with hydraulic oil until the oil level is showing in the middle of the sight glass (1).

Note: Do not fill the tank to more than the middle of the sight glass to allow room for the oil to expand as it heats up.

Note: It is important to only use clean filtered oil when filling the oil. Clean oil will assist the pump and motors to work more efficiently.

- Clean the breather cap (2) and replace the cap on the tank.

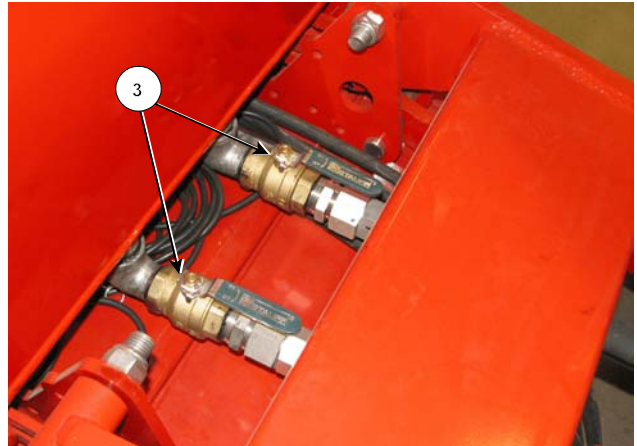


Check the Oil Level in the Tank

216053C

Section 3 - Mower Preparation

20. Ensure the shutoff valves (3) at the bottom of the tank are in the open position.



Open Tank Shutoff Valves

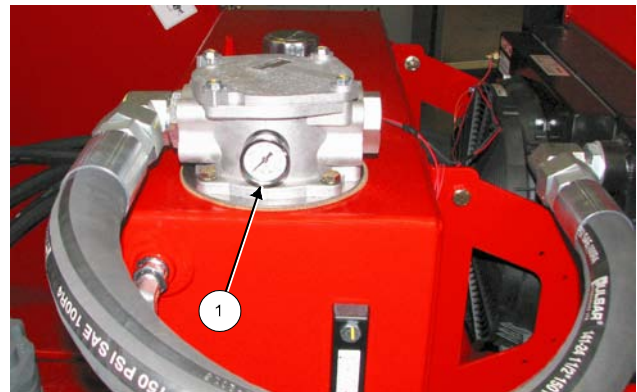
214044C

21. Check the oil filter operating pressure.
- When the oil is warm, with the pump running, check the filter pressure gauge (1).

Note: When the oil is cold, the gauge may show that the filter needs replacing. Allow the oil to warm and check the filter gauge again.

- If the gauge is in the green zone, the filter is okay.
- If the gauge is in the yellow zone, the filter will need to be replaced soon.
- If the gauge is in the red zone, replace the filter immediately.

Note: See Section 5 “Maintenance” for information on “Replacing the Filter”.

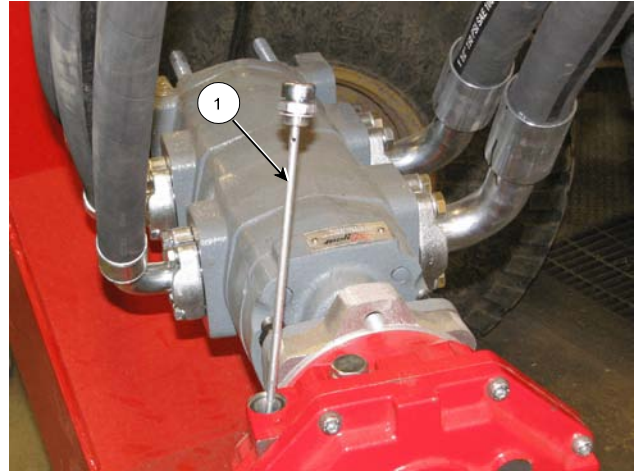


Check Oil Filter Operating Pressure

216054C

Section 3 - Mower Preparation

22. Check the oil level in the pump gearbox.
- Remove the breather vent (1) at the top of the gearbox. The breather has a dip stick attached to it.
 - Check that the oil is at least to the level of the line near the bottom of the dip stick.
 - If needed, add oil using 85W90 gear oil.
 - Replace the breather vent (1).



Check Oil Level in Pump Gearbox

214045C

Section 3 - Mower Preparation

23. Check the condition of the chain guards all around the machine.



The mower shall not be operated without the chain guards in place or in good condition.

- Replace worn, missing or broken chain sections immediately.



Check Condition of the Chain Guards

214046

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

25. Inspect the wing skid plate for secure mounting and wear.



The mower shall not be operated without the skid plates in place.

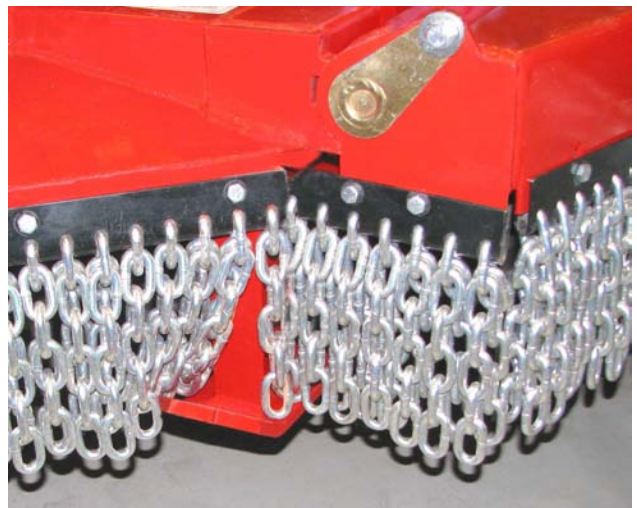
- If the leading edge (1) of the wing skid plate is worn excessively or is damaged, it should be replaced.



Inspect Wing Skid Plates

214047C

26. Inspect the center section skid plate (behind the front chain guards) for secure mounting and wear.



Inspect the Center Section Plates

214048

Section 3 - Mower Preparation

27. If the wing skid plate wheel is installed, check the condition of the tire and that all fasteners are tight.



Inspect Wing Skid Plate Wheel

214049

28. For 10 Foot Models, inspect the center deck skid and counterweights for secure mounting.

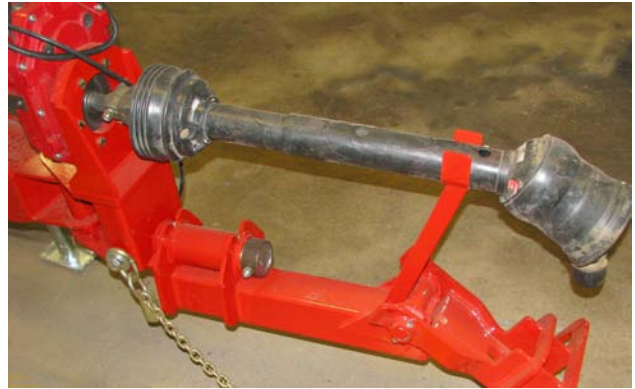


Inspect Center Skid & Counterweights (10 Foot)

215073

Section 3 - Mower Preparation

29. Ensure the driveline is securely attached to the pump gearbox.



Driveline Fastened to Gearbox

214050

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



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



31. Lubricate all grease fittings and check the fluid level in the pump gearbox. See the Maintenance Section.
32. Ensure all fasteners are tightened.

4.0 OPERATING THE MOWER



Do not allow anyone to ride on the mower.

- Falling from the machine can cause injury

Do not operate mower blade pan on the wings that are raised.

- Contact with exposed rotating blades can cause serious injury or death.
- Raised wings can throw objects causing serious injury or death.



Hydraulic Oil Temperature

Cold Oil

When the oil temperature is low (ie. during cool weather operation - below 32°F/0°C) it is recommended to rotate the pump and motors at a moderate speed (less than 1000 rpm) to allow the oil to warm.

Cold oil may cause the filter to show that it needs attention. When the oil warms, the oil filter reading will return to normal.

Normal Oil Temperature

The typical temperature of the oil at the motors is between 150 -160 °F (65 - 71 ° C).

The fan at the radiator turns on at 150 °F (65 °C).

Note: This is the factory setting but it may be adjusted to another temperature. See Section 7 "Troubleshooting" for more information.

Note: An infrared heat sensor is a valuable tool in knowing the condition of the hydraulic system and valuable for troubleshooting.

Section 4 - Operating the Mower

Overheated Oil

If the oil temperature is too hot, damage to the pump and motors may occur. It is important to keep the oil cooler radiator clean for heat to be removed from the oil.

When the “Oil Temp Warning” light comes on at the switch box in the cab, it indicates the oil temperature has reached 185° F (85° C).

- Stop the mower immediately.
- Clean the radiator.
- Ensure the cooling fan is working. Check the fuse that is located in the power supply cable running to the control box.
- Check that the electrical supply cable is connected to an outlet that is rated for 30 amps or more. The power can also be taken directly from the tractor battery.

Refer to “Responding to a High Oil Temperature Warning” in this section.

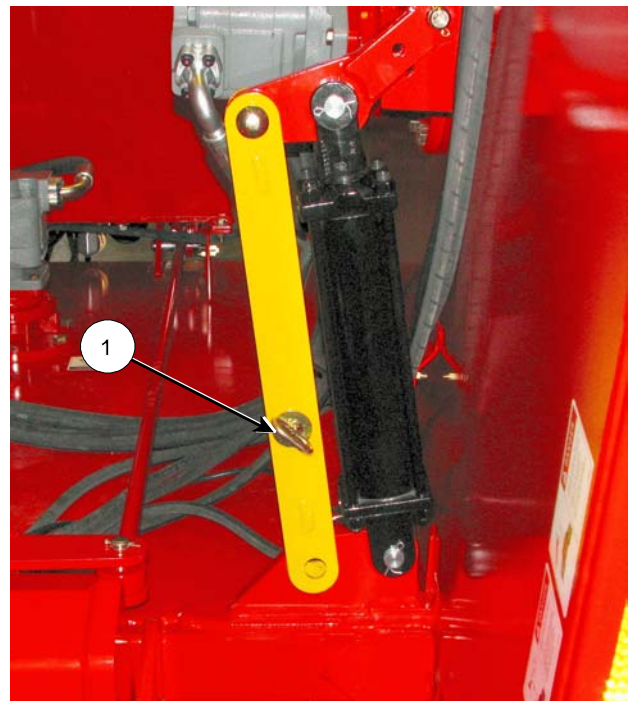
Also check the "Troubleshooting" Section 7 for additional directions regarding high oil temperature.

1. Park on level ground.
2. Move both wing transport lock pins (1) to the storage position on the wing lock bars.



Oil Temperature Warning Lamp

214052



Move the Wing Transport Lock Pins

216049C

Section 4 - Operating the Mower

3. Remove the hitch cylinder transport locks from the cylinders.

- Store the locks in the toolbox.



Remove Hitch Cylinder Transport Locks

214039

4. Lower the wings.



Ensure all bystanders are well clear of the wing movement area.

- Ensure the tractor PTO drive is disengaged.



5. Remove debris from the cutting area.

- Mark areas where objects could cause damage to the mower blades or pans.

Controlling the Mower

The hydraulic pump on the hitch is driven by the PTO driveline. The pump provides hydraulic flow for the blade pan motors mounted on the decks.

The flow for the hydraulic cylinders is provided by the tractor hydraulics.

There are 2 types of controllers for the mower:

- Control box requiring 3 tractor hydraulic remotes.
- Control box with joystick requiring 1 tractor hydraulic remote.

Center Deck Blade Pan

When the hydraulic pump is being turned by the PTO, the center deck blade pan will be turning with both types of controllers.

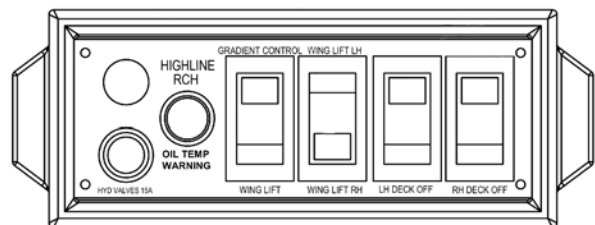
Note: The wing deck blade pans will also turn unless the RH Deck and LH deck switches on the Control Box are in the "Off" position.

Control Box - 3 Remote Tractor

High Oil Temperature Warning

When the "Oil Temp Warning" light comes on, it indicates the oil temperature has reached the maximum temperature of 185° F (85°C).

- Stop the mower immediately.
- Clean the radiator.
- Ensure the cooling fan is working. Check the fuse that is located in the power supply cable running to the control box.
- Check that the electrical supply cable is connected to an outlet that is rated for 30 amps or more. The power can also be taken directly from the tractor battery.



Control Box for 3 Remote Tractor

42723_E

Section 4 - Operating the Mower

Refer to "Responding to a High Oil Temperature Warning" in this section.

Also check the "Troubleshooting" Section 7 for additional directions regarding high oil temperature.

Wing Lift

This switch setting activates the wing lift circuit.

Wing Lift LH or RH

When the Wing Lift switch is activated, this switch allows the choice of which wing is to be lifted when the hydraulic control lever is moved.

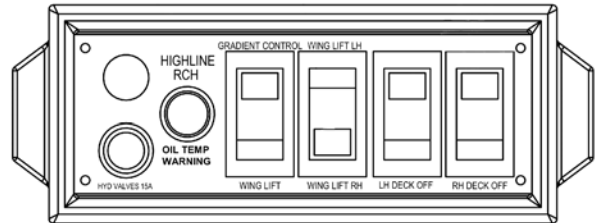
Wing Deck Blade Pan Switches

To have the wing deck blade pans turning, move the switches up.

Note: The deck blade pans will be activated when the light on the switch is on. If the light is off, the deck blade pan is turned off.

- To turn off one of the deck blade pans move the switch down. This will activate a solenoid valve that will cut off the oil flow to the motor. The light on the switch will be off.

Note: If main electrical power to the fan is lost or the main electrical fuse is blown, the wing pans will not turn for cutting to indicate that there is a problem that needs attention and to prevent overheating of the oil.



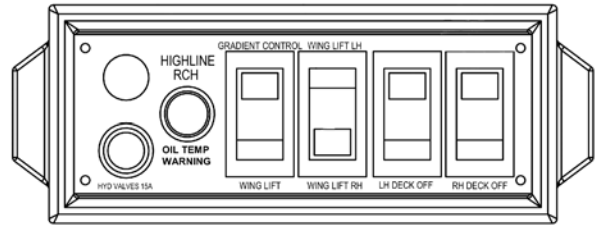
Control Box for 3 Remote Tractor

42723_E

Section 4 - Operating the Mower

Gradient Control (Steering Option)

If the mower has the optional Gradient Control installed, the switch will activate the hydraulic control lever to move the front wheels so the mower tries to climb the ditch. This reduces the side force loads on the tractor and also helps the mower to track straight which improves the cutting.



Control Box for 3 Remote Tractor

42723_E

- Turn on the switch on the control box.
- Activate the hydraulic control lever to move the hydraulic cylinder to direct the front wheels.
- Disengage the hydraulic cylinder when wanting to turn or maneuver the mower. This will allow the wheels to castor.

Control Box - Joystick Control (1 Remote)

High Oil Temperature Warning

When the "Oil Temp Warning" light comes on, it indicates the oil temperature has reached the maximum temperature of 185° F (85 C).

- Stop the mower immediately.
- Clean the radiator.
- Ensure the cooling fan is working. Check the fuse that is located in the power supply cable running to the control box.
- Check that the electrical supply cable is connected to an outlet that is rated for 30 amps or more. The power can also be taken directly from the tractor battery.



Joystick Control Box

216010

Refer to "Responding to a High Oil Temperature Warning" in this section.

Also check the "Troubleshooting" Section 7 for additional directions regarding high oil temperature.

Wing Deck Blade Pan Switches

To have the wing deck blade pans turning, move the switches up (light on).

Note: The deck blade pans will be activated when the light on the switch is on. If the light is off, the deck blade pan is turned off.

- To turn off one of the deck blade pans move the switch down. This will activate a solenoid valve that will cut off the oil flow to the motor. The light on the switch will be off.

Note: If main electrical power to the fan is lost or the main electrical fuse is blown, the wing pans will not turn for cutting to indicate that there is a problem that needs attention and to prevent overheating of the oil.

Joystick Control

The joystick has multifunction ability. These functions are shown on the decal.

Mowing Height Control

The joystick controls the height of the decks from the ground which controls the mowing height. Refer to the decal on the joystick for the desired height movement.

Deck Swing

The joystick controls the swing of the mowing decks. Refer to the decal on the joystick for the desired deck swing movement.

Raise Left Wing or Right Wing

To raise a wing so that it is not mowing,

- Use the control box switch to disengage the wing motor.
- Use the joystick with the trigger depressed to activate the wing cylinder to raise that wing.

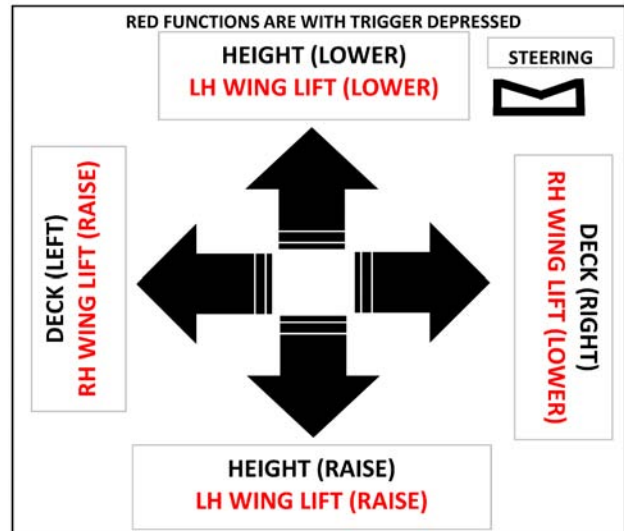
Lower Left Wing or Right Wing

- Use the joystick with the trigger depressed to activate the wing cylinder to raise that wing.

Gradient Control (Steering Option)

The steering option move the front wheels so the mower tries to climb the ditch. This reduces the side force loads on the tractor and also makes the mower to track straight which improves the cutting.

- Depress the rocker switch on the joystick to move the cylinder to direct the front wheels.
- Disengage the hydraulic cylinder when wanting to turn or maneuver the mower. This will allow the wheels to castor.



Joystick Control

214053A

Section 4 - Operating the Mower

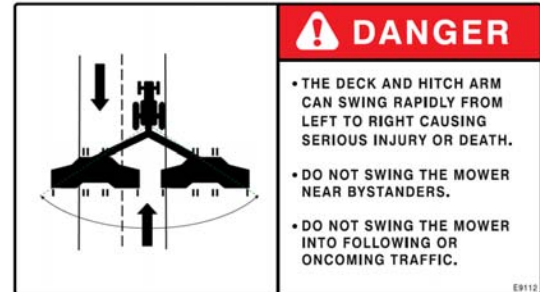
6. Swing the mower deck to move the mower into the cutting area.



Ensure all bystanders are well clear of the mower and hitch. The deck and hitch can move rapidly.

The deck and hitch can swing rapidly from left to right causing serious injury or death.

Do not swing the mower into following or oncoming traffic.



- Drive ahead slowly while operating the hydraulic lever to swing the deck. This will move the mower into the cutting area.
- If using the optional joystick, drive ahead slowly while operating the joystick to swing the deck. This will move the mower into the cutting area.



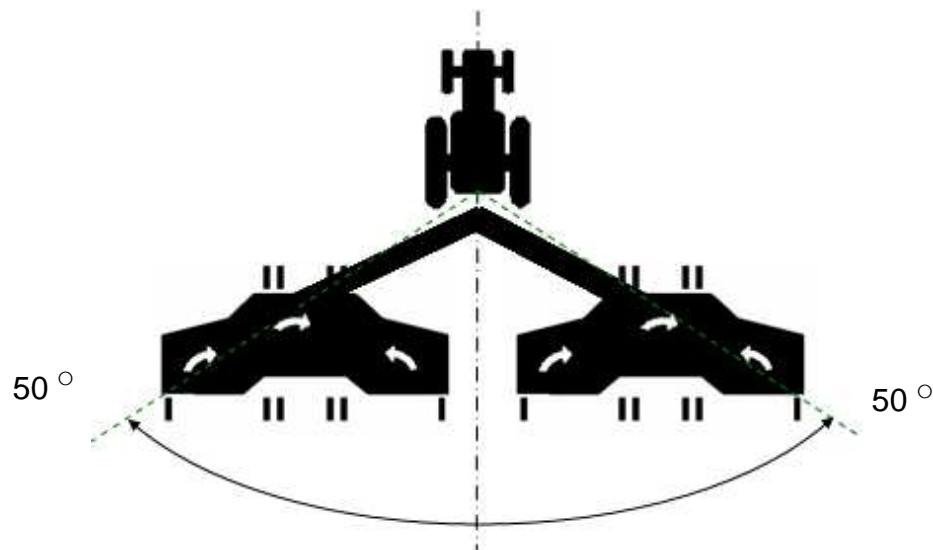
Swing Deck Into Cutting Area

214111

The mower can be operated anywhere in the range of:

50° left of the center of the tractor

50° right of the center of the tractor

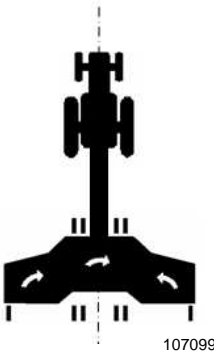

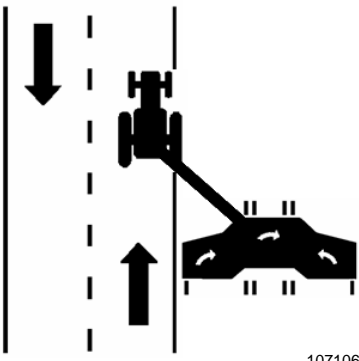
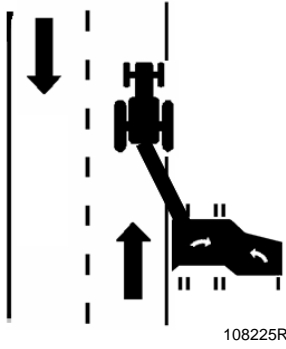


Range of Mower Operation

107098

Section 4 - Operating the Mower

Recommended Setup to Obtain a Quality Mowing Cut

Level Ground Operation	Slope Operation
 	 
<ol style="list-style-type: none">1. Confirm that the blades rotate as indicated.2. Adjust the wing heights for Level Ground Operation (See Section 3).3. Set Gradient Control Option to full front wheel movement.	<ol style="list-style-type: none">1. Confirm that the blades rotate as indicated.2. Adjust the wing heights for Slope Operation. (See Section 3)3. Set Gradient Control Option to move the front wheels to offset the effect of the sloped ditch.

Section 4 - Operating the Mower

7. Lower to the cutting height.



The mower shall not be operated without the chain guards in place or in good condition.

- Use the hydraulic lever (or joystick if installed) to lower the deck to the preferred cutting height.
- Operate at a sufficient height that prevents the blades from striking the ground or cutting the edge of the ditch, which increases blade wear and causes undue strain on the system.
- Install height stops around the height cylinder rod to maintain the preferred height.

8. Adjust ground speed for the terrain, the type, height and density of vegetation and the cutting height.

The mower shall not be operated without the side plate skid shoes in place.

- Recommended speed is between 2 and 5 mph (3 - 8 kmh)
- Decrease the ground speed as the severity of the cutting condition's increase and to permit grasses to partially rebound from the tires.
- The mower can cut vegetation up to 3½" (89mm) in diameter for short periods of time.

Note: If the mower is cutting too much material, the hydraulic pressure will exceed safe limits. At that point a pressure relief valve will be activated which will cause the blade pan to stop turning.



Set the Cutting Height

214112



Adjust Ground Speed

214113

Once the pressure relief valve has been activated (shown by blade pans not turning), raise the mower decks to allow the pressure relief valve to close and to recover the blade pan RPM.

Section 4 - Operating the Mower

9. Move the wing blade pans switches up (light on) on the control box to have the wing blades operating.

Note: If main electrical power to the fan is lost or the main electrical fuse is blown, the wing pans will not turn for cutting to indicate that there is a problem that needs attention and to prevent overheating of the oil.



Control Box (Joystick Option Shown)

216010

10. Operate the PTO at the rated PTO speed to engage the hydraulic pump to turn the center and wing blade pans.



Do not operate within 300 ft (100m) of any person. Thrown objects can cause serious injury or death.

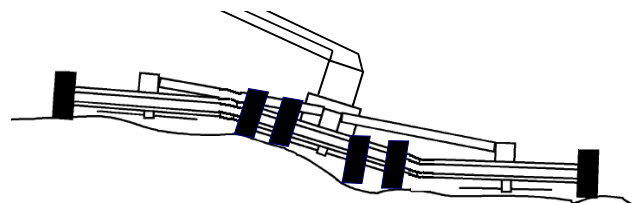


11. Allow the wings to float.
 - Fully extend the wing lift cylinders. This will allow the wings to follow the contour of uneven ground.
 - If a wing seems to lower, re-phase the wing height cylinders by fully raising the mower. Hold the lever open for at least 30 seconds or until the cylinders are fully synchronized.



Allow the Wings to Float

12. Avoid cutting into the ditch.
 - On uneven areas, prevent the blades from cutting into gravel or dirt by positioning a support wheel near the highest point.



Mower Deck On Uneven Area

Section 4 - Operating the Mower

13. Swing the mower deck away from obstructions.

- Swing the deck to move the mower away from obstructions such as drive approaches, culverts or large rocks.
- Swing the deck using the hydraulic lever or the optional joystick control.
- If an object is hit, immediately stop driving and disengage the PTO.
 - Wait for all rotating parts to stop.
 - Raise the mower and drive away from the object.
 - Check the mower for damage.



Swing Deck Away from Obstructions

214114

14. Check that the hydraulic oil cooling fan is operating.

- Check that the electrical supply cable is connected to an outlet that is rated for 30 amps or more. The power can also be taken directly from the tractor battery.
- The factory setting is for the oil cooling fan to come on when the hydraulic oil reaches a temperature of 150° F (65.5° C).
 - Note: The temperature for the fan to come on can be adjusted on the fan controller module. See Section 7 "Troubleshooting" for more information.
- A steady "on" status light on the fan controller module means that the fan is operating normally and will come on as needed.
- A blinking status light on the fan controller module indicates trouble codes. See Section 7 "Troubleshooting" for information on the trouble codes.

Note: If main electrical power to the fan is lost or the main electrical fuse is blown, the wing pans will not turn for cutting to indicate that there is a problem that needs attention and to prevent overheating of the oil.

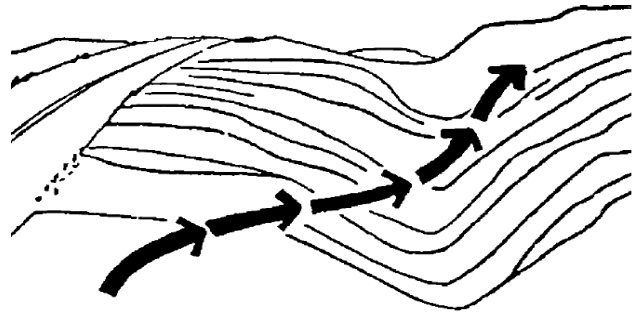
Responding to a High Oil Temperature Warning

1. Stop the mower PTO immediately. Damage can occur to the pump and motors if operated at high oil temperature conditions.
2. Check the cleanliness of the oil cooling radiator. It is important to keep the oil cooler radiator clean for heat to be removed from the oil.
 - Use a broom and a low pressure air hose to remove the debris.
 - If additional material needs to be removed, blow air through the fan and through the radiator.
 - If dirt is stuck in the fins or core of the radiator, clean out with a low pressure water hose.
3. Ensure the cooling fan is working.
 - Check the main fuse located in the power cable going to the control box.
 - Check the electrical supply to the fan. The cable should be connected to an outlet that is rated for 30 amps or more. The power can also be taken directly from the tractor battery.
4. Check the fan control module status light.
 - If the status light is steady but the fan does not start, remove the temperature sensor lead wire.
 - If the fan starts, replace the temperature sensor.
 - If the status light is blinking, check Section 7 "Troubleshooting Fan Control Module" for the Trouble Codes.
 - If there is no status light on the module, check for power coming to the module by using a volt meter.
 - If there is power coming to the module but the status light is not working, replace the module.
 - The fan can be made to run continuously by taking power around the module directly to the fan until the module can be replaced.
5. Ensure all electrical connections are tight including the grounding straps.
6. Check the Section 7 "Troubleshooting" for additional directions.

Note: If main electrical power to the fan is lost or the main electrical fuse is blown, the wing pans will not turn for cutting to indicate that there is a problem that needs attention and to prevent overheating of the oil.

Section 4 - Operating the Mower

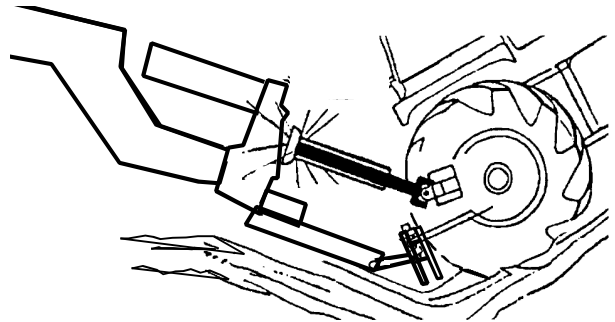
15. Do not drive or swing the mower into following or on-coming traffic.
16. Cross ditches and steep inclines at about a 30° approach angle.
 - Maintain sufficient height to prevent blades from hitting the ground.



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.



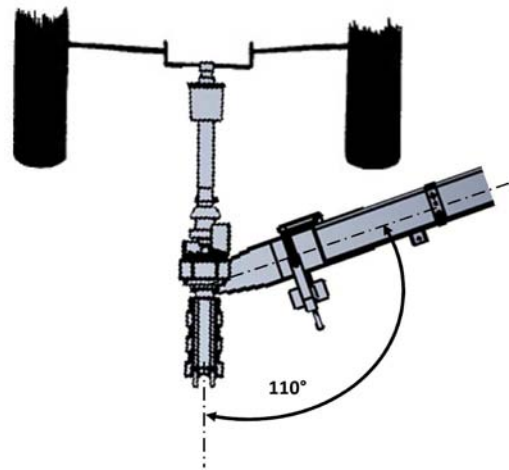
Hitch Driveline Collapsed in Steep Incline

107089C

Section 4 - Operating the Mower

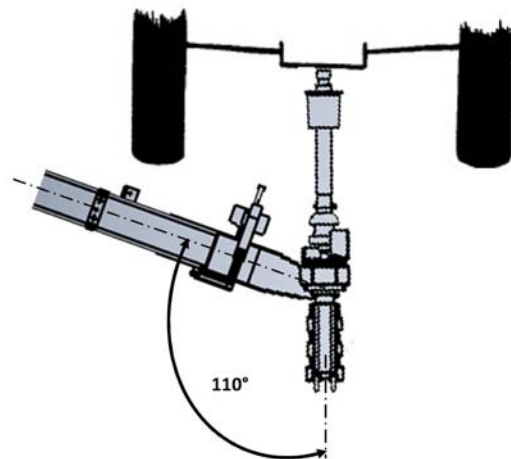
17. Making Turns

- Do not make turns sharper than 110° .
- The hitch will contact itself if turns greater than 110° are attempted.



Turns Less Than 110°

214065



Turns Less Than 110°

214066

Recommended Practices for a Quality Cut

1. Use the correct tractor PTO speed for the mower.
 - Check the PTO speed decal on the hitch of the mower.
2. Cut in the primary cutting conditions that the mower is configured for. (See above)
 - The rotation of the blades and the wing height adjustment will influence the quality of cut in the cutting area.
3. Verify the blades are mounted for the cutting conditions.
 - Check the rotation decals on the top of the center and wing decks.
 - Mount the blade so that when the bent end of the blade is up toward the underside of the deck, the leading edge of the blade turns into the rotation as indicated on the decal.
4. Check that the blades are in good condition.
 - Replace blade pair at maximum of 50 hours use.
 - Worn, bent or gouged blades will cause uneven cutting height.
 - Replace with new Highline blades.
5. Reduce the travel speed.
 - In tall, wet or dense vegetation, reduce the travel speed to handle the higher volume of material in the cutting chamber.
 - Slower travel speed will reduce “uncut tracks.”
 - The mower wheels may bend over the stalks of the vegetation and debris may be distributed on top of the bent over stalks.
 - Reduce travel speed to allow more time for the stalks to lift and to allow more blade passes over the vegetation.
6. Set the cutting height according to the vegetation being cut.
 - Lower the height for short, dry or sparse vegetation, but avoid hitting the ground.
 - Raise the height in tall, lush or dense vegetation. Reduce the travel speed to allow the cutting chamber to handle the high volume of material.

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5.0 MAINTAINING THE MOWER

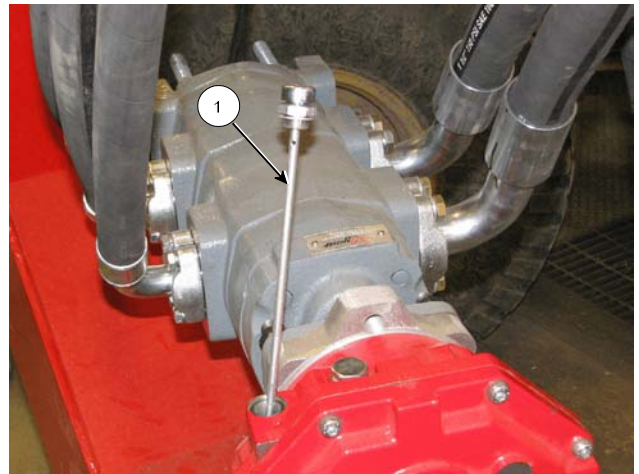


Shut down the tractor and remove the key before repairing, servicing, lubricating or cleaning the mower.

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



- Check the oil level in the pump gearbox.
 - Remove the breather vent (1) at the top of the pump gearbox. The breather has a dip stick attached to it.
 - Check that the oil is at least to the level of the line near the bottom of the dip stick.
 - If needed, add oil using 85W90 gear oil.
 - Replace the breather vent (1).
 - Annually change the oil in the pump gearbox. (See Gearbox Oil Changing Procedures)



Check Oil Level in Pump Gearbox

214045C

- Check the oil level in the oil tank.
 - When the oil is cold, check that the oil level is showing in the middle of the sight glass (1) on the side of the oil tank.
 - To fill the oil tank
 - Clean the top of the tank to prevent contamination of the oil.
 - Remove the top breather cap (2) and fill with hydraulic oil until the oil level is showing in the middle of the sight glass (1).

Note: Do not fill the tank to more than the middle of the sight glass to allow room for the oil to expand as it heats up.

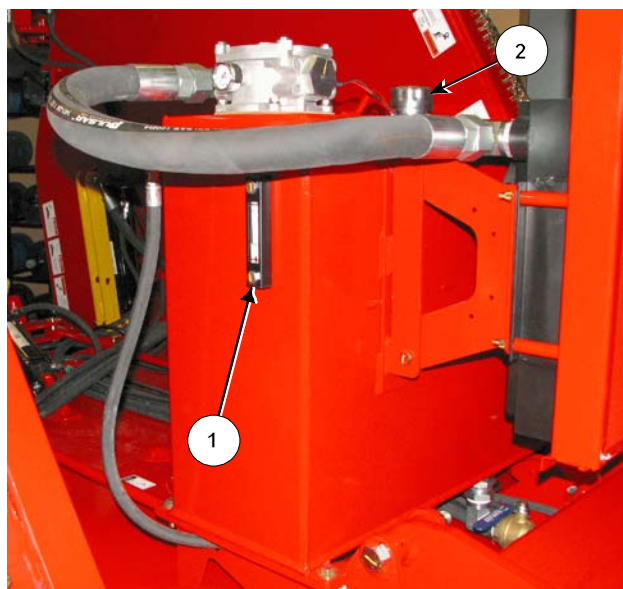
Note: Only use clean filtered oil when filling. Clean oil will assist the pump and motors to work more efficiently.

- Clean the breather cap (2) and replace on the tank.

Visually Inspect Hydraulic Hoses/Fittings

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

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



Check the Oil Level in the Tank

216053C

Section 5 - Maintaining the Mower

- Check the oil filter operating pressure.

Change the oil filter after the first 25 hours of operation.

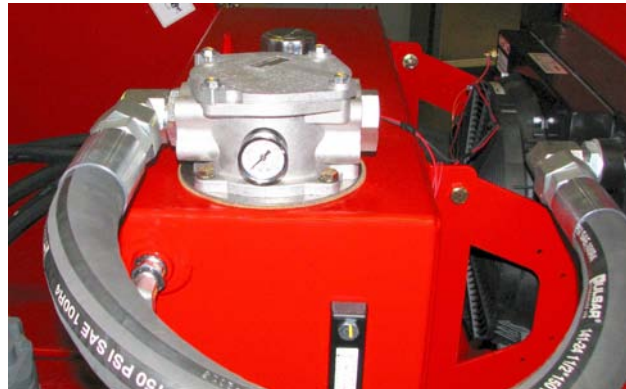
Replace the filter every 500 hours or when the filter condition gauge shows it needs to be changed.

Note: When the oil is cold, the gauge may show that the filter needs replacing. Allow the oil to warm and check the filter gauge again.

- When the oil is warm, with the pump running, check the filter pressure gauge.
- If the gauge is in the green zone, the filter is okay.
- If the gauge is in the yellow zone, the filter will need to be replaced soon.
- If the gauge is in the red zone, replace the filter immediately.

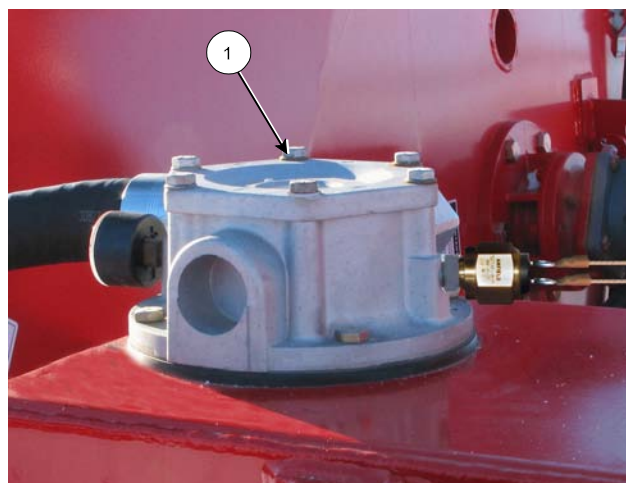
Replacing the Filter

- Loosen the bolts (1) that hold the top of the filter cap.
- The bolts only need to be loosened enough to rotate the cap.
- Remove the filter cap.
- Remove the o-ring seal under the cap. The o-ring seal will be re-used.
- Remove the used filter and discard.
- Install a new 5 micron oil filter.
- Replace the o-ring seal, cap and fasteners. Tighten in place.



Check Oil Filter Operating Pressure

216054

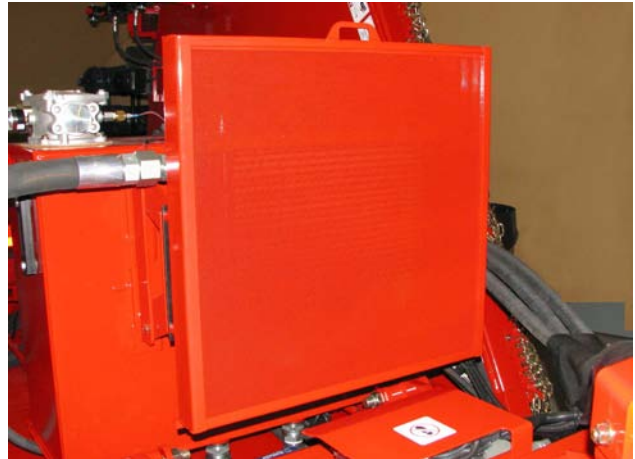


Remove Cap to Replace the Filter

216011C

Section 5 - Maintaining the Mower

- Clear debris from the removable chaff screen.
 - Remove the screen to clean the both sides of the screen.
 - Use a broom, low pressure air and water to clean the screen.



Clear Debris from the Chaff Screen

216050

- With the chaff screen removed, clear the debris from the oil cooling tank and the radiator.
 - Use a broom and a low pressure air hose to remove the debris.



Clear Debris from Radiator

216051

- Clear debris from the fan on the backside of the oil tank.
 - Remove additional material by blowing low pressure air through the fan and through the radiator.
 - If dirt is packed in the fins and core of the radiator, use a low pressure water source to clean the core.



Clear Debris from Fan

216052

Section 5 - Maintaining the Mower

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.

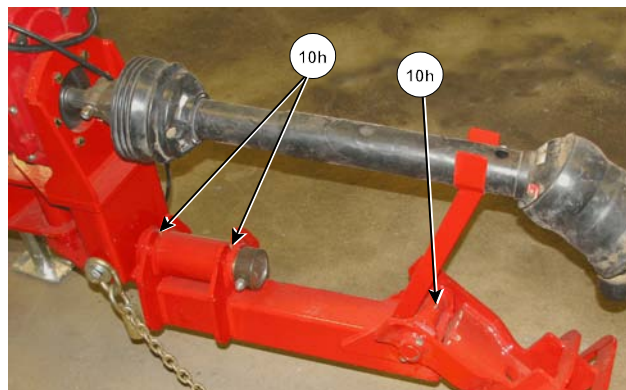
Every 10 Hours

- Lubricate 3 points on the hitch every 10 hours.
- PTO - Lubricate 5 points on the PTO every 10 hours.
 - 1 point at the constant velocity joint.
 - *Continued angled operation will require lubrication every 4 hours.
 - 1 point on each joint collar
 - 1 point at the telescoping section

Note: If the grease point in the center of the PTO (telescoping section) is not accessible when connected to the tractor, disconnect from the tractor and extend the PTO shaft to access the grease point.

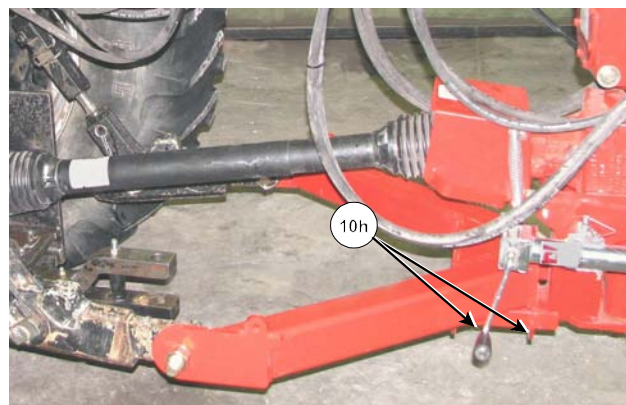
Every 50 Hours

- On the optional Steering Control, lubricate 4 points every 50 hours.
 - 2 points on the left pivot pin
 - 2 points on the right pivot pin



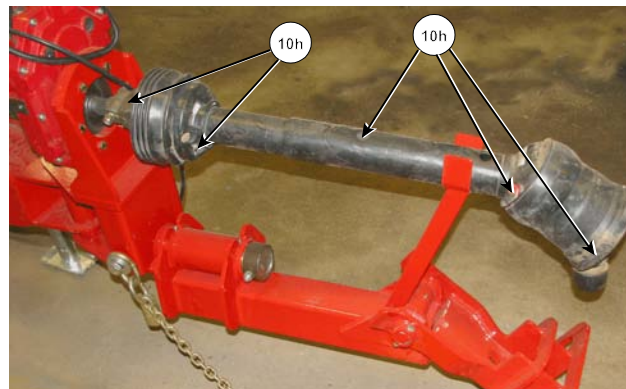
Grease Hitch - Single Point Connection

214050C



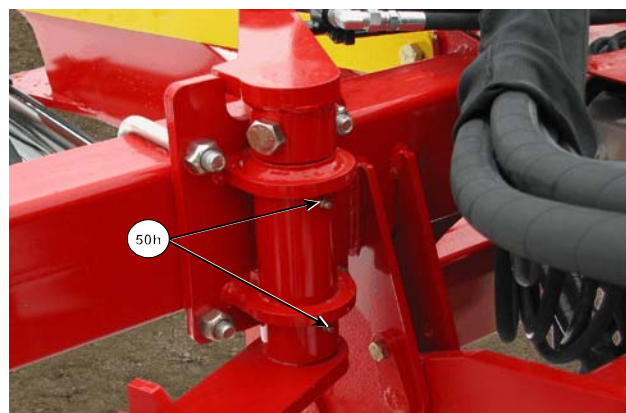
Grease Hitch - 2 Point Connection

217045C



Grease Points on PTO

108116C



Grease Steering Control Pivot Pins

215075C

Section 5 - Maintaining the Mower

Every 100 Hours

- Grease the front wheel hubs.



Grease Front Wheel Hubs

214055C

- Grease the center rear hubs.



Grease Center Rear Hubs

214057C

- Grease wing hubs on both wings.



Grease Wing Hubs (Walking Axle Shown)

214058C

Annually

- Grease the blade hub on the center deck and both wing decks.
 - The grease point (1) is accessed by reaching between the blade pan and the deck.

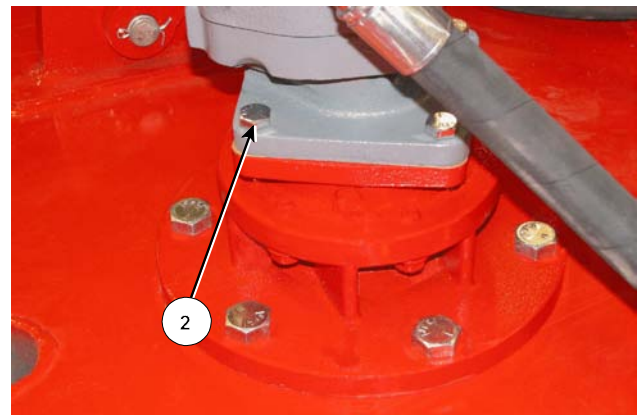
Note: It is not necessary to remove the blade pan to grease the hubs.
 - There is a grease fitting on the hub body.
 - Fill with grease until grease comes out the fitting which is on the hub on the top side of the deck.



Grease Blade Hub (Pan Shown Removed for Clarity) 214059C

Alternate Method:

- Remove the four bolts (2) holding the motor.
- Lift the motor.
- Check that the grease is at the level of the breather.
- If grease is needed, add a semi-fluid NLGI #00 EP lithium grease to the level of the breather.



Hub on Deck

214060C

Oil Tank Oil Changing Procedures

The hydraulic oil should be changed every 1500 hours (Change oil earlier if there is a contamination in the hydraulic oil system).

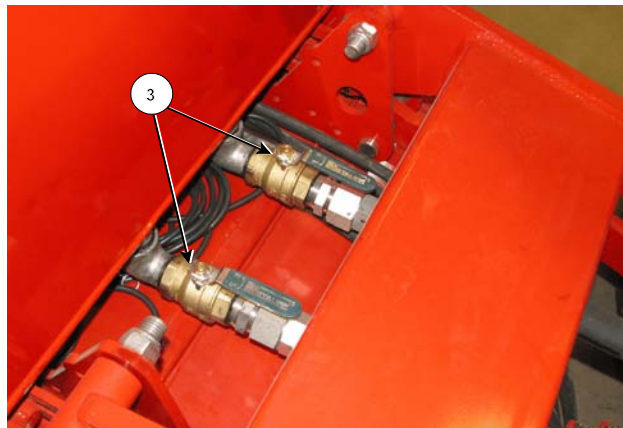
- If a motor or pump fails, drain all the hydraulic oil to prevent further component damage due to contamination. Replace the filter and fill the system with new hydraulic oil.

To Empty the Tank:

- Close both valves (3) at the bottom of the oil tank.
- Remove a hose from the one of the valves.
- Place a container to collect the oil that will come out of the opened valve.
- Open the valve to allow the oil to drain from the system.
- To remove the small amount of oil remaining in the tank, remove the drain plug from the bottom of the tank.

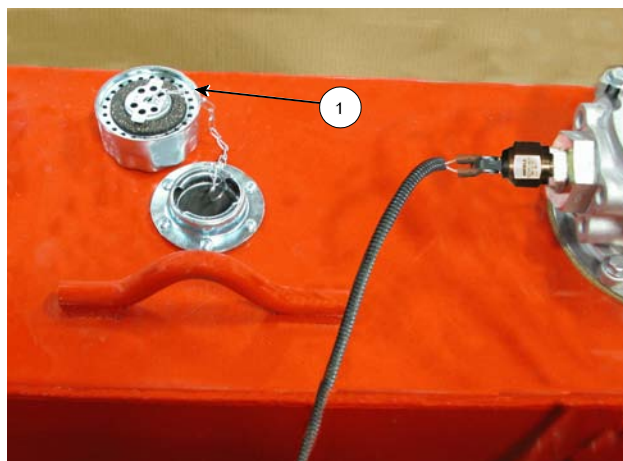
To Fill the Tank:

- Replace the drain plug into the bottom of the tank.
- Close the valve (3) at the bottom of the oil tank.
- Reconnect the hose to the valve.
- Clean the top of the oil tank to prevent oil contamination.
- Remove the filler cap (1).
- Fill with 50 gallons (190 liters) of Hydrex MV36 or equivalent hydraulic oil.
- Check the oil level in the sight glass on the side of the tank.
- Replace the filler cap (1).



Valves at the Bottom of the Oil Tank

214044C



Remove Filler Cap to Fill Tank

216012C



Check Oil Level After Filling

216055

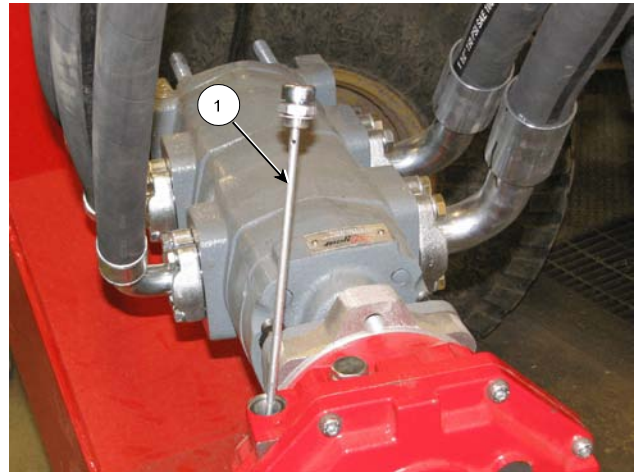
Gearbox Oil Changing Procedures

To Drain the Pump Gearbox:

- Remove the breather/dipstick (1) from the top of the gearbox.
- Place a container at the bottom of the gearbox to catch the drained oil.
- Remove the gearbox bottom plug (2) to drain the oil.

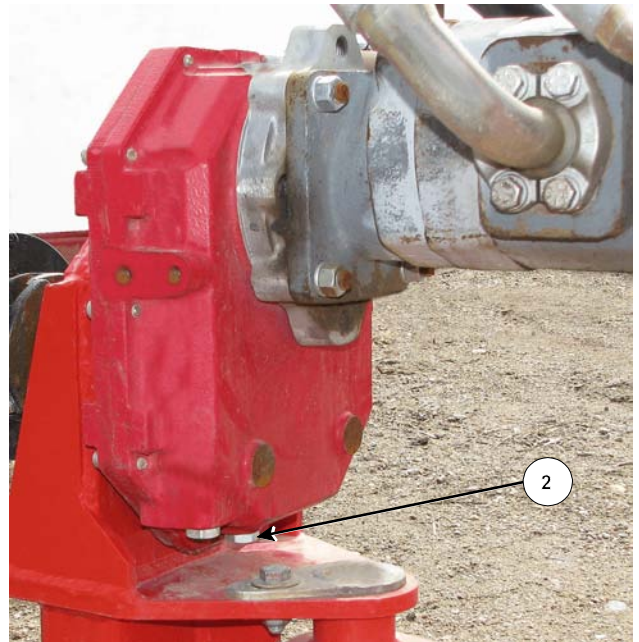
To Fill The Gearbox:

- Replace the bottom plug (2) in gearbox.
- Fill with 85W90 gearbox oil into the breather hole at the top of the gearbox.
- Fill until the oil level is at the bottom line of the dipstick.



Remove Breather From Gearbox

214045



Remove Drain Plug

214117C

Blade Replacement Procedure



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

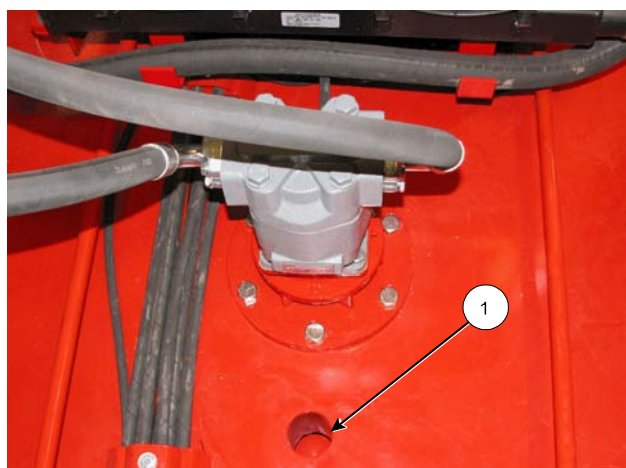


Securely block-up the mower before any work is done under the mower when lifted up. This is to prevent the mower from dropping due to inadvertent operation of controls, hydraulic leaking or failure of any components.

Note: The blades can be replaced without having to remove the blade pan.

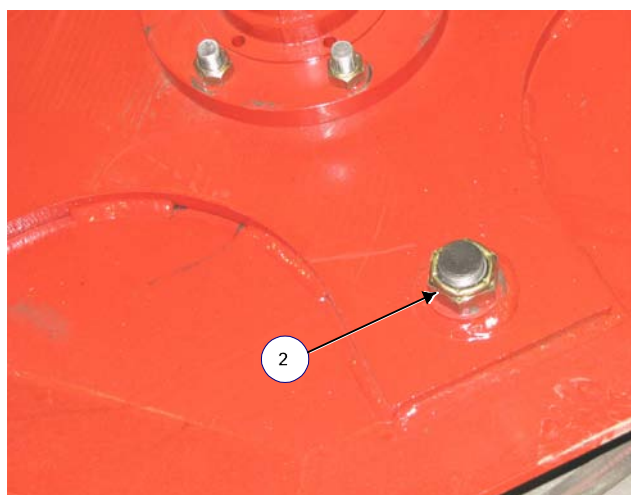
1. Remove the old blades.

- For each blade, line up the nut holding the blade with the socket hole (1) in the top of the mower deck.
- From the top of the deck, remove the blade bolt nut (2) and discard it. (This nut cannot be reused)
 - The bolt is lobed to prevent it from turning.
- Drive out the bolt and the blade will drop.
- The blade bolt may be reused if it is not damaged.



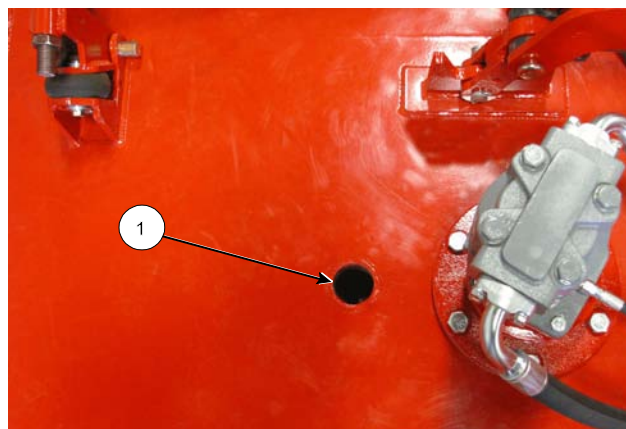
Blade Nut Access Hole - Center Section

214062C



Blade Nut (For Clarity Pan Shown Removed)

107059C



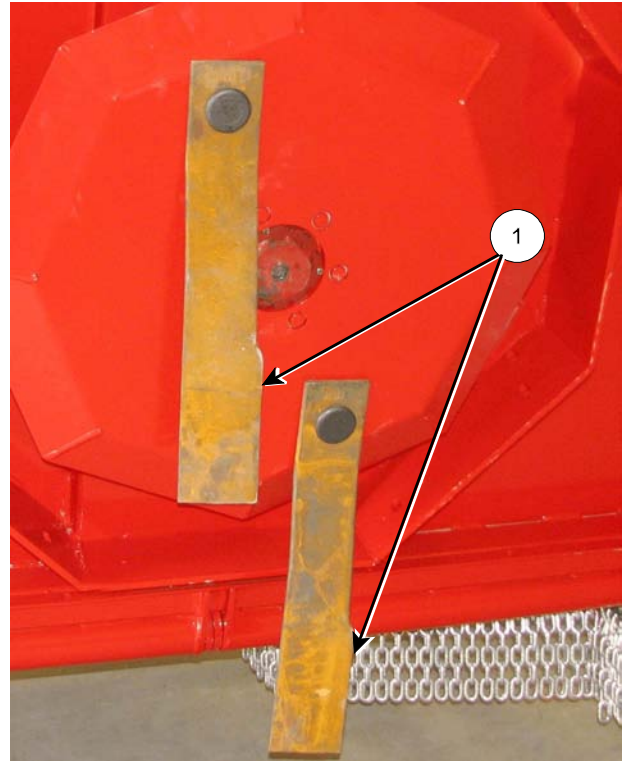
Blade Nut Access Hole - Wing Section

214061C

Section 5 - Maintaining the Mower

2. Install the new blades.

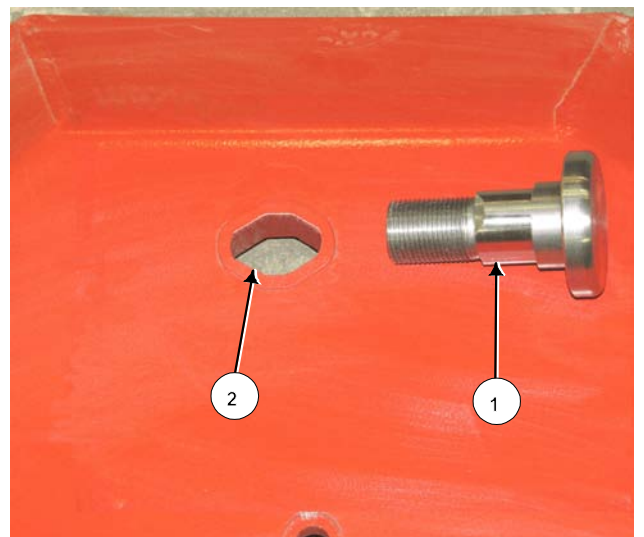
- For each blade, place the blade onto the shoulder of the bolt.
- The old bolt can be used again if it is not damaged.
- Ensure the blade is installed with cutting edge leading (1) into the rotation indicated by the decal on the section of the mower deck.



Blade Mounting Orientation

201104C

- Align the bolt (1) into the slotted hole (2) in the pan.
- Slide the bolt into the blade pan.
- Use a new nylon locking nut.
 - Do not reuse the old nut. The locking nylon nut cannot be reused.
 - Finger tighten the nut.
- Tap the head of the bolt to seat the bolt into the pan.
- Tighten the nut with a socket from the top of the deck.
- Tap the head of the bolt again.
- Tighten the nut to 900 lbf (1220 Nm).



Blade Bolt and Fitted Hole

107107C

Section 5 - Maintaining the Mower

Removing and Replacing the Blade Pan

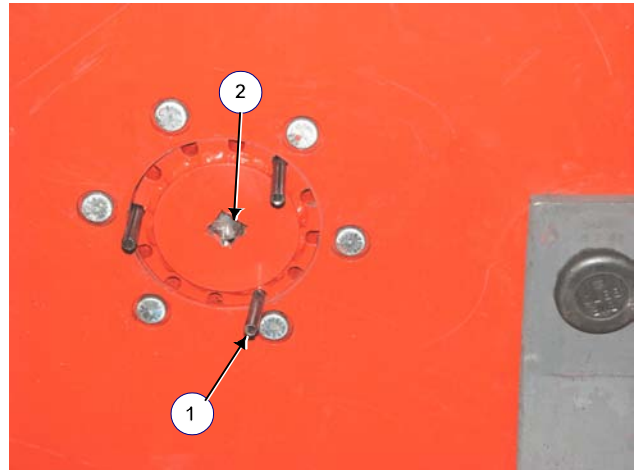


Before beginning, make sure the tractor is off and the PTO is disengaged. Disconnect the driveline from the tractor before doing any work.



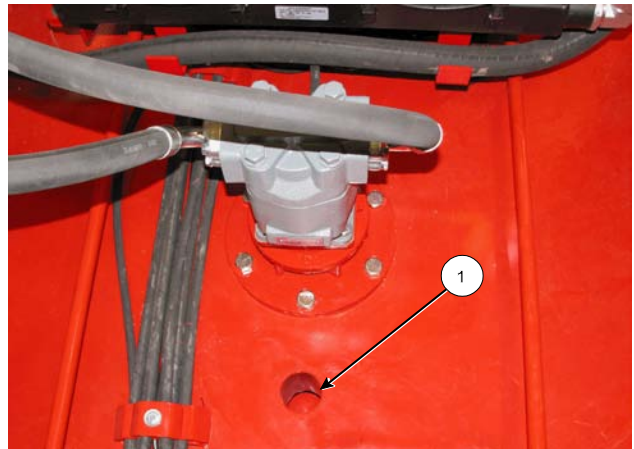
Securely block-up the mower before any work is done under the mower when lifted up. This is to prevent the mower from dropping due to inadvertent operation of controls, hydraulic leaking or failure of any components.

1. Removing the blade pan with hub.
 - Remove the three roll pins (1) that are securing the pan nut.
 - Secure the driveline from turning.
 - Use a 3/4" impact drive to remove the pan nut (2).
 - Insert a bar through the deck hole (1) and drift the bar to impact the pan.
 - If pan does not drop, rotate the pan 180° and drift again to remove the pan from the tapered driveshaft.
 - The pan hub is keyed to the drive shaft with 1 key. The key can be re-used if it is in good condition.



Remove Roll Pins From Blade Pan Nut

107060C



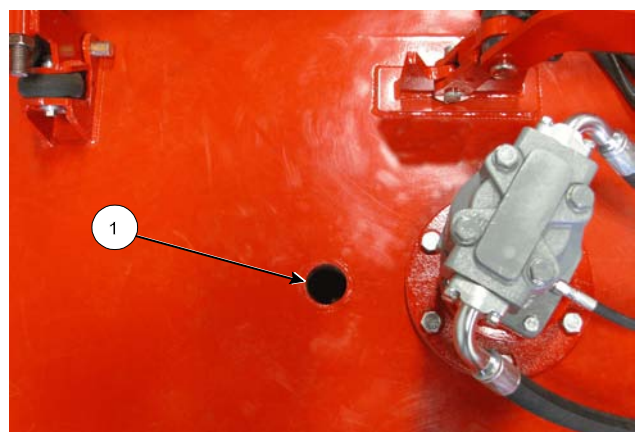
Center Deck Hole

214062C



Blade Pan Removed

107120



Wing Deck Hole

214061C

Section 5 - Maintaining the Mower

2. Installing the blade pan with hub.

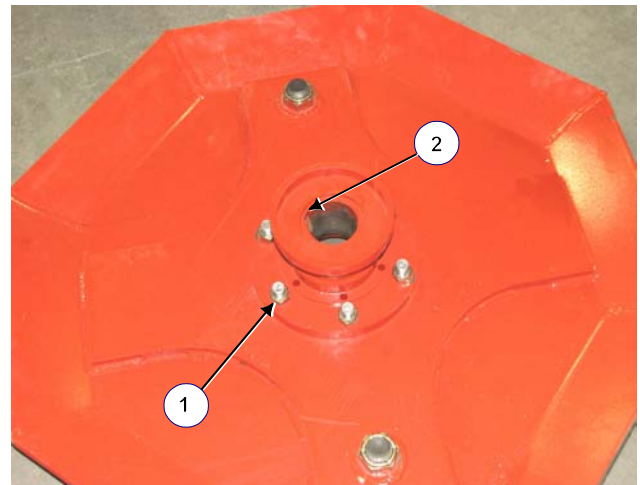
- Inspect the drive shaft and keyway to ensure they are in good condition.
- Check the oil seal to ensure that it is not leaking.
- Ensure that the spindle nuts are tight.



Shaft & Keyway

214133

- Inspect the pan hub.
 - The hub is fastened to the pan with 6 bolts. (1) Ensure all are tight to 170 lbf (230 Nm)
 - Check the condition of the keyway (2).



Blade Pan Hub

214134C

Section 5 - Maintaining the Mower

- Inspect the blade/pan area of the deck.
- Check the condition of the underside of the deck and the ring around the hub area.



Blade Pan Area

201098

- Place the key in keyway of the drive shaft.
- Tape the key in place to temporarily hold it while the hub/pan is being mounted.

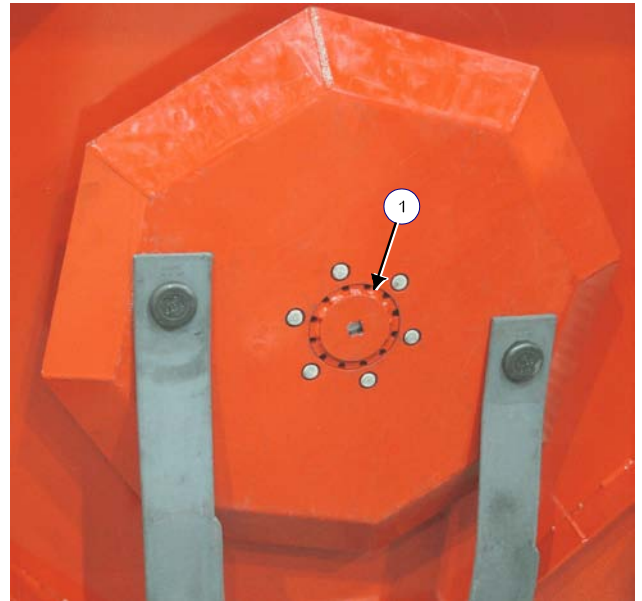


Key Taped Onto Shaft

214132

Section 5 - Maintaining the Mower

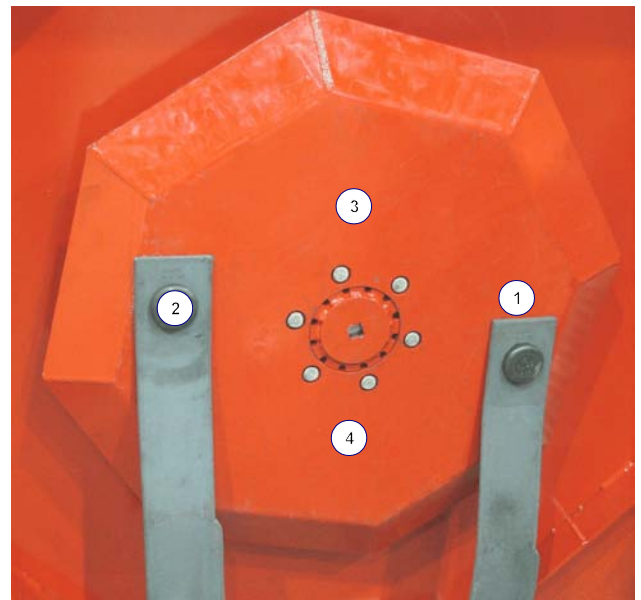
- Slide the hub onto the shaft.
 - Align the key into the hub keyway.
- Install the hub nut (1) and tighten using a 3/4" drive impact wrench.



Pan Mounted on Driveshaft

107066C

- Drive the hub onto the taper between the driveshaft and the hub.
 - Use a soft blow hammer to hit the pan in the order and locations shown in the figure.
- Tighten the hub nut using the 3/4" drive impact wrench.
- Re-drive the hub onto the taper using a soft blow hammer to hit the pan in the order and locations shown in the figure.
- Re-tighten the hub nut using the 3/4" drive impact wrench.
- Torque to 700 lbf (949 Nm).

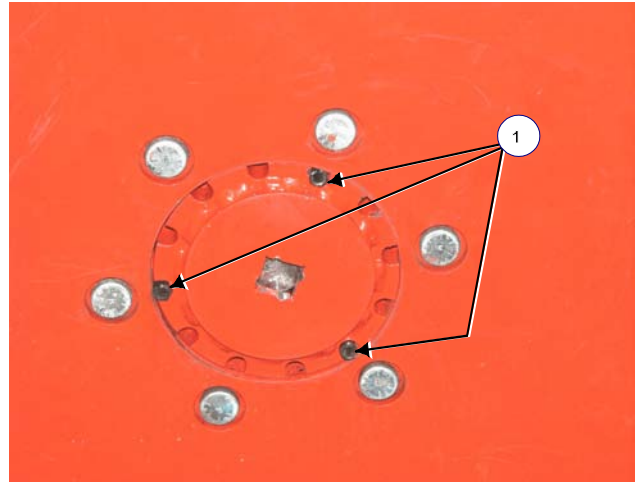


Drive Hub Onto Taper of Driveshaft

107067C

Section 5 - Maintaining the Mower

- Using a punch and hammer, tighten the hub nut until the first available roll pin hole in the hub becomes visible.
- Install and set 3 roll pins (1) into the nut and hub.



Roll Pins Installed in Nut/Hub

107068C

Section 5 - Maintaining the Mower

Front Tires -

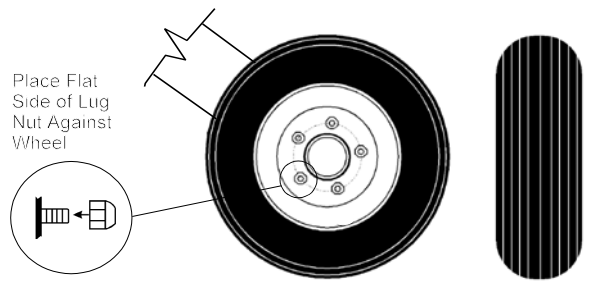
Note: It is recommended to have the tires mounted by a tire technician.

- Check the condition of the front tires.
- The tires are tubeless with a sealant.
- Mount the tires so that the air valve will be toward the wheel hub when mounted on the mower.
- Place the flat side of the lug nut against the wheel rim. Torque to 75 lbf (101 Nm).
- Tire Pressure - Fill the tires to 44 psi (303 Kpa).
- Transport speed should not exceed 20 mph (32 kmh).
- When replacing the tires, refer to the Specification Section for the size and type of tires.



Front Tires

214072



Front Tire Mounting

107094C

Rear Tires

There are 2 rear tire mounting configurations that can be used on the mower. See the Table for Tire Mounting Configurations:

Note: The center deck tires must all be the same type.

Note: Do not use automotive tires and rims.

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

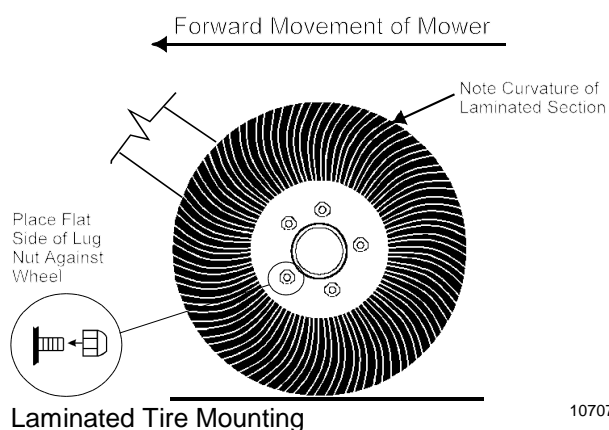
Center Rear Section	Wing Section
Aircraft (Foam Filled)	Laminated
Laminated	Laminated

Tire Mounting Configurations

Rear Laminated Tires

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

- Mount the wheels so that the curvature of the laminated sections lay with the ground when mounted on the wheel hub. (See figure)
- Place the flat side of the lug nut against the wheel rim. Torque to 75 lbf (101 Nm).
- Do not transport the mower on roadways for long distances with laminated tires.
- Transport speed for laminated tires should not exceed 15 mph (24 kmh). Excessive speed can cause damage to the machine and tire sections.
- Do not attempt to repair the tires. If they are damaged, discard them and mount new tire assemblies.
- When replacing the tires, refer to the Specification Section for the size and type of tire.



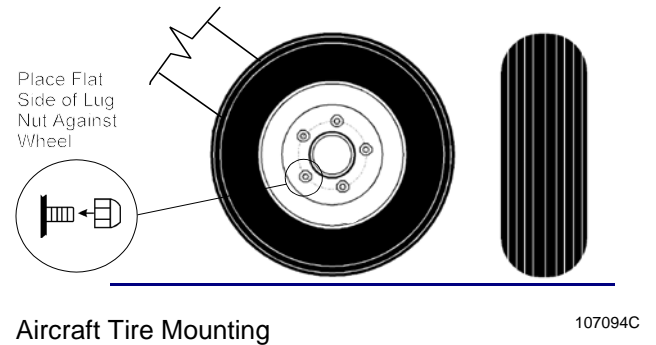
107074C

Center Rear Aircraft Tires

(Foam Filled)

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

- Mount the tires so that the air valve will be toward the wheel hub when mounted on the mower.
- Place the flat side of the lug nut against the wheel rim. Torque to 75 lbf (101 Nm).
- Transport speed for aircraft tires should not exceed 20 mph (32 kmh).
- When replacing the tires, refer to the Specification Section for the size and type of tires.



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6.0 STORING THE MOWER

1. Clean all the debris off the mower decks.
2. Lubricate all mower grease points (See Section 5).
3. Tighten all bolts to the recommended torque.
4. Check the mower for worn and damaged parts. Replace as needed.
5. Touch-up the paint to prevent rusting.
6. Park the mower on level ground.



Clean Debris off the Mower

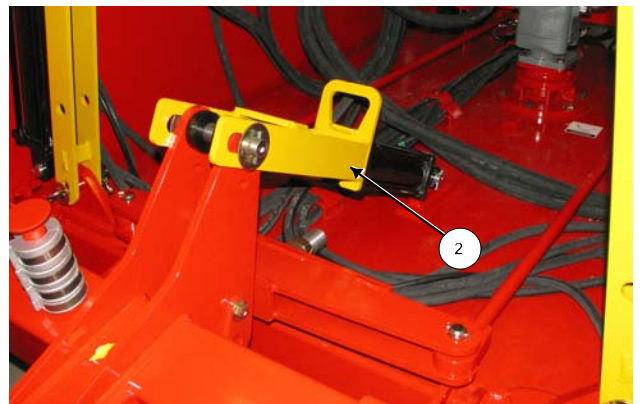
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Park on Level Ground

214107

7. Lower the mower until the hydraulic height control cylinder is resting on the transport lock (1).



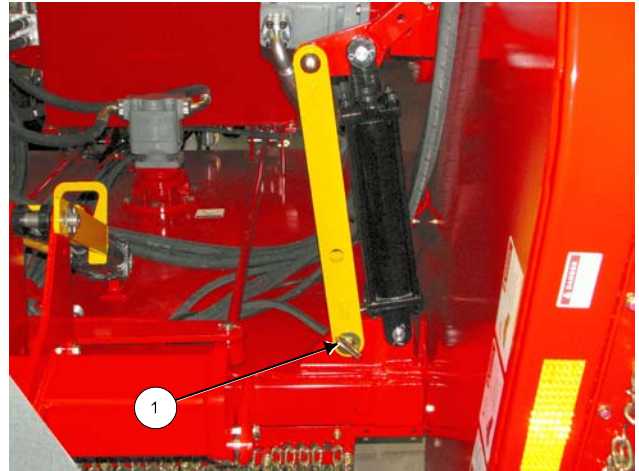
Height Cylinder Resting on Lock

216048C

Section 6 - Storing the Mower

8. Place the wing transport lock pins in place to lock the wings.

- Raise the wings until they rest in place.
- Install the wing lock pins (1) in both wings. Clip in place.

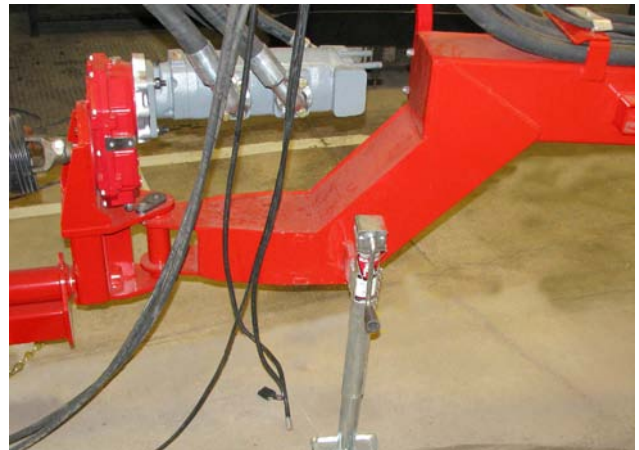


Install the Wing Transport Pins

216047C

9. Remove the jack from the storage position and place it onto the hitch (1).

- Pin the jack in place.
- Raise the hitch until the weight is supported by the jack.
- Ensure that the jack is resting on solid level ground or resting on a wood block.



Raise Hitch with the Jack

214033C

Section 6 - Storing the Mower

10. Remove the driveline from the tractor PTO shaft.
11. Disconnect the safety chain from the tractor.
12. Disconnect the hitch from the tractor.
 - Remove the hitch pin.
 - Remove the hitch bolts, lock nuts and washers from the drawbar.
13. Relieve the pressure on the hydraulic hoses and disconnect them.
14. Disconnect the electrical connection.



Remove Driveline and Safety Chain

108006

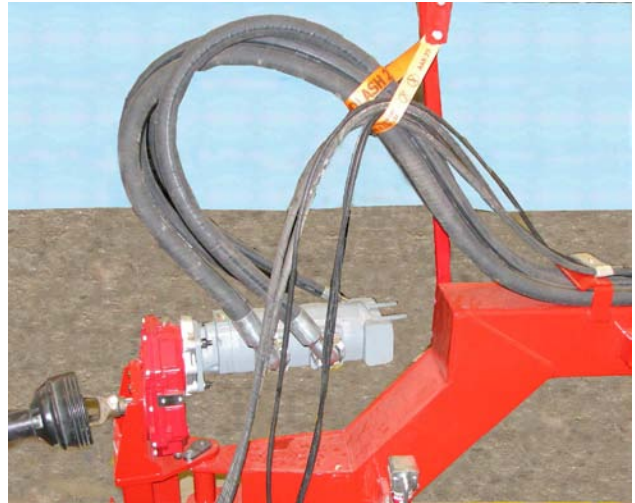


Disconnect Hydraulic Hoses & Electrical

107023

Section 6 - Storing the Mower

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



Hydraulic Hoses

214034

16. Place the PTO driveline in the support bracket.



Driveline in Support Bracket

214050

17. Change the oil in the gear box. See the Maintenance Section for procedures.

7.0 TROUBLESHOOTING



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

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



Operation

Symptom	Problem	Solution
Uneven Cut	Excessive ground speed	Reduce ground speed
	Mower not operated at rated rpm	Use full PTO speed
	Blades worn, dull or bent	Replace blades in pairs (refer to section 5). Replace with Highline parts
	Incorrect blade for rotation	Use correct blade for rotation. Refer to decal on mower deck for rotation
	Blades locked in a fixed position	Clean around blade. Check for free movement of blade
	Damaged blade pan	Repair or replace as necessary. Replace with Highline parts
	Mower not level	Adjust center section and wings (refer to section 3)
	Improper height adjustment	Adjust mower height
	Tractor tires push grass down	Reduce ground speed to allow grass to recover but keep PTO at full rpm
	Conditions too wet	Wait for drier conditions

Section 7 - Troubleshooting

Symptom	Problem	Solution
Uncut Material	Excessive ground speed	Reduce ground speed
	Rpm to low	Use full PTO speed
	Drive not functioning (blades do not turn when PTO is running)	Check drive shaft connection to pump gearbox
	Improper blade for direction of cut	Mower not setup for the primary cutting conditions
	Worn or broken blades	Replace blades with Highline parts
	Pressure relief valve	Heavy material may cause high oil pressure causing the pressure relief valve to open. This will result in the blade pan to stop turning. Drive slower or raise deck to reduce pressure
		Check if pressure relief valve is stuck open.
	Electrical Power to Fan	If main electrical power to the fan is lost or the main electrical fuse is blown, the wing pans will not turn for cutting. Check main fuse. Check voltage to cooling fan.

Poor Shredding of Material	Excessive ground speed	Reduce ground speed to circulate material longer
	Cutting to high	Lower cutting height
	Build up of material under the mower deck	Clean underside of mower
	Material heavy and lush	Decrease ground speed

Section 7 - Troubleshooting

Symptom	Problem	Solution
Mower Vibration	One blade missing	Replace blades in pairs. Use Highline parts
	Loose blades	Tighten blade bolt nuts. Check condition of the blade bolts. Replace with Highline parts
	Old and new blade on the same blade pan	Replace blades in pairs. Use Highline parts
	One broken blade	Replace blades in pairs. Use Highline parts
	Uneven wear on one blade causing unequal weight on blade pan	Replace blades in pairs. Use Highline parts
	Blades not swinging	Free blades so they swing on the blade bolt
	Blade pan bent or damaged	Replace as necessary. Use Highline parts
	Loose blade pan	Tighten blade pan bolts
	Mower not being operated at rated rpm	Set tractor throttle for proper PTO speed during operation
	Broken or defective u-joint cross bearing	Replace as necessary
	Bent or damaged PTO shaft	Repair or replace as necessary
	Bent or damaged output shaft.	Replace shaft and seal as necessary. Use Highline parts
	Bearing failure. Check blade pan hub for side play	Replace bearing and seal as necessary. Use Highline parts
	Spindle bolts loose	Tighten

Center Section

Symptom	Problem	Solution
Center Blades Not Turning	Low oil in tank	Fill oil tank
	Oil tank valves closed	Open both tank valves
	Suction line to pump restricted or crimped	Remove obstruction or replace suction line
	Pressure relief valve	Pressure relief valve is stuck open or has changed to a lower pressure. Replace valve
	Pump	A section of the pump is not operating to capacity. Load check the pump. Have pump maintained by qualified technician or replace
	Motor	Blade pan motor is not operating at capacity. Have pump maintained by qualified technician or replace

Spindle Noisy	Worn or damaged bearings	Replace bearings
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Spindle overheating	Low on lubricant	Fill to level plug
	Improper type lubricant	Replace lubricant. See section 5 "Maintenance" for type of lubricant
	Trash build-up around spindle	Remove trash

Spindle Leaking	Worn seal	Replace seal. Use Highline parts
	Damaged oil seal	Replace seal. Use Highline parts

Section 7 - Troubleshooting

Symptom	Problem	Solution
	Oil seal not sealing in housing	Replace seal. Use Highline parts
	Oil seal installed incorrectly	Replace seal
	Shaft surface is rough	Replace shaft. Use Highline parts
	Bent shaft	Replace shaft and oil seal. Use Highline parts
	Bolts loose	Tighten bolts
	Motor seal leaking	Replace seal

Wings

Symptom	Problem	Solution
Wings Do Not Lower or Raise	Transport pins installed	Remove pin and place in carrier position
	Hydraulic hoses or cylinders leaking	Check for leaks and repair. Use Highline parts

Wing Blades Not Turning	Motor switch turned off	Turn wing motor switch on at the switch box in the cab
	Low oil in tank	Fill oil tank
	Wing solenoid valve	Check that wing solenoid valve is closing.
		<p>The solenoid valve can be manual operated. Avoid being harmed by sudden movements of the mower.</p> <p>Manually push the valve rod into the full depth of the valve body to get motion. If this does not result in the desired motion, turn the rod 1/4 turn to release the rod from the neutral position (marked by a rod groove lined up with the nut). Pull the rod out as far as possible to get motion. Return the rod to the neutral position by pushing the rod in and turning 1/4 turn.</p>
	Electrical Power to Fan	Main electrical power to the fan is lost. Check voltage to cooling fan
	Electrical Fuse	Check the 40 amp fuse located in the power cable going to the switch box

Section 7 - Troubleshooting

Symptom	Problem	Solution
	Pressure relief valve	Pressure relief valve is stuck open or has changed to a lower pressure. Replace valve
	Suction line to pump restricted or crimped	Remove obstruction or replace suction line
	Pump	A section of the pump is not operating to capacity. Load check the pump. Have pump maintained by qualified technician or replace
	Motor	Motor is not operating at capacity. Have pump maintained by qualified technician or replace

Spindle Overheating	Low on lubricant	Fill to level plug
	Improper type lubricant	Replace lubricant. See section 5 "Maintenance" for type of lubricant
	Trash build-up around spindle	Remove build-up

Spindle Noisy	Worn or damaged bearings	Replace bearings
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Spindle Leaking	Worn seal	Replace seal. Use Highline parts
	Damaged oil seal	Replace seal. Use Highline parts
	Oil seal not sealing in housing	Replace seal. Use Highline parts
	Oil seal installed incorrectly	Replace seal
	Shaft surface is rough	Replace shaft. Use Highline parts

Section 7 - Troubleshooting

Symptom	Problem	Solution
	Bent shaft	Replace shaft and oil seal. Use Highline parts
	Bolts loose	Tighten bolts
	Motor seal leaking	Replace seal

Wheels

Symptom	Problem	Solution
Laminated Tires Burn Up	Traveling too fast	Slow down. Do not exceed 15 mph (24 kmh)
	Improper mounting of tire	Mount tire so that the curvature of the laminated sections lay with the ground
	Lug nuts incorrectly installed	Place flat side of lug nut against wheel

Tires Leak Air	Foreign object in tire	Replace tire
	Air valve to outside of rim causing mud to pack and rip off valve	Mount tire with air valve to inside of rim

Front Wheels Dig Into Cutting Area	Ground is too soft and wet	Back up to free the wheels
		Stay out of very soft and wet conditions

Hitch

Symptom	Problem	Solution
Hitch Does Not Move	Transport locks installed	Remove and place locks in carrier positions
	Hydraulic hoses or cylinders leaking	Check for leaks and repair. Use Highline parts

Blades

Symptom	Problem	Solution
Excessive Wear	Blade contacting ground	Increase cutting height
	Cutting too low in abrasive (sandy or rocky) conditions	Increase cutting height
	Non-Highline blades	Replace blades. Use Highline parts
	Mower not being operated at rated rpm	Set tractor throttle to proper PTO speed

Blade Breakage	Cutting too low in rocky conditions	Increase cutting height
	Cutting with damaged or extremely worn blades	Replace blades. Use Highline parts

Blade Bolt Loosening	Inadequate torque on blade bolts nuts	Tighten blade bolts nut. (Refer to "Maintenance" section)
	Blade bolt locknut worn	Do not re-use locknut. Replace lock nut. Use Highline parts

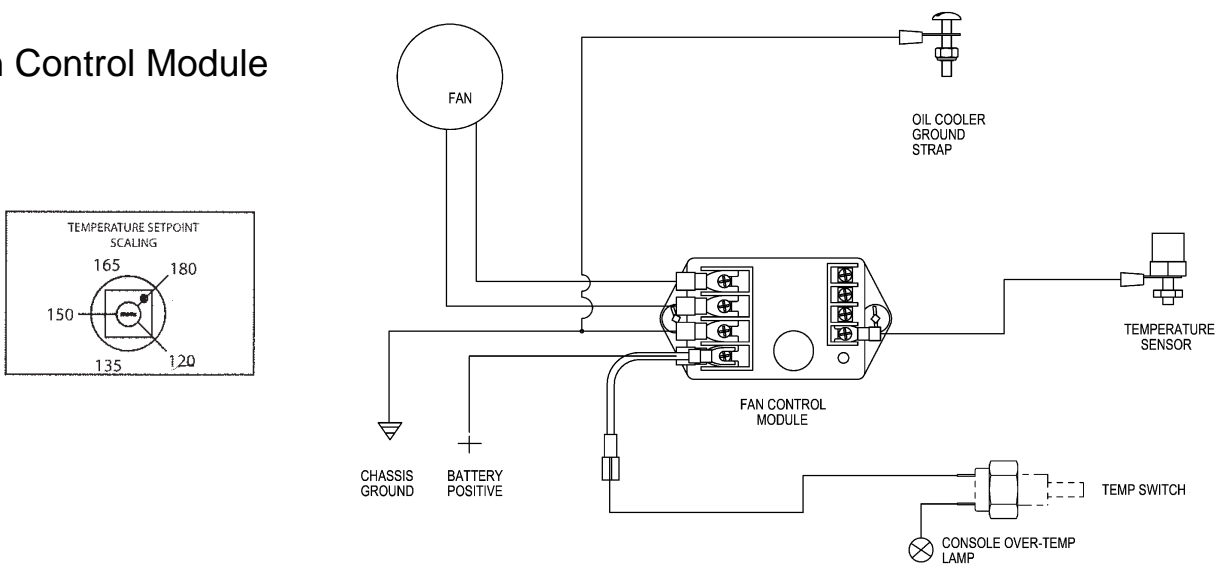
Mower Oil

Symptom	Problem	Solution
Overheating	Refer to ""Responding to a High Oil Temperature Warning" in Section 4.	
	Low oil level	Add oil to tank. Check sight glass for level
	Cooling fan not operating	Check "Trouble Codes" on the fan control module. Repair.
		Connect the electrical power to an outlet that is rated for 30 amps or more to ensure sufficient power for the cooling fan. The power can also be taken directly from the tractor battery.
		Check voltage to the fan
		Check the 40 amp fuse located in the power cable going to the switch box
	Radiator plugged	Blow out debris with air. Wash out dirt with low pressure water
	Blade pan motor running hot	Check the motors with an infrared heat sensor. The motor that reads as hotter than the others needs attention by a qualified technician. Replace motor
	Excessive ground speed in heavy conditions	Reduce ground speed
	Excessive hitting of ground with blades	Increase cutting height
	Excessive amount of oil leaking past gears	Worn pump or motor. Have pump or motor maintained by qualified technician or replace

Cooling Fan

Symptom	Problem	Solution
Fan Not Operating	Check power	Check voltage and connections to fan motor
		Check the 40 amp fuse located in the power cable going to the switch box
		Connect the electrical power to an outlet that is rated for 30 amps or more to ensure sufficient power for the cooling fan. The power can also be taken directly from the tractor battery.
	Fan motor	Connect power directly to fan to confirm the fan is good
	Fan Control Module	If there is voltage to the module but no light on the module, replace the module
	Module trouble codes	Refer to the Fan Control Module information for the Status Light Trouble Codes table. Fix problem
	Temperature sensor	Disconnect the temperature sensor wire from the module. Fan should start running if temperature sensor is faulty. Replace sensor
	Fan "On" temperature setting	Refer to the Fan Control Module information to adjust the temperature at which the fan turns on
Refer to "Responding to a High Oil Temperature Warning" in Section 4.		

Fan Control Module



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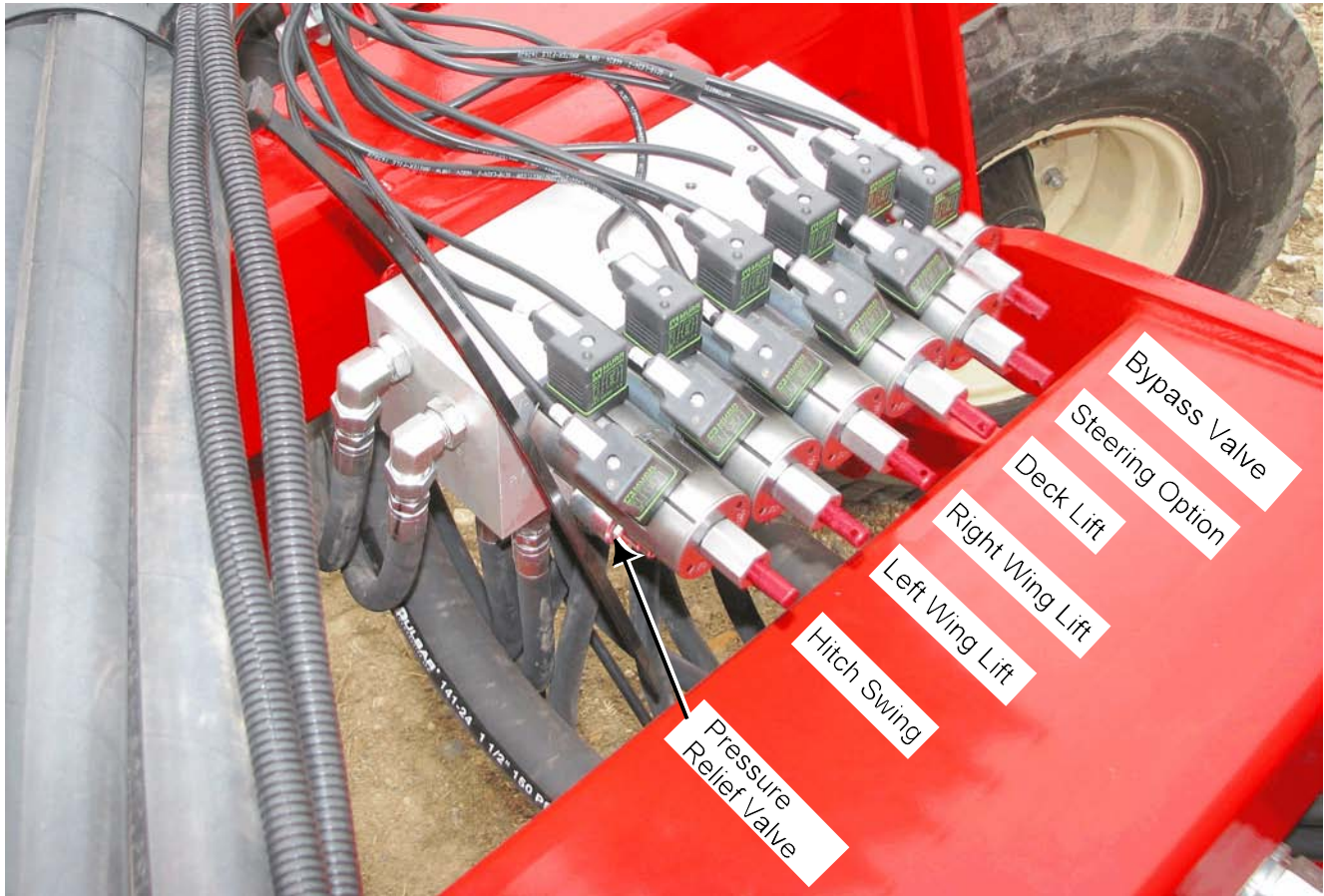
Status Light - Trouble Codes

Solid Light	Normal Operation
1 blink	Open or disconnected fan motor
2 blink	Shorted or over current fan motor
3 blink	Temp sensor open or out of range
4 blink	Over temp alarm - above 185°F (85°C)

Hydraulic Manifold - Joystick Option

Symptom	Problem	Solution
Solenoid valve	Electrical fault	Check cable and connector
		Measure voltage at the connector
	Not responding to joystick	The solenoid valve can be manual operated. Avoid being harmed by sudden movements of the mower. Manually push the valve rod into the full depth of the valve body to get motion. If this does not result in the desired motion, turn the rod 1/4 turn to release the rod from the neutral position (marked by a rod groove lined up with the nut). Pull the rod out as far as possible to get motion. Return the rod to the neutral position by pushing the rod in and turning 1/4 turn.
		Refer to the manifold layout

Joystick Hydraulic Manifold Layout



Joystick Manifold Layout

214135C

Tractor Hydraulic Oil

Hydraulic Oil Overheating	Incorrect optional valve type (Open center vs closed center)	Install correct valve type
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Pump Gear Box

Symptom	Problem	Solution
Gearbox Overheating	Low on lubricant	Fill to the level plug
	Improper lubricant	Replace with proper lubricant
	Trash build-up around the gearbox	Remove trash

Gearbox Noisy	Low oil in gearbox	Fill gearbox with proper grade of oil
	Rough gears	Change gears. Use Highline parts
	Worn bearing	Replace bearing. Use Highline parts

Gearbox Output Shaft Seal Oil Leak	Worn seal	Replace seal. Use Highline parts
	Oil seal incorrectly installed	Replace seal. Use Highline parts
	Oil seal not sealing in housing	Replace seal
	Shaft surface is rough	Replace shaft. Use Highline parts
	Gear case overfilled	Drain oil to proper level
	Gear case not vented	Check that the vent is clear

Section 7 - Troubleshooting

Symptom	Problem	Solution
	Driveline bottoms out when operating through deep ditches	Avoid these conditions
	Bent or damaged output shaft and/or bearings	Replace shaft and oil seal and bearings. Use Highline parts

Driveline

Symptom	Problem	Solution
Telescoping Tube Fails	Shock load	Avoid solid objects
	Collapsed beyond allowed angle	Avoid such conditions
		Set the drawbar to the proper length
		Replace driveline
	Insufficient Greasing	If the grease point in the telescoping section is not accessible when connected to the tractor, disconnect from the tractor and extend the PTO shaft to access the grease point

Yoke or cross fails	Lack of lubrication	Apply grease
	Shock load	Avoid solid objects

PTO Driveline Bent	Contact with the drawbar	Reposition drawbar. Refer to “transporting the mower” section
	Driveline too long, bottoms out when operating through deep ditches	Avoid these conditions

Section 8 - Specifications

8.0 ROTARY MOWER SPECIFICATIONS

	15 Foot	10 Foot
Cutting swath	180" (4572 mm)	120" (3048 mm)
Overall width	196" (4978 mm)	150" (3810 mm)
Overall length	402" (10210 mm)	402" (10210 mm)
Transport width	120" (3048 mm)	112" (2845 mm)
Front to back contour length	153" (3886 mm)	153" (3886 mm)

Weight	8600 lbs (3901 kg)	7600 lbs (3447 kg)
Tongue weight	650 lbs (295 kg)	650 lbs (295 kg)

Cutting height	2" to 15" (51 mm to 381 mm)
Cutting capacity (diameter)	3.5" (89 mm)
Blade size	1/2 " x 4" (13 mm x 102 mm)
Blade tip speed 1000rpm	16568 fpm (5050 mpm)

Input drive	Cat.4/ 1000 rpm
Wing working range	Down 25 degrees; Up - 55 degrees
Oil Tank Capacity	42 Imp gallons (190 Liters) (50 US Gallons)
Hydraulic Fluid	Hydrex MV 36
Operating Temperature Range (when warn)	129° - 185°F (54° - 85°C)

Rear Tires	Laminate 6 x 9 x 20 (152 x 229 x 508)
	Aircraft 22 x 6.6 x 22 ply (559 x 167 x 22 ply) (Air Filled or Foam Filled)
Front Tires (RCH)	32 x 11.5 x 15 - 22 ply

Recommended tractor Hp	115 PTO (85.7 kw)
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Highline RCH Hydro Mower Equipment Limited Warranty Policy

Highline Manufacturing Limited (hereinafter "Highline") warrants this new Mower product of Highline's manufacturer to be free from defects in material and workmanship, under normal use and service, under the following uses and shall apply only to complete machines of Highline's manufacture:

First (1) Year - Parts and Labour

During the First Year of the Limited Warranty period, any defect in material or workmanship in any warranted item of Highline RCH Hydro Mower, not excluded below, shall be repaired or replaced at Highline's option without charge in the first year from the date of initial purchase. These repairs shall be by a Dealer that Highline has authorized to perform service on the Highline Mower Product Line. The repairs shall be made during normal working hours. Highline reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

Second (2) Year - 100% off of the Current Listed Retail Price of Defective Pump, Motor, Speed Increaser Gearbox, Spindle and Adaptor Parts

During the Second Year of the Limited Warranty period, this warranty is limited to the provision of 100% off of the current listed retail price of parts for the Pump, Motor, Speed Increaser Gearbox, Spindle and Adaptor found to be defective in material or workmanship but not the labour for installation of those parts. Highline reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

Third (3) Year - 50% off of the Current Listed Retail Price of Defective Pump, Motor, Speed Increaser Gearbox, Spindle and Adaptor Parts

During the third year from the date of purchase, this warranty is limited to the provision of 50% off of the current listed retail price of Defective Pump, Motor, Speed Increaser Gearbox, Spindle and Adaptor Parts found to be defective in material or workmanship but not the labour for installation of those parts. Highline reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

Equipment and accessories not of Highline's manufacture (with the exception of Pump, Motor, Speed Increaser Gearbox, Spindle and Adaptor Parts) 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.

Labour will be in accordance with Highline's labour reimbursement policy.

This Warranty is conditional upon completing the Highline Warranty Claim form and submitting it to Highline within 30 days of the repair.

Retail Purchaser Responsibility:

This Limited Warranty requires proper maintenance and periodic inspections of the Mower as indicated in the Operator's Manual furnished with each new Mower. 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 RCH Hydro Mower Equipment Limited Warranty Policy may be subject to cancellation if the above requirements are not performed.

Disclaimer of Implied Warranties & Consequential Damages

This warranty shall not be interpreted to render Highline Manufacturing Ltd. liable for injury, death, property damage or damages of any kind, whether direct, consequential or contingent to property. Without limiting the generality of the foregoing, Highline shall not be liable for damages resulting from any cause beyond its reasonable control, including, without limitation, loss of income, out of service time, any expense or loss of labour, supplies or damage to equipment which this equipment may be attached.

No other warranty of any kind whatsoever, express or implied is made with respect to this sale, and all implied warranties of merchantability and fitness for a particular purpose which exceed the obligations set forth in this written warranty are hereby disclaimed and excluded from this sale.

Exclusions and Limitations

The warranties contained herein shall NOT APPLY to the following:

1. To a new Mower delivered to the retail purchaser in which the warranty registration has not been completed and returned to Highline Manufacturing Ltd. within thirty (30) days from the date of purchase.
2. If, in the sole opinion of Highline, the Mower has been subjected to misapplication, abuse, misuse, negligence or accident.
3. To any goods that have sustained damage or deterioration attributable to contact with foreign objects (eg. stones, iron and material other than grass and brush.)
4. To any defect which was caused, in Highline's sole judgement, by other than normal use and service of the Mower or by any of the following:
 - a. accident
 - b. misuse or negligence
 - c. overloading
 - d. lack 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 the Mower which were not manufactured or supplied by Highline
 - k. the elements
 - l. collision or other accident.
5. To any Mower whose identification numbers or marks have been altered or removed.
6. To any Mower 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), hydraulic fluids and blades.
7. To any Mower used in demonstrations not performed by a Highline Dealer. Warranty will be at the discretion of Highline for all other demonstration warranty.
8. To any defect that was caused (in Highline's sole judgement) by operation of the Mower not abiding by standard operating procedures outlined in the Operator's Manual.
9. Tire Limited Warranties and support are the responsibility of the respective product's manufacturer.
10. To transportation costs, if any, of transporting to the Dealer that Highline has authorized to perform service on the Highline Mower Product Line or transporting to the location specified by the Highline Service Department for service by the Highline Service Department.
11. In no event shall Highline's liability exceed the purchase price of the product.
12. Diagnostic and overtime labour premiums are not covered under this Limited Warranty Policy.
13. 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.
14. Accessory systems and electronics not of Highline's manufacture are warranted only to the extent of such manufacturer's respective Limited Warranty if any.
15. To normal replacement items such as gearbox lubricant, hydraulic fluids, and seals.
16. To wear items which are listed by product group below:
 - a. Blades and blade pans
 - b. Blade bolts and nuts
 - c. Skid shoes
 - d. Chain guards
 - e. Other items that in Highline's sole judgement is a wear item

Replacement Parts Warranty

Parts replaced in the warranty period will receive the balance of the RCH Hydro Mower Limited Warranty listed above. Replacement parts, after the original machine warranty, are warranted to be free from defects of material for ninety (90) days from the date of purchase or the part will be repaired or replaced at Highline's sole judgement, 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, improve and change specifications at any time on any product without incurring any obligations to owners to replace or update any product previously sold. No person is authorized to give any other warranty, or to assume any additional obligation on Highline's behalf.