Safety, Operation and Maintenance Manual

R311T-T4F™ Rotary Mower with folding ROPS

69178 – R311T-T4F, Kubota® V2403-CR-T, 4WD

⚠️ WARNING

WARNING: If incorrectly used this machine can cause severe injury. Those who use and maintain this machine should be trained in its proper use, warned of its dangers and should read the entire manual before attempting to set up, operate, adjust or service the machine.
2.1  IMPORTANT

The Jacobsen R311T with a Diesel engine is a self propelled rotary mower. The hydraulic systems are for the traction drive, steering, lift - lower and the cutting unit drive.

If you follow all instructions in this manual, you increase the life of your mower and keep its maximum performance. Adjustments and maintenance must always be done by an approved technician.

IMPORTANT: Do the maintenance included in this manual to make sure that the quality of cut is kept at a high level.

This SAFETY, OPERATION AND MAINTENANCE MANUAL is part of the mower and must stay with the mower always. Suppliers of both original and used mowers need to keep the documentation that comes with the mower.

You must use the mower to cut the grass and not for any other purpose. Compliance with the conditions or operation, service and repair specified by the manufacturer, are understood to be part of the correct use.

ALL operators MUST read through this manual and understand the Safety Instructions, controls, lubrication and maintenance procedures.

Make sure that you obey all safety and road traffic regulations.

You must not make any changes to the mower that the manufacturer does not approve. This type of change can release the manufacturer from the liability for any damage or injury.

When you discard worn parts, know the environmental result and use the systems available in the country where the mower is used. When the mower is at its end of life, there are guidelines in this manual for the removal of the mower from use.

Use only Jacobsen approved parts.

2006/42/EC
The instructions recorded here are the original instructions confirmed by Jacobsen, A Textron Company.
2 INTRODUCTION

2.2 PRODUCT IDENTIFICATION

Mower Serial number plate

A  Gross weight (Kg)
B  Engine Power (Kw)
C  Date code
D  Product number and Serial number

Location of Mower Serial number plate

The serial number plate (A) is found on the right side frame rail behind the wing deck mount.

Engine Serial Number

The engine serial number is found on the top of the valve cover toward the front of the mower. Label shows the engine group and serial number.

The engine serial number is also found on the engine block.

2.3 SERIAL NUMBERS

Record the mower and engine numbers shown below:

Mower Number:_________________________

Engine Number:_________________________

11524 WILMAR BLVD,
CHARLOTTE, NC 28273
®

1-800-848-1636 (US)PRODUCT OF U.S.A.
A Textron Company

kg kW

69178001601

A V2403
S/N KEAXXXXX
Contact KEA for Parts
MADE IN JAPAN
2.4 GUIDELINES FOR THE DISPOSAL OF SCRAP PRODUCTS

2.4.1 DURING SERVICE LIFE

The used oil, oil filters and engine coolant are hazardous materials. Follow the recommended procedures for their safe removal.

If a fluid leaks, contain the spill to make sure that the leak does not flow into the ground or drainage system. Follow the local laws to make sure that leaks are controlled safely.

The maintenance procedures in this manual make sure that the damage that the mower can cause in the local environment is controlled safely.

Take these actions after the mower complete its full service life.

2.4.2 END OF SERVICE LIFE

Use these guidelines with applicable Health, Safety and Environmental laws. Always use the approved local waste disposal and agencies for recycled materials.

- Park the mower in a location to use all of the necessary lifting equipment.
- Use the correct tools and Personal Protective Equipment (PPE) and take instruction from the technical manuals applicable to the mower.
- Remove and keep correctly
  1. Batteries
  2. Fuel
  3. Engine coolant
  4. Oils
- Disassemble the structure of the mower and refer to the technical manuals. Give attention to parts that have mechanical pressure or tension applied to the part in the mower, including springs.
- Separate items that continue to have service life and returned to storage.
- Separate items that are worn into the material groups and removed according to the agencies for the recycled materials that are available. Common types are as shown:
  - Steel
  - Non ferrous metals
    - Aluminum
    - Brass
    - Copper
  - Plastic Materials
    - Identified
    - Can be recycled
    - Can not be recycled
    - Not Identified
  - Rubber
  - Electrical and Electronic Components
- Add items that can not be easily separated into different materials to the “General discarded materials” area.
- Do not burn the discarded materials

Change the mower records to show that the mower is not in service and is discarded. Supply this serial number to Jacobsen Warranty Department to close their records.
3 SAFETY

3.1 HOW TO OPERATE SAFELY

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
</table>

EQUIPMENT OPERATED INCORRECTLY OR WITHOUT TRAINING CAN BE DANGEROUS.

Know the location and correct operation of controls. Operators without experience must receive instruction from another person that knows the correct operation of the equipment before you operate the mower.

Only use parts, accessories and attachments approved by Jacobsen.

3.1.1 SAFE OPERATION

| a | Read the Operator's Manual and other training material. If the operator or technician can not read this manual, the owner is responsible to describe this material to the operators and technicians. Manuals in additional languages may be available on the Jacobsen or RansomesJacobsen website. |
| b | Read all of the instructions for this mower carefully. Know the controls and the correct operation of the equipment. |
| c | Children or persons who do not understand these instructions must not use the mower. The local regulations can limit the age of the operator. |
| d | Never use a mower near persons, including children or animals. |
| e | Never use a mower near persons, including children or animals. |
| f | Never carry passengers. |
| g | Never allow persons to operate or service the mower or its attachments without correct instructions. |

3.1.2 PREPARATION

| a | When you operate the mower, wear correct clothing, slip resistant work shoes or boots, work gloves, hard hat, safety glasses and hearing protection. Long hair, loose clothing or jewelry can be caught in moving parts. |
| b | Do not operate the equipment with the Interlock System disconnected or the system does not operate correctly. Do not disconnect or prevent the operation of any switch. |
| c | Never operate equipment that is not in correct order or without decals, guards, shields, deflectors or other protective devices fastened. |
| d | Inspect the mower before you operate the mower. Check the tire pressure, engine oil level, the radiator coolant level and the air cleaner indicator. Fuel is flammable. Use caution when you add the fuel to the mower. |
| e | Operate the mower in daylight or in good artificial light. Use caution when you operate the mower during bad weather. Never operate the mower with lightning in the area. |
| f | Inspect the area to select the accessories and attachments that are needed to correctly and safely do the job. Only use parts, accessories and attachments approved by Jacobsen. |
| g | Be careful of holes in the terrain and other hazards that are not visible. |
| h | Inspect the area where the equipment is operated. Remove all objects you can find before you operate. Be careful of obstructions above the ground (low tree limbs, electrical wires) and also underground obstacles (sprinklers, pipes, tree roots). Enter a new area carefully. Look for possible hazards. |
| i | Inspect the cutting system before you start the mower. Make sure the blades are free to rotate. When you rotate one blade, other blades can rotate. |
3.1.3 OPERATION

a) Never operate the engine without enough ventilation or in an enclosed area. The carbon monoxide in the exhaust fumes can increase to dangerous levels.

b) Never carry passengers. Keep other persons or animals away from the mower.

c) Disengage all drives and engage the parking brake before you start the engine. Only start the engine with the operator in the seat. Never start the engine with persons near the mower.

d) Keep your legs, arms and body inside the operator compartment while the mower is in operation. Keep your hands and feet away from the cutting units.

e) Do not operate on the slopes greater than the safe slope limit for the equipment.

f) To guard against over turning or loss of control:
   - Operate the mower up and down on the face of slopes (vertically), but not across the face (horizontally).
   - Do not start or stop suddenly on slopes.
   - Decrease the speed when you operate on slopes or when you must turn. Use caution when you change direction. Turf condition can change the mower stability.
   - Use caution when you operate the mower near drop-offs, ditches or embankments.
   - Be careful of holes in the terrain and other hazards that are not visible.

g) When you drive in the reverse direction, look behind you and down to make sure the path is clear. Do not operate the cutting units when you drive in the reverse direction.

h) Use caution when you go near corners, trees or other objects that can prevent a clear view.

i) Equipment must meet the current regulations to be driven on the public roads.

j) Before you move across or operate on the paths or roads, turn off the PTO switch, lift the mowers and travel at decreased speed. Look for traffic.

k) Stop the blades when the mower is on any surface that is not grass.

l) Do not release the cut grass in the direction of persons or allow persons near the mower while in operation.

m) Do not operate the mower with damaged guards or without safety devices in position.

n) Do not change the engine governor setting or over-speed the engine. Never change or tamper with adjusters that are closed with a seal for the engine speed control.

o) Before you leave the operator compartment, for any reason:
   - Disengage all the drives and lower attachments to the ground.
   - Engage the parking brake.
   - Stop the engine and remove the key.

p) When you hit an object or mower starts to cause the vibration that is not normal, inspect the mower for damage and make repairs.

q) Decrease the throttle setting before you stop the engine.

r) Do not use this equipment for uses that the mower was not made for.
3 SAFETY

3.1.4 ROPS

a  The ROPS is a safety device. Keep the ROPS in the vertical and locked position. Always use the seat belt when you operate the mower. Make sure the seat belt can be released quickly in an emergency.

b  Only operate the mower with the ROPS in the folded position on flat and level surfaces when necessary. Do not operate the mower with the ROPS in the folded position on slopes, near sharp edges or near water. There is no roll over protection with the ROPS in the folded position.

c  Check for clearance before you drive below objects. Do not contact tree branches, electrical wires or other objects with the ROPS.

d  Do not use the seat belt with the ROPS in the folded position.

e  Inspect the ROPS for damage. Keep the ROPS hardware fastened.

f  Do not weld, drill, change or bend the ROPS. Replace a damaged ROPS. Do not try to correct a damaged ROPS.

g  Do not remove the ROPS from the mower.

h  Jacobsen must approve any changes to the ROPS.

3.1.5 SAFE HANDLING OF FUELS

a  The fuel and the fuel vapors are flammable. Use caution when you add the fuel to the mower. The fuel vapors can cause an explosion.

b  Never use the containers that are not approved to keep or transfer fuel.

c  Never keep the mower or fuel containers near an open flame or any device that can cause the ignition of fuel or fuel vapors.

d  Never fill the fuel containers inside a vehicle or on a truck or trailer with a plastic liner. Always put the fuel container on the ground away from your vehicle before you fill the container.

e  Refuel the mower before you start the engine. When the engine is in operation or while the engine is hot, never remove the fuel cap or add fuel to the mower.

f  Refuel outdoors only and do not smoke when you add fuel. Extinguish all types of ignition.

g  The fuel nozzle must touch the rim of the fuel tank when you add fuel to the mower. Do not use a device to lock the fuel nozzle in the open position.

h  Do not over fill the fuel tank. Leave at least 1 inch (2.5 cm) below the filler neck.

i  Always tighten the fuel tank cap and container cap after you add fuel.

j  If the fuel spills on your clothing, change your clothing immediately.

3.1.6 MAINTENANCE AND STORAGE

a  Before you clean, adjust or repair this equipment, push PTO switch to the OFF position, lower the cutting unit to the ground, engage the parking brake, stop the engine and remove the key.

b  Make sure the mower is parked on a solid and level surface.

c  Never work on a mower that is lifted only by the jack. Always use the jack stands.

d  Never allow persons to service the mower or its attachments without correct instructions.

e  When the mower is parked, put into storage or left without an operator, lower the cutting device unless a positive mechanical lock is used.

f  When you put the mower on a trailer or put the mower in storage, close the fuel valve. Do not keep fuel near flames or drain the fuel inside a building.
g Disconnect the battery before you service the mower. Always disconnect the negative battery cable before the positive battery cable. Always connect the positive battery cable before the negative battery cable.

h Charge the battery in an area with good airflow. The battery can release hydrogen gas that is explosive. To prevent an explosion, keep any device that can cause sparks or flames away from the battery.

i Disconnect the battery charger from the power supply before you connect or disconnect the battery charger to the battery. Wear protective clothing and use insulated tools when you service the battery.

j Be careful and wear gloves when you check or service the cutting unit blades. Replace any damaged blades, do not try to correct a damaged blade.

k Keep your hands and feet away from parts that move. Do not adjust the mower with the engine in operation, unless the adjustment needs the engine in operation.

l Carefully release the pressure from components with stored energy.

m To prevent injury from the hot, high pressure oil, never use your hands to check for oil leaks. Use the paper or cardboard to find leaks.

n The hydraulic fluid pressure can have enough force to enter your skin. If hydraulic fluid has entered your skin, a doctor must remove the hydraulic fluid surgically within a few hours or gangrene can occur.

o When you service the hydraulic system, make sure the hydraulic fittings, tubes and hoses are tightened to the correct torque. Make sure the hydraulic system is in good condition before you start the engine.

p Keep the mower and the engine clean.

q Allow the engine to become cool before storage and always remove the ignition key.

r Keep all nuts, bolts and screws tight to make sure the equipment is in safe condition.

s Replace worn or damaged parts for safety. Replace damaged or worn decals. Only use parts, accessories and attachments approved by Jacobsen.

t To decrease the fire hazard, remove materials that burn from the engine, muffler, battery tray and fuel tank area.

u Disconnect the battery and controller connectors before you weld on this mower.

3.1.7 WHEN YOU PUT THE MOWER ON A TRAILER

a Be careful when you load or unload the mower on a trailer. Trailer must be wider than the mower and can carry the weight of the mower.

b Use a full-width ramp to load or unload the mower on a trailer.

c Use straps, chains, cables or ropes to fasten the mower to the trailer. Both front and rear straps must be sent down and toward sides of trailer.

d Make sure that all latches are correctly fastened.
3 SAFETY

3.1.8 IMPORTANT SAFETY NOTES

This safety alert symbol gives a warning of possible hazards.

**DANGER** - Indicates a dangerous condition that WILL cause death or injury unless it is prevented.

**WARNING** - Indicates a dangerous condition that CAN cause death or injury unless it is prevented.

**CAUTION** - Indicates a dangerous condition that can cause injury and property damage unless it is prevented. The label can indicate work procedures that are not safe.

**NOTICE** - Indicates a condition that can cause damage to the property unless it is prevented. The label can indicate work procedures that are not safe.

Some illustrations in this manual show the shields, guards or plates, removed. Do not operate this equipment without these devices correctly fastened in position.

**WARNING**

The Interlock System on this mower prevents the operation of the mower unless:

- a.) The parking brake switch is in the ON position.
- b.) The PTO switch is in the OFF position.
- c.) The cruise control switch is in the OFF position.
- d.) The traction pedal is in the Neutral position.

The system will stop the engine if the operator leaves the seat without:

- a.) The parking brake switch in the ON position and
- b.) the PTO switch in the OFF position.

NEVER operate the mower unless the Interlock System operates correctly.

**WARNING**

1. Before you leave the operator position, for any reason:
   
   a. Return the traction pedal to Neutral.
   b. Disengage all drives.
   c. Lower the mowers to the ground.
   d. Engage the parking brake.
   e. Stop the engine and remove the ignition key.

2. Keep your hands, feet and clothing away from moving parts. Wait for all movement to stop before you clean, adjust or service the mower.

3. Keep persons and animals away from the area of operation.


5. Never operate the equipment without a correctly fastened grass deflector in position.

If additional information or service is needed, contact your Authorized Jacobsen Dealer. Your Dealer knows the current methods to service this equipment.
## 4.1 ENGINE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>R311T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make</td>
<td>Kubota</td>
</tr>
<tr>
<td>Model</td>
<td>V2403-CR-T-E4B</td>
</tr>
<tr>
<td>Type</td>
<td>Four cycle, liquid cooled, Diesel</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>4</td>
</tr>
<tr>
<td>Bore and Stroke</td>
<td>3.43 in. (8.7 cm) x 4.03 in. (10.24 cm)</td>
</tr>
<tr>
<td>Total Displacement</td>
<td>148.5 in³ (2.434 l)</td>
</tr>
<tr>
<td>Combustion System</td>
<td>Direct Injection</td>
</tr>
<tr>
<td>Intake System</td>
<td>Turbocharged</td>
</tr>
<tr>
<td>Gross Intermittent Power</td>
<td>65.2hp (48.6 kW)@2700 rpm</td>
</tr>
<tr>
<td>Torque</td>
<td>146.4 ft.Lb. (198.5 Nm)@1600 rpm</td>
</tr>
<tr>
<td>Maximum Speed</td>
<td>2950 ± 50 rpm (No Load)</td>
</tr>
<tr>
<td>Low Idle</td>
<td>1000 ± 50 rpm (No Load)</td>
</tr>
<tr>
<td>Rotation</td>
<td>Counter-clockwise viewed at flywheel</td>
</tr>
<tr>
<td>Fuel</td>
<td>#2 ultra-low sulfur Diesel fuel</td>
</tr>
<tr>
<td>Injection Pump</td>
<td>Bosch MD type mini pump</td>
</tr>
<tr>
<td>Engine Oil (API Class)</td>
<td>CJ-4</td>
</tr>
<tr>
<td>Oil Pan Capacity</td>
<td>2.51 gallons (9.5 l)</td>
</tr>
<tr>
<td>Starter</td>
<td>12 Volt, 2 kW</td>
</tr>
<tr>
<td>Alternator</td>
<td>12 Volt, 45 Amp</td>
</tr>
<tr>
<td>Dry Weight</td>
<td>514 lb. (233 kg)</td>
</tr>
<tr>
<td>Dimensions (Length x Width x Height)</td>
<td>34.2 x 20.4 x 28.9 in. (86.9 x 51.7 x 73.5 cm)</td>
</tr>
<tr>
<td>Emission Regulation</td>
<td>Tier 4 Final/Stage IIIIB</td>
</tr>
</tbody>
</table>
4 SPECIFICATIONS

4.2 DIMENSIONS AND WEIGHTS

<table>
<thead>
<tr>
<th>A - Width of Cut (Front and both wings)</th>
<th>R311T</th>
</tr>
</thead>
<tbody>
<tr>
<td>134 inch (340.3 cm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B - Maximum Width</th>
<th>139 inch (353.0 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>C - Transport Width</th>
<th>93.5 inch (237.5 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>D - Height ROPS frame in the vertical position</th>
<th>84 inch (213.4 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>E - Height ROPS frame folded</th>
<th>63.5 inch (161.3 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>F - Total length cutting</th>
<th>144 inch (365.7 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>G - Total length transport</th>
<th>141 inch (358.1 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>H - Wheel Base</th>
<th>67.8 inch (172.2 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>J - Front Wheel Track</th>
<th>49.5 inch (125.7 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>K - Rear Wheel Track</th>
<th>49.6 inch (126.0 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>L - Maximum Height Canopy</th>
<th>89 inch (226.1 cm)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Maximum Height Cab Installed</th>
<th>TBD</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight of unit, hydraulic and fuel tanks filled, decks lifted</th>
<th>4150 lb. (1882 kg)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight of unit, hydraulic tank full, fuel tank empty, decks lifted</th>
<th>4028 lb. (1827 kg)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight of unit, hydraulic and fuel tanks filled, decks lifted, cab installed</th>
<th>TBD</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Tire Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Wheel</td>
</tr>
<tr>
<td>Tire Size</td>
</tr>
<tr>
<td>26 x 12-12</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
4 SPECIFICATIONS

4.3 MOWER SPECIFICATION

Battery: 12V, 560 CCA, Group AABM #75NF
Service Brake: Dynamic braking through the traction circuit
Parking Brake: Integrated in wheel motor, hydraulic release
Fuel Tank: 20 U.S. Gallons (75.7 l)
Hydraulic Tank: 16 U.S. Gallons (60.57 l)
Hydraulic Fluid: SAE 10W30
Return Filter: 10 Micron, 25 psi (1.72 BAR) crack bypass
Charge Filter: 10 Micron, 25 psi (1.72 BAR) crack bypass
Hydraulic Cooling: Side by side combined hydraulic oil cooler and engine coolant radiator
Steering: Hydrostatic power steering, with adjustable steering wheel
Traction Drive: 4WD parallel system in the forward direction. 2WD in the reverse direction. Variable displacement hydraulic pump to 17.1 in³ (280 cc) front wheel motors and 11.9 in³ (195 cc) rear wheel motors.
Cutting Unit Drive: 1.01 in³ (16.55 cc) hydraulic motors connected to the cutting unit
Mow Speed: 0-7.8 mph (0-12.5 kph)
Transport Speed: 0-14.9 mph (0-24 kph)
Reverse Speed: 0-6 mph (0-9.6 kph)
R311T Cutting Performance: 10.3 acres/hr. (4.17 hectares/hr) @7.7 mph (12.39 km/hr)

4.4 HYDRAULIC SPECIFICATION

<table>
<thead>
<tr>
<th>Circuit Description</th>
<th>Flow @2700 rpm engine speed</th>
<th>Relief Valve Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US Gallons/Minute (Liters/Minute)</td>
<td>psi (BAR)</td>
</tr>
<tr>
<td>Forward Traction Circuit</td>
<td>29.2 (110.7)</td>
<td>3626 (250)</td>
</tr>
<tr>
<td>Reverse Traction Circuit</td>
<td>29.2 (110.7)</td>
<td>3626 (250)</td>
</tr>
<tr>
<td>Charge Pressure</td>
<td></td>
<td>312 (21.5)</td>
</tr>
<tr>
<td>Front Deck</td>
<td>12.0 (45.6)</td>
<td>3000 (207)</td>
</tr>
<tr>
<td>Wing Mowers</td>
<td>12.0 (45.6)</td>
<td>3000 (207)</td>
</tr>
<tr>
<td>Steering</td>
<td>4.5 (17.4)</td>
<td>1500 (103)</td>
</tr>
<tr>
<td>Lift/Lower</td>
<td>4.5 (17.4)</td>
<td>1500 (103)</td>
</tr>
<tr>
<td>Back Pressure Valve</td>
<td></td>
<td>50 (3.4)</td>
</tr>
</tbody>
</table>
4.5 VIBRATION LEVEL

The mower was tested for hand and arm vibration levels. The operator was in the normal position to drive the vehicle, with two hands on the steering mechanism. The engine was in operation and the cutting device was in rotation, while the mower was not moving.

The Machinery Safety Directive 2006/42/EC
By compliance to:
The Lawnmower Standard BS EN ISO 5395-3
Referenced to Hand/Arm: BS EN ISO20643:2008

Information Supplied for Physical Agents Directive 2002/44/EC
By reference to:
Hand/Arm Standards: BS EN ISO 5349-1 (2001)
BS EN ISO 5349-2 (2001)

<table>
<thead>
<tr>
<th>R311T Hand/Arm Acceleration Level</th>
<th>69178 R311T</th>
<th>Maximum Left Hand or Right Hand Accelerations m/s²</th>
<th>Mean Value of X, Y, Z Aeq</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1.04 ± 2.5</td>
<td></td>
</tr>
</tbody>
</table>

The mower was tested for Whole Body vibration levels. The operator was in the normal position to drive the vehicle, with two hands on the steering mechanism. The cutting device was in rotation with the mower driven in a straight line at 6 Km/hr on a level and cut lawn.

The Machinery Safety Directive 2006/42/EC
By compliance to:
Whole Body EN1032:2003

Information Supplied for Physical Agents Directive 2002/44/EC
By reference to:
Whole Body Standards BS EN ISO 2631-1 (1997)

<table>
<thead>
<tr>
<th>R311T Whole Body Acceleration Level</th>
<th>69178 R311T</th>
<th>Maximum Seat Pad Accelerations m/s²</th>
<th>Mean Value of X, Y, Z Aeq</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.13 ± 0.227</td>
<td></td>
</tr>
</tbody>
</table>
4 SPECIFICATIONS

4.6 SLOPES

DO NOT USE ON SLOPES GREATER THAN 16.5°. The 16.5° slope was calculated with static stability measurements according to the requirements of BS EN ISO 5395-3.

4.7 CUTTING UNIT SPECIFICATION

<table>
<thead>
<tr>
<th>Blade Length</th>
<th>R311T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of blades</td>
<td>22.87 in. (58.1 cm)</td>
</tr>
<tr>
<td>Height of cut</td>
<td>7</td>
</tr>
<tr>
<td>Height of cut adjustment</td>
<td>1 to 5-1/2 in. (2.54 to 13.97 cm)</td>
</tr>
<tr>
<td>Blade Tip Speed</td>
<td>1/2 in. (1.3 cm) increments using clevis pin in various mounting positions.</td>
</tr>
<tr>
<td>@ 2700 rpm engine speed</td>
<td>264.2 feet/second (80.5 meters/second)</td>
</tr>
</tbody>
</table>

4.8 RECOMMENDED LUBRICANTS

Engine Oil:

Must meet MIL-L-46152 or API Classification grades CJ-4

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Viscosity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 77° F (25° C)</td>
<td>SAE 30 or SAE 10W-30 or SAE 10W-40</td>
</tr>
<tr>
<td>32° to 77° F (0° to 25° C)</td>
<td>SAE 20 or SAE 10W-30 or SAE 10W-40</td>
</tr>
<tr>
<td>Below 32° F (0° C)</td>
<td>SAE 10W or SAE 10W-30 or SAE 10W-40</td>
</tr>
</tbody>
</table>

Hydraulic Fluid:

The standard hydraulic fluid is SAE 10W-30 (MIL-L-46152 or API Classification grades SG, SF/CC, CD).

GreensCare™ 68 and GreensCare™ 68 Plus are alternative fluids.

NOTICE

Flushing the hydraulic system with GreensCare Bio-Flush is required to switch to GreensCare 68 or GreensCare 68 Plus.

Grease:

Texaco Starplex 2EP Moly (NLGI Grade 2-EP Lithium Complex Grease containing Molybdenum Disulfide) or equivalent
4.9 ACCESSORIES

4.9.1 CANOPY / SUN SHADE

Product number 68127

4.9.2 MULCHER KIT

Product Number 69174

4.9.3 REPLACEMENT BLADES

Left Hand Blade 4186581
Right Hand Blade 4186582
4 SPECIFICATIONS

4.9.4 ROAD LIGHT KIT
Product number 69181

4.9.5 LIGHT KIT
Kit number 4207582

4.9.6 CAREFREE TIRE KIT
Kit number 2811453
Individual Tire Replacement 2811454

4.10 SUPPORT LITERATURE
Contact your Jacobsen Dealer for a complete listing of literature available for your mower.

Safety, Operation, & Maintenance Manual: 4280331
Mower Parts Manual: 4280334
Engine Parts Manual: 4290893
Service & Repair Manual: TBD
4.11 DECLARATION OF CONFORMITY

Business name and full address of the manufacturer:
Jacobsen, A Textron Company
11524 Wilmar Blvd.
Charlotte, NC 28273, USA

Product Code
Kubota V2403-CR-T-E4B Diesel

48.6 kW @ 2700 RPM

Kubota V2403-CR-T-E4B Diesel
Conforms to Directives: In accordance with the directive(s) of 2000/14/EC, VDD, 2000/14/EC Annex VI, Part 1, and Directive 2000/14/EC 2005/88/EC, 2006/42/EC and 2006/66/EC.

Conformity Assessment: In accordance with the procedures in Annex VIII of 2000/14/EC Directive.

Measured Sound Power Level: 104 dB(A) ± 0.71 LWA


UK Notified Body for 2000/14/EC: Sound Research Laboratories Number: 1088

Operator Ear Noise Level: In accordance with the procedures specified in 2000/14/EC Annex VI, Part 1.

UK: 1088

Sound Research Laboratories Limited
Holbrook House, Little Waldingfield
Sudbury, Suffolk CO10 0TH

Operator Ear Noise Level: 91 dB(A) ± 0.71 Leq (2004/22/EC)
### SPECIFICATIONS 4

<table>
<thead>
<tr>
<th>Harmonised standards used</th>
<th>Technical standards and specifications used</th>
<th>The place and date of the declaration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmonised standards used ▪ Исползвани хармонизирани стандарти ▪ Použité harmonizované normy ▪ Brugte harmoniserede standarder ▪ Gebrauchte geharmonisierte Standards ▪ Kasutatud ühtlustatud standardid ▪ Estándares armonizados utilizados ▪ Tecnoška standarti in specifikacije ▪ 所采用的协调标准 ▪</td>
<td>Technical standards and specifications used ▪ Исползвани технически стандарти и спецификации ▪ Použité technické normy a specifikace ▪ Brugte tekniske standarder og specifikationer ▪ Gebrauchte technische Standards und spezifikations ▪ Kasutatud tehnilised standardid ja spetsifikatsioonid ▪</td>
<td>The place and date of the declaration ▪ Място и дата на декларацията ▪ Místo a datum prohlášení ▪ Sted og dato for erklæringen ▪ Plaats en datum van de verklaring ▪ Locul şi data declaraţiei ▪</td>
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</table>
Signature of the person empowered to draw up the declaration on behalf of the manufacturer, holds the technical documentation and is authorised to compile the technical file, and who is established in the Community.

Подпись на човека, упълномочен да съставя декларацията от името на производителя, който поддържа техническата документация и е съгласен да изтегли технически фалит и е регистриран в общността.

Podpis osoby oprávněné sestavit prohlášení v imenu výrobce, holds dokumentaci technickou a je oprávněná k sjednocování dokumentací, a která je registrována v společenství.

Handtekening van de persoon die bevoegd is de verklaring te op te stellen, bevat technische documentatie en is gestandaardiseerd in het Gemeenschap.

Свидетельство подписи на человека, уполномоченного составить декларацию от имени производителя, который поддерживает техническую документацию, и имеет право на издание технической формы и зарегистрирован в сообществе.
5.1 SAFETY DECALS

Understand the purpose of these decals. The decals are important to the safe operation of the mower. REPLACE THE DAMAGED DECALS IMMEDIATELY.

DANGER

Injury or death can occur from contact with the blade or from the objects discharged from the mower.

- Do not operate the mower if grass deflector or guards are removed.
- Do not operate the mower with bent or damaged components or with cutting units in the lifted position.
- When mower is in operation, keep persons and animals away.

DANGER

To prevent injury while you do work on the battery:

1. Connect the negative (BLACK) wire after the positive (RED) wire. Remove the negative (BLACK) wire before the positive (RED) wire.
2. Keep sparks and flames away from the battery. Prevent the contact with the battery acid.

To prevent injury while you attach the jumper cables to the battery:

1. Connect the positive (+) battery terminal of the charged battery to positive battery terminal of drained battery.
2. Connect the negative (−) battery terminal of the charged battery to frame of vehicle with drained battery.

WARNING

The engine coolant is under pressure. To prevent injury, do not remove the radiator cap on a hot radiator.
5 DECALS

WARNING
To prevent injury, do not touch the muffler or muffler shield. The muffler temperatures can be more than 150° F (66° C).

WARNING
Do not use the mower for towing.

WARNING
Always use the seat belt with the ROPS frame in the vertical and locked position.

WARNING
Always use the seat belt with the ROPS frame in the vertical and locked position.
Never use the seat belt with the ROPS in the folded position.
Read the Manual.
WARNING

• Read the manual. Do not allow persons without training to use the mower.
• Keep the shields in position and hardware fastened.
• Keep your hands, feet and clothing away from moving parts.
• Before you clean, adjust or repair this equipment, disengage all drives, engage the parking brake and stop the engine.
• Never carry passengers.
• When mower is in operation, keep persons and animals away.
• Do not use on the slopes greater than 16.5°

WARNING

To connect the jumper cables:

1. Connect the positive cable to the positive remote terminal first.
2. Connect the negative cable to the negative remote terminal last.

To disconnect the jumper cables:

1. Disconnect the negative cable first.
2. Disconnect the positive cable last.

WARNING

Use caution when you connect or disconnect the battery cables. If the battery terminals are short-circuited, a battery explosion can occur.
WARNING

The charge filter is under pressure. To prevent injury, remove the filter slowly.

WARNING

To prevent injury or death, never operate the mower without the seat hardware installed correctly. Read the manual for more information.

Without the seat platform fastened, the seat can tilt suddenly when you make a sudden change in direction, when you operate on the slopes or when the mower is over turning.

NOTICE

DO NOT USE THE START ASSIST FLUIDS

Start assist fluids in the air intake system can be explosive or cause an engine condition that is not controlled and can cause engine damage.
WARNING
To prevent injury when you fold the ROPS, use caution to prevent your fingers broken between moving and rigid parts of the ROPS.

NOTICE
Do NOT fold this ROPS if a canopy is attached. Damage to the mower hood could result.

WARNING
This structure's protective capability may be impaired by structural damage, overturn, or alteration. If any of these conditions occur, this structure must be replaced.

WARNING
To prevent injury, use caution when you do work on the mower with the wing decks in the lifted position. When the mower is not in operation, keep the transport latches engaged with the wing mowers lifted.

5.2 INSTRUCTION DECALS
Wing Transport Latch Cable

Horn Symbol
Antifreeze

THIS RADIATOR CONTAINS
ANTI-FREEZE
PROTECTED TO -26°F (-32°C)

Mix equal parts of clean water and a premium quality ethylene glycol based anti-freeze to maintain the boil over, rust and corrosion protection.

Drain and discard coolant yearly. Read manual for additional instructions.

Height of cut adjustment

Traction pedal operation
Weight Transfer

Increase

Decrease

Guaranteed Sound Power Level

105 dB

Control Panel
6 CONTROLS

6.1 OPERATOR COMPARTMENT
6 CONTROLS

6.2.1 IGNITION SWITCH

The ignition switch has three positions, OFF, RUN and START. In the run position, the controller program is active and input and output circuits are monitored.

6.2.2 PARKING BRAKE SWITCH

To engage the parking brake, move the orange lock toward front of mower and press the front of the switch. Parking brake light on combination gauge (See 6.2.17) will turn on. Operation of the cutting units operation is disabled with the parking brake engaged.

To disengage parking brake, press the rear part the switch. The parking brake light will turn off.

**NOTE:** *Engine will not start with the parking brake switch in the OFF position.*

6.2.3 HORN SWITCH

Press the front of the switch to use the horn.
6.2.4 FRONT DECK LEVER

The front deck lever lifts and lowers the front deck.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>The engine throttle must be at least 50% speed to lift or lower the decks.</td>
</tr>
</tbody>
</table>

Press and release the lever until the front deck has lowered to the ground. If the PTO switch is in the ON position, the front deck blades will start to turn when the front deck is lowered.

Pull and hold the lever until the front deck has lifted. When the front deck is lifted, the front deck blades will stop.

6.2.5 LEFT WING DECK LEVER

The left wing deck lever lifts and lowers the left wing deck.

Press and hold the lever until the left wing deck has lowered to the ground. If the PTO switch is in the ON position, the left wing deck blades will start to turn when the left wing deck is lowered.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>To prevent damage to the mower, make sure that the left wing transport latch is disengaged before you lower the left wing deck. See 6.7</td>
</tr>
</tbody>
</table>

Pull and hold the lever until the left wing deck has lifted. When the left wing deck is lifted, the left wing deck blades will stop.

6.2.6 RIGHT WING DECK LEVER

The right wing deck lever is for lift and lower the front deck.

Press and hold the lever until the right wing deck has lowered to the ground. If the PTO switch is in the ON position, the right wing deck blades will start to turn when the right wing deck is lowered.

<table>
<thead>
<tr>
<th>NOTICE</th>
</tr>
</thead>
<tbody>
<tr>
<td>To prevent damage to the mower, make sure that the right wing transport latch is disengaged before you lower the right wing deck. See 6.7</td>
</tr>
</tbody>
</table>

Pull and hold the lever until the right wing deck has lifted. When the right wing deck is lifted, the right wing deck blades will stop.
6 CONTROLS

6.2.7 DPF REGEN INHIBIT SWITCH

Press the rear of the switch to the INHIBIT position to prevent the DPF Regen cycle from starting. The Red light at front of switch will illuminate when switch is in the INHIBIT position. See 9.10

NOTICE

If the DPF Regen cycle is prevented for too long of a period, a blockage of the DPF can occur. If a blockage of the DPF has occurred, an authorized Kubota Engine Service Center must clean the DPF before the mower is used.

Put the switch in the center position to allow automatic Active Regen. Operation of the mower is not changed during Active Regen. See 9.10

When the Regen Request light flashes, press and release the front part of the switch to start the Parked Regen cycle. To prevent damage to the turf during Parked Regen, park the mower on concrete or gravel. The engine must be warm, the traction pedal in NEUTRAL position, PTO switch in OFF position and the parking brake engaged for the Parked Regen cycle to start. Do not stop the engine, disengage the parking brake or drive the mower until the Regen cycle is completed and the Regen Request light turns off. See 9.10

6.2.8 DPF LIGHT MODULE

The Diesel Particulate Filter (DPF) light module has a Regen Request light and High Exhaust Temperature light that indicate the status of the DPF Regen system.

When a Parked Regen cycle is necessary, the front amber light will flash. During a Parked Regen cycle, the Regen Request light will illuminate. See 9.10

The rear amber light indicates that an Active or Parked Regen cycle is active and a high exhaust temperature is sensed. See 9.10

6.2.9 ENGINE LIGHT MODULE

The engine light module has an amber glow plug active light and a red check engine light.

The front amber glow plug light indicates the glow plugs are active. Do not turn the ignition switch to the start position until the glow plug light turns off.

The red check engine light indicates that the engine controller sensed a problem. Connect a CAN diagnosis tool or the Kubota Diagmaster tool to identify problem. When the check engine light is illuminated, the DPF Regen cycle will not start.
6.2.10 FILTER LIGHT MODULE

The filter light module has an amber fuel filter light and a red charge filter light.

The fuel filter light indicates that moisture was sensed in the fuel. Check and replace the water separator and fuel filter elements as needed.

The red charge filter light indicates low-charge pressure in the traction system. Stop the engine and check the hydraulic oil level in the tank. Damage to the hydraulic components can occur when the mower is operated with the charge filter light illuminated.

6.2.11 TURN SIGNAL MODULE

The turn signal module indicates the position of the turn signal lever included with the road light kit.

When turn signal lever is in the center position, both turn signal lights are OFF.

When the turn signal lever is in the down position, the left-side turn signal light will flash.

When the turn signal lever is in the up position, the right-side turn signal light will flash.

6.2.12 PTO SWITCH

The PTO switch is a 2-position knob type switch to engage and to disengage the mowers. The PTO switch must be in the OFF (down) position to start the engine.

Pull on the red knob to move the switch to the ON position. When the PTO switch is in the ON position and the decks are lowered, the blades will start to turn. When the cutting units are lifted, the blades will stop.

The mower will automatically switch to 4WD with the PTO switch in the ON position.

6.2.13 LIGHT SWITCH

The light switch controls the operation of the optional work lights and the road lights.

Press the front part of the switch to turn on the road lights. Press the rear part of the switch to turn on the work lights. Put the switch in the center position to turn off the lights.
6 CONTROLS

6.2.14 4WD SWITCH

The 4WD switch controls the operation of the 4WD traction system. The mower will automatically switch to 4WD with the PTO switch in the ON position.

Put the switch in the center position for 2WD. When the mower is in motion, do not engage or disengage the 4WD system.

Press the front part of the switch to engage 4WD in the forward direction.

Press and hold the rear part of the switch to engage 4WD in the reverse direction. When the switch is released, the mower will disengage 4WD.

6.2.15 CRUISE CONTROL SWITCH

The cruise control switch controls the operation of the cruise control system.

To engage the cruise control, press the traction pedal, push the orange lock forward and press the front of the switch.

To disengage the cruise control, press the rear part of the cruise control switch, press the rear part of the parking brake switch or turn the ignition switch to the OFF position.

The cruise control switch must be in the OFF position to start the engine.

6.2.16 THROTTLE LEVER

The throttle lever controls the engine speed. Always operate the mower at full throttle during normal operation.
6.2.17 COMBINATION GAUGE

The combination gauge shows the hours of operation, the level of fuel and has six indicator lights to indicate the mower conditions.

The hour meter in the center of the gauge shows the hours of operation of the mower. When the ignition switch is in the RUN position, the hour meter is active.

The fuel gauge is above the hour meter in the center of the gauge. The fuel gauge shows the level of fuel in the tank. Do not allow the tank to become empty while you operate the mower.

The combination gauge indicator lights supply the following information:

- The Red coolant-temperature light indicates that coolant temperature is more than 230° F (110° C). Stop unit immediately. Remove the tree leaves, grass clippings and other objects that can decrease air flow through the rear screen and the radiator. If the engine continues to run hot, return mower to the service area.

- The red hydraulic filter light indicates that the hydraulic filter must be replaced. Return the mower to the service area and replace the filter.

- The red hydraulic-level light indicates a low-fluid level in the hydraulic tank. Stop the mower immediately. Visually inspect the mower for indications of leaks around connections, hoses and hydraulic components. Return the mower to the service area for maintenance.

- The red engine oil-pressure light indicates engine oil pressure is less than 7 psi (0.48 BAR). Immediately stop the engine and inspect oil level in the engine. If the oil-pressure light stays illuminated with the oil at the correct level, stop the engine and tow the mower to the service area. NEVER operate the engine with the oil-pressure light illuminated or Engine damage can occur.

**WARNING**

The engine coolant is under pressure. To prevent injury, do not remove the radiator cap on a hot radiator.

The hydraulic fluid is under pressure. To prevent injury, do not use your hands to find hydraulic leaks, use paper or cardboard. Allow the hydraulic fluid to become cool before you check the fluid level or you add fluid to the hydraulic tank.

**WARNING**

The red engine oil-pressure light indicates engine oil pressure is less than 7 psi (0.48 BAR). Immediately stop the engine and inspect oil level in the engine. If the oil-pressure light stays illuminated with the oil at the correct level, stop the engine and tow the mower to the service area. NEVER operate the engine with the oil-pressure light illuminated or Engine damage can occur.
6 CONTROLS

The red parking brake light indicates that the parking brake switch is in the ON position. Do not press the traction pedal with light illuminated.

The red battery light indicates that the battery voltage was less than 11.5 volts for one minute. Return the mower to the service area. Inspect the battery and the alternator.

6.3 TRACTION PEDAL

The traction pedal controls the movement of the mower. Press the front of the pedal to move in the forward direction. Press the rear part of the pedal to move in the reverse direction. When traction pedal is not pressed, the pedal will return to the NEUTRAL position.

6.4 MOW STOP

The mow stop will limit the forward speed while you operate the cutting units.

To travel at a lower speed, rotate mow stop to the mow position. The mow stop will touch the pedal stop and limit the forward speed.

To travel at transport speed, rotate mow stop to the transport position.

6.5 STEERING WHEEL TILT ADJUSTMENT

The steering wheel angle is adjustable. Lift the lever and move the steering wheel backward or forward to get the correct setting. Release the lever to set the position of the steering wheel.

CAUTION

To prevent injuries, DO NOT adjust the steering wheel while you operate the mower. Only adjust the steering wheel with the mower stopped and the parking brake engaged.
6.6 SEAT CONTROLS

The seat has three controls to adjust for the operator.

![seat controls diagram]

**WARNING**

To prevent injuries, DO NOT adjust the seat while you operate the mower. Only adjust the seat with the mower stopped and parking brake engaged.

Lift the seat position lever and move the seat backward or forward. Release the lever to set the adjustment. Make sure the seat is locked in position before you operate the mower.

Lift the backrest lever to adjust the angle of the backrest. Release the lever to set the adjustment. Make sure the seat is locked in position before you operate the mower.

Rotate the armrest knob to adjust the angle of the armrest.

6.7 WING DECK TRANSPORT LATCHES

The wing deck transport latches are found behind the seat on the hood cowling. The latch knob on the left side of the cowling engages the left side wing latch. The latch knob on the right side of the cowling engages the right side wing latch.

To engage the wing transport latches, completely lift the wing mower and push the latch knob.

**CAUTION**

To prevent injury or damage, do not put the weight of the deck and lift arm on the latch. When the latch is released, the weight of the deck and the lift arm can cause the deck to fall.

To disengage the wing transport latches, pull the latch knob.

**NOTICE**

To prevent damage to the mower, make sure that the wing transport latch is disengaged before you lower the deck.
7 OPERATION

7.1 DAILY INSPECTION

Do a visual inspection of the mower. Look for indications of wear or loose hardware. Look for any components that are not included on the mower or damaged components. Check for fuel and oil leaks to make sure the connections are tight. Make sure that all hoses and tubes are in good condition.

Check the fuel supply, radiator coolant level, crankcase oil level and air cleaner indicator. When the engine is cold, all fluids must be at the full level mark.

Check the radiator fins for dirt or grass. Clean with compressed air as required before you operate the mower.

Make sure all cutting units are adjusted to the same cutting height.

Check all tires for the correct pressure.

Test the interlock system.

⚠️ CAUTION

The inspection must be done each day when the engine is turned off and all fluids are cold. Lower the cutting units to the ground, engage the parking brake, stop the engine and remove the ignition key.
7.2 INTERLOCK SYSTEM

The Interlock System prevents the engine to start unless the parking brake switch is in the ON position, the traction pedal is in the NEUTRAL position, cruise control switch is in the OFF position and the PTO switch is in the OFF (Down) position. The system stops the engine if the operator leaves the seat with the PTO switch in the ON position, traction pedal out of the NEUTRAL position or the parking brake switch in the OFF position.

Do each of these tests to make sure the Interlock System operates correctly. If any of the tests fail, stop the test and have the system inspected and repaired as shown below:

- The engine does not start during test 1
- The engine does start during tests 2, 3, 4 and 5
- The engine continues to run during tests 6 and 7

Refer to the chart below for each test and follow the check (4) marks across the chart. Turn off the engine between each test.

TEST 1: The test shows the normal engine start procedure. The operator is in the seat, parking brake switch is in the ON position, the traction pedal is in the NEUTRAL position, cruise control switch is in the OFF position and the PTO switch is in the OFF (down) position. The engine will start.

TEST 2: The engine must not start if the PTO switch is in the ON position.

TEST 3: The engine must not start if the parking brake switch is in the OFF position.

TEST 4: The engine must not start if the traction pedal is out of the NEUTRAL position.

TEST 5: The engine must not start of the cruise control switch is in the ON position.

TEST 6: Start the engine with the normal procedure. Turn on the PTO switch and lift your weight off the seat. The engine must stop. The cutting unit blades must not rotate after seven (7) seconds.

TEST 7: Start the engine with the normal procedure. Turn off the parking brake switch and lift your weight off the seat. The engine must stop. The cutting unit blades must not rotate after seven (7) seconds.

<table>
<thead>
<tr>
<th>Test</th>
<th>Operator Seated</th>
<th>PTO Switch OFF</th>
<th>Cruise Control Switch Off</th>
<th>Parking Brake Switch ON</th>
<th>Traction Pedal in Neutral</th>
<th>Engine Starts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes  No</td>
<td>Yes No</td>
<td>Yes No</td>
<td>Yes No</td>
<td>Yes No</td>
<td>Yes No</td>
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<td>1</td>
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<td>4</td>
<td>Yes No</td>
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<td>4</td>
<td>H</td>
<td>4</td>
<td>H</td>
<td>4</td>
<td>H</td>
</tr>
</tbody>
</table>

H Start the engine with the normal procedure, move position of the switch and lift your weight off the seat. The engine must stop immediately and the cutting unit blades must not rotate after seven (7) seconds.
7 OPERATION

7.3 OPERATING PROCEDURE

⚠️ WARNING
This mower has a folding Roll Over Protection Structure (ROPS). Always wear the seat belt with the ROPS frame in the vertical and locked position. Never wear the seat belt with the ROPS in the folded position. 

If the mower is over turning and the ROPS is in the vertical and locked position, hold the steering wheel. Do not try to move off the mower or leave the seat.

⚠️ CAUTION

To prevent injury, always wear the safety glasses, leather work shoes or boots, a hard hat and ear protection.

1. Always start the engine with the operator in the seat, never while next to the mower. Never start the engine with persons near the mower.
2. Never operate the engine without enough ventilation or in an enclosed area. The carbon monoxide in the exhaust fumes can increase to dangerous levels.
3. Keep your hands and feet away from moving parts and the cutting units. When possible, do not adjust the mower with the engine started.
4. Do not operate the mower with loose or damaged components. All components must be correctly fastened to the mower. Mow when the grass is dry to get the best results.
5. First cut in a test area so that you completely understand the operation of the tractor and controls.
6. Inspect the area to find the safest procedure for the mower. Check the height of the grass, the type of terrain and the conditions of the surface. Each condition needs the correct adjustments and precautions.
7. Do not release the cut grass in the direction of persons or allow persons near the mower while in operation. The owner and operator are responsible for injuries caused to persons near the mower and any damage to their property.

⚠️ CAUTION

Remove all objects you can find before you operate the mower. Carefully enter a new area and always operate at speeds that allow you to control the mower safely.

8. Be careful when you operate near to gravel areas (roads, parking areas, cart paths). Stones released from the equipment can cause injuries to persons and cause damage to the equipment.
9. When you are not mowing grass, always turn off the PTO switch.
10. Before you move across or operate on the paths or roads, turn off the PTO switch, lift the mowers and travel at decreased speed. Look for traffic.
11. When you hit an object or mower starts to cause vibration that is not normal, inspect the mower for damage and make repairs.

⚠️ WARNING

Before you clean, adjust or repair this equipment, always turn off the PTO switch, lower cutting units to the ground, turn on the parking brake switch, stop the engine and remove the ignition key.

12. Travel at decreased speed and be careful when you operate on the slopes or near sharp edges.
13. When you drive in the reverse direction, look behind you and down to make sure the path is clear. Use caution when you go near corners, trees or other objects that can prevent a clear view.
14. Never use your hands to clean the cutting units. Use a brush to remove the grass clippings from the blades. The blades are sharp and can cause injuries.
7.4 STARTING THE ENGINE

Start the engine with the operator in the seat, the PTO switch in the OFF position, the cruise control switch in the OFF position and the parking brake switch in the ON position. Remove your foot from the traction pedal. Always wear the seat belt with the ROPS frame in the vertical and locked position. Never wear the seat belt with the ROPS in the folded position.

Set the throttle lever to half throttle.

Turn the ignition switch to the RUN position. The warning lights on the combination gauge and the instrument panel will illuminate for a few seconds. Make sure that the warning lights are illuminated.

When the glow plug light turns off, immediately turn the ignition switch to the START position. Release the key when the engine starts. Allow 30 seconds between start tries to allow the starter motor to become cool.

When the engine starts, all of the warning lights will turn off. Allow the engine to become warm before you operate the engine at full throttle.

7.5 TO STOP THE ENGINE

To stop and park the mower in normal conditions:

1. Turn the PTO switch to the OFF position. Lift the decks and drive the mower to a flat and level area to park the mower.
2. Remove your foot from the traction pedal. When the traction pedal is in the NEUTRAL position, the hydraulic brake will stop the mower.
3. Lower the front and rear cutting units to the ground. Turn the parking brake switch to the OFF position.
4. Allow the engine to operate at low idle without load for 3 to 5 minutes.

NOTICE

Do not hold the ignition switch in the START position for more than 10 seconds. After 10 seconds, the start circuit is disabled. Turn the ignition switch to the OFF position to set the start circuit again.

When the engine is stopped before you allow the turbocharger to cool, permanent damage to the turbocharger can occur.

To prevent damage, operate the engine at low idle without load for 3 to 5 minutes.

5. Turn the ignition switch to the OFF position and remove the key before you leave the operator seat.

If an emergency occurs and you must park the mower in the area of operation, follow the guidelines set by the grounds manager. If the mower is parked on a slope, chock or block the wheels.
7 OPERATION

7.6 DRIVING

Read and follow all safety instructions contained in this manual when you drive the mower. When you operate in the reverse direction, look behind you to make sure you have a clear path.

IMPORTANT: Equipment must meet the current regulations to be driven on the public roads.

Push the PTO switch to the OFF position and lift the cutting units to the transport position.

Engage the wing transport latches before you transport the mower on a trailer or when the mower is stored with the wings in the lifted position. See 6.7.

7.7 MOWING SPEED

The cutting quality is improved at speeds lower than the transport speed of the mower. A mow speed of 6 to 7 mph (10 to 11 km/hr) is set at the factory and is correct for most conditions. The local turf conditions may require a different speed. If the adjustment is needed, see Section 10.2.

7.8 MOWING

To mow:

1. Set the PTO switch to the ON position. When the PTO switch is in the ON position, the 4WD system is engaged.

2. Push and hold the deck levers until the front and rear cutting units are lowered to the ground. When the cutting units are lowered, the blades will start turning.

3. To lift the front and rear decks, pull and hold the deck levers until the cutting units are completely lifted. The deck blades will stop when the decks are lifted.

WARNING

To prevent injuries, when the blades rotate, keep your hands, feet and clothing away from the cutting unit.

NEVER use your hands to clean the cutting units. Use a brush to remove grass from the blades. The blades can be sharp and can cause injury.

NOTICE

To prevent damage to the mower, make sure that the wing transport latches are disengaged before you lower the wing decks.

The engine throttle must be at least 50% speed to lift or lower the decks.
7.9 MOWING ON SLOPES

The mower is made to have good traction and to have good balance. Operate the mower with caution when you drive on a gradient. If you drive on wet grass, the traction and steering control of the mower is decreased.

**WARNING**

When you operate on the slopes, lock the ROPS frame in the vertical position and the seat belt fastened. Do not operate on the slopes with the ROPS in the folded position.

To make sure that the mower does not turn over, the safest method to drive on a slope is to drive vertically. You must not drive across the face horizontally. Travel at a slow speed and do not make the turns that are not necessary.

Check for hazards on the road that are not visible to the drivers. Keep the cutting units lowered when you operate on the slopes.

**CAUTION**

Do not operate the mower on the slopes greater than 16.5° or a 29.5% slope.

1. Always cut the grass with the engine at full throttle. Control the forward speed with the traction pedal to keep the correct performance.
2. Adjust wing deck weight transfer to improve the weight distribution between the cutting units and the mower.
3. If the mower moves to the side or the tires damage the turf, drive the mower on a slope with a decreased angle.
4. If the mower continues to move to the side and damage the turf, the slope is at an angle that is not safe. Do not continue to drive toward the top of the slope. Carefully drive toward the bottom of the slope.
5. When you drive toward the bottom of a slope with a high angle, lower the cutting units to the ground. This procedure makes sure the mower does not turn upside down.
6. Correct tire pressure is necessary for maximum traction.
   Front - 16 to 20 psi (1.10 to 1.38 BAR)
   Rear - 10 to 12 psi (0.69 to 0.83 BAR)
7. If additional traction is required, adjust the weight transfer knob. See 10.9.
How to calculate a slope:

Tools Required:
Level (A), either 1 yard, or 1 meter long.
Tape measure (B).

Use the level (A) and position it horizontally to measure the distance (C) with tape measure (B). Use the chart to calculate the slope angle or the percentage grade of the slope (D).

<table>
<thead>
<tr>
<th>Height (C)</th>
<th>Result (D)</th>
<th>Inches with 1 Yard Level (A)</th>
<th>Millimeters with 1 Meter Level (A)</th>
<th>Slope in Degrees</th>
<th>Slope Grade %</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4.8</td>
<td>3</td>
<td>100</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>8.5</td>
<td>150</td>
<td>200</td>
<td>11.3</td>
<td>20.0</td>
</tr>
<tr>
<td>7.5</td>
<td>9.5</td>
<td>200</td>
<td>225</td>
<td>11.8</td>
<td>20.8</td>
</tr>
<tr>
<td>9</td>
<td>14</td>
<td>250</td>
<td>275</td>
<td>15.4</td>
<td>27.5</td>
</tr>
<tr>
<td>10</td>
<td>15.5</td>
<td>300</td>
<td>325</td>
<td>18.0</td>
<td>32.5</td>
</tr>
<tr>
<td>11</td>
<td>16.7</td>
<td>350</td>
<td>375</td>
<td>18.4</td>
<td>33.3</td>
</tr>
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<td>12</td>
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<td>400</td>
<td>425</td>
<td>19.9</td>
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<tr>
<td>13</td>
<td>20.6</td>
<td>475</td>
<td>500</td>
<td>20.6</td>
<td>37.5</td>
</tr>
<tr>
<td>14</td>
<td>21.3</td>
<td>500</td>
<td>550</td>
<td>22.6</td>
<td>41.7</td>
</tr>
<tr>
<td>15</td>
<td>21.8</td>
<td>425</td>
<td>600</td>
<td>24</td>
<td>44.4</td>
</tr>
<tr>
<td>16</td>
<td>22.6</td>
<td>475</td>
<td>700</td>
<td>27.0</td>
<td>47.5</td>
</tr>
<tr>
<td>17</td>
<td>26.6</td>
<td>500</td>
<td>800</td>
<td>29.1</td>
<td>55.6</td>
</tr>
<tr>
<td>18</td>
<td>31.0</td>
<td>600</td>
<td>900</td>
<td>34.8</td>
<td>69.4</td>
</tr>
<tr>
<td>20</td>
<td>38.7</td>
<td>800</td>
<td>900</td>
<td>39.8</td>
<td>83.3</td>
</tr>
<tr>
<td>25</td>
<td>42.0</td>
<td>1000</td>
<td>1000</td>
<td>45.0</td>
<td>100</td>
</tr>
</tbody>
</table>
7.10 TOWING THE MOWER

If the mower has a problem and cannot drive to the service area, open the tow valve and load the mower on a trailer. If a trailer is not available, tow the mower at a slow speed for short distances.

Be careful when you load or unload the mower on the trailer. Fasten the mower to the trailer to prevent the mower to move on the trailer.

If the trailer is moved on the highway, close fuel shutoff valve and inflate the tires to the maximum pressure recorded on the tire before you fasten the mower to the trailer. Decrease the tire pressure after the mower is removed from the trailer.

Remove the seat and the seat base assembly. Open the bypass valve before you tow the mower. The bypass valve lets the mower be moved without the engine started and to prevent possible damage to hydraulic components.

The bypass valve is found on the left hand side of the traction pump below the operator seat. To open the valve, use a wrench or put a small screwdriver into the hole in the valve stem. Turn the valve two full turns (720°).

Remove the floorboard panel. Rotate the brake release lever to the released position. To release the brakes, turn the steering wheel to the right until you feel resistance.

Before towing, make sure the cutting units are lifted. If the cutting units cannot be lifted, remove the cutting units from the mower.

**NOTICE**

When you tow the mower, do not drive more than 2 mph (3.2 km/hr). Jacobsen recommends that you do not tow the mower for long distances.

When the mower gets to the service area, close the bypass valve completely, rotate brake release lever to the normal operation position. Install seat and make certain the seat latches are closed.
### 8.1 MAINTENANCE CHART

#### Mower Service Interval Chart

<table>
<thead>
<tr>
<th>Interval</th>
<th>Item</th>
<th>Section</th>
</tr>
</thead>
</table>
| First 50 Hours | • Replace engine oil  
• Replace engine oil filter  
• Replace hydraulic oil filter  
• Check steering system  
• Check electrical wiring  
• Check fan belt tension | See 9.3  
See 9.3  
See 9.13  
See 10.14  
See 9.20  
See 10.2 |
| Each day (10 Hours) | • Check Safety Interlock System  
• Check engine oil level  
• Check engine coolant level  
• Check hydraulic fluid level  
• Check tire pressure  
• Clean radiator and screens  
• Lubricate spindles and casters after washing cutting units  
• Inspect visible hydraulic hoses or tubes for leaks or oil marks | See 7.2  
See 9.3  
See 9.12  
See 9.14  
See 8.2 |
| Each week (50 Hours) | • Lubricate all grease fittings  
• Check fuel lines and fittings  
• Check for loose components | See 8.2  
See 9.5 |
| Each Two weeks (100 Hours) | • Check air filter  
• Check fan belt tension  
• Drain water from fuel system  
• Check electrical wiring | See 9.4  
See 10.2  
See 9.6  
See 9.20 |
| Each month (250 Hours) | • Inspect hydraulic hoses and tubes  
• Check engine exhaust system  
• Check steering system | See 9.11  
See 9.9  
See 10.14 |
| Each two months (400 Hours) | • Replace engine oil and filter  
• Replace fuel filter | See 9.3  
See 9.6 |
| Each 500 hours | • Replace fan belt  
• Replace hydraulic oil and filter. (500 hours or yearly, whichever comes first) | See 10.2  
See 9.12 |
| Yearly | • Replace air filter  
• Replace radiator antifreeze | See 9.4  
See 9.16 |

#### 50 Hour Grease Fittings
- A Front Mower Arm Pivot (2)
- B Front Lift Cylinders (4)
- C Wing Mower Arm Pivot (2)
- D Wing Mower Lift Cylinder (4)
- E Caster Wheels (10)
- F Caster Arms (8)

#### 50 Hour Grease Fitting
- G Wing Deck Pivot Housing (8)
- H Steering Axle Spindle Housing (2)
- J Steering Axle Pivot (1)
- K Steering Axle Ball Joints (4)
- L Drive Shaft (3)
## 8.2 LUBRICATION CHART

![Diagram of the equipment with various parts labeled with letters from A to J.]

## 8.3 FLUID REQUIREMENTS

<table>
<thead>
<tr>
<th>Fluid Requirements</th>
<th>Quantity</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Oil with Filter</td>
<td>10 Quart (9.5 liter)</td>
<td>10W-30 API Classification CJ-4</td>
</tr>
<tr>
<td>Hydraulic Oil with Filter</td>
<td>16 U.S. Gallon (60.5 liter)</td>
<td>10W-30 (Standard) GreensCare 68 (Optional) GreensCare 68 Plus (Optional)</td>
</tr>
<tr>
<td>Radiator Coolant</td>
<td>8 Quart (7.6 liter)</td>
<td>50/50 Ethylene Glycol Based Anti-Freeze/Water</td>
</tr>
<tr>
<td>Fuel</td>
<td>17 U.S. Gallon (64.4 liter)</td>
<td>#2 Ultra Low Sulfur Diesel</td>
</tr>
</tbody>
</table>
A qualified technician must always do adjustments and maintenance. If the correct adjustments can not be made, contact your Jacobsen Dealer.

Inspect the equipment according to the maintenance schedule and keep complete records.
   a. Keep the equipment clean.
   b. Keep all moving parts correctly adjusted and lubricated.
   c. Replace worn or damaged parts before you operate the mower.
   d. Keep all fluids at the correct level.
   e. Keep the shields in position and all hardware tight.
   f. Keep the tires correctly inflated.

When you make the adjustments or repairs, do not wear jewelry or loose fitting clothing.

Refer to the illustrations in the Parts Manual for the removal and assembly of parts.

When you discard hazardous materials (batteries, lubricants, fuel, anti-freeze), follow your local, state or federal-recommended procedures.

9.2 ENGINE

**IMPORTANT** - The mower includes a separate Engine Manual prepared by the engine manufacturer. Read the Engine Manual and know the operation and maintenance of the engine. When you follow the engine manufacturer instructions, you will make sure of the maximum service life of the engine. The replacement engine manuals are available from the engine manufacturer.

The operation and maintenance during the first 50 hours of a new engine can make a difference to the performance and life of the engine.

During the first 50 hours of operation, Jacobsen recommends the following.

- Allow the engine to reach a temperature of at least 140° F (60° C) before operation at full load.
- Check the engine oil level two times each day. Higher than normal oil use can occur during the first 50 hours.
- Change the engine oil and oil filter after the first 50 hours of operation.
- Check the fan belt.
- Refer to the Engine manual for specified maintenance intervals.

If the injection pump, injectors or the fuel system need service, contact your Jacobsen Dealer.

**NOTICE**

The mower operates and cuts correctly at the preset governor setting. Do not change the engine governor setting or over speed the engine.
9.3 ENGINE OIL

Check engine oil level

Check the engine oil level before you start the engine or at least five minutes after you stop the engine.

a. Park the mower on a level surface.
b. Remove the dipstick, clean the dipstick with a cloth and replace in position.
c. Remove the dipstick and check the oil level. The oil level must be between the two level indicators on the dipstick.

Change Engine Oil

a. Start the engine to increase the temperature, then stop the engine.
b. Remove the drain plug from the bottom of the crankcase and clean with a cloth.
c. Drain the engine oil into a container.
d. Replace the drain plug and fill the engine with the correct quantity and grade of oil through the filler.

Change Engine Oil Filter

a. Remove the oil filter.
b. Let the engine oil flow into a container.
c. Clean the filter area on the remote filter head.
d. Apply a thin layer of oil to the gasket on new filter. Install the oil filter.
e. Only use your hand to tighten the filter.
f. Start the engine and check around the oil filter gasket for leaks.
g. Stop the engine and check the engine oil level.

⚠️ CAUTION

The engine oil can damage your skin. Use gloves when you use engine oil. If engine oil touches your skin, clean the area immediately.

Discard used engine oil as shown in local regulations.
9 MAINTENANCE

9.4 ENGINE AIR FILTER

Check the service indicator each day. If the red band become visible in the window, replace the filter elements.

Do not remove the elements to inspect or clean. Removal of the filter that is not necessary increases the risk of dust and other particles to enter the engine.

When service is needed, first clean the outside of the filter housing, then remove the old elements carefully.

Clean the inside of the filter housing. Make sure dust and other particles do not get into the engine inlet hose.

Inspect the new elements. Do not use a damaged element and never use an incorrect element.

Assemble the secondary and primary filter elements. Make sure the elements seat correctly. Press the button to set the service indicator.

Assemble the cap to the filter housing. Make sure the cap seals around the filter housing. The dust valve on the cap must be at the bottom of the filter. Fasten the cap with the two clips.

Check the air filter hoses for wear or damage. Make sure the hose clamps are tight and hold the hoses in position.

9.5 FUEL

Diesel fuel is flammable. Use caution when you add the fuel to the mower. Only use an approved container. The spout on the container must fit inside the fuel filler neck. Never use the containers that are not approved to keep or transfer fuel.

Fill the fuel tank to less than 1 inch (2.5 cm) below the filler neck.

Use clean No. 2 ultra low sulfur Diesel fuel with a minimum Cetane Rating of 45. Use of Diesel fuel additives are not recommended. If fuel additives are used, the fuel additives must be approved for use in DPF systems. Refer to the engine manual for additional information.

Check fuel hoses and clamps every 50 hours. Replace fuel hoses and clamps at first indication of wear or damage.

Keep fuel according to your local, state or federal regulations and instructions from your fuel supplier.

Never allow the tank to become empty. The level of fuel is shown on the combination gauge.
9.6 FUEL SYSTEM

Water Separator

If the water is not removed from the fuel, damage to the fuel-injection system can occur. When the fuel filter light on the filter light module is illuminated or every 100 hours, drain the water from the water separator.

a Stop the engine. Open the air vent at the top of water separator.
b Open the drain valve at the bottom of the water separator and drain the water. Water will drain before the fuel. When fuel drains from the valve, close the valve.
c Close the vent at the top of the water separator.

Fuel Filter

Replace the fuel filter every 400 hours.

a Stop the engine.
b Open the air valve at the top of the filter to release system pressure.
c Remove fuel filter cartridge. Clean any fuel that spills.
d Assemble new filter cartridge to the filter base. Tighten the cartridge with your hand.
e Bleed air from the fuel system.

How To Bleed The Air From The Fuel System

After water is drained from the fuel system, fuel filter cartridge is replaced or the fuel hoses are replaced, bleed the air from the fuel system.

a Open the air vent at the top of the water separator.
b Press and release the hand pump until air bubbles at separator air vent stop and fuel starts to spill. Close the vent. Clean any fuel that spills.
c Open the air vent on the fuel filter. Turn the ignition switch to the RUN position, but do not start the engine. Operate the fuel pump until air bubbles at filter vent stop and fuel starts to spill. Close the air vent. Clean any fuel that spills.
d Start the engine. The engine will remove any air remaining in the fuel hoses.

CAUTION

The Diesel fuel can damage your skin. Use gloves when you use Diesel fuel. If the fuel touches your skin, clean the area immediately.

Discard used Diesel fuel as shown in local regulations.
9 MAINTENANCE

9.7 BATTERY

Before you service the battery, make sure the ignition switch is in the OFF position and the key is removed.

⚠️ CAUTION

When you service the battery, always use the tools with insulation, wear protective glasses and protective clothing.

Discard used batteries as shown in your local regulations.

⚠️ WARNING

The battery contains corrosive acid. Prevent contact with the battery acid.

Always wash your hands after you service a battery.

⚠️ WARNING

The battery posts, battery terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and other reproductive harm.

Tighten the battery cables on the battery terminals. To prevent corrosion, apply a layer of silicone dielectric grease to battery terminals and ends of cables. Keep the vent caps and battery terminal covers in position.

Before you do any welding operation on the mower, always disconnect the battery cables from the battery and the connectors from the controllers.

Confirm the battery polarity before you connect or you disconnect the battery cables.

When you install the battery, always connect the positive (RED) battery cable before the negative (BLACK) battery cable.

When you remove the battery, always disconnect the negative (BLACK) battery cable before the positive (RED) battery cable.

Jump-Starting the Mower

a. Before you try to jump-start the mower, check the condition of the drained battery.

b. Connect the positive (+) battery terminal of the charged battery to remote positive battery terminal of the drained battery.

c. Connect the negative (−) battery terminal of the charged battery to remote negative battery terminal of vehicle with the drained battery.

⚠️ WARNING

The battery can release hydrogen gas that is explosive. To decrease the risk of an explosion, prevent sparks near the battery. Always connect the negative jumper cable to the remote negative battery terminal of the mower with the drained battery.

d. When the cables are connected, start the engine on the vehicle with the good battery, then start the mower.
9.8 CHARGE THE BATTERY

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge the battery in an area with good airflow. The battery can release hydrogen gas that is explosive. To prevent an explosion, keep any device that can cause sparks or flames away from the battery.</td>
</tr>
<tr>
<td>When the battery charger is turned on, to prevent injury, stay away from the battery. A battery that is damaged can cause an explosion.</td>
</tr>
</tbody>
</table>

Read the battery charger manual for specified instructions on the operation of the charger.

When possible, remove the battery from the mower before you charge the battery. If the battery is not sealed, check and make sure the level of the electrolyte is above the plates in all of the cells.

Make sure the battery charger is turned OFF, then connect the battery charger to the battery terminals as specified in the battery charger manual.

Always turn OFF the battery charger before you disconnect the battery charger from the battery terminals.

9.9 ENGINE EXHAUST

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td>The exhaust fumes contain carbon monoxide. The carbon monoxide in the exhaust fumes can increase to dangerous levels. To protect you from carbon monoxide poisoning, inspect the complete exhaust system every month and replace damaged components immediately.</td>
</tr>
<tr>
<td>NEVER operate the engine without enough ventilation.</td>
</tr>
<tr>
<td>The temperature of the exhaust components can be greater than 300° F (149° C). To prevent the burns, do not touch a hot exhaust system.</td>
</tr>
</tbody>
</table>

The exhaust system has the exhaust manifold, turbocharger, Diesel Particulate Filter (DPF) and exhaust pipes. Refer to Section 6.2.7 and 6.2.8 for the operation and the Engine Manual for information about the DPF system.

If you sense a change in the color or sound of the exhaust, stop the engine immediately. Identify the problem and have the system repaired.

Torque all exhaust manifold hardware equally. Tighten or replace the exhaust clamps.
9 MAINTENANCE

9.10 DIESEL PARTICULATE FILTER

During the operation of the mower, the level of particle material will increase in the Diesel Particulate Filter (DPF) system. The periodic Regen of the DPF system is needed to remove particle material. During an Active or Parked Regen, the engine will use more fuel. The DPF system operates in one of four states.

<table>
<thead>
<tr>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Regen State</td>
</tr>
<tr>
<td>- The engine operates in the Passive Regen state during normal engine operation. The exhaust temperature can be more than 572° F (300° C).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibit Regen State</td>
</tr>
<tr>
<td>- When the Regen Inhibit switch is in the INHIBIT position, engine can not enter the Active or Parked Regen states. Inhibit Regen does not prevent the Passive Regen. If the fuel tank is near empty, move the Regen Inhibit switch to the INHIBIT position until the fuel tank is filled.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Regen State</td>
</tr>
<tr>
<td>- When the level of particle material reach a certain point, the engine will enter Active Regen state. Operation of the mower is not changed. The exhaust temperature can be more than 1150° F (625° C) during Active Regen. The high exhaust temperatures during Active Regen will illuminate the High Exhaust Temperature light.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parked Regen State</td>
</tr>
<tr>
<td>- When a Parked Regen is needed, the Regen Request light will flash. Park the mower on concrete or gravel to prevent damage to the turf. Engage the parking brake, but do not stop the engine. Press and release the front part of the Inhibit Regen switch to start the Parked Regen. During the Parked Regen, the Regen Request light will illuminate. The high exhaust temperatures during Parked Regen will illuminate the High-Exhaust Temperature light. Do not disengage the parking brake, stop the engine or move the mower during the Parked Regen. A Regen cycle that is not completed will move the engine through six different levels of control.</td>
</tr>
</tbody>
</table>

| Level 0 - Normal operation of mower with Passive Regen. When particles reach the Active Regen level, the engine controller will change to Level 1. When the engine controller is at Level 0, the Active and Parked Regen is disabled. |
| Level 1 - Engine will enter Active Regen state unless Inhibit Regen switch is in the INHIBIT position. Normal Active Regen is completed in approximately 20 minutes. If the particle material level does not decrease to the Passive Regen level in 30 minutes (1800 seconds), the engine controller will change to Level 2. When the engine controller is at Level 1, the Parked Regen is disabled. |
| Level 2 - Regen Request light will flash. Engine will enter Active Regen state unless the Inhibit Regen switch is in the INHIBIT Position. When the mower is parked and the parking brake is engaged, the Parked Regen state is available. If the engine is operated at Level 2 without a Regen for approximately 1 to 1-1/2 hours, the engine controller will change to Level 3. |
| Level 3 - Regen Request light will flash and the check engine light is illuminated. The engine power output is decreased and Active Regen is disabled. When the mower is parked and the parking brake is engaged, the Parked Regen state is available. If the engine is operated at Level 3 without a Regen for approximately 1 to 1-1/2 hours, the engine controller will change to Level 4. |
| Level 4 - High Exhaust Temperature Light will flash and the check engine light is illuminated. The engine power output is decreased significantly. Active and Parked Regen is disabled. The Kubota Diagmaster tool is needed to start a Regen. If the engine is operated at level 4 without a Regen for approximately 1 to 1-1/2 hours, the engine controller will change to Level 5. |

WARNING

During Active or Parked Regen, the temperature of the exhaust components can be more than 1150° F (625° C). To prevent burns, do not touch a hot exhaust system and do not stand or reach into exhaust gas area from exhaust pipe outlet. To prevent fires, make sure the engine area is kept clean and the grass clippings are not near exhaust components.

Make sure the exhaust gas from the exhaust pipe is not blocked and there is enough space between the exhaust pipe and objects. Park the mower on concrete or gravel during Parked Regen. During Active or Parked Regen exhaust gas from the exhaust pipe can cause turf damage or fire.

Make sure the exhaust gas from the exhaust pipe is not blocked and there is enough space between the exhaust pipe and objects. Park the mower on concrete or gravel during Parked Regen.
Level 5 - High Exhaust Temperature light will flash quickly and the check engine light is illuminated. The engine power output is decreased significantly. An authorized Kubota Engine Service Center must clean the DPF before the mower is used.

9.11 HYDRAULIC HOSES

WARNING

To prevent injury from the hot, high pressure oil, never use your hands to check for oil leaks. Use the paper or cardboard to find leaks.

The hydraulic fluid pressure can have enough force to enter your skin. If hydraulic fluid has entered your skin, a doctor must remove the hydraulic fluid surgically within a few hours or gangrene can occur.

Always lower the cutting units to the ground, disengage all drives, engage parking brake, stop the engine and remove the key before you inspect or disconnect hydraulic lines or hoses.

Check visible hoses and tubes each day. Look for wet hoses or oil marks. Replace worn or damaged hoses and tubes before you operate the mower.

The replacement tube or hoses must be sent in the same path as the original hose. Do not move the clamps, brackets and cable-ties to a new location.

Completely inspect all tubes, hoses and connections every 250 hours.

IMPORTANT: If the hydraulic fluid becomes dirty, damage to the hydraulic system can occur. Before you disconnect any hydraulic component, clean the area around the fittings and the ends of the hoses to prevent dirt to enter the system.

Before you disconnect any hydraulic component, tag or mark the location of each hose then clean the area around the fittings.

To prevent dirt to enter the hydraulic system when you disconnect the component, be prepared to assemble plugs or caps to the ends of hoses and open ports. Clean any hydraulic fluid that spills.

Make sure “O” rings are clean and hose fittings are correctly installed before you tighten.

Prevent the hose to twist. The twisted hoses can cause the hose connections to loosen as the hose moves while you operate the mower and can cause oil leaks.

The hydraulic hoses that are twisted or have sharp bends can decrease the oil flow and cause damage to the hoses. The decreased oil flow can cause system problems and increase the temperature of the hydraulic fluid.
9 MAINTENANCE

9.12 HYDRAULIC FLUID

Drain and replace the hydraulic oil if one of the following occur.

- Component failure
- Water or foam is in the hydraulic fluid
- The hydraulic fluid has a rancid odor (indication of high heat)
- Every 500 hours or each year, which is the first to occur.

Always replace the hydraulic filter when you replace the hydraulic fluid.

a Clean the area around the oil cap and drain plug to prevent dirt to enter the hydraulic system.

b Remove the drain plug from the bottom of the tank.

c After the oil has drained, install the drain plug and fill the tank with hydraulic fluid.

b Start the engine and remove the air from the hydraulic system. Operate all mower functions for 5 minutes to remove the air and to balance the hydraulic fluid level.

e When the oil-level has balanced and the air is removed, add fluid to the tank to the Full-mark on the dipstick

9.13 HYDRAULIC FILTER

The hydraulic system is protected by two 10 micron filters. Flow through the charge filter is monitored while you operate the mower. When the difference in hydraulic pressure across the charge filter is greater than 16 to 20 psi (1.1 to 1.4 BAR), the hydraulic oil filter warning light on the combination gauge will illuminate. To make sure continued protection of the hydraulic system, replace filter as soon as possible after light illuminates.

When you replace the filter, -

a Fill the new filter with hydraulic fluid and lubricate the filter O-ring with hydraulic fluid before you assemble the new filter. Tighten the filter with your hand.

b Operate the engine at idle speed for five minutes to remove the air from the hydraulic system. The oil-level light can illuminate and the horn can activate during the five minutes.

c Stop the engine and check the level of hydraulic fluid in the tank. Add the hydraulic fluid to the Full mark on the dipstick.

9.14 TIRES

Keep the tires correctly inflated to increase tire life. Inspect the tread wear.

Check the tire pressure each day, while the tires are cool. Use an accurate low-pressure tire gauge.

Keep tires inflated to 16-20 psi (1.10-1.38 BAR) for the front tires, and 10-12 psi (0.69-0.86 BAR) for the rear tires.

NOTICE

During cold weather, the oil filter warning light can illuminate until the hydraulic fluid becomes warm. Wait until the oil becomes warm and the warning light turn off before you operate the mower.

When you replace the filter, -

a Fill the new filter with hydraulic fluid and lubricate the filter O-ring with hydraulic fluid before you assemble the new filter. Tighten the filter with your hand.

b Operate the engine at idle speed for five minutes to remove the air from the hydraulic system. The oil-level light can illuminate and the horn can activate during the five minutes.

c Stop the engine and check the level of hydraulic fluid in the tank. Add the hydraulic fluid to the Full mark on the dipstick.

CAUTION

DO NOT try to put a tire on a rim unless you have the correct training, tools and experience. Incorrect mounting can cause an explosion which can cause injury.
### 9.15 WHEEL MOUNTING PROCEDURE

**WARNING**

Make sure the mower is parked on a solid and level surface. Never work on a mower that is supported only by the jack. Always use jack stands.

If only the front or behind the mower is lifted, put the chocks in front of and behind the wheels that are not lifted.

Remove dirt, grease and oil from the stud threads. Do not lubricate threads.

Put the wheel on the hub. Inspect the wheel to make sure of full contact between surface of wheel and hub.

Tighten all hardware with your fingers, then torque hardware in the order shown. When possible, tighten nuts in the top position.

Check and torque hardware each day until torque is kept at 85-95 ft.lb. (115-128Nm).

---

**Wheel Torque Order**

1. 10
2. 4
3. 3
4. 5
5. 2

---

### 9.16 RADIATOR

**WARNING**

To prevent injury from the hot-engine coolant or steam, never remove the radiator cap with the engine in operation. Stop the engine and wait until the radiator is cool. When radiator is cool, use caution to remove the radiator cap.

**CAUTION**

Do not put cold water into a hot radiator. Do not operate the engine without a correct coolant mixture. Install the radiator cap correctly.

Check coolant level each day. The radiator must be full and the recovery bottle must be at the cold mark.

Drain and fill the cooling system each year. Empty and clean the recovery bottle.

Mix clean water with ethylene glycol anti-freeze for the coldest ambient temperature. Read and follow the instructions on the anti-freeze container and the Engine manual.

Keep the radiator, engine oil cooler and hydraulic oil cooler air passages clean. Use compressed air (maximum of 30 psi (2 BAR)) to clean the fins. Open the panel under the radiator to allow dirt and other particles to fall from the frame.

Check and tighten the engine fan belt every 100 hours and replace the belt every 500 hours. Replace the clamps and hoses every two years.

Have your Jacobsen Dealer check the cooling system if you need to add coolant more than one time a month or you add more than a quart of coolant at a time.
9 MAINTENANCE

9.17 FOLDING ROPS

A folding Roll Over Protective Structure (ROPS) is included with this mower. Inspect the ROPS periodically for loose hardware or damage.

![Diagram of ROPS in Vertical and Folded Positions]

<table>
<thead>
<tr>
<th>Vertical Position</th>
<th>Folded Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hair Pin</td>
<td>ROPS Pin</td>
</tr>
<tr>
<td>ROPS Pin</td>
<td>Hair Pin</td>
</tr>
</tbody>
</table>

**CAUTION**

Keep the ROPS hardware correctly fastened. Do not do welding operations, drill, change or bend the ROPS. Replace damaged ROPS. Do not try to correct a damaged ROPS.

Every 400 hours, inspect the seat, seat belt, ROPS mounting hardware and ROPS frame for damage. Replace all damaged parts immediately. All replacement parts for the ROPS must be as specified in the Parts Manual.

Check and torque all ROPS hardware every 100 hours.

Only operate the mower with the ROPS in the folded position on flat and level surfaces. Do not operate the mower with the ROPS in the folded position on the slopes, near sharp edges or near water. **There is no roll over protection with the ROPS in the folded position.**

Folding the ROPS.

- a) Remove the hair pin and ROPS pin from both sides of the ROPS.
- b) Fold the ROPS toward the mower hood.
- c) Assemble the ROPS pin and hair pin to lock the ROPS in the folded position. **Never** wear the seat belt with the ROPS in the folded position.

**WARNING**

To prevent injury when you fold the ROPS, use caution to prevent your fingers crushed between moving and rigid parts of the ROPS.

Always wear the seat belt with the ROPS frame in the vertical and locked position.

**Never wear the seat belt with the ROPS in the folded position.**

**NOTICE**

To prevent damage to the ROPS or the mower hood, do not operate the mower without the ROPS frame locked in the vertical or folded position.
9.18 INSPECTING BLADES

Every 50 hours of operation or when the cutting unit is removed from the mower, carefully inspect the blades to make sure the blades are in good condition. Replace any blade that has bends, grooves or cracks.

⚠️ CAUTION
Be careful when you check blades to prevent pinching hands and fingers between ends of the blades.

⚠️ WARNING
Never try to correct or repair a damaged blade. Always replace a damaged blade.

The bends, grooves or cracks can cause a piece of the blade to become loose and be discharged from the mower. The broken blade pieces can cause injury to persons or property damage.

A bent blade can have a small crack that can increase and cause a piece of the blade to break. The bent blades can cause vibration and other stress on the mower.

The dust or sand particles can wear a dangerous groove in the blade between the air vanes and the flat part of the blade. The groove can quickly increase in size and allow a piece of the blade to break.

9.19 SHARPENING BLADES

Put a wooden block between the blade and cutting unit housing to prevent the blade to rotate.

⚠️ WARNING
The cutting unit blades can have sharp edges. To prevent injury, use caution when you service or hold the blade.

When you remove more than one half inch of material, the blade tip can break and be discharged from the mower. The broken blade pieces can cause injury to persons or property damage.

When you prepare or sharpen the blade, do not follow the original grind pattern. Grind new cutting edges at an angle. If the maximum of one half inch (1.3 cm) blade loss has occurred, do not sharpen more, replace the blade.

To prevent a blade that is not balanced, make sure an equal amount of material is removed from both ends of the blades. A blade that is not balanced will cause vibration and can damage the mower. Use a blade balancer to check the blade after you sharpen.

Torque center blade bolt to 67 to 83 ft.Lb. (91 to 112 Nm).
9 MAINTENANCE

9.20 ELECTRICAL SYSTEM

CAUTION

Always turn the ignition switch to the off position and remove the negative (BLACK) battery cable before you inspect or service the electrical system.

General precautions to decrease electrical problems are -

- Make sure that all the connections are clean and correctly fastened.
- Check the interlock system, fuses and circuit breakers at normal intervals. If the interlock system does not operate correctly and you cannot correct the problem, contact an authorized Jacobsen Dealer.
- Keep the wiring harness away from hot surfaces and moving parts.
- Make sure the seat switch wiring harness is connected to the mower wiring harness.
- Check the battery and the alternator.
- Do not wash or pressure spray around electrical connections and components.

9.20.1 CONTROLLERS

The mower's electrical system is monitored and controlled by the controller found beneath the operator seat. The controller has 2 light emitting diodes (LED) that can help to correct electrical system problems.

The mower engine is monitored and controlled by the engine controller found on the right side of the cowling. Two CAN bus connectors are found near the engine controller. The four pin connector is for the Kubota Engine Controller (ECU) diagnostic connector. The three pin connector is for the mower's controller (VCU) diagnostic connector.

NOTICE

For factory help with the Mower Controller problems, give the hardware revision and software version found on the mower’s controller. The replacement controllers with higher revision levels will be compatible.

For factory help or replacement of the Kubota Engine Controller, give the engine model and serial number found on a plate on the engine valve cover.
9.20.2 CIRCUIT BREAKERS

Open the two latches and remove the access panel on the right-side console wall to check the circuit breakers.

- **CB1** - 10 Amp Ignition Switch Circuit Breaker
- **CB2** - 10 Amp Combination Gauge Circuit Breaker
- **CB3** - 10 Amp 4WD-Cruise Control Circuit Breaker
- **CB4** - 30 Amp Accessory Relay Circuit Breaker
- **CB5** - 30 Amp Lights Circuit Breaker
- **CB6** - 10 Amp Air Ride Seat Circuit Breaker
- **CB7** - 5 Amp Start Interlock Circuit Breaker
- **CB8** - 25 Amp Main Relay Circuit Breaker
- **CB9** - 10 Amp ECU Circuit Breaker
- **CB10** - 5 Amp EGR Circuit Breaker

9.20.3 RELAYS

The relays are found below the control panel and the circuit breakers. Remove the control panel hardware and move the control panel away from the fuel tank as far as the wires will allow.

The R311T mower uses five different types of relays. The relays are almost the same in appearance and connection, but are not interchangeable. Always replace the relays with the correct relay.

- **K1** - 30 Amp SPST w/ Diode Engine Temp Relay (P/N 365963)
- **K2** - 30 Amp SPST w/ Diode Cruise Control Relay (P/N 365963)
- **K3** - 30 Amp SPST w/ Diode Hydraulic Oil Level Relay (P/N 365963)
- **K4** - 30 Amp SPST w/ Diode Horn Relay (P/N 365963)
- **K5** - 30 Amp SPST w/ Diode Accessory Relay (P/N 365963)
- **K7** - 30 Amp SPDT w/ Resistor Neutral Switch Relay (P/N 4284035)
- **K8** - 30 Amp SPDT w/ Diode Brake Switch Relay (P/N 4193880)
- **K9** - 30 Amp SPDT w/ Resistor Interlock Relay (P/N 4284035)
- **K10** - 30 Amp SPDT w/ Diode Fuel Cut-Off Relay (P/N 4193880)
- **K11** - 30 Amp SPDT w/ Diode Start Interlock Relay (P/N 4193880)
- **K13** - 40 Amp Main Relay (P/N 4271134)
- **K14** - 70 Amp Glow Plug Relay (P/N 4221100)
- **K15** - 40 Amp Start Relay (P/N 4271134)
- **K17** - 30 Amp SPST w/ Diode Left Wing Switch Relay (P/N 365963)
- **K18** - 30 Amp SPST w/ Diode Right Wing Switch Relay (P/N 365963)
9 MAINTENANCE

9.21 CARE AND CLEANING

Clean the mower and cutting units after each use. To prevent damage to the engine, do not wash the mower with the engine in operation. When possible, clean the mower with compressed air.

**NOTICE**

Do not wash any part of the mower that is hot. Do not use the high-pressure spray or steam. Use the cold water and automotive cleaners.

Use compressed air to clean the engine and the radiator fins. Do not pressure wash engine.

Use clean water to wash your equipment.

**NOTICE**

To use salt water or drain water is known to cause rust and corrosion of metal parts and can cause damage or failure. This damage is not included by the factory warranty.

Do not spray water at the instrument panel, ignition switch, controller or other electrical components or at bearing housings and seals.

Clean all plastic or rubber parts with a weak soap solution or use commercially available rubber cleaners.

To keep the original high polish of the fiberglass parts, wax with a good grade of one-step cleaner wax.

Repair damaged metal surfaces and use Jacobsen touch-up paint. Apply wax to the equipment for maximum paint protection.

**CAUTION**

To prevent fire, clean grass clippings and dirt from the cutting units, drives, engine and exhaust components.

**WARNING**

Never use your hands to clean cutting units. Use a brush to remove grass clippings from the blades. The blades are sharp and can cause injuries.
9.22 MOWER STORAGE

General
- Clean the mower and lubricate. Repair and paint damaged or open metal.
- Inspect the mower, tighten all hardware, replace worn or damaged components.
- Drain and fill the radiator.
- Clean the tires and keep the mower so that the load is not on the tires. If the mower is not on the jack stands, check tires at normal intervals and add air when needed.
- Keep the mower and all accessories clean, dry and protected from the elements. Never keep the mower near an open flame or spark which can cause ignition of the fuel or fuel vapors.

Battery
- Remove, clean and keep the battery in the upright position on a surface that is not metal in a cool dry location. To prevent increased battery discharge, do not keep the battery on a metal surface.
- Check and charge the battery every 60 to 90 days.
- Keep the battery in a cool dry location. To decrease the self discharge rate, the temperature must not be more than 80°F (27°C) or less than 20°F (-7°C).

Engine
- While the engine is warm, remove the drain plug, drain the oil from the crankcase and change the oil filter. Install the drain plug and fill the engine with oil. Torque the drain plugs to 22 ft. Lb. (30 Nm).
- Clean the outside surface of the engine. Paint bare metal or apply a thin layer of rust preventative oil.
- Add a fuel conditioner or biocide to prevent the fuel to become a gel or bacteria in the fuel. See your fuel supplier for instructions. Drain water from water separator.

Cutting Units
- Completely clean the cutting units. Repair and paint any damaged or bare metal surfaces.
- Lubricate all grease fittings and friction points.
- Apply a thin layer of rust preventative oil to the sharpened edges of the blades.

**CAUTION**
The cutting unit blades can have sharp edges. To prevent injury, use caution when you service or hold the blade.

After Storage
- Check and install the battery. If necessary, charge the battery.
- Check or service the fuel filter and air cleaner
- Check the radiator coolant level.
- Check the level of engine oil and hydraulic fluid.
- Fill the fuel tank with fuel. Bleed the fuel system.
- Make sure the tires are correctly inflated.
- Remove all oil from the blades. Adjust the cutting height.
- Start the engine at 1/2 throttle. Allow the engine to become warm and lubricated.

**WARNING**
Never operate the engine without enough ventilation or in an enclosed area. The carbon monoxide in the exhaust fumes can increase to dangerous levels.
10 ADJUSTMENTS

10.1 GENERAL PRECAUTIONS

**WARNING**

Before you clean, adjust or repair this equipment, push PTO switch to the OFF position, lower front and rear cutting units to the ground, turn on the parking brake switch, stop the engine and remove the key.

Make sure the mower is parked on a solid and level surface. Never work on a mower that is lifted only by the jack. Always use the jack stands.

A qualified technician must always do adjustments and maintenance. If the correct adjustments can not be made, contact your Jacobsen Dealer.

Inspect the equipment according to the maintenance schedule and keep complete records.

a. Keep the equipment clean.

b. Keep all moving parts correctly adjusted and lubricated.

c. Replace worn or damaged parts before you operate the mower.

d. Keep all fluids at the correct level.

e. Keep the shields in position and all hardware tight.

f. Keep the tires correctly inflated.

When you make the adjustments or repairs, do not wear jewelry or loose fitting clothing.

Refer to the illustrations in the Parts Manual for the removal and assembly of parts.

When you discard hazardous materials (batteries, lubricants, fuel, anti-freeze), follow your local, state or federal-recommended procedures.

10.2 ENGINE FAN BELT

Inspect and adjust a new belt after the first ten hours of operation. Check the belt every 100 hours after the first 10 hours.

Adjust the alternator position so that the belt moves 1/4 to 5/16 inch (0.6 to 0.8 cm) with a 20 lb. (89 N) push at the center point between pulleys. Refer to the Engine manual.

If the belt tension is not correct, loosen the alternator mounting bolts and adjust the alternator until the correct belt tension is set. Tighten the alternator mounting bolts.
10.3 NEUTRAL ADJUSTMENT

The neutral adjustment is set at the factory on all new mowers and replacement pumps. Additional adjustment is not necessary unless the pump was disassembled for repair or service. Neutral adjustment is set at the drive pump.

To adjust Neutral position -

a) Disconnect the pedal linkage from the pump.

b) Put the mower on jack stands. All four wheels must not touch the ground.

c) Make sure the tow valve is closed.

d) Disconnect the seat switch and assemble the jumper wire to the wiring harness.

e) Loosen the screws that hold the lever bracket enough to allow the bracket to move.

f) Make sure the parking brake switch is in the ON position, the PTO switch is in the OFF position and the traction pedal is in the NEUTRAL position. Start the engine.

g) Turn the parking brake switch to the OFF position. Adjust the lever bracket until the wheels do not turn. Stop the engine and tighten the bracket hardware to set the adjustment.

h) Remove the jumper wire and connect the seat switch to the wiring harness.

i) Lower the mower to the ground.

j) Connect the pedal linkage to the pump.

k) Check the neutral switch adjustment. See 10.7.

l) Check the reverse sensing switch adjustment. See 10.8.

m) Start the engine and check the operation of the traction pedal. When the pedal is in the NEUTRAL Position, the wheels must not turn.

**WARNING**

With the pedal linkage disconnected, hold the traction pedal in the NEUTRAL position until the engine is started.

When you turn the parking brake switch to the OFF position, the wheels will rotate. Use caution when you are near the wheels.
10 ADJUSTMENTS

10.4 FORWARD AND REVERSE SPEED ADJUSTMENT

The forward and reverse speed adjustments are made at the traction pedal. Set the forward speed before you adjust the reverse speed.

To adjust the forward speed -

1. Make sure that the neutral adjustment is set. Rotate the mow speed stop to the transport position. See 6.4
2. Start the engine and check the forward travel speed with the engine at full throttle. The correct forward transport speed is 14.9 mph (24 km/hr).
3. Stop the engine. To adjust the forward speed, disconnect the rod end from the pedal and loosen the jam nut. Turn the eye bolt to the right to decrease the forward speed. Turn the eye bolt to the left to increase speed. Tighten the jam nut to set the adjustment. Connect the rod end to the pedal.
4. Adjust the neutral switch.
5. Check the forward transport speed. If necessary, adjust the eye bolt and the neutral switch until forward transport speed is 14.9 mph (24 km/hr).

10.5 MOW SPEED

The cutting quality is improved at speeds lower than the transport speed of the mower. A mow speed of 6 to 7 mph (10 to 11 km/hr) is set at the factory and is correct for most grass conditions. The local turf condition can need a different speed.

To adjust the mow speed, loosen the flange nut and adjust the pedal stop. Move the pedal stop closer to the pedal to decrease the mow speed. Move the pedal stop closer to the floorboard to increase the mow speed. Tighten the flange nut to hold the adjustment in position.

10.6 REVERSE SPEED

The reverse speed is set at the pedal.

1. Set the forward speed.
2. Start the engine and check the reverse speed with the engine at full throttle. The correct reverse speed is 6 mph (9.6 km/hr).
3. Stop the engine. Loosen the flange nut on reverse pedal stop. Adjust position of pedal stop to set the reverse speed. Turn pedal stop to the right side to increase speed. Turn pedal stop to the left side to decrease speed. Tighten the nut to set the adjustment.
4. Start the engine and check the reverse speed. Repeat the adjustment until reverse speed is 6 mph (9.6 km/hr).
10.7 NEUTRAL SWITCH ADJUSTMENT

Adjust the neutral switch after the neutral adjustment or forward speed adjustment is done.

When the traction pedal is in the NEUTRAL position, the rod end bolt must be over the sensing part of the switch. If necessary, loosen switch hardware and adjust the position of the switch.

10.8 REVERSE SENSING SWITCH

Adjust the reverse sensing switch after the neutral adjustment or forward speed adjustment is done.

Loosen the switch hardware and adjust the switch as required. Adjust the switch so that:

- When the switch roller touches the block and the traction pedal is in the Neutral position, the switch contacts are open.
- When the traction pedal is moved in the forward direction, the switch contacts must close.

10.9 WEIGHT TRANSFER ADJUSTMENT

The weight transfer valve is for transfer the weight from the cutting units to the mower. When you adjust the weight transfer valve, the lower time of the cutting units will change and the ground pressure at each tire. The weight transfer valve is found on the steering tower.

To set the weight transfer pressure:

1. Loosen the thin knob and adjust the large knob to increase or decrease the pressure applied to the cutting units. The knob adjustment will change all three mowers.
2. Increased pressure applied to the cutting units will decrease the mower’s traction and improve the cutting units contact with the ground. Decreased pressure applied to the cutting units will improve the mower’s traction, but can cause the cutting units to lift off the ground.
3. Tighten the thin knob to set the adjustment.

**NOTICE**

If the cutting unit weight is set too low, the wing cutting units will not lower to the ground.
10 ADJUSTMENTS

10.10 STEERING ADJUSTMENTS

Adjust the Steering Toe-In.

a) Turn the rear wheels to the straight position.
b) Loosen the clamp bolts on both ends of the tie rod.
c) Rotate the tie rod to get the correct toe-in. The toe-in must not be more than +1/16 inch (+ 0.15 cm).
d) Tighten the clamp bolts.

Adjust the Steering Turn Radius.

The steering cylinder must be adjusted for equal turn radius in both directions. Make sure that the ball joints are threaded equally into both ends of the steering cylinder.

a) Loosen the jam nuts and turn stop bolts against the mounting block.
b) Disconnect the steering cylinder ball joints from the steering arm and the rear axle.
c) Loosen the clamp bolt on lock clamps. Equally adjust the ball joints as required to increase or decrease the distance between the ball joints. Increased distance between ball joints will increase the left-side turn radius. Decreased distance between ball joints will increase the right-side turn radius.
d) Tighten the clamp bolts.
e) Check the turn radius in both directions. Repeat the adjustment as required.

Adjust the Steering Stop.

a) After the toe-in and turn radius are adjusted, adjust the stop bolts.
b) Turn the steering wheel to the left side to extend the steering cylinder rod. When the steering cylinder rod is completely extended, adjust the left-side stop bolt to touch the steering arm.
c) Turn the steering wheel to the right side to retract the steering cylinder rod. When the steering cylinder rod is completely retracted, adjust the right-side stop bolt to touch the steering arm.
d) Tighten the stop bolt jam nuts.

**NOTICE**

The stop bolts must not prevent the travel of the steering cylinder rod stroke.
10.11 HEIGHT OF CUT

The height of cut for the cutting unit is adjusted from 1 to 5-1/2 inch (2.5-14.4 cm) in 1/2 inch (1.3 cm) steps. The height of cut result can be different from the heights given because of the condition of the turf and other conditions.

**NOTICE**

When cutting rough areas, a lower height of cut can cause scalping. Adjust the height of cut to prevent damage to the turf.

Park the mower on a flat and level surface. Put 9 inch (22.7 cm) supports below the cutting units. Lower the cutting units on the 9 inch (22.7 cm) supports. Turn the parking brake switch to the ON position, stop the engine and remove the key.

**WARNING**

To prevent injury, make sure the cutting units are on the supports. The supports will prevent the cutting units to lower accidentally while you adjust the height of cut.

Make sure the parking brake is engaged, stop the engine and remove the key before you make adjustments to the cutting units.

Refer to the decal on the cutting units or the chart below to set the height of cut.

**To change the height of cut -**

- a. Check the caster arm mounting position. For height of cut from 1 to 3 inches (2.5 to 7.6 cm), use the upper holes in the deck plates (Position A) to install the caster arms. For height of cut more than 3 inches (7.6 cm), use the lower holes in the deck plates (Position B) to install the caster arms.
- b. Remove the retaining ring pins, washers and any spacers above the pivot block. Remove the caster wheel yoke from the pivot block.
- c. Install the correct number of 1/2 inch (1.3 cm) spacers and one thin spacer onto the caster yoke.
- d. Slide the caster wheel yoke into the pivot block. Place any remaining 1/2 inch (1.3 cm) spacers on caster yoke shaft above the pivot block.
- e. Put the thrust washer(s) and large washer on the top of the spacers. The large washer is always on the top, under the retaining ring pins. Assemble the retaining ring pins.
- f. Remove the snap pins and the clevis pins from the height of cut plates. Insert the clevis pins into the correct hole for the height of cut.
- g. Repeat for the remaining caster wheels.
## Height of Cut

<table>
<thead>
<tr>
<th>Height of Cut</th>
<th>Spacers Below Pivot Block</th>
<th>Caster Arm Position</th>
<th>Pin Mounting Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 inch (1.9 cm)</td>
<td>0</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>1-1/2 inch (3.8 cm)</td>
<td>1</td>
<td>A</td>
<td>2</td>
</tr>
<tr>
<td>2 inch (5.1 cm)</td>
<td>2</td>
<td>A</td>
<td>3</td>
</tr>
<tr>
<td>2-1/2 inch (6.3 cm)</td>
<td>3</td>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>3 inch (7.6 cm)</td>
<td>4</td>
<td>A</td>
<td>5</td>
</tr>
<tr>
<td>3-1/2 inch (8.9 cm)</td>
<td>0</td>
<td>B</td>
<td>6</td>
</tr>
<tr>
<td>4 inch (10.2 cm)</td>
<td>1</td>
<td>B</td>
<td>7</td>
</tr>
<tr>
<td>4-1/2 inch (11.4 cm)</td>
<td>2</td>
<td>B</td>
<td>8</td>
</tr>
<tr>
<td>5 inch (12.7 cm)</td>
<td>3</td>
<td>B</td>
<td>9</td>
</tr>
<tr>
<td>5-1/2 inch (13.3 cm)</td>
<td>4</td>
<td>B</td>
<td>10</td>
</tr>
</tbody>
</table>

---

**Diagram:**

- Front Deck HOC Plates
- Caster Arm Deck Plates
- Wing Deck HOC Plates
10.12 LEVEL THE FRONT DECK

Before the front deck is leveled, inflate the mower tires and caster wheels to the correct pressure. The deck level is related to the tire pressure.

Set the cutting height of the front mower to 5-1/2 in. (14.0 cm).

Rotate all blades so that one end of the blade is toward the front.

Completely lower the front deck. Measure from the ground to the front end of the blade and from the ground to rear end of the blade. The rear end of the blade must be 1/8 in. (0.3 cm) higher than the front end of the blade.

Add or remove the shims as required between the bumper plate and the lift arm.

When the front mower is level, adjust the cutting height. If there is a change to the tires, check the front deck level.

10.13 FRONT DECK SERVICE POSITION

Lift and tilt the front deck to give access to the bottom of the front deck and blades for service. Make sure to disengage all drives, engage the parking brake, stop the engine and remove the ignition key before you service the deck.

To tilt the front deck to the service position:

a. Completely lift the front deck. Stop the engine.
b. Remove the snap rings and clevis pins from the front deck. Carefully lift the deck to a vertical position.
c. Use a clevis pin and snap ring on the left side lift arm to fasten the deck in the service position.
d. Start the engine and lower the front deck to the ground. Stop the engine and remove the ignition key.

To return deck to service:

Start the engine and completely lift the front deck. Stop the engine. Remove the pin from the left side lift arm and slowly lower the front deck.

Install the height of cut pins in the correct set of holes. Start the engine and lower the front deck.
10 ADJUSTMENTS

10.14 TORQUE SPECIFICATION

NOTICE

The torque values included in these charts are approximate and are for reference. Use these torque values at your risk. Jacobsen is not responsible for any loss, claim or damage caused by these charts. Always use caution with torque values.

Jacobsen uses Grade 5 (Inch) and Grade 8.8 (Metric) Plated bolts, unless a note is shown. Always check the marks on the head of the bolts for the bolt grade. For tightening plated bolts, use the value given for lubricated hardware.

<table>
<thead>
<tr>
<th>SIZE</th>
<th>UNITS</th>
<th>GRADE 5</th>
<th>GRADE 8</th>
<th>GRADE 5</th>
<th>GRADE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6-32</td>
<td>in. lb. (Nm)</td>
<td>20 (2.3)</td>
<td>30 (4.4)</td>
<td>37 (50.1)</td>
<td>50 (67.8)</td>
</tr>
<tr>
<td>#8-32</td>
<td>in. lb. (Nm)</td>
<td>24 (2.7)</td>
<td>45 (5.1)</td>
<td>57 (77.2)</td>
<td>75 (101)</td>
</tr>
<tr>
<td>#10-24</td>
<td>in. lb. (Nm)</td>
<td>35 (4.0)</td>
<td>65 (7.3)</td>
<td>82 (111)</td>
<td>109 (148)</td>
</tr>
<tr>
<td>#10-32</td>
<td>in. lb. (Nm)</td>
<td>40 (4.5)</td>
<td>50 (5.7)</td>
<td>85 (111)</td>
<td>118 (156)</td>
</tr>
<tr>
<td>#12-24</td>
<td>in. lb. (Nm)</td>
<td>50 (5.7)</td>
<td>65 (7.3)</td>
<td>109 (148)</td>
<td>156 (209)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIZE</th>
<th>UNITS</th>
<th>GRADE 5</th>
<th>GRADE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>#6-32</td>
<td>in. lb. (Nm)</td>
<td>75 (8.4)</td>
<td>107 (12.1)</td>
</tr>
<tr>
<td>#8-32</td>
<td>in. lb. (Nm)</td>
<td>85 (9.6)</td>
<td>120 (13.5)</td>
</tr>
<tr>
<td>#10-24</td>
<td>in. lb. (Nm)</td>
<td>157 (17.7)</td>
<td>220 (24.8)</td>
</tr>
<tr>
<td>#16-18</td>
<td>in. lb. (Nm)</td>
<td>173 (19.5)</td>
<td>245 (27.6)</td>
</tr>
<tr>
<td>#3/8-12</td>
<td>ft. lb. (Nm)</td>
<td>23 (31.1)</td>
<td>32 (43.3)</td>
</tr>
<tr>
<td>#3/8-16</td>
<td>ft. lb. (Nm)</td>
<td>26 (35.2)</td>
<td>35 (47.4)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SIZE</th>
<th>UNITS</th>
<th>GRADE 5</th>
<th>GRADE 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4</td>
<td>Nm (in. lb.)</td>
<td>1.80 (16)</td>
<td>4.63 (41)</td>
</tr>
<tr>
<td>M5</td>
<td>Nm (in. lb.)</td>
<td>2.40 (21)</td>
<td>6.18 (54)</td>
</tr>
<tr>
<td>M6</td>
<td>Nm (in. lb.)</td>
<td>3.05 (27)</td>
<td>6.63 (59)</td>
</tr>
<tr>
<td>M8</td>
<td>Nm (in. lb.)</td>
<td>7.41 (65)</td>
<td>19.1 (69)</td>
</tr>
<tr>
<td>M10</td>
<td>Nm (ft. lb.)</td>
<td>14.7 (11)</td>
<td>37.8 (29)</td>
</tr>
<tr>
<td>M12</td>
<td>Nm (ft. lb.)</td>
<td>25.6 (19)</td>
<td>66.0 (48)</td>
</tr>
<tr>
<td>M14</td>
<td>Nm (ft. lb.)</td>
<td>40.8 (30)</td>
<td>105 (77)</td>
</tr>
</tbody>
</table>

10.15 SPECIFIC TORQUE

Front Wheel Bolts (10) 40-50 ft. lb. (54-68 Nm)
Steering Cylinder Ball Joints (2) 40 ft. lb. (54 Nm)
Blade Adapter Bolts (14) 35-40 ft. lb. (47-54 Nm)
Rear Wheel Bolts (10) 40-50 ft. lb. (54-68 Nm)
Tie Rod Ball Joints (2) 30 ft. lb. (40 Nm)
Center Blade Bolts (7) 67-83 ft. lb. (91-112 Nm)
## 11.1 GENERAL

The problem solution chart lists basic problems that can occur during start and operation of the mower. For complete information about the hydraulic and electrical systems, contact your Jacobsen Dealer.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible Cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine will not start</td>
<td>1. Parking brake switch OFF, traction pedal out of neutral, cruise control switch ON or PTO switch ON.</td>
<td>1. Check the interlock and start procedure.</td>
</tr>
<tr>
<td></td>
<td>2. Battery low on charge or has defects.</td>
<td>2. Inspect the battery condition and connections.</td>
</tr>
<tr>
<td></td>
<td>3. Fuel tank empty or dirty. Water in the fuel, air in fuel lines.</td>
<td>3. Fill the tank with clean fuel. Change the fuel filter. Drain water from water separator. Bleed the fuel system.</td>
</tr>
<tr>
<td></td>
<td>4. Circuit Breaker tripped</td>
<td>4. Reset circuit breaker, inspect electrical system</td>
</tr>
<tr>
<td></td>
<td>5. Relay has defects.</td>
<td>5. Test and replace the relay</td>
</tr>
<tr>
<td></td>
<td>6. Neutral switch not adjusted correctly or has defects.</td>
<td>6. Adjust or replace the neutral switch</td>
</tr>
<tr>
<td>Engine is difficult to start or engine runs rough</td>
<td>1. Level of fuel is low, fuel or fuel filter not clean.</td>
<td>1. Fill with clean fuel. Change fuel filter. Drain water from water separator, bleed fuel system.</td>
</tr>
<tr>
<td></td>
<td>2. Air cleaner dirty</td>
<td>2. Inspect and replace air filter.</td>
</tr>
<tr>
<td>Engine Stops</td>
<td>1. Fuel tank empty.</td>
<td>1. Fill with clean fuel and bleed the fuel system.</td>
</tr>
<tr>
<td></td>
<td>2. The interlocks not set before you leave the seat</td>
<td>2. Turn the parking brake ON and turn the PTO switch OFF before you leave the seat.</td>
</tr>
<tr>
<td>The engine temperature more than 230° F (110° C).</td>
<td>1. Level of coolant is low</td>
<td>1. Inspect and add coolant</td>
</tr>
<tr>
<td></td>
<td>2. Air intake decreased.</td>
<td>2. Clean air intake at radiator.</td>
</tr>
<tr>
<td></td>
<td>3. Engine fan belt loose or broken.</td>
<td>3. Tighten or replace the belt.</td>
</tr>
<tr>
<td>The battery does not hold a charge.</td>
<td>1. Loose battery cables or corrosion on the battery terminals.</td>
<td>1. Inspect and clean battery terminals, tighten battery cables.</td>
</tr>
<tr>
<td>The battery light is illuminated.</td>
<td>2. Low electrolyte.</td>
<td>2. Fill the battery.</td>
</tr>
<tr>
<td></td>
<td>3. Engine fan belt loose or broken.</td>
<td>3. Tighten or replace the belt.</td>
</tr>
<tr>
<td></td>
<td>4. Alternator has defects.</td>
<td>4. See the Engine Manual.</td>
</tr>
<tr>
<td></td>
<td>5. Battery has a dead cell.</td>
<td>5. Load test the battery.</td>
</tr>
<tr>
<td>Decks cut at different levels.</td>
<td>1. Height of Cut not adjusted correctly.</td>
<td>1. Inspect height of cut adjustment. Make sure same number of spacers below deck housing on all spindles.</td>
</tr>
<tr>
<td></td>
<td>2. Engine speed below specification.</td>
<td>2. Check the engine speed. Run the engine at full throttle.</td>
</tr>
<tr>
<td></td>
<td>3. Mow speed not adjusted for the turf conditions</td>
<td>3. Adjust the mow speed for best cut.</td>
</tr>
</tbody>
</table>
12 QUALITY OF CUT

12.1 QUALITY OF CUT PROBLEM SOLVING

Make a “test cut” to check the performance of the mower before you start the repairs.

This area must have turf conditions that are known and do not change across the area. This type of area allows an accurate inspection of the performance of the mower to be made.

Another “test cut” must be done after the repairs or adjustments to confirm the mower’s performance.

Before you do a “test cut” to show the appearance and performance of the mower, the following items must be confirmed. These items make sure that the “test cut” is accurate.

1. Cut (Ground) Speed
2. Blade Sharpness
3. Height-of-Cut (HOC)
4. Caster Wheel Bearing Condition
5. Blade Speed

12.2 WASHBOARDING

Washboarding is a repeated pattern of different cutting heights, that causes an appearance that is like a wave. In most cases, the wave tip-to-tip distance is approximately 6—8 in. (15—20 cm). A change in the color (from light-to-dark) is also seen.

This cause of this condition can be a movement from side-to-side in the cutting units (s). This condition is found on mowers with cutting units held under the mower, but other cause can give the same result.

Another cause of Washboarding is differences in the type of turf.

<table>
<thead>
<tr>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting units have too much or too little weight on</td>
<td>Adjust the weight transfer valve to increase weight on the cutting units. See 10.9.</td>
</tr>
<tr>
<td>them.</td>
<td></td>
</tr>
</tbody>
</table>
12.3 STEP CUTTING

Step cutting occurs when grass is cut higher on one side of a cutting unit than the other side. Step cutting can occur when one cutting unit is higher than another cutting unit.

The wear of mechanical parts or an incorrect roller adjustment can cause step cutting.

<table>
<thead>
<tr>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOC (height-of-cut) settings are different from one side of a cutting unit to the other side or from one cutting unit to another unit.</td>
<td>Check HOC adjustment of cutting units. See 10.11</td>
</tr>
<tr>
<td>Worn deck caster wheel bearings.</td>
<td>Check and replace the bearings in the roller and the deck caster wheels.</td>
</tr>
<tr>
<td>Mower ride height is uneven side to side.</td>
<td>Check and adjust tire inflation pressure.</td>
</tr>
</tbody>
</table>
Scalping is a condition in which areas of grass are cut shorter than the adjacent areas. The area can be light green or brown. A low HOC setting or turf that is not level can cause scalping.

**NOTE:** Arrow indicates direction of travel.

<table>
<thead>
<tr>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOC (height-of-cut) settings are lower than normal.</td>
<td>Check and adjust the HOC settings. See 10.11</td>
</tr>
<tr>
<td>Turf is not level and the mower can not follow the turf.</td>
<td>Change the direction of cut.</td>
</tr>
<tr>
<td>Grass is higher than the cutting unit capacity.</td>
<td>Cut the grass more frequently.</td>
</tr>
<tr>
<td>Cut (ground) speed is higher than the mower can cut.</td>
<td>Reduce the cut (ground) speed.</td>
</tr>
</tbody>
</table>
12.5 STRAGGLERS

Stragglers are separated blades of grass that are not cut, or are cut incorrectly.

**NOTE:** Arrow indicates direction of travel.

<table>
<thead>
<tr>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edge of the cutting blade(s) are not sharp.</td>
<td>Sharpen the blade(s). <strong>See 9.19</strong></td>
</tr>
<tr>
<td>Cut (ground) speed is higher than normal</td>
<td>Reduce the cut (ground) speed.</td>
</tr>
<tr>
<td>The grass is higher than the level at which the mower can cut correctly.</td>
<td>Cut the grass more frequently.</td>
</tr>
<tr>
<td>Cut in the same direction.</td>
<td>Change the direction of cut more frequently.</td>
</tr>
<tr>
<td>The blade speed is too slow</td>
<td>Operate the mower with the engine at full throttle. Inspect and repair the hydraulic system.</td>
</tr>
</tbody>
</table>
A streak is a line of grass that is not cut. The cause of a streak can be a damaged blade.

**Probable Cause** | **Remedy**
---|---
Damaged blade(s). | Replace the blade(s). See 9.18
The mower turns at a rate that is faster than the mower can turn and cut correctly. The cutting units do not overlap around turns or on side hills. | Turn at a speed that will allow the cutting units to overlap. Change the direction of cut or pattern on the side hills.
The tires compresses the grass before the grass is cut. | Check and adjust the tire inflation pressure.
The blades are not installed correctly. | Check to make sure the correct blade is installed on each motor.
12.7 WINDROWING

Windrowing is the deposit of clippings increased at one end of cutting unit(s) or between cutting units. Windrowing can make a line in the direction of travel.

NOTE: Arrow indicates direction of travel.

<table>
<thead>
<tr>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>The grass is higher than the level at which the mower can cut correctly.</td>
<td>Cut the grass more frequently.</td>
</tr>
<tr>
<td>Mowing the grass while grass is wet.</td>
<td>Cut when grass is dry.</td>
</tr>
</tbody>
</table>
Mismatched cutting units is a pattern of different cutting heights, that gives the grass a stepped cut appearance. This appearance is normally because of a mismatched HOC (height-of-cut) adjustment from one cutting unit to another unit.

NOTE: Arrow indicates direction of travel.

<table>
<thead>
<tr>
<th>Probable Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOC is different from one cutting unit to another unit.</td>
<td>Check and adjust the HOC on cutting units to same height. See 10.11</td>
</tr>
<tr>
<td>Difference in cutting unit motor speeds.</td>
<td>Check the operation of cutting unit motor(s). Repair or replace as necessary.</td>
</tr>
<tr>
<td>Difference in mower ride height side to side.</td>
<td>Check and adjust the tire inflation pressure.</td>
</tr>
<tr>
<td>The front cutting unit is not level.</td>
<td>Check and adjust for even mower weight distribution.</td>
</tr>
<tr>
<td></td>
<td>Level front cutting unit. See 10.11</td>
</tr>
</tbody>
</table>
Europe & Rest of The World Except North & South America

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