

RCH™ Mower
Radial Contouring
Hitch Mower

**Operator's
Manual**



RCH™ Mower Radial Contouring Hitch Mower

Operator's Manual

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E9145V1

Highline Team Message

***Congratulations on your purchase of the RCH Mower** 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 RCH mower owners.*

This operator's manual has been prepared to provide information necessary for the safe and efficient operation of your RCH 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 RCH Mower as your machine of choice.

Highline Manufacturing Ltd.

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SERIAL NUMBER

Your serial number is found on the serial number plate attached to the RCH™ Mower on the left side of the fifth wheel hitch support tower.

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.

Section 1 - Safety

SAFETY SIGN-OFF FORM

Highline Manufacturing Ltd. follows the general Safety Standards specified by the American Society of Agricultural Engineers (ASAE) and the Occupational Safety and Health Administration (OSHA). Anyone who will be operating and/or maintaining the Highline RCH 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 RCH 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." (Taken from ASAE S474.1 Feb 04 - 5.2.5.1)
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



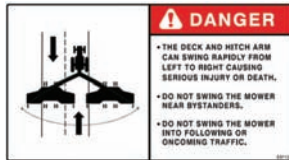
STAND CLEAR OF WINGS

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.



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.



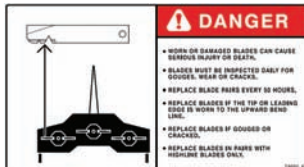
DO NOT SWING DECK AND HITCH ARM NEAR BYSTANDERS OR INTO TRAFFIC

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.



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 blades if the tip or leading edge is worn to the upward bend line. (The bend line is 2" (51mm) from the leading edge of a 4" (102 mm blade.)
Replace blades if gouged or cracked.
Blades must be changed in sets.
Use only Highline replacement parts.

Do not repair blades.



ENSURE SLOW MOVING VEHICLE SIGN IS IN PLACE

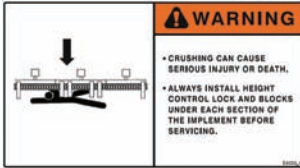
Ensure the Slow Moving Vehicle sign is in place, clean and easily visible.

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

READ AND FULLY UNDERSTAND THE INSTRUCTIONS ON THIS DECAL

 DANGER 	
PREPARING 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 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 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 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.

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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.

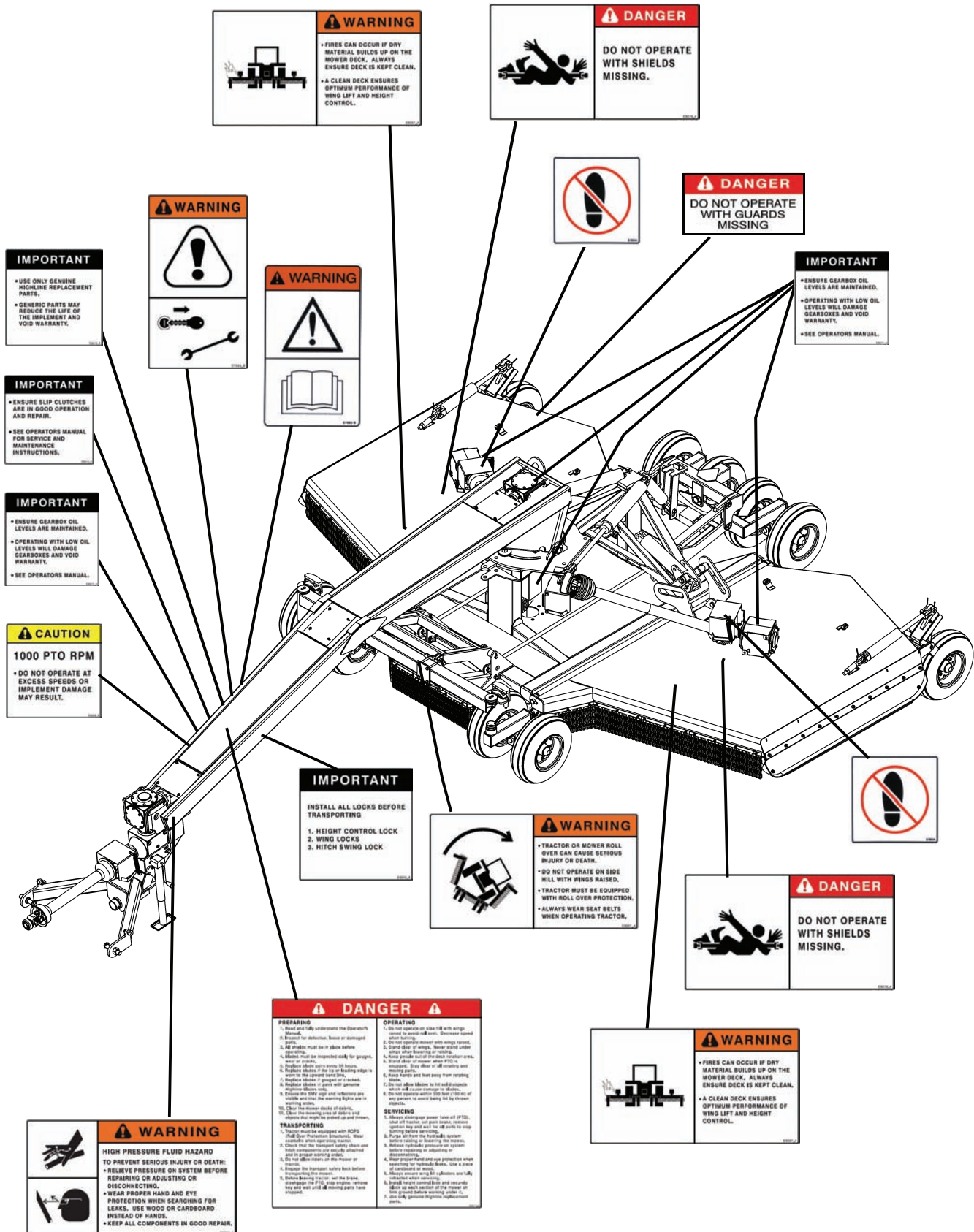
A clean deck ensures optimum performance of wing lift and height control.



DO NOT EXCEED PTO SPEED

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

SAFETY DECAL LOCATIONS CONTINUED



2.0 TRANSPORTING THE MOWER



Only tow the mower behind a properly sized and equipped tractor which exceeds the weight of the mower by 20%. 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

- Minimum tractor weight of 9360 lbs (4246 kg).
- Roll Over Protection System (ROPS)
- Working seatbelts
- 1 3/8" 21 spline PTO
- Minimum 80 PTO HP
Recommended is 100 PTO HP.
- 3 Spool Control Valves (SCV)

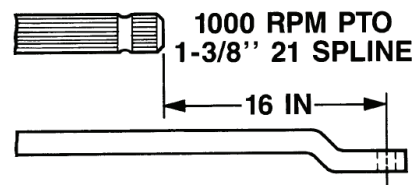
2. Ensure correct PTO speed

- 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 Single Point Hitch Drawbar Length

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



Tractor Drawbar Adjustment for 1000 RPM

108005

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

Section 2 - Transporting the Mower

4. Connect Single Point Hitch (if applicable)

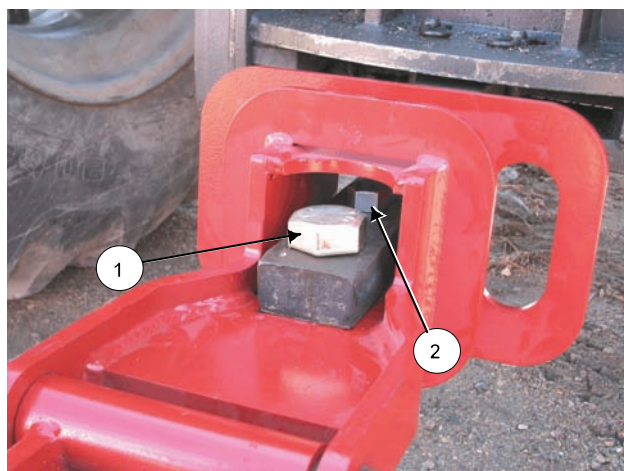
- Lift the Hitch Arm with the jack (1)
 - The hitch arm is very heavy. Do not attempt to lift it without using the jack.
 - Adjust the hitch to connect the drawbar.



Single Point Hitch on Jack

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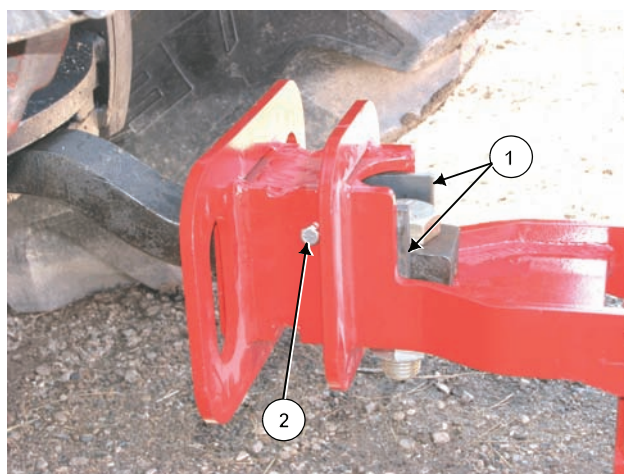
- Connect the tractor drawbar to the drawbar connector with:
 - 1 1/4" x 5" bolt, washer and locknut (1). Torque to 600 lbf (813 Nm)
 - 3/4" x 3 1/2" bolt, washer and locknut (2). Torque to 260 lbf (352 Nm).



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).



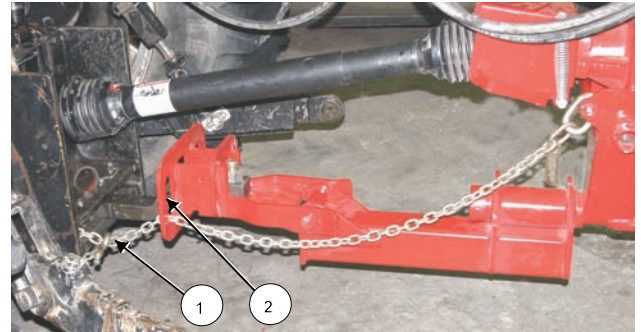
Drawbar Shims

107083C

Section 2 - Transporting the Mower

5. 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

108006C

6. 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

7. Tractor Wheel Tread Width Settings

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

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

9. Attach Driveline to PTO



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



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

- 1) Shut off the tractor engine and remove the key.
- 2) Check that the driveline telescopes easily and that the shields are in good condition and rotate freely.
- 3) Lift the tractor PTO shield.
- 4) 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.
- 5) 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.
- 6) Lower the tractor & hitch PTO shields into place.

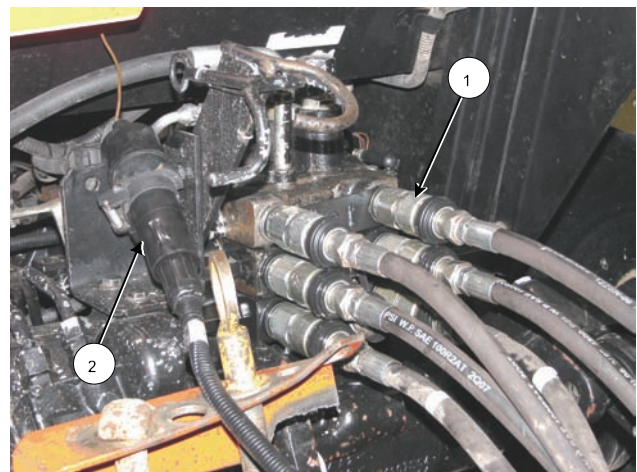


Attach Driveline to PTO

108006

10. Attach Hydraulics

- The tractor must be equipped with 3 spool control valves (SCV) to control the deck rotation, winging up and down and height control.
- 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

Section 2 - Transporting the Mower

11. Connect Lights
 - Connect the light plug (2) into the appropriate tractor receptacle.
 - Ensure the light cable does not interfere with or contact moving parts.
12. Place the Hitch Jack in the Storage Location.



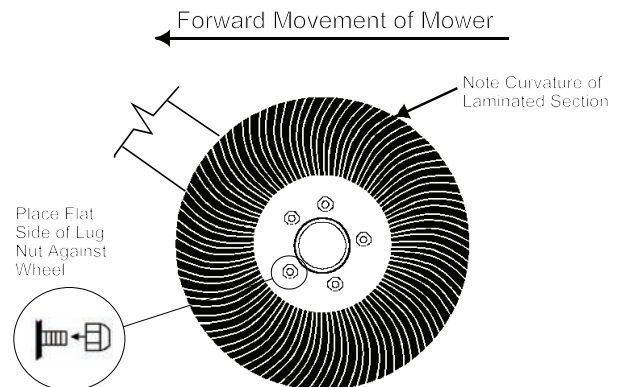
Hitch Jack in Storage Location

107043

13. Check on the condition of all the tires.
 - Verify 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.

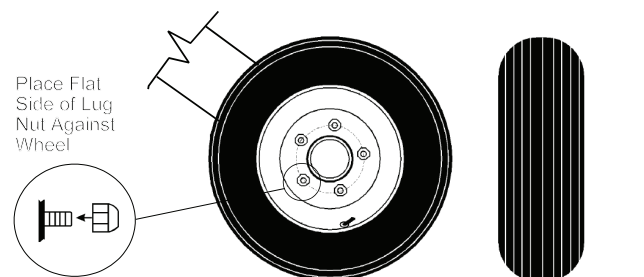


Laminated Tires

107074C

Aircraft Tires

- Air Filled Tire Pressure - Fill the tires to 30 psi (207 Kpa).



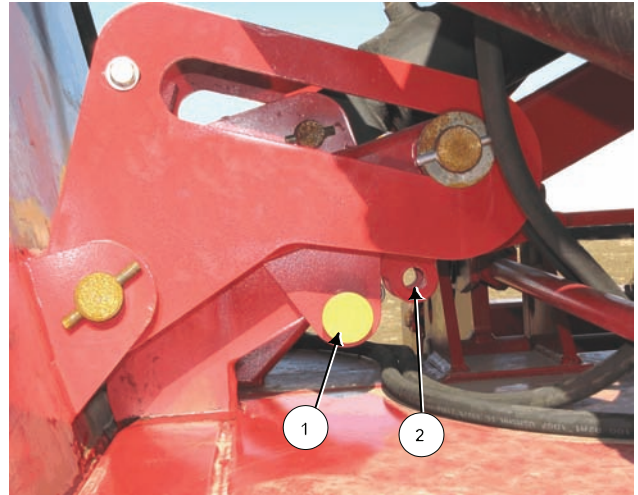
Aircraft Tires

107094C

Section 2 - Transporting the Mower

14. Raise the wings until they rest in place.

- Install the Wing Lock Pins (1) from the lock pin carrier (2) position. Clip the pin into place.



Install the Wing Transport Lock Pins

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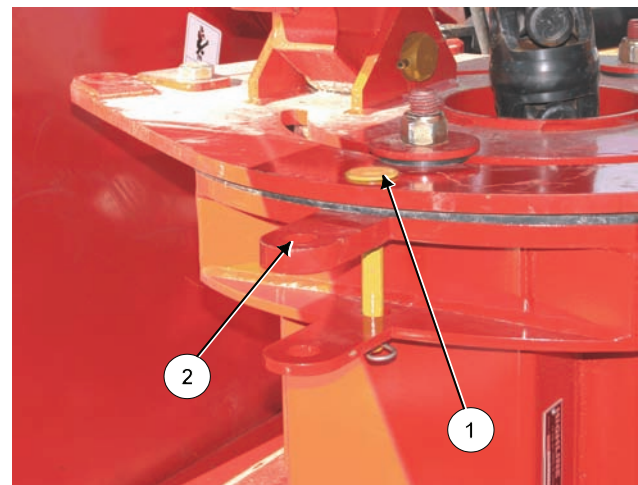
15. Lower the mower until the hydraulic height control cylinder is resting on the height cylinder lock (1).



Height Cylinder Resting on Lock

108077C

16. Install the Hitch Transport Lock Pin (1) from the lock pin carrier (2) position. Clip the pin into place.

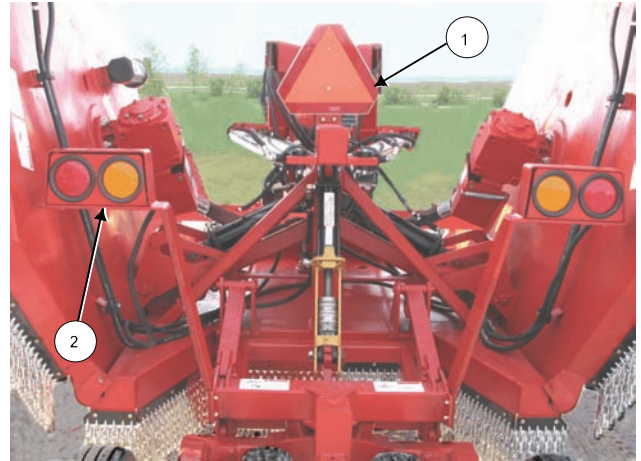


Install the Hitch Transport Lock Pin

107086C

Section 2 - Transporting the Mower

17. Verify that the Slow Moving Vehicle (SMV) sign (1) is clean and visible.
18. Verify that the taillights and flashing warning lights (2) are clean, visible and in good working order.



Verify the SMV is Visible & Lights are Working 108077C2

19. Transport Speed

Laminated Tires

- Do not exceed 15 mph (24 km/h). Excessive speed can cause damage to the machine and tire sections.

Aircraft Tires (Air or Foam Filled)

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

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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.



Park On Level Ground

108084

5. 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 driveshaft or pan.
- Inspect the pan for damage caused by contact with an immovable object.
- Inspect blade pan mounting hardware for damage.
- Inspect blade mounting bolts for damage.



Inspect Blades & Hardware

107034

Section 3 - Mower Preparation

6. Check the Condition of the Blades

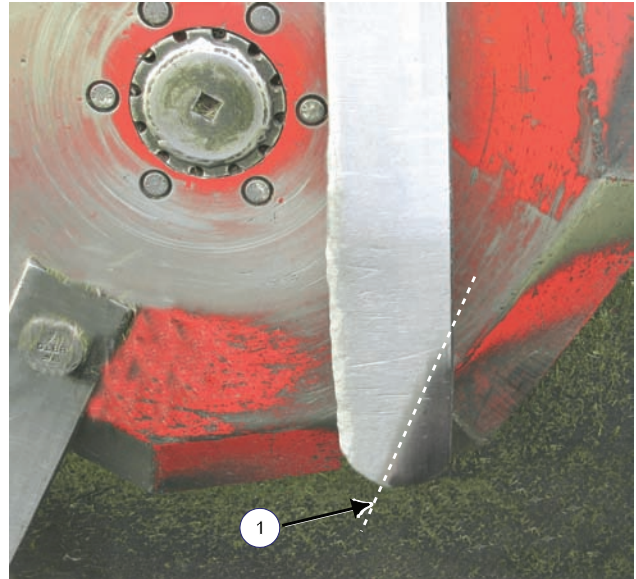
- Inspect the blades daily.
- Check that the blades swing freely.

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 to the upward bend line (1). Replace with Highline blades.
 - The bend line is 2" (51mm) from the leading edge of a 4" (102mm) blade.
- 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 Worn to Bend Line

1070802C



Replace Blade When Gouged

107080

Section 3 - Mower Preparation

6. Remove the Height Control Transport Lock

- Raise the mower center section by extending the lift cylinder.
- Shut off the tractor and remove the ignition key.
- Place the center transport lock (1) into the storage slot (2).

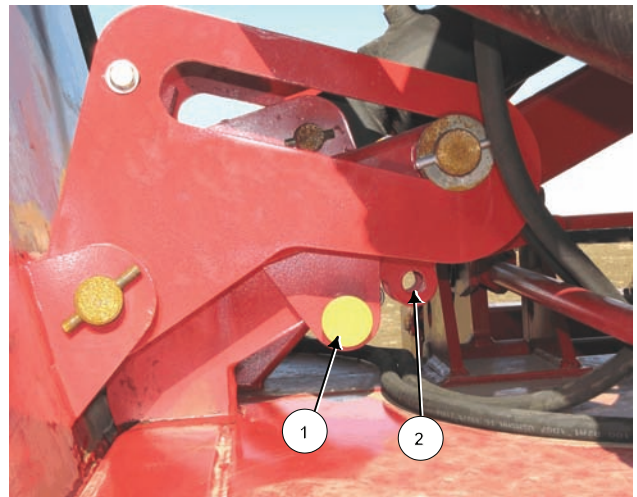


Remove Height Control Transport Lock

108010C

7. Remove the Wing Transport Lock Pins

- Place the pins (1) into the pin storage position (2).

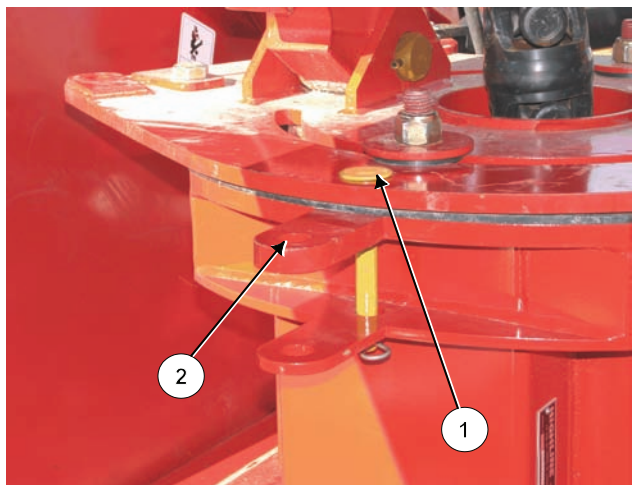


Remove Wing Transport Lock Pins

107085C

8. Remove the Hitch Transport Lock Pin

- Place the pin (1) into the pin storage position (2).



Remove Hitch Transport Lock Pin

107086C

Section 3 - Mower Preparation

9. Lower the Wings on Level Ground.



Lower the Wings

107087

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

107027



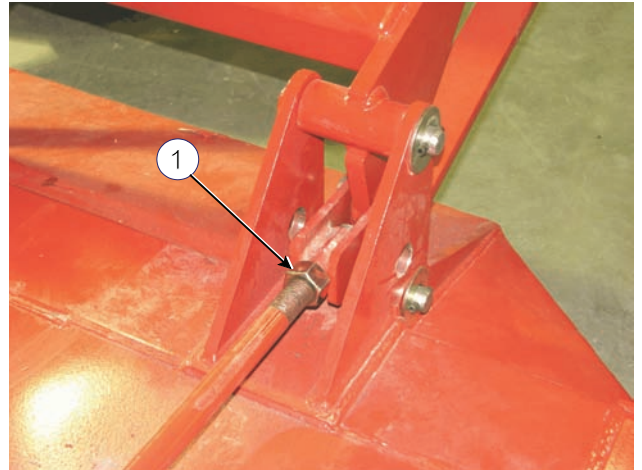
Height from Back Wing Pivot to Ground

107028

Section 3 - Mower Preparation

To adjust the center section for front to back level:

- 1) Raise the deck.
- 2) Block up the center section to remove all tension from both tie rods that extend from the front castors to the rear wheel carriers. This will avoid damage to the threads on the tie bars.
- 3) Loosen both tie rod jam nuts (1) near the front castors.



Tie Rod Jam Nut at Front of Mower

107029C

- 4) Turn both tie rod adjusters (1) equally to raise or lower the wheels. The tie rod adjusters are near the back wheel carrier.
 - To lower the mower, loosen the tie rods.
 - To raise the mower, tighten the tie rods.



Tie Rod Adjuster at Back of Mower

107030C

- 5) Tighten both tie rod jam nuts to lock in place.
- 6) Raise the mower, remove the blocking and lower the mower to the preferred cutting height.
- 7) Measure and compare the level from the front to back.
- 8) Adjust further if required.

Section 3 - Mower Preparation

11. Determine the Primary Mowing Operating Conditions

There are 3 primary operating conditions:

- Mowing on Right Hand Slopes such as roadway ditches when traveling with traffic.
- Mowing on Left Hand Slopes such as roadway ditches when traveling against traffic.
- Mowing on Level Ground.

12. Determine the Operating Setup of the Mower by Reviewing the 2 Setup Factors.

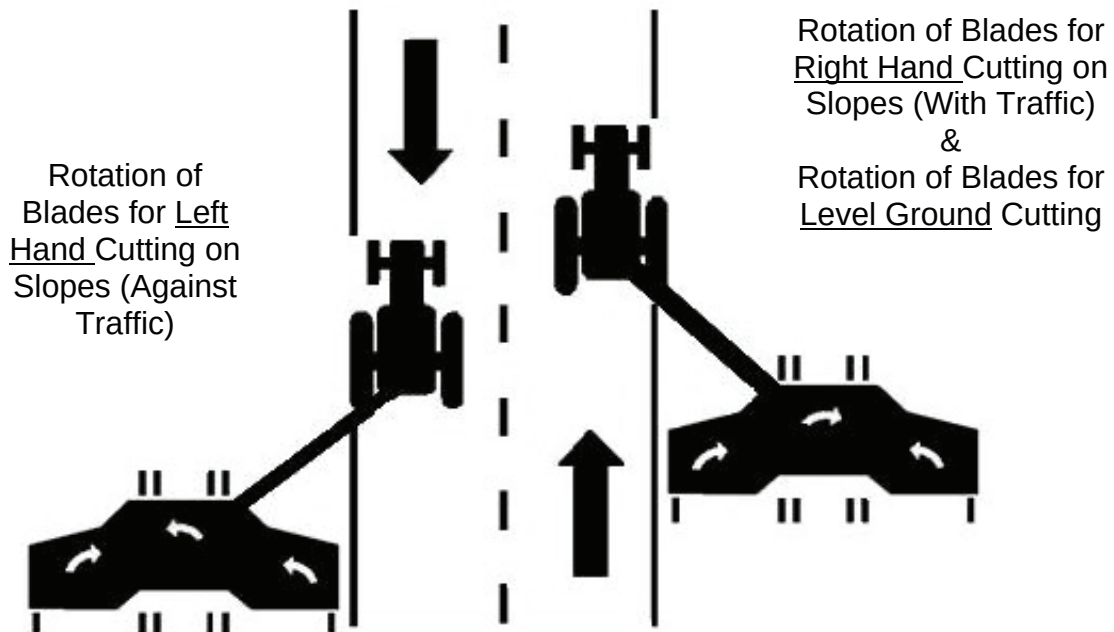
Setup Factor #1 - Determine Blade Direction

- Direction of blade rotation is indicated by decals near the gearbox 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 direction of the Center Blade to the diagram below.
- Determine if the mower is setup as a Right Hand machine or a Left Hand machine by comparing to the diagram below.

Note: Level Ground setup has the Center Blade direction the same as a Right Hand machine.



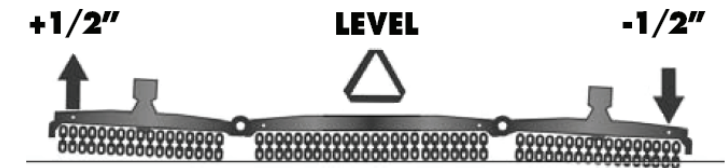
Direction of Blades for Left Hand Slope, Right Hand Slope or Level Ground

107015

Section 3 - Mower Preparation

Setup Factor #2 - Determine Wing Height Adjustment

- Right Hand Slope Operation (With Traffic)
 - 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) $\frac{1}{2}$ " (1.2 cm) up from the leveled center section.
 - Lower the outer edge of the right wing (ditch side) $\frac{1}{2}$ " (1.2cm) down from the leveled center section.
 - This will enable the wings to contour to the ditch for a better cut.
- Left Hand Slope Operation (Against Traffic)
 - Confirm the Wing Height according to the diagram.
 - As needed, use the Wing Adjustment Procedure (listed below):
 - Lower the outer edge of the left wing (ditch side) $\frac{1}{2}$ " (1.2cm) down from the leveled center section.
 - Raise the outer edge of the right wing (road side) $\frac{1}{2}$ " (1.2 cm) up from the leveled center section.
 - This will enable the wings to contour to the ditch for a better cut.
- Level Ground Operation
 - Confirm the Wing Height according to the diagram.
 - As needed, use the Wing Adjustment Procedure to level the left wing and right wing with the leveled center section.



←Roadway

Right Hand Slope Wing Adjustment- From Behind

107016



Roadway→|

Left Hand Slope Wing Adjustment - From Behind

107017



Level Ground Wing Adjustment - From Behind

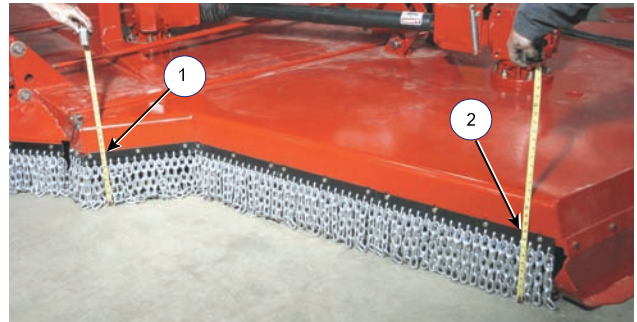
107101

Section 3 - Mower Preparation

13. Wing Adjustment Procedure

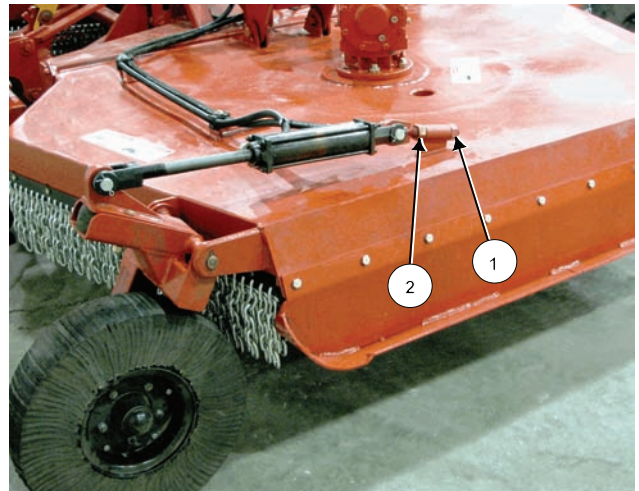
Note: Level the center section before adjusting wing height.

- 1) Fully raise the mower by extending the lift cylinders. Hold the lever open for 30 seconds to ensure the phasing cylinders are synchronized.
- 2) On a level surface, lower the mower to the preferred cutting height.
- 3) 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).
- 4) Loosen the wing height adjustment jam nut (1).
 - Adjust the height of the wing using the adjustment nut (2).
 - Use the Setup Factor #2 - Wing Adjustment diagram (shown above) for the heights.
 - Measure and compare.
- 5) Tighten the jam nut (1).
- 6) Repeat the procedure on the other wing.



Measure Wing Heights

107032C



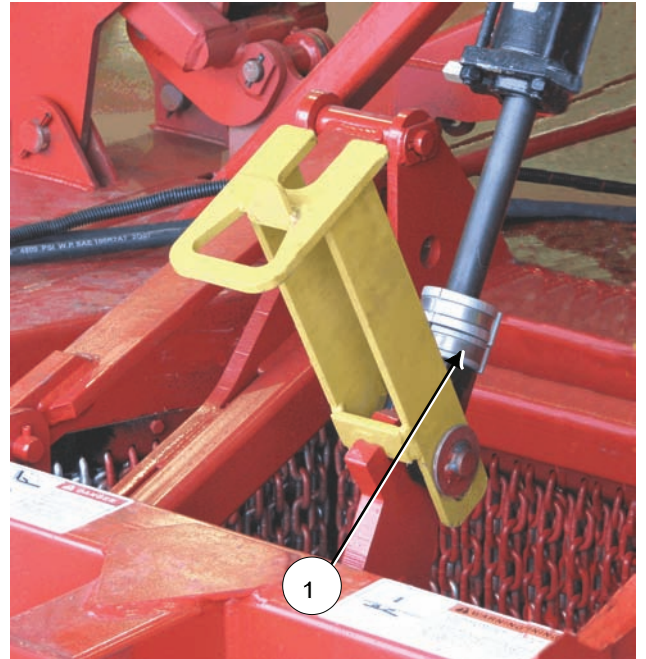
Adjust Wing Height

108011C

Section 3 - Mower Preparation

14. Set the Preferred Cutting Height

- Lower the wings.
- Raise the mower to the preferred cutting height.
- Install a number of height stops (1) around the cylinder rod to achieve the preferred cutting height.



Height Stops Installed

108012C

15. Inspect All the Hydraulic Cylinders.

- Ensure the proper size pins are in place and secured.
- Check for hydraulic leaks on the cylinders, along the hydraulic lines and at the tractor.



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

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



Inspect Hydraulic Cylinders and Hoses

108013

16. 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 sections immediately.

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



Check Condition of the Chain Guards

107037

Section 3 - Mower Preparation

18. Inspect the wing skid shoe for secure mounting and wear.



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

- If the leading edge (1) of the skid shoe is worn excessively or is damaged, it can be exchanged with the skid shoe from the other wing.

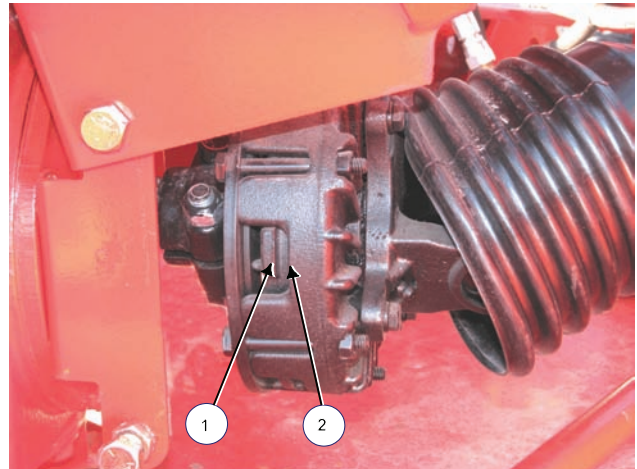


Inspect Skid Shoe

108106C

19. Ensure the driveline clutches will slip under an excessive load by checking that there is a gap between the tabs of the pressure plate (1) and the clutch housing (2).

- If the tabs are against the housing, replace the friction discs in the clutch. Refer to the Maintenance Section for procedures.
- All new clutches and those that have not been operated for approximately 30 days need to be run in. Refer to the "Run in of the Friction Clutch" in the Maintenance Section.



Clutch-Gap Between Pressure Plate & Housing^{107090C}

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



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

- ☐ Read and understand the Operator's Manual and all decals.
- ☐ Ensure that shields, guards and locks are in good working order.
- ☐ Lubricate all grease fittings and check the fluid level in all gear boxes. See Maintenance Section.
- ☐ Ensure all fasteners are tightened.

4.0 OPERATING THE MOWER



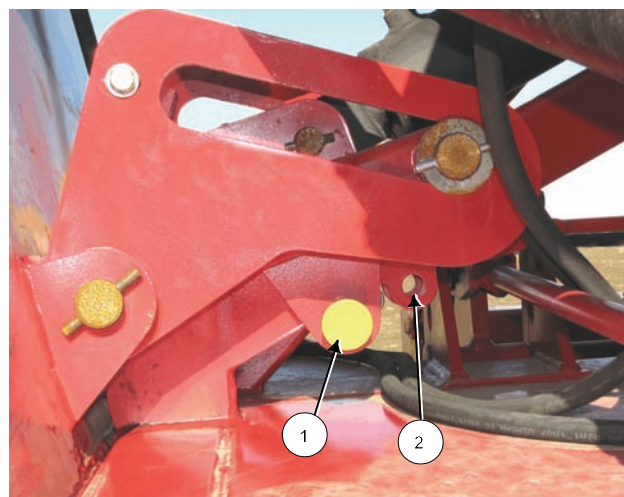
Do Not Operate Mower with the Wings Raised.

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



1. Park on Level Ground

- #### 2. Remove the Wing Lock Pins (1) and place into the lock pin carrier position (2). Clip in place.

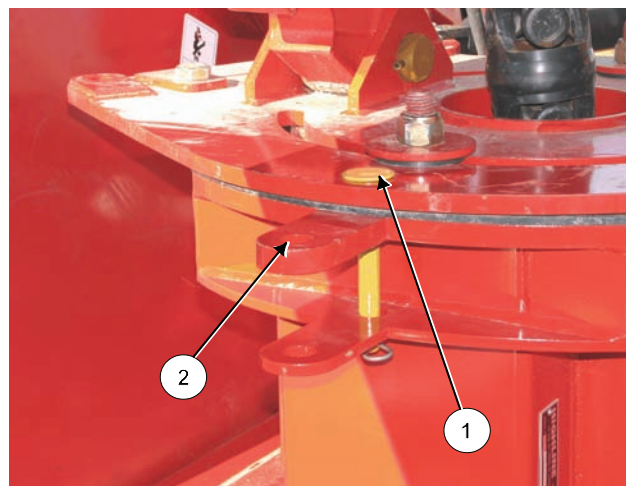


Remove Wing Transport Lock Pins

- #### 3. Remove the Hitch Lock Pin (1) and place into the lock pin carrier position (2). Clip in place.

4. Lower the Wings

- Ensure the tractor PTO drive is disengaged.
- Ensure all bystanders are well clear of the wing movement area.



Remove Hitch Transport Lock Pin

Section 4 - Operating the Mower

5. Remove Debris from the Cutting Area
 - Mark areas where objects could cause damage to the mower blades or pans.

6. Rotate the Mower Deck to Move the Mower into the Cutting Area



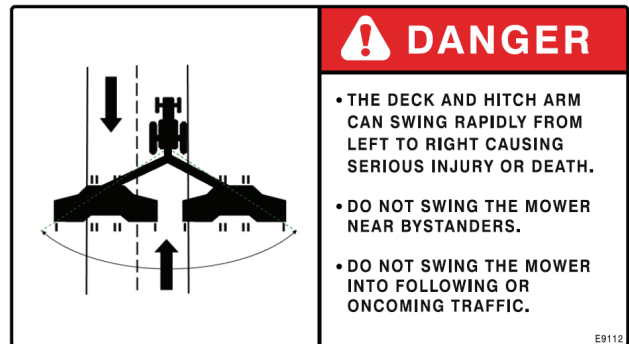
Ensure all bystanders are well clear of the mower and hitch. The deck and swing arm can move rapidly.

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.

- Drive ahead slowly while operating the SCV to rotate the deck. This will move the mower into the cutting area.



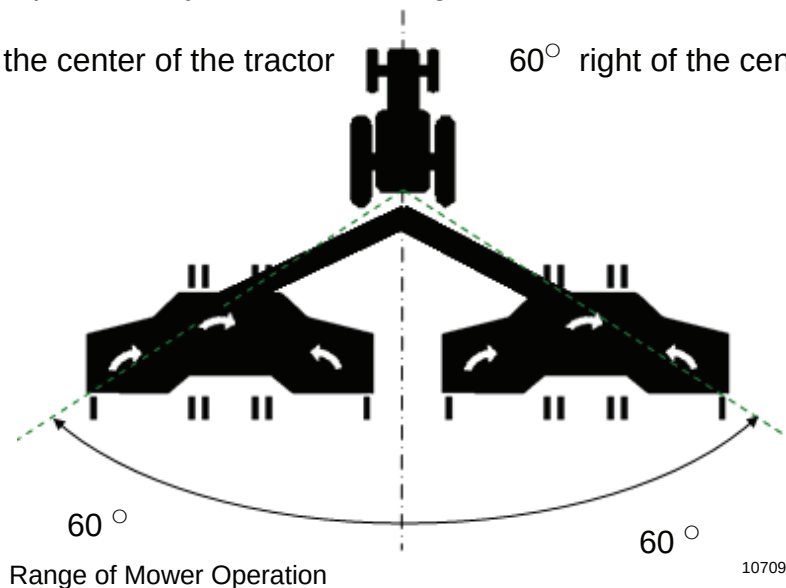
Rotate Deck Into Cutting Area

107040

The mower can be operated anywhere in the range of:

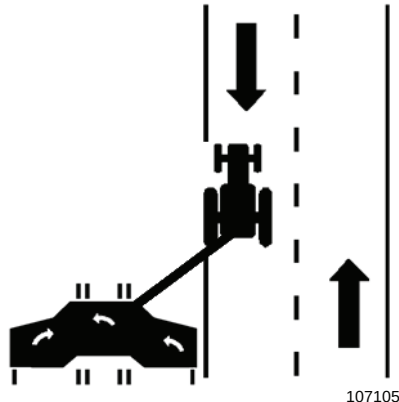
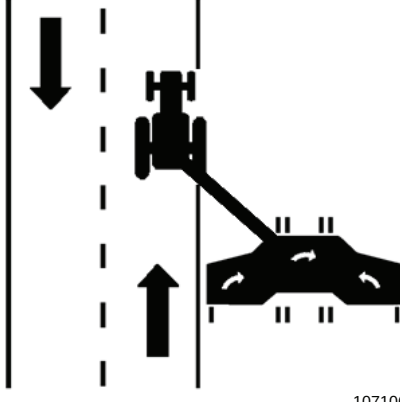
60° left of the center of the tractor

60° right of the center of the tractor



Section 4 - Operating the Mower

Recommended Setup to Obtain a Quality Mowing Cut for the Primary Cutting Conditions indicated below:

Left Hand Slope Operation (Against Traffic)	Level Ground Operation	Right Hand Slope Operation (With Traffic)
 107105	 107099	 107106
1. Confirm that the center section blades rotate counterclockwise and the wing blades rotate toward the center section. 2. Adjust the wing heights for Left Hand Slope Operation. (See Section 3) 3. If the Gradient Control Option is installed, see the Gradient Control Option Section.	1. Blade rotations are the same as for Right Hand Slope Operation. Confirm that the blades rotate as indicated for Right Hand Slope Operation. 2. Adjust the wing heights for Level Ground Operation (See Section 3). 3. If the Gradient Control Option is installed, see the Gradient Control Option Section.	1. Confirm that the center section blades rotate clockwise and the wing blades rotate towards the center section. 2. Adjust the wing heights for Right Hand Slope Operation. (See Section 3) 3. If the Gradient Control Option is installed, see the Gradient Control Option Section.

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.

- Lower the deck to the preferred cutting height.
- Install height stops around the height cylinder rod to maintain the preferred 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 driveline.



Set the Cutting Height

107039

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 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.



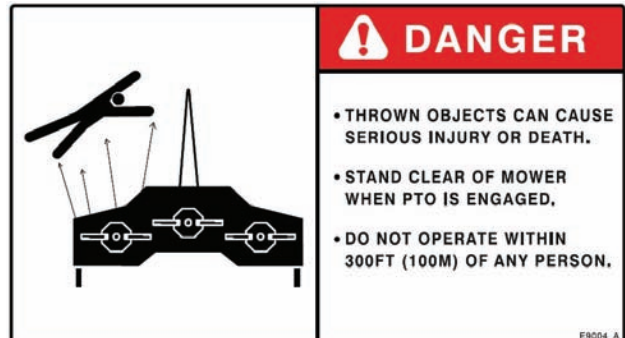
Adjust Ground Speed

107041

9. Operate the PTO at the rated PTO speed to maintain blade speed for a clean cut.



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



E9004_A

Section 4 - Operating the Mower

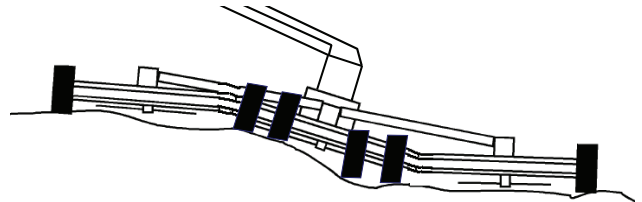
10. Allow the Wings to Float.
- The wing connections float in the slot area of the wing lift links.
 - Fully extend the wing lift cylinders. This will allow the wings to follow the contour of uneven ground.
 - If a wing seems to lower, re-phase the wing height cylinders by fully raising the mower. Hold the lever open for at least 30 seconds to ensure the cylinders are synchronized.



Allow Wings to Float

107039

11. 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

107075C

12. Rotate the Deck to Swing the Mower Away from Obstructions
- Rotate the deck to move the mower away from obstructions such as culverts or large rocks.
 - Do not rotate the mower into following or on-coming traffic.
 - 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.



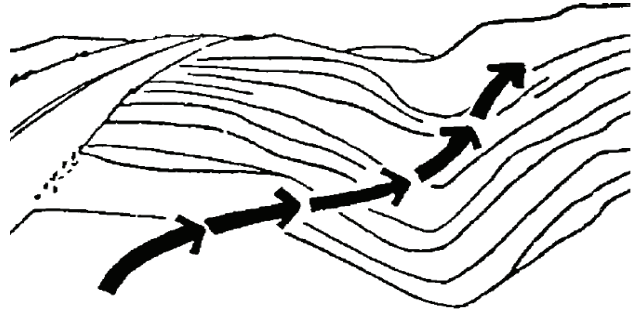
Rotate Mower Away from Obstructions

107055

Section 4 - Operating the Mower

13. Crossing Ditches and Steep Inclines

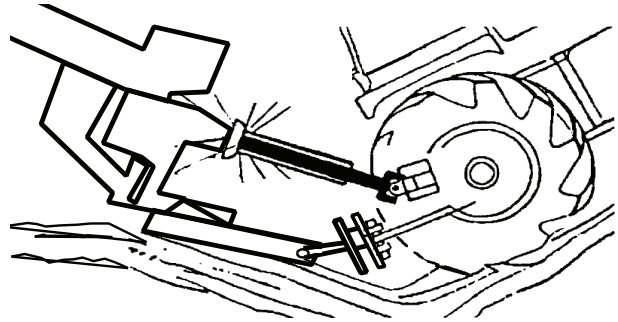
- Cross ditches or inclines at about a 30° approach angle.
- Maintain sufficient height to prevent blades from hitting the ground.



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.

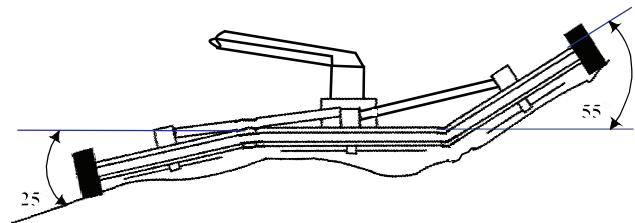


Driveline Collapsed in Steep Incline

107089C

14. Wing Cutting Angles

- Do not operate the wing driveline at angles greater than 25° down or 55° up to prevent damage to the drivelines.



Cutting Angles

107088C

15. Making Turns

- Do not exceed 90° on driveline while turning to avoid damage to the front hitch frame pivot.

Recommended Practices for a Quality Cut

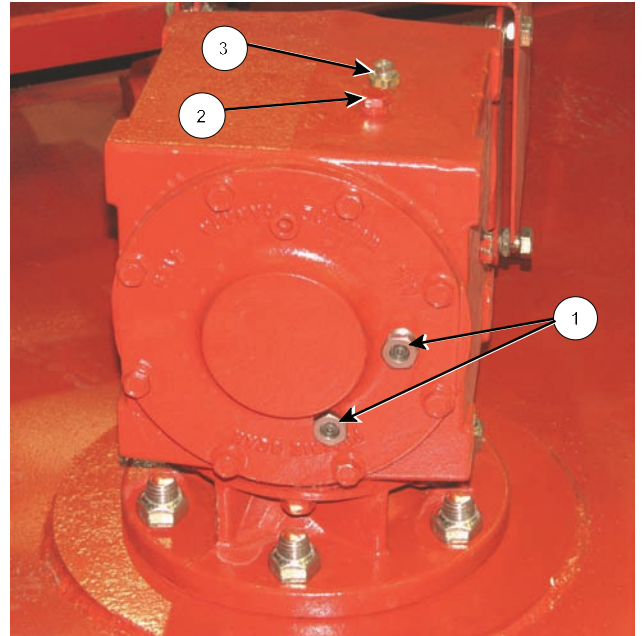
1. Use the Correct Tractor PTO Speed for the Mower.
 - Check the PTO speed decal on the hitch of the mower.
2. Cut in the primary cutting conditions that the mower is configured for. (See above)
 - The rotation of the blades and the wing height adjustment will influence the quality of cut in the cutting area. (See Section 3 and 4).
3. Verify the Blades Are Mounted for the Primary 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.
 - 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.
 - This 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.
7. Check That the Clutches Will Slip.
 - Inspect the clutches to ensure there is a gap between the tabs of the pressure plate and the clutch housing.
 - If the tabs are against the housing, replace the friction discs in the clutch. (Refer to the Maintenance Section for procedures)

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5.0 MAINTAINING THE MOWER

Check Fluid Level in All Gearboxes Daily

- Check that the oil fluid level is between the upper and lower sight glass (1) on the gearbox.
 - Allow the gearbox to sit idle for at least 10 minutes to get an accurate level reading.
- If oil is low, add oil through the plug (2) on the top of the gear box.
 - Use gear oil Grade 80W90 that meets or exceeds API service classification GL-4 and GL-5.
 - Low oil level may be an indicator that a seal is damaged and needs to be replaced.
- Check that the gearbox vent (3) is in place and the poppet valve freely snaps in and out.
- Annually change the oil in all the gearboxes. (See Gearbox Oil Changing Procedures)



Check Fluid Level in Drive Boxes (Wing Shown) 108016C

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 2 points on each front castor.
 - 2 on spindle

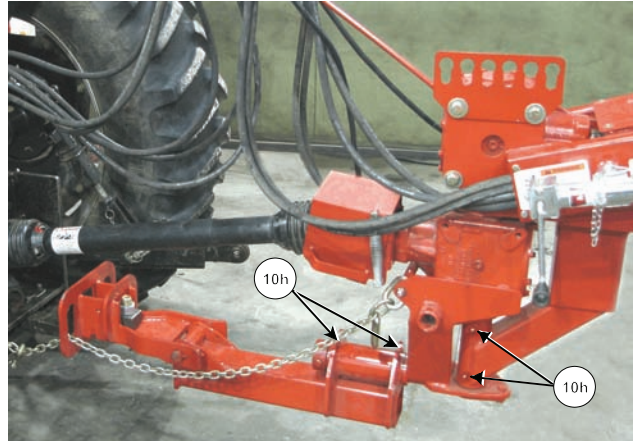


Grease Front Spindles

107044C

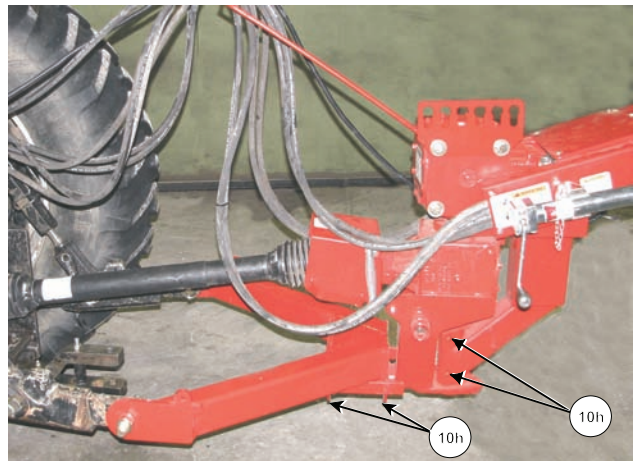
Section 5 - Maintaining the Mower

- Lubricate 4 points on the hitch.
 - 2 on king pin
 - 2 on hitch swivel



Grease Hitch Points (Single Point)

108017C

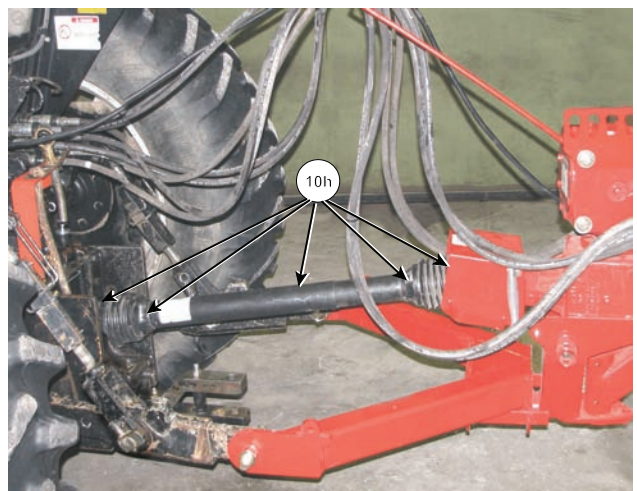


Grease Hitch Points (2 Point)

108018C

PTO - Lubricate 5 points on the PTO every 10 hours.

- 1 point on each joint
- 1 point on each joint collar
- 1 point at the telescoping section

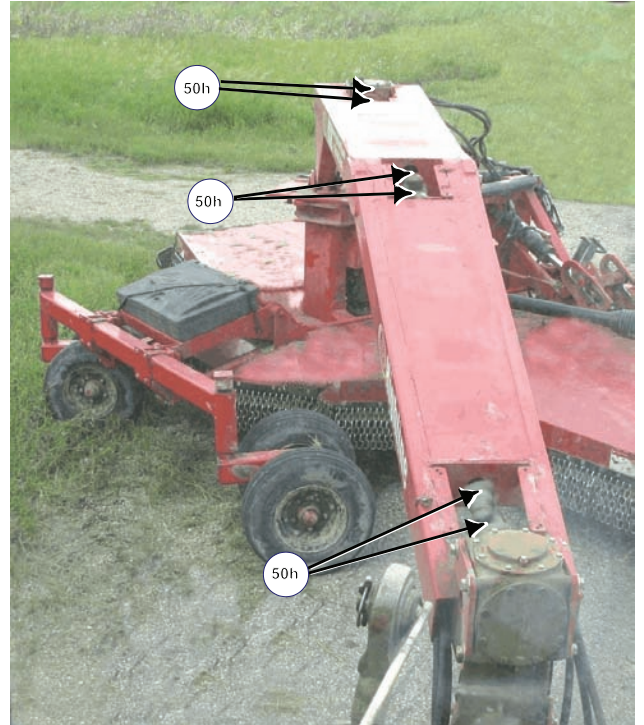


Grease Points on PTO

108019C

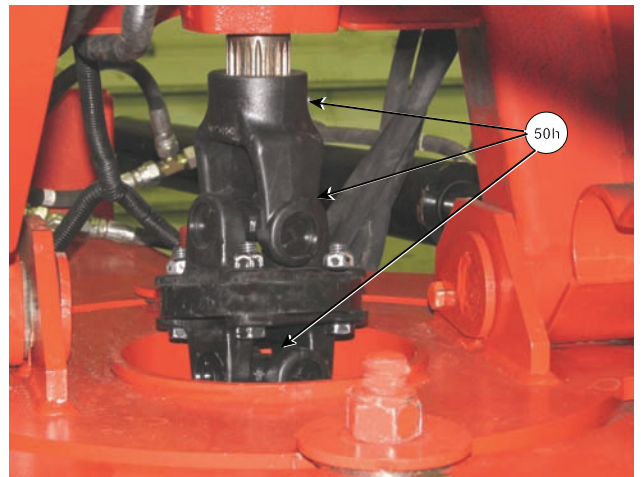
Every 50 Hours

- Hitch Arm - Lubricate 6 points on the hitch every 50 hours.



Grease Hitch Arm Drive (Shown Shields Removed) 107047C

- Universal Joint to Splitter Box on center section - Lubricate 3 points every 50 hours.



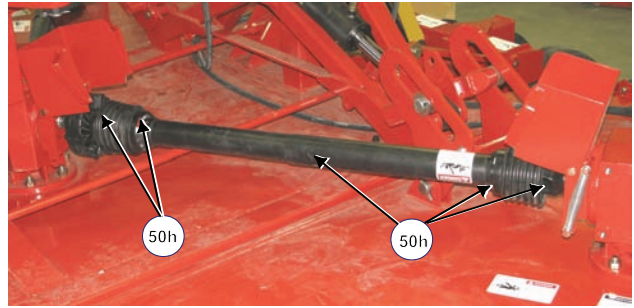
Grease Joint to Splitter Box

108020C

Section 5 - Maintaining the Mower

- Left Wing & Right Wing Driveline - Lubricate 5 points on each wing every 50 hours.

- 1 point on each joint
- 1 point on each joint collar
- 1 point at the telescoping section



Grease Wing Driveline

107049C

- Walking Beams - Lubricate every 50 hours.
 - 2 front walking beams on castors
 - 2 rear wheel carriers walking beams



Grease Front Walking Beams

107051C



Grease Rear Walking Beams

108021C

Every 100 Hours

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



Grease Hubs on all Spindles

107052C

Gearbox Oil Changing Procedures

Change the oil annually and before storing the mower for the season.



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



Securely block-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.

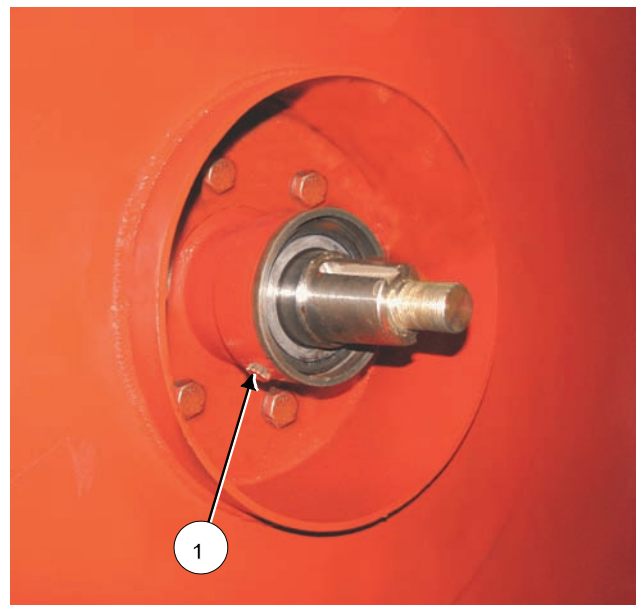
Wing Gearboxes Oil Change

1. Wing up the mower. The oil on the wing gearboxes can be changed with the wings raised.
2. Remove the Blade Pan to gain access to the drain plug. Use the Blade Pan Removing and Replacing procedures outlined in this Manual.
3. The oil drain plug (1) is located on the gearbox vertical shaft casing.
4. Remove the drain plug and drain the oil. Collect the oil in an environmentally friendly container.
5. Replace the drain plug.
6. Replace the Blade Pan using the Blade Pan Removing and Replacing procedures outlined in this Manual.
7. Refill with the specified oil type through the fill plug.
8. Dispose of the oil container at an appropriate oil recycling center.



Remove Blade Pan to Change Oil in Gearbox

108026



Wing Gearbox Oil Drain Plug

108027C

Splitter Gearbox Oil Change

1. The Splitter gearbox is located on the center section of the mower.



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.

2. Remove the Center Section Blade Pan to gain access to the drain plug. Use the Blade Pan Removing and Replacing procedures outlined in this Manual.
3. The oil drain plug (1) is located on the gearbox vertical shaft casing.
4. Remove the drain plug and drain the oil. Collect the oil in an environmentally friendly container.
5. Replace the drain plug.
6. Replace the Blade Pan using the Blade Pan Removing and Replacing procedures outlined in this Manual.
7. Refill with the specified oil type through the fill plug.
8. Dispose of the container at an appropriate oil recycling center.

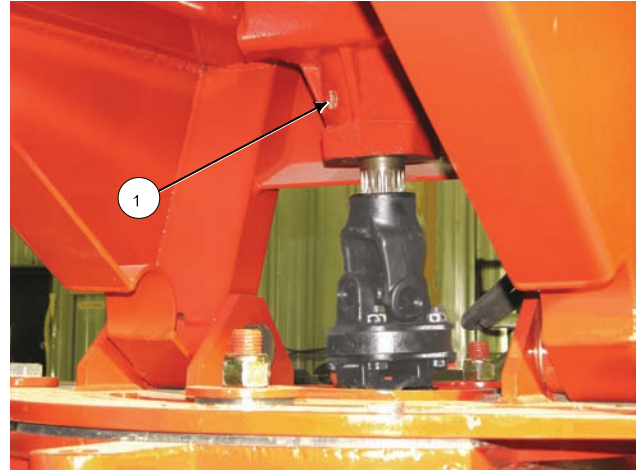


Splitter Box Oil Drain Plug

108028C

T-Box Gearbox Oil Change

1. The oil drain plug (1) is located on the gearbox vertical shaft casing.
2. Remove the drain plug and drain the oil. Collect the oil in an environmentally friendly container.
3. Replace the drain plug.
4. Refill with the specified oil type through the fill plug.
5. Dispose of the oil container at an appropriate oil recycling center.



T-Box Oil Drain Plug

108029C

Upper and Lower Hitch Gearbox Oil Change

1. The oil drain plugs (1) are located on the gearbox horizontal shaft casing.
2. Remove the drain plug and drain the oil from both boxes. Collect the oil in an environmentally friendly container.
3. Replace the drain plug.
4. Refill both boxes with the specified oil type through the fill plugs.
5. Dispose of the oil container at an appropriate oil recycling center.



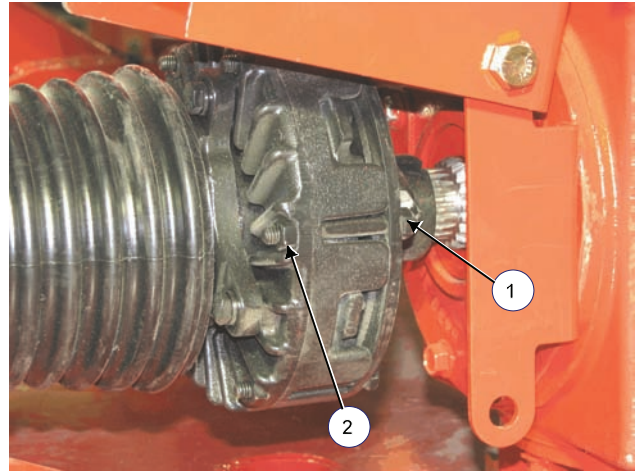
Hitch Gearbox Oil Drain Plugs

108030

Run-In of the Friction Clutch

The clutch manufacturer recommends the following Run-In Procedure:
(Taken from www.weasler.com)

1. Make sure the tractor is off and the PTO is disengaged.
2. Disconnect the driveline from the tractor.
3. Locate the long bolts (1) on the clutch pack. Loosen the nuts (2) until all are finger tight, then tighten each one half a turn.
4. Attach the implement to the tractor and the driveline to the tractor PTO.
5. Turn the tractor on. Engage the PTO and run for a few seconds or until the clutch visibly smokes.
6. Disengage the tractor PTO and shut off the tractor. Keep clear of the machine until all parts stop moving.
7. Disconnect the driveline from the tractor.
8. Tighten the long bolts to 30 lbf (41 Nm).



Loosen Long Bolts for Run In

107053C

Replacing the Clutch Friction Discs

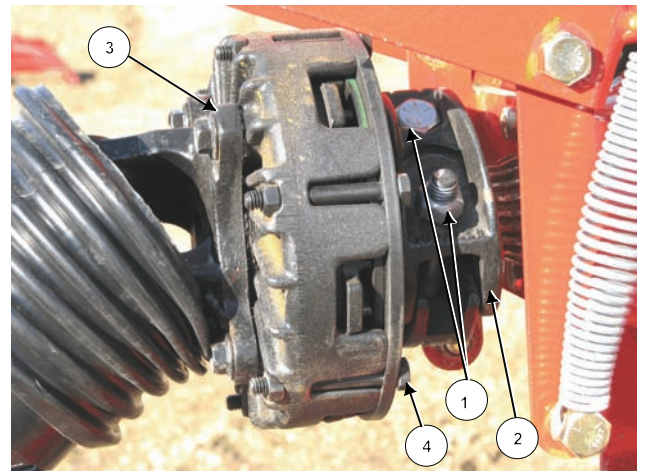
Replace the clutch friction plates when the tabs of the pressure plate are against the clutch housing - indicating that the friction discs are worn.

Replace the clutch friction plates when the drive slips (no longer turns) when cutting.

Pressure Plate Replacement Procedure:

Disassembly:

1. Remove the drive yoke bolts (3) and remove the drive shaft from the clutch housing.
2. Loosen the spline connection bolts (1) and slip the clutch off the splined shaft of the gearbox.
3. Remove the spline connection clamp (2).
4. Take the clutch to a work bench to replace the pressure plates.
5. Remove the long bolts (4) on the outside of the housing that hold the friction pack together.
6. Remove the spring, plates and discs leaving the yoke/hub intact. (See Figure below.)

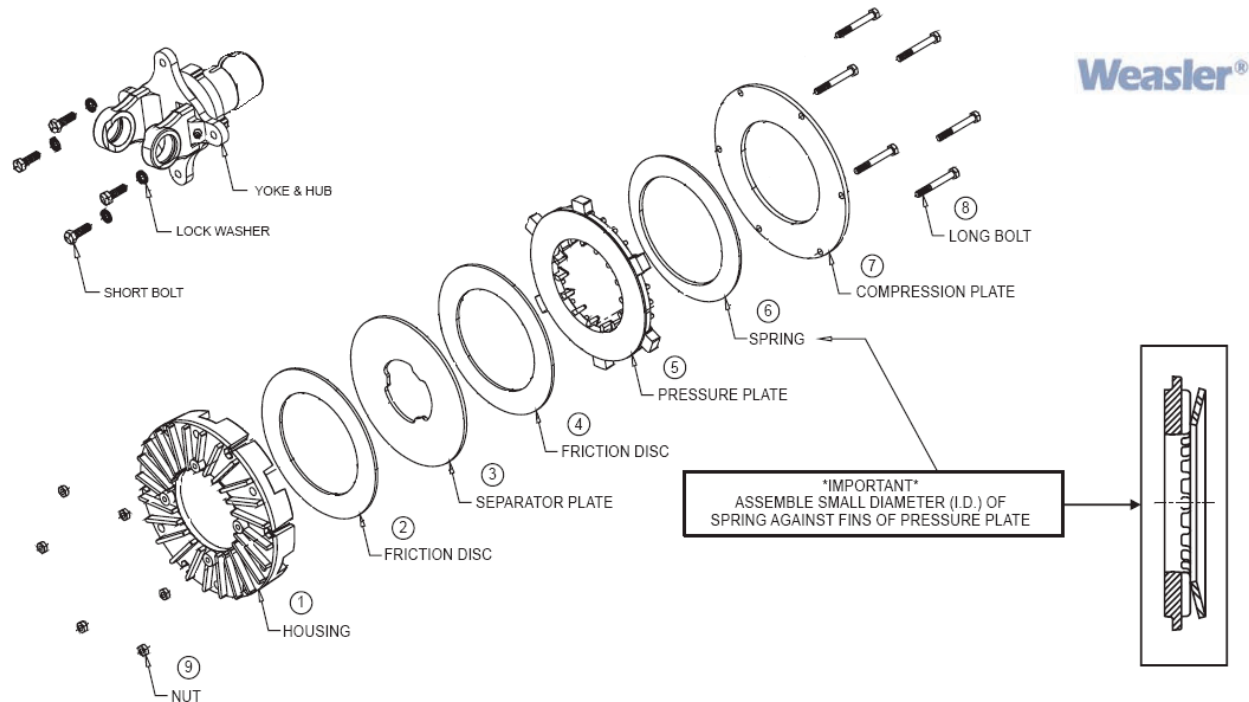


Clutch Disassembly

107091C

Inspection

1. Measure the friction disc thickness. Discard the friction discs if worn below 1/16" (1.6mm).
2. Inspect the steel and iron parts for wear, warping or cracking and replace if necessary.
3. Inspect the yoke & hub for looseness. Replace if there is more than .03" (0.75mm) end play.
4. Clean any, rust or dust from the plate surfaces with a wire brush or steel wool.



Friction Clutch (taken from www.weasler.com)

107092

Assembly

1. Place one new friction disc (2) inside the housing (1), the separator plate (3) and the other friction disc (4).
2. Place the pressure plate (5) so that the flat surface rests on the friction disc (the tabs on the plate must fall into the reliefs in the housing).
3. Place the disc spring (6) so that the small diameter of the spring is against the fins of the pressure plate.
4. Fasten the compression plate (7) with the long bolts (8), making sure that the nuts (9) are in their pockets. Tighten to 30 lbf (41 Nm).

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.

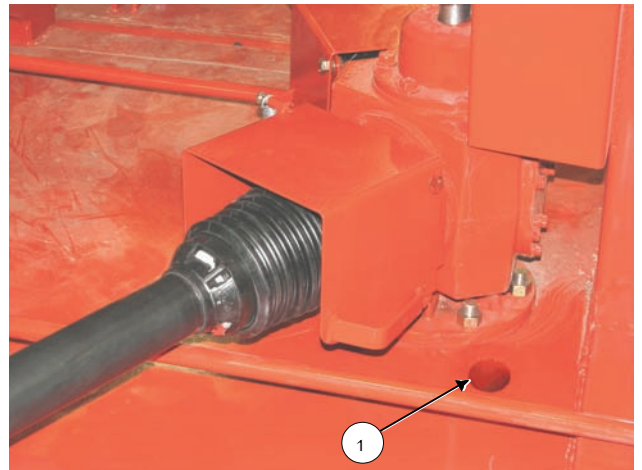


Securely block-up the mower before any work is done under the mower when lifted up. This is to prevent the mower from dropping due to inadvertent operation of controls, hydraulic leaking or failure of any components.

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

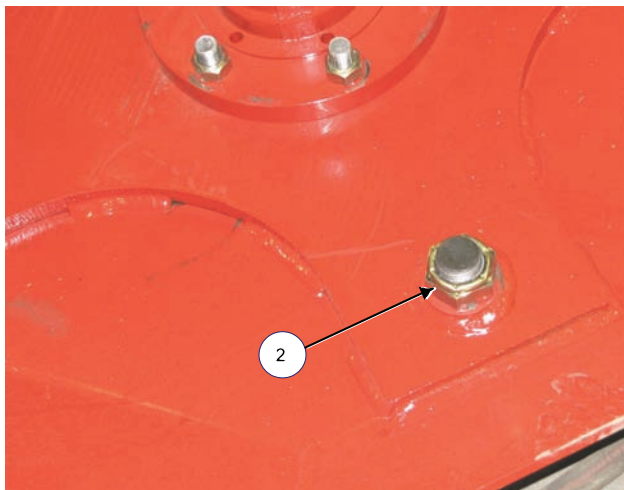
1. Remove the Old Blades

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



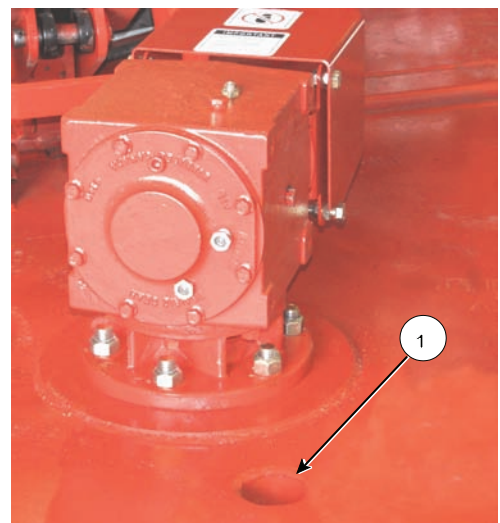
Blade Nut Access Hole - Center Section

108022C



Blade Nut (Pan Shown Removed)

107059C



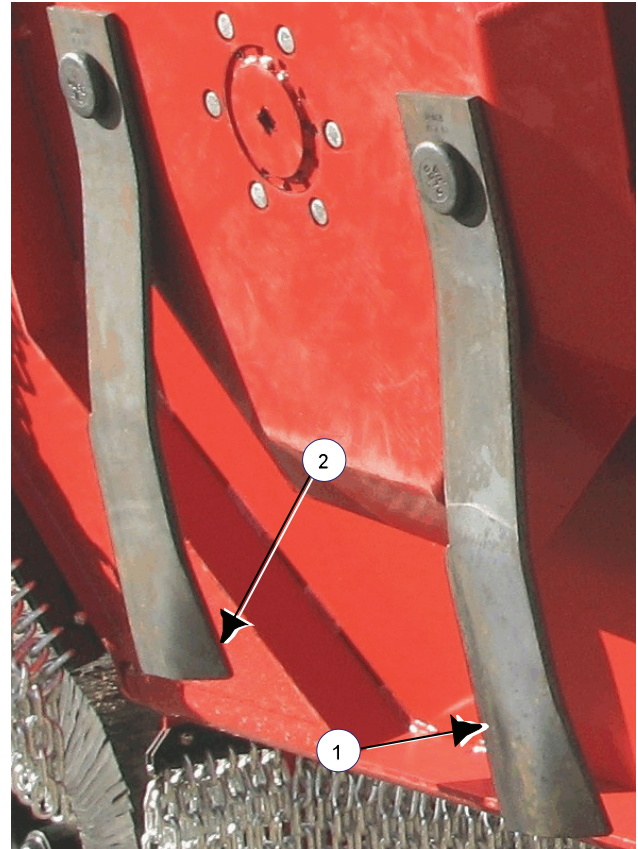
Blade Nut Access Hole - Wing Section

108023C

Section 5 - Maintaining the Mower

2. Install the New Blades

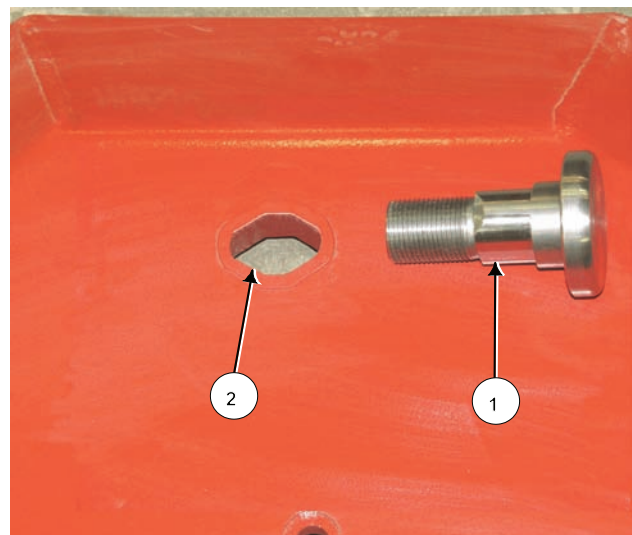
- a. For each blade, place the blade onto the shoulder of the bolt.
 - i. The old bolt can be used again if it is not damaged.
 - ii. Ensure the blade is installed with cutting edge leading (1) into the rotation indicated by the decal on the section of the mower deck. The trailing bent edge (2) should be up toward the bottom of the deck. This creates an upward suction on the material.



Blade Mounting Orientation

107064C

- b. Align the bolt (1) into the slotted hole (2) in the pan.
- c. Slide the bolt into the blade pan.
- d. Use a new nylon locking nut.
 - i. Do not reuse the old nut. The locking nylon nut cannot be reused.
 - ii. Finger tighten the nut.
- e. Tap the head of the bolt to seat the bolt into the pan.
- f. Tighten the nut with a socket from the top of the deck.
- g. Tap the head of the bolt again.
- h. Tighten the nut to 600 lbf (813 Nm).



Blade Bolt and Fitted Hole

107107C

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.



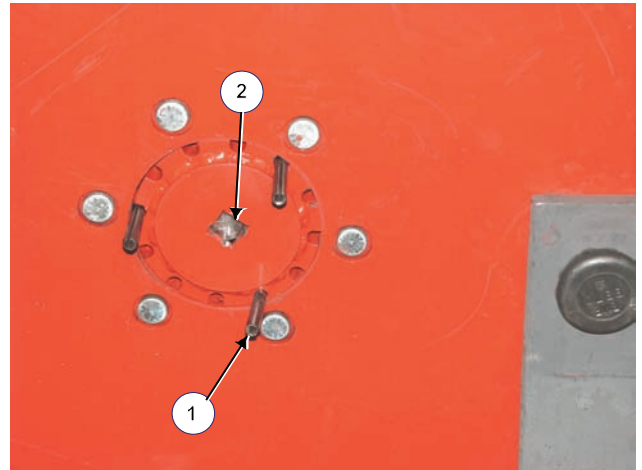
Securely block-up the mower before any work is done under the mower when lifted up. This is to prevent the mower from dropping due to inadvertent operation of controls, hydraulic leaking or failure of any components.

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



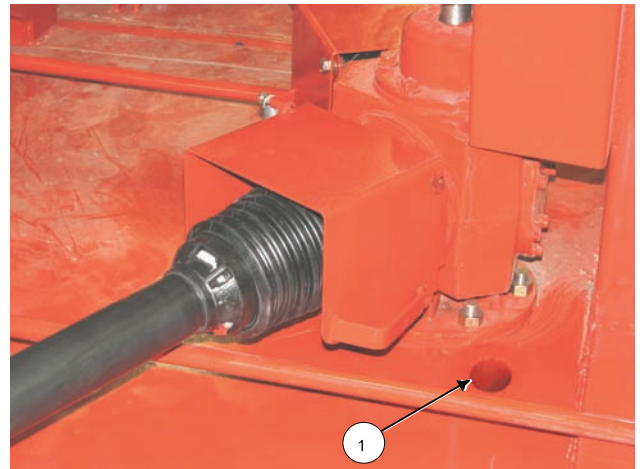
Blade Pan Removed

107120



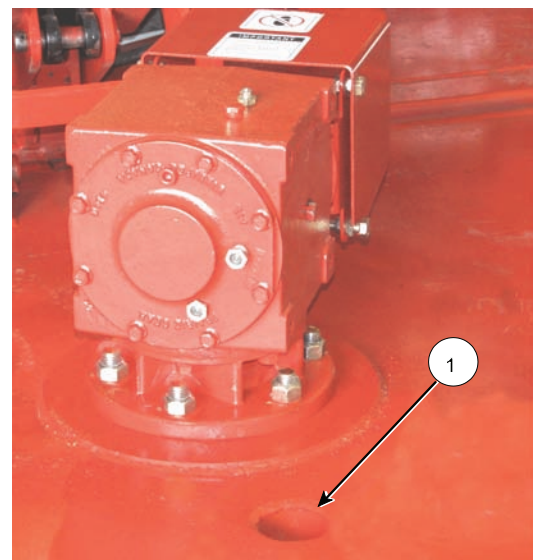
Remove Roll Pins From Blade Pan Nut

107060C



Center Deck Hole

108022C



Wing Deck Hole

108023C

2. Installing the Blade Pan with Hub

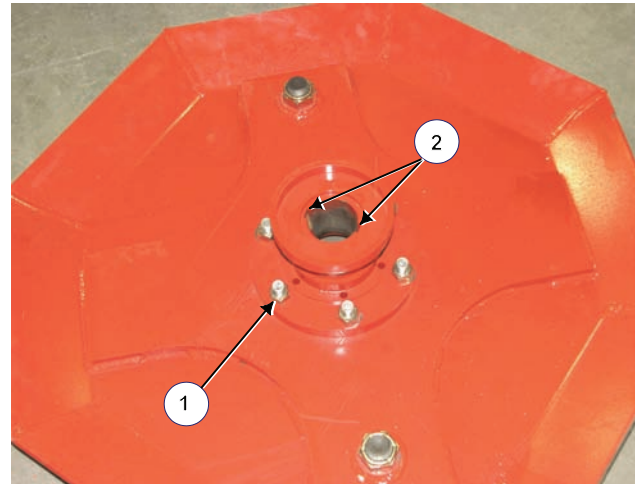
- a. Inspect the drive shaft and keyways to ensure they are in good condition.
- b. Check the oil seal of the gearbox to ensure that it is not leaking.
- c. Ensure that the gearbox nuts are tight.



Drive Shaft & Keyway

108027

- d. Inspect the pan hub.
 - i. The hub is fastened to the pan with 6 bolts. (1) Ensure all are tight to 120 lbf (163 Nm)
 - ii. Check the condition of the keyways (2).



Blade Pan Hub

107061C

Section 5 - Maintaining the Mower

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



Blade Pan Area

107063

- f. Place keys on each of the keyways of the drive shaft.
 - i. Tape the keys in place to temporarily hold them while the hub/pan is being mounted.

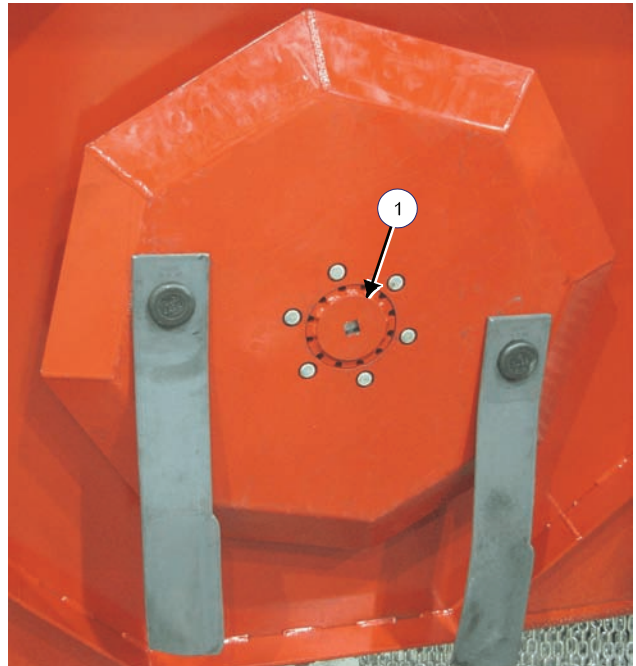


Keys Taped Onto Driveshaft

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Section 5 - Maintaining the Mower

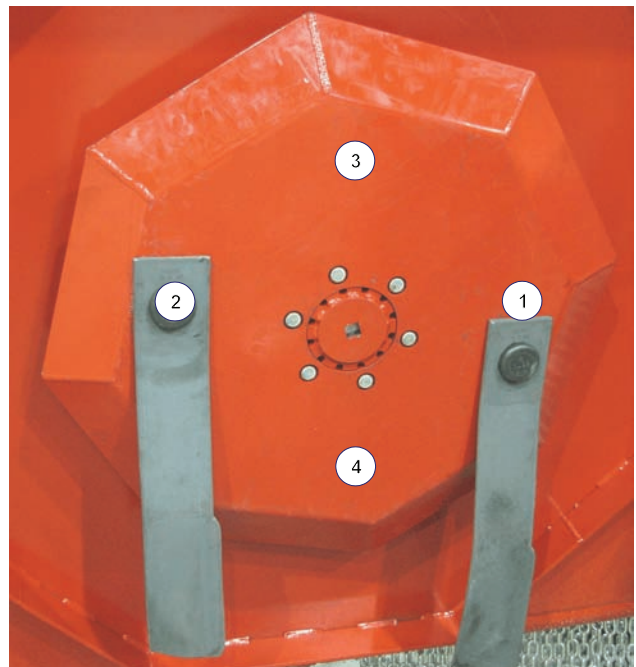
- g. Slide the hub onto the shaft.
 - i. Align the keys into the hub keyways.
- h. Install the hub nut (1) and tighten using a 3/4" drive impact wrench.



Pan Mounted on Driveshaft

107066C

- i. Drive the hub onto the taper between the driveshaft and the hub.
 - i. Use a sledge hammer to hit the pan in the order and locations shown in the figure.
- j. Tighten the hub nut using the 3/4" drive impact wrench.
- k. Re-drive the hub onto the taper using a sledge hammer to hit the pan in the order and locations shown in the figure.
- l. Re-tighten the hub nut using the 3/4" drive impact wrench.

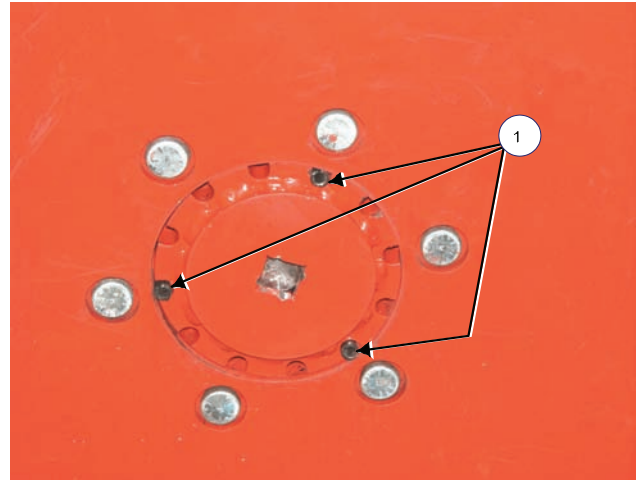


Drive Hub Onto Taper of Driveshaft

107067C

Section 5 - Maintaining the Mower

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



Roll Pins Installed in Nut/Hub

107068C

Tires

There are 3 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.

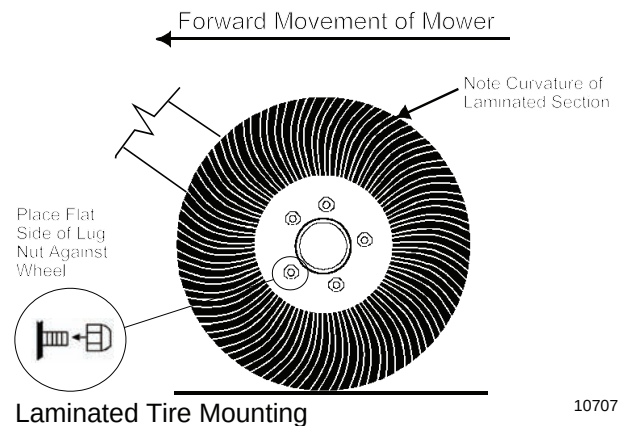
Center Section	Wing Section
Aircraft (Air or Foam Filled)	Aircraft (Air or Foam Filled)
Aircraft (Air or Foam Filled)	Laminated
Laminated	Laminated

Tire Mounting Configurations

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.

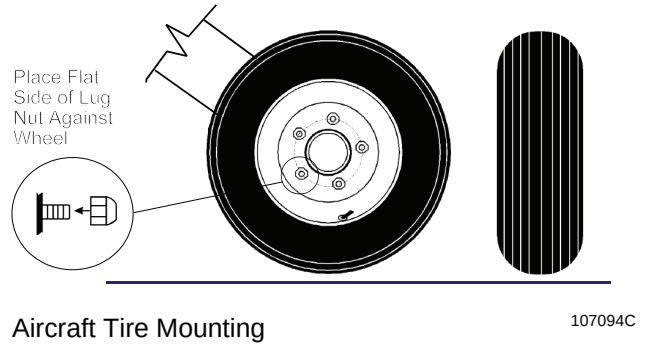


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Aircraft Tires (Air or Foam Filled)

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).
- Air Filled Tire Pressure - Fill the tires to 30 psi (207 Kpa).
- 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.
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.
7. Lower the mower until the hydraulic height control cylinder is resting on the transport lock (1).



Clean Debris off the Mower

107097



Park on Level Ground

107095



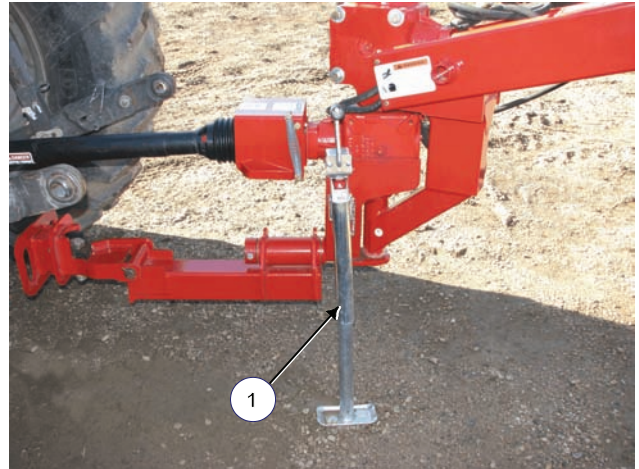
Height Cylinder Resting on Lock

108077C

Section 6 - Storing the Mower

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

107081C

9. Remove the driveline from the tractor PTO shaft.

10. Disconnect the safety chain from the tractor.

11. Disconnect the hitch from the tractor.

- Single Point - Remove the hitch bolts, lock nuts and washers from the drawbar.
- 2 Point - Disconnect from the draft links.



Remove Driveline and Safety Chain

108006

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



Disconnect Hydraulic Hoses

107023

Section 6 - Storing the Mower

13. Secure the hydraulic hoses to the hose holder on the hitch to keep them off the ground and clean.
 14. Place the PTO driveline in the support bracket.
 15. For single point connection, wrap the safety chain through the drawbar connector and fasten to keep the connector off the ground.
 16. Change the oil in all the gear boxes. See the Maintenance Section for procedures.
- Fill the driveboxes to the oil levels as outlined in the Maintenance Section.



Hydraulic Hoses, PTO and Connector

108025

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7.0 TROUBLESHOOTING

Operation

Symptom	Problem	Solution
Uneven Cut	Excessive Ground Speed	Reduce Ground Speed
	Mower Not Operated at Rated RPM	Use Full PTO Speed and Check for Correct Gearbox Ratio
	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 too Low	Use Full PTO Speed and Check for Correct Gearbox Ratio
	Drive not functioning (blades do not turn when PTO is running)	Check drive shaft connection. Check gearboxes
	Improper Blade for Direction of Cut	Mower Not Setup for the Primary Cutting Conditions
	Worn or broken blades	Replace Blades with Highline parts
	Excessive clutch slippage	Check clutch and repair as needed

Poor Shredding of Material	Excessive Ground Speed	Reduce Ground Speed to Circulate Material Longer
	Cutting too 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
	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
	Driveline Bent or Damaged	Replace as necessary. Use Highline parts
	Bent or Damaged PTO Shaft	Repair or Replace as necessary
	Bent or Damaged Gearbox Output Shaft . Oil will normally leak from bottom shaft seal	Replace shaft and seal as necessary. Use Highline parts
	Bearing failure in gearbox. Check shaft for side play	Replace bearing and seal as necessary. Use Highline parts
	Gearbox Bolts Loose	Tighten

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

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

Aircraft 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 Pin Installed	Remove Pin and place in carrier position
	Hydraulic Hoses or Cylinders Leaking	Check for leaks and repair. Use Highline parts
	5 th Wheel Plate has vertical play	Replace the hitch wheel wear plate. 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

Driveline Clutches

Symptom	Problem	Solution
Overheating	Clutch slipping	Check for jammed blade or foreign object preventing turning of blade pan
	Friction plates worn	Replace plates
	Excessive ground speed in heavy conditions	Reduce ground speed
	Excessive hitting of ground with blades	Increase cutting height

Seized	Prolonged storage in damp conditions	Inspect clutch lining . Free up clutch. Refer to “Replacing the Clutch Friction Discs” in the “Maintaining the Mower” Section
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Excessive Clutch Slippage	Clutch discs worn or plates warped	Replace discs. Use Highline parts.
	Blades hitting ground	Increase cutting height
	Oil on friction plate	Replace friction plate. Refer to “Replacing the Clutch Friction Discs” In Maintaining the Mower Section. Use Highline parts
	Friction Plate face is glazed	Run-in the clutch. Refer to ”Run-In of the Friction Clutch” in Maintaining the Mower section

Drive Boxes

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	Operating with grass or wire wrapped on shaft in seal area	Check seal areas regularly and clean off material
	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 poppet vent is clear
	Bent or damaged output shaft and/or bearings	Replace shaft and oil seal and bearings. Use Highline parts
	Used heat to remove blade pan causing seal damage	Replace seal. Use Highline parts

Drivelines

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

Yoke or cross fails	Lack of lubrication	Apply grease
	Shock load	Avoid solid objects
	Slip clutch seized causing driveline to receive high shock load	Inspect clutch lining and replace. Use Highline parts

Twisted	Slip clutch seized causing driveline to receive high shock loads	Inspect clutch lining and replace as necessary. Use Highline parts
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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 RCH™ MOWER SPECIFICATIONS

Cutting swath	180" (4572 mm)
Overall width	196" (4978 mm)
Overall length	292" / 204" (7417 mm / 5181mm)
Transport width	135" (3429 mm)
Front to back contour length	153" (3886 mm)

Weight	7800 lbs (3538 kg)
Tongue weight	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)

Gearbox rating - all gearboxes	250 hp rating (186 kilowatt)
Input drive	Cat.4/ 1000 rpm; Cat. 5/ 540 rpm
Wing working range	Down 25 degrees; Up - 55 degrees

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)

Minimum tractor Hp	80 (59.6 kw)
Recommended tractor Hp	100 (74.5 kw)

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Gradient Control Option

1. Confirm the installation of the Gradient Control Option.

- On Left Hand Slope Operation Setup
 - Confirm that when the cylinders are completely contracted, the front castors are turned to the right, towards the top of the slope.
- On Level Ground Operation
 - This option can be installed for either Left Hand Slope or Right Hand Slope Operation.
 - The Option will be disengaged (cylinders extended) to allow the castors to freely move through the range.
 - Engaging the control option when cutting on level ground will increase unwanted loads on the tractor and hitch.
- On Right Hand Slope Operation Setup
 - Confirm that when the cylinders are completely contracted, the front castors are turned to the left, towards the top of the slope.

2. Engage the selector valve to change the SCV from wing control to Gradient Control as needed to reduce the side force loads. Engage the SCV.

- Contract the control cylinders to move the castors towards the top of the slope. This will reduce the side force loads from the slope of the ditch.
- Disengage (extend cylinders) to allow the castors to move within the freely in the range.
- Disengage the selector valve to change the SCV back to wing control.



Gradient Control Engaged (Right Hand Slope Shown) 108015



Gradient Control Disengaged

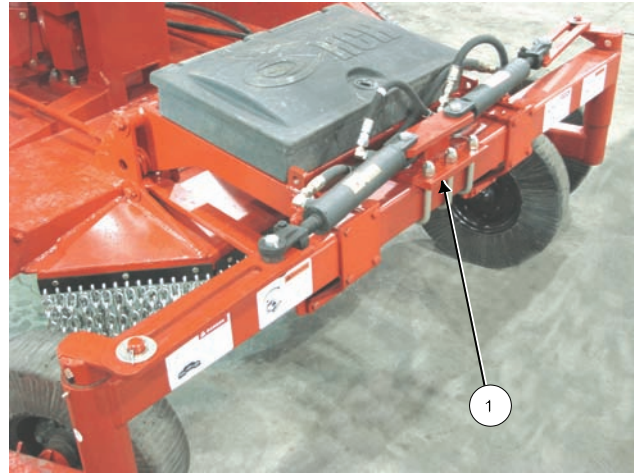
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Note: The Gradient Control option only aids in performance when it is installed and operated for the Primary Cutting Conditions (See Sections 3 and 4).

- Right Hand Gradient Control operated when cutting on the Left Hand Slope will increase the unwanted loads on the tractor and hitch.
- Left Hand Gradient Control operated when cutting on the Right Hand Slope will increase the unwanted loads on the tractor and hitch.

Options - Gradient Control Option

3. If additional Gradient Control is needed, the cylinder mount plate (1) can be moved to one side along the front mower tube. This will cause the cylinders to move the castors more.



Move Mount Plate for More Gradient Control

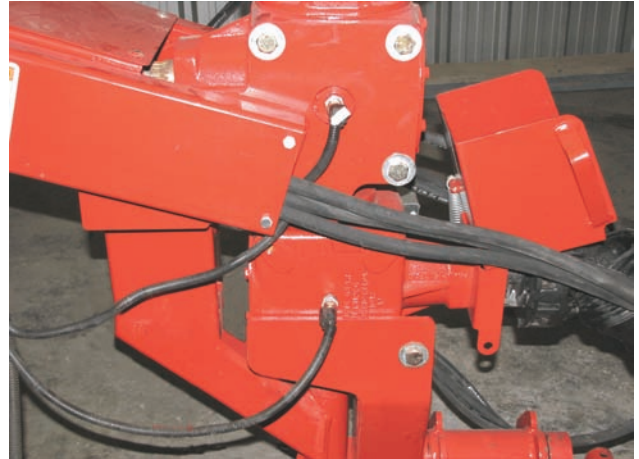
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Gearbox Temperature Sensing Option

The Gearbox Temperature Sensing Option gives a readout of the oil temperature in the mower gearboxes.

The Temperature Sensing Option will also give High Temperature Warning alerts so that preventative action can be taken.

1. Confirm that the sensors are securely installed in all the gearboxes and connected to the wiring harness.
2. Check that all electrical connections are tight. Check that the wiring harness is in good condition.
3. Observe the gearbox oil temperatures through the monitor in the tractor cab.



Check Sensors in Gearboxes

108030



Check Electrical Connections

108032



Monitor Gearbox Temperatures

108033

Options - Gearbox Temperature Sensing

4. When the oil in a gearbox has reached a high temperature, a High Temperature Warning will be displayed. The monitor will indicate which gearbox has reached the high oil temperature.

Note: Continuing to mow when a gearbox has reached a high temperature may damage the gearbox and other parts of the mower.

- a. The warning can be acknowledged by pressing the button under the "ACK".
- b. Stop the mower as soon as possible to determine the cause of the high temperature.
- c. Correct what is causing the high oil temperature in the gearbox.



High Temperature Warning

108074

5. If the oil temperature of a gearbox continues to rise to an Extremely High Temperature, the monitor will give a warning to Stop the mower. The monitor indicates which gearbox has reached the extremely high temperature.

Note: Continuing to mow when a gearbox has reached an extremely high temperature will damage the gearbox and other parts of the mower.

- a. There is no option to acknowledge the warning.
- b. Stop the mower to determine the cause of the extremely high temperature.
- c. Correct what is causing the extremely high oil temperature in the gearbox.



Extremely High Temperature Warning

108075

Highline New Mower Equipment Limited Warranty Policy

Effective January 1, 2008

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:

Non-Commercial Use (Including farm, institutional, government, and municipality use)

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 Mower, not excluded below, shall be repaired or replaced at Highline's option without charge in the first year for non-commercial use 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 or by the Highline Service Department. 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. Highline reserves the right to supply re-manufactured replacement parts as it deems appropriate.

Second (2) and Third (3) Year - 50% Discount off of the Current Listed Retail Price of Defective Parts

During the second and third year from the date of purchase, this warranty is limited to the provision of 50% off of the current listed retail price of 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. Highline reserves the right to supply re-manufactured replacement parts as it deems appropriate.

Equipment and accessories not of Highline's manufacture are warranted only to the extent of the original manufacturer's warranty and subject to their allowance to Highline only if found defective by such manufacturer.

Commercial Use

Ninety (90) Days - Parts and Labour

During the Ninety (90) Days of the Limited Warranty period, any defect in material or workmanship in any warranted item of Highline Mower, not excluded below, shall be repaired or replaced at Highline's option without charge in the Ninety (90) days for commercial use from the date of initial purchase. These repairs shall be performed by a Dealer that Highline has authorized to perform service on the Highline Mower Product Line or by the Highline Service Department. 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. Highline reserves the right to supply re-manufactured replacement parts as it deems appropriate.

Equipment and accessories not of Highline's manufacture are warranted only to the extent of the original manufacturer's warranty and subject to their allowance to Highline only if found defective by such manufacturer.

A Dealer that Highline has authorized to perform service on the Highline Mower Product Line or by the Highline Service Department must make the warranty replacement.

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

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 New 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 ten (10) 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. Clutches and clutch components
 - f. 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 New 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.

HIGHLINE MFG. LTD.

P.O. Box 307, VONDA, SK S0K 4N0 CANADA
TEL.306-258-2233 FAX.306-258-2010
TOLL FREE 1-800-665-2010

DELIVERY AND WARRANTY REGISTRATION

DELIVERY DATE

MONTH

DAY

YR

WARRANTY COVERAGE IS EFFECTIVE ONLY WHEN THIS FORM HAS ALL APPLICABLE INFORMATION COMPLETED, IS SIGNED BY BOTH THE OWNER AND THE AUTHORIZED SELLER AT THE TIME OF DELIVERY, AND IS RETURNED TO **HIGHLINE MANUFACTURING LTD.** WITHIN 10 DAYS FROM THE DATE OF PURCHASE. WARRANTY SERVICE MAYBE DENIED IF THIS FORM CONTAINS FALSE INFORMATION OR IS INCOMPLETE.

HIGHLINE AUTHORIZED MOWER DEALER or

HIGHLINE SALES DEPARTMENT

CUSTOMER NAME

MAILING ADDRESS _____

MAILING ADDRESS _____

PHONE _____

PHONE _____

I HEREBY ACKNOWLEDGE THAT:

1. I have received and accepted delivery of equipment described.
2. The equipment was checked thoroughly for loose or missing parts and has been adjusted in accordance with the PRE-DELIVERY CHECKLIST.
3. I have been provided with and have carefully read the Operator's Manual.
4. I have read and understand thoroughly the SAFETY PRECAUTIONS found in the Safety Section of the Operator's Manual.
5. I have read and understand the nature and extent of the Warranty and understand clearly that there were and are no other representations or warranties, either express or implied, made by anyone.
6. I have been advised on proper operation, maintenance and lubrication procedures of this equipment.
7. I have been instructed and do understand the application, limitations and capacities that this equipment was designed and recommended for, all of which is described in the Operator's Manual and other literature published by Highline Mfg. Ltd.

PLEASE TYPE OR PRINT LEGIBLY

BASIC MACHINE MODEL NO. _____ SERIAL # _____

OPTIONAL EQUIPMENT

INSTRUCTIONS

1. Make sure registration is complete and signed.
2. White and yellow copies mail direct to HIGHLINE MFG. LTD.
3. Pink copy - Highline Authorized Mower Dealer file.
4. Goldenrod copy - maintain in Operator Manual.

Authorized Sales Signature

Owner or Designated Representative Signature

NOTE: BOTH AUTHORIZED SELLER AND OWNER MUST SIGN TO VALIDATE THE WARRANTY