Safety Operation and Maintenance Manual

AR Series Mower

10029628 - AR730 T4F
Series:BAM

10029629 - AR730 Stage V
Series:BAN

Kubota® V2403-T-E4B T4F/V2403-CR-TE5B-TXN-1
4WD
Reversing Fan

⚠ WARNING

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

GB

RJL AFCB

673834-B

1 CONTENTS

FOREWORD

This manual contains adjustment, maintenance, and troubleshooting instructions for your new Jacobsen machine. This manual should be stored with the equipment for reference during operation.

Before you operate your machine, you and each operator you employ should read the manual carefully in its entirety. By following the safety, operating and maintenance instructions, you will prolong the life of your equipment and maintain its maximum efficiency.

If additional information is needed, contact your Jacobsen Dealer.

SERVICE SUPPORT MATERIAL

Part No.	Description
673834	Safety, Operation & Maintenance Manual
673837	Parts Manual
4299117	Kubota V2403-T-E4B Engine Parts Manual
689336	Kubota V2403-CR-TE5B Engine Parts Manual

Part No.	Description

Blade Recommendations

AR730 - 23” BLADE RECOMMENDATION			
	DISCHARGE MODE	MULCH MODE	COMMENTS
Vortex Combo	Best cut quality; good distribution	Good hiding of clippings for cool and warm season grasses; best quality cut	Best all around blade in cool and warm season grasses
692774	Good all around blade	Sometimes best blade for Bermuda	
Extreme Mulch	In certain conditions best distribution, but some degradation in cut quality	Best blade for hiding, but some degradation in cut quality	Performance is very dependent on specific local conditions
692775	Often the best blade for Bermuda	Often the best blade for Bermuda	
High Lift	Use for very heavy conditions	Not recommended	Not Available for European Market
692771	Helps with distribution in cool season grass, especially in the Spring	Not recommended	

Note: * These recommendations are intended as an initial guide for blade selection.
Grass type, regional climates, height of cut, and customer preferences will affect the actual blade choice.

** Due to sound level regulations, some blades may not be available in all regions. Please check with your local dealer for availability.

CALIFORNIA PROPOSITION 65

WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 IMPORTANT

The AR730 with a Diesel engine is a self propelled rotary mower with hydraulic systems to power the traction drive, the cutting implement lift and lower, the cutting implement drives and the steering.

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

This Manual is part of the machine and must stay with the machine always. The suppliers of new, or used, machines need to keep this documentation and supply the owners with a copy.

This equipment is intended for turf care and maintenance, primarily for grass cutting. Accessories approved by Jacobsen may support alternate secondary functionality to allow more versatile use of the equipment.
Certifications of accessories for global regional use is subject to local regulations.

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 machine that are not approved by the manufacturer. This type of change can release the manufacturer from the liability for any damage or injury.

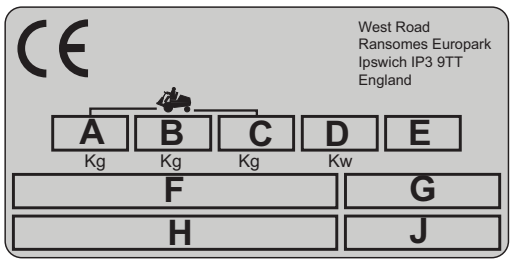
Discard worn parts in accordance with all local environment protection regulations. Use the local systems available in the country where the machine is used, for these recycled materials. When the machine is at its end of life, there are guidelines in this manual for the removal of the machine from use.

Use only Jacobsen Genuine spare parts to meet the machine type approval regulations specified by the European Union.

2006/42/EC

These instructions are the Original instructions confirmed by Jacobsen

1.2 PRODUCT IDENTIFICATION

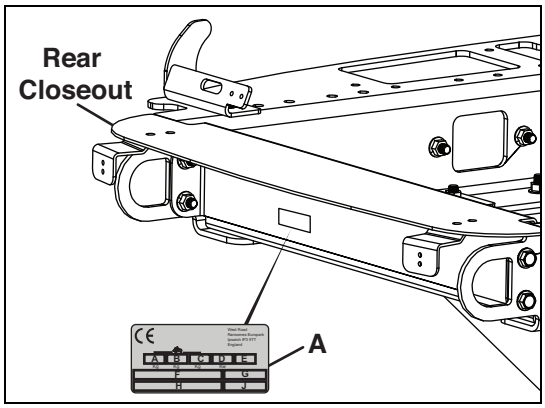


Mower Serial number plate

A. Maximum front axle load in Kg (for machines being driven on the highway)
B. Unladen weight, (No cutting implements or fuel (mass) in Kg
C. Maximum rear axle load in Kg (for machines being driven on the highway)
D. Power in Kw
E. Date code
F. Machine type (Designation)
G. Product code
H. Product name
J. Serial number

Location of Mower Serial number plate

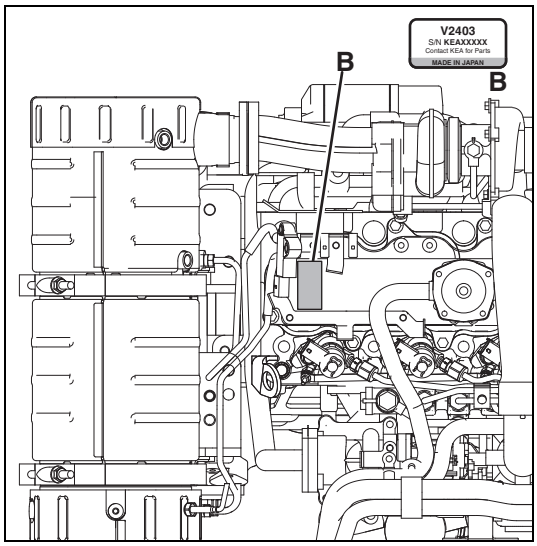
The serial number plate (A) is found on the rear closeout.



Engine Identification

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

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



1.3 KEY NUMBERS

Record the mower and the engine serial numbers.

The serial numbers are found on the serial plates and the engine serial number is on the valve cover.

Machine Serial Number: . . . . . .

Engine Serial Number: . . . . . .

1.4 PARTS MANUAL

To refer to the parts list for this mower you have two options:

1. Website – www.jacobsen.com. Select the “ONLINE PARTS LOOK-UP” tab. These pages will show the parts list and the line drawings you need to help with the identification of spare parts.
2. Website – www.jacobsen.com. Select the “MANUALS” tab. You have the option to view or “Download” a PDF version of the parts manual.

1.5 GUIDELINES FOR THE DISPOSAL OF SCRAP PRODUCTS

1.5.1 DURING SERVICE LIFE

All the used fluids and parts must be controlled as hazardous materials. Recommended procedures must be followed for their safe removal.

If a fluid leak occurs, contain the spill to make sure that the leak does not flow into the ground or drainage system. Follow the regulations in force to make sure that leaks are controlled.

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

When the machine completes its full service life, the following actions must be taken.

1.5.2 END OF SERVICE LIFE

These guidelines must be used with applicable Health, Safety and Environmental laws. Always use the approved local waste disposal and agencies for recycled materials.

- Park the machine in an applicable area to use all of the necessary lifting equipment.
- Use correct tools and Personal Protective Equipment (PPE) and take instruction from the technical manuals applicable to the machine.
- Remove and store correctly
  1. Batteries
  2. Fuel
  3. Engine coolant
  4. Oils
- Read the Technical Manual before you begin to disassemble the machine. Plan the disassembly, give attention to parts that are in a state of mechanical pressure or contain stored energy e.g springs.
- Items that continue to have a service life must be separated and returned to the local dealer.
- Items that are worn must be separated into the material groups and removed according to the agencies for the recycled materials that are available. Common examples.
  - Steel
  - Non ferrous metals
    - Aluminum
    - Brass
    - Copper
  - Plastic materials
    - Identified
    - Can be recycled
    - Can not be recycled
    - Not identified
  - Rubber
  - Electrical and Electronic Components
- Some parts are not easily separated e.g. Hydraulic hoses. These materials must be added to the “General discarded materials” area.
- Do not burn discarded materials.

Change the machinery records to show that the machine is not in operation and is discarded. Supply this serial number to The Jacobsen Warranty Department to close their records.

2.1 HOW TO OPERATE SAFELY

⚠ WARNING

EQUIPMENT OPERATED INCORRECTLY OR WITHOUT TRAINING CAN BE DANGEROUS.

Know the location and correct operation of controls. Operators without experience must receive instruction from a person trained in the correct operation of the equipment before being allowed to operate the mower.

Only use parts, accessories and attachments approved by Jacobsen.

2.1.1 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 Ransomes Jacobsen website.

a Read all of the instructions for this mower carefully. Know the controls and the correct operation of the equipment.

b Children or other people who do not understand these instructions must not use the mower. The local regulations can limit the age of the operator.

c Never use a mower near bystanders, including children or animals.

d Remember that the operator or owner is responsible for accidents or hazards that occur to other people or their property.

e Never carry passengers.

f Never allow anyone to operate or service the mower or its attachments without correct instructions.

g Do not operate equipment while tired, sick or after you use alcohol or drugs.

2.1.2 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 labels, 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.

2.1.3 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 bystanders 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 anyone standing 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 implements.

e Do not use 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 implements 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 mow 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 bystanders or allow bystanders 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.

2.1.4 ROPS

a The ROPS is a safety device. Always use the seat belt when you operate a mower equipped with a ROPS. 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.

2.1.5 SAFE HANDLING OF FUELS

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

b Never use 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. Never remove the fuel cap or add fuel to the mower when the engine is in operation or while the engine is hot.

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.

2.1.6 MAINTENANCE AND STORAGE

a Before you clean, adjust or repair this equipment, push mow switch to the OFF position, lower the cutting implement 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 a jack. Always use jack stands.

d Never allow anyone 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 implement 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 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 labels. Only use parts, accessories and attachments approved by Jacobsen.

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

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

2.1.7 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 be able to carry the weight of the mower.

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

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.

2.1.8 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 is engaged.

b The mow switch is in the OFF position.

c 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 engaged.

b The mow 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.
4. Never carry passengers.
5. Never operate the equipment without a correctly fastened grass deflector in position.

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

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

⚠ WARNING

Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system
- Do not idle the engine except when necessary.

For more information go to
www.p65warnings.ca.gov/diesel

⚠ WARNING

To prevent injury from the hot oil at high pressure, do not use your hands to check for oil leaks. make sure that you use paper or cardboard.

Release of hydraulic fluid at high pressure has enough force to enter through the skin. if the fluid enters through the skin, the fluid must be surgically removed within hours by a specialist doctor or gangrene may result.

⚠ WARNING

When the machine is driven off-road, a seat belt must be worn at all times.

This warning is because a seat belt must be worn with a ROPS to follow the Machinery Directive,

2006/42/EC Sections 3.2.2, Seating & 3.4.3, Rollover. (ANSI B71.4-2012 section 20.7)

Jacobsen recommends that the owner/user of the machine completes a local risk assessment of the machine to find any conditions that do not follow this rule. e.g. when you drive the machine next to water or on the highway.

⚠ WARNING

Explosive gases are released by batteries. The battery contains corrosive acid and supplies an electrical current that is high enough to cause burn injuries to the body.

⚠ WARNING

You must not use this machine to tow other mowers or vehicles.

⚠ WARNING

Ear protection must be worn when you operate machines with an operator ear noise level of more than 85 db(a) leq.

⚠ WARNING

Vibration Exposure Limits

Exposure limits are calculated as a combination of the vibration level (magnitude) of the tool and the Daily Exposure Time (Trigger Time). E.g. A product with 5m/s² vibration can be used up to 2 hours/day to reach the EAV and up to 8 hours/day to reach the ELV.

Exposure Action Value (EAV) - Daily vibration exposure A(8) = 2.5m/s²

Where daily vibration exposure A(8) is below 2.5m/s² the risk is relatively low and no action need be taken

Exposure Limit Value (ELV) - Daily Vibration Exposure A(8) = 5.0m/s²

If several tools are used the exposure values must be combined:

Total exposure is then the combined value of the activities

⚠ WARNING

Never mow if there is a risk of lightning or when you hear thunder. If you are in the middle of mowing, stop in a safe place, turn off the engine and go inside a building.

⚠ CAUTION

When you do any welding on the machine, the battery, controller and display units must be disconnected before you start. You must not open the controller. If the controller is opened, this can cancel all of the warranties and can cause the failure of the machine.

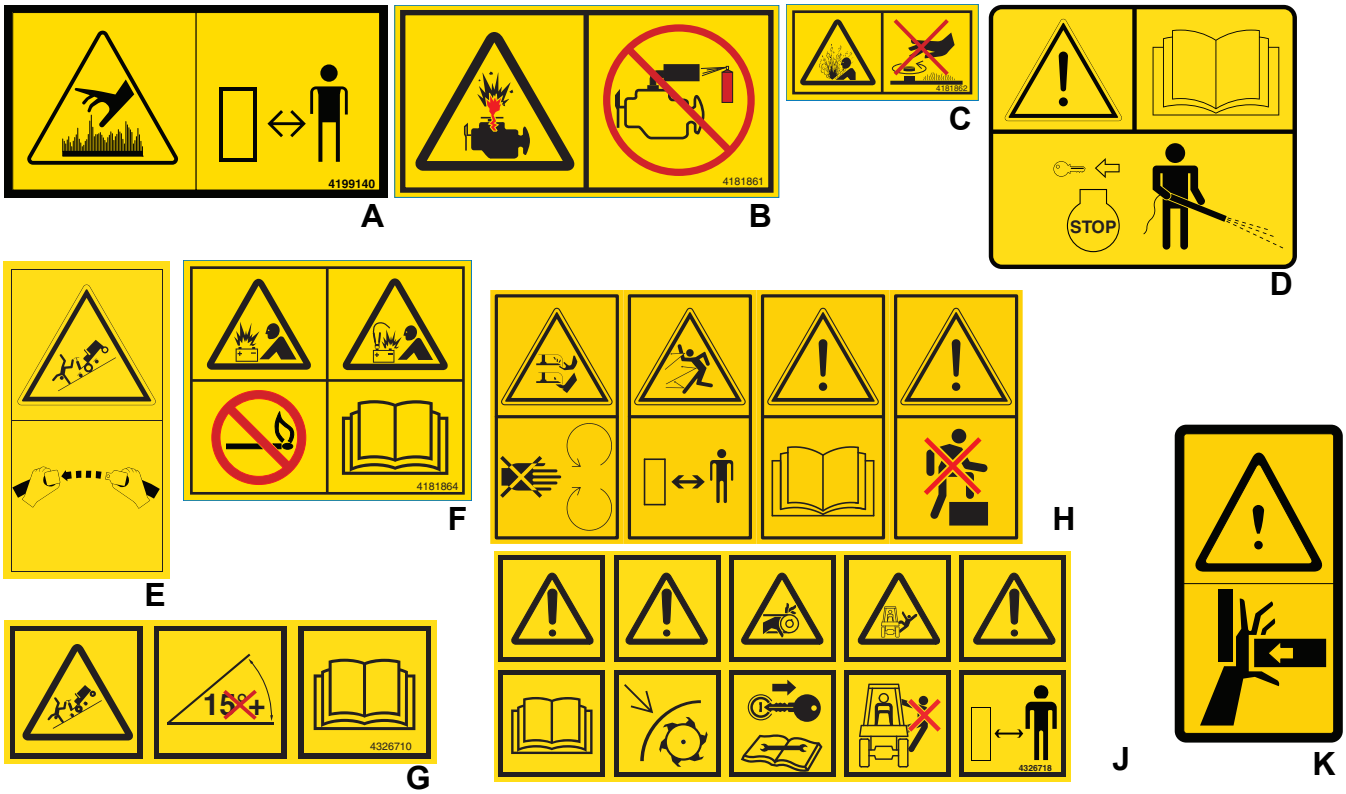
⚠ CAUTION

Personal Protective Equipment (PPE), For example safety glasses, leather work shoes or boots, a hard hat, leather work gloves and ear protection must be used after the owner/user completes a local risk assessment of the mower, to prevent injury.

Training in all manual operations must be given by an approved person before the machine is used the first time.

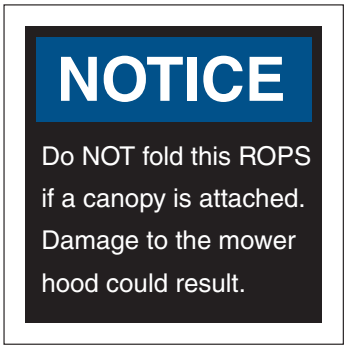
3 LABELS

3.1 SAFETY LABELS

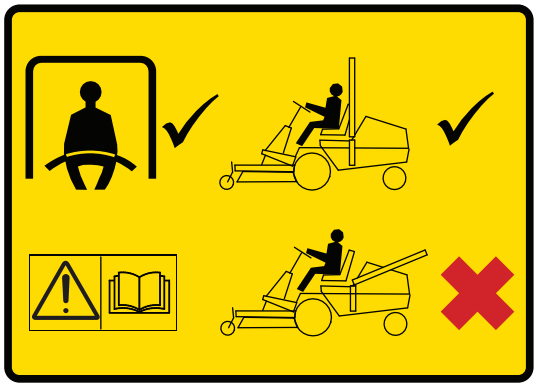


A	4199140	Warning, hot surfaces. Do not touch with bare hand.
B	4181861	Warning, do not use start assist fluids.
C	4181862	Warning, do not remove the radiator cap when the radiator is hot.
D	4153197	Caution, do not pressure wash radiator or allow water to enter the air intake.
E	9114380	Warning, fasten seat belt when folding ROPS is in the raised position.
F	4181864	Warning, battery
G	4326710	Warning, do not operate on slopes greater than 15°. Read the manual
H	4311249	Warning, implement
	–	Rotating blades. Keep your hands, feet and clothing away from cutting implements.
	–	Warning, be careful of objects thrown by the cutting implements. When mower is in operation, keep bystanders and animals away.
	–	Read the manual. Do not allow anyone without training to use the mower.
	–	Do not step on cutting implements.
J	4326718	Warning, mower
	–	Read the manual. Do not allow anyone 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 bystanders and animals away.
K	845027	To prevent injury when adjusting the height of cut, use caution to prevent your fingers being pinched between moving and fixed parts of the cutting implement.

L



M



N

P

L Warning - This structure’s protective capability may be impaired by structural damage, overturn, or alteration. If any of these conditions occur, the structure must be replaced.

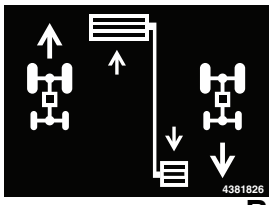
M Notice - Do not fold this ROPS if a canopy is attached. Damage to the mover hood could result.

N 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.

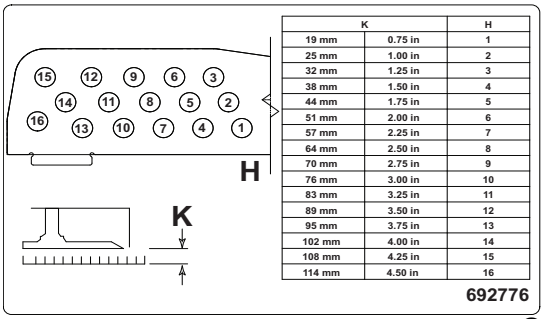
P Canadian EMC Decal

3.2 INSTRUCTION LABELS

A



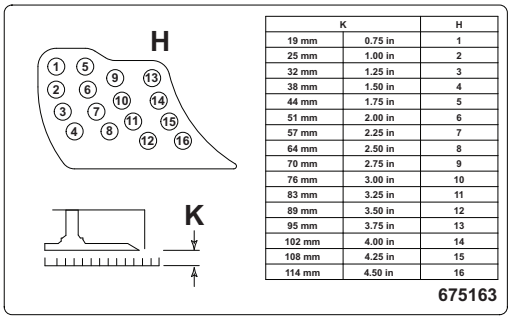
B



K		H
19 mm	0.75 in	1
25 mm	1.00 in	2
32 mm	1.25 in	3
38 mm	1.50 in	4
44 mm	1.75 in	5
51 mm	2.00 in	6
57 mm	2.25 in	7
64 mm	2.50 in	8
70 mm	2.75 in	9
76 mm	3.00 in	10
83 mm	3.25 in	11
89 mm	3.50 in	12
95 mm	3.75 in	13
102 mm	4.00 in	14
108 mm	4.25 in	15
114 mm	4.50 in	16

692776

C



K		H
19 mm	0.75 in	1
25 mm	1.00 in	2
32 mm	1.25 in	3
38 mm	1.50 in	4
44 mm	1.75 in	5
51 mm	2.00 in	6
57 mm	2.25 in	7
64 mm	2.50 in	8
70 mm	2.75 in	9
76 mm	3.00 in	10
83 mm	3.25 in	11
89 mm	3.50 in	12
95 mm	3.75 in	13
102 mm	4.00 in	14
108 mm	4.25 in	15
114 mm	4.50 in	16

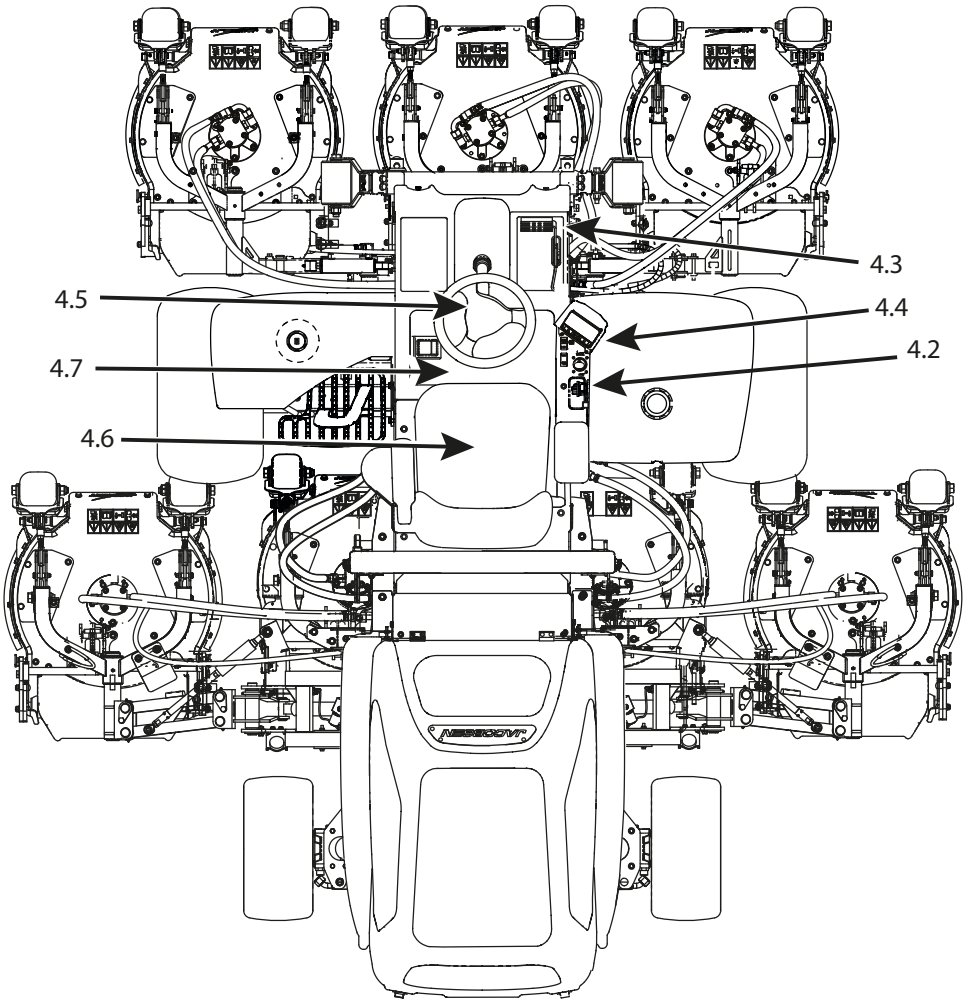
675163

D

Description

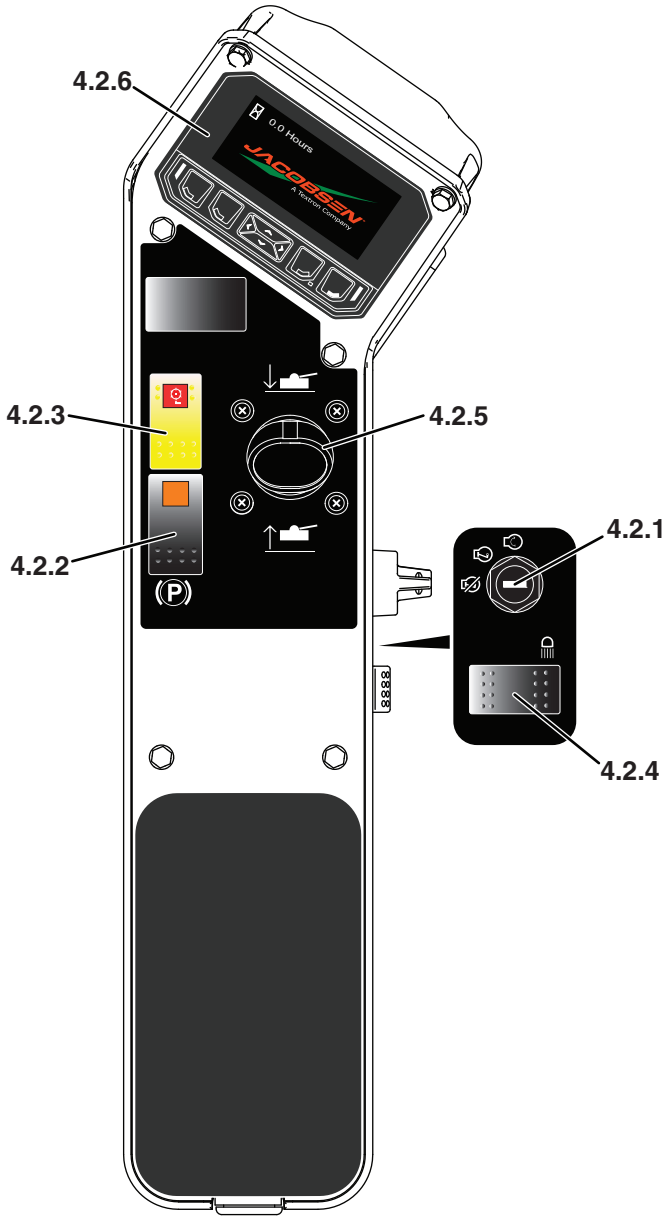
A	4117468	105 dB Guaranteed Sound Power Level
B	4381826	Traction Pedal
C	692776	Front HOC, Right Wing Deck
D	675163	Rear HOC, Right Wing Deck, Left Wing Deck, Left Wing Deck, LH

4.1 OPERATOR COMPARTMENT



4.2 - Control Panel
4.3 - Armrest Adjuster
4.4 - Traction Pedal
4.5 - Steering Tilt Lever
4.6 - Tow Valve (Under Seat)
4.7 - Brake Valve (Under Floorboard)

4.2 CONTROL PANEL



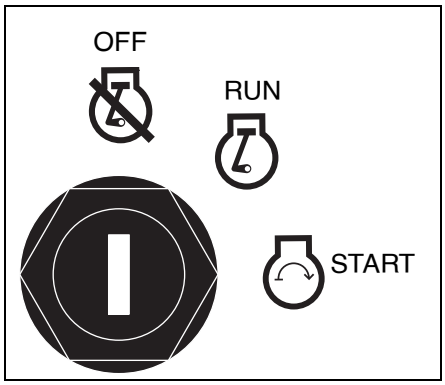
4.2.1 - Key Switch
4.2.2 - Parking Brake Switch
4.2.3 - Mow Switch
4.2.4 - Light Switch (Optional)
4.2.5 - Lift/Lower Joystick
4.2.6 - Visual Display

4.2.1 KEY SWITCH

Turn the key switch to the 'START' position to start the engine. When the engine starts, release the key and allow to return automatically to the 'RUN' position.'

To stop the engine, turn the key to the 'OFF' position.

NOTE. There can be a time delay before the engine starts, it depends on the engine temperature while the glow plugs operate automatically.



4.2.2 PARK BRAKE SWITCH

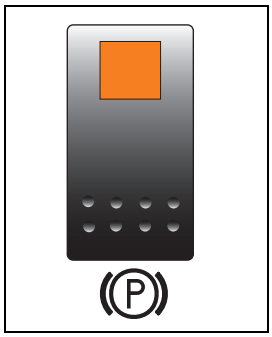
Move the orange button back and press the front of the switch to engage the park brake.

When the engine is stopped, the parkbrake is applied with the switch in both the ON and OFF position.

To release the park brake, press the rear of the switch.

The park brake icon (P) is displayed on the visual display screen when engaged.

DO NOT apply the brake while the machine is in motion. The park brake will also auto-engage when the transmission is in neutral & the machine is not in motion. When this function is active, the brake will automatically release when transmission pedal is operated in order to drive forward or in reverse.



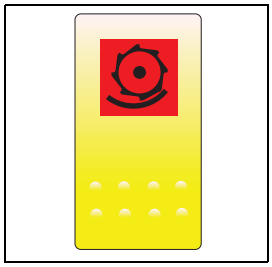
4.2.3 MOW SWITCH

The mow switch engages cutter rotation.

To cut grass, push the front of the switch and move the joystick forward to lower the cutting implements. When the switch is in the ON position, the red LED on the switch is illuminated. When the mow switch is in the ON position, the mower traction will be in all wheel drive (AWD).

To stop the drive to the cutting implements, press the rear of the mow switch.

When the cutting implements are lifted or the operator leaves the seat, cutting implements rotation is stopped.

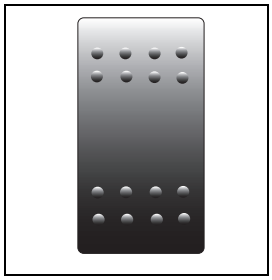


4.2.4 LIGHT SWITCH

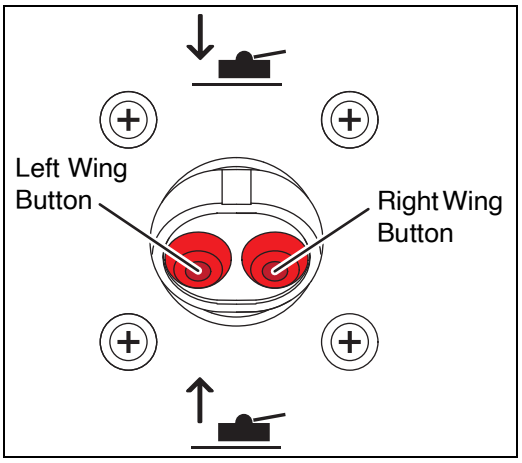
Turns the work lights ON and OFF.

Push the top of the switch to turn the lights ON.

Push the bottom of the switch to turn the lights OFF.



4.2.5 LIFT/LOWER JOYSTICK



The lift/lower joystick controls the lift and lower operation of the cutting implements. The lift/lower joystick operates in One-Touch or manual mode. Push the lift/lower joystick to lower the cutting implements or pull the lift/lower joystick to lift the cutting implements.

The One-Touch or manual mode is set on the display.

Manual Mode - When One-Touch is disabled, the cutting implements will lift or lower only while the lift/lower joystick is pulled or pushed.

One-Touch Mode - With One-Touch enabled and the mow switch is in the ON position,

To Lower - Push and release the lift/lower joystick once to lower the cutting implements to the mid Cross Cut position, Push and release the lift/lower joystick a Second time to lower the cutting implements to the ground and start the blades.

To Raise - Pull and release the lift/lower joystick once to lift the cutting implements to the mid Cross Cut position.Pull and release the lift/lower joystick a second time to completely lift the cutting implements and stop the blades.

Left Wing Button - Press the left wing button on the top of the joystick to enable the left wing cutting implement. The light on the button will turn on and the joystick will control the lift and lower of the cutting implement. When the left wing cutting implement is lowered, and the mower is moving, the cutting implement blades will start to turn

Press the left wing button a second time to disable the left wing cutting implement. The cutting implement will stop and lift to the transport position.

Right Wing Button - Press the right wing button on the top of the joystick to enable the right wing cutting implement. The light on the button will turn on and the joystick will control the lift and lower of the cutting implement. When the right wing cutting implement is lowered, and the mower is moving, the cutting implement blades will start to turn

Press the right wing button a second time to disable the right wing cutting implement. The cutting implement will stop and lift to the transport position.

To engage the cutting implements if they are already in the lowered position but disengaged, Press the Mow Switch to On position, Push and release the Lift /Lower joystick once to engage the cutter blades.

4.2.6 VISUAL DISPLAY

The visual display is activated when the key switch is turned to the ‘RUN’ position.

4.2.6.1 STARTUP SCREEN

When the key switch is turned to the ‘RUN’ position, this screen is shown for two seconds.

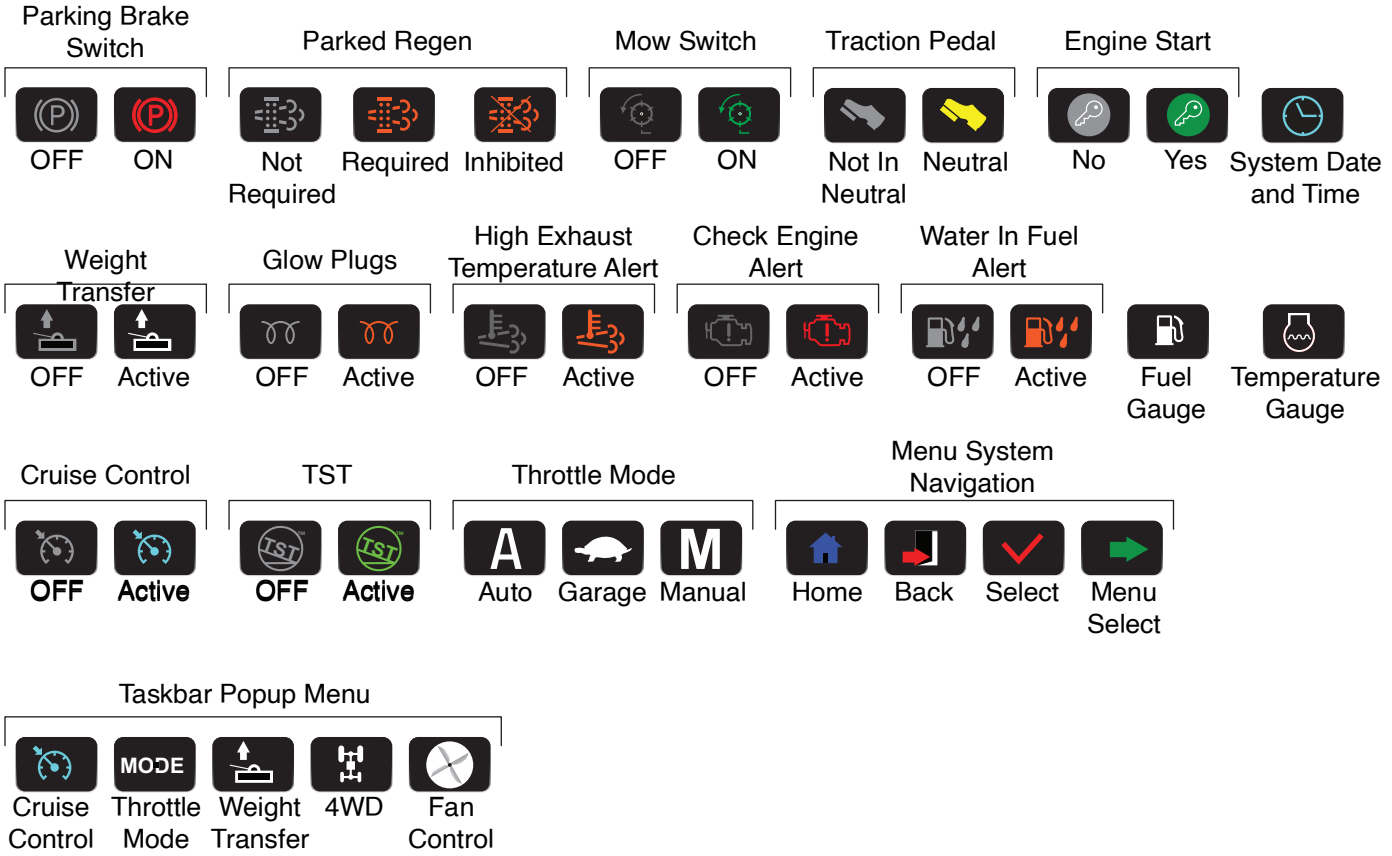
The hour meter will show total hours of engine operation.

4.2.6.2 WARNING / SERVICE SCREEN

After the startup screen the warning screen is shown. The warning screen is visible for three seconds. If there is no input needed, the main screen will become visible. If a fault condition has occurred during the previous start, a pop up screen will become visible over the top of the warning screen. The operator must confirm the fault before they can move to the main screen.

4.2.6.3 ICONS

The following Icons are used in the controller. Not all icons may be visible, depending on the engine and the options installed on the mower.



4.2.6.4 FIRST SCREEN

This screen shows the status of vehicle functions, the fuel gauge and coolant temperature gauge.

When an icon is grayed out, the mower function is not active or the switch is in the OFF position.

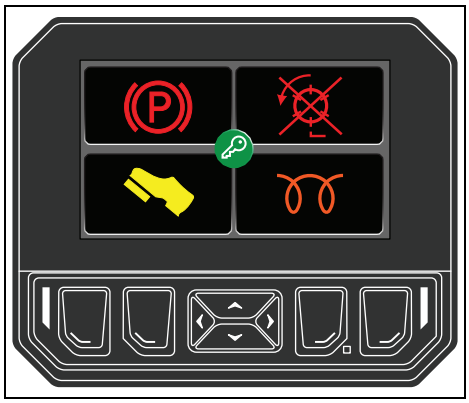
Color icons indicate an active function or switch in the ON position.

The fuel gauge is on the left side of the screen.The fuel gauge color will be green when the tank is between 30% and 100% full. The fuel gauge color will be orange when the tank is between 18% and 29% full. The gauge color will be red when the tank is less than 18% full. Do not allow the mower to run out of fuel.

The engine temperature gauge is on the right side. The temperature gauge color will be green with engine temperature below 203° F (95° C). The temperature gauge color will be orange with the engine temperature between 203° F (95° C) and 220° F (104° C). The temperature gauge color will be red with the engine temperature above 220° F (104° C).

4.2.6.5 ENGINE START

When the key switch is turned to the start position and the interlocks are set, this screen is shown.



To start the engine, the parking brake switch must be in the ON position, the mow switch must be in the OFF position and the traction pedal must be in the Neutral position. There may be a time delay before the engine starts to rotate, it depends on the engine temperature while the glow plugs operate automatically.

4.2.6.6 THE ENGINE WILL NOT START

When the ignition key is turned to the start position and the interlocks are not set, this screen is shown.

- The parking brake switch is not in the ON position. The icon will flash red and gray.
- The mow switch is not in the OFF position. The icon will flash red and gray.
- The traction pedal is not in the Neutral position. The icon will flash yellow and gray.

The engine will not start until all the items in the list are correct.

4.2.6.7 TASKBAR POP-UP MENU

When the first screen is shown on the display, press any of the selection buttons to display the Taskbar Pop-Up Menu. If the reversing fan option is installed, press the LEFT or RIGHT arrow keys to toggle to the second screen.

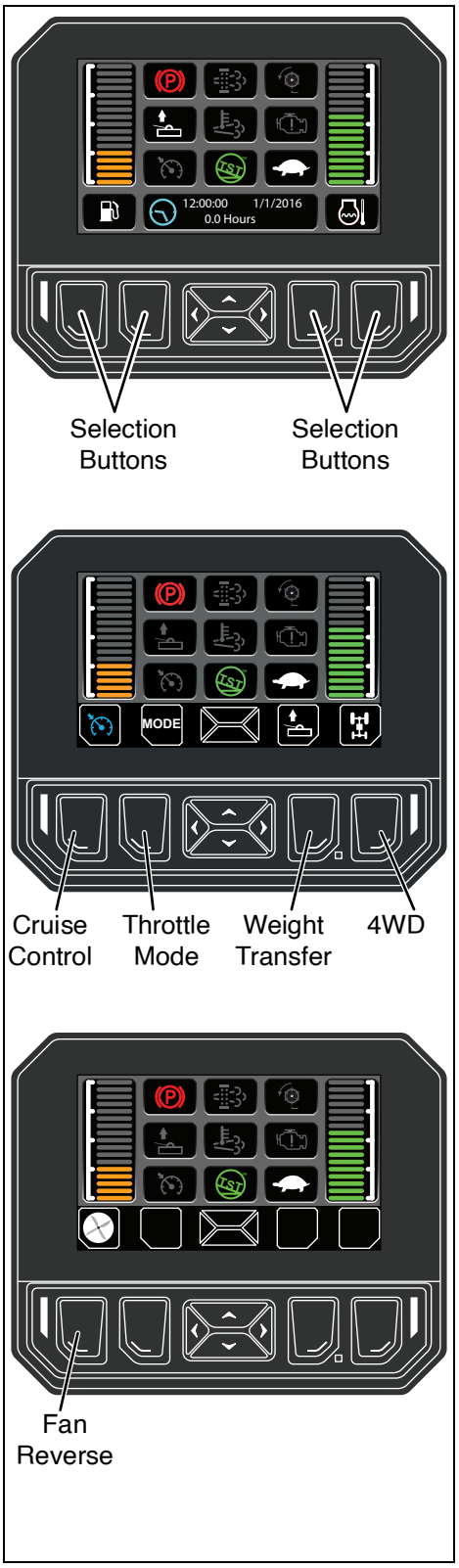
To activate cruise control, drive the mower in the forward direction, press any of the selection buttons to display the taskbar pop-up menu, press the first selection button from the left and lift your foot off the pedal. The cruise control icon will change to blue and the mower will continue to drive at the current speed until cruise control is selected again, the traction pedal is pressed, the brake switch is moved to the ON position, the operator leaves the seat or the key switch is turned to the OFF position.

To engage 4WD, press any of the selection buttons to display the Taskbar Pop-Up Menu and press and hold the second button from the left. 4WD will be active as long as the button is held down and the mower is driven in the forward direction. When the button is released, the mower will return to 2WD.

To change throttle mode, press any of the selection buttons to display the Taskbar Pop-Up Menu and press the third button from the left. The throttle mode icon on the display will cycle to the next mode. Repeat pushing the throttle mode button until the desired traction mode is selected. Throttle mode can also be changed using the vehicle settings menu. **See "Throttle Mode" on page 26.**

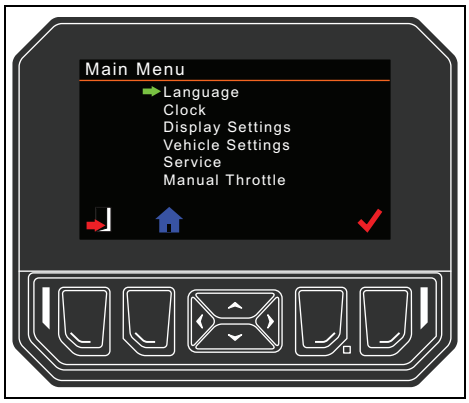
To activate the weight transfer system, press any of the selection buttons to display the Taskbar Pop-Up Menu and press and hold the fourth button from the left. The mower controller will pulse the lift system to transfer the weight from the cutting implements to the drive wheels to increase traction for as long as the button is held down. When the button is released, the mower will return to normal operation.

If the reversing fan option is installed, press the LEFT or RIGHT arrow keys to toggle to the second screen and press the first selection button from the left. The fan will complete a reverse fan cycle then return to normal operation.



4.2.6.8 MAIN MENU

When the first screen is shown on the display, press the LEFT or RIGHT arrow keys to access the main menu.



4.2.6.9 MENU NAVIGATION

When the first screen is shown on the display, press the LEFT or RIGHT arrow keys to access the main menu.

Use the UP and DOWN arrow keys to move the selection arrow up or down the list.

Press the select button to select menu item indicated by the arrow.

Press the back button to return to the previous screen.

Press the home button to return to the first screen.

The main menu has Language, Clock, Display Settings, Vehicle Settings (Requires PIN), Service and Manual Throttle.

4.2.6.10 LANGUAGE

Press the LEFT or RIGHT arrow keys to display the main menu.

Use the UP and DOWN arrow keys until the green arrow is next to Language. Press the select button to select Language.

Use the UP and DOWN arrow keys until the green arrow is next to the needed language.

Press the select button to select the language.

Press the back button to return to previous menu.

4.2.6.11 CLOCK

Press the LEFT or RIGHT arrow keys to display the main menu.

Use the UP and DOWN arrow keys until the green arrow is next to Clock. Press the select button to select Clock.

The ✓ is moved with the UP and DOWN arrow keys to select, date, time or date format.

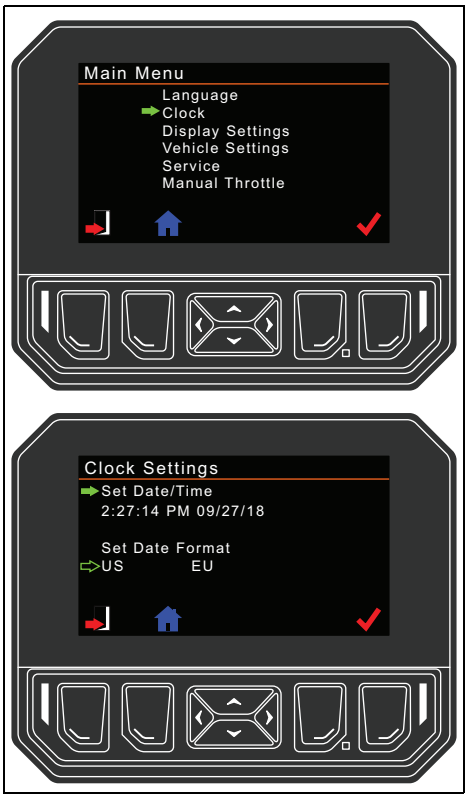
The button accepts the option that has the ✓.

Use the UP and DOWN arrow keys to increase or decrease the value.

Use the LEFT or RIGHT arrow keys to move between fields.

Press the select button to set.

Press the button to return to previous menu.



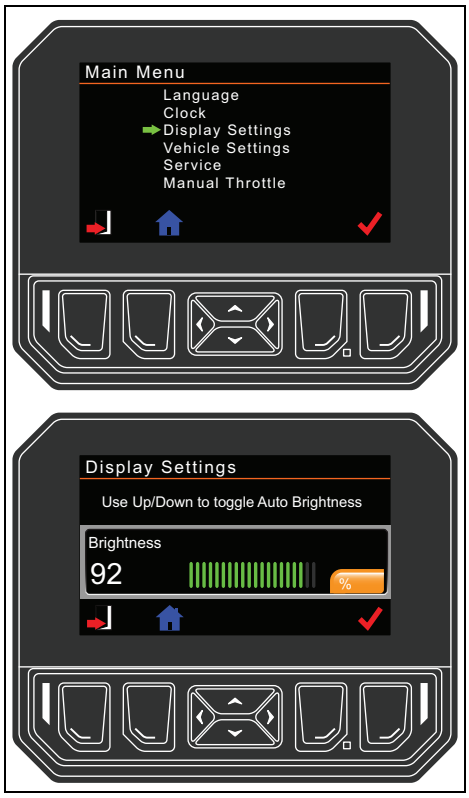
4.2.6.12 DISPLAY SETTINGS

Press the LEFT or RIGHT arrow keys to display the main menu.

Use the UP and DOWN arrow keys until the green arrow is next to Display Settings. Press the select button to select Display Settings.

Press the select button to set.

Press the button to return to previous menu.

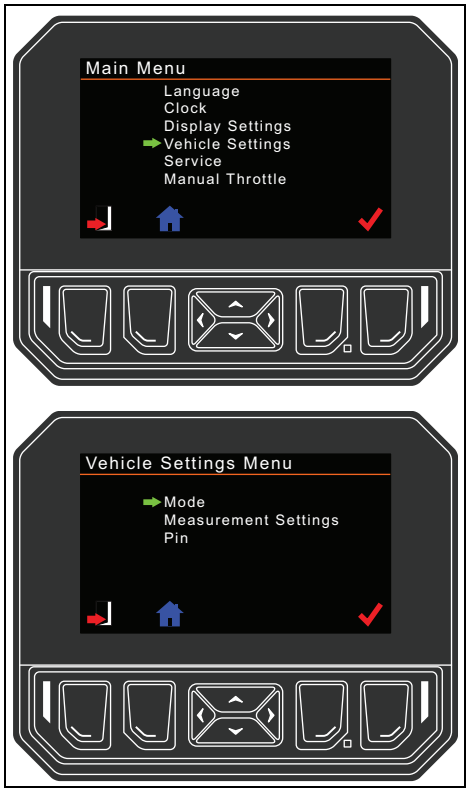


4.2.6.13 VEHICLE SETTINGS MENU

Press the LEFT or RIGHT arrow keys to display the main menu.

Use the UP and DOWN arrow keys until the green arrow is next to Vehicle Settings. Press the select button to select Vehicle Settings.

The vehicle settings menu has the Throttle Mode, Measure Units and PIN.



4.2.6.14 THROTTLE MODE

Navigate to the Vehicle Settings Menu.

Use the UP and DOWN arrow keys until the green arrow is next to Mode. Press the select button to select Mode.

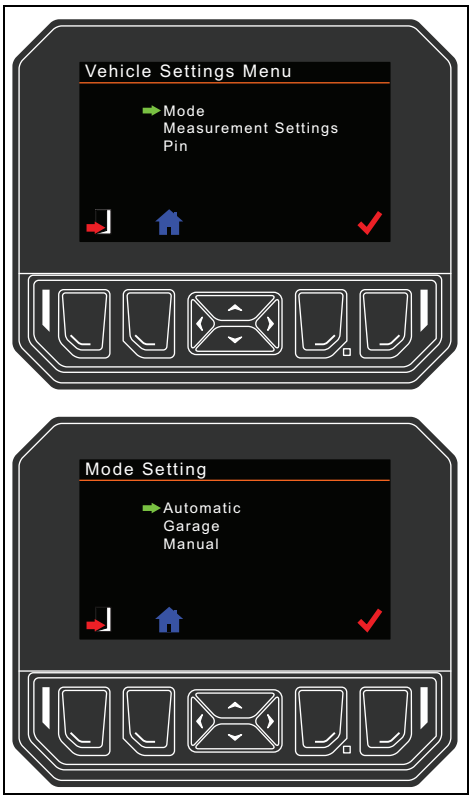
There are three modes, Automatic (A), Manual (M) and Garage. The mode selection can only be changed when the machine is stopped.

Automatic Mode (A) - Automatic throttle and drive features enabled.

- Climb assist - Load sensing system adjusts engine throttle and ground speed for efficient slope climbing
- Cut assist - Load sensing system adjusts engine throttle and ground speed to maintain optimum cutting performance
- Auto Idle - Throttle drops to idle when pedal returns to neutral during transport operations,

Garage Mode - The cutting system is disabled, engine operates at 20% throttle and max speed limited to 5 mph (8km/h) for safe, controlled use in workshops, storage facilities and when loading onto vehicles

Manual Mode (M) - The engine speed is set at a fixed value that can be changed using the Manual Throttle menu.

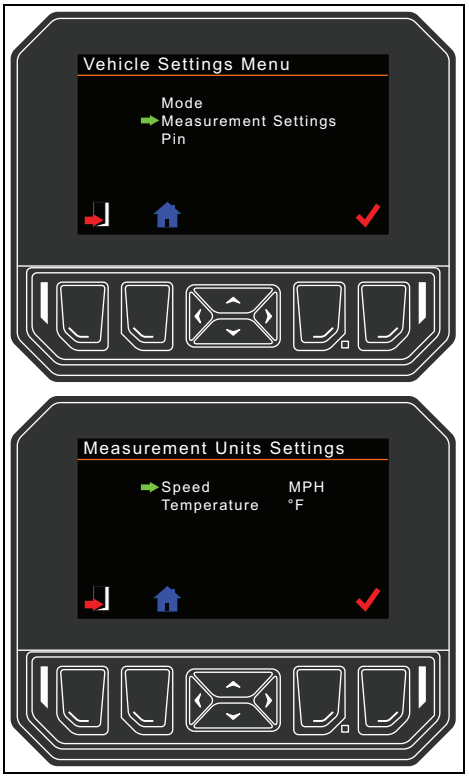


4.2.6.15 MEASURE UNITS

Navigate to the Vehicle Settings Menu.

Use the UP and DOWN arrow keys until the green arrow is next to Measure Units. Press the select button to select Measure Units.

Use the arrow keys to change the unit of measure. The speed unit of measure can be set to either Mph or Km/h. The temperature unit of measure can be set to either °F (Fahrenheit) or °C (Celsius).



4.2.6.16 ENTER PIN

Start the engine. Navigate to the Vehicle Settings Menu.

Use the UP and DOWN arrow keys until the green arrow is next to PIN. Press the select button to select PIN.

Use the arrow keys to highlight the correct number. Press the select button to enter the number and to advance to the next position. Repeat until all four numbers of the pin have been entered.

Highlight the C and press the select button to clear the previous number.

If the correct PIN number has been entered the PIN menu will be on the display.

The initial PIN number is 1001

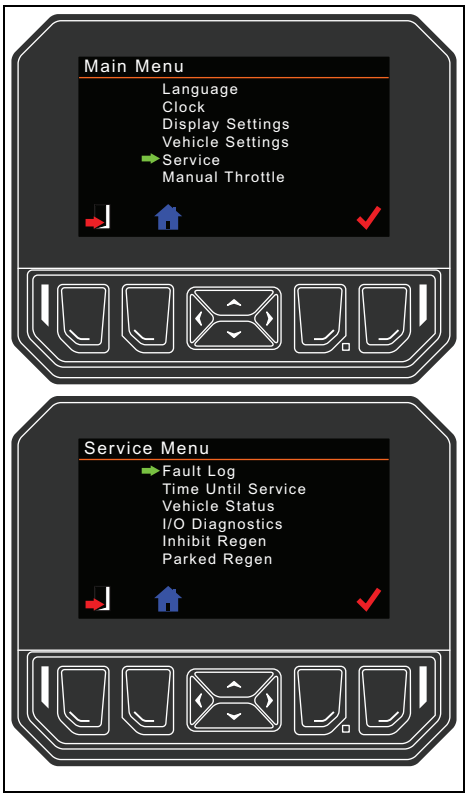
Notice: Managers are advised to change the PIN to stop the machine parameters being changed.

4.2.6.17 SERVICE MENU

Press the LEFT or RIGHT arrow keys to display the main menu.

Use the UP and DOWN arrow keys until the green arrow is next to Service. Press the select button ✓ to select Service.

The Service Menu has the Fault Log, Time Until Service, Vehicle Status, I/O Diagnostics, Inhibit Regen and Parked Regen.



4.2.6.18 FAULT LOG

Navigate to the Service Menu.

Use the UP and DOWN arrow keys until the green arrow is next to Fault Log. Press the select button to select Fault Log.

The last 50 “Faults” that the controller finds are recorded. When 50 faults are recorded, the fault that next occurs will write over the oldest fault.

The inclinometer records faults when the mower is operated on slopes greater than 22°.

The engine controller records the engine shut down faults because of overheat or loss of oil pressure.

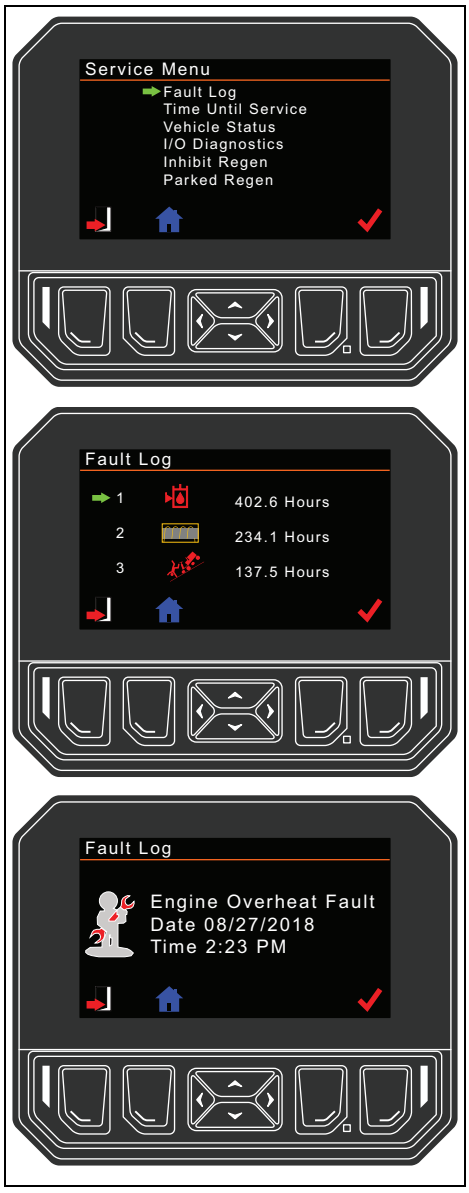
The mower controller records hydraulic by-pass fault and missed service.

Press the button to select, press the UP and DOWN arrow keys to move the green arrow. The errors will move with the last error at the top of the screen.

Select the fault log to be accessed and accept to show the details.

These details show the date and time of the fault.

Press the back button to return to previous menu.



4.2.6.19 TIME UNTIL SERVICE

Navigate to the Service Menu.

Use the UP and DOWN arrow keys until the green arrow is next to Time Until Service. Press the select button to select Time Until Service.

Press the back button to return to previous menu.

To reset the service hours, access the Pin Menu and select Reset Service Hours.

4.2.6.20 VEHICLE STATUS

Start the engine. Navigate to the Service Menu.

Use the UP and DOWN arrow keys until the green arrow is next to Vehicle Status. Press the select button to select Vehicle Status.

The first screen of the vehicle status shows the software revisions of the MCU controller and display.

The second screen of the vehicle status shows the engine speed, engine throttle position, traction pedal position and vehicle speed.

The third screen of the vehicle status shows the battery voltage and the engine coolant temperature.

Press the back button to return to previous menu.

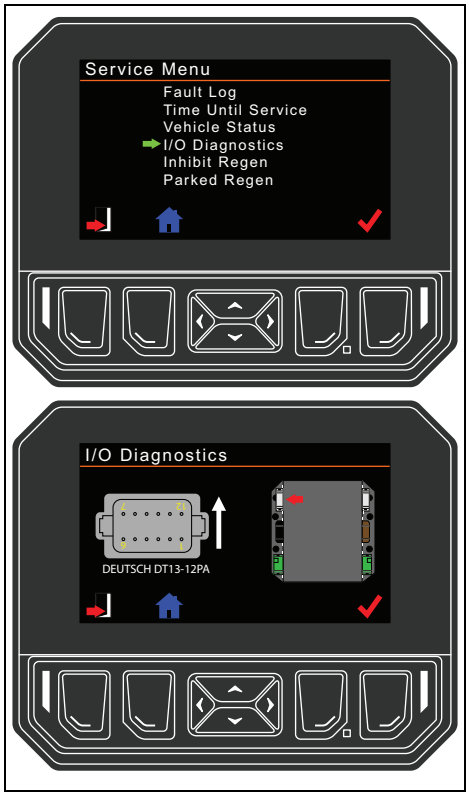
Software Revision is used by Dealer for fault diagnostics.

4.2.6.21 I/O DIAGNOSTICS

Start the engine. Navigate to the Service Menu.

Use the UP and DOWN arrow keys until the green arrow is next to I/O Diagnostics. Press the select button to select I/O Diagnostics.

Use the UP and DOWN arrow keys until the red arrow is next to connector you want to check the status of. Press the select button to select the connector.



4.2.6.22 CONNECTOR J1

This screen shows the status of the J1 connector circuits.

Press the left side button to return to I/O diagnostics menu.

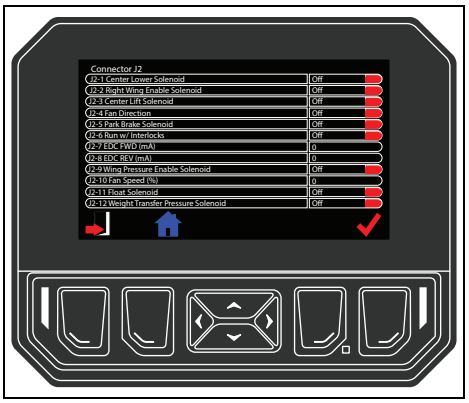
Values are shown for illustration purposes only.

4.2.6.23 CONNECTOR J2

This screen shows the status of the J2 connector circuits.

Press the left side button to return to I/O diagnostics menu.

Values are shown for illustration purposes only.



4.2.6.24 CONNECTOR J3

This screen shows the status of the J3 connector circuits.

Press the left side button to return to I/O diagnostics menu.

Values are shown for illustration purposes only.

4.2.6.25 CONNECTOR J4

This screen shows the status of the J4 connector circuits.

Press the left side button to return to I/O diagnostics menu.

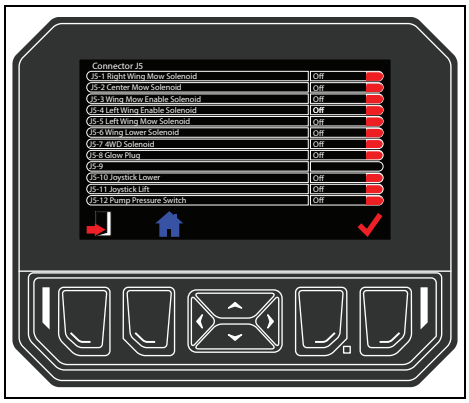
Values are shown for illustration purposes only.

4.2.6.26 CONNECTOR J5

This screen shows the status of the J5 connector circuits.

Press the left side button to return to I/O diagnostics menu.

Values are shown for illustration purposes only.

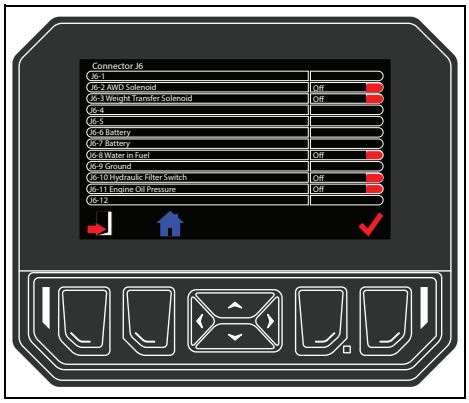


4.2.6.27 CONNECTOR J6

This screen shows the status of the J6 connector circuits.

Press the left side button to return to I/O diagnostics menu.

Values are shown for illustration purposes only.



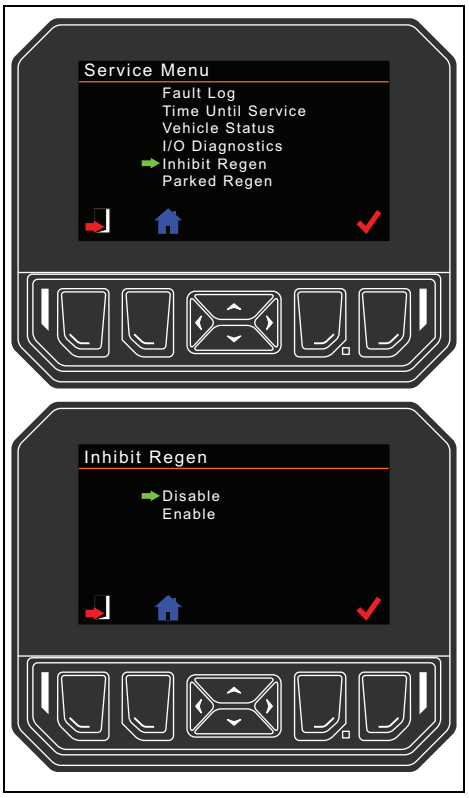
4.2.6.28 INHIBIT REGEN

Start the engine. Navigate to the Service Menu.

Use the UP and DOWN arrow keys until the green arrow is next to Inhibit Regen. Press the select button to select Inhibit Regen.

Use the UP and DOWN arrow keys until the red arrow is next to Enable or Disable. Press the select button to accept

When the Regen Inhibit is selected, the engine can not enter the Active or Parked Regen states. Inhibit Regen does not prevent Passive Regen. If the fuel tank is near empty, select the Inhibit Regen until the fuel tank has been filled.



NOTICE

If the Regen cycle is prevented for too long of a period, a blockage of the Diesel Particulate Filter (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.

4.2.6.29 PARKED REGEN

When a parked regen is required, the parked regen icon will be active on the display.Start the engine. Navigate to the Service Menu.

Use the UP and DOWN arrow keys until the green arrow is next to Parked Regen. Press the select button to select Parked Regen.

On the confirmation screen, press the select button to accept and enter Parked Regen

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.

To start a parked regen, the parking brake switch must be in the ON position, the mow switch must be in the OFF position and the engine temperature must be above 150° F (65° C). If these conditions are not met, a screen will appear indicating the requirements.

When the requirements are met, the mower will enter the parked regen state. The length of time that the Parked Regen will take depends on the level of particulate matter in the DPF. During the Parked Regen, the Regen Request icon will be active. When high-exhaust temperatures are sensed during Parked Regen, the High-Exhaust Temperature icon will also be active. Do not disengage the parking brake, stop the engine or move the mower during the Parked Regen.

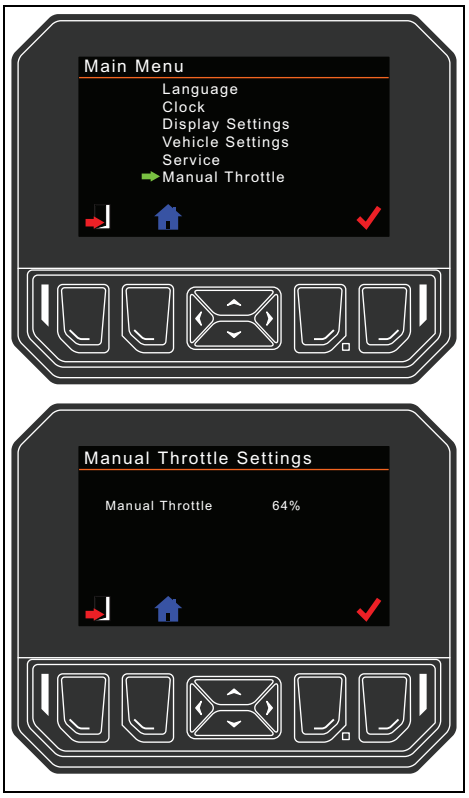
4.2.6.30 MANUAL THROTTLE

Use the UP and DOWN arrow keys until the green arrow is next to Manual Throttle. Press the select button to select One Touch.

Use the UP and DOWN arrow keys increase or decrease the engine throttle in 1% increments. Press the select button to accept.

NOTE: *The engine speed will only increase or decrease when throttle mode is set to Manual Mode. This setting does not affect Automatic or Garage mode.*

Press the back button to return to previous menu.



4.2.6.31 ONE TOUCH

Navigate to the PIN Menu. **See 4.2.6.16**

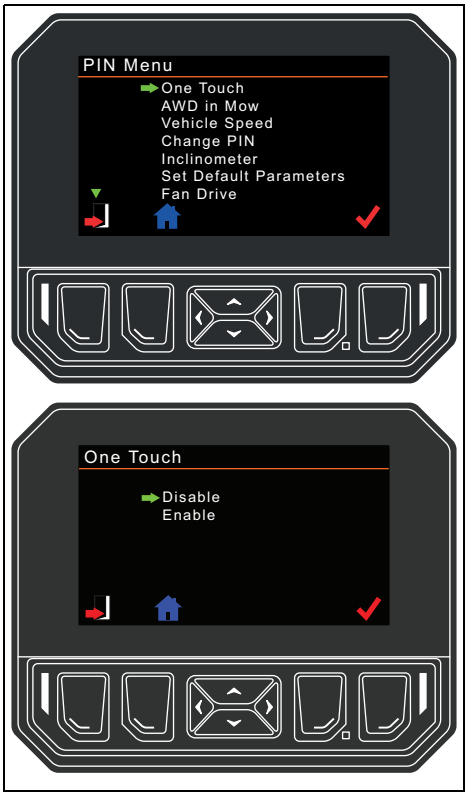
Use the UP and DOWN arrow keys until the green arrow is next to One Touch. Press the select button to select One Touch.

Use the UP and DOWN arrow keys until the green arrow is next to Enable or Disable. Press the select button to accept.

Disable - The cutting implements lift or lower only while the lift/lower joystick is pushed or pulled.

Enable - Joystick is pressed and released to lower the cutting implements or to lift the cutting implements.

Press the back button to return to previous menu.



4.2.6.32 VEHICLE SPEED

Navigate to the PIN Menu.**See 4.2.6.16**

Use the UP and DOWN arrow keys until the green arrow is next to Vehicle Speed. Press the select button to select Vehicle Speed.

The button accepts the speed that has the green arrow.

Use the UP and DOWN arrow keys to increase or decrease the value by 0.5 Mph (0.3 km/h) increments.

Press the select button to set.

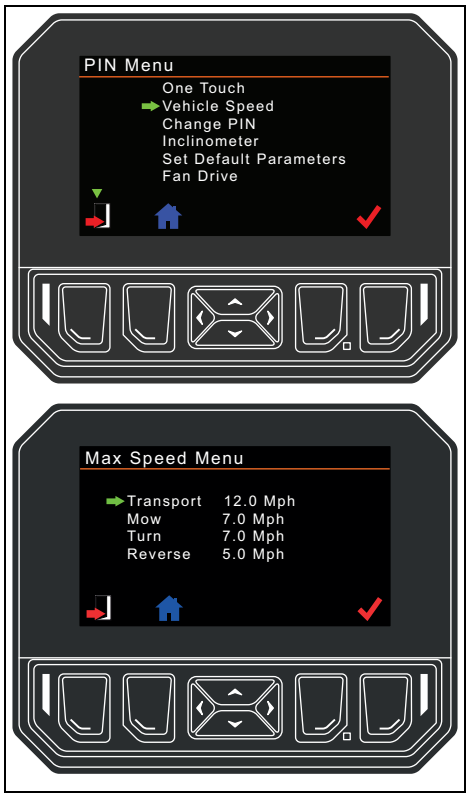
Maximum transport speed can be set between 1 - 12 Mph (1.6 - 19.3 km/h)

Maximum mow speed can be set between 1 - 7 Mph (1.6 - 11.3km/h)

Maximum turn speed can be set between 1 - 7 Mph (1.6 - 11.3km/h)

Maximum reverse speed can be set between 1 - 5 Mph (1.6 - 8 km/h)

Press the button to return to previous menu.



4.2.6.33 CHANGE PIN

Navigate to the PIN Menu.**See 4.2.6.16**

Use the UP and DOWN arrow keys until the green arrow is next to Change PIN. Press the select button to select Change Pin.

Use the arrow keys to highlight the new correct number. Press the select button to enter the number and to advance to the next position. Repeat until all four numbers of the pin have been entered.

Select . To accept.

Some pin numbers are reserved by the controller and cannot be used. A Jacobsen Dealer or service technician call is required to reset a forgotten pin.

Press the back button to return to previous menu.

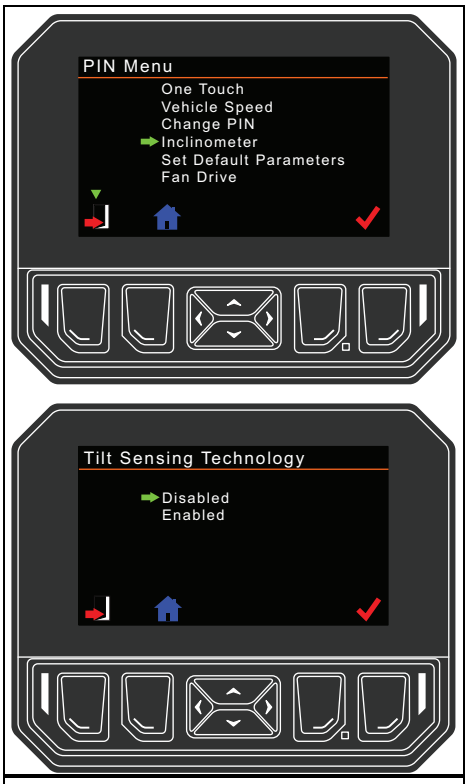
4.2.6.34 INCLINOMETER

Navigate to the PIN Menu. **See 4.2.6.16**

Use the UP and DOWN arrow keys until the green arrow is next to Inclinometer. Press the select button to select Inclinometer.

Use the UP and DOWN arrow keys until the green arrow is next to Enable or Disabled. Press the select button to accept.

Press the back button to return to previous menu.



4.2.6.35 SET DEFAULT PARAMETERS

Navigate to the PIN Menu. **See 4.2.6.16**

Use the UP and DOWN arrow keys until the green arrow is next to Set Default Parameters. Press the select button to select Set Default Parameters.

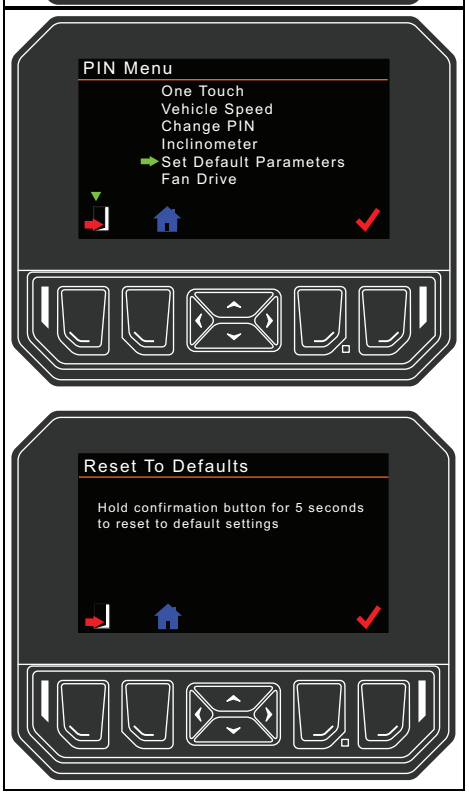
Press the select button for five seconds to reset the mower to default parameters.

NOTE: *Some parameters below may not apply, depending on options installed on the mower.*

Default Parameters

- Speed Units - MPH
- Temperature Units - °F
- Date Format - MM/DD/YYYY
- One Touch - Enabled
- Brightness - 100%
- Reversing Fan Mode - Automatic
- Reversing Fan Duration - 10 Seconds
- Reversing Fan Interval - 30 Minutes
- Weight Transfer - Enabled
- Inclinometer - Enabled
- AWD in Mow - Enabled
- Transport Speed - 12 MPH
- Mow Speed - 7 MPH
- Turn Speed - 7 MPH
- Reverse Speed - 5 MPH
- Manual Throttle - 75%
- Garage Throttle - 30%
- Transport/Mow Throttle - 100%
- Start Throttle - 50%
- Idle Throttle - 0%

Press the back button to return to previous menu.



4.2.6.36 FAN DRIVE

Navigate to the PIN Menu. **See 4.2.6.16**

Use the UP and DOWN arrow keys until the green arrow is next to Fan Drive. Press the select button to select Fan Drive.

Use the UP and DOWN arrow keys until the green arrow is next to the desired Fan Drive mode. Press the select button to select the Fan Drive mode and enter the setting screen.

- Off - Fan will only operate in the normal direction. A manual fan cycle will not start if selected on the Taskbar Pop-Up Menu.
- Manual - Reversing fan operation must be initiated using the Taskbar Pop-Up menu. Fan duration time is set in the Manual Fan Drive Setting screen.
- Automatic - Fan will operate in the normal direction for the interval time cycle, then operate in the reverse direction for the duration time cycle. The time cycles will automatically repeat. Using the Taskbar Pop-Up menu to initiate a manual reversing fan cycle will restart the interval time cycle after the reverse duration cycle is completed. Fan duration and interval cycle times are set on the Automatic Fan Drive Setting screen

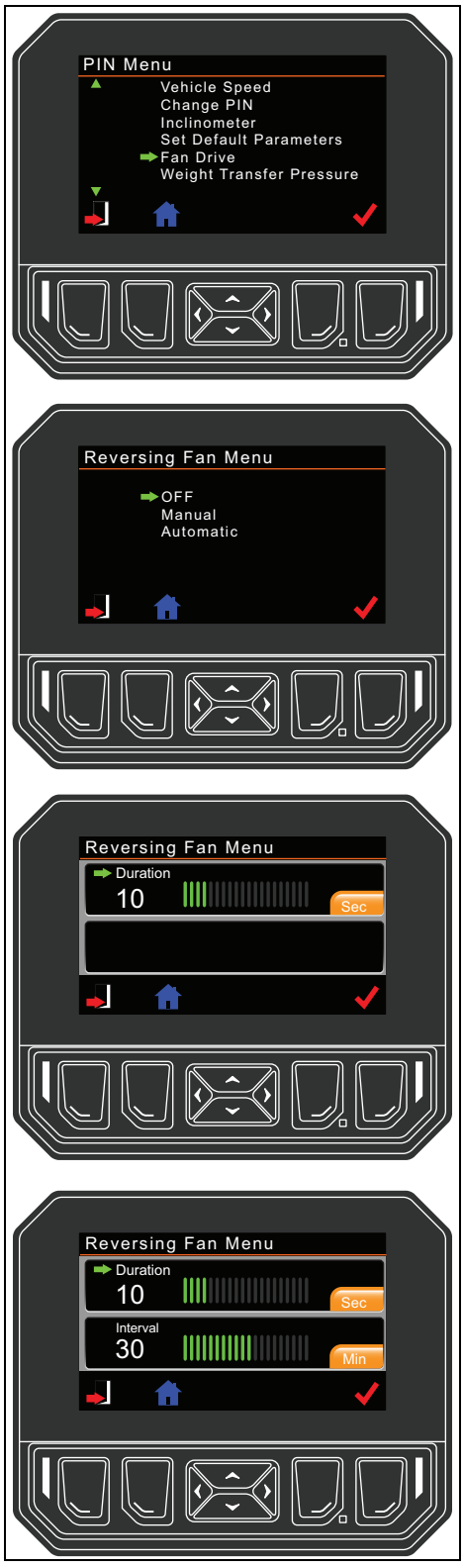
To set the duration cycle time (Manual and Automatic), Use the UP and DOWN arrow keys until the green arrow is next to Duration, Press the select button to change the duration time setting.

Use the UP and DOWN arrow keys to increase or decrease the duration time by 1 second. Duration time can be set between 5 and 30 seconds. Press the select button to set the duration time.

To set the interval cycle time (Automatic only), Use the UP and DOWN arrow keys until the green arrow is next to Interval, press the select button to change the interval time setting.

Use the UP and DOWN arrow keys to increase or decrease the interval time by 15 minutes. The interval time can be set between 15,30,40 and 45minutes. Press the select button to set the duration time.

Press the back button to return to previous menu.



Dynamic Debris Clearing

The machine will run an automatic Dynamic Debris Clearing Cycle. Every 5 min of engine run time, the cooling fan will automatically reduce in speed for a period of 6 seconds, then return to full Fan speed. This is designed to keep the air intake area of hood clear of debris. This function will run in all vehicle modes.

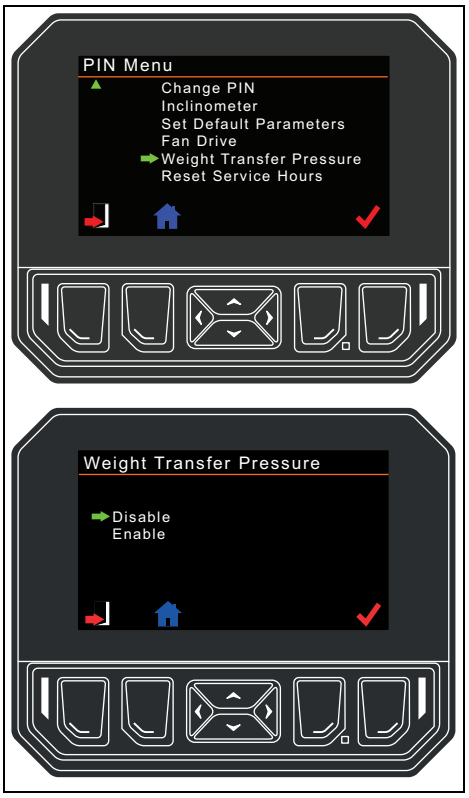
4.2.6.37 WEIGHT TRANSFER

Navigate to the PIN Menu. **See 4.2.6.16**

Use the UP and DOWN arrow keys until the green arrow is next to Weight Transfer Pressure. Press the select button to select Weight Transfer Pressure.

Press the select button to disable or enable the weight transfer pressure.

Press the back button to return to previous menu.



4.2.6.38 AWD IN REVERSE

Navigate to the PIN Menu. **See 4.2.6.16**

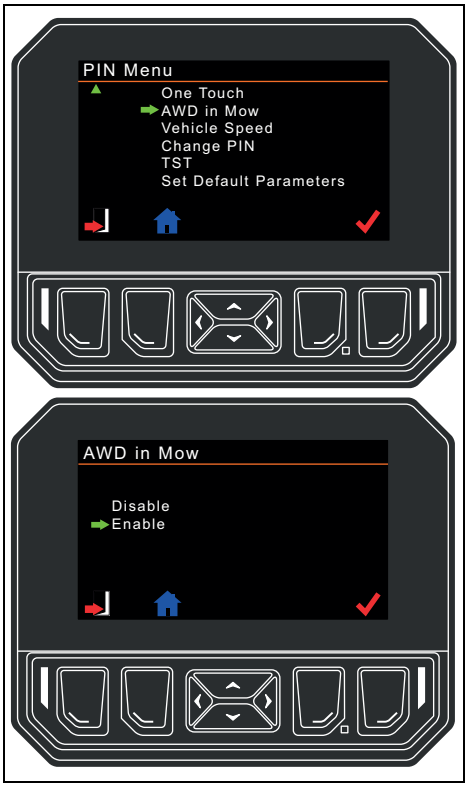
Use the UP and DOWN arrow keys until the green arrow is next to AWD in Mow. Press the select button to select AWD in Mow.

Press the select button to disable or enable the AWD in Mow function.

Press the back button to return to previous menu.

When AWD in Mow is enabled, the AWD solenoid will be engaged when the mow switch is enabled and pedal not in reverse. In AWD mode, the maximum theoretical traction speed obtainable is 6mph.

When AWD in Mow is disabled, the AWD solenoid will not be engaged when the mow switch is enabled. This allows the operator to mow in 2WD mode, where the 7mph mow speed limit is obtainable.



4.2.6.39 RESET SERVICE HOURS

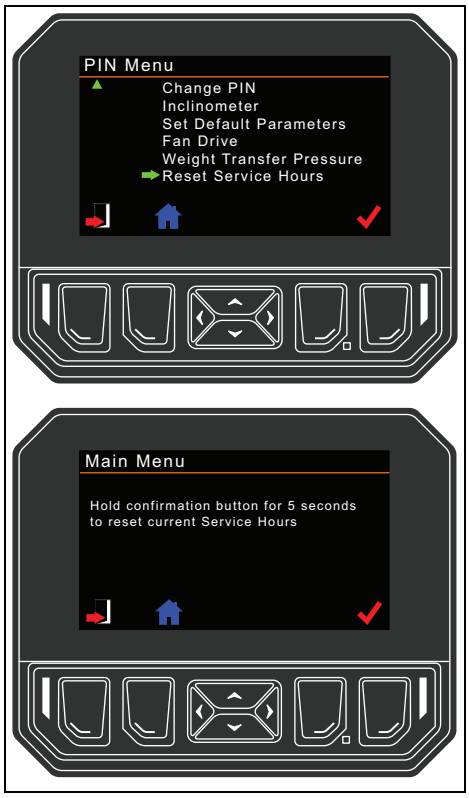
Navigate to the PIN Menu. **See 4.2.6.16**

Use the UP and DOWN arrow keys until the green arrow is next to Set Default Parameters. Press the select button to select Reset Service Hours.

NOTE: *Only reset the service hours after the required service has been performed on the mower. Failure to complete required service can void the mower's warranty.*

Press the select button for five seconds to reset the service hours.

Press the back button to return to previous menu.



WARNINGS

NOTICE

The number in the top right of the screen indicates the total number of current faults recorded. If more than one fault, it will cycle all current faults.

4.2.6.40 WARNING SLOPE ANGLE - ANGLE ALERT

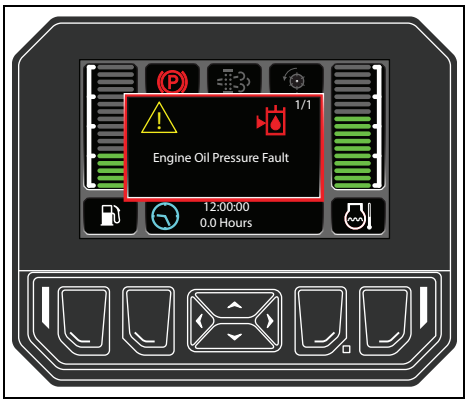
During work if the machine is driven on a slope greater than 16° the screen will display this warning. This over rides all other information, and will continue until the machine has been driven to an area with a slope of less than 13°.

The engine will stop if a slope angle of 42° is achieved.

4.2.6.41 WARNING OIL-PRESSURE FAULT

When this screen is shown, the engine oil pressure has decreased below the normal level. The LED will flash and the horn will sound every four seconds.

If this happens during operation, Stop the engine and check the oil level. Top up if necessary. If the problem persists consult your service dealer.



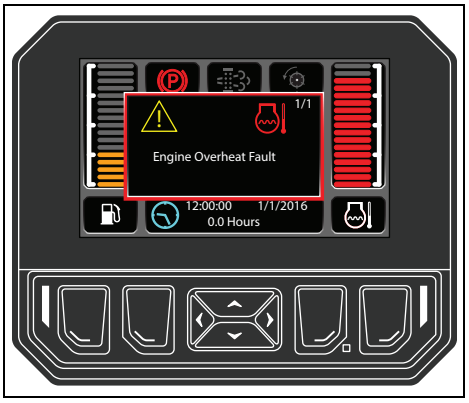
4.2.6.42 WARNING ENGINE OVERHEAT

When this screen is shown, the engine temperature has risen above the normal levels. The LED will flash and the horn will sound two times every two seconds.

Park the machine in a safe area disengage cutting implements, set engine to idle to allow engine temperature to decrease prior to switching off the engine.

Clean the radiator and screens of all grass and debris.

The Mow solenoid and joystick lower function is disabled until warning is cleared.

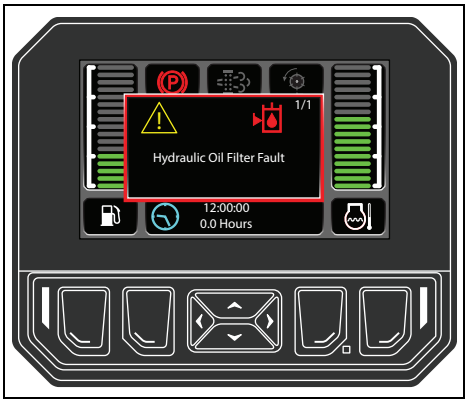


4.2.6.43 WARNING HYDRAULIC OIL FILTER

This screen is shown when the hydraulic oil filter needs to be replaced. The LED will flash and horn will sound five times every five seconds.

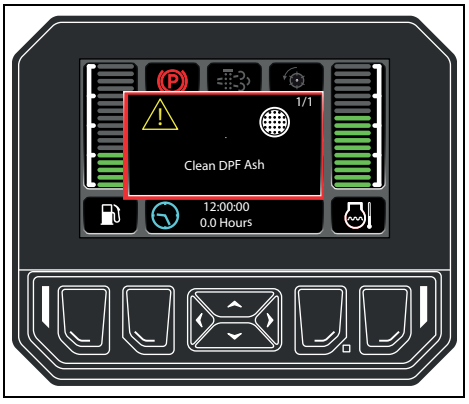
Return the machine to the service area and replace the filter.

The Mow solenoid and joystick lower function is disabled until warning is cleared.



4.2.6.44 CLEAN DPF ASH

When this screen is shown, the engine controller (ECU) is reporting that the level of ash in the DPF (Diesel Particulate Filter) is in excess of 95% and therefore requires servicing. Contact your local Jacobsen dealer for information on the procedure for servicing the DPF.



4.2.6.45 WARNING HYDRAULIC OIL LEVEL

This screen is shown if the hydraulic oil level is low. The LED will flash and horn will sound six times every six seconds.

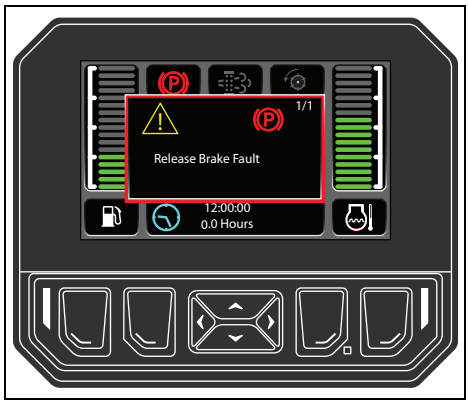
Stop the machine immediately and check for oil leaks.

The Mow solenoid and joystick lower function is disabled until warning is cleared.

4.2.6.46 WARNING BRAKE/TRACTION PEDAL

This screen is shown if the traction pedal is pressed with the parking brake switch in the ON position. The LED will flash four times every two seconds and the horn will sound constantly until the traction pedal is returned to the Neutral position or the parking brake switch is moved to the OFF position.

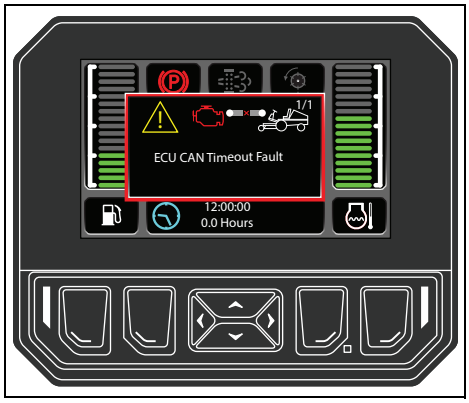
Remove your foot from the traction pedal and disengage the parking brake before you drive the mower.



4.2.6.47 WARNING ECU CAN TIMEOUT

This screen is shown if there is no CAN communication from the ECU for 3 seconds. The LED will flash and the horn will sound two times every five seconds.

Stop the machine as soon as possible and contact your service dealer. Check the controller harness connections.



4.2.6.48 WARNING MCU CAN TIMEOUT

This screen is shown if there is no CAN communication from the MCU for 3 seconds. The LED will flash and the horn will sound two times every five seconds.

Stop the machine as soon as possible and contact your service dealer. Check the controller harness connections.

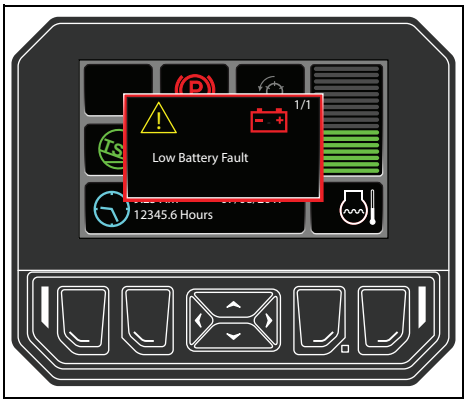
4.2.6.49 WARNING DISPLAY CAN TIMEOUT

This screen is shown if there is no CAN communication is detected by the display for 3 seconds.The LED will flash and the horn will sound two times every five seconds

Stop the machine as soon as possible and contact your service dealer. Check the armrest and controller harness connections.

4.2.6.50 WARNING BATTERY FAULT

When this screen is shown, the battery is below 10.5V for 30 seconds. The LED will flash and the horn will sound two times every five seconds.

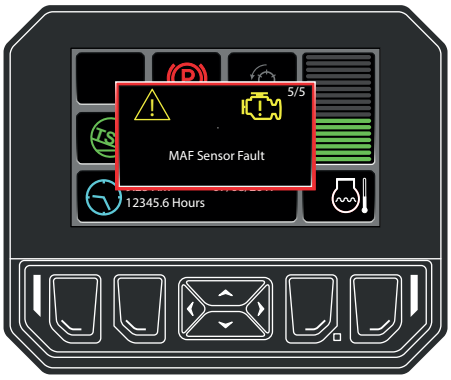


4.2.6.51 WARNING SERVICE NEEDED

When this screen is shown, scheduled maintenance is required.

4.2.6.52 EMISSION FAULT - MAF SENSOR

When this screen is shown, the engine controller (ECU) is reporting a fault with the MAF (Mass Air Flow) sensor. The output from the engine will be reduced. Stop the engine as soon as possible and contact your local Jacobsen Dealer.

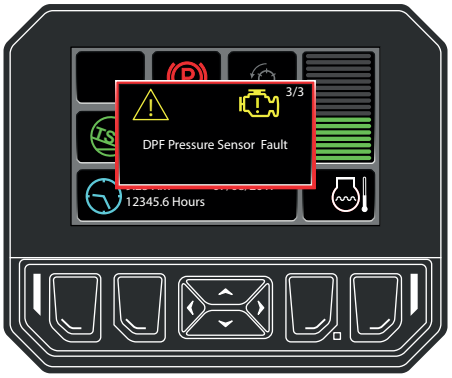


4.2.6.53 EMISSION FAULT - EGR NOX CONTROL

When this screen is shown, the engine controller (ECU) is reporting a fault with EGR system or sensor.The output from the engine will be reduced. Stop the engine as soon as possible and contact your local Jacobsen Dealer

4.2.6.54 EMISSIONS FAULT - DPF PRESSURE SENSOR

When this screen is shown, the engine controller (ECU) is reporting a fault with the DPF (Diesel Particulate Filter). Stop the engine as soon as possible and contact your local Jacobsen Dealer



4.2.6.55 WARNING CONTROLLER I/O FAULT

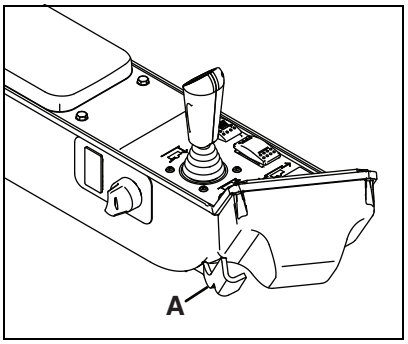
When this screen is shown, there is a controller I/O fault. The LED will flash two times every two seconds.

Go to I/O Diagnostics for solenoid identification. **See Section 4.2.6.21**

Glow Relay Fault (J5-8)
Start Relay Fault (J1-6)
Parking Brake Valve
Park Brake Solenoid Fault (J2-5)
5 Gang Lift Valve
Center Lower Solenoid Fault (J2-1)
Center Lift Solenoid Fault (J2-3)
Center Float Solenoid Fault (J2-11)
Weight Transfer Solenoid Fault (J6-3)**Wing Lift Valve**
Wing Pressure Enable Solenoid Fault (J2-9)
Wing Lower Solenoid Fault (J5-6)
Left Wing Enable/Transport Solenoid Fault (J5-4)
Right Wing Enable/Transport Solenoid Fault (J2-2)
5 Gang implement Valve
Mow Solenoid Fault (J5-2)
Wing implement Valve
Wing Mow Enable Solenoid Fault (J5-3)
Left Wing Mow Enable Solenoid Fault (J5-5)
Right Wing Mow Enable Solenoid Fault (J5-1)
Reversing Fan Valve
Fan Direction Solenoid Fault (J2-4)
4WD Valve
4WD Solenoid Fault (J5-7)
AWD Solenoid Fault (J6-2)
Traction Pump
EDC Solenoid Fault (J2-7 & J2-8)
DPF Sensor fault
DPF Malfunction Fault
DPF Pressure Sensor Fault
EGR NOx Control Fault
MAF Sensor Fault
Clean DPF Ash Fault

4.3 ARMREST ADJUSTER

The armrest adjuster is found on the right side under the Armrest.



• Lift up on the adjuster lever and slide the armrest in the forward or rearward direction. Release the adjuster lever to set the adjustment.

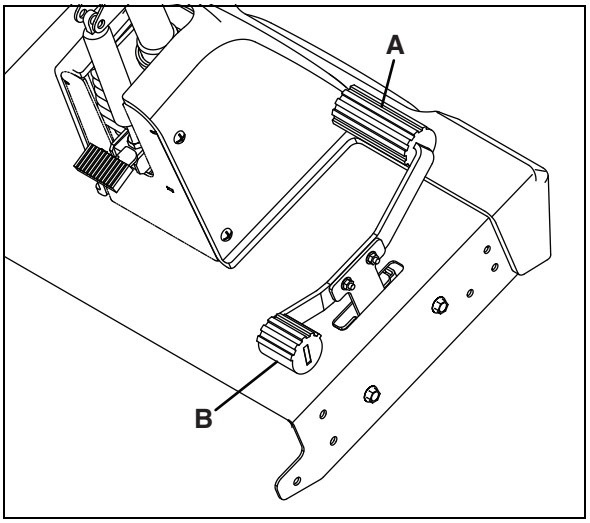
⚠ CAUTION

To prevent injury or property damage, do not adjust the armrest position while the mower is in motion.

See Section 6.4 for armrest height adjustment.

4.4 TRACTION PEDAL

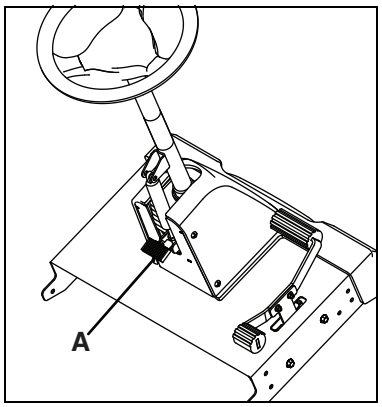
The traction pedal is found on the right side of the footplate.



• Carefully press the top (A) of the foot pedal to reach the forward speed that you need. Maximum forward transport and mow speeds are limited by the mower controller settings
• To stop - Carefully return the foot pedal to the Neutral position.
• To move in the reverse direction press the bottom (B) of the foot pedal. Maximum reverse speed is limited by the mower controller settings

4.5 STEERING TILT CONTROL

While you hold the steering wheel, press the small foot pedal (A) at the base of the steering column.



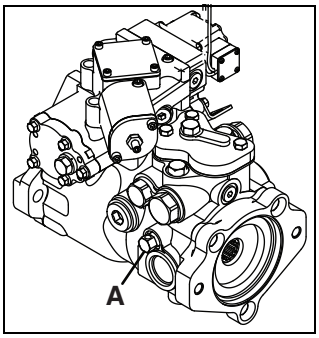
Tilt the column backward or forward to the correct position. Release the small foot pedal to lock the steering column in position.

⚠ CAUTION

To prevent injury or property damage, do not adjust the steering tilt control position while the mower is in motion.

4.6 TOW VALVE

The tow valve is situated on the right side of the transmission pump, under the seat assembly. To access the tow valve, remove the seat retaining hardware and carefully tilt the seat toward the right side of the mower



1. To push the machine, disengage the parking brake, **See Section 4.6**
2. Turn screw (A) located on the right side of the transmission pump three complete turns counterclockwise. Set the steering wheel so that the rear wheels are pointing straight ahead.
3. After pushing the machine, reapply the parking brake. **See Section 4.6**
4. Rotate screw (A) on the pump three complete turns clockwise to return the pump to normal operation.

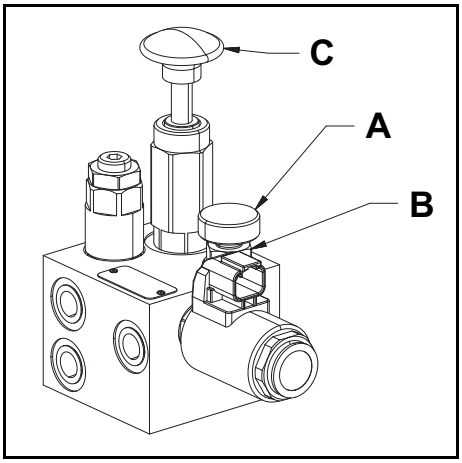
⚠ WARNING

THE FREE WHEEL FACILITY IS FOR RECOVERY PURPOSES ONLY.

Do not tow the machine for more than a few meters, or allow the machine to free wheel down slopes even when unloading down ramps.

4.7 PARKING BRAKE RELEASE VALVE

The Park Brake Release Valve is situated under the operator platform, on the right hand chassis rail. It is used to release the parking brake when the engine is not running



To release the Parking Brake,

- Unscrew Lock wheel (B) by rotating counter-clockwise.
- Rotate Hand wheel (A) clockwise until resistance is felt.
- Using the Hand pump (C), create sufficient pressure to release the brakes (50 to 60 strokes should give 90 seconds of brake release).

When complete rotate Hand wheel (A) counter-clockwise 3 turns and lock using Lock wheel (B).

5 OPERATION

5.1 DAILY INSPECTION

⚠ CAUTION

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

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, hydraulic 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 implements are adjusted to the same cutting height. **See Section 6.9**

Check all tires for the correct pressure. **See Section 7.1**

Test the interlock system. **See Section 5.2**

5.2 INTERLOCK SYSTEM

The Interlock System prevents the engine from starting unless the parking brake switch is in the ON position, the traction pedal is in the NEUTRAL position and the mow switch is in the OFF position. The system stops the engine if the operator leaves the seat with the mow switch in the ON position, traction pedal out of the NEUTRAL position or the parking brake switch in the OFF position. The engine will stop if the traction pedal is pressed with parking brake switch in the ON position.

⚠ WARNING

Do not operate the equipment with the Interlock System disconnected or if the system does not operate correctly. Do not disconnect or prevent the operation of any switch.

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 and 4
- The engine continues to run during tests 5 and 6

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 and the mow switch is in the OFF position. The engine will start.

TEST 2: The engine must not start if the mow 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: Start the engine with the normal procedure. Turn on the mow switch and lift your weight off the seat. The engine must stop. The cutting blades must not rotate after seven (7) seconds.

TEST 6: 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 blades must not rotate after seven (7) seconds.

Test	Operator Seated		Mow Switch OFF		Parking Brake Switch ON		Traction Pedal in Neutral		Engine Starts	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1	4		4		4		4		4	
2	4			4	4		4			4
3	4		4			4	4			4
4	4		4		4			4		4
5	4	H	4	H	4		4		H	
6	4	H	4		4	H	4		H	
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 implements must not rotate after seven (7) seconds.										

5.3 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 people 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 implements. 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 mower 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 people or allow people near the mower while in operation. The owner and operator are responsible for injuries caused to people 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 gravel areas (roads, parking areas, cart paths). Stones released from the equipment can cause injuries to people and cause damage to the equipment.
9. When you are not mowing grass, always turn off the mow switch.
10. Before you move across or operate on paths or roads, turn off the mow switch, lift the cutting implements and travel at decreased speed. Look for traffic.
11. When you hit an object or a vibration starts that is not normal, inspect the mower for damage and make repairs.

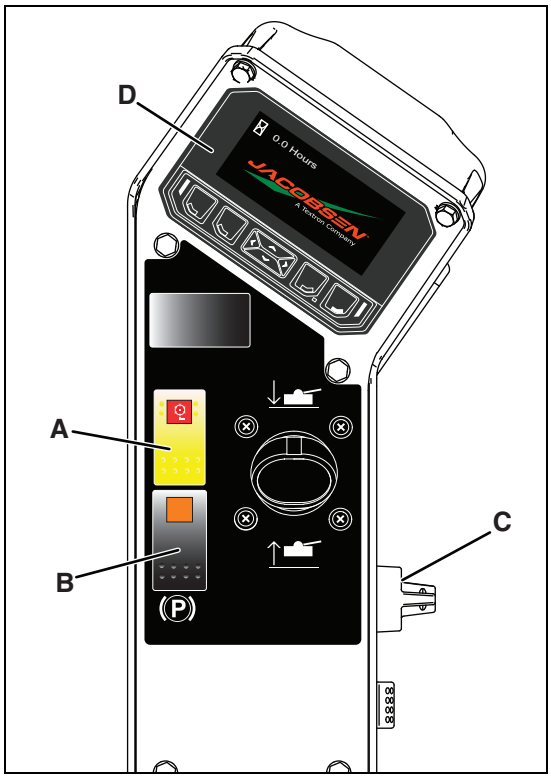
⚠ WARNING

Before you clean, adjust or repair this equipment, always turn off the mow switch, lower the cutting implements 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 implements. Use a brush to remove the grass clippings from the blades. The blades are sharp and can cause injuries.

5.4 STARTING THE ENGINE

Start the engine with the operator in the seat, the mow switch (A) in the OFF position and the parking brake switch (B) 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.



Turn the ignition switch (C) to the RUN position. The display (D) will turn on.

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.

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.

NOTE. There can be a time delay before the engine starts, it depends on the engine temperature while the glow plugs operate automatically.

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.

5.5 TO STOP THE ENGINE

To stop and park the mower in normal conditions:

1. Turn the mow switch to the OFF position. Drive the mower to a flat and level area to park the mower.
2. Remove your foot from the traction pedal.
3. Lower the cutting implements to the ground. Turn the parking brake switch to the ON position.
4. Change the implement to automatic or garage mode if it is in manual mode.
5. Allow the engine to operate at low idle without load for 4 to 5 minutes.

NOTICE

When you do not operate the engine at no load before you stop the engine, permanent damage to the turbocharger can occur. Run the engine at no load for 4 to 5 minutes to allow the turbocharger to become cool before you stop the engine.

6. 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.

5.6 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 mow switch to the OFF position and lift the cutting implements to the transport position.

5.7 TRACTION MODES

This mower has three traction modes, two wheel drive (2WD), all wheel drive (AWD) and momentary four wheel drive (4WD). The mower only operates in 2WD when driving in the reverse direction.

When the mow switch is in the OFF position, the mower is in 2WD mode. Drive pressure is only applied to the front two wheels. The 4WD valve allows oil to flow between the rear motor ports when the mower is in 2WD mode. This provides no driving force to the rear wheel motors, but allows the motors to rotate as the mower travels forward.

When the mow switch is in the ON position, the mower is in AWD mode. Drive pressure is applied in parallel to all four wheels. If one tire is slipping, the other tires may not supply enough driving force to move the mower.

When the momentary 4WD mode is activated on the visual display, the mower is in 4WD mode. Drive pressure is applied to the front wheels then the rear wheels. If a front tire is slipping, the rear tires will continue to supply driving force to the mower. 4WD mode is only active when the button is held down. When the button is released, the mower will return to 2WD or AWD mode, depending on the position of the mow switch.

5.8 MOWING SPEED

The cutting quality is improved at speeds lower than the transport speed of the mower. A mow speed of 7 mph (11.2 km/hr) is set at the factory and is correct for most conditions. The local turf conditions may need a different speed. If an adjustment is needed, **See Section 4.2.6.32**.

5.9 MOWING

⚠ WARNING

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

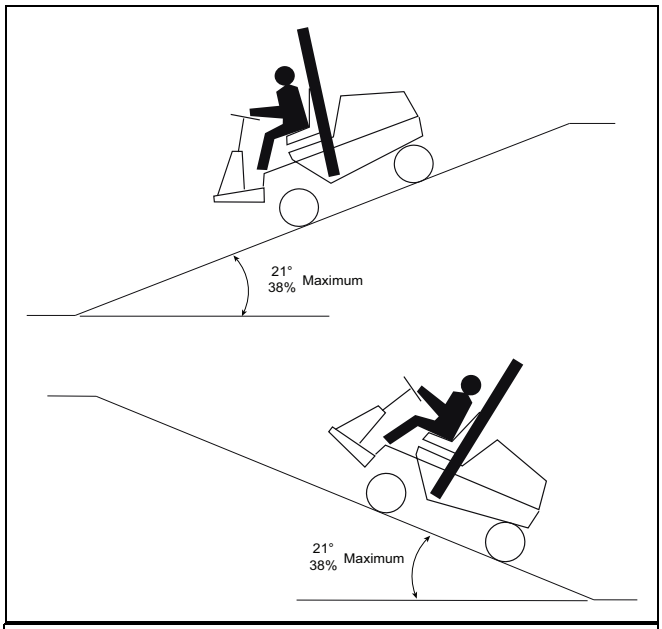
NEVER use your hands to clean the cutting implements. Use a brush to remove grass from the blades. The blades can be sharp and can cause injury.

To mow:

1. To mow, the throttle mode must be set to either manual or automatic mode. Mow function is disabled in Garage mode.
2. Lower the cutting implements with the lift/lower joystick.
3. To engage the cutting implements, press the front of the mow switch.
4. Release the parking brake and drive in a forward direction. When the mow switch is in the ON position, the mower traction will be in all wheel drive (AWD).
5. Drive at a speed compatible with the surface and slope you are cutting. When you operate at high speed, danger is increased and the quality of cut will be compromised.

5.10 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 slope. If you drive on wet grass, the traction and steering control of the mower are decreased.



⚠ WARNING

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 unnecessary turns.

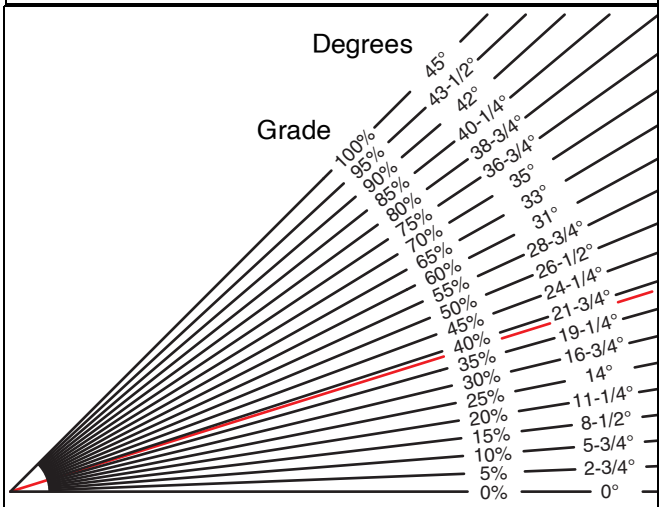
Keep the cutting implements lowered when you operate on slopes.

⚠ CAUTION

Do not operate the mower on the slopes greater than xx° or a xx% 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. Activate the traction control to improve the weight distribution between the cutting implements and the mower.
3. If the mower slips or the tires damage the turf the slope angle is too large to safely operate the mower.
4. If the mower continues to move to the side and damages 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 implements to the ground. This procedure makes sure the mower does not turn upside down.
6. Correct tire pressure is necessary for maximum traction.

   Front and Rear - 12-14 psi (0.82-0.97 BAR)

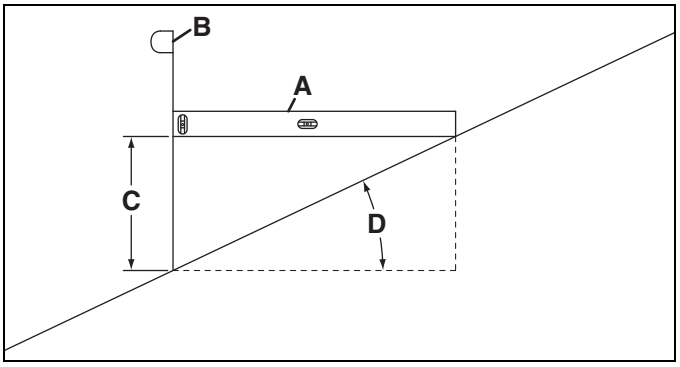


General slope of roadway embankment - 45°
Steepest Grass Area - 31°
Slope of the average roof - 19-1/4°
2nd Class highway maximum grade 4-1/2°
Toll road or freeway - 1-3/4°

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)**.



Height (C)		Result (D)	
Inches with 1 Yard Level (A)	**Millimeters with 1 Meter Level (A)**	**Slope in Degrees**	**Slope Grade %**
3		4.8	8.3
	100	5.7	10.0
	150	8.5	15
6		9.5	16.7
	200	11.3	20.0
7.5		11.8	20.8
	225	12.7	22.5
9	250	14	25.0
	275	15.4	27.5
10		15.5	27.8
	300	16.7	30.0
11		17.0	30.6
	325	18.0	32.5
12		18.4	33.3
	350	19.3	35.0
13		19.9	36.1
	375	20.6	37.5
14		21.3	38.9
	400	21.8	40.0
15		22.6	41.7
	425	23.0	42.5
16		24	44.4
	475	25.4	47.5
18	500	26.6	50.0
20		29.1	55.6
	600	31.0	60.0
25		34.8	69.4
	800	38.7	80.0
30		39.8	83.3
	900	42.0	90
36	1000	45.0	100

5.11 TOWING THE MOWER

If the mower has a problem and can not drive to the service area, open the bypass valve and load the mower on a trailer. If a trailer is not available, tow the mower at a slow speed for short distances. **See Section 4.6**

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

Always follow any recommendations for maximum trailer weights given in your towing vehicle's handbook.

IMPORTANT

Use the chart in the specification section 11.2 to calculate the total weight of your machine configuration.

Do Not exceed the maximum gross weight shown on the trailer plate.

Always read the trailer manufacturer's and towing vehicle manufacturer's handbooks before towing.

If the trailer is moved on the highway, 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.

Open the tow 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. **See Section 4.6**

Release the brakes to allow the mower to be moved. **See Section 4.7**

Before towing, make sure the cutting implements are lifted. If the cutting implements can not be lifted, remove the cutting implements 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 tow valve completely and set the brake valve for normal operation. **See Section 4.6 and 4.7**

5.12 TO REMOVE A BLOCKAGE FROM CUTTING IMPLEMENTS

1. Stop and lift the cutter implements before you move the machine to level ground.
2. Turn off the engine and remove the ignition key.
3. Wear the personal protective equipment that is applicable for this work, for example eye protection, gloves and correct footwear. Use Bat (4184540), to remove the blockage.
4. Check the blades for damage and replace if necessary.
5. Start the engine and run the cutter implements to check for correct operation.

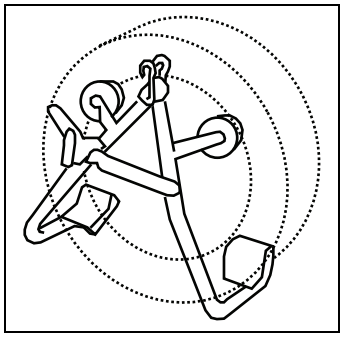
⚠ WARNING

To reduce the risk of injury and infection from foreign objects always use the Bat (4184540) and heavy duty leather gloves to remove a blockage from cutting implement.

5.13 SLINGING AND JACKING THE MACHINE

Slinging

When slinging the machine a set of four damage free wheel clamps must be used, similar to the one shown, in conjunction with a certified lifting frame.



6.1 GENERAL PRECAUTIONS

⚠ WARNING

Before you clean, adjust or repair this equipment, move the mow switch to the OFF position, lower front and rear cutting implements 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 make the adjustments and do the 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.
g When you make the adjustments or repairs, do not wear jewelry or loose fitting clothing.

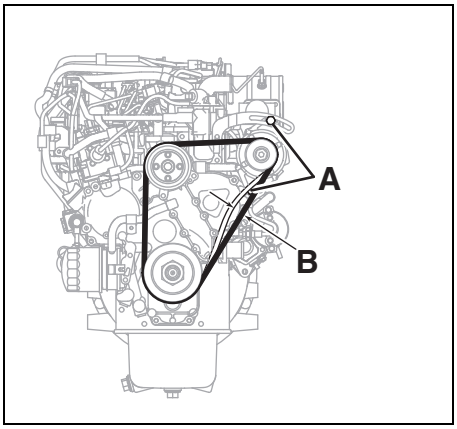
Refer to the illustrations in the Parts Manual for the removal and assembly of parts.

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

6.2 ALTERNATOR BELT

Check And Adjust The Alternator Belt:

The alternator belt tension is adjusted to prevent stress on the alternator bearings and to prevent movement on the alternator pulley. Check the belt tension at the center of the belt between the crank shaft and alternator pulleys. A deflection of 1/4 to 5/16 in. (6.3 to 8 mm) is needed at the center (B) with a load of 20 lbs (9 kgf/89 N) for a new belt.

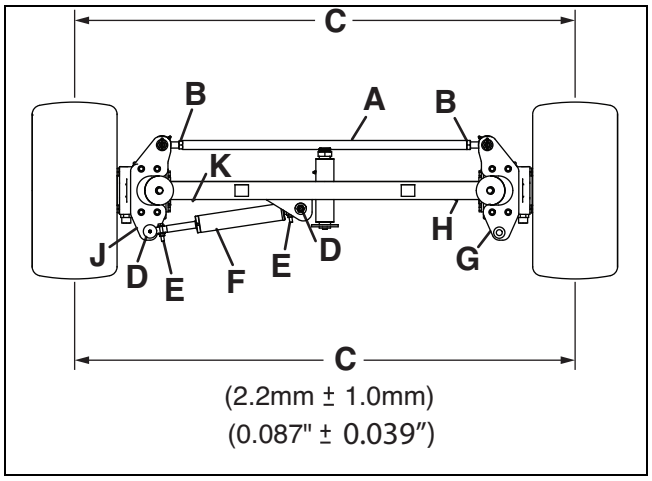


To adjust belt tension:

1. Loosen the alternator bolt and the pivot bolt (A) below the alternator.
2. Move the alternator to tighten or loosen the belt tension.
3. Tighten the bolts.

6.3 STEERING SHAFT ADJUSTMENT

The rear axle must be adjusted for 1/16 inch (1.6 mm) toe-in.



1. Turn the rear wheels to the straight position.
2. Loosen the jam nuts (B) on both ends of the tie rod (A).
3. Rotate the tie rod (A) to get the correct toe-in (C). the Toe-in must not be more than 0.087" ± 0.039" (2.2mm ±1.0mm).
4. Tighten the jam nuts (B).

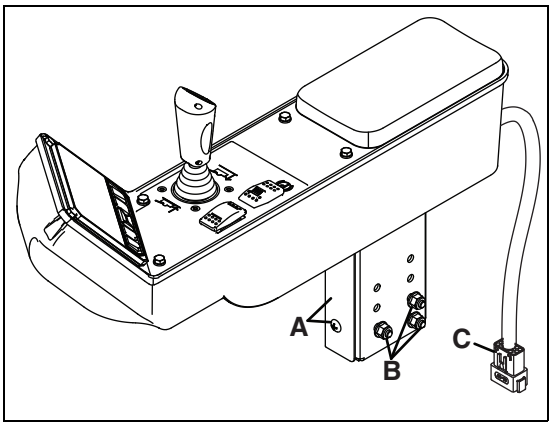
After the tie rod is adjusted, adjust the steering cylinder ball joints (D) for the steering stops.

NOTE: *It may be required to disconnect the ball joint at the center of the axle to obtain the correct steering stop adjustment.*

1. Start the engine and turn the steering wheel to the left until the steering cylinder is fully extended. Stop the engine.
2. Loosen the ball joint clamp hardware (E) on both ball joints (D).
3. Adjust the steering cylinder (F) in or out of the ball joints (D) equally until there is 5/16 inch (8 mm) clearance between the right side steering arm (G) and the axle stop (H).
4. Tighten the clamp hardware (E).
5. Start the engine and turn the steering wheel to the right until the cylinder is fully retracted. Stop the engine.
6. Check the clearance between the left side steering arm (J) left side axle stop. Adjust ball joints (D) as required until steering stop clearance is 5/16 inch (8 mm) for both full left and full right turns.

6.4 ARMREST ADJUSTMENT

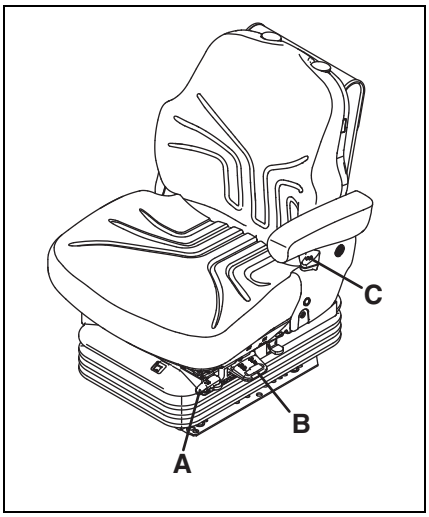
The armrest has three available height settings for the operator.



1. Stop the engine and remove the key.
2. Remove the four screws and cover (A).
3. Remove the armrest hardware (B) from the bracket on the right side of the seat.
4. Lift or lower the armrest as needed until another set of holes in the armrest bracket align with the seat bracket. Install the armrest hardware (B).
5. Install the four screws and cover (A).
6. After you adjust the armrest, check the armrest wire harness connector (C) for a tight connection to the mower harness.

6.5 PREMIUM SEAT ADJUSTMENTS

The premium seat has three adjustments for the operator, seat position, seat height and backrest angle adjustment.



⚠ CAUTION

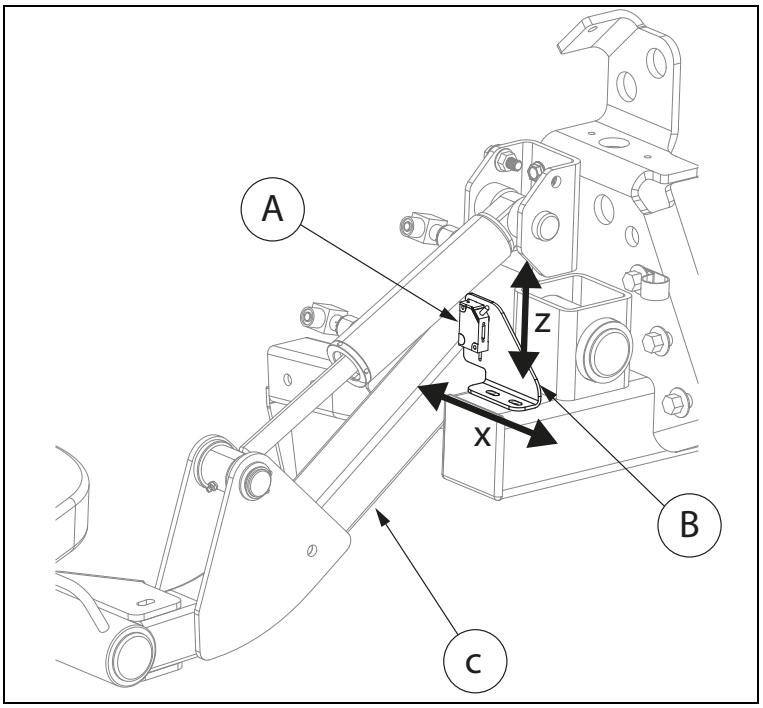
To prevent injury or property damage, do not adjust the seat while the mower is in motion. Only adjust the seat with the mower stopped and the parking brake applied.

To adjust the seat position, lift the seat position lever (A) 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.

To adjust the seat height, lift up on height adjust lever (B) to lift the seat or push down on the lever to lower the seat.

To adjust the backrest angle, lift up on the lever (C) and tilt the seat to the desired angle. Release the lever to set the adjustment. Make sure the backrest is locked in position before you operate the mower.

6.6 FRONT PROXIMITY SWITCH



The mower has a proximity switch (A), which signals the controller to stop the cutting implement blades. The switch is installed on the front lift mount behind the left front lift arm. If the cutting implements continue to rotate when lifted or do not rotate when lowered, adjust or replace the switch as required. The proximity switch has a red LED to signal when the switch contacts are closed.

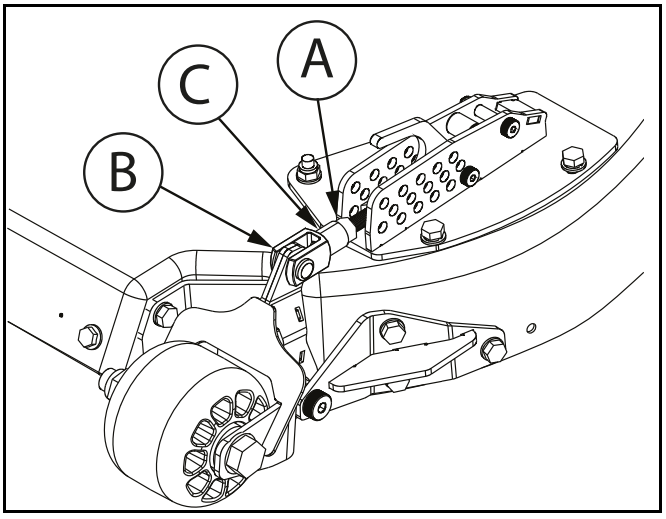
To adjust switch:

1. Park the mower on a flat and level surface.
2. Loosen hardware of the lift arm switch bracket (B). Adjust the lift arm switch bracket in direction of X as required to get an 1/8 to 3/16 in. (0.3 to 0.5 cm) air gap between the switch and the lift arm (C). Once complete, tighten the hardware.
3. The switch may need further fine adjustment and should be set so that the cutters disengage before reaching 15-3/4 inch (400mm) Height above ground surface. Loosen the switch hardware and adjust the proximity switch (A) in direction of Z until sensor detects lift arm at the desired height. Fasten the switch in this position.
4. Start the engine and make sure that the cutter blades stop when lifted.

NOTICE

The proximity switch sets the point where the blades stop rotation. The cutting implements will continue to lift to the cross cut position.

6.7 FINE ADJUSTMENT



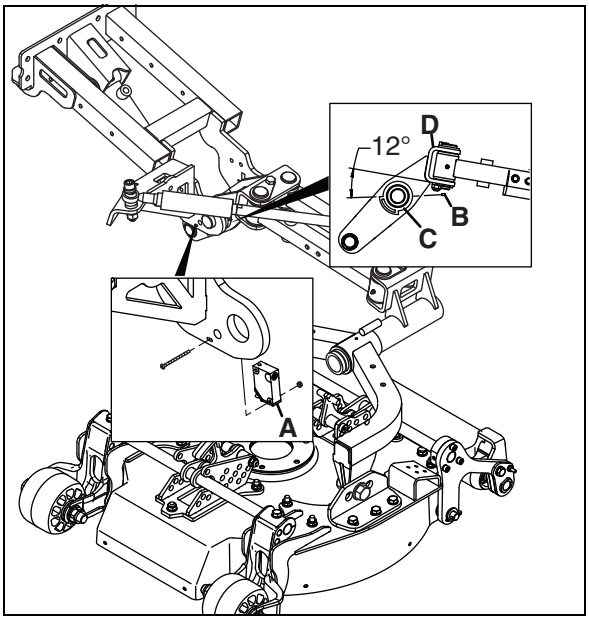
The Height of Cut can be finely adjusted on each individual implement to increase accuracy of the cutting height. Fine adjustment may occasionally be necessary due to wear of components or damage caused to implement over time.

To fine adjust Height of Cut:

1. With the unit raised off the floor. Release locknut A.
2. Remove Pin B.
3. Rotate turnbuckle C Clockwise to lower or Counter-clockwise to raise the front of Cutting implement.
4. Re-insert pin B and measure Height Of Cut setting. Repeat this exercise on both Left and Right hand side of implement until you have achieved desired result.
5. Once setting is achieved. Tighten Locknut A.

6.8 WING PROXIMITY SWITCH

The mower has left and right wing proximity switches (A), which signals the controller to stop the wing cutting unit blade. The switches are installed on the left and right wing lift mounts. If the cutting unit blades continue to rotate when lifted or do not rotate when lowered, adjust or replace the switch as required. The proximity switch has a red LED to signal when the switch contacts are closed.



NOTE: *Left wing deck adjustment shown. Right wing deck adjustment similar.*

To adjust switch:

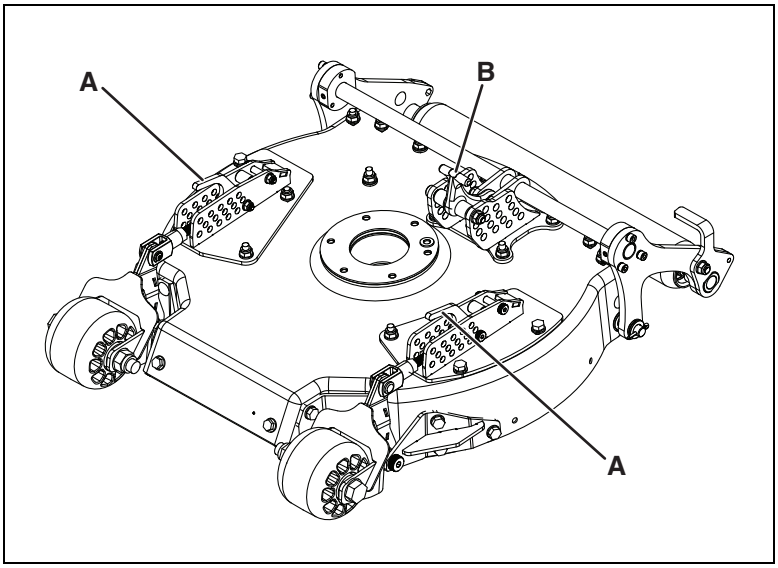
1. Park the mower on a flat and level surface.
2. Loosen hardware and adjust the lift arm switch (A) as required to get an 1/8 to 3/16 in. (0.3 to 0.5 cm) air gap between the switch and the cam (C). Tighten the switch hardware
3. Loosen set screw (B) and adjust position of cam (C). Flat ledge on cam should be 12° from lift arm (D).
4. Start the engine and make sure that the cutting units blades stop when lifted.

NOTICE

The proximity switch sets the point where the blades stop rotation. The cutting units will continue to lift after the blades stop.

6.9 HEIGHT OF CUT

The height of cut is determined by the position of the blades in relation to the rear roller and front wheels. Changes to this height are made at two points on each implement and can be done in any order.



To adjust the height of cut:

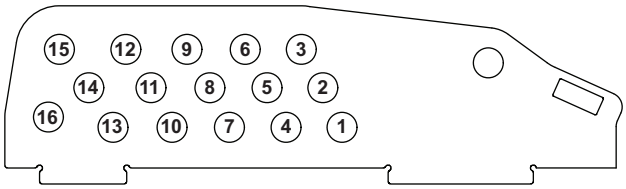
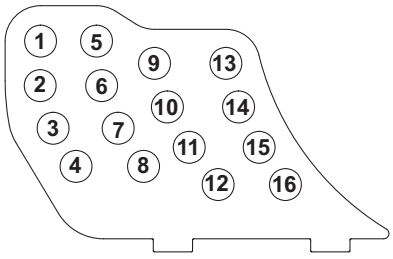
1. Start the engine and lift the cutting implements until the rollers are approximately 6 inches (15.2 cm) off the ground. Stop the engine and remove the key.
2. Support the cutting implement housing.
3. Remove lock nut, washer and hex socket cap screws from front (A) and rear (B) adjustment handles.
4. Using the chart below or decals on the implement, determine the correct holes for the desired height of cut.

NOTE: *The HOC brackets shown in the chart are viewed from the left side of the cutting implement.*

5. Move the handle to new position and assemble handle hardware in the correct set of holes. The front wheels and rear roller will pivot as the height of cut handles are moved.

⚠ CAUTION

To prevent injury, when adjusting the height of cut, use caution to prevent your fingers being pinched between the moving and fixed parts of the cutting implement.

HOC Inch	HOC mm	HOC Bracket Hole	HOC Bracket
3/4	19	1	 Front HOC Bracket
1	25	2	
1-1/4	32	3	
1-1/2	38	4	
1-3/4	44	5	
2	51	6	
2-1/4	57	7	
2-1/2	64	8	
2-3/4	70	9	 Rear HOC Bracket
3	76	10	
3-1/4	83	11	
3-1/2	89	12	
3-3/4	95	13	
4	102	14	
4-1/4	108	15	
4-1/2	114	16	

6.10 TORQUE SPECIFICATION

NOTICE

The torque values included in these charts are approximate and are for reference only. 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 given. Always check the marks on the head of the bolts for the bolt grade. For tightening plated bolts, use the value given for lubricated.

SIZE	UNITS	 GRADE 5		 GRADE 8		SIZE	UNITS	 GRADE 5		 GRADE 8	
		Lubricated	**Dry**	**Lubricated**	**Dry**			**Lubri-cated**	**Dry**	**Lubri-cated**	**Dry**
#6-32	in-lb (Nm)	–	20 (2.3)	–	–	7/16-14	ft-lb (Nm)	37 (50.1)	50 (67.8)	53 (71.8)	70 (94.9)
#8-32	in-lb (Nm)	–	24 (2.7)	–	30 (3.4)	7/16-20	ft-lb (Nm)	42 (56.9)	55 (74.6)	59 (80.0)	78 (105)
#10-24	in-lb (Nm)	–	35 (4.0)	–	45 (5.1)	1/2-13	ft-lb (Nm)	57 (77.2)	75 (101)	80 (108)	107 (145)
#10-32	in-lb (Nm)	–	40 (4.5)	–	50 (5.7)	1/2-20	ft-lb (Nm)	64 (86.7)	85 (115)	90 (122)	120 (162)
#12-24	in-lb (Nm)	–	50 (5.7)	–	65 (7.3)	9/16-12	ft-lb (Nm)	82 (111)	109 (148)	115 (156)	154 (209)
1/4-20	in-lb (Nm)	75 (8.4)	100 (11.3)	107 (12.1)	143 (16.1)	9/16-18	ft-lb (Nm)	92 (124)	122 (165)	129 (174)	172 (233)
1/4-28	in-lb (Nm)	85 (9.6)	115 (13.0)	120 (13.5)	163 (18.4)	5/8-11	ft-lb (Nm)	113 (153)	151 (204)	159 (215)	211 (286)
5/16-18	in-lb (Nm)	157 (17.7)	210 (23.7)	220 (24.8)	305 (34.4)	5/8-18	ft-lb (Nm)	128 (173)	170 (230)	180 (244)	240 (325)
5/16-24	in-lb (Nm)	173 (19.5)	230 (26.0)	245 (27.6)	325 (36.7)	3/4-10	ft-lb (Nm)	200 (271)	266 (360)	282 (382)	376 (509)
3/8-16	ft-lb (Nm)	23 (31.1)	31 (42.0)	32 (43.3)	44 (59.6)	3/4-16	ft-lb (Nm)	223 (302)	298 404	315 (427)	420 (569)
3/8-24	ft-lb (Nm)	26 (35.2)	35 (47.4)	37 (50.1)	50 (67.8)	7/8-14	ft-lb (Nm)	355 (481)	473 (641)	500 (678)	668 (905)

SIZE	UNITS	 4.6		 8.8		 10.9		 12.9		Non Critical Fasteners into Aluminum
		Lubricated	**Dry**	**Lubricated**	**Dry**	**Lubricated**	**Dry**	**Lubricated**	**Dry**	
M4	Nm (in-lb)	–	–	–	–	–	–	3.83 (34)	5.11 (45)	2.0 (18)
M5	Nm (in-lb)	1.80 (16)	2.40 (21)	4.63 (41)	6.18 (54)	6.63 (59)	8.84 (78)	7.75 (68)	10.3 (910	4.0 (35)
M6	Nm (in-lb)	3.05 (27)	4.07 (36)	7.87 (69)	10.5 (93)	11.3 (102)	15.0 (133)	13.2 (117)	17.6 (156)	6.8 (60)
M8	Nm (in-lb)	7.41 (65)	9.98 (88)	19.1 (69)	25.5 (226)	27.3 (241)	36.5 (323)	32.0 (283)	42.6 (377)	17.0 (150)
M10	Nm (ft-lb)	14.7 (11)	19.6 (14)	37.8 (29)	50.5 (37)	54.1 (40)	72.2 (53)	63.3 (46)	84.4 (62)	33.9 (25)
M12	Nm (ft-lb)	25.6 (19)	34.1 (25)	66.0 (48)	88.0 (65)	94.5 (70)	125 (92)	110 (81)	147 (108)	61.0 (45)
M14	Nm (ft-lb)	40.8 (30)	54.3 (40)	105 (77)	140 (103)	150 (110)	200 (147)	175 (129)	234 (172)	94.9 (70)

Cutting Implement Blade Bolt Torque - 95 ft-lb (129 Nm)
Wheel Lug Bolt/Nut Torque - 85-95 ft-lb (115-129 Nm)

7 MAINTENANCE AND LUBRICATION

7.1 MAINTENANCE AND LUBRICATION CHARTS

Machine Service Interval Chart		
Interval	Item	Section
First 50 hours	• Change the Engine oil • Change the engine oil filter • Change the Hydraulic Filter • Check steering system • Check electrical wiring • Check alternator belt tension	7.4 7.4 7.7 6.3 6.2
Each day 10 hours	• Check Safety Interlock System • Check engine oil level • Check engine coolant Level • Check air filter service indicator • Check the Hydraulic Fluid Level • Check the fuel level • Check tire Pressure • Clean radiator screens • Check Grease Points & Lubricate as required • Check alternator belt tension	5.2 7.4 7.5 7.6 7.9 7.15 7.1 6.2
Each week Every 50 hours	• Check for Loose Components • Check for Hydraulic Leaks • Check fuel lines and fittings • Drain water from fuel system • Check air filter	 7.6 7.9 7.9 7.10
Every 250 Hours	• Check radiator hoses • Check intake air hoses@ • Check hydraulic hoses and tubes • Check muffler and exhaust	7.5 7.10 7.8 7.13
Every 500 Hours	• Change the fuel filter • Change the engine oil • Change the engine oil filter • Change the alternator belt	7.9 7.4 7.4 6.2
End of season Every 1000 hours	• Check Battery Condition • Change the Hydraulic Oil and Filters • Change the air filter element@ • Check valve clearance	7.12 7.6 7.10
Every 1500 Hours	• Check injection nozzle pressure@ • Check EGR Cooler • Change oil separator element	
Every 3000 Hours	• Check Turbocharger • Check EGR system • Clean DPF Filters	
Every Year	• Check air intake hose • Check EGR piping • Check DPF related piping • Check Exhaust manifold for cracks or gas leaks, looseness or damage	

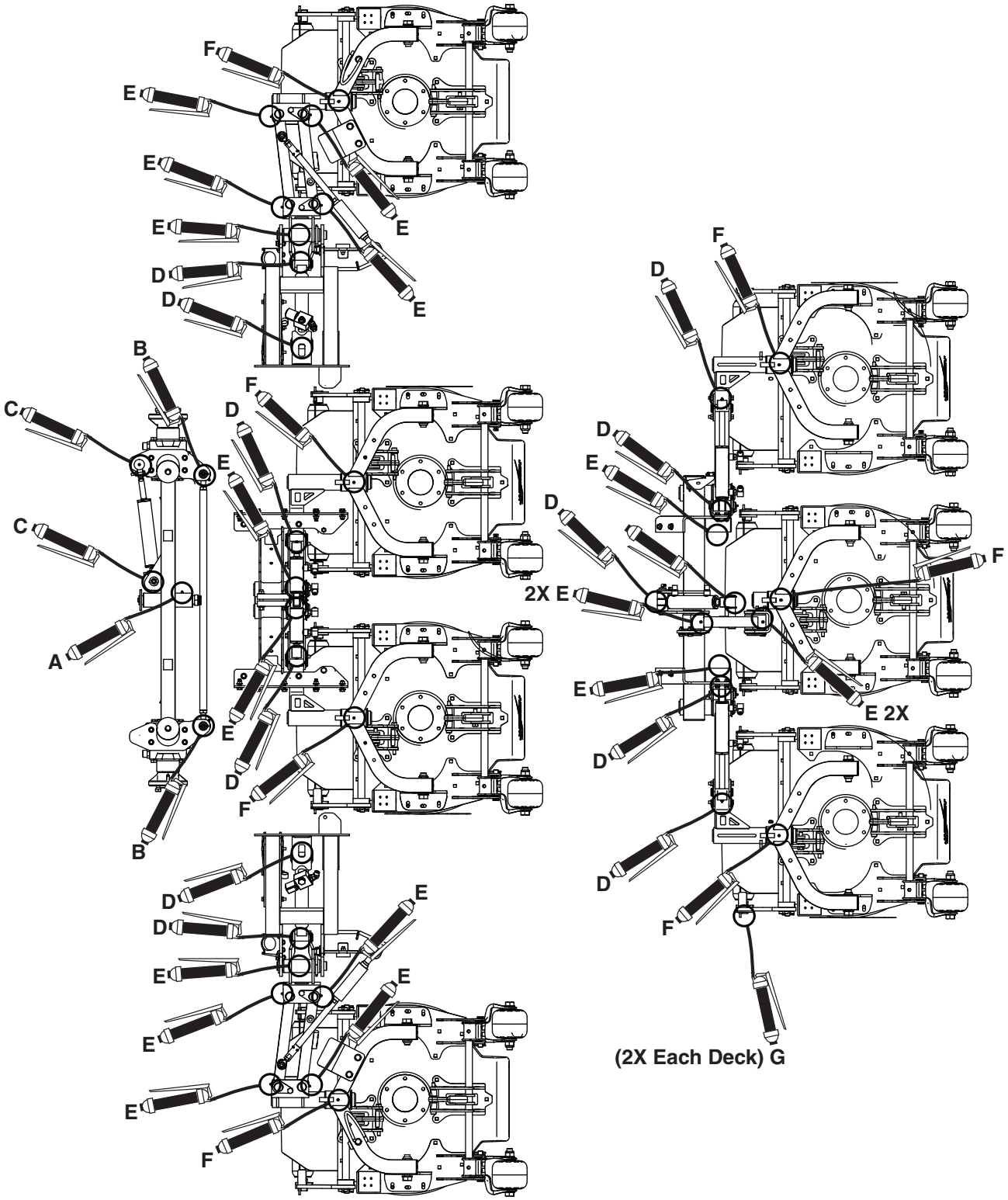
Every 2 Years	• Replace oil separator related rubber piping • Replace DPF related rubber piping • Replace air intake line and suction air pressure takeout rubber piping. • Replace Boost sensor rubber piping • Replace EGR cooler rubber piping • Replace water rubber piping • Replace lubricant rubber piping. • Change engine coolant • Change radiator hoses and clamps • Change fuel hoses and clamps@ • Change intake air hoses@ • Replace Alternator Belt (or every 500Hrs)	
The items listed above (@ marked) are registered as emission related critical parts by Kubota in the U.S.EPA non road emission regulation. As the engine owner you are responsible for the performance of the required maintenance on the engine according to the above instruction. Please see Warranty Statement for detail. **Refer to Engine Manufacturers Manual for the Complete Engine Maintenance Procedures**		

Fluid Requirements				
	Quantity			Type
Engine Oil (with filter)	7.6 liters	2.4 Imp gals	2 US gals	(see specification below)
Hydraulic Oil (with filter)	37.9 liters	12 Imp gals	10 US gals	Greens Care 68
Radiator Coolant	7.6 liters	2.4 Imp gals	2.0 US gals	50% Anti-Freeze
Fuel	64.2 liters	20 Imp gals	17 US gals	#2-D (ASTM D975) Diesel
Grease	as required			Shell Gadus 2 or equivalent

Engine oil: Must be to A.P.I. Classification CJ-4 grade or higher.	
TEMPERATURE	VISCOSITY
Above 25°C (77°F)	SAE30 or SAE10W-30 or 10W-40
0°C to 25°C (32°F to 77°F)	SAE20 or SAE10W-30 or 10W-40
Below 0°C (32°F)	SAE10W or SAE10W-30 or SAE10W-40

TIRE PRESSURE					
Front Wheel			Rear Wheel		
Tire Size	Tire Type	Tire Pressure	Tire Size	Tire Type	Tire Pressure
26.5 x 14.00 - 12	Ultra Chevron 6pr	12-14 psi (0.82-0.97 BAR)	20.00 x 10.00 - 8	Grass Master 4pr	12-14 psi (0.82-0.97 BAR)

Lubrication Points (Grease Every 50 Hours)	
A. Steering axle pivot)	E. Lift Arm Pivot (18)
B. Tie Rod Ball Joints (2)	F. implement Pivot (7)
C. Steering Cylinder Ball Joints (2)	G. Rear implement Roller (14)
D. Lift Cylinders (12)	


F
E
E
E
E
D
D
E
B
C
C
A
B
F
D
E
E
D
F
D
D
E
E
E
E
F
F
D
D
F
2X E
E
E 2X
D
D
F
(2X Each Deck) G

7.2 GENERAL PRECAUTIONS

⚠ WARNING

Before you clean, adjust or repair this equipment, push mow switch to the OFF position, lower cutting implements 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 make the adjustments and do the 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.

NOTICE

Only use the tool attached to the key ring to open the engine hood catches.

7.3 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. 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 60° C (140° F) 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 alternator 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.

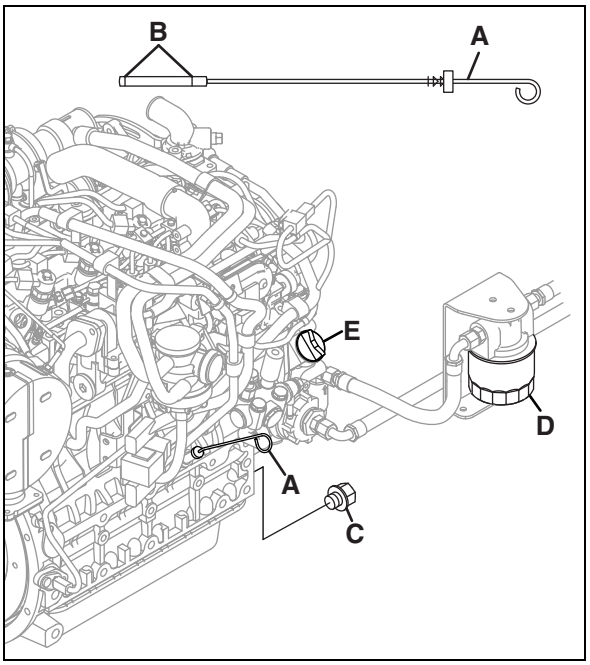
7.4 ENGINE LUBRICATION

Check Engine Oil Level

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

a Park the machine on level ground, remove the dipstick (A), clean with a cloth and replace in position.

b Remove the dipstick (A) again and check the oil level. The oil must be between the two level indicators (B) on the dipstick.



Change Engine Oil

a Start the engine to increase the temperature, then turn off the engine. Remove the oil drain plug (C) from the bottom of the crankcase and clean with a cloth.

b Drain the engine oil into a container.

c Replace the drain plug (C) and fill the engine with the correct quantity and grade of oil through the filler (E).

Change Engine Oil Filter

a Remove the oil filter cartridge (D).

b Let the engine oil flow into a container.

c Clean area on the crankcase.

d Apply a thin layer of oil to cartridge gasket before you install the filter.

e Only use your hand to tighten the filter cartridge (D).

f Check for oil leaks around the cartridge gasket after the engine is started.

⚠ CAUTION

Engine oil can damage your skin. use gloves. If engine oil touches your skin, clean the area immediately.

⚠ CAUTION

Discard engine oil in accordance with local regulations

7.5 ENGINE COOLANT

⚠ 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 coolant mixture 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 between the LOW and FULL indicators.

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

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

Keep the radiator and hydraulic oil cooler air passages clean. Do not use water to clean the fins. Only use low pressure compressed air to clean radiator.

⚠ CAUTION

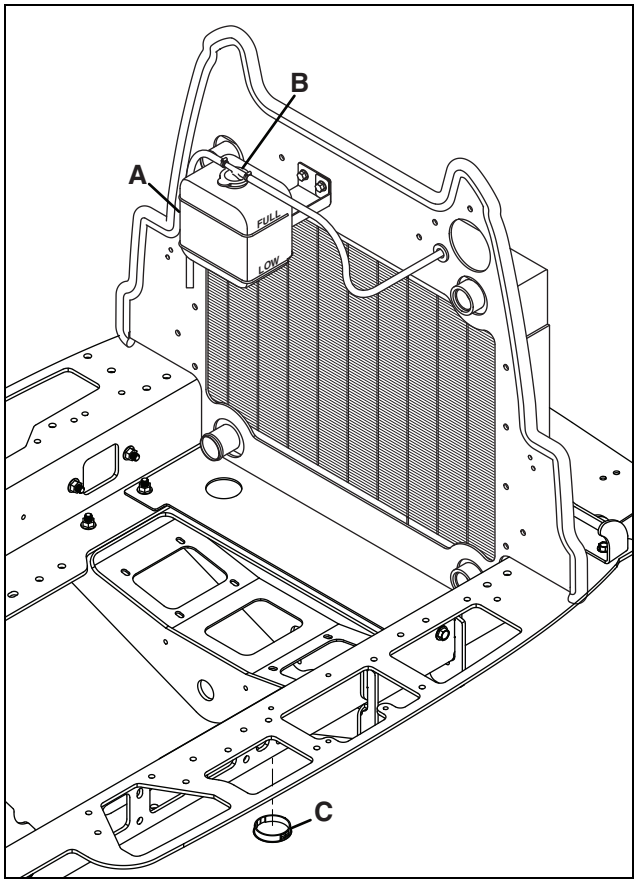
Stop engine and remove the key before pressure washing. Do not use a pressure washer near the instrument panel or engine radiator to prevent damage.

Check and tighten the engine fan belt (see maintenance chart) and replace the belt (see maintenance chart). Replace the clamps and hoses (see maintenance chart).

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 liter of coolant at a time.

Check The Engine Coolant Level

1. The level of coolant in a cold recovery bottle (A) must be between the LOW and FULL indicators.



⚠ 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.

2. If you need to fill the recovery bottle, remove the cap (B) and fill with the correct anti-freeze mixture (**See Section 7.1**). Replace the recovery bottle cap.

How To Change Coolant

1. To drain coolant, remove the plastic plug (C) from the right rear corner of the frame to access the radiator drain valve.
2. Open the radiator drain valve and drain the engine coolant into a container.
3. Close the radiator drain valve, clean up any spilled engine coolant and assemble plastic plug (C) into opening in the frame.
4. Remove the radiator cap and fill the radiator with the correct anti-freeze mixture (**See Section 7.1**). Assemble the radiator cap.
5. Remove the cap and fill the recovery bottle with the correct anti-freeze mixture. The level of coolant in a cold recovery bottle must be between the LOW and FULL indicators. Assemble the recovery bottle cap.
6. Run the engine for approximately 5 minutes or until the thermostat opens.
7. Check the level of coolant in recovery bottle. Fill the tank if more coolant is needed.

⚠ CAUTION

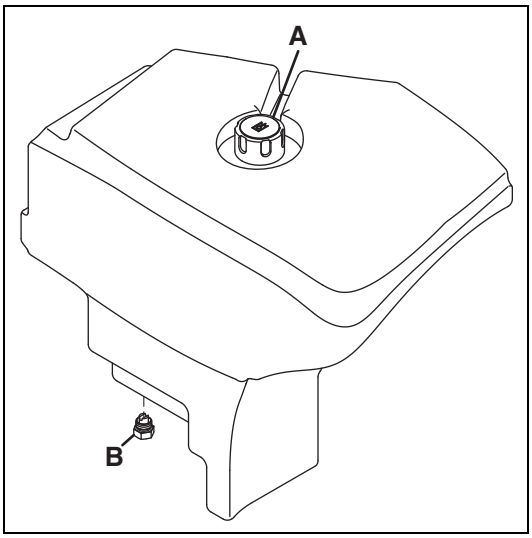
Anti-freeze can damage your skin. Use gloves when you use anti-freeze. If anti-freeze touches your skin, clean the area immediately.

⚠ CAUTION

Discard anti-freeze in accordance with local safety regulations.

7.6 HYDRAULIC SYSTEM

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



- Hydraulic component failure.
- Water or foam in the hydraulic fluid.
- The hydraulic fluid has a rancid odor (indication of high heat).
- When required by maintenance schedule.

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

Change The Hydraulic Oil

a Clean the area around the breather cap (A) and drain plug (B) to prevent entry of dirt into the hydraulic system.

b Place a container capable of holding 15 gallons beneath the hydraulic tank.

c Remove the drain plug (B) and allow the oil to drain into the container.

d After the oil has drained, assemble the drain plug. Remove the breather cap (A) and fill the tank with hydraulic fluid through breather cap opening. Assemble the breather cap.

e 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.

f When all air is removed from the hydraulic-fluid, check the level, add hydraulic fluid to the tank to the recommended level.

IMPORTANT

If you open the closed hydraulic transmission circuit, you need to fill the circuit with oil before the circuit is used again. When you fill the hydraulic tank, use only clean oil. The hydraulic oil must go through a 10 micron filter before the oil enters the tank.

⚠ CAUTION

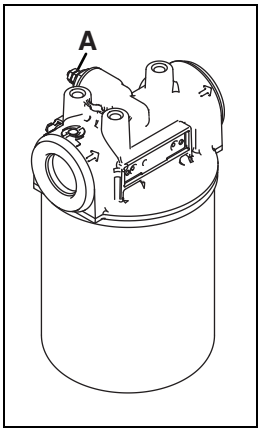
Hydraulic oil can damage your skin. Use gloves when you use hydraulic oil. If hydraulic oil touches your skin, clean the area immediately.

⚠ CAUTION

Discard used hydraulic oil in accordance with local safety regulations.

7.7 HYDRAULIC FILTER

The hydraulic system is protected by one 10 micron filter. A 40 psi (2.7 BAR) pressure switch (A) is on the side of the filter head. When service is needed, a signal is sent to the mower controllers.



When you replace the filter:

a Fill the new filter with hydraulic fluid and lubricate the filter O-ring with hydraulic fluid before you install 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.

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

⚠ CAUTION

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

⚠ CAUTION

Discard used hydraulic oil in accordance with local safety regulations.

7.8 HYDRAULIC HOSES

⚠ WARNING

To prevent injury from the hot, high pressure oil, never use your hands to check for oil leaks. Use 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 implements 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 follow 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 in accordance with the maintenance chart.

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 stop the entry of dirt into the system.

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

To stop the entry of dirt into the 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 hose twist. Twisted hoses can cause the hose connections to loosen as the hose moves while you operate the mower and can cause oil leaks.

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.

7.9 FUEL

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

⚠ WARNING

Refuel the mower before you start the engine. Never remove the fuel cap or add fuel to the mower while the engine is in operation or while the engine is hot.

Refuel outdoors only and do not smoke when you add fuel.

If fuel spills, do not try to start the engine until fuel vapors have dissipated. Do not allow sparks, open flame or other ignition sources in the area until fuel vapors have dissipated.

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

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

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

Use clean ultra low sulfur Diesel fuel to the recommended specification. The use of Diesel fuel additives is not recommended. If fuel additives are used, the fuel additives must be approved for use in the engine type used in your machine. Refer to the engine manual for additional information.

Check fuel hoses and clamps at service interval (see chart). Replace the fuel hoses and clamps at first indication of wear or damage.

Store fuel according to your local, state or federal regulations.

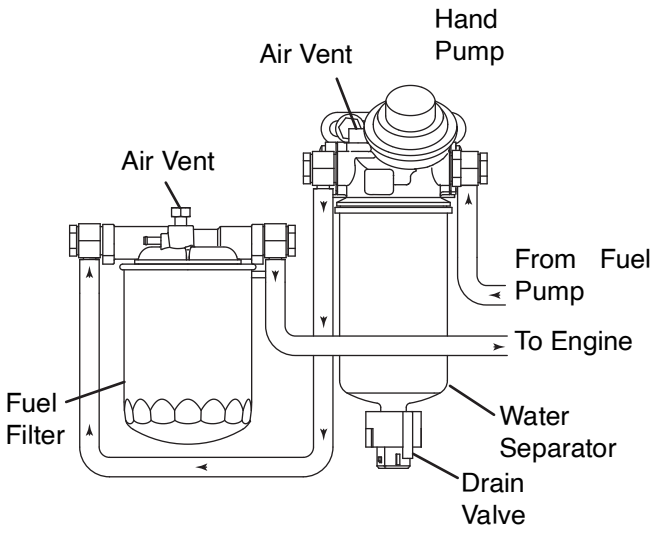
Fuel System

Use ultra low sulfur Diesel fuel (ASTM D975 Ultra Low Sulfur)

Water Separator

If the water is not removed from the fuel, damage to the fuel-injection system can occur. Every 100 hours, drain the water from the water separator.

1. Stop the engine. Open the air vent at the top of water separator.
2. 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.
3. Close the vent at the top of the water separator.



Fuel Filter

1. Replace the fuel filter every 400 hours.
2. Stop the engine.
3. Open the air valve at the top of the filter to release system pressure.
4. Remove fuel filter cartridge. Clean any fuel that spills.
5. Assemble new filter cartridge to the filter base. Tighten the cartridge with your hand.
6. Bleed air from the fuel system.

How To Bleed The Air From The Fuel System

1. After water is drained from the fuel system, the fuel filter cartridge is removed or the fuel hoses are replaced, the air must be removed from the fuel system.
2. Open the air vent at the top of the water separator. Turn the ignition switch to the RUN position, but do not start the engine. Operate the fuel pump until air bubbles at separator air vent stop and fuel starts to spill. Close the vent. Clean any fuel that spills.
3. 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.
4. Start the engine. The engine will remove any air remaining in the fuel hoses.

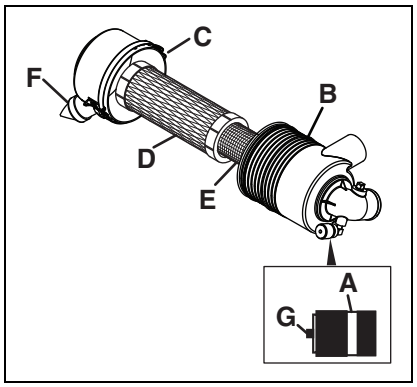
⚠ CAUTION

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

⚠ CAUTION

Discard diesel fuel in accordance with local safety regulations

7.10 AIR CLEANER



Check the service indicator (A) each day. If the red band becomes visible in the window, replace the primary filter element (D).

Only remove the safety filter element (E) when replacement is required. Removal of the safety filter that is not necessary increases the risk of dust and other particles to enter the engine. Replace the safety element every third change of the primary element (D).

When service is needed, first clean the outside of the filter housing (B), release the two clips and remove the cap (C). Remove the primary filter element (D) 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 element. Do not use a damaged element and never use an incorrect element.

Install the filter element. Make sure the element seats correctly. Press the button (G) to reset the service indicator.

Install the cap (C) onto the filter housing (B). Make sure the cap seals around the filter housing. The dust valve (F) on the cap must be at the bottom of the filter. Fasten the cap with the two clips.

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

7.11 CHARGE THE BATTERY

⚠ WARNING

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.

When the battery charger is turned on, to prevent injury, stay away from the battery. A battery that is damaged can cause an explosion.

Read the battery charger manual for specific 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.

7.12 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 tools with insulation, wear protective glasses and protective clothing.

Discard used batteries in accordance with 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

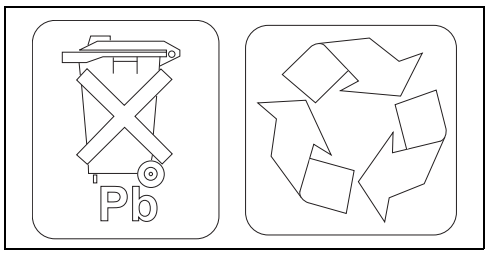
The battery posts, battery terminals and related accessories contain lead and lead compounds, chemicals know to the State of California to cause cancer and other reproductive harm.

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



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

c Connect the negative (–) battery terminal of the charged battery to frame 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 frame 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.

7.13 ENGINE EXHAUST

WARNING

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.

NEVER operate the engine without enough ventilation.

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.

CALIFORNIA PROPOSITION 65

WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects and other reproductive harm.

The exhaust system has the exhaust manifold, turbocharger, Diesel Particulate Filter (DPF) and exhaust pipes. Refer to Section 7.14, Section 4.2.6.28, Section 4.2.6.29 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.

7.14 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.

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.

Passive Regen State - The engine operates in the Passive Regen state during normal engine operation. The exhaust temperature can be more than 572° F (300° C).

Inhibit Regen State - When the visual display is set to Inhibit Regen, the 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, set the visual display to Inhibit Regen until the fuel tank is filled. **See Section 4.2.6.28.**

Active Regen State - 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 temperature icon will become active during Active Regen.

Parked Regen State - When a Parked Regen is needed, the Parked Regen Icon will become active on the display. Park the mower on concrete or gravel to prevent damage to the turf. Engage the parking brake, but do not stop the engine. Activate the parked Regen using the visual display to start the Parked Regen. During the Parked Regen, the Parked Regen icon will be active on the display. The high exhaust temperature icon will also become active on the display during Parked Regen. Do not disengage the parking brake, stop the engine or move the mower during the Parked Regen. **See Section 4.2.6.29.**

A Regen cycle that is not completed will move the engine through six different levels of control.

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 is set on the visual display. Normal Active Regen is completed in approximately 20 minutes. The high exhaust temperature icon will become active during Active Regen. 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 - Parked Regen icon will become active. Engine will enter Active Regen state unless Inhibit Regen is set on the visual display. The high exhaust temperature icon will become active during Active Regen.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 icon will flash and the check engine light icon is active on the visual display. 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. The high exhaust temperature icon will become active during Parked Regen. 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 - The check engine icon is active on the visual display. 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.

Level 5 - The check engine icon is active on the visual display. The engine power output is decreased significantly. An authorized Kubota Engine Service Center must clean the DPF before the mower is used.

7.15 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 at the correct pressure (**See Section 7.1**)

⚠ 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.

7.16 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.

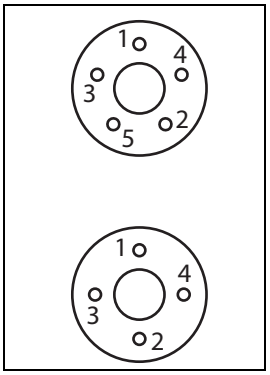
If only the front or rear of the mower is lifted, put the chocks in front of and behind the wheels that are not lifted.

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.

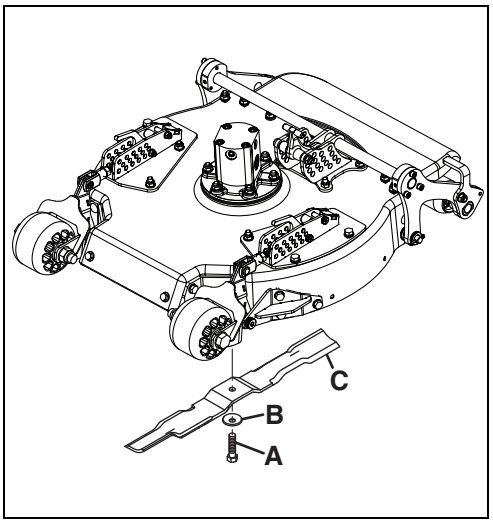
Check and torque hardware each day until torque is kept at 85-95 ft.lb. (115-128Nm).



7.17 BLADE CHANGE

All Cutter Implements

1. Start the engine and fully lift the cutting implements. Stop the engine and remove the key.
2. If necessary, lift up on the front of the implement housing for better access to the blade. Support the implement housing in this position.
3. Use a block of wood or other means to prevent the blade from turning.
4. Remove blade bolt (A) and washer (B).
5. Remove blade (C) from implement.
6. Fit new blade.
7. Assemble washer (B) and blade bolt (A) to motor spindle. The cupped side of the washer must face the blade.
8. Use a block of wood or other means to prevent the blade from turning. Torque the blade bolt to 95 ft-lb (129 Nm).

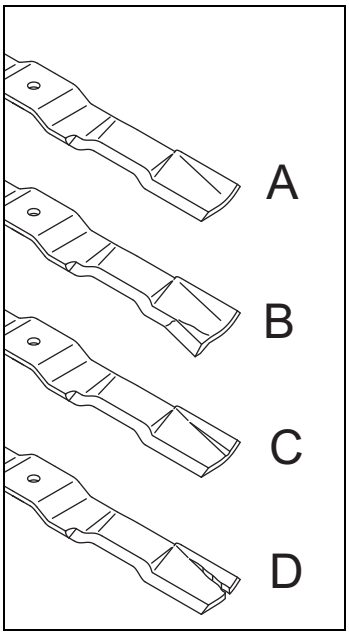


⚠ WARNING

Blades are extremely sharp and can cause severe cuts. For your protection, hold blades with thick leather work gloves only.

7.18 INSPECTING BLADES

Inspected the blade in accordance with the maintenance chart or when the cutting implement is removed from the mower, carefully inspect the blades to make sure the blades are in good condition (A). Replace any blade that has bends (B), grooves (C) or cracks (D).



⚠ 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 replaced a damaged blade.

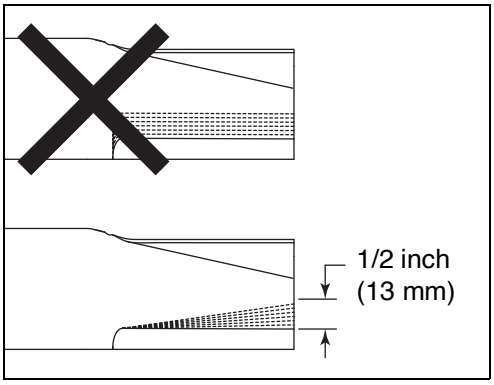
The bends, grooves or cracks can cause a piece of the blade to become loose and be discharged from the mower. The broken blade pieces can cause injury to bystanders or property damage.

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.

7.19 SHARPENING BLADES

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



⚠ WARNING

The cutting implement 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 bystanders 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 1/2 inch (13 mm) blade loss has occurred, do not sharpen more, replace the blade.

To stop blade balance problems, 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 95 ft-lb (129 Nm).

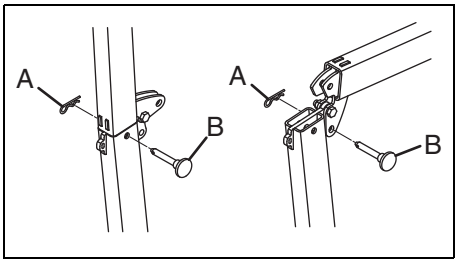
7.20 FOLDING ROPS

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

⚠ CAUTION

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

Inspect the seat, seat belt, ROPS mounting hardware and ROPS frame for damage in accordance with maintenance chart. 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 in accordance with maintenance chart.

Do not operate the mower with the ROPS in the folded position.

There is no roll over protection with the ROPS in the folded position.

Folding the ROPS.

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

⚠ DANGER

In off road or transport mode, the seat belt must always be worn. The ROPS frame must be in the position for operation. This instruction is given to meet:

The machinery directive, 2006/42/EC Sections 3.2.2, Seating & 3.4.3, Rollover.

Jacobsen recommends that the owner operator of the machine complete a local risk assessment on the machine to find any conditions that do not follow this rule.

⚠ WARNING

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

Always wear the set 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.

7.21 CARE AND CLEANING

Clean the mower and cutting implements 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. Use cold water and automotive cleaners.

⚠ CAUTION

Do not use high pressure water or air to clean 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. Do not spray water 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 plastic parts, wax with a good grade one-step cleaner and wax combination product.

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 implements, drives, engine and exhaust components.

⚠ WARNING

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

7.22 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
- When the vehicle is not being used for an extended period, the tire pressures must be increased. Inflate to the maximum rating on the tire wall to make sure that flat spots do not occur. Decrease the tire pressure before the vehicle is put into operation.
- 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.
- When a label is damaged or removed from the machine, make sure that the label is replaced. See the Decals section of this manual or the Parts Manual.

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 plugs, drain the oil from the crankcase and change the oil filter. Install the drain plugs. Tighten the drain plugs to 22 ft. Lb. (30 Nm). Fill the engine with correct amount of oil
- Clean the outside surface of the engine. Paint bare metal or apply a thin layer of rust preventative oil.

Cutting Implements

- Completely clean the cutting implements. 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 blades can have sharp edges. To prevent injury, wear leather gloves and use caution when you service or hold the blades.

After Storage

- Check and install the battery. If necessary, charge the battery.
- Check or service the fuel system 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 cutting implement blades. Adjust the cutting height.
- Start the engine and 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.

8.1 GENERAL INFORMATION

⚠ CAUTION

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

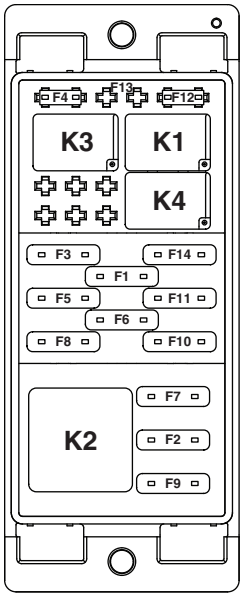
General precautions to decrease electrical problems are -

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

The electrical system is monitored and controlled by the Engine Control Unit (ECU), Mower Control Units (MCU) and the visual display. There are CAN diagnostic connectors located under the armrest control panel and under the hood on the left side of the engine. A four pin Kubota Diagmaster connector is located on the left side of the engine.

There are fifteen fuses and four relays that are used to protect the mower circuits. The mini/ATO fuses and relays are located under the mower hood, on the left side of the engine. The 60A maxi fuse is found in the positive battery cable near the alternator.

8.2 FUSE AND RELAY/COMPONENT IDENTIFICATION



FUSES

FUSE IDENTIFICATION			
Fuse	**Type**	**Rating**	**Protected Circuits**
F1	ATO	10A	ECU Power
F2	ATO	25A	Main Relay Load Circuit
F3	ATO	5A	Start Signal
F4	Mini	5A	EGR
F5	ATO	15A	Premium Seat Compressor / Armrest
F6	ATO	20A	MCU Power
F7	ATO	25A	MCU Relay Power
F8	ATO	20A	MCU CPU Power
F9	ATO	40A	Glow Plug Relay
F10*	ATO	20A	Start Relay
F11	ATO	20A	Work Lights
F12	Mini	5A	T4F Main Relay Coil
F13	Mini	5A	Not Used
F14	ATO	10A	12V Accessory Outlet
F15	Maxi	60A	Alternator Output (Located in Positive Battery Cable)

Relays

Relay	Rating	Circuits
K1	Micro	Main Relay
K2	40A	Glow Plug Relay
K3	Micro	Start Relay

K4	Micro	Light Relay

WARNING

To prevent injury to the operator or damage to the mower, never replace a fuse with a higher amperage rating fuse.

Never bypass fuses. Fire damage may result.

NOTICE

For proper operation of the AR730 mower with a Tier 4 Final engine installed, do not insert a fuse in the F13 location. Placing a fuse in the F13 location will cause problems with the mower.

9.1 ENGINE PROBLEM SOLVING

The Engine is difficult to start	
Cause	**Action**
The fuel is thick and does not flow.	Check the fuel tank and fuel filter.
	Remove any contamination from the fuel system.
	Clean the fuel filter with kerosene.
Air or water mixed in fuel	The fuel system is a pressure type. Air in the system will cause a problem. Bleed the Fuel System.
	To get correct fuel injection pressure, check carefully for loose fuel line couplings and loose cap nut.
	Loosen the joint bolt stop, fuel filter and air vent screws of fuel injection pump to remove all the air in the fuel system.
The Engine oil becomes thick in cold weather and engine cranks slowly.	Change the grade of oil according to the average temperature.
The Battery is discharged and the engine will not crank	Charge the battery.
	In the winter, always remove the battery from the machine. Keep the battery charged and store in a dry, safe environment.

Loss of Power	
Cause	**Action**
No fuel.	Check the fuel system.
Moving parts at more than operating temperature.	Check lubricating oil system.
	Make sure that the lubricating oil filter flow is not decreased.
	A dirty filter element can cause loss of lubrication. Change the filter element.
The air cleaner is dirty	Replace the filter element every 100 hours of operation.
Injection pump wear	Use the correct grade of fuel. Low grade fuel will cause the fuel pump to wear. Only use the specified Diesel fuel.

The Engine stops	
Cause	**Action**
There is no Fuel	Check the fuel tank and fill with fuel.
	Check the fuel system for air leaks.
Bad Nozzle	If necessary, replace the nozzle.
Moving parts at more than operating temperature. Not enough lubrication.	Check amount of engine oil with oil level gauge.
	Check lubricating oil system.
	The oil filter cartridge must be replaced at every second oil change.

Dirty Smoke or carbon increase on the Exhaust	
Cause	**Action**
Wrong fuel	Only use Diesel fuel specified in specification section.
Bad Nozzle	If necessary, replace the nozzle.

Engine must be stopped immediately	
Cause	**Action**
The color of the exhaust turns dark.	Check the fuel system and the fuel injection nozzle.
The bearings are at more than operating temperature.	Check the lubricating system.

Engine Temperature above Safe Maximum.	
Cause	**Action**
Engine oil low.	Check oil level. Fill to specified level.
The fan is not operating correctly.	Check the fan fuse and relay. Make sure fan connector is tightly connected.
Coolant low.	Fill to the specified level.
The Anti-freeze solution is too strong.	Add clean water only or change to coolant of the correct ratio.
The radiator screen or radiator fins are dirty.	Clean screen or fin carefully.
The radiator or coolant lines are dirty	Clean or replace the radiator and parts.
The fan, radiator or radiator cap has defects.	Replace the parts.
The Thermostat has defects.	Check the thermostat and replace if necessary.
The Temperature gauge or sensor has defects.	Check the temperature with thermometer and replace if necessary.
Engine is operated at more than maximum load.	Decrease the load.
Head gasket has defects or water leakage.	Replace the parts.
Incorrect fuel used	Use specified fuel.

10.1 QUALITY OF CUT PROBLEM SOLVING

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

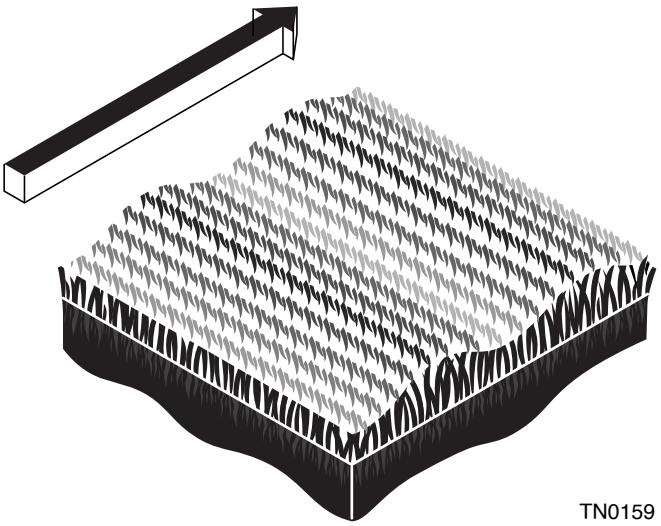
This area must have known turf conditions that do not change across the area. This type of area allows an accurate inspection of the performance of the mower to be made.

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. Roller and Implement Wheel Bearing Condition
5. Blade Speed

10.2 WASHBOARDING



TN0159

NOTE: Arrow indicates direction of travel.

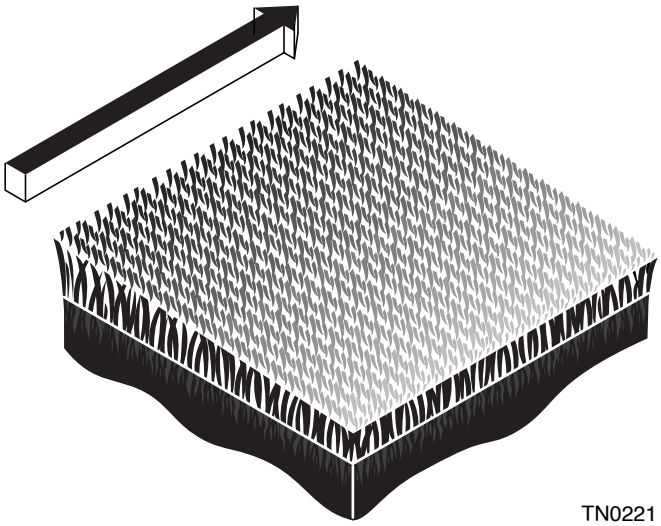
Washboarding is a repeated pattern of different cutting heights, that causes an appearance that is like a wave. In most cases, the wave tip-to-tip distance is approximately 6—8 in. (15—20 cm). A change in the color (from light-to-dark) is also seen.

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

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

Probable Cause	Remedy
The cut (ground) speed is higher than normal.	Reduce the cut (ground) speed.
Grass attaches on roller.	Clean the roller and scraper.
The roller is out of round.	Replace the roller.
Cut in the same direction.	Change the direction of cut more frequently.
Cutting implements have too much or too little weight on them.	Use the visual display to transfer weight on or off cutting implements.
Hydraulic system and implement drive motor performance is decreased.	Check the hydraulic system performance (pump output, motor operation, valve operation and relief valve settings).

10.3 STEP CUTTING



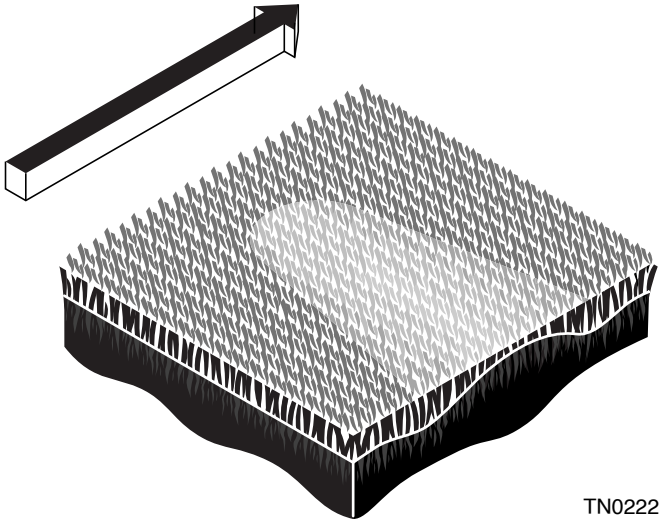
NOTE: Arrow indicates direction of travel.

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

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

Probable Cause	Remedy
HOC (height-of-cut) settings are different from one side of a cutting implement to the other side or from one cutting implement to another implement.	Check HOC adjustment of cutting implements.
Worn roller or implement wheel bearings.	Check and replace the bearings in the roller and the implement wheels.
The cutting implement movement is prevented.	Check and remove the cutting implement movement obstruction.
Differences in turf density	Change the direction of cut.
Mower ride height is uneven side to side.	Check and adjust tire inflation pressure.
Cutting implement height is uneven side to side.	Check and adjust for even mower weight distribution.

10.4 SCALPING

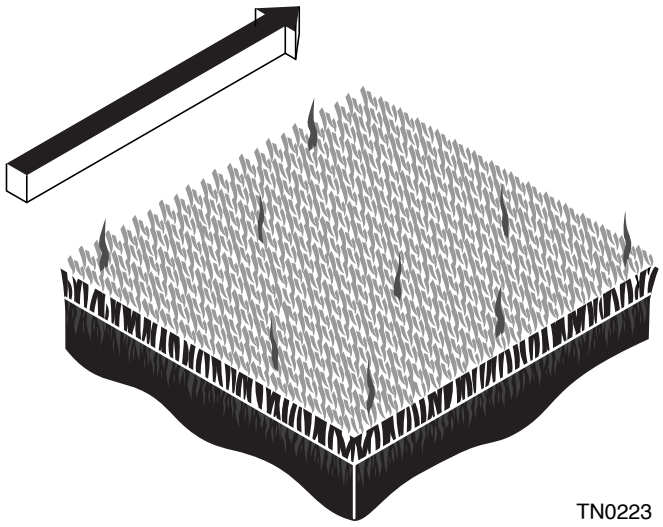


NOTE: Arrow indicates direction of travel.

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.

Probable Cause	Remedy
HOC (height-of-cut) settings are lower than normal.	Check and adjust the HOC settings.
Turf is not level and the mower can not follow the turf.	Change the direction of cut.
Grass is higher than the cutting implement capacity.	Cut the grass more frequently.
Cut (ground) speed is higher than the mower can cut.	Reduce the cut (ground) speed.

10.5 STRAGGLERS

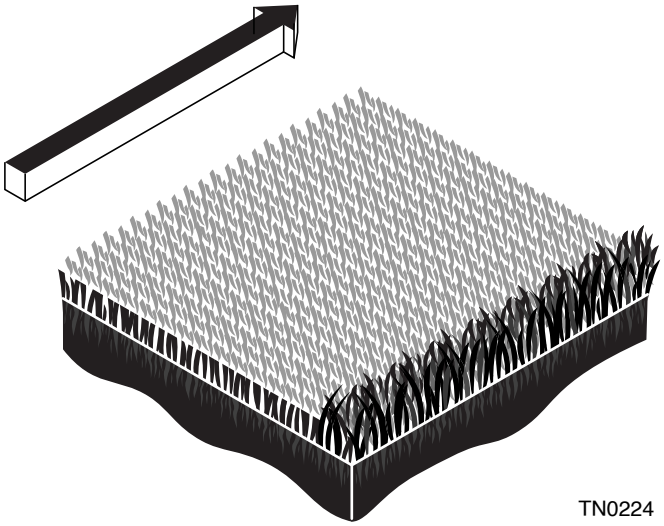


Stragglers are separated blades of grass the are not cut, or are cut incorrectly.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
Edge of the cutting blade(s) are not sharp.	Sharpen the blade(s).
Cut (ground) speed is higher than normal	Reduce the cut (ground) speed.
The grass is higher than the level at which the mower can cut correctly.	Cut the grass more frequently.
Cut in the same direction.	Change the direction of cut more frequently.

10.6 STREAKS

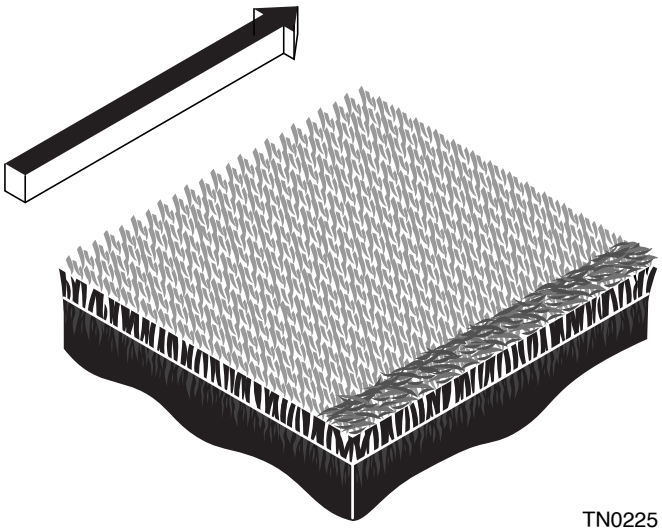


A streak is a line of grass that is not cut. The cause of a streak can be a damaged blade.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
Damaged blade(s).	Replace the blade(s).
The mower turns at a rate that is faster than the mower can turn and cut correctly. The cutting implements do not overlap around turns or on side hills.	Turn at a speed that will allow the cutting implements 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 mower compresses the wet grass before the grass is cut.	Cut the grass when grass is dry.

10.7 WINDROWING

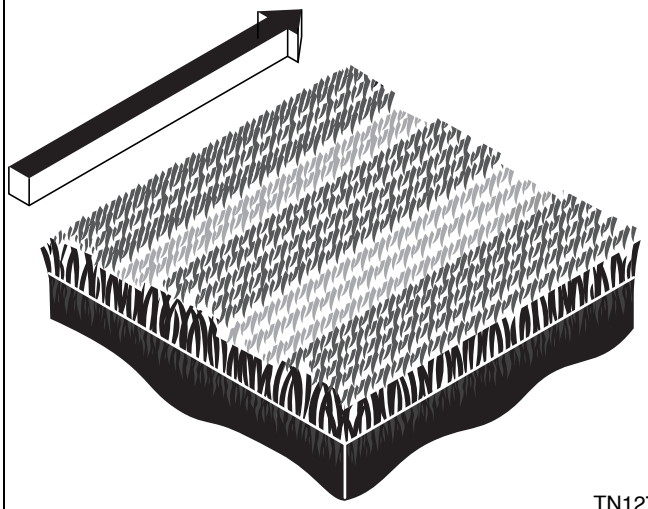


Windrowing is the deposit of clippings increased at one end of cutting implement(s) or between cutting implements. Windrowing can make a line in the direction of travel.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
The grass is higher than the level at which the mower can cut correctly.	Cut the grass more frequently.
Mowing the grass while grass is wet.	Cut when grass is dry.
Grass attaches to the roller.	Clean the rollers and scrapers.
Grass collecting on mower or cutting implement frame.	Clear the cutting implement(s) grass deflector.

10.8 MISMATCHED CUTTING IMPLEMENTS



TN1278

NOTE: Arrow indicates direction of travel.

Mismatched cutting implements 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 implement to another implement.

Probable Cause	Remedy
HOC is different from one cutting implement to another implement.	Check and adjust the HOC on cutting implements to same height.
Difference in cutting implement motor speeds.	Check the operation of cutting implement motor(s). Repair or replace as necessary.
Difference in mower ride height side to side.	Check and adjust the tire inflation pressure.
	Check and adjust for even mower weight distribution.

11 SPECIFICATIONS

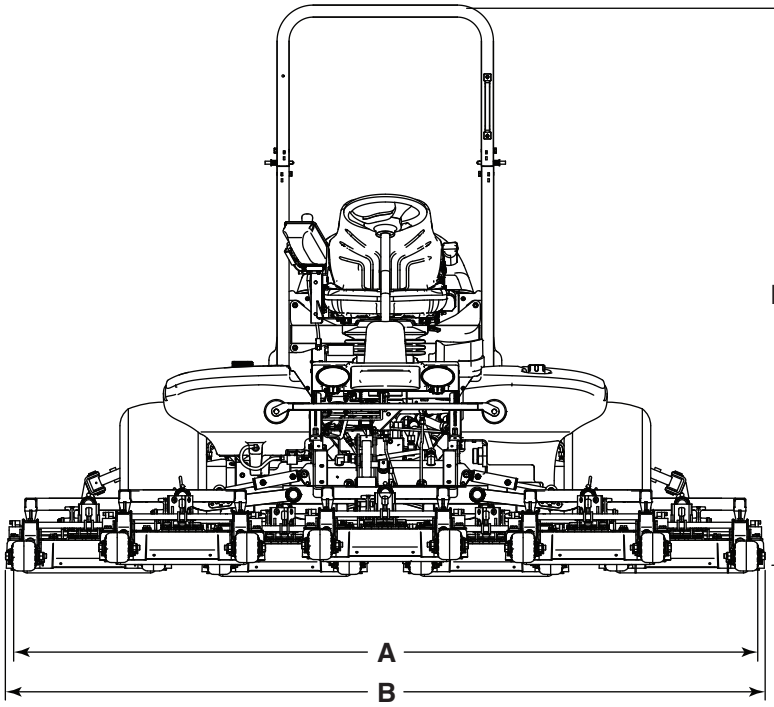
11.1 ENGINE SPECIFICATION

Model:	V2403-CR-E4B-T4F / V2403-CR-TE5B-TXN-1
Type:	Vertical, water-cooled, 4-cycle diesel engine
Number of Cylinders	4
Bore and Stroke	3.43 x 4.03 inch (8.7 x 10.25 cm)
Total Displacement	148.5 in^3 (2.434 liters)
Combustion Type	Common Rail Direct Injection
SAE Net Intermittent (SAEJ1349) HP / rpm (kW / rpm)	65.2 HP @ 2700 rpm (48.6 kW @ 2700 rpm)
Maximum Torque / Rotating Speed	146.4 ft-lb @ 1600 rpm 198.5 Nm @1600 rpm
Maximum Bare Speed:	2900 ± 50 rpm (No load)
Idle Speed:	1100 ± 25 rpm
Firing order	1-3-4-2
Direction of Rotation	Counter-clockwise (viewed from flywheel side)
Compression Ratio	18.5:1
Fuel:	Diesel Fuel No. 2-DULS (Ultra Low Sulfur)
Lubrication (API Class)	CJ-4 or higher
Dimensions (length x width x height)	34.2 x 20.4 x 28.9 inch (86.9 x 50.0 x 73.4 cm)
Dry Weight (BB Spec.)	513 lb (233 kg)
Starter motor	12V, 2.0 kW
Generator	12V, 45 Amp

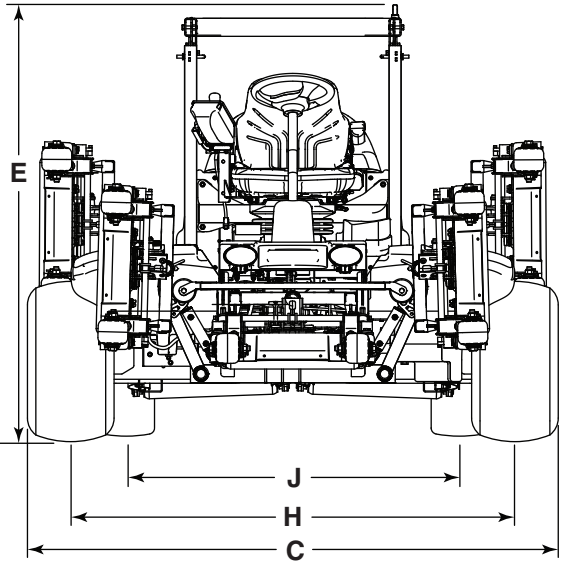
11.2 DIMENSIONS & WEIGHTS

A	Width Of Cut	121.8	309.3 cm
B	Overall Width	126.5 in.	321.3 cm
C	Maximum Width Transport With Cutting Implements Raised	88.6 in.	225.0 cm
D	Maximum Height With ROPS in Vertical Position	91.6 in.	232.6 cm
E	Height With ROPS Folded	71.5	181.5 cm
F	Total Length	137.5 in.	349.2 cm
G	Wheel Base	63 in.	160 cm
H	Wheel Track Front	74 in.	188 cm
J	Wheel Track Rear	55.5 in.	141 cm
	Ground Clearance	6.09 in.	15.48 cm
	Turning Circle, Curb to Curb (outside tire to outside tire) in Transport (Left/Right Turn)	262 in.	665 cm
	Weight of AR730, Hydraulic and fuel tanks filled, implements lifted	4441lb	2014kg
	Weight of AR730, Hydraulic tank full, fuel tank empty, implements lifted	4356lb	1976kg

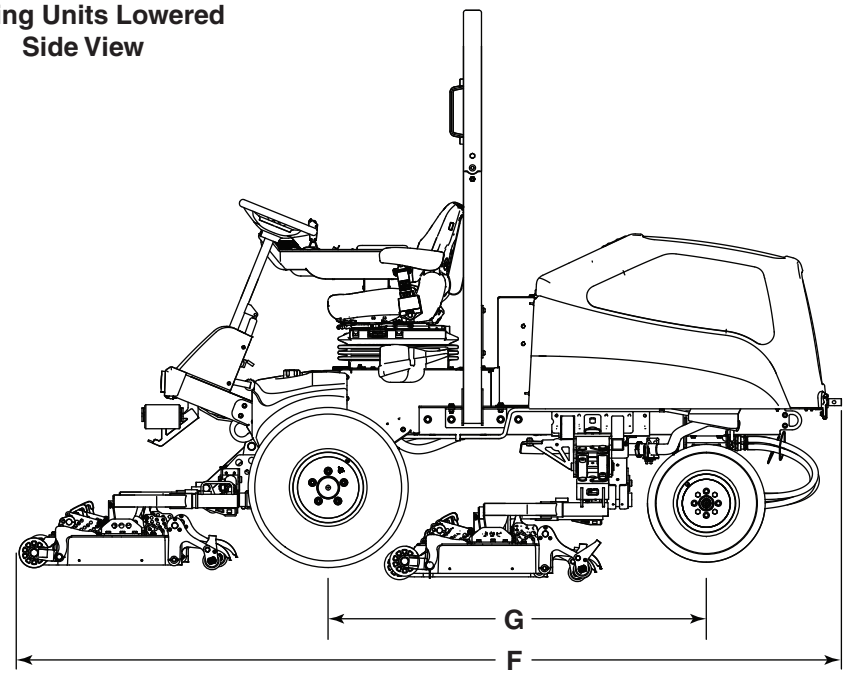
Cutting Units Lowered
Front View



Cutting Units Lifted
ROPS Folded
Front View



Cutting Units Lowered
Side View



11.3 MACHINE SPECIFICATION

Frame construction: Heavy duty steel chassis with formed steel frame rails.

Cutting Implement Drive:AR730, Seven individual hydraulic motors.

Transmission: Hydrostatic closed loop parallel 2WD/AWD wheel drive system with 4WD parallel cross flow forward on demand. Variable displacement piston pump. Front high torque fixed displacement piston wheel motors. 2WD forward in transport mode, AWD in mow mode. 2WD only in reverse

Speeds:

Cutting: 0 - 12 mph (0 - 19.3 km/h) Forward

Transport: 0 - 12 mph (0 - 19.3 km/h) Forward

Reverse: 0 - 5 mph (0 - 8 km/h)

Steering: Hydrostatic powered steering.

Ground pressure: Depends on the tire pressures and the accessories installed.

Brakes: Hydrostatic braking with wet disc parking brakes on the front wheels.

Battery: 12V VRLA Deep Cycle, 560 CCA, 28 Amp Hours @ 20 hour rate Capacity

Mower Lift/Lower: Hydraulic Double Acting Cylinders

11.4 HYDRAULIC SPECIFICATION

Circuit Description	Flow @2800 rpm engine speed US Gallon/Minute (Liters/Minute)	Relief Valve Pressure PSI (BAR)
Forward Traction Circuit	33.9 (128.5)	3625 (250)
Reverse Traction Circuit	33.9 (128.5)	3625 (250)
Charge Pressure	10.3 (39)	300 (20.7)
5 Gang Cutting Implements	10.8 (40.8)	2800 (193)
Wing Cutting Implements	10.8 (40.8)	3000 (206.8)
Steering and 5 Gang Lift (Standard Fan)	6.85 (25.7)	1958 (135)
Steering and 5 Gang Lift (Reversing Fan Option)	5.5 (20.8)	1958 (135)
Wing Lift/Lower (Standard Fan)	6.85 (25.7)	1958 (135)
Wing Lift/Lower (Reversing Fan Option)	5.5 (20.8)	1958 (135)
Lower (Standard Fan)	6.85 (25.7)	500 (34.5)
Lower (Reversing Fan Option)	5.5 (20.8)	500 (34.5)
Reversing Fan Option	8.85 (33.5)	2200 (151.7)

11 SPECIFICATIONS

11.5 VIBRATION

The machine 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. No drive was engaged.

The Machinery Safety Directive 2006/42/EC
By compliance to:
The Lawnmower Standard BS EN ISO5395-3:2013
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 (2002)

Hand / Arm Acceleration Level	AR730
	Maximum Accelerations m/s²
	0.78 ±0.27

Whole-body vibration measurement was carried out with the machine traveling in a straight line at a speed close to 6 km/h on a flat horizontal level surface. The height of cut was set at the lowest position and the cutting means engaged.

Each reading shall be obtained from a signal time suitable
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)

Whole Body Acceleration Level	AR730
	Maximum.Acceleration m/s²
	0.48 ± 0.27

11.6 NOISE

When the machine was tested for sound pressure (Operator Ear).

The Machinery Safety Directive 2006/42/EC
And
Exposure Of Workers To The Risks Arising From Physical Agents (Noise) Directive 2003/10/EC
By compliance to:
The Lawnmower Standard BS EN ISO 5395:2013
And
Sound Pressure Standard EN ISO 3746: 2010

Measured Sound Pressure 88(A) ± 0Leq

When the machine was tested for sound power (Noise in the Environment).

The Machinery Safety Directive 2006/42/EC
And
Noise Emission In The Environment By Equipment For Use Outdoors
Directive 2000/14/EC
By compliance to:
Sound Power Standard EN ISO 3744:2010

Measured Sound Power 103.2dB(A) ± 1.06 LWA

11.7 SLOPES

DO NOT USE ON SLOPES GREATER THAN 15°. The slope was calculated using static stability measurements according to the requirements of BS EN ISO 5395:2013

11.8 CUTTING PERFORMANCE

121.3 inch (309.3 cm) width of cut:

3.12 hectares/hr. At 11.26 kph.

7.72 acres/hr. at 7 mph

(10% allowance is included for normal overlaps and turning at the end of each cut).

11.9 CUTTER IMPLEMENT SPECIFICATION

	AR730
Number of Cutting Implements	7
Blade Cutting Width	23 inch (58.4 cm)
Height of Cut	0.75 - 4.5 inch (19 mm - 114 mm)
Height of Cut Adjustment	Front and rear roller adjustment handles.
Transmission	By Hydraulic motor to blade.

11 SPECIFICATIONS

11.10 RECOMMENDED LUBRICANTS

Grease:

Shell Darina R2 lithium based grease or equivalent.

11.11 ACCESSORIES

Bat (for clearing blockages) 4184540

United Kingdom

Ransomes Jacobsen Limited
West Road, Ransomes Europark, Ipswich, IP3 9TT
English Company Registration No. 1070731

T: +44 1473 270000 **W:** www.ransomes.com

Europe office

Ransomes Jacobsen France
3 Chemin des Silos
ZI du Chapitre
31100 Toulouse

T: +33 (0)5 34 47 86 40

North & South America

Jacobsen
1451 Marvin Griffin Road, Augusta,
Georgia 30906 - 3852, USA

W: www.jacobsen.com

TEXTRON SPECIALIZED VEHICLES
1451 Marvin Griffin Road Augusta, Georgia 30906 - 3852, USA