Jake

A SIGNATURE CUT, TRUSTED FOR OVER 100 YEARS

JACOBSEN

SAFETY, OPERATION & MAINTENANCE MANUAL

Super Lightweight Electric Ride on Reel Mower

SLF1 ELiTE - Lithium - 3WD

Product Code:10018933
Series: DFN

⚠ 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
United Kingdom

RJL BBCE

10020773-D-GB

CONTENTS

SECTION 1 - FOREWORD

IMPORTANT 1
PRODUCT IDENTIFICATION 2
IDENTIFICATION NUMBERS 4
PARTS MANUAL 4
GUIDELINES FOR DISPOSAL OF PRODUCTS 5
DURING SERVICE LIFE 5
END OF SERVICE LIFE 5

SECTION 2 - SAFETY

GENERAL SAFETY WARNINGS 6
ELECTRICAL SAFETY 6
LAWNMOWER USE AND CARE 6
BATTERY MACHINE USE AND CARE 6
SERVICE 6
WORK AREA SAFETY 7
OPERATION 7
ROLL OVER PROTECTION STRUCTURE (ROPS) 8
MAINTENANCE AND STORAGE 9
LITHIUM VEHICLE FIRE 10
LOADING MOWER ON TO A TRAILER 10
IMPORTANT SAFETY NOTES 11

SECTION 3 - SPECIFICATIONS

DIMENSIONS AND WEIGHTS 13
TYRE SPECIFICATION 13
MACHINE SPECIFICATION 15
CUTTING UNIT SPECIFICATION 15
BATTERY SPECIFICATION 15
VIBRATION 16
NOISE 17
SLOPES 17
CUTTING PERFORMANCE 17
RECOMMENDED LUBRICANTS 17
ACCESSORIES 18

SECTION 4 - DECALS

SAFETY LABELS 20
INSTRUCTION LABELS 22

SECTION 5 - CONTROLS

OPERATION WORKSTATION 23
CONTROL PANEL 24
KEY SWITCH 25
PARK BRAKE SWITCH 25
MOW SWITCH 25
LIGHT SWITCH 25
BEACON SWITCH 26
LIFT/LOWER JOYSTICK 26
VISUAL DISPLAY 26
STARTUP SCREEN 27
WARNING / SERVICE SCREEN 27
HOME SCREEN 28
POP UP TASK BAR MENU 29
START INTERLOCK - INITIATE 29
START INTERLOCK - WILL NOT INITIATE 30
MAIN MENU NAVIGATION 30
VIEW MACHINE CONFIGURATION MENU 30
DISPLAY SETTINGS MENU 31
VEHICLE SETTINGS MENU 31
OWNER PIN MENU 32
CONFIGURATION SETTINGS MENU 32
VEHICLE SPEEDS MENU 33
ACTUATOR RECOVERY MENU 33
WHEEL SIZE MENU 33
STEERING OFFSET CALIBRATION 33
BATTERY RESERVE MENU 34
CHANGE PIN MENU 34
SET DEFAULT PARAMETERS MENU 34
RESET SERVICE HOURS MENU 34
TOW MODE MENU 35
SERVICE MENU 35
FAULT LOG 35
TIME UNTIL SERVICE 36
VEHICLE STATUS 36
I/O DIAGNOSTICS MENU 37
BACKLAP 39
LANGUAGE 39
WARNING SCREENS 40
WARNING ICONS 40
WARNING FAULT CODES 41
ARMREST LENGTH ADJUSTMENT 43
ARMREST HEIGHT ADJUSTMENT 43
ARMREST PIVOT ADJUSTMENT 43
TRACTION PEDAL 44
STEERING TILT CONTROL 44
BATTERY ISOLATION SWITCH 44

SECTION 6 - OPERATION

DAILY INSPECTION 46
INTERLOCK SYSTEM 47
OPERATING PROCEDURE 48
ACTIVATE THE MOWER SYSTEMS 49
DE-ACTIVATE THE MOWER SYSTEMS 49
DRIVING 49
MOWING 50
MOWING ON SLOPES 51
MOWER RECOVERY 52
TOWING 52
PARK BRAKE EMERGENCY RELEASE 53
LOADING MOWER ON TRAILER 53
TO REMOVE BLOCKAGE FROM CUTTING UNITS 54
SLINGING AND JACKING 54
BATTERY SAFETY 56
BATTERY CHARGING AND MAINTENANCE 56
BATTERY PROLONGED STORAGE 59

CONTENTS

SECTION 7 - MAINTENANCE

MAINTENANCE AND LUBRICATION 61
MAINTENANCE SCHEDULE 61
LUBRICATION 62
GENERAL PRECAUTIONS 62
BATTERY 63
TYRES 64
WHEEL MOUNTING PROCEDURE 64
ROPS 64
CARE AND CLEANING 65
BACKLAP 66
GRINDING THE BEDKNIFE 66
STEERING OFFSET CALIBRATION 67
MOWER STORAGE 68

SECTION 8 - ADJUSTMENTS

GENERAL PRECAUTIONS 69
STEERING CHAIN TENSION 69
SEAT STANDARD 70
SEAT PREMIUM 70
BEDKNIFE-TO-REEL 71
BEDKNIFE ADJUSTMENT 72
CUTTING HEIGHT 73
DOWN PRESSURE 73
CUTTING UNIT ATTACHMENT 74
REEL BEARING 74
BEDKNIFE ADJUSTER TENSION 75
LIFT SYSTEM CONFIGURATION 75
FREQUENCY OF CUT 78
ADJUST FOC WITH REEL SPEED SETTING 78
TORQUE SPECIFICATION 82
THE TORQUE VALUES 82

SECTION 9 - PROBLEM SOLVING

PROBLEM SOLVING - GENERAL 83
FUSE LOCATIONS 84

SECTION 10 - QUALITY OF CUT

QUALITY OF CUT PROBLEM SOLVING 85
STEP CUTTING 85
MARCELLING 86
WASHBOARDING 87
SCALPING 88
STRAGGLERS 89
STREAKS 90
WINDROWING 91
CLUMPING 92
TORN CROWNS 93
LAYING UNCUT GRASS 94

SECTION 11 - SCHEMATICS

ELECTRICAL SCHEMATIC 95
FUSES 103

SECTION 12 - GUARANTEE

GUARANTEE 104

1.1 IMPORTANT

The SLF1 ELiTE is a self propelled ride on reel mower. The fully electric system powers all the system drives for traction, cutting, lift and steering.

IMPORTANT: The product must be regularly serviced in accordance with this manual to make sure that the quality of cut, safety and performance of mower is maintained to the designed specification.

This Safety and Operators Manual is considered part of the machine and must always be made available to the operators of the mower. Suppliers of both original and used machines need to keep the original documentation provided with the mower for future reference.

The SLF1 ELiTE is designed as a professional grass cutting mower, intended only for cutting and maintaining grass. It must not be used for any other purpose. Compliance with the conditions of operation, service and repair specified by the manufacturer, are understood to be part of the correct use.

ALL operators **MUST** read through this manual and understand the safety instructions, controls, lubrication and maintenance procedures. Only a fully trained operator should be permitted to use the mower.

Whilst using the mower, make sure that you obey all safety and road traffic regulations.

You must not make any changes or modifications to the machine that is not approved by the manufacturer. This type of change can release the manufacturer from the liability for any damage or injury caused.

Discard worn parts in compliance to local authority regulations, taking into consideration the environmental impact of incorrectly disposed parts. 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 make sure that conformity is controlled.

This product was produced in compliance to Directive 2006/42/EC.

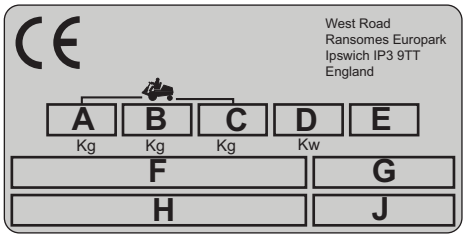
These instructions are the original instructions confirmed by Ransomes Jacobsen Limited.

SERVICE SUPPORT MATERIAL

Part No.	Description
10028384	Parts Manual
10038301	Quick Start Guide
D01911-04	Battery Charger - Zivan User Guide. (download at www.zivan.it)

1.2 PRODUCT IDENTIFICATION

A. Maximum front axle load in Kg (for machines being driven on the highway)
B. Unladen weight, (No cutting implements (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
I. Serial number

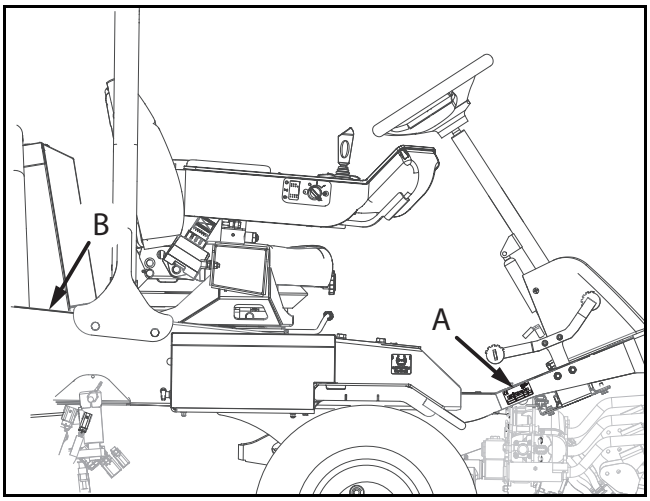


Location of Serial Number Plate

The serial number plate (A) is found on the right hand side of the chassis rail.

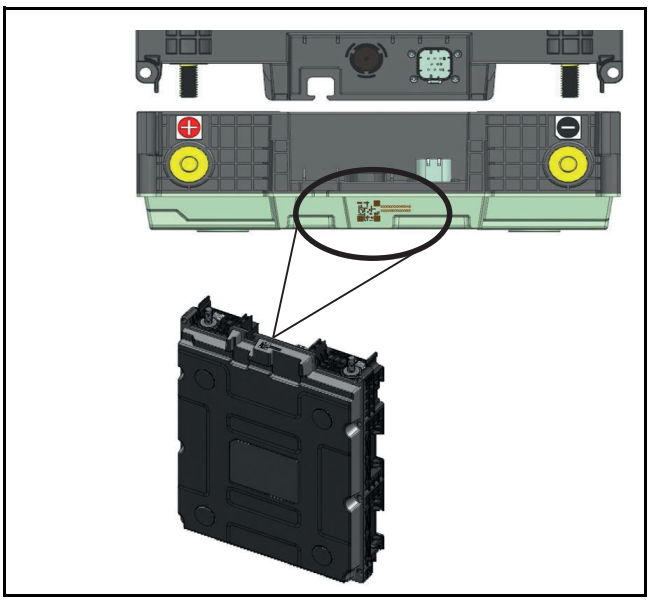
Chassis Stamp

The Serial number and date code are marked on the top of the right hand chassis rail, behind the ROPS fixing point (B). To view, open the Hood.



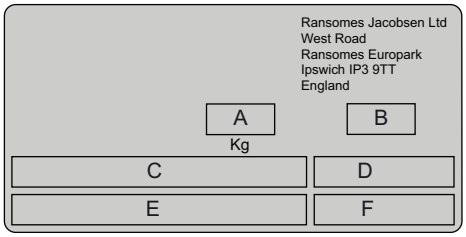
Battery Identification

Each individual Lithium battery cell has its own unique serial number printed on top edge between the terminals as indicated. (For authorised dealers reference only).



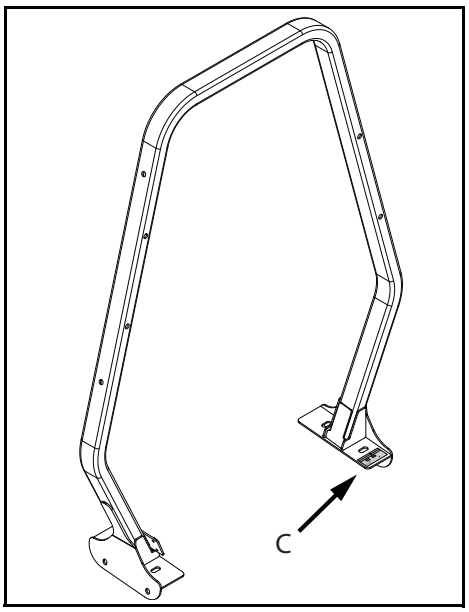
ROPS Serial Plate

A. Weight of ROPS
B. Date Code
C. Standard Used
D. Part Number
E. Used on Product
F. Serial Number



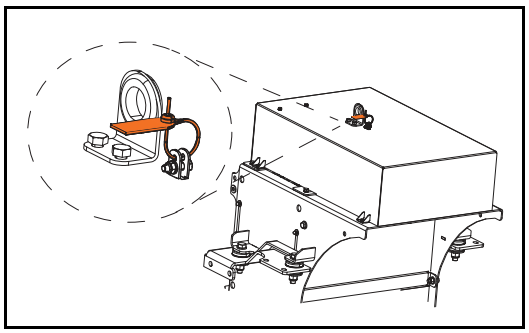
ROPS Serial Plate Location

The ROPS serial plate (C) is located on top of the right hand ROPS mounting plate.



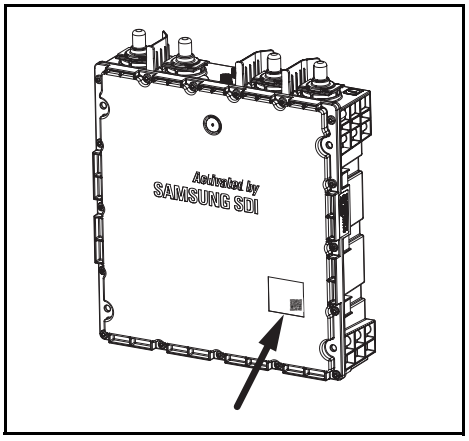
Battery Pack Quality Inspection Tag

The battery pack cradle and guard has a tamper proof quality inspection tag fitted. Each Tag is serial numbered. Only an authorised dealer shall remove this tag during essential maintenance.The dealer will refit a new tag along with new serial number. This should be logged with Jacobsen along with any repairs made.



Battery Management System BMS Serial

The BMS serial is printed on the front face of the unit next to a QR code. (For Use by authorised dealers only.)



1.3 IDENTIFICATION NUMBERS

Record the serial identification numbers below for future reference:

Starter Key (number stamped on key):_ _

Machine Serial Number: _

ROPS Serial Number: _

1.4 PARTS MANUAL

In compliance with the ISO14001 standard, Ransomes Jacobsen Limited does not send a paper parts manual with every product.

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

1. Website – www.jacobsen.com. Select the “FIND A MANUAL” tab at the top, select product from drop down menu or use search function. You now have access to a PDF version of the parts manual which you can print.

2. Complete the form included in the technical manual pack supplied with the machine if you require a paper copy of the parts manual.

Only Genuine Jacobsen parts should be used. The machines performance and safety may be compromised using alternatively sourced replacement parts.

1.5 GUIDELINES FOR THE DISPOSAL OF SCRAP PRODUCTS

1.5.1 DURING SERVICE LIFE

Used Battery packs contain hazardous materials. Recommended procedures must be followed for their safe removal.

In the event of structural failure or damage to battery pack, follow the local laws and guidelines to make sure that leaks are controlled and battery is disposed of in safe and correct manner.

If followed correctly, the maintenance procedures in this manual are designed to avoid any potential damage that the machine can cause to local environment.

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

1.5.2 END OF SERVICE LIFE

These guidelines should be used in conjunction with applicable Health, Safety and Environmental legislation and use of approved local facilities for waste disposal and recycling.

- Position the machine in a suitable location to enable use necessary lifting equipment.
- Use appropriate tools and Personal Protective Equipment (PPE) and take instruction from the technical manuals applicable to the machine.
- Remove Battery Packs and store correctly. The removal of Battery packs should only be carried out by qualified technicians. Battery packs should be returned to your local Jacobsen dealer or a local authorised battery recycling centre for disposal.
- Disassemble the structure of the machine and refer to the technical manuals where applicable. Special attention should be made when dealing with parts that have potential for mechanical stored energy. For example in springs.
- Items that still have a useful service life as second hand components.
- Items that are worn must be separated into the material groups and removed according to the agencies for recycled materials that are available. Common types are as follows:
    - Steel
    - Non ferrous metals:
        - Aluminium
        - Brass
        - Copper
    - Plastic materials:
        - Identifiable
        - Can be recycled
        - Can not be recycled
        - Not identified
    - Rubber
    - Electrical and Electronic Components
- Every effort should be made to identify and separate waste components. Items that cannot be economically separated into different material groups and where no hazardous materials are identified, should disposed of in the general waste area.
- Do not incinerate waste materials.

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

2.1 GENERAL SAFETY WARNINGS

WARNING

READ ALL SAFETY WARNINGS, INSTRUCTIONS, ILLUSTRATIONS AND SPECIFICATIONS PROVIDED WITH THIS MACHINE.

Failure to follow all instructions listed below may result in electric shock. fire and/or serious injury.

Save All Warnings and instructions for future reference.

2.1.1 ELECTRICAL SAFETY

a. **Do not clean the machine with water from a pressure washer**. Water entering a machine will increase the risk of electrical shock.

2.1.2 LAWNMOWER USE AND CARE

a. **Disconnect the machine from the power source and/or remove the battery pack, if detachable, from the machine before making any repairs or changing blades.** Such preventive safety measures reduce the risk of starting the machine accidentally.

b. **Remove the key or disable the machine when leaving the machine unattended.** Machines are dangerous to untrained users.

2.1.3 BATTERY MACHINE USE AND CARE

a. **Recharge only with the charger specified by the manufacturer**. A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.

b. **Use machines only with specifically designated battery packs.** Use of any other battery packs may create a risk of injury and fire.

c. **When the battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another**. Shorting the battery terminals together may cause burns or a fire.

d. **Under abusive conditions liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes seek immediate medical help.** Liquid ejected from the battery may cause irritation or burns.

e. **Do not use a battery pack or machine that is damaged or modified**. Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.

f. **Do not expose a battery pack or machine to fire or excessive temperature.** Exposure to fire or temperature above 130 °C may cause explosion.

g. **Follow all charging instructions and do not charge the battery pack or machine outside the temperature range specified in the instructions.** Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

2.1.4 SERVICE

a. **Have your machine serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the lawnmower is maintained.

b. **Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.

2.1.5 WORK AREA SAFETY

a. **Do not use the lawnmower in bad weather conditions, especially when there is a risk of lightning.** This decreases the risk of being struck by lightning.

b. **Never use a mower near persons, including children or animals.** Parts could be ejected from the machine at high speed in certain circumstances. The hazard area, particularly in front of and behind the machine, must be cleared of any persons, animals or objects before starting.

c. **Thoroughly inspect the area where the lawnmower is to be used and remove all foreign objects from the area to be cut**. Thrown objects can cause personal injury.

d. **Check the ground conditions are firm enough to support the machines weight**. Avoid water logged or loose surfaces. The machines traction, control and stability may be adversely affected.

e. **While operating the lawnmower, Use personal protective equipment. Always wear eye protection and non-slip protective footwear.** Do not operate the lawnmower when barefoot or wearing open sandals. This reduces the chance of injury to the feet, in particular from contact with the cutter blades.

f. **While operating the lawnmower, always wear appropriate clothing.** Exposed skin increases the likelihood of injury from environmental hazards, thrown objects, sharp edges and hot surfaces. Avoid loose clothing, jewellery or long hair that has potential to get caught in moving machinery.

g. **Do not operate the lawnmower on slopes that exceed safe working limit of machine.** This reduces the risk of loss of control, slipping and rollover, which may result in personal injury.

h. **When working on slopes, where possible always work up and down the face of slopes, never across the face and exercise extreme caution when changing direction.** This reduces the risk of loss of control and rolling the machine, which may result in personal injury.

i. **Be careful of holes in the terrain and other hazards that are not visible.Use caution when you operate the mower near drop-offs, ditches or embankments**.

j. **Use extreme caution when maneuvering**. Always be aware of your surroundings.

k. **Remember that the operator or owner is responsible for accidents or hazards that occur to other persons or their property.**

l. **Inspect the area to be cut prior to commencing work.**

- Select the appropriate accessories and attachments that are necessary to complete the work and attach them securely before starting. Only use genuine Jacobsen parts.

2.2 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 made available on the website Jacobsen.com.

- The operator should familiarize them self with the controls and the correct operation of the equipment before use.
- Children or persons who do not understand these instructions must not use the mower. The local regulations can limit the age of the operator.

b. **Inspect the mower before you operate it**. Check the tyre pressures and general condition of machine is in good working order. Ensure there are no loose objects on mower such as tools.

c. **Keep guards in place**. Guards must be in working order and be properly mounted. A guard that is loose, damaged, or is not functioning correctly may result in personal injury.

d. **Visually inspect to see that the blade and the blade assembly are not worn or damaged**. Worn or damaged parts increase the risk of injury.

e. **Check the grass catcher frequently for wear or deterioration**. A worn or damaged grass catcher may increase the risk of personal injury.

f. **Keep all cooling air inlets clear of debris**. Blocked air inlets and debris may result in overheating or risk of fire.

g. **Never carry passengers**.Never start the mower with persons in close proximity. Keep bystanders and animals away from the mower.

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

i. **Do not use on the slopes greater than the safe slope limit for the equipment**.

j. **Equipment must meet the current regulations to be driven on the public roads**.Refer to local government legislation.

k. **Do not change or modify the machines set parameters, other than those as instructed by this manual.** Never allow the machine to run over its rated specified speeds.

l. **Before you leave the operator platform, for any reason**:

- Disengage all the drives and lower attachments to the ground unless a positive mechanical lock is used.
- Engage the park brake.
- Switch the power off and remove the key.

m. **If you hit an object or mower starts to vibrate abnormally, Switch off and inspect the mower immediately for damage and make necessary repairs**.

n. **Stop the cutters when the mower is on any surface that is not grass.** The machine and its cutting units are designed for use on maintained turf surfaces. Use of the machine with its cutting units engaged on hard and rough surfaces could rapidly decrease design life of components and potentially cause acute damage to the units making them unsafe for operation.

o. **When clearing jammed material or cleaning the lawnmower, make sure all power switches are off and remove the key**. Unexpected operation of the lawnmower may result in serious personal injury. The cutter blades may have stored energy which could release when blockage is removed.

p. **Do not touch blades and other hazardous moving parts while they are still in motion.** This reduces the risk of injury from moving parts. Use a tool or a piece of wood to clear blocked reels, never attempt to remove blockage with hands or feet.

q. **Stay alert, watch what you are doing and use common sense when operating a lawnmower**. Do not use a lawnmower while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating lawnmower may result in serious personal injury.

r. **Only Use the mower in an environment that is within the vehicles design capabilities**. The mower should only be used within an ambient temperature range between -10^{o}C to 45^{o}C. The mower has been designed to be able to work in damp and moderately wet conditions, however care should be taken not to submerse or saturate the machine with water. Use in heavy rain should be avoided as this may compromise the mowers traction, stability and stopping distances. Quality of cut will also be reduced.

s. **Only Operate the mower when there is good visibility of surrounding area**. Avoid mowing within close proximity to bystanders.

2.3 ROLL OVER PROTECTION STRUCTURE (ROPS)

a. **The ROPS is a safety device.** Never remove or operate the machine without the ROPS fitted.Only operate the mower with the ROPS fitted.

b. **Always use the seat belt when you operate the mower.** Make sure the seat belt can be released quickly in an emergency.

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

d. **Inspect the ROPS for damage.** Keep hardware fastened.

e. **Do not weld, drill, change or bend the structure**. Replace a damaged ROPS Do not try to correct a damaged ROPS frame. Jacobsen must approve any changes to the ROPS.

f. **Do not remove the ROPS from the mower other than for maintenance access**. Ensure to correctly refit before use.

2.4 MAINTENANCE AND STORAGE

a. Before you clean, adjust or repair this equipment, push PTO switch to the OFF position, lower the cutting units to the ground, engage the park brake, power off 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 Axle stands.

d. Isolate the battery before you service the mower. Always fully disconnect the battery if work is being carried out on the battery modules.

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

f. If an Off Board Charger is in use, 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.

g. Be careful and wear gloves when you check or service the cutting unit reels and bottom blades. Replace any damaged reel blades, do not try to correct a damaged blade unless trained to do so.

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

i. Take care working on cutting units and moving parts with potential of stored energy. Make sure the cutting means are free to rotate. Use caution, When you rotate one unit, other blades or attachments may also rotate.

j. Be aware that some surfaces may get hot when product is in use. Allow the systems to become cool before storage or maintenance.

k. With electrical vehicles, There is always risk of electric shock. Use caution when working on the electrical system or where work is in close proximity to electrical contacts. Always let a machine fully dry out and any collected water is allowed to drain before conducting maintenance. Wear gloves and use appropriate insulated tools when conducting maintenance work.

l. Keep the mower clean.

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

n. Do not operate the machine if you have excessively worn or damaged parts. Replace damaged or worn decals. Only use parts, accessories and attachments approved by Jacobsen.

o. To decrease the fire hazard, remove grass debris that may collect on machine whilst cutting.

p. To maintain the mower in peak condition, the mower should always be stored in a dry location that is not subject to large fluctuations in temperature. If stored under a protective cover, ensure that it is permeable to air to avoid corrosion caused by trapped humidity.

⚠ CAUTION

During maintenance and repair where welding is required, The batteries and controllers MUST be disconnected and where possible it is advised to remove them before starting work.

2.5 LITHIUM VEHICLE FIRE

In the unlikely event of a fire occurring involving a Lithium battery pack, the priority should be for the safety of the operator and bystanders. If there are signs of a fire, usually indicated by either a heat build up, Smoke, an acrid smell or visible flames, the procedure for the operator is as follows;

a. Park the vehicle in a safe position. If conditions allow, find a well ventilated area away from people, buildings and combustible materials.

b. Switch the mower off and remove the key, where possible isolate the battery at the Isolator switch. If charging, disconnect from the mains power.

c. Keep clear and maintain distance from the machine. Lithium fires can burn extremely hot and emit harmful gases, which if inhaled can lead to serious health implications.

d. Call the emergency services, who have specialist training and equipment for dealing with Lithium battery fires and hazardous waste disposal.

e. Portable Fire Extinguishers are unlikely to extinguish a Lithium fire. If suitable equipment is available and the operator has had appropriate training, then attempting to tackle the fire at an early stage may help slow and contain the spread of fire whilst waiting for emergency service to arrive. Dowsing with water will help keep the other battery cells cool. Specialized Lithium-ion fire extinguishers are now commercially available.

⚠ CAUTION

In the event of Fire. Ensure the safety of the operator and bystanders is a priority.
Lithium Fires are difficult to extinguish and produce harmful fumes which are hazardous to health if inhaled.
Switch off the mower, Unplug mains power if connected, keep Clear and call emergency services.

f. Notify your local Jacobsen dealer who can advise on correct disposal & recovery of the mower. Always dispose of Hazardous waste material in accordance with local authority guidelines.

2.6 LOADING MOWER ON TO A TRAILER

See Section 6.9 for instruction on towing and Section 6.10 for loading machine onto trailer. The following safety measures should be taken into consideration.

a. Be careful when you load or unload the mower on a trailer. The trailer should be wider than the mower and designed to carry the full gross weight of the mower.

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

c. Use appropriate securing methods to fasten the mower to the trailer. Both front and rear straps must be sent down and towards the sides of trailer.

d. Make sure that all latches are correctly fastened.

2.7 IMPORTANT SAFETY NOTES

This safety alert symbol is used to alert you to 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. Also, the label can indicate work procedures that are not safe.

IMPORTANT:

Some illustrations in this manual can show shields, guards or plates removed for clarity. This equipment must not be operated without these devices correctly fastened and in position.

WARNING

The Interlock System on this mower prevents the starting of the mower unless;

a. The Park Brake is Engaged.
b. The mow switch is in the OFF position.
c. The traction pedal is in the Neutral position.
d. The operator is in the seat.

The system will deactivate when the operator leaves the seat if the following conditions are not met;

a. Park Brake is engaged.
b. Mow switch is in the OFF position.

NEVER operate the mower unless the Interlock System is working.

WARNING

1. Before leaving the operator's position for any reason:
   a. Return traction pedal to the Neutral position.
   b. Disengage all drives.
   c. Lower all cutting units to the ground.
   d. Engage Park Brake.
   e. Power down and remove the power 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 machine.
3. Keep the area of operation clear of all persons and animals.
4. Never carry any passengers.

Never operate the equipment without guards and deflectors in position.

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

If a service is needed contact your authorized Jacobsen Dealer or after sales for additional information or help.

⚠ WARNING

When the machine is driven off-road, a seat belt must be worn.
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 site specific 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.

⚠ WARNING

Ear protection must be worn when you operate machines with an operator ear noise level of more than 85dB(A) Leq.
Lack of adequate ear protection may result in permanent damage to hearing.

⚠ 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 use 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 you hear thunder. If you are in the middle of mowing, stop in a safe place, turn off the system power, remove key and go inside a building where possible.

⚠ CAUTION

Personal Protective Equipment (PPE), for example safety glasses, safety footwear, work gloves and ear protection must be used. The owner/user should complete a site specific risk assessment of the mower to prevent injury.

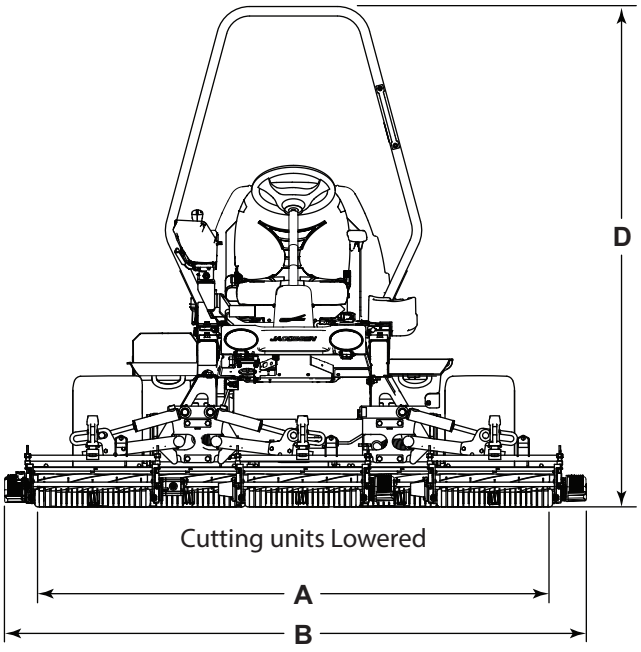
3.1 DIMENSIONS AND WEIGHTS

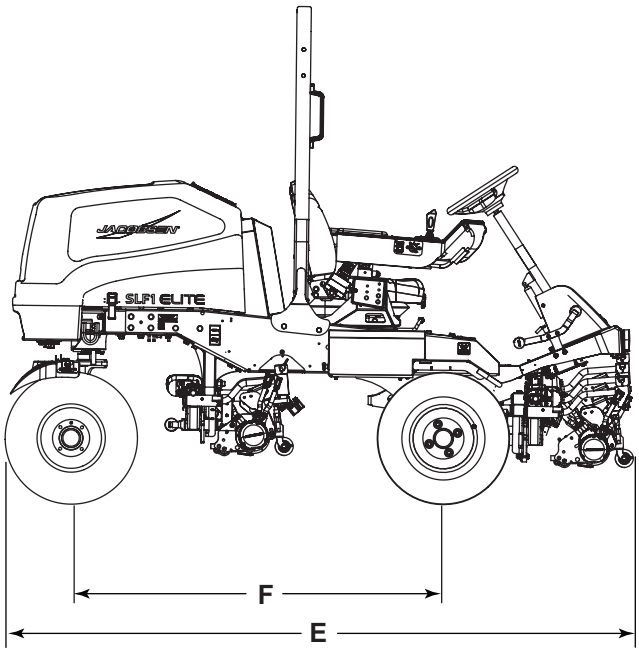
A	Width Of Cut	208 cm	82 in.
B	Overall Width - Cutting Units Lowered	248 cm	97.6 in.
C	Maximum Width - Transport, with Cutting Units Raised	244 cm	96.4 in.
D	Maximum Height with ROPS	209 cm	83.2 in.
D	Maximum Height with Canopy (Optional)	223 cm	87.8 in.
E	Total Length (3WD) Including Grass boxes.	307 cm	120.9 in.
E	Total Length (3WD) Excluding Grass boxes.	277 cm	109 in.
F	Wheel Base (3WD)	162 cm	63.8 in.
G	Wheel Track Front	160 cm	54.5 in.
	Ground Clearance	10 cm	3.9 in.
	Turning Circle, Curb to Curb (outside tyre to outside tyre) in Transport 3WD Option (Left/Right Turn)	510/476 cm	200.8/187.4 in.
	Uncut Turning Circle 3WD (Left turn / Right turn),	134/90 cm	52.7/35.4 in.
	Unladed Weight Of SLF1 Elite Machine With ROPS, 3WD, Battery pack. No Reels.	929 kg	2048 lb.
	Gross Maximum Weight, SLF1 Elite with ROPS and heaviest configuration of reels and accessories fitted.	1211 kg	2670 lb.
	Maximum Front Axle Loading	857 kg	1889 lb.
	Maximum Rear Axle Loading 3WD	369 kg	813 lb.
	Weight Of Reel (5 Required)	45 kg	99 lb.
	Weight Of Lithium Battery Module (x10 per vehicle)	15.2 kg	33 lb.
	Weight Of Lithium Battery Module pack (x10 modules, carriage and guarding)	215 kg	474 lb.

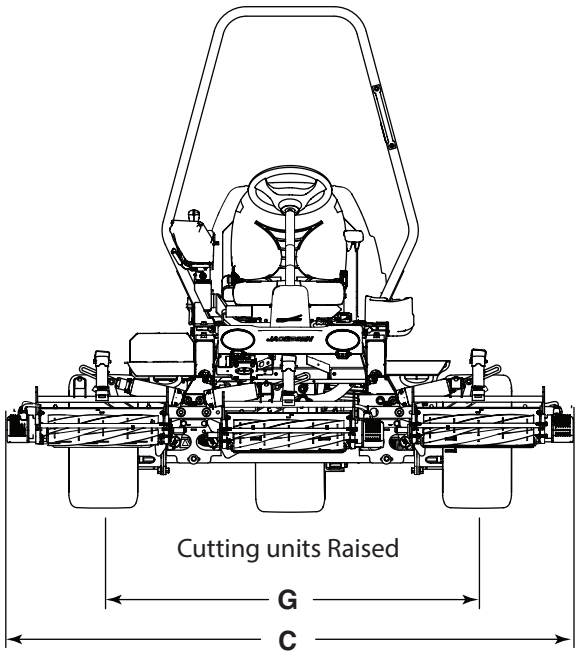
Note: Specifications are subject to change.

3.2 TYRE SPECIFICATION

Tyre Pressures						
Product	Front Wheel			Rear Wheel		
	Tyre Size	Tyre Type	Tyre Pressure	Tyre Size	Tyre Type	Tyre Pressure
3WD, Smooth Tyre	22 x 12.00 - 12	Smooth 4pr	0.69 bar (10 psi)	22 x 12.00 - 12	Smooth 4pr	0.69 bar (10 psi)
3WD, Treaded Tyre	22 x 12.00 - 12	Treaded 4pr	0.69 bar (10 psi)	22 x 12.00 - 12	Treaded 4pr	0.69 bar (10 psi)


D
Cutting units Lowered
A
B


SLF1 ELITE
F
E


Cutting units Raised
G
C

3.3 MACHINE SPECIFICATION

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

Cutting Unit Drive: Five individual brush-less DC motor per reel 1.3 HP (0.97 kW) continuous.

3WD Transmission: x3 Electric motors, AC; 4.4 HP (3.3 kW) continuous.

Steering: Electric powered steering. 48V AC chain drive.

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

Service Brakes: Dynamic Electric Regenerative Braking.

Parking Brakes: Electronically Controlled Integral Park Brake.

Mower Lift/Lower: Electric Actuators.

Power: Nominal 17.62kW / Peak Power 25.5kW.

Speeds:

- **Cutting:** 0 - 12 km/h (0 - 7.5mph) Forward.
- **Transport:** 0 - 15 km/h (0 - 9.3 mph) Forward.
- **Reverse:** 0 - 8 km/h (0 - 5mph).

3.4 CUTTING UNIT SPECIFICATION

Product (2 LH Reels and 3 RH Reels Required)	10018925(RH) / 10018926 (LH) Reel Cutting Unit	10018927(RH) / 10018928 (LH) Reel Cutting Unit
Number of Reel Blades	8	11
Reel Cutting Width	45.7 cm (18 inch)	
Height of Cut	7 mm - 25 mm (0.27 inch - 0.98 inch) Standard	
Height of Cut Adjustment	Lift or lower front roller with adjustment knobs on the ends of reel.	
Transmission	By Electric motor to drive side of reel.	
Max Reel Speed	2200RPM	

3.5 BATTERY SPECIFICATION

Battery Power Modules

The batteries are normally shipped from the factory only partially charged. To ensure the optimum performance range and longest battery life possible, fully charge the batteries prior to first use.

System Voltage.....50.34 (Nominal) volt DC.

Batteries..... 50.75 volt Lithium ion battery modules.(x10 Module pack), 508Ah.

Charger.....60 Amps Peak, up to 48 volt DC, input voltage 110-230 volts AC ± 10%, 50-60 Hz.

Battery pack cell model Number: Samsung 4850

3.6 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 mower was in operation and the cutting device was in rotation. No transmission 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	SLF1
	Maximum Accelerations m/s²
	0.113 ± 0.54

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	SLF1
	Maximum.Acceleration m/s²
	0.425 ± 0.27

3.7 NOISE

The machine was tested for sound pressure (Operator Ear) in accordance with;

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 ISO 11201: 2010

SLF1 Elite 3WD: Measured Sound Pressure 77.2 dB(A) ± 2.47 LWA

(Represents worst case configuration)

The machine was tested for sound power (Noise in the Environment) in accordance with;

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 and ISO 11094:1991

SLF1 Elite 3WD: Measured Sound Power 95.2 dB(A) ± 2.47 LWA
(Represents worst case configuration)

3.8 SLOPES

DO NOT USE ON SLOPES GREATER THAN **17°**. The slope was calculated using static stability measurements according to the requirements of BS EN ISO 5395:2013

DO NOT USE ON SLOPES GREATER THAN **16°** if the optional ROPS Canopy has been fitted.

3.9 CUTTING PERFORMANCE

208 cm (82 in.) width of cut:

2.86 hectares/hr at 12 kph.

7 acres/hr at 7.5 mph.

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

3.10 RECOMMENDED LUBRICANTS

Grease:

Cutting units and lift arms; Shell Gadus S2 U406C grease or equivalent.

Cutting Unit Splines: Shell Gadus S2 V220 grease or equivalent.

3.11 ACCESSORIES

Cutting Units; less front and rear roller (2LH and 3RH reels required for SLF1-Elite)	Part Number
Reel - TrueSet 18" x 5" Dia, 8 Blade, Left Hand	10018926
Reel - TrueSet 18" x 5" Dia, 8 Blade, Right Hand	10018925
Reel - TrueSet 18" x 5" Dia, 11 Blade, Left Hand	10018927
Reel - TrueSet 18" x 5" Dia, 11 Blade, Right Hand	10018928
18” Medium section Legendary bedknife	4118902
Verticut unit - 18” x 5” Dia, 0.75” Spacing, Left Hand	067155
Verticut unit - 18” x 5” Dia, 0.75” Spacing, Right Hand	067169
Reel conversion kit (One per verticut unit required)	4218680
Lift arm yoke for 18” Cutting/Verticut reels	4395926
Kit - Counter weight, 1.2kW reel (x1 per unit, Required if No Groomers/Brushes fitted).	10052287
Kit - Down Pressure (x1 per Machine).	10052005
Rear Rollers (1 rear Roller per cutting unit)	
18" Solid tube rear Roller w/ scraper (2 - 3/16 / 5.56cm diameter)	068674
18" Hollow steel tube Roller w/ Scraper	4420307
18" Solid steel Roller w/ Scraper	4420310
Scraper, Rear Roller Floating 5X18'	4420380
18" Hollow Smooth Tube Steel Roller (2" Diameter)	4175221
15.5” Narrow width solid tube steel rear roller (2 - 3/16” diameter)	4115860
Front Rollers (1 front roller per cutting unit)	
18” Smooth, Solid steel roller with scraper, 2-3/16”, Non-greasable.	068626
18” Deep Grooved, Assembly/Disc, Steel Roller with scraper, 3” diameter, Greasable.	067925
18” Grooved, Machined, Steel Roller, 2-3/16” diameter, Non-greasable.	068616
18”, Smooth, Light, Steel Roller, 2” Diameter, Greasable.	4108920
Groomer 18" Spacing 1/2" for 5" x 18" cutting unit - LH Drive (2 per machine)	10050397
Groomer 18" Spacing 1/2" for 5" x 18" cutting unit - RH Drive (3 per machine)	10050398
Catcher Kit (Basket and Mounting Hardware, 5" x 18" reels, 1 required per reel)	4371659
Powered Rear Roller Brush 5"x18" Cutting Unit (Requires Counterweight 4257240-LH & 10050613-RH)	062819
High Cut Front Roller Kit to Extend Range to 23.81 mm (15/16")	068634
Kit - Counter weight , Brush, LH drive	4261251
Kit - Counter weight , Brush, RH drive	10050613
Canopy / Sunshade Kit - Adjustable	068127
Grass Dispersal kit (5" x 18" reels, 1 required per reel)	669325
Kit, Ball Guard	669644
Drive GRMR/Brush 5in Reel - LH HYD	10051815
Drive GRMR/Brush 5in Reel - RH HYD	10051816
Groomer, 18in, 1/2in Spacing	062940
Brush, 18in, Herringbone, Stiff Bristle	062915
Brush, 18in, Herringbone, Medium Bristle	062916
Brush, 18in, Herringbone, Soft Bristle	062917

Front Roller, Grooved 18in, 1/2in Spacing	062941
Front Roller, Solid, 18in.	062931
Inclinometer Kit	4399787
Foot Rest kit	LMAC629
Treaded Tyre	4365967
Bat - Tool to clear unit blockage	4184540
Kit - Beacon	10052851
Kit - work light, rear	10052865
Kit - Tow bar	10050813
Kit - Break release	10032281
Kit - Charger, US	10032424
Kit - Charger, UK	10032425
Kit - Charger, APAC	TBA

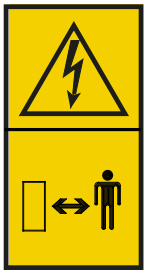
4.1 SAFETY LABELS

A

i ii iii iv v

B

vi vii viii ix



C

D

E

F

G

H

I

J

K

L

M

N

A Platform Group Safety Instruction.

i. Read Operators Manual before use.
ii. Disconnect battery power before working on machine.
iii. Switch off power and remove key switch before maintenance or adjustments.
iv. Guarding - Do not remove or operate machinery without guards in place.
v. Isolate power before washing machine - Do Not use high pressure water hose.

B Platform Group Safety Instructions.

vi. Always wear seat belt with ROPS deployed.
vii. Caution - Do Not Carry Passengers.
viii. Caution - Keep Limbs away from cutting units.
ix. Caution - Thrown object hazard - keep clear.

C Caution - Risk of Electrical shock - keep clear.

D Caution - Disconnect battery power before working on machine.

E Caution - Switch off power and remove key switch before maintenance or adjustments.

F Caution - Keep limbs clear of cutting units.

G Caution - Hot surface - localized. Keep clear.

H Guarding - Do not remove or operate machinery without guards in place.

I Caution - Fan blade. Keep clear, do not remove guard whilst in operation.

J Lubrication point.

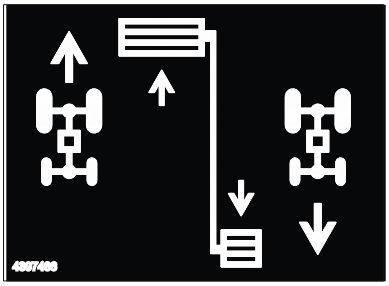
K Caution - Entrapment hazard - Drive belt. Keep clear.

L Caution- Do not use on slopes exceeding 17^{o}.

M Use Seat belt whilst operating machine.

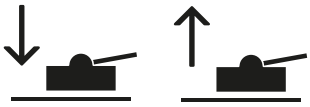
N No Step.

4.2 INSTRUCTION LABELS



A

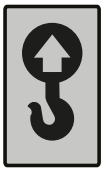
B



C

D

E



F

G

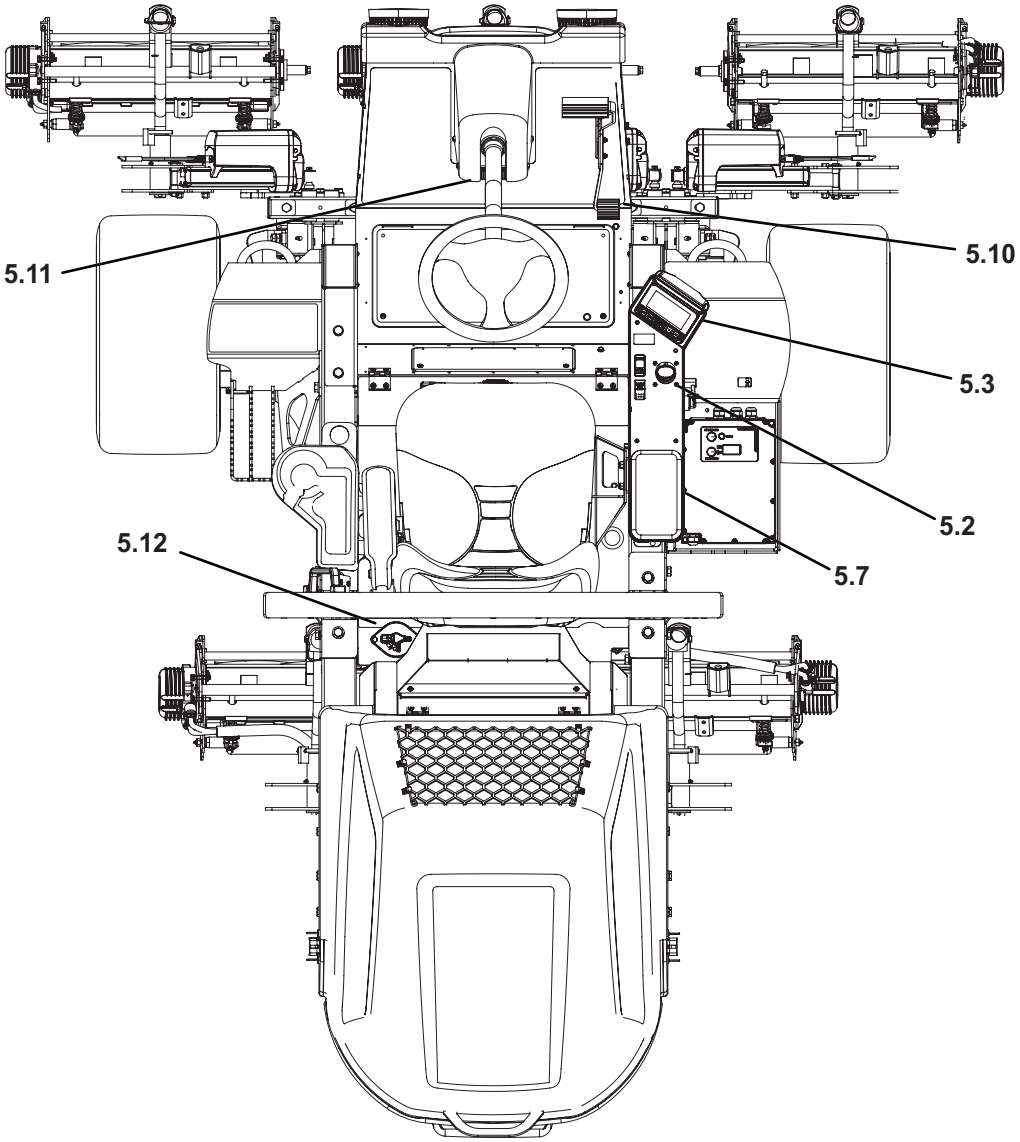
H

I

Description

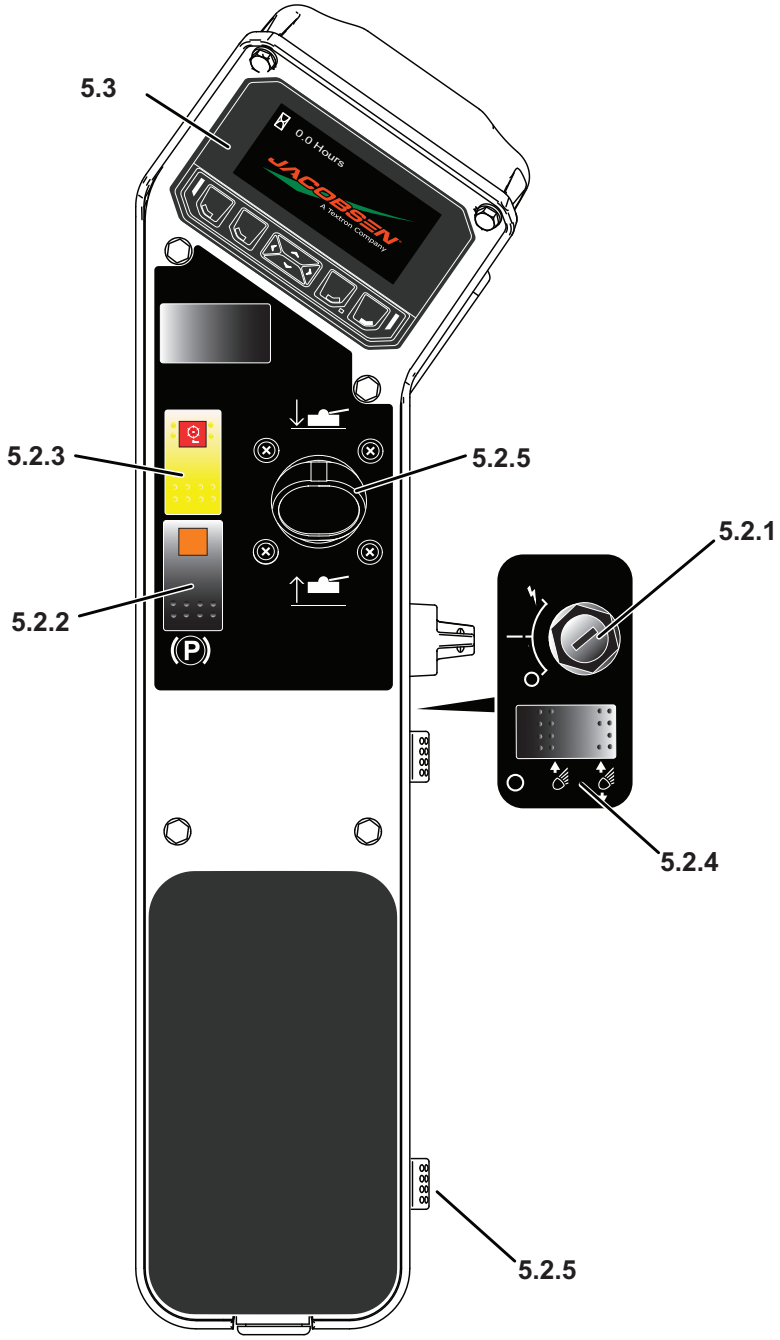
A	Traction Pedal, control of forward and reverse direction of travel.
B	Battery safety instruction. Wear PPE, Risk of Electrical shock, Explosive risk, Discard safely, Recycle.
C	Joystick cutting unit lift and lower control.
D	Sound Power Level.
E	Jacking Point.
F	Lifting/ slinging point.
G	Tyre pressure- recommended.
H	Isolator Switch.
I	Park brake switch.

5.1 OPERATION WORKSTATION



5.2 - Control Panel
5.3 - Display Screen
5.7 - Armrest Pod Adjustment
5.10 - Traction Pedal
5.11 - Steering Tilt adjustment
5.12 - Battery Power Isolation Switch

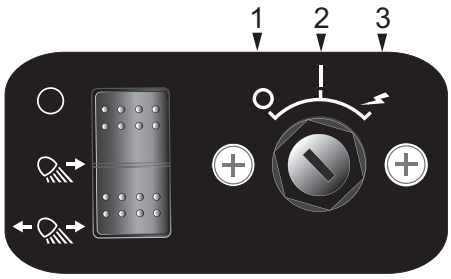
5.2 CONTROL PANEL



5.2.1 - Key Switch
5.2.2 - Park Brake Switch
5.2.3 - Mow Switch
5.2.4 - Light Switch
5.2.5 -Beacon Switch (Optional)
5.2.6 - Lift / Lower Joystick
5.3 - Visual Display

5.2.1 KEY SWITCH

The key switch is used to turn the mower on and off. It has 3 positions.



Position 1 - Off.

- Power to the mower is turned Off.

Position 2 - Power On / Run.

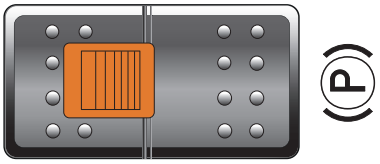
- Power to the mower is On. Controllers are active. Display screen is on. Functions will not operate until the Key is moved to the Start position to initiate the mower.

Position 3 - Activate Mower Systems.

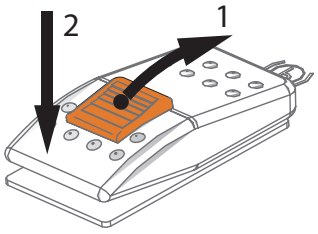
- This key position will activate the mower systems. The switch position is momentary and will return to the run position upon releasing the key. All transmission and mowing functions will now work provided all safety interlock criteria is met.

5.2.2 PARK BRAKE SWITCH

Each wheel motor has an integrated electronic park brake. This is activated when either the mower is powered off or if the park brake has been switched On.The park brake Icon will be displayed on screen when the park brake is activated.



- To apply the brake, Move the orange latch (1) backwards and simultaneously depress the front of the switch (2) to engage the park brake.
- To release the park brake, depress the rear of the switch.



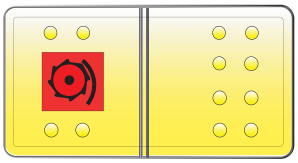
When power to the system is off, the park brake is applied with the switch in either the On or Off positions.

If the machine comes to a stop or is stationary whilst the park brake is switched off, the mower shall automatically apply the brake, however this will disengage on activation of the transmission pedal.

There are no adjustments or service requirements of the brake components. Do not apply the brake while the machine is in motion.

5.2.3 MOW SWITCH

The mow switch engages cutter rotation.



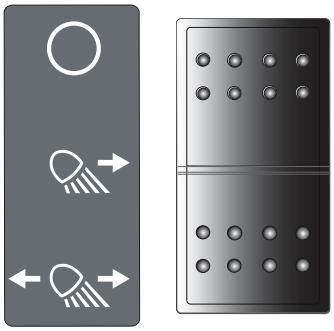
To cut grass, push the front of the switch and move the joystick forward to lower the cutting units. When the switch is in the On position, the red LED on the switch is illuminated.

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

When the cutting units are lifted or the operator leaves the seat, the cutting reels will stop rotating.

5.2.4 LIGHT SWITCH

Turns the work lights On and Off. This switch has three positions.



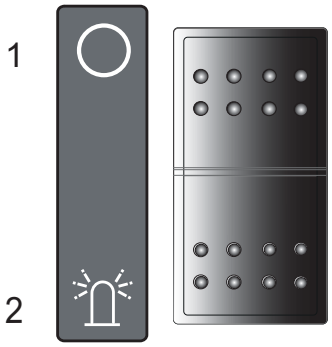
Position 1 - All lights Off.

Position 2 - Front Work lights On.

Position 3 - Front and Rear Work lights On.

5.2.5 BEACON SWITCH

The Beacon is an optional extra accessory that is fitted to the ROPS frame. A switch is positioned on the arm rest and has 2 functional positions.

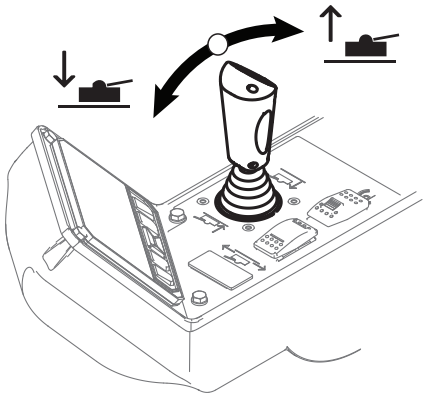


Position 1 - Beacon light Off.

Position 2 - Beacon light On.

5.2.6 LIFT/LOWER JOYSTICK

The joystick controls the lift and lower operation of the cutting units. There are two operational modes, Mow or Manual mode. Push the joystick forwards to lower the cutting units or pull backwards to lift the cutting units.



Manual Mode - When the machine is stationary with the park brake on and mow switch off, the system will automatically default to Manual mode. The cutting units will lift or lower only when continued pressure to the joystick is applied and will cease when joystick is released. This allows the operator to position the units at any desired height within its lift range.

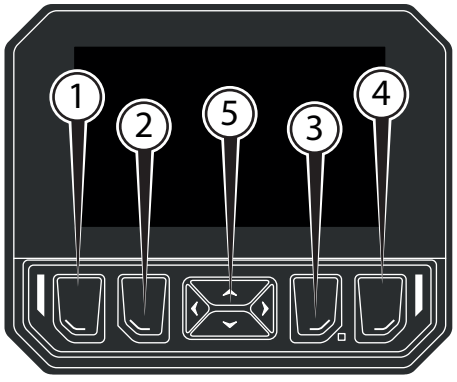
Mow Mode - Operates only when the mow switch in the on position and with park brake off.

- If the cutting units are at the full transport height, Momentarily operate and release the joystick to lift or lower the cutting units to the crosscut position ready for cutting.
- If the cutting units are at the cross-cut position. Momentarily operate and release the joystick to either lift the cutting units to full transport height or to fully lower the cutting units to the ground to begin cutting.
- If the cutting units are fully lowered, Momentarily operate and release the joystick to lift the cutting units to the cross-cut position.

If the park brake and the mow switch are both off, The lift and lower functions are disabled.

5.3 VISUAL DISPLAY

The visual display is activated when the key switch is turned to the 'On / Run' position.



To navigate and select the screen functions, use the 5 control buttons situated immediately below the LCD display screen.

There are 4 soft key selection buttons, numbered 1 to 4 as viewed left to right.

- Button 1 is the Back button for returning to previous menu.
- Button 2 is the Home button and will return the display to the home screen.
- Button 4 is the Confirm Selection button.

There is also a central navigation cursor pad (5). This has directional buttons for navigating the menus, Left, Right, Up and Down keys. These are used for toggling between options and adjusting parameters.

5.4 STARTUP SCREEN

When the key switch is turned to the 'On/ Run' position, this screen is shown for two seconds.

The hour meter will show total hours of machine operation.

5.5 WARNING / SERVICE SCREEN

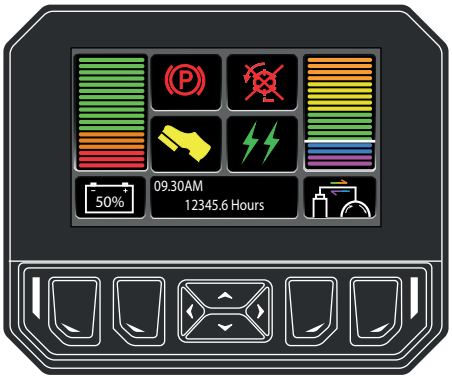
After the startup screen the warning screen is shown. The warning screen is visible for three seconds. If there is no input needed, the main screen will become visible. If a fault condition has occurred during the previous start, a pop up screen will become visible over the top of the warning screen.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

DISPLAYED ICONS

1		Park brake engaged	8		Power consumption Amp (Displayed below bar gra
2		System Enabled	9		Time
3		Cutter switch indicator (Indicates state of Mow function Red is disabled, Green is cutters activated).	10		Key is in On / Run positior
4		Foot pedal warning (Flashes if not in neutral position on start up)	11		Back
5		Operator Presence Control (Flashes red if Operator is not in seat).	12		Home
6		Backlap Engaged	13		Select
7		Battery charge status	14		Menu item to be selected

5.6 HOME SCREEN

This screen displays icons that indicate the status of the vehicle systems and interlock switches.



- The Park Brake icon displays the status of the brake system.
  - Solid red indicates the park brake is engaged.
  - Flashing red indicates the brake switch is off, the mower system is deactivated and the automatic brake is applied.
  - Solid gray indicates the system is active with the park brake switch off, brakes released.
- The Mow PTO icon will display Solid green if the PTO is engaged or red with cross through if disengaged.
- The Foot Pedal Interlock icon will display solid yellow if the machine is in neutral. When the pedal position is not in neutral the icon will display solid gray.
- The System Enabled icon will display solid green if the key switch is in the On/Run position and system is active, If the system is not enabled it will flash green.

BATTERY CHARGE LEVEL

The Battery Charge Level is indicated on the left hand side of display screen. Coloured bars indicate current level of charge (A):

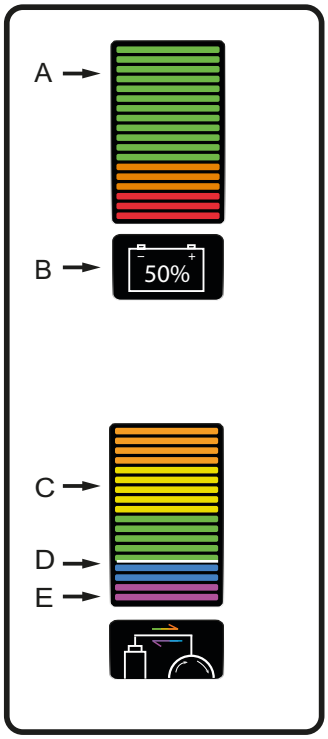
- Green = 30 - 100%
- Orange = 15 - 30%
- Red = 0 - 15%

Full charge is indicated by 18 coloured bars. The battery charge status is also displayed as a percentage in bottom left hand corner (B).

POWER CONSUMPTION GAUGE

The Power Consumption gauge is on the right hand side of the display screen. Coloured bars indicate real time power consumption as amperage draw (C).

- Orange = 300+ Amps
- Yellow = 200 to 300 Amps
- Green = 0 to 200 Amps
- White Demarcation = 0 Amps
- Blue = 0 to -50 Amps
- Purple = -50 to -100 Amps



A white demarcation line (D), indicates the point at which the battery enters a Regenerative state, This is when machine is generating excess power, which is then used to re-charge the battery.

Higher power consumption will drain battery power quicker, resulting in less runtime before next charge.

A clock displaying the time and accumulated runtime hours of machine is shown at bottom centre of screen.

Wheel Speed Calibration LED's

The machine will automatically monitor and calibrate wheel speeds whilst driving in a straight line on a flat level surface. If the steering offset is correct, the display screen will show Purple LEDs when traveling in a straight line and switch off when turning. If they display when turning or do not display when driving in a straight line on level ground, this will indicate that the steering offset requires calibrating.

5.7 POP UP TASK BAR MENU

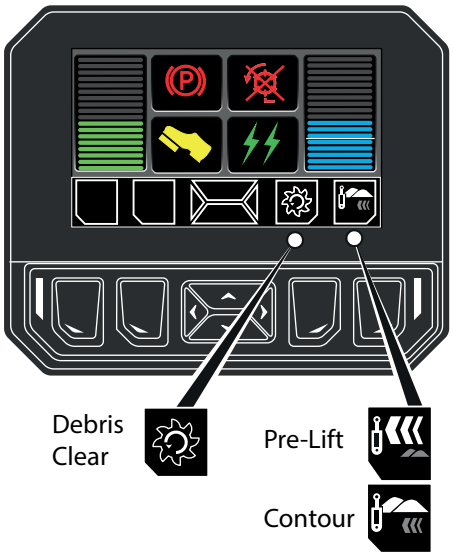
When the Home screen is shown on the display, press any of the selection buttons 1 to 4 to display the Task bar Pop-Up Menu.

- **Clear debris**, Whilst the cutting units are running, Press and hold button 3 to activate. This function is designed to assist with clearing the cutter reels of any debris build up whilst mowing. A command will be sent to reverse the direction of the reel blades for ejecting any grass or debris from a jammed unit. To resume normal cutting direction, release the button.

Clear Debris mode can be enabled or disable through the Backlap Menu. (5.30)

Should this function fail to clear the reel sufficiently refer to the Removing Blockages Section. (6.13)

- **Contour / Pre-lift**, Press Button 4 to toggle between the two modes.
- **Contour Mode,** Sets the neutral position of the actuators at mid point, this allows the units to freely follow contours on undulating terrain, To fully lift or lower the units a 2nd lift or lower command is required.
- **Pre-Lift mode**, There is no set neutral position. The actuators will move less distance which allows the units to lift or lower more quickly if one touch is enabled.



⚠ WARNING

Before initializing either the Clear Debris or Backlap function, It is essential to check that it is safe to do so. Check the immediate vicinity, ensuring the area is clear of bystanders or objects prone to damage from potential ejected projectiles.

5.8 START INTERLOCK - INITIATE

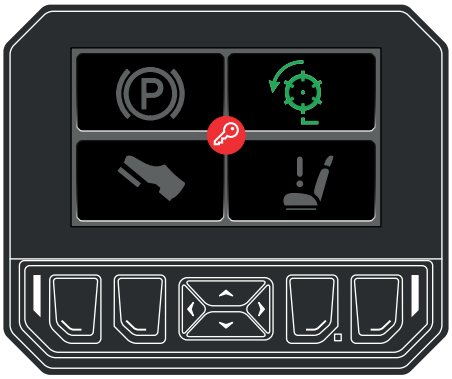
When the key switch is turned to the start position and the interlocks are set, this screen is shown.

To activate the mower:

- The parking brake switch must be in the On position.
- The mow switch must be in the Off position.
- The foot pedal must be in the Neutral position.
- The operator must be present in seat.

5.9 START INTERLOCK - WILL NOT INITIATE

When the key switch 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 foot pedal is not in the Neutral position. The icon will flash yellow and gray.
- The operator is not seated or the seat weight has not been set correctly. The icon will flash red and gray.

The system will not initiate until all the interlocks are correctly set.

5.10 MAIN MENU NAVIGATION

When the **Home screen** is shown on the display, press the Left or RIGHT arrow keys to access the main menu.

To Navigate and select menu items. Use the Up and Down arrow keys to move the selection arrow up or down the list.

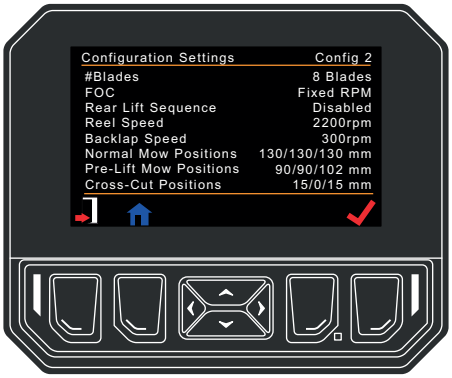
- Press the select button(4) to select menu item indicated by the arrow.
- Press the back button(1) to return to the previous screen.
- Press the home button(2) to return to the Home screen.

The main menu has the following as sub-menu options:

- View Machine Configuration
- Display Settings
- Vehicle Settings (Requires PIN)
- Tow Mode
- Service
- Backlap
- Languages

5.11 VIEW MACHINE CONFIGURATION MENU

Selectable from **Main menu**. This screen displays the current mower cutting configuration. The current mode selected is displayed in the top right hand corner of the screen.The following user defined configurations for the selected mode are also displayed;

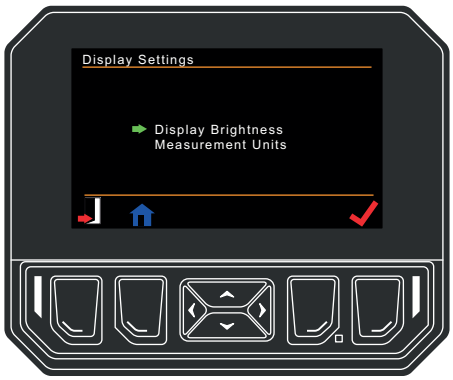


- Number of Blades (per Reel)
- Frequency of Cut (FOC)
- Rear Lift Sequence
- Reel Speed
- Backlap Speed
- Normal Mow Positions
- Pre-Lift Mow Positions
- Cross-Cut Positions

This is an information screen only. To make adjustments to configuration see section 5.15.

5.12 DISPLAY SETTINGS MENU

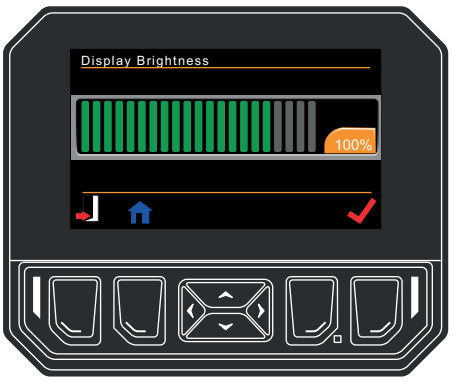
Selectable from **Main Menu**. This screen allows adjustments to the display settings.



From the **Display Settings menu**, use the Up and Down arrow keys and the select button(4) to access the required option.

There are 2 sub-menu options to choose from:

1. **Display Brightness.** The display screen brightness can be adjusted. Use the Left and Right arrow keys to increase or decrease the screen brightness. Press back button(1) to return to previous menu.



2. **Measurement units.** The following units of measure can be changed from this menu. Use the Up and Down arrows to select the type of measurement to be adjusted, then press the select button(4) to toggle between the two available options.

- **Vehicle Speed**: Miles per hour (MPH) or Kilometers per hour (KPH)
- **Temperature:** Fahrenheit (F) or Celsius (C)
- **Frequency of Cut (FOC):** Inch (IN) or Millimeters (mm)

Press the back button(1) to return to previous menu.

5.13 VEHICLE SETTINGS MENU

Selectable from **Main Menu**. The **Vehicle Settings** menu contains submenus that has vehicle information and allows adjustments to operational parameters of the vehicle.

ENTER PIN

After selecting Vehicles Settings from the Main Menu, the next screen will request a Personal Identification Number (PIN) entry in order to continue to sub menus. **The default Operator PIN is 1001**.

To enter the PIN use the Up and Down arrow keys to change the 1st number, then use the Right arrow key to move to the next number. Press the select button (4) to confirm PIN number. When correct PIN is confirmed the screen will change to the **PIN Menu**.

Notice: Managers are advised to change the PIN to stop the machine parameters being changed. Authorised Jacobsen dealers will have access to a unique PIN that will allow them to reset PIN numbers if lost or forgotten.

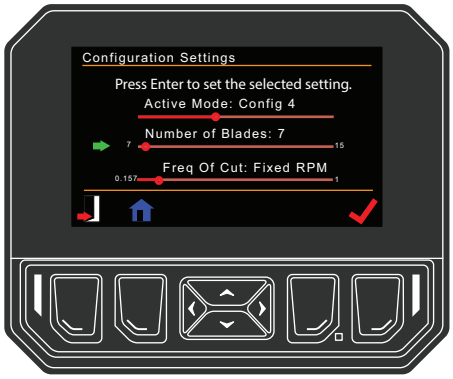
5.14 OWNER PIN MENU

Selectable from **Vehicles Settings** Menu. The **PIN Menu** contains Sub-Menus that enable changes vehicle parameters. Sub-Menus can be selected by using the Up and Down keys and then Select Button(4).

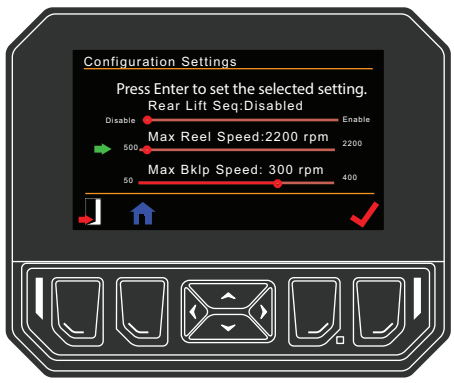
- Change Machine Config.
- Vehicle Speed
- Actuator Recovery
- Wheel Size
- Steering Offset
- Battery Reserve
- Change PIN
- Set Default Parameters
- Reset Service Hours

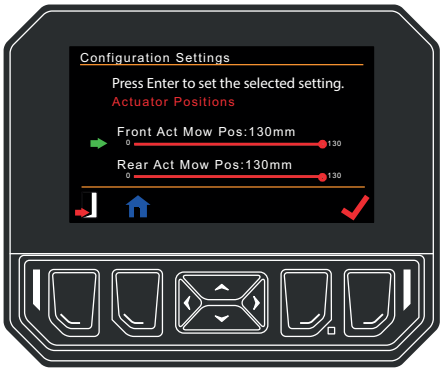
5.15 CONFIGURATION SETTINGS MENU

Selectable from **PIN menu**. The **Configuration Settings Menu** allows adjustment of the following parameters, Use the Up and Down keys to select between parameters and the Left and Right keys to adjust them:



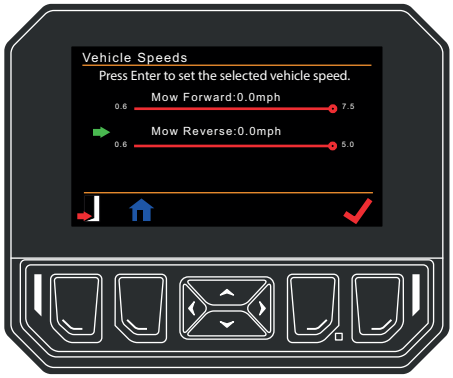
1. **Active Mode**. There are 7 available modes to select and set. Use the Left or Right arrow keys to select the required mode, These are numbered 1 to 7. Press Button 4 to confirm mode. Any adjustment of the subsequent parameters will be saved to the mode number you have selected. You must confirm the selection using button 4 before leaving this menu for any adjustments to be saved.
2. **Number of Blades:** Use the arrow keys to adjust the number of blades relevant to current cutting reels fitted Blade number options available: 7, 8, 9 11 and 15.
3. **FOC**: Use the arrow keys to adjust the Frequency of Cut (FOC). Adjustable from Fixed RPM to 25.4mm. If Fixed RPM is selected FOC will be disabled and the reels will run at maximum set speed.
4. **Rear Lift Sequencing**: When Enabled there will be a programmed time delay between lifting the front and rear units whilst mowing so that the rear units finish cutting in line with the front units. Alternatively when disabled, all 5 units will lift simultaneously.
5. **Max Reel Speed:** Use the arrow keys to adjust the Maximum reel speed limit. Adjustable from 500 to 2200 RPM.
6. **Max Bklp Speed:** Use the arrow keys to adjust the Maximum reel backlap speed limit. Adjustable from 50 to 400 RPM.
7. **Actuator Positioning:** Sets the position that the front and rear lift actuators will default to whilst using the mow, pre-lift and cross cut lift functions.





5.16 VEHICLE SPEEDS MENU

Selectable from **PIN menu**. The **Vehicle Speeds Menu** allows adjustment of the vehicles maximum forward and reverse transmission speeds in both transport and mow modes.



To adjust speeds, use the Up and Down arrow keys to select the required speed option. Use the Left and Right arrow Keys to adjust the speed to level required. Press the back button (1) to return to previous menu.

The maximum and minimum designed speed is preset and cannot be exceeded.

5.17 ACTUATOR RECOVERY MENU

Selectable from **PIN menu**. The **Actuator Recovery Menu** Will find and reset the lift actuators neutral positions. Use this feature if any of the actuators appear unresponsive. This fault is can be caused by the inadvertent moving of lift arms whilst the machine is powered off. Causing the sensors to fault when looking for neutral positions when starting the mower.

To reset the Actuators.

1. Select enable from the Actuator recovery menu.
2. Ensure the machine system is activated by the key switch and that the park brake switch is On.
3. Using the Lift /Lower Joystick, Pull to raise the units fully.

The Actuators will sense and reset in the raised position. Return to Actuator Recovery Menu and select Disable.

5.18 WHEEL SIZE MENU

Selectable from **PIN menu**. The **Wheel Size Menu** is for selecting the wheel size fitted to the mower. It is important to ensure that this is set correctly to achieve correct control and quality of cut. The measurement is the Rolling Radius, taken from wheel centre to ground surface. Ensure tyre pressure is correct when measuring.

There are two wheel size options available:

- Factory Tyre (235mm)
- Custom Tyre (450-550mm)

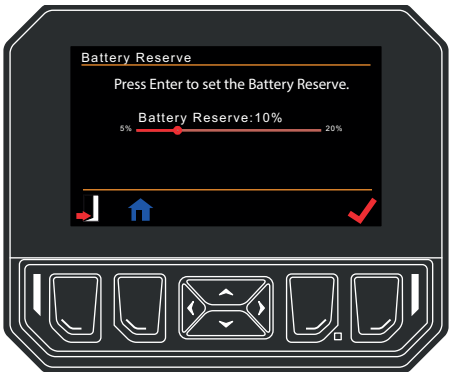
Use the Up and Down arrow keys to select correct wheel size for vehicle, followed by back button(1) to return to previous menu.

5.19 STEERING OFFSET CALIBRATION

Selectable from **PIN Menu**. The Steering calibration screen is used to set the machines steering angle. It is important to ensure this is checked before operation of machine. (See maintenance section.7.2.9).

5.20 BATTERY RESERVE MENU

Selectable from the **PIN Menu.** The **Battery Reserve Menu** is for setting the level at which the mower shall enter a Battery Reserve State. This function assists the operator to return to the nearest charging point safely before remaining battery power is exhausted and transmission is completely lost.

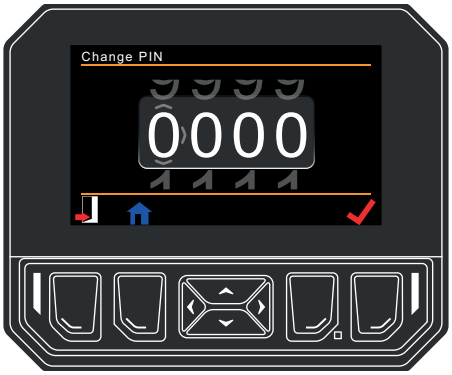


When the set level is reached, the system will turn off the Cutter reels, thereby reserving the remaining battery power for transmission and prompting the operator to charge the vehicle.

Each operator will be required to assess and adjust the setting based on their own unique working environment and proximity to charging locations.

5.21 CHANGE PIN MENU

Selectable from **PIN Menu**. The **Change PIN Menu** allows the owner to set their own customized pin number.



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.

Press and hold the select button(4) for 5 seconds to confirm new PIN.

Press the back button(1) to return to previous menu.

5.22 SET DEFAULT PARAMETERS MENU

Selectable from the **PIN Menu.** The **Set Default Parameters Menu** can be used to reset all configuration settings back to the factory set defaults.

Press and hold the select button(4) for 5 seconds to reset the mower to default parameters. The text ‘PIN reset successfully’ will appear in bottom right hand corner of screen.

Press the back button(1) to return to previous menu.

5.23 RESET SERVICE HOURS MENU

Selectable from the **PIN Menu**. The **Reset Service Hours Menu** can be used to reset the interval for the service notification following a completed machine service. The interval will be reset to 100hours before next service is due.

Press and hold the select button(4) for 5 seconds to reset the service interval. The test ‘Service hours reset successfully’ will appear in bottom right hand corner of screen.

Press the back button(1) to return to previous menu.

5.24 TOW MODE MENU

Selectable from the **Main menu**, the **Tow Mode Menu** allows the operator to enable and disable the Tow Mode.

In the event of a fault that prevents the machine from driving under its own power. Enable Tow Mode to allow release of the brakes, Use the UP and Down arrow keys to select Enable. Without leaving Tow Mode Menu screen, the brakes can be toggled On and Off using Brake Switch.

When Tow Mode is Active, a caution screen will pop up followed by 'Tow Mow Enabled' screen. To return to normal driving mode, select Disable. Press back button(4) to return to previous menu.

This function will only work if the mower system has power. If there is complete power failure refer to Section 6.9 Vehicle Recovery.

5.25 SERVICE MENU

Selectable from the **Main Menu.** The **Service Menu** contains Sub-menus relating to vehicle serviceability. The following Sub-menus can be selected by using the Up and Down arrow keys to move cursor to the required item, Then press the select button(4) to confirm.

- Fault Log
- Time Until Service
- Vehicle Status
- IO Diagnostics

Jacobsen Dealers will have access to higher service levels within the software.

5.26 FAULT LOG

Navigate to the **Service Menu**.

Use the Up and Down arrow keys until the green arrow is next to **Fault Log** option. Press the select button(4) to view the Fault Log.

The last 100 "Faults" that the controller finds are recorded. When 50 faults are recorded, the fault that next occurs will write over the oldest fault. These will display in chronological order from most recent to oldest.

The system will record any forced shutdowns due to detected faults. It will also record fault by-passes and missed services.

To view a fault, press the Up and Down arrow keys to move the green arrow. Press the select button(4) to confirm and view the specified fault code.

To clear the display of the fault warning, Press **Button 4** to acknowledge the fault. It is important that the fault is investigated and rectified before continued use of the mower.

There are 5 main fault icon categories:

- Steering
- Traction
- Actuators
- Reels
- TST (Inclinometer)

5.27 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** option. Press the select button(4) to view 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.

5.28 VEHICLE STATUS

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(4) to view Vehicle Status. There are three screens to toggle through using the Up and Down arrow keys.

The first screen, **Vehicle Status 1**,displays real time transmission data:

- Steering Position
- Foot pedal command
- Vehicle Speed
- Drive Mode
- Mowing Mode
- Individual wheel; Speed, RPM command, RPM actual, Current, Temperature.

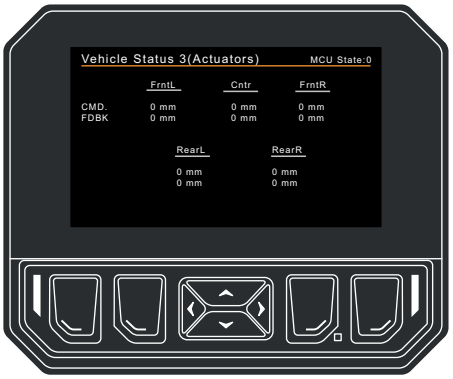
The second screen, **Vehicle Status 2**, displays real time lift actuator & Reel motor data.

- Battery Management System (BMS) Voltage, Current, State of Charge (SOC)
- Actuator Current
- Traction Voltage
- Traction Current
- Reel Voltage
- Reel Current

The third screen, **Vehicle Status 3**, displays real time control & Actuator data.

- Lift Actuator - Command (CMD)
- Lift Actuator - Feedback (FDBK)

Press the back button(1) to return to previous menu.



The forth screen, **Vehicle Status 4**, displays real time control & Reel data

- Reel - Command (RPM)
- Feedback (Reel RPM)
- Feedback - Reel Motor Temperature

Press the back button(1) to return to previous menu.

The fifth screen, **Vehicle Status 5**, displays software revisions;

- MCU software revision
- Display and software revision
- SCU Revision
- BMS revision
- Individual Actuator revision
- Individual Wheel traction controller revision
- Individual Reel motor controller revision

Press the back button(1) to return to previous menu.

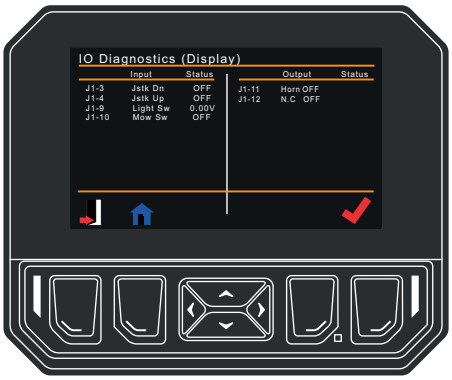
5.29 I/O DIAGNOSTICS MENU

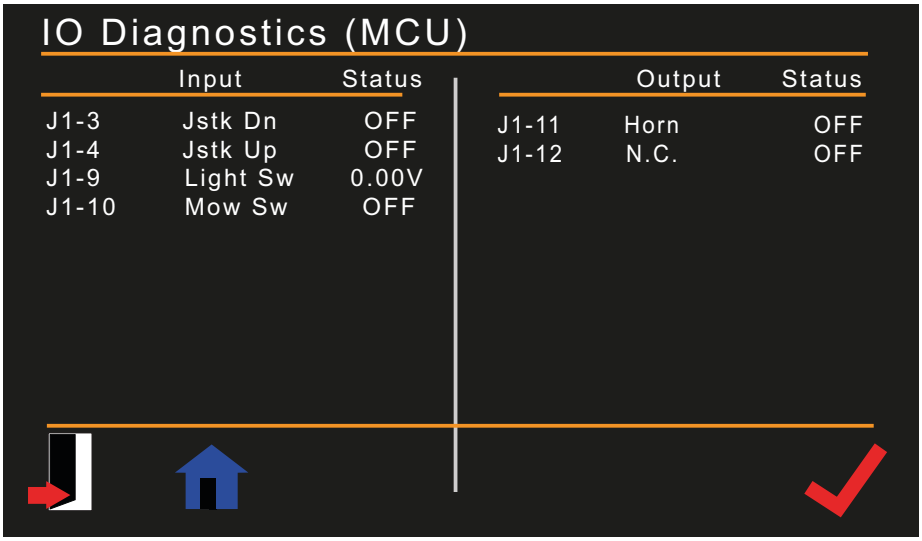
Navigate to the **Service Menu**.

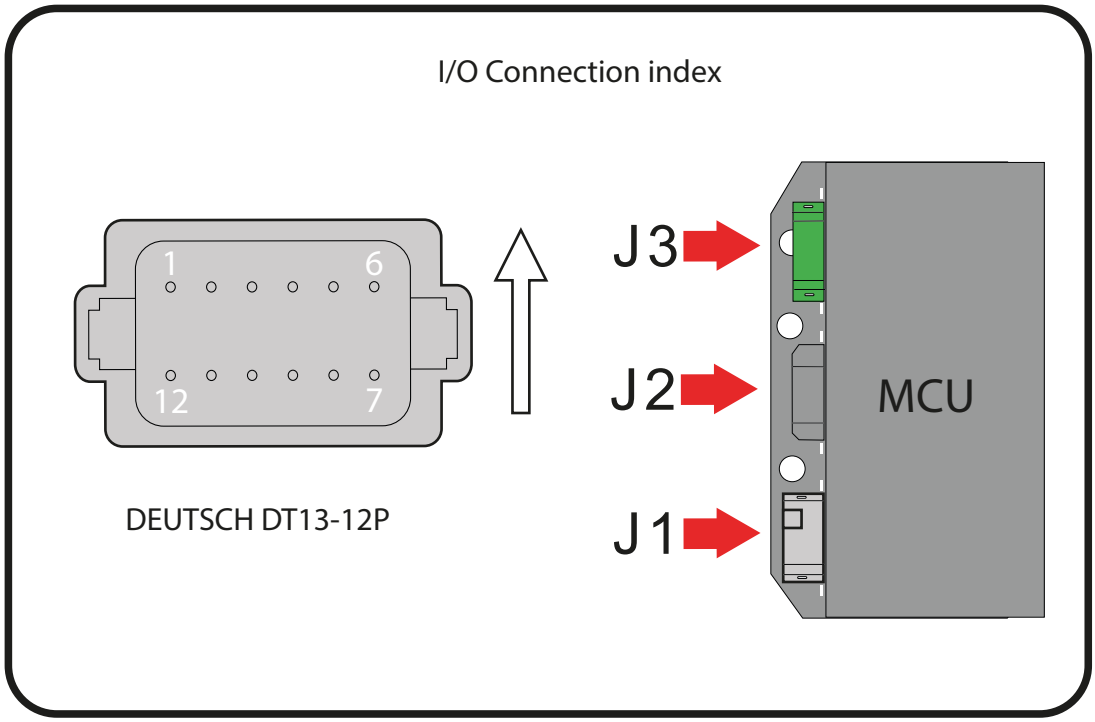
Use the UP and DOWN arrow keys until the green arrow is next to **I/O Diagnostics.** Press the select button(4) to view**.**

The **IO Diagnostics** screen displays all the real time electrical Input and Output Signals that the MCU controls.

The status of the control switch inputs are on left side of screen, the Output signals are on right side of screen. The current real time status of each I/O is either given as Off, On or Voltage.




IO Diagnostics (MCU)
Input
Status
J1-3
Jstk Dn
OFF
J1-4
Jstk Up
OFF
J1-9
Light Sw
0.00V
J1-10
Mow Sw
OFF
Output
Status
J1-11
Horn
OFF
J1-12
N.C.
OFF


I/O Connection index
1
6
12
7
DEUTSCH DT13-12P
J3
J2
J1
MCU

5.30 BACKLAP

Selectable from **Main Menu.** The **Backlap Menu** has two sub-menus. These can be selected by pressing the Up and Down arrow keys followed by the select button(4) to confirm.

Menu Options:

- **Clear Debris**. Select to enable or disable the clear debris command available from the popup task bar. (5.7).
- **Stationary Backlap.** Select to initiate the backlap function which will set the reels to run in reverse direction for honing the reel blades. See Section 7.2.7 for instruction on backlapping reels.

⚠ WARNING

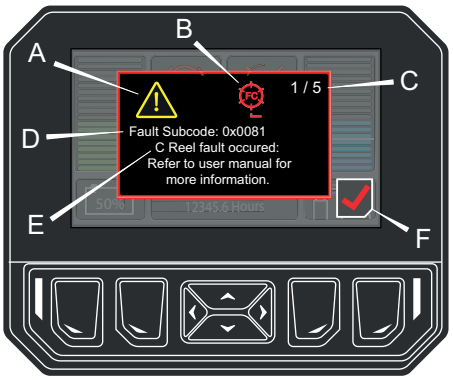
Before initializing either the Clear Debris or Backlap function, It is essential to check that it is safe to do so. Check the immediate vicinity, ensuring the area is clear of bystanders or objects prone to damage from potential ejected projectiles.

5.31 LANGUAGE

Selectable from **Main Menu**.

From **Language Menu**, Use the Up and Down arrow keys until the solid green arrow is next to the required language. The current language selected is indicated by the outlined green arrow.
Press the select button(4) to select the language.
Press the back button(1) to return to previous menu.

5.32 WARNING SCREENS



Pop-up Warning screens will display If the mower control system detects a fault. These will display the following information which will be useful for fault diagnostics.

A. Caution. It may be unsafe to continue to operate the mower without rectifying the fault first.If necessary consult your local Jacobsen dealer.

B. An icon will display indicating the type of fault. This icon will change depending on which fault has been detected.

C. Fault count. This will show how many faults have been found and the fault number currently viewed. These will be numbered in order of fault occurrence. Most recent being fault No.1.

D. Fault code, This code is important for identifying the fault. Use this code when reporting the fault. Refer to the fault code table to identify which the fault displayed.

E. Fault description. This will briefly explain the fault found.

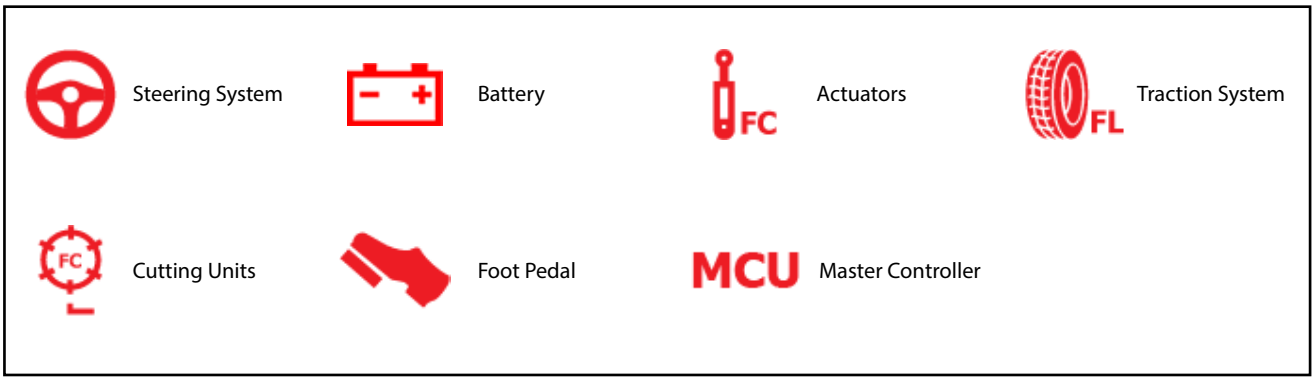
F. Acknowledge Fault. To clear fault screen press Button 4 to acknowledge the fault has been viewed.

The fault pop up will continue to display until it is acknowledged by the operator. If theres more than one fault, keep pressing button 4 to acknowledge each fault until the display is cleared.

It is important to take note of the fault displayed before clearing the screen. Faults will not be rectified by clearing the screen and the fault pop up will continue to display on start up until the problem is rectified.

5.33 WARNING ICONS

The Warning Pop-up screens will display icons with text to help identify the detected faults. The following Icons may be displayed, Each fault will have its own unique identification code:



5.34 WARNING FAULT CODES

Fault Code reference tables:

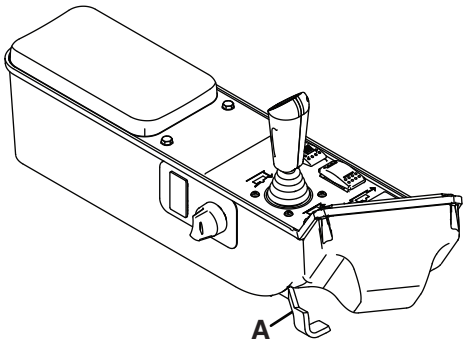
MCU Faults	
Sub-Code	Description
0x0000	No Faults
0x0010	Pedal A-B mis-match
0x0011	Pedal Safety Minimum
0x0012	Pedal Safety Maximum
0x0013	Supply Under-Voltage
0x0014	Supply Over-Voltage
0x0015	External 12V Output Low
0x0016	External 5V Output Low
0xF957	Single Run Max Faults
Reel Motor Controllers	
Sub-code	Description
0	Motor Temp
1	Drive Temp
2	Locked Rotor
3	Over-Current
4	Over-Voltage
5	Under-Voltage
6	Logic Under Voltage
7	Controller Fault
8	CAN Timeout
Actuators	
Sub-Code	Description
0	No Error
1	Hall Error
2	Over Voltage
3	Under Voltage
4	Failed CAN keep-alive
5	ESS Error
6	Power-On Block State
7	Temperature Error
8	Heart Beat Error
9	SMPS Error
Fault ID	
Sub-Code	Module Name
0	System
1	TCU
2	SCU
3	BMS
4	FL_Wheel
5	FR_Wheel
6	RL_Wheel

Sub-Code	Module Name
7	RR_Wheel
8	Outer Left Actuator
9	Front Left Actuator
10	Rear Left Actuator
11	Center Actuator
12	Rear Right Actuator
13	Front Right Actuator
14	Outer Right Actuator
15	Outer Left Reel
16	Front Left Reel
17	Rear Left Reel
18	Center Reel
19	Rear Right Reel
20	Front Right Reel
21	Outer Right Reel
22	MCU
23	Charger
24	Left Blade (eAR3)
25	Center Blade (eAR3)
26	Right Blade (eAR3)
27	NOT VALID

5.35 ARMREST LENGTH ADJUSTMENT

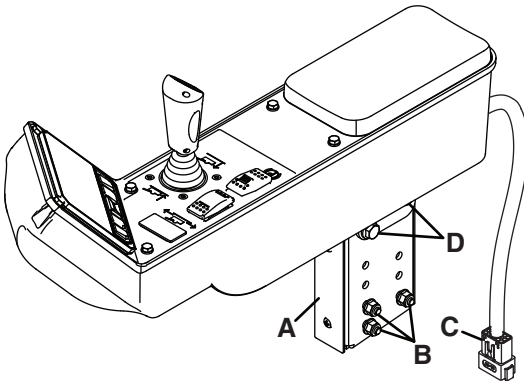
The armrest can be adjusted in length fore and aft. adjuster is found on the right side under the Armrest.

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



5.36 ARMREST HEIGHT ADJUSTMENT

The armrest has three available height settings and can tilt for the operator.

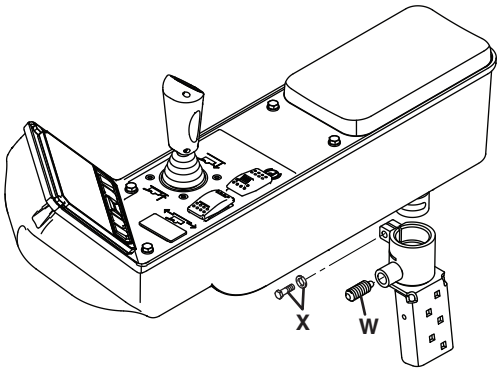


1. Stop the mower and remove the key.
2. Remove the hardware cover (A).
3. Remove the armrest hardware (B) from the bracket on the right side of the seat.
4. Lift or lower the armrest as needed until another set of holes in the armrest bracket align with the seat bracket. Install the armrest hardware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

5.37 ARMREST PIVOT ADJUSTMENT

Tighten or loosen pivot plunger (W) as required so plunger button stops the armrest at both ends of armrest pivot slots, and plunger body does not contact armrest pivot. Do not use plunger to increase pivot tension.

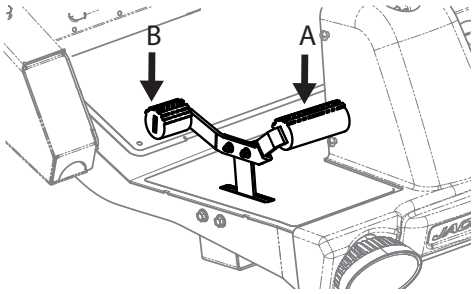
Adjust hardware (X) as required to obtain 2 to 6 lbs (9 to 26.7 N) of force required, at visor end of armrest, to pivot armrest. Do not over-tighten pivot hardware or leave too loose.



⚠ CAUTION

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

5.38 TRACTION PEDAL



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

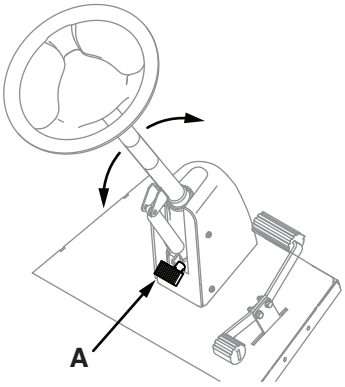
- Carefully press the top (A) of the foot pedal to reach the forward speed that you need.
- To stop - Carefully return the foot pedal to the Neutral position.
- To move in the reverse direction press the bottom (B) of the foot pedal.

INTELeTRAC™ - ELECTRONIC TRACTION CONTROL SYSTEM

The machine is equipped with an electronic traction control system which utilizes a controller and software to electronically control the drive motor which maintains a smooth and constant speed whether the unit is going uphill or downhill.

When the direction/speed pedal is returned to neutral, the controller uses regenerative braking by essentially turning the drive motor into a generator and putting energy back into the battery pack.

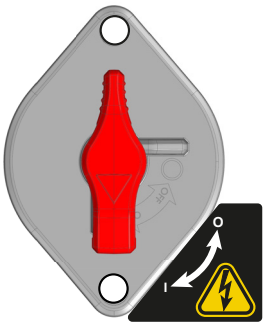
5.39 STEERING TILT CONTROL



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.

5.40 BATTERY ISOLATION SWITCH



The battery Isolation switch is located behind the seat on the left hand side of the operators platform.

The switch Isolates the Battery pack connection to the vehicles electrical circuit.

Always turn the isolate to Off before conducting any maintenance work to the mower. It is recommend that the machine is switched off at the isolator switch at the end of each day.

To operate, rotate the red switch lever counter-clockwise to switch Off and isolate the battery. Rotate the lever clockwise to switch On. With the isolator switched off, none of the vehicles systems will function.

⚠ WARNING

To reduce the risk of Electrical Shock, Always turn OFF the Battery Power isolation switch before conducting any maintenance on vehicle.It is always good practice to isolate battery when the machine is not in use.

Notes

6.1 DAILY INSPECTION

⚠ CAUTION

The inspection should be done each day, before and after use. Prior to conducting the inspection, lower the cutting units to the ground, engage the park brake and ensure all surfaces have sufficiently cooled.

Switch Off the system power and remove the key.

Conduct a visual inspection of the entire mower.

- Visually inspect for indications of wear, loose or damaged hardware.
- Check for any missing or damaged components.
- Check the condition of battery pack enclosure for any signs of damage or loose fixtures. Ensure it is kept clear of grass cuttings and debris. The Battery pack is sealed and does not require opening by the operator.
- Check all accessible electrical and mechanical connections are secure and tight.
- Check any vent grills are free from debris and grass.
- Make sure all cutting units are adjusted correctly and to the same cutting height.
- Check the cutting unit reels are free from debris and damage.
- Check all tyres for damage and that they are set at the correct pressure of 10psi (0.69Bar).
- Check the mower has been sufficiently charged for planned duration of use.
- Once the inspection is complete and before operating the machine, test the Operator Presence and Safety Interlock system (Sect 6.2).

Any defaults, damage or Missing parts should be rectified before further use.

⚠ CAUTION

Routine maintenance is essential for maintaining the mowers performance and safety features as intended by design. Failure to keep the mower correctly serviced may increase the risk of injury and may reduce the performance and longevity of the mower.

Product warranty may be void if the correct service schedule is not adhered to.

6.2 INTERLOCK SYSTEM

The Interlock System safeguards the operator and bystanders from unintentional operation of the mower. The interlock works by preventing the mower from starting unless the operator is seated, the park 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 will also disable the mow, transmission and steering function if the operator leaves the seat whilst in use.

⚠ WARNING

Do not operate the equipment if the Interlock System does not function correctly. Do not disconnect, bypass or prevent the operation of any switch or sensor. Any malfunctions must be resolved before using the mower, Failure to do so may result in Injury to the operator or bystanders.

Conduct each of the 7 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.

Refer to the chart below for each test and follow the check (✓) marks across the chart. These indicate the status of the interlock switch during the test. Switch off the system power between each test to reset the system.

TEST 1: The system must not start with the operator Off the seat.

TEST 2: The system must not start if the mow switch is in the On position.

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

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

TEST 5: The test shows the system 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 system should start.

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

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

When System is deactivated, the mow, transmission and lift lower function will be disabled.

Test	*Operator Seated*		*Mow Switch OFF*		*Parking Brake Switch ON*		*Traction Pedal in Neutral*		*System Starts*	
	Yes	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*	*Yes*	*No*
1		✓	✓		✓		✓			✓
2	✓			✓	✓		✓			✓
3	✓		✓			✓	✓			✓
4	✓		✓		✓			✓		✓
5	✓		✓		✓		✓		✓	
6	✓	✹	✓	✹	✓		✓		✹	
7	✓	✹	✓		✓	✹	✓		✹	

✹ Start the system as per Test 5 then operate the control function as indicated. The system must stop immediately.

6.3 OPERATING PROCEDURE

⚠ WARNING

This mower has a Roll Over Protection Structure (ROPS). Always wear the seat belt provided.
If the mower is over turning, hold the steering wheel. Do not try to move off the mower or leave the seat.

⚠ CAUTION

To prevent injury, always wear personal protective equipment (PPE). Safety glasses, suitable anti-slip work shoes or boots, a hard hat and ear protection are advised.

1. Always start the mower with the operator in the seat, never while next to the mower. Never start the mower with bystanders in close proximity.
2. Keep your hands and feet away from moving parts and the cutting units. Do not adjust the mower with system power left on.
3. Do not operate the mower with loose or damaged components. All components must be correctly fastened to the mower.
4. If using the mower for the first time, cut a test area to become familiar with the operation and controls of the mower. Check the setup of the cutting units by inspecting the condition of the cut grass.
5. Prior to work, inspect the area to be cut. Check the height of the grass, the type of terrain and the conditions of the surface, plan for the safest method to cut the area and make necessary adjustments to the machine for each condition. For the best results mow when the grass is dry.
6. Do not discharge cut grass in the direction of people or allow people near the mower whilst in operation. The owner and operator are responsible for injuries to people and damage to property as a result of unsafe mowing practices or undue care and attention.

⚠ CAUTION

Inspect the area to be cut and remove all potentially hazardous objects before you operate the mower.
Carefully enter a new area and always operate at speeds that allow you to control the mower safely.

7. Be careful when you operate near gravel areas (roads, parking areas, cart tracks). Stones released from the equipment can cause injuries to people and cause damage to the equipment.
8. When you are not mowing grass, always turn off the mow switch.
9. Before you move across or operate on sidewalks or roads, turn off the mow switch, lift the cutting units and travel at decreased speed. Look for traffic.
10. If the mower hits an object or if vibration starts that is not normal, inspect the mower for damage and make necessary repairs.

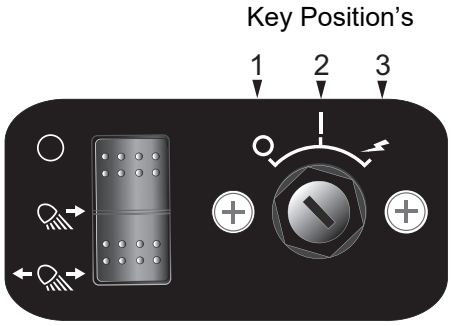
⚠ WARNING

Before you clean, adjust or repair this equipment, always turn off the mow switch, lower the cutting units to the ground, turn on the park brake switch, shut off power to the system and remove the key.

6.4 ACTIVATE THE MOWER SYSTEMS

To activate the mower ensure the charging lead is unplugged, that the power isolating switch is turned Onand the mower interlocks are correctly set.

- Insert and rotate the system key clockwise to position 2. Wait 3 seconds until the display has completed its startup sequence and displays the home screen.
- If there are any faults detected these will display as warning screens and an audible warning tone will sound. Fault screens will need to be cleared and any faults rectified before attempting to initiate the system.
- Turn the key clockwise to position 3 to activate mower systems. The switch position is momentary and will return to the run position upon releasing the key. The mower is now activated and all functions will now operable.



6.5 DE-ACTIVATE THE MOWER SYSTEMS

To stop and park the mower in normal conditions:

1. Park the mower on a flat and level surface.
2. Switch the Park Brake on and ensure the cutter switch is turned off.
3. Lower the cutting units to the ground.
4. Turn the key 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.

6.6 DRIVING

Read and follow all safety instructions contained in this manual when you drive the mower.

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

1. Before driving off, ensure control and seat adjustments are made to suit individual operator requirements. All controls should be adjusted to be within comfortable reach.
2. Check cutting units are raised and Mow Switch is Off.
3. Check your steering and wheels are pointing in the intended direction of travel.
4. Check all around the immediate vicinity of mower before driving off, ensuring no obstacles or bystanders are obstructing the mowers movement.
5. Release park brake.
6. Operate the traction pedal to achieve a gentle and controlled acceleration in the intended direction.

Use extra caution when you operate in the reverse direction, look behind you to make sure you have a clear path.

Operator Presence

The mower automatically detects the presence of a seated operator. In the circumstance that the operator has left the operators seat whilst the machine is running with the park brake off, The machine will automatically deactivate the cutters and apply the park brake within 3 seconds.

If the park brake is applied and the operator leaves the seat whilst machine is running, the system will remain on but the controls will be disabled until the operator presence is detected back on the seat.

6.7 MOWING

⚠ WARNING

To prevent injuries, when the reels rotate, keep your hands, feet and clothing away from the cutting unit. ***NEVER*** use your hands to clean the cutting units. Use a brush to remove grass from the reels. The reel blades can be sharp and can cause injury.

To mow:

1. Move the park brake switch to the Off position and set the mow switch to the On position.
2. Push the joystick to lower the cutting units to the ground. When the cutting units are lowered, the reels will start turning.
3. Pull the joystick to lift the cutting units. The cutting units will lift to the crosscut position and the reels will stop. To lift the cutting units to the transport position, pull and hold the joystick until the cutting units are completely lifted.

NOTICE

To prevent damage to the reel and the bedknife, never operate the cutting units when you are not mowing grass. Friction and heat will develop between the reel and bedknife which can cause damage.

To remove or install grass catchers:

1. Set the mow switch in the Off position, lower the cutting units to the ground, put the park brake switch in the On position and turn off the mower.
2. Tilt the grass catcher body and move the grass catcher off or on to the lift yoke.

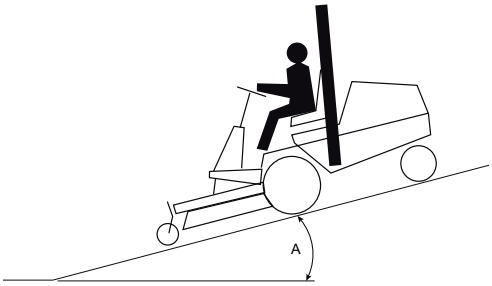
6.8 MOWING ON SLOPES

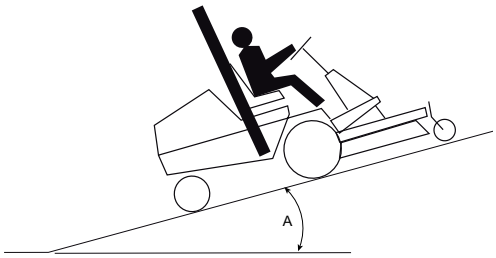
The mower has been designed for good traction and stability under normal operating conditions. Operate the mower with caution when you drive on a gradient. If you drive on wet grass, or loose surface material the traction and steering control of the mower are decreased.

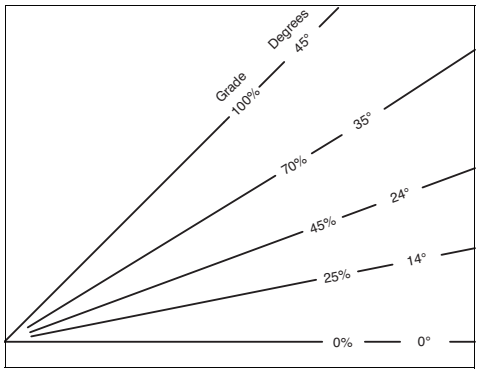
1. Control the forward speed with the traction pedal to keep the correct performance.
2. If the mower begins to lose traction and slip or the tyres begin to mark or damage the turf, this indicates the slope angle is too steep to safely operate the mower. Use caution and move the mower to a lower gradient slope until traction is regained.
3. When you drive toward the bottom of a slope with a high angle, lower the cutting units to the ground. This procedure reduces risk of mower overturning.
4. Correct tyre pressure is necessary for maximum traction and stability.

- Front - 10 psi (0.69 BAR)
- Rear - 10 psi (0.69 BAR)

A = Maximum Allowable Slope

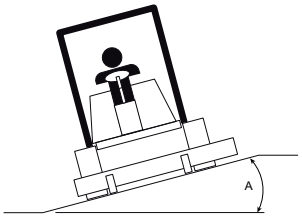






⚠ WARNING

To minimize the possibility of overturning the mower, the safest method of operating on slopes is to drive vertically up and down the slope face, not horizontally across the slope. Travel at a slow speed and avoid make unnecessary turns. Keep the cutting units lowered where possible and be vigilant for changes in terrain, identify and avoid hazards such as drop-offs, ditches and embankments.
Do not operate the mower on the slopes greater than 17° incline



⚠ WARNING

The ROPS frame is designed as a permanent fixture and must not be removed. The seat belt should be used at all times unless specific conditions cause a higher risk of doing so. Jacobsen recommends that a local risk assessment is completed by the owner/user of the machine to determine the risks associated with working on slopes.

This rationale is based on the fact that a seat belt must be worn with a ROPS to comply with the Machinery Directive 2006/42/EC sections 3.2.2, Seating & 3.4.3, Roll-over

6.9 MOWER RECOVERY

⚠ WARNING

To prevent injury or damage to the mower, Use the recommended Jacobsen Tow Kit available from your authorised Jacobsen dealer. Do not attempt to tow the mower using flexible straps or rope.

The tow vehicle must be capable of slowing and stopping the mower using its own braking system in conjunction with a rigid tow bar. The mower park brake should not be used unless in an emergency.

If the mower has complete power failure resulting in the loss of all control functions including loss of steering, lift, transmission and brake release, the mower can be recovered by using a Jacobsen EV brake release kit (10032281) and Tow Kit (10050813).

The brake release kit comprises of an auxiliary battery module with connection leads which can be used to remotely release the brakes.

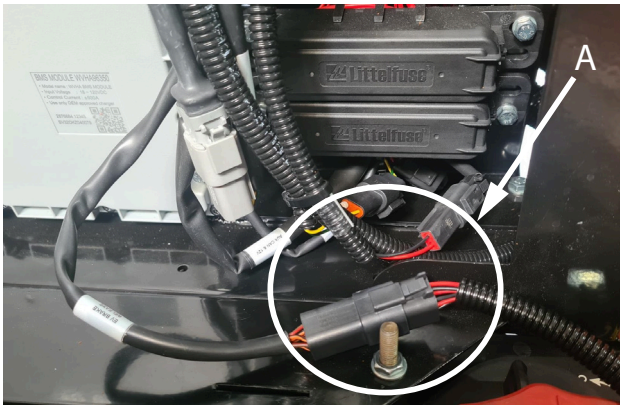
The tow kit comprises of a rigid tow bar and towing hitch for vehicle recovery.

EV brake release kit - 10032281.

Note; this kit will not function if theres mechanical failure of the brake or transmission system or if there's a fault with the harness supplying power to the brakes.

6.10 TOWING

1. If mower is located on a slope, chock the wheels to prevent the mower moving inadvertently.
2. If the cutting units require lifting, use suitable lift equipment and secure them in the raised position. If this is not possible then the units can be removed.
3. Remove the bulk head guard located behind operators seat by releasing the retaining hardware.
4. Attach the tow bar accessory, (Part No.10050813), to the rear steering yoke (Refer to tow bar instruction sheet). Do not use a tow strap or rope to tow mower. Connect other end of tow bar to the towing vehicle equipped with ball hitch and vehicle tow bar.
5. If the mower has power, release the brakes using Park Brake Emergency Release function. (See 6.11).
6. If the mower has complete power failure, Locate the brake release connector (A). Plug in the Tow kit 6 pin plug. This will provide auxiliary power to release the wheel brakes, allowing them to rotate whilst being towed.
7. If previously used, remove chocks from the mowers wheels. Switch the auxiliary power unit on to release the brakes. The mower is now ready to tow.
8. After towing the mower, remove the tow bar accessory and the brake release connector. Replace Bulkhead guard.



NOTICE

To prevent damage to the mower, do not exceed 3.7MPH (6KPH) while towing. Long distance towing is not recommended. Damage to the mower as a result of excessive tow speeds will void warranty on parts.

Use caution when towing. Avoid steep inclines and uneven ground conditions. To prevent damage to steering yoke, avoid turns that will cause rear wheel to turn more than 55° in either direction.

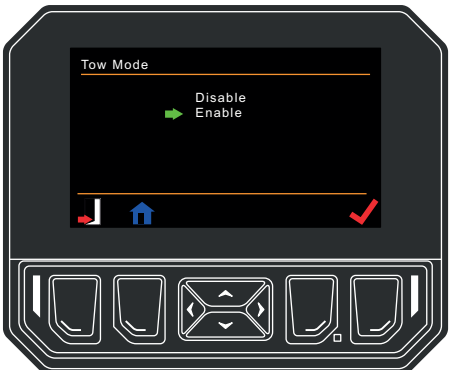
⚠ WARNING

If mower is on an incline, chock the wheels before manually disengaging the park brake to avoid the mower inadvertently rolling downhill.
Ensure the mower is returned to normal operating condition. Never operate the mower with the Tow Kit still installed.

6.11 PARK BRAKE EMERGENCY RELEASE

Should the mower develop problems where the transmission drive is inoperable but the system has power, The integral electronic park brakes can be released to enable towing or pushing for short distances.

1. Turn power on.
2. Navigate to the main menu on the display screen.
3. Select option Tow Mode and select Enable.
4. Press the brake release button.The brakes will now be disengaged allowing the machine to be manually moved. All other machine functions will be disabled if the operator is out of the seated position. It is advisable that an operator is present at the controls to steer and apply brake when required.



6.12 LOADING MOWER ON TRAILER

Use care when loading and unloading mower onto trailer. Fasten mower to trailer, using tie downs on left and right side and rear of mower, to prevent mower from rolling or shifting during transport.

If the mower experiences problems and must be shut down and removed from the area, it should be towed back to the maintenance area, or loaded onto a trailer for transport. Fully raise reels before driving up trailer ramp. Lift arms must be in lift locks and bumpers properly adjusted to prevent damage to reels, mower, or other objects.

If the mower is to be trailered on the highway, before strapping to trailer, inflate tyres to 22 psi (1.5 BAR). After unloading mower, reduce tyre pressure to normal operating pressure. Always secure armrest cover in closed position with a strap when transporting.

NOTICE

Failure to properly secure armrest cover in the closed position when transporting may result in armrest cover damage.

Make certain key switch is in Off position and key removed. If mower is unable to drive onto trailer on its own power, follow this procedure:

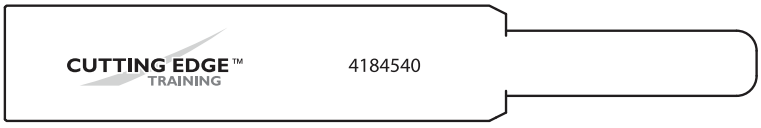
1. Follow procedure for disengaging parking brake.
2. Make sure reels are raised. If they cannot be raised, remove them from the mower.
3. Make certain key switch is in Off position and key removed.
4. Use a winch or other device to load mower onto trailer. Mower must be moved in a straight line to prevent damage to steering system.
5. Use tie down at rear of mower for attaching winch. If front tie downs must be used, winch must be connected to both the left and right tie downs.
6. With mower strapped down to trailer, remove brake release harness. Brake must be disengaged again before unloading mower.
7. Carefully unload mower from trailer using a winch or other device to slowly get mower down trailer ramp. Mower brakes have been disabled and are not able to stop mower.

⚠ WARNING

To prevent injury, keep bystanders away when loading or unloading a disabled mower on trailer. Mower brakes have been disabled and may not be used to stop mower.
Do not attempt to roll mower down trailer ramp without use of winch or similar device to restrain mower.

6.13 TO REMOVE BLOCKAGE FROM CUTTING UNITS

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



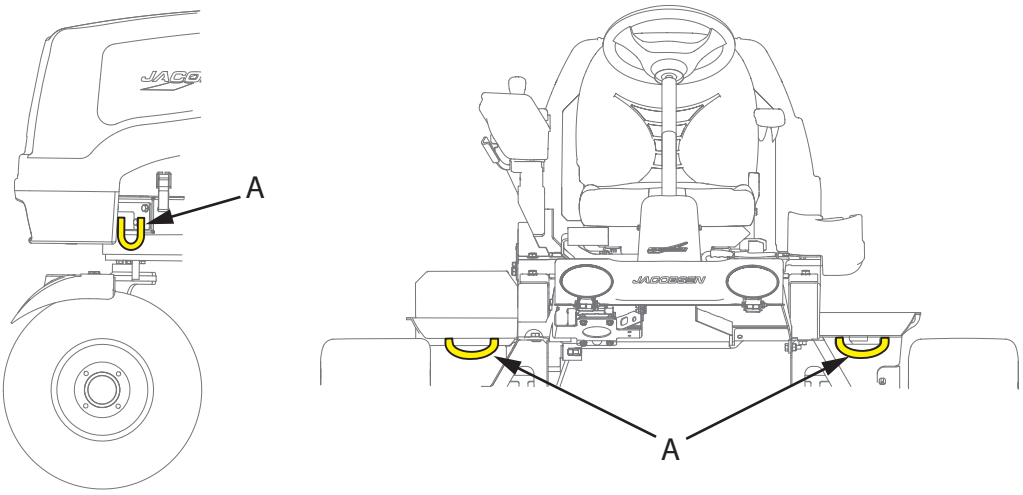
⚠ WARNING

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 unit.

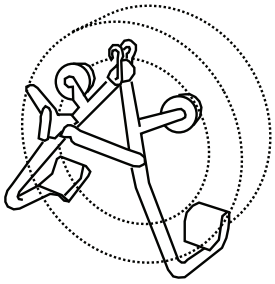
6.14 SLINGING AND JACKING THE MACHINE

Lifting

The mower has designated lift and tie down points (A), Use suitable lift equipment to attach at each of the four lift points to aid a secure and stable lift of machine by a qualified operative. Pay attention to the mower weight ensuring the load rating of lift equipment used is sufficient. These points can also be use for securing the mower whilst in transit.

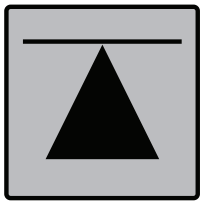


Alternatively slinging the machine using a set of damage free wheel clamps can be used, similar to the one shown, in conjunction with a certified lifting frame.



Jacking points

There are jack points indicated on the machine on the rear axle and two on the front axle. This decal indicates the correct lift points. Always secure the machine on axle stands before commencing work or whilst left unattended.



6.15 BATTERY SAFETY

DANGER

Risk of electric shock. Connect the charger power cord to an outlet that is correctly installed and connected to an electrical ground according to all codes and regulations. A grounded outlet is necessary to decrease the risk of electric shock. Do not use ground adapters or replace the plug. Do not touch parts of output connector or battery terminals that do not have insulation.

WARNING

Do not spray water at the battery pack or the battery management system.
Do not attempt to charge the mower in wet conditions or if machine is parked in standing water.

6.16 BATTERY CHARGING AND MAINTENANCE

The charger should be operated in accordance with the charger manufacturer's instructions. Never charge batteries in a hazardous environment.

Charging should be performed when ambient temperatures are between 40°F and 110°F (4°C and 42°C). The battery pack may be charged or topped up after every use.

The battery management system (BMS) and charger cooperate to make sure that charging occurs at the proper rate for the battery temperature. When the battery charger is connected to the mower, it will determine the charge rate based on the battery temperature. The charger will operate at the rates shown in the table below;

Charge Rate	Temperature
NO charging	below 14°F (-10°C) or above 140°F (60°C)
Pre-charge (charge at reduced rate, 21 amps)	between 14°F (-10°C) and 41°F (5°C) between 104°F (40°C) and 140°F (60°C)
Full charging	between 37.4°F (3°C) and 107.6°F (42° C)

WARNING

Do not attempt to start the mower or charge the battery pack if the mower has been stored at freezing temperatures or below. -4° F(-20°C) or above 113°F (45°C).

- The BMS will adjust the charge rate based on the temperature of the batteries.
- Use only the OEM approved Lithium-Ion battery charger for your mower. See charge operating instructions for use.
- Do not open or disassemble the charger.
- Do not operate the charger if the AC supply cord is damaged. Ensure only qualified personnel service or repair the charger.
- The battery will charge with the isolator switch in both the On or Off position. If the isolator is switched off, the display screen will not indicate the charge status. The charger cover will need to be removed to visually identify when charging is in process by means of the charger LED indicators. Alternatively, If the isolator switch is left in the On position, the display screen will indicate the state of charge during the charging cycle.

Connecting the Battery Charger

Disconnect the AC supply plug before you make or break the connections to a battery that is charging.

Check the AC supply voltage is correct for the charger unit. See the charger manufactures manual for specification. Check that the outlet plug socket is compatible with charger unit. Ensure the supply outlet is protected by suitable RCD protection.

Charger	Capacity (DC out)	Charger Draw (AC in)	Input Voltage (AC)	Input Frequency (AC)	Recommended Dedicated Circuit
Zivan SG3	1175W	12A	110V	50~60Hz	1 per 110V 15A/20A Circuit
Zivan SG3	2660W	13A	220V / 230V	50~60Hz	1 per 230V 16A Circuit. (Not Compatible with 13A Domestic Sockets) Use 16A IEC 60309 Sockets

Before connecting the battery charger

- Park the mower, turn the key switch to Off and remove the key.
- Remove charger socket cover by unscrewing the cap.
- Inspect the mower charger receptacle and charger for dirt, debris or damage. Clean if necessary and replace immediately if damage is found.
- Inspect the charger cable and plugs for cracks or damage. replace any damaged cables before use.
- Ensure AC power outlet is switched off. Plug the charger cable into the mowers charging receptacle then plug into the AC supply outlet.
- Switch AC Supply power On.
- When the charger is connected and charging, the display screen will power up and display charging status provided the isolator switch is on.

EU Socket illustrated. The design may differ depending on region of use.

Disconnecting the Battery Charger

- Switch Power Supply Off.
- Disconnect the charger cable from the mower. If disconnecting before the charge cycle is complete, it is recommended that the charger cable be disconnected from the wall AC power outlet first, then unplug the charger cable from the mower receptacle.
- Re-fit charger socket cover.
- Carefully store the charger cable.

The Charger Unit

The charger unit has an integral display panel that indicates the following:

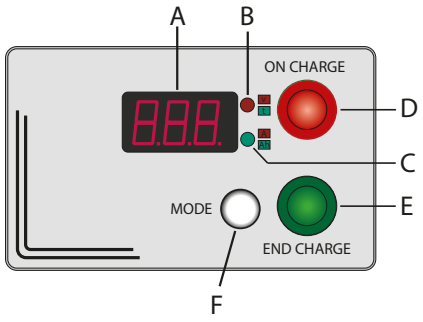
Red LED numeric display (A), can toggle between:

Voltage - Red upper LED (B)

Current - Red lower LED (C)

Time - Green upper LED (B)

Amp. Hours - Green lower Lower (C)



Large LED indicators (D & E) - Flash codes:

Red	Constant or Max current phase
Blinking red (4s On -1s Off)	Voltage control phase
Red and Blinking Green (4s On -1s Off)	Over charging phase
Blinking Green (4s On -1s Off)	Wait Phase (for equalization)
Green	End Charge
Blinking Green (4s On -1s Off)	Equalization pulse and floating
Green and Red Blinking together	Connection with CAN Console or S/S HW-SW

Charger Fault Codes

If a fault occurs during charging, the numeric LCD screen will display the detected fault as codes:

Code	Alarm Type	Description	STOP
A01	LOGIC FAILURE #1	Trouble with current detection	Yes
A02	CAN BUS K.O	Trouble on CAN communication	No
A03	WATCHDOG	Logic Board mis-working	Yes
A05	HIGH BATTERY TEMPERATURE	Battery temperature higher than 55°C / 131°F	Temporary
A07	OVERCURRENT	Over Current	Temporary
A08	HIGH TEMPERATURE	Battery charger high temperature	Temporary
A09	MISMATCH VOLTAGE	Battery voltage sensing error	Temporary
A10	TIMEOUT	Phase 1 finished timeout	Yes
A13	BATTERY DISCONNECTED	Battery disconnected	Temporary
A14	PUMP PRESSURE ERROR	Wrong Pump Pressure.Air pump not working	No
A15	THERMAL SENSOR FAILURE	Thermal sensor not connected - failed	No
A16	LOGIC FAILURE #2	Logic supply failure	Temporary
A17	FLASH CHECK SUM	Micro-controller flash memory corrupted	Yes
A18	EEPROM CHECKSUM	EEPROM / Flash memory corrupted	Yes
A23	POWER FAILURE #1	Output current sensing circuit damaged	Yes
A24	WRONG INPUT MAINS	Input mains level out of the operating range	Yes
A25	SHORT OUTPUT	Short circuit at the output stage	Yes
A26	WRONG MARKER EEP	EEPROM/Flash memory corrupted	Yes
A27	NO MAINS	Input grid failure	Temporary
A28	LOW TEMPERATURE	Charger internal temperature below -30°C / -22°F	Temporary
A29	CLOCK BATTERY OFF	Clock calendar battery discharged or not connected	Yes

Mode Button

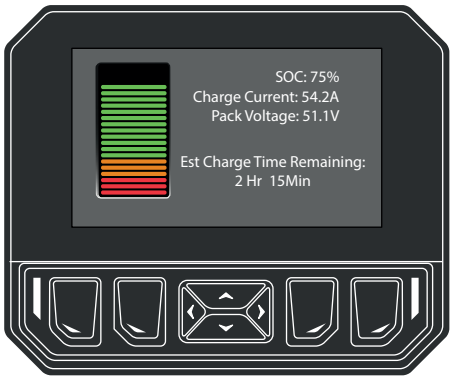
The Mode button (F), if momentarily pressed will scroll between the chargers numeric display screen functions. If pressed and held for 1 second or more, the charger display will enter settings mode. The setting for the mower will have been set to factory default.

⚠ WARNING

Only use the charger and receptacles supplied by Jacobsen to charge the mower.
Using 3rd party charging equipment may potentially cause a Hazardous situation resulting in either damage to vehicle and injury

Battery Charging Screen

When the charger is connected and charging, the screen will power up and display charging status provided the isolator switch is On.



- Battery charge level gauge.
- State of charge level percentage
- BMS charge current
- Pack voltage
- Estimated charge time remaining

The battery charger is designed to completely charge the battery set. If the batteries are severely deep cycled the charger will indicate a fault. The automatic charger determines the correct length of charge for the battery set and turns off when the batteries are charged. Always refer to the instruction supplied with the charger.

AC Voltage

The battery charger output voltage is directly related to the input voltage. If the mower receives an incomplete charge in a normally adequate time period, low AC voltage can be the cause. Consult an electrician if necessary.

6.17 BATTERY PROLONGED STORAGE

NOTICE

Improper storage may damage, destroy or cause permanent loss of battery capacity. Do not exceed storage time or temperature limits. Batteries must be charged to the correct level before storage. Storing fully depleted batteries will make them permanently unusable.

Storage Preparation

The optimum storage temperature range is between 65°F and 82°F (18°C and 28°C)

- Charge the battery module based on climate during storage period.
- In cold climates, fully charge the battery module. Make sure that the charging operation is complete and there are no faults displayed on the charger. The green light on the charger should be on, indicating the charge cycle is complete.
- In hot climates, store the mower with a 30% to 50% charge of battery pack capacity.
- Turn the key to the Off position and remove it from the key switch.
- Turn off all accessories.
- The storage time for properly charged Lithium-Ion batteries supplied with this mower varies based on the ambient temperature.

Temperature	Length of Storage Time
-22°F to -4°F (-30°C to -20°C)	One month at 100% battery charge, all accessories turned off.
-4°F to 113°F (-20°C to 45°C)	Six months at 100% battery charge, all accessories turned off.
113°F to 140°F (45°C to 60°C)	One month at 30% - 50% charge, all accessories turned off.

Setting State of Charge (SOC)

The SOC meter can be used to determine the state of charge of the battery module. If the SOC is below 30%, charge the battery module until the state of charge reaches 50%. The charge cycle may be interrupted by disconnecting the charger from the AC power source first, then from the charging receptacle on the mower. If the SOC is above 50%, operate the mower until the SOC is below 50%.

During Storage

Check the state of charge every 30 days. If the SOC is below 30%, charge the battery module until the state of charge reaches 50%.

Deep Discharge

Should the mower be stored for extended periods with low state of charge, there is risk of deep discharge. This is where the battery has reached a critically low level of charge. The BMS will completely shutdown and the mower will be unable to recharge using the on-board charger. Contact your local Jacobsen dealer if this issue arises.

Extreme Low Temperature Storage

If the ambient temperature is below -4°F (-20°C) DO NOT:

- turn the mower key to the ON position
- drive the mower
- tow the mower
- charge the mower
- operate accessories
- turn the lights on (if equipped)

Returning mower to Service

At the end of the storage period, charge the battery module to 100% before operating the mower.

Before charging the mower be sure that the ambient temperature is between 14°F (-10°C) and 113°F (45°C) and the mower has had time to adjust to the temperature.

Battery Disposal

Lithium-Ion batteries are recyclable:

Contact the distributor or manufacturer for information on returning or recycling used or damaged battery packs.

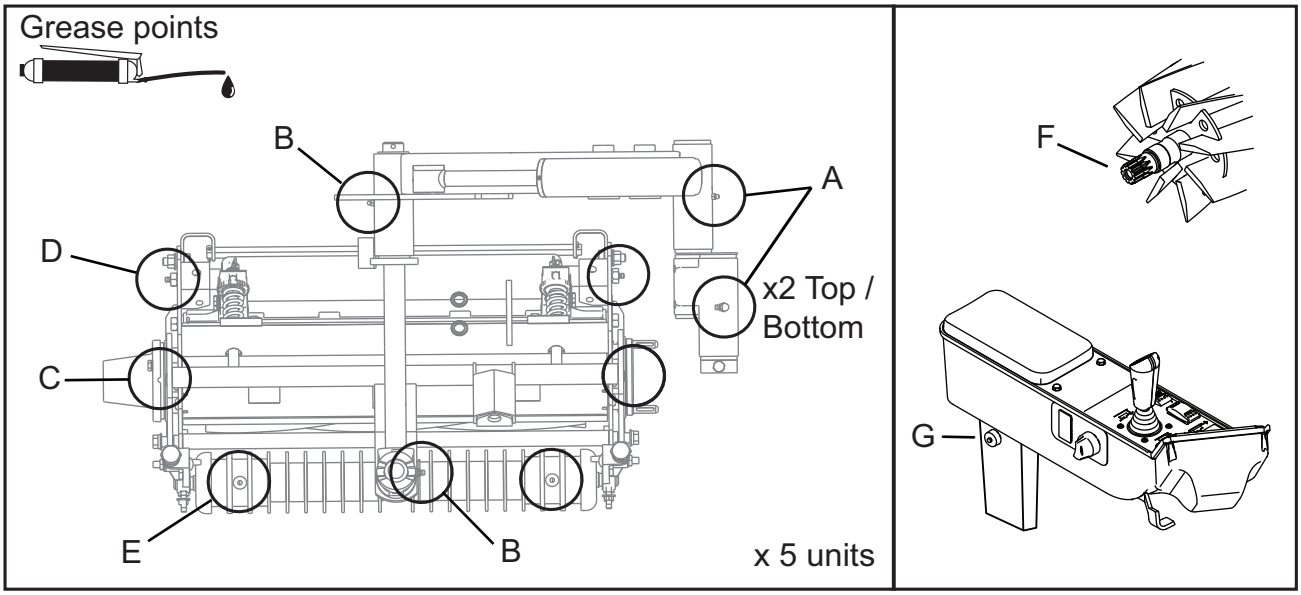
Contact local or state environmental department for disposal information.

Refer to the Maintenance section for additional information.

7.1 MAINTENANCE AND LUBRICATION

Maintenance Schedule		
Interval	**Item**	**Section**
Daily / 10 hours	• Check Safety Interlock System. • Check Tyre Pressure. • Check Bedknife & Reel Blades. • Walk-Around - Damage Inspection • Clear Ventilation Screens • SOC - Check State of Charge	Sect 6.2 Sect. 8.6 Sect. 6.16
Weekly / Every 50 hours	• Check for Loose Components & Secure • Clear debris build up from under seat plate • Lubricate Grease points • Check Steering Calibration	 Sect. 7.1 Sect 7.2.9
Every 100 Hours	• Lubricate Steering Chain	
Every 300 Hours	• Inspect, clean and grease cut unit drive couplings	
*Check more often in dirty conditions		
IMPORTANT Refer to the battery manufacturers manual for additional maintenance procedures relating to the battery cells.		

Lubrication Points (Grease Every 50 Hours or Weekly)	
A. Lift Arm Pivot (15)	D. Front Roller (10)
B. Cutting Unit Pivots (10)	E. Rear Roller (10)
C. Cutting Unit Bearing Housing (10)	F. Reel Splines (5)
G. Arm rest Pivot (1)	



7.1.1 LUBRICATION

Always clean the grease fittings before and after lubricating, removing dirt and excessive grease. Lubricate the following on a weekly basis or every 50 hours. Use Shell Gadus (or equivalent) S2 U460L grease.

- Cutting unit Rollers.
- Cutter unit pivots.
- Reel Bearing housings.
- Reel drive spines. (Use Shell Gadus S2 V220 Grease)
- Seat Pivot.

Periodically apply a small amount of lithium based grease to the seat runners.

For smooth operation of all levers, pivot points and other friction points that are not shown on the lubrication chart apply several drops of SAE 30 oil every 50 hours of operation or as needed.

NOTICE

Apply grease with a manual grease gun, do not use a compressed air gun.
Fill slowly until grease begins to seep out.

7.2 GENERAL PRECAUTIONS

⚠ WARNING

Before you clean, adjust or repair this equipment, ensure the cutter switch is in the OFF position. Lower all the cutting units to the ground, apply the parking brake, power OFF and remove the key.
Make sure the mower is parked on a solid and level surface. Never work on the mower that is only held by a jack. Always use the jack stands to support vehicle off the ground.

Only trained personal should carry out maintenance or adjustments on the mower. If the correct adjustments can not be made, contact your Jacobsen Dealer.

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

1. Keep the equipment clean.
2. Keep all moving parts correctly adjusted and lubricated.
3. Replace worn or damaged parts before you operate the mower.
4. Keep guarding in position and all hardware tight.
5. Keep the tyres inflated to the recommended pressure.

When carrying out any maintenance, avoid wearing jewelry or loose fitting clothing that could become entrapped in equipment. When discarding waste hazardous materials follow your local authority procedures.

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

When working on Electrical components, Always isolate the power supply and disconnect the charger. Use appropriate tooling for specialist electrical work, rubber insulated tools are commercially available.

7.2.2 BATTERY

DANGER

High Voltage - Risk of Electric Shock.
Only authorised technicians should attempt to access the battery modules.

The battery pack cradle and guard is fitted with a Quality Inspection Tag. Removal of these tags and entry into the battery compartment is prohibited and may void warranty if removed.

WARNING

The battery contains harmful substances. Under no circumstances should the battery modules be opened.
The battery packs are Non-Serviceable. In the event of a fault contact your authorised Jacobsen dealer.
Discard used or damaged batteries in accordance with local regulations.

WARNING

The battery posts, terminals and related parts contain lead and lead compounds.
The State of California understands Lead to be a cause of cancer and reproductive harm.

- Keep the battery module carriage and hardware tight.
- Before welding any part on the Mower, disconnect the battery cables.

Flat Battery Start

Before you try to start the mower, check the State of Charge. If SOC is low or empty proceed with the charging procedure. If the battery fails to charge contact your local Jacobsen dealer.

WARNING

The Lithium battery pack cannot be jump started. Do not attempt to jump start the battery pack under any circumstances. Contact your local Jacobsen dealer.

For recovery of inoperable machine, see section 6.9.

7.2.3 TYRES

Check tyres for correct pressure using an accurate low-pressure tyre gauge. This should be done before operation when the tyres are cool. Tyres should be inflated to a recommended pressure of 10 PSI (0.69 BAR).

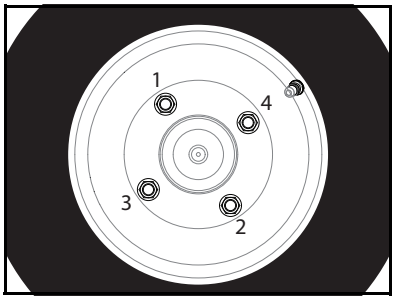
Keep the tyres inflated at the correct pressure and check for wear or damage before each day of operation.

⚠ CAUTION

Only attempt to fit a tyre to a rim if properly trained to do so. Incorrect mounting can cause injury.

7.2.4 WHEEL MOUNTING PROCEDURE

Remove any contaminates, grease or 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. Tighten each of the nuts in the top position (1).
Check and torque hardware as indicated in the Maintenance and Lubrication Charts.
Torque wheel nuts as follows: 112-119 Nm (83-88 lbf-ft).



⚠ WARNING

Park the Mower on a solid level surface. Never work on a mower supported only by a jack. Always use jack stands. If only one axle is lifted, chock the remaining grounded wheels.

7.2.5 ROPS

A Roll Over Protective Structure (ROPS) is included with this mower. Inspect the ROPS as indicated in the Maintenance chart 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. Replace all damaged parts immediately. All the replacement parts for the ROPS must be approved Jacobsen Limited parts as shown in the Parts Manual. Check and torque all ROPS hardware as indicated in the Parts Manual.

⚠ DANGER

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. (ANSI B71.4-2012 section 20.7)
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.

7.2.6 CARE AND CLEANING

In order to maintain the design performance and longevity of the mower, care should be taken to clean it regularly and correctly in accordance with these instructions.

NOTICE

Always wear correct Personal Protective Clothing (PPE) when washing vehicles. Eye protection and gloves should always be warn.

- Clean the mower and cutting units after each use.
- Park the mower in a suitable location, on a flat level surface with ability to collect the waste water for correct disposal after cleaning.
- Switch Off power and remove the key. Unplug charger if connected.
- Where possible and conditions allow, Use a compressed air line to clean the grass and debris from the mower. If this fails to sufficiently clean stubborn dirt and grass then it is permissible to use low pressure water and brush.

⚠ CAUTION

It is important not to use high pressure water to clean the vehicle. Water ingress may severely damage electrical components causing the machine to malfunction.
Hose water pressure should not exceed 7psi (0.5BAR).
To reduce the risk of fire, Use compressed air to clean any grass clippings and debris from the machine after use. Ensure any ventilation grills are cleaned and allow unobstructed air passage

- Always allow machine to cool down after use before washing with water.
- Use clean water to wash your equipment.

NOTICE

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

- Do not spray water at the instrument panel, key switch, controller or other electrical components or at bearing housings and seals.
- Clean all plastic or rubber parts with a weak soap solution or use commercially available rubber cleaners. To keep the original high polish of the plastic parts, wax with a good grade of one-step cleaner wax. Repair damaged metal surfaces and use Jacobsen touch-up paint. Apply wax to the equipment for maximum paint protection.

⚠ WARNING

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

7.2.7 BACKLAP

Park the machine on a flat level surface, Ensure that the area to the front of mower is clear of objects and bystanders, Lower the cutting units to the ground. From the Main Menu (5.10) Select the Backlap sub menu,

1. Start the machine and apply the park brake. Check that the debris clear function is enabled. Exit the backlap menu by pressing button 1, Start the cutting units running and then run the debris clear feature from the pop up task bar (5.7). This will clear the units and confirm they are free to run in reverse. Once complete, Switch off the cutting units.

2. Return to the Backlap menu and select the Backlap feature. To enable backlap, use the down arrow key followed by button 4 to confirm selection. The screen will change to Backlap timer screen.

3. Use the UP and Down arrow keys to increase or decrease the backlap timer. Press the select button. Backlap timer can be set from 1 to 20 minutes in 1 minute increments.

4. To start the backlap process, ensure the parking brake switch is on, the traction pedal is in neutral, the cutting units are lowered and the mow switch on. The operator must remain seated for the reels to rotate.

5. Engage the cutters using the joystick lower command, the Reels will run in the reverse direction and the backlap timer will start. If the operator leaves the seat at any point the timer will pause and the reels will stop. To resume backlapping, return to the seat and toggle the mow switch off & on again to resume.

6. Apply lapping compound with a long handle brush, along the full length of the reel. When the reels are honed, carefully and completely wash off the remaining mixture.

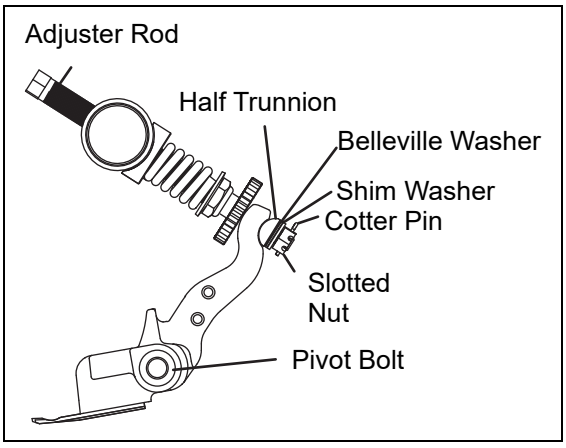
7. To stop backlapping, Press the either buttons 1,2 or 4 on the display screen.

To adjust the backlap reel speeds, go to the machine configuration menu (5.15) and set the speed prior to backlapping.

7.2.8 GRINDING THE BEDKNIFE

For best results it is recommended to completely remove the bed knife assembly from the cutting unit and grind using a professional purpose built bedknife grinding machine.

1. Remove the cotter pin, slotted nut, Belleville washer, shim washer (If needed) and half trunnion from both ends of the reel.
2. Rotate the adjuster rod counter-clockwise, compressing the spring. This will release the bedknife finger from the bottom end of the rod adjuster.
3. Remove the two retaining pivot bolts and remove the bottom block and knife assembly.



4. After you grind the reel and bedknife, assemble the bedknife using reverse order of removal. Check the adjustment of bedknife adjuster tension, and the reel to bedknife adjustment. Refer to section 8.9.1 and 8.9.2.

7.2.9 STEERING OFFSET CALIBRATION

The machine's steering system is designed so that when correctly setup the product will be operating at its optimal performance and decrease the potential risk of marking the turf. To ensure the system functions correctly the steering offset must be calibrated.

This should be checked at the start of each day by driving the vehicle forward in a straight line for a short distance on a flat level surface The Purple LED's should display if steering is set correctly.

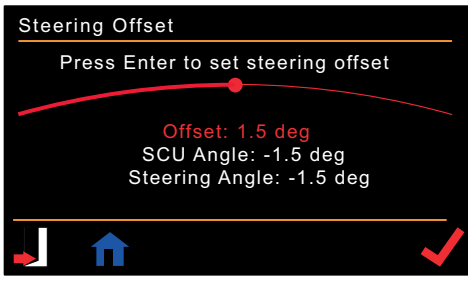
Stop and carry out calibration in the following circumstances:

- If the purple wheel speed calibration LEDs are not lit whilst driving in a straight line.
- If the machine has been involved in an incident which may have changed any of the steering geometry, e.g, impact to the rear wheel.
- If excessive marking of the turf is observed.
- If the purple wheel speed LED's come on when vehicle is turning.
- If any maintenance has been carried out involving the steering system.

To calibrate

1. Check Tyres are set to correct pressure.
2. Select the steering offset menu from the PIN menu.
3. Drive the machine a short distance on a flat and level surface until it is traveling in a straight line without any further input from the steering wheel.
4. Without touching the steering wheel, bring the machine to a stop.
5. On the display screen, observe the recorded SCU angle.
6. Set the Offset by using Left and Right arrow keys until the Offset matches the displayed SCU angle in the opposite direction.
7. Press the Enter (Button 4) to confirm setting.

Example: The SCU angle measured is **-1.5** Degrees, the Steering Offset should be set as **+ 1.5** degrees in opposite direction. If the SCU angle displays **1.5** degrees, then the Offset should be set to **-1.5** degrees.



⚠ CAUTION

Ensure the area is safe and free from bystanders or potential collision hazards before conducting the steering calibration.
Drive at walking speed and maintain awareness of surroundings at all times.

Should the steering fail to calibrate correctly, check the steering chain tension is set correctly. (Sect 8.2)

7.2.10 MOWER STORAGE

General

1. Clean the mower and lubricate. Repair and paint damaged or open metal.
2. Inspect the mower, tighten all hardware, replace worn or damaged components.
3. Clean the tyres.
4. When the vehicle is not being used for an extended period, the tyre pressures must be increased. Inflate to the maximum rating on the tyre wall to make sure that flat spots do not occur. Decrease the tyre pressure before the vehicle is put into operation.
5. 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 a potential fire hazard.
6. When a label is damaged or removed from the machine, make sure that the label is replaced. See the Decals section 4 of this manual or the Parts Manual.

Battery

1. The Battery should be fully charged prior to storage.
2. Switch off the Isolator and remove the key.
3. Store the machine in a dry and well ventilated area away from sources of ignition.
4. For prolonged storage see Section 6.17.

Cutting Units

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

⚠ CAUTION

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

After Storage

- Make sure the tyres are correctly inflated.
- Remove all oil from the blades. Adjust the cutting height.
- Check Battery State of Charge is at 100% before operating.

8.1 GENERAL PRECAUTIONS

⚠ WARNING

When you clean, adjust or repair this equipment, lower all the cutting units to the ground.
Engage the parking brake switch, stop the mower and remove the key.
Make sure the mower is parked on a solid and level surface. Never work on the mower,
if the mower is only supported by the jack. Always use jack stands.

A trained technician must always do the adjustments and maintenance.

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

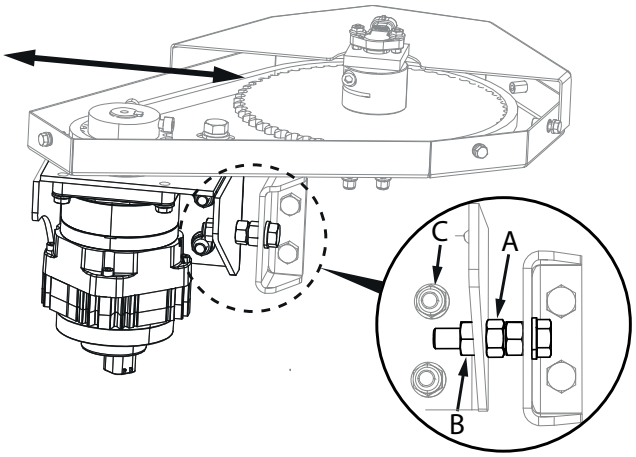
1. Keep the equipment clean.
2. Keep all the moving parts correctly adjusted and lubricated.
3. Replace worn or damaged parts before you operate the mower.
4. Keep the guards in position and all hardware tight.
5. Keep the tyres inflated to the correct pressure.
6. Do not wear jewelry or loose fitting clothing, when you make adjustments or carry out maintenance.

Refer to the illustrations in the Parts Manual for the removal and assembly of parts.
When you discard hazardous materials (batteries, lubricants), follow your local, state or federal-recommended procedures.

8.2 STEERING CHAIN TENSION

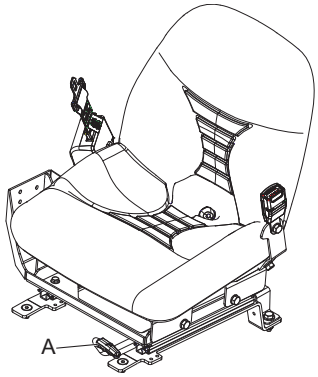
To adjust the steering chain tension;

1. Isolate the power at isolator switch and remove the Start Key from control arm.
2. Open the hood to gain access to the chain.
3. Loosen x4 lock nuts (C) on motor mounting Bracket.
4. Release Locking screw (B).
5. Adjust Motor position to obtain required chain tension. This is achieved by adjusting the bolt length (A). Correct tension is achieved when a measured deflection of the chain is between 2-6mm (0.078-0.236in) with a force of 9-45Nm (2 to 10lbs) push at mid span of chain.
6. Re-tighten screw (B) and Lock nuts (C)
7. Close and fasten the hood.
8. Start the mower and check that the steering is fully functional before use.



8.3 SEAT STANDARD

Adjust the seat to the best location based on leg reach.

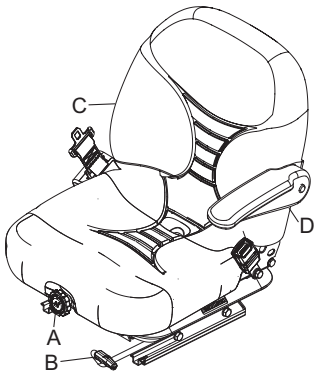


FORE AND AFT ADJUSTMENT

The adjusting lever is on the left hand side of the seat below the seat cushion (A). By moving the lever upwards, the seat can slide backwards and forwards. When in the desired position release the lever to lock the seat into one of the pre-set positions.

8.4 SEAT PREMIUM

Adjust the seat to the best location based on leg reach.



ADJUSTMENT FOR OPERATOR WEIGHT

Whilst standing in front of the machine, rotate knob (A) clockwise or anticlockwise to move the red indicator to the approximate operator weight.

FORE AND AFT ADJUSTMENT

The adjusting lever is on the left hand side of the seat below the seat cushion (B). By moving the lever upwards, the seat can slide backwards and forwards. When in the desired position release the lever to lock the seat into one of the pre-set positions.

BACKREST ADJUSTMENT

Rotate the adjuster (C) clockwise or anticlockwise until a comfortable position is achieved.

ARM REST ADJUSTMENT

Raise the arm rest to the vertical position and rotate the adjustable stop (D) to achieve a comfortable position.

⚠ WARNING

The Operator Weight must be set to the actual weight of the Operator. Safety Systems will be compromised if this is not done.

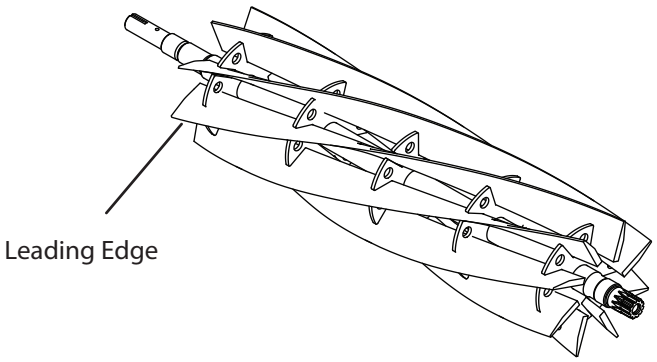
NOTICE

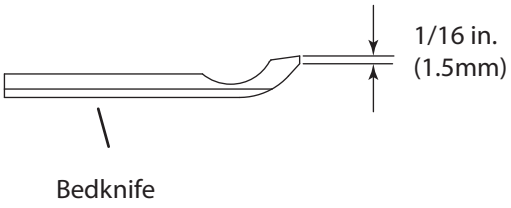
Adjust the seat to make sure all controls are within reach and will operate through the full range of movement.

1. The seat has a micro switch fitted to sense that the operator is in the seat, therefore it is important to set the seat to match the operators weight.
2. Set the seat position for distance from the traction pedal, check that you can reach all the controls.
3. Set the seat so that you can see the cutting units and area around them.

8.5 BEDKNIFE-TO-REEL

1. Check the reel bearings for end play or radial play.
2. Inspect the reel blades and the bedknife to make sure of good sharp edges without bends or surface damage.
   - The leading edge of the reel blades must be sharp, without rough edges and show no indications of becoming blunt.
   - The bedknife and the bedknife backing must be correctly tightened. The bedknife must be straight and s sharp.
   - A flat surface of at least a minimum of 1/16 in. (1.5 cm) must be on the front face of the bedknife. Use a standard flat file to prepare the bedknife.
3. If backlapping can not correct wear or damage to the reel or bedknife, use a grinder to correct the surfaces.
4. Correct reel-to-bedknife adjustment is very important. A gap of 0.001 to 0.003 in. (0.025 to 0.076 mm) must be kept across the full length of the reel and bedknife.
5. The reel must be parallel to the bedknife. An incorrectly adjusted reel will lose its sharp edges and can cause damage to the reel and bedknife.
6. Grass conditions can change the adjustment.
   - Dry conditions will need a wider gap to prevent temperature increase and damage to the reel and bedknife.
   - High quality grass with a good moisture amount will need a closer gap (near zero).





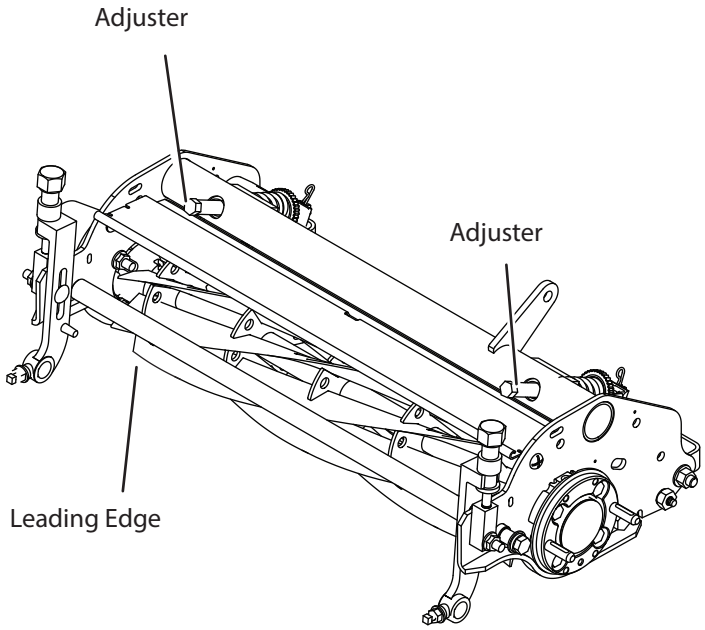
⚠ CAUTION

Cutting units reel blades and bedknife can be extremely sharp. Always wear appropriate PPE. The wearing of protective gloves is mandatory when handling reels or bedknives.
Always ensure the power unit is switched off and key removed before handling cutting units. Beware stored energy in the blades which could result in unexpected rotation of reels.

8.6 BEDKNIFE ADJUSTMENT

1. Read Section 8.5 before you adjust the reel.
2. Start the adjustment at the leading end of the reel, followed by the trailing end. The leading end of the reel blade is the end which moves over the bedknife first during normal reel rotation.
3. Use the adjusters, to adjust the gap. Rotate the adjusters to the right side to close the gap. Each click of the adjuster moves the bedknife 0.001 in. (0.025 mm) closer to the reel.

   a. Put a 0.001 - 0.003 in. (0.025 - 0.075 mm) feeler gauge or shim between the reel blade and the bedknife. Do not turn the reel.
   b. Adjust the trailing end of the reel to the same gap in a same method then inspect the adjustment at the leading end.
   c. When the reel is correctly adjusted to the bedknife, the reel will rotate freely. When a piece of newspaper is held at 90° to an adjusted bedknife, you can cut a piece of newspaper, along the full length of the reel.



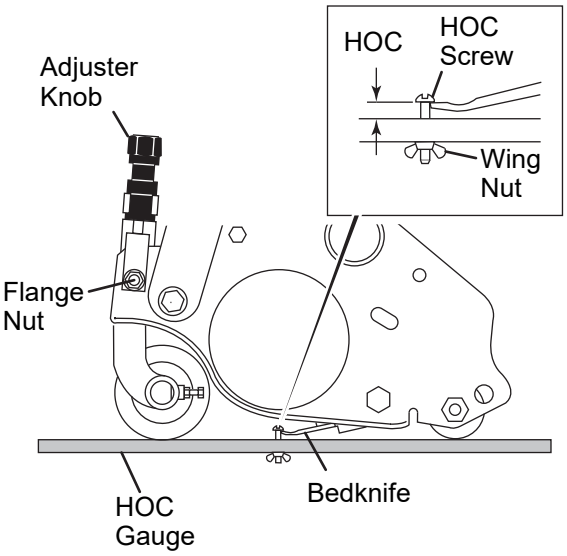
NOTICE

Avoid excessive tightening or serious damage may result to bedknife and reel blades.
Reels must turn freely.

8.7 CUTTING HEIGHT

Note: *Always make the reel-to-bedknife adjustment before you adjust the height of cut.*

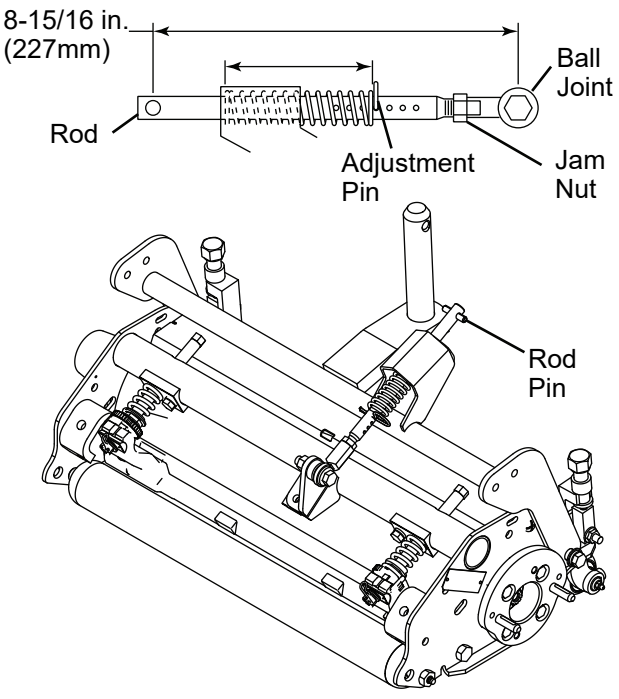
1. Lift the cutting units to the transport position. Set the park brake switch to the ON position, stop the mower and remove the key. Set the height of cut (HOC) on the HOC gauge.
   a. Measure the distance between the bottom of the HOC screw head and the gauge surface.
   b. Adjust the HOC screw to get the correct height then tighten the wing nut.
3. Loosen the flange nuts on the front roller brackets to allow the adjuster to lift or lower the roller.
4. Put the HOC gauge across the bottom of the front and rear rollers at one end of roller.
5. Move the head of the HOC screw over the bedknife. Rotate the adjuster knob to close the gap between the screw head and bedknife. Repeat Steps 4 and 5 on the opposite end of the reel. Complete the adjustment to one end before you adjust the opposite end.
6. Tighten the flange nuts and recheck each end.



8.8 DOWN PRESSURE

Each reel has a down pressure spring. Down pressure improves the cutting quality by contact between the reel and ground. Check and adjust the down pressure any time the HOC is changed or to improve the cut for the best performance.

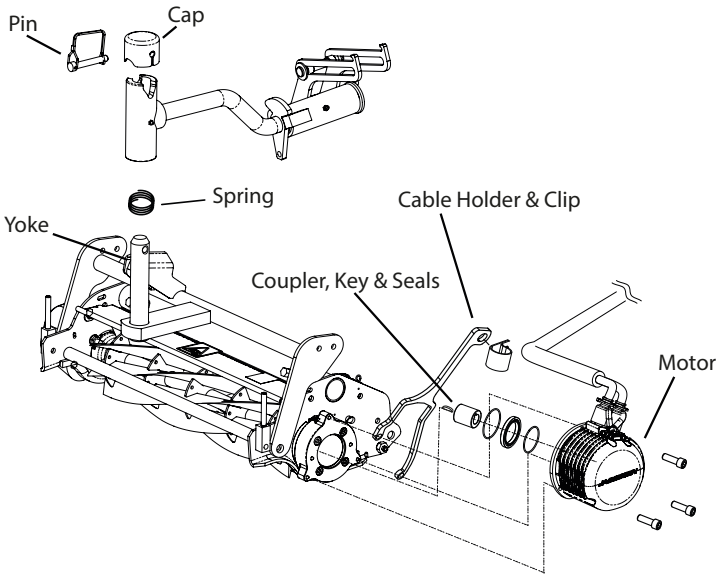
1. Lift the reels to the transport position. Put the adjustment pin in 4th hole from ball joint. Lower the reels onto a flat surface before you measure the down pressure.
2. Set the distance between the ball joint center and the rod pin center to 8-15/16 in. ± 1/16 in. (227 mm ± 2 mm). To adjust the length, loosen the jam nut and rotate the rod into or out of the ball joint.
3. Measure length of spring as shown on all 5 reels. Record the shortest spring dimension. Adjust the ball joint to get the other springs to the same dimension ± 1/16 in. (2 mm). The rod pin must be horizontal, then tighten the jam nut.
4. To adjust the down pressure, move the adjustment pin one hole toward the spring to increase the down pressure on the rear roller. Move the adjustment pin one hole away from the spring to decrease the down pressure on the rear roller.



8.9 CUTTING UNIT ATTACHMENT

Installing Cutting units

1. Place each cutting unit in front of the lift arm. Raise the lift arm and place the cutting unit so that the yoke is aligned to the swivel housing. Carefully lower the lift arm on the yoke. Install the pin through the hole in the yoke and fasten the retaining clip. Install the cap on the swivel housing.
2. Clean the motor splines and the coupler. Apply shell Gadus S2 V220 grease to the female splines on the coupler. Completely clean the motor mounting surface. Move the motor into bearing housing. Install the motor with drive coupling and seal in position along with the cable holder using the x3 Cap head bolts provided.
3. Lift the reels and install the down pressure adjustment pins. If the HOC has not changed, set pins in same position when the reels were removed.



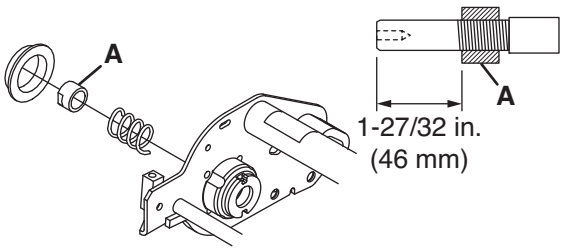
Removing Cutting Units

1. Lower the reels to the ground and remove the down pressure adjustment pins. Make note of where springs are set.
2. Remove the x3 motor retaining bolts and pull the motor away from cutting unit. Ensure to remove and retain the drive coupling adapter and seal for future installation.
3. Carefully secure the motor and its cables away from the cutting unit. To prevent contamination and damage to components, cover or cap off the bearing housing cavity.
4. Remove the cap on the swivel housing. Release the retaining clip from the pin. Remove the pin.
5. Lift the lift arm until the cutting unit can be removed.

8.9.1 REEL BEARING

Any end play or radial play indicates bad bearings, a weak tension spring, or a backed-off nut.

1. Check the bearing housing mounting hardware. Tighten or replace components as required. Carefully clean the reel shaft threads with a degreaser.
2. Apply a medium strength grade of Loctite to nut (A).
3. Thread the nut (A) onto the reel shaft until the nut is 1-27/32 in. (46 mm) from the end of the reel shaft.

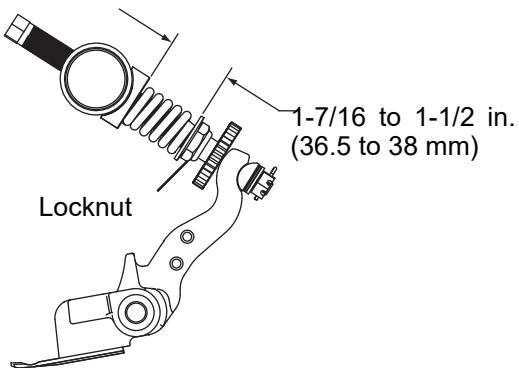


Fill the reel bearing housings with NLGI - Grade O grease after adjusting the Bedknife Adjuster Spring.

For correct operation, the bedknife adjuster spring must be compressed to 1-7/16 to 1-1/2 in. (36.5 to 38 mm).

To adjust the spring compression, loosen or tighten the locknut to get a distance of 1-7/16 to 1-1/2 in. (36.5 to 38 mm).

After you adjust the spring, check the reel to bedknife adjustment.

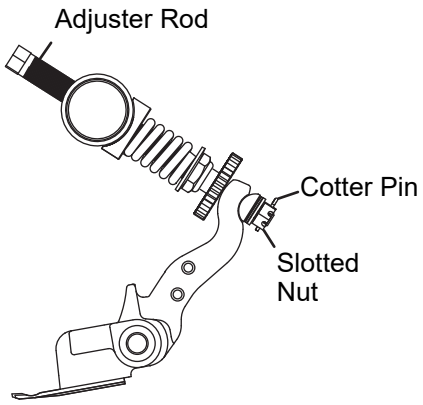


8.9.2 BEDKNIFE ADJUSTER TENSION

Remove the cotter pin. Completely loosen then tighten the slotted nut to remove the clearance (no end play) between components. Continue to tighten the nut until next slot in nut aligns to the hole in the bedknife adjuster rod. Install a new cotter pin.

Check the torque needed to rotate the adjuster rod. Torque must be less than 24 in. lb. (2 ft. lb.) (2.7 Nm).

After you adjust the nut, check the reel to bedknife adjustment.



NOTICE

When you tighten the slotted nut more than necessary, the bedknife adjuster rod will be difficult to adjust.

8.9.3 LIFT SYSTEM CONFIGURATION

The lift system should be configured to optimize cutting unit contour following and maintain maximum clearance between units. This will help avoid contact between attachments when following undulating ground conditions.

The mower will be factory set to a default configuration using guide blocks attached to the lift arm mounting brackets.

When fitting Brush kits or Groomer attachments it may be necessary to alter the position of the guide blocks.

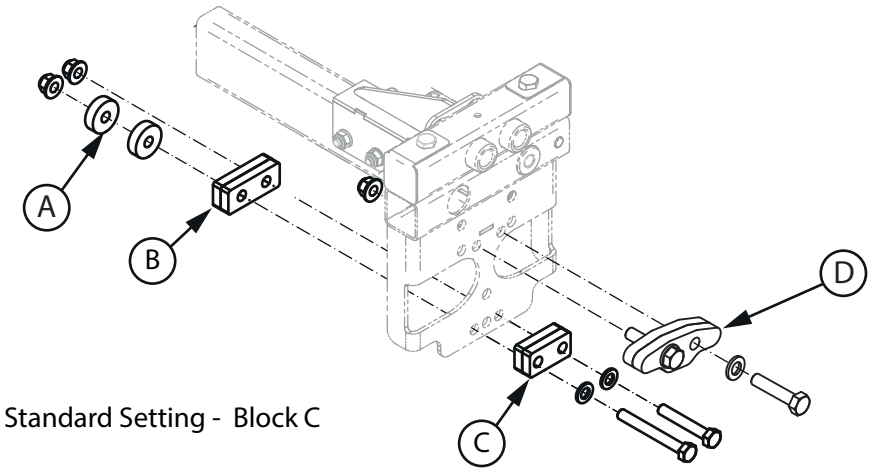
It is possible to customize the configuration to suit local conditions and use. Always check for potential contact between units at full range of lift arm movement before operating the mower to avoid any potential damage as a result of incorrect installation.

The following settings are recommended for the given unit configurations.

Guide Block ID	Description	Colour
A	40mm Diameter round blocks x2	Green
B	80mm Rectangular block	Orange
C	63mm Long rectangular block	Black
D	111mm Long rectangular block	Black
E	Plate Holder	Black
F	100mm Profiled block	Black

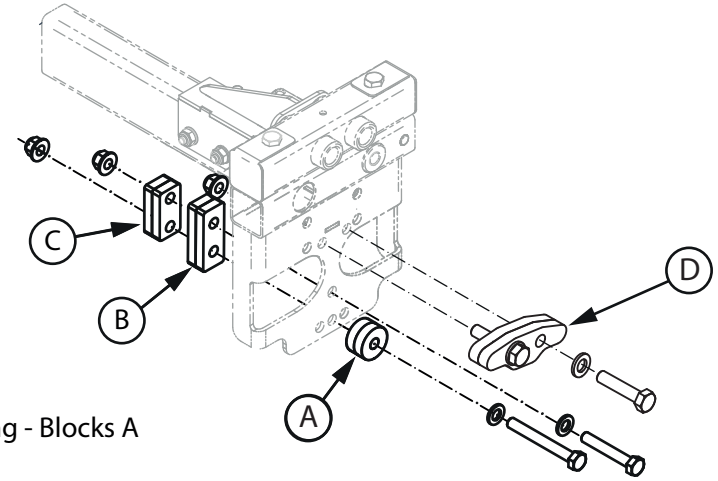
Front Lift Arms- Configuration

Standard Setting - Default from factory. Recommended for standard cutting units with Brush kits fitted.



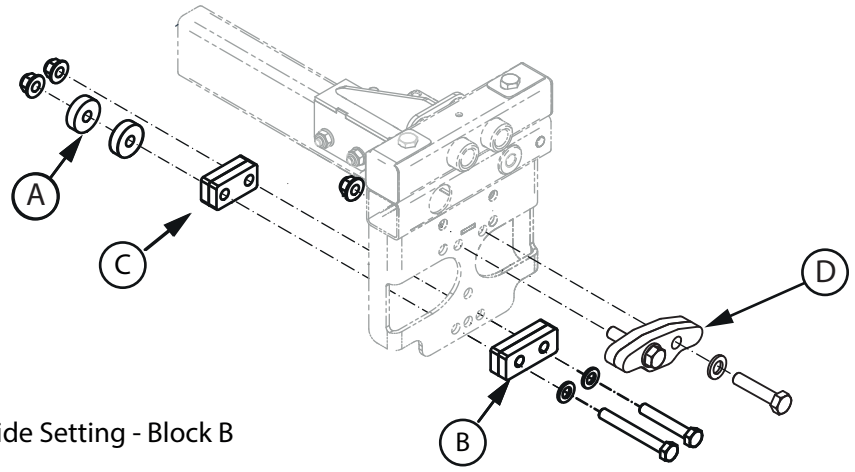
Standard Setting - Block C

Narrow Setting - Recommended for standard cutting units with no attachments. This gives maximum contour following.



Narrow Setting - Blocks A

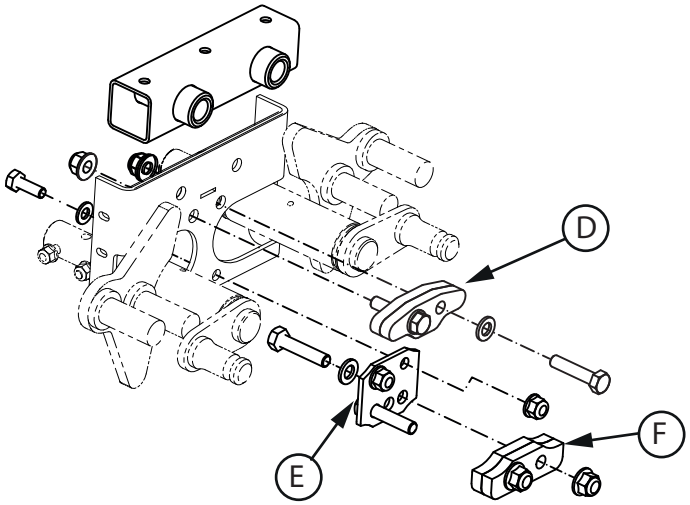
Wide Setting - Recommended for standard cutting units with Brushes and Groomers fitted. This gives maximum space between units but reduces contour following.



Wide Setting - Block B

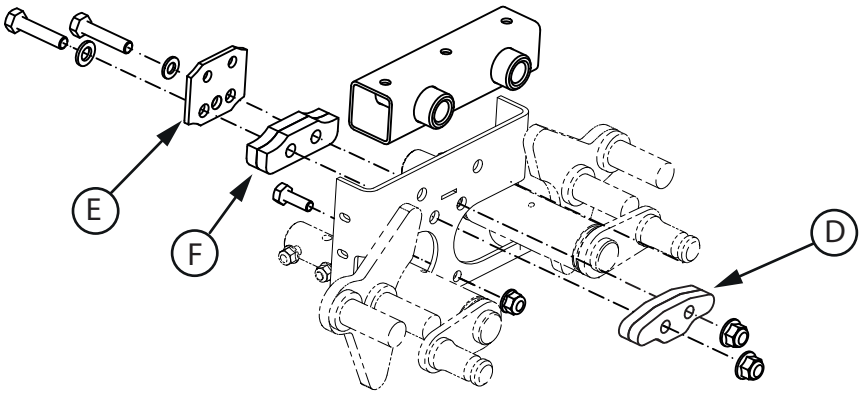
Rear Lift Arms - Configuration

Standard and Wide Setting - Default from factory. Recommended for standard cutting units with either Brush kits or groomers fitted.



Standard and Wide Setting - Block F

Narrow Setting - Recommended for standard cutting units with no attachments. This gives maximum contour following.



Narrow Setting - no Blocks

8.9.4 FREQUENCY OF CUT

The FOC (Frequency of Cut) is the distance, in inches (mm), the machine travels forward between reel blades contacting the bedknife. The FOC can be adjusted either by changing the FOC settings or by changing the maximum mow speed and the maximum reel speed on the LCD display when in Fixed RPM mode. (Section 5.15)

Adjust FOC with Fixed FOC setting

Changing the FOC setting to a value other than 0 will enable the fixed FOC mode and overrides the reel speed setting. As mower travel speed increases or decreases, reel speed will automatically adjust as required to maintain set FOC.

NOTICE

When using a fixed FOC setting, the reels will not turn if the mower is not moving.

Maximum mow speed may be lower than what is set in the LDU when using a very low FOC

8.10 ADJUST FOC WITH REEL SPEED SETTING

Using the FOC tables on following pages, determine the maximum mow speed and fixed reel speed required for the desired FOC.

From the PIN menu, Select Configuration Settings Menu. (Section 5.15)

Set fixed FOC setting to Fixed RPM mode.

Set desired Maximum Mow Speed.

Set desired Fixed Reel Speed.

NOTE: Mow speed is measured in mph (kph), FOC is measured in inches (millimeters).

15 Blade Reel FOC Table

Mow Speed	Reel RPM								
	1800	1850	1900	1950	2000	2050	2100	2150	2200
MPH (KPH)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1.0 (1.61)	0.039 (0.993)	0.038 (0.967)	0.037 (0.941)	0.036 (0.917)	0.035 (0.894)	0.034 (0.872)	0.034 (0.852)	0.033 (0.832)	0.032 (0.813)
1.25 (2.01)	0.049 (1.242)	0.048 (1.208)	0.046 (1.176)	0.045 (1.146)	0.044 (1.118)	0.043 (1.090)	0.042 (1.064)	0.041 (1.040)	0.040 (1.016)
1.50 (2.41)	0.059 (1.490)	0.057 (1.450)	0.056 (1.412)	0.054 (1.376)	0.053 (1.341)	0.052 (1.308)	0.050 (1.277)	0.049 (1.248)	0.048 (1.219)
1.75 (2.82)	0.068 (1.738)	0.067 (1.692)	0.065 (1.647)	0.063 (1.605)	0.062 (1.565)	0.060 (1.526)	0.059 (1.490)	0.057 (1.455)	0.056 (1.422)
2.00 (3.22)	0.078 (1.987)	0.076 (1.933)	0.074 (1.882)	0.072 (1.834)	0.070 (1.788)	0.069 (1.745)	0.067 (1.703)	0.065 (1.663)	0.064 (1.626)
2.25 (3.62)	0.088 (2.235)	0.086 (2.175)	0.083 (2.118)	0.081 (2.063)	0.079 (2.012)	0.077 (1.963)	0.075 (1.916)	0.074 (1.871)	0.072 (1.829)
2.50 (4.02)	0.098 (2.484)	0.095 (2.416)	0.093 (2.353)	0.090 (2.293)	0.088 (2.235)	0.086 (2.181)	0.084 (2.129)	0.082 (2.079)	0.080 (2.032)
2.75 (4.43)	0.108 (2.732)	0.105 (2.658)	0.102 (2.588)	0.099 (2.522)	0.097 (2.459)	0.094 (2.399)	0.092 (2.342)	0.090 (2.287)	0.088 (2.235)
3.00 (4.83)	0.117 (2.980)	0.114 (2.900)	0.111 (2.823)	0.108 (2.751)	0.106 (2.682)	0.103 (2.617)	0.101 (2.555)	0.098 (2.495)	0.096 (2.438)
3.25 (5.23)	0.127 (3.229)	0.124 (3.141)	0.120 (3.059)	0.117 (2.980)	0.114 (2.906)	0.112 (2.835)	0.109 (2.767)	0.106 (2.703)	0.104 (2.642)
3.50 (5.63)	0.137 (3.477)	0.133 (3.383)	0.130 (3.294)	0.126 (3.210)	0.123 (3.129)	0.120 (3.053)	0.117 (2.980)	0.115 (2.911)	0.112 (2.845)
3.75 (6.04)	0.147 (3.725)	0.143 (3.625)	0.139 (3.529)	0.135 (3.439)	0.132 (3.353)	0.129 (3.271)	0.126 (3.193)	0.123 (3.119)	0.120 (3.048)
4.00 (6.44)	0.156 (3.974)	0.152 (3.866)	0.148 (3.765)	0.144 (3.668)	0.141 (3.576)	0.137 (3.489)	0.134 (3.406)	0.131 (3.327)	0.128 (3.251)
4.25 (6.84)	0.166 (4.222)	0.162 (4.108)	0.157 (4.000)	0.153 (3.897)	0.150 (3.800)	0.146 (3.707)	0.142 (3.619)	0.139 (3.535)	0.136 (3.454)
4.50 (7.24)	0.176 (4.470)	0.171 (4.350)	0.167 (4.235)	0.162 (4.127)	0.158 (4.023)	0.155 (3.925)	0.151 (3.832)	0.147 (3.743)	0.144 (3.658)
4.75 (7.64)	0.186 4.719	0.181 4.591	0.176 4.470	0.171 4.356	0.167 4.247	0.163 4.143	0.159 4.045	0.156 3.951	0.152 3.861
5.00 (8.04)	0.196 4.967	0.190 4.833	0.185 4.706	0.181 4.585	0.176 4.470	0.172 4.361	0.168 4.258	0.164 4.159	0.160 4.064
5.25 (8.45)	0.205 5.215	0.200 5.075	0.195 4.941	0.190 4.814	0.185 4.694	0.180 4.579	0.176 4.470	0.172 4.366	0.168 4.267
5.50 (8.85)	0.215 5.464	0.209 5.316	0.204 5.176	0.199 5.044	0.194 4.917	0.189 4.798	0.184 4.683	0.180 4.574	0.176 4.470
5.75 (9.25)	0.225 5.712	0.219 5.558	0.213 5.412	0.208 5.273	0.202 5.141	0.197 5.016	0.193 4.896	0.188 4.782	0.184 4.674
6.00 (9.66)	0.235 5.961	0.228 5.799	0.222 5.647	0.217 5.502	0.211 5.364	0.206 5.234	0.201 5.109	0.196 4.990	0.192 4.877
6.25 (10.06)	0.244 6.209	0.238 6.041	0.232 5.882	0.226 5.731	0.220 5.588	0.215 5.452	0.210 5.322	0.205 5.198	0.200 5.080
6.50 (10.46)	0.254 6.457	0.247 6.283	0.241 6.117	0.235 5.961	0.229 5.812	0.223 5.670	0.218 5.535	0.213 5.406	0.208 5.283
6.75 (10.86)	0.264 6.706	0.257 6.524	0.250 6.353	0.244 6.190	0.238 6.035	0.232 5.888	0.226 5.748	0.221 5.614	0.216 5.486
7.00 (11.26)	0.274 6.954	0.266 6.766	0.259 6.588	0.253 6.419	0.246 6.259	0.240 6.106	0.235 5.961	0.229 5.822	0.224 5.690
7.25 (11.66)	0.284 7.202	0.276 7.008	0.269 6.823	0.262 6.648	0.255 6.482	0.249 6.324	0.243 6.173	0.237 6.030	0.232 5.893
7.50 (12.07)	0.293 7.451	0.285 7.249	0.278 7.059	0.271 6.878	0.264 6.706	0.258 6.542	0.251 6.386	0.246 6.238	0.240 6.096

11 Blade Reel FOC Table

Mow Speed	Reel RPM								
	1800	1850	1900	1950	2000	2050	2100	2150	2200
MPH (KPH)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1.0 (1.61)	0.053 (1.355)	0.052 (1.318)	0.051 (1.283)	0.049 (1.250)	0.048 (1.219)	0.047 (1.189)	0.046 (1.161)	0.045 (1.134)	0.044 (1.108)
1.25 (2.01)	0.067 (1.693)	0.065 (1.648)	0.063 (1.604)	0.062 (1.563)	0.060 (1.524)	0.059 (1.487)	0.057 (1.451)	0.056 (1.418)	0.055 (1.385)
1.50 (2.41)	0.080 (2.032)	0.078 (1.977)	0.076 (1.925)	0.074 (1.876)	0.072 (1.829)	0.070 (1.784)	0.069 (1.742)	0.067 (1.701)	0.065 (1.663)
1.75 (2.82)	0.093 (2.371)	0.091 (2.307)	0.088 (2.246)	0.086 (2.188)	0.084 (2.134)	0.082 (2.082)	0.080 (2.032)	0.078 (1.985)	0.076 (1.940)
2.00 (3.22)	0.107 (2.709)	0.104 (2.636)	0.101 (2.567)	0.098 (2.501)	0.096 (2.438)	0.094 (2.379)	0.091 (2.322)	0.089 (2.268)	0.087 (2.217)
2.25 (3.62)	0.120 (3.048)	0.117 (2.966)	0.114 (2.888)	0.111 (2.814)	0.108 (2.743)	0.105 (2.676)	0.103 (2.613)	0.100 (2.552)	0.098 (2.494)
2.50 (4.02)	0.133 (3.387)	0.130 (3.295)	0.126 (3.208)	0.123 (3.126)	0.120 (3.048)	0.117 (2.974)	0.114 (2.903)	0.112 (2.835)	0.109 (2.771)
2.75 (4.43)	0.147 (3.725)	0.143 (3.625)	0.139 (3.529)	0.135 (3.439)	0.132 (3.353)	0.129 (3.271)	0.126 (3.193)	0.123 (3.119)	0.120 (3.048)
3.00 (4.83)	0.160 (4.064)	0.156 (3.954)	0.152 (3.850)	0.148 (3.751)	0.144 (3.658)	0.140 (3.568)	0.137 (3.483)	0.134 (3.402)	0.131 (3.325)
3.25 (5.23)	0.173 (4.403)	0.169 (4.284)	0.164 (4.171)	0.160 (4.064)	0.156 (3.962)	0.152 (3.866)	0.149 (3.774)	0.145 (3.686)	0.142 (3.602)
3.50 (5.63)	0.187 (4.741)	0.182 (4.613)	0.177 (4.492)	0.172 (4.377)	0.168 (4.267)	0.164 (4.163)	0.160 (4.064)	0.156 (3.969)	0.153 (3.879)
3.75 (6.04)	0.200 (5.080)	0.195 (4.943)	0.189 (4.813)	0.185 (4.689)	0.180 (4.572)	0.176 (4.460)	0.171 (4.354)	0.167 (4.253)	0.164 (4.156)
4.00 (6.44)	0.213 (5.419)	0.208 (5.272)	0.202 (5.133)	0.197 (5.002)	0.192 (4.877)	0.187 (4.758)	0.183 (4.645)	0.179 (4.537)	0.175 (4.433)
4.25 (6.84)	0.227 (5.757)	0.221 (5.602)	0.215 (5.454)	0.209 (5.314)	0.204 (5.182)	0.199 (5.055)	0.194 (4.935)	0.190 (4.820)	0.185 (4.711)
4.50 (7.24)	0.240 (6.096)	0.234 (5.931)	0.227 (5.775)	0.222 (5.627)	0.216 (5.486)	0.211 (5.353)	0.206 (5.225)	0.201 (5.104)	0.196 (4.988)
4.75 (7.64)	0.253 6.435	0.246 6.261	0.240 6.096	0.234 5.940	0.228 5.791	0.222 5.650	0.217 5.515	0.212 5.387	0.207 5.265
5.00 (8.04)	0.267 6.773	0.259 6.590	0.253 6.417	0.246 6.252	0.240 6.096	0.234 5.947	0.229 5.806	0.223 5.671	0.218 5.542
5.25 (8.45)	0.280 7.112	0.272 6.920	0.265 6.738	0.258 6.565	0.252 6.401	0.246 6.245	0.240 6.096	0.234 5.954	0.229 5.819
5.50 (8.85)	0.293 7.451	0.285 7.249	0.278 7.059	0.271 6.878	0.264 6.706	0.258 6.542	0.251 6.386	0.246 6.238	0.240 6.096
5.75 (9.25)	0.307 7.789	0.298 7.579	0.291 7.379	0.283 7.190	0.276 7.010	0.269 6.839	0.263 6.677	0.257 6.521	0.251 6.373
6.00 (9.66)	0.320 8.128	0.311 7.908	0.303 7.700	0.295 7.503	0.288 7.315	0.281 7.137	0.274 6.967	0.268 6.805	0.262 6.650
6.25 (10.06)	0.333 8.467	0.324 8.238	0.316 8.021	0.308 7.815	0.300 7.620	0.293 7.434	0.286 7.257	0.279 7.088	0.273 6.927
6.50 (10.46)	0.347 8.805	0.337 8.567	0.328 8.342	0.320 8.128	0.312 7.925	0.304 7.732	0.297 7.547	0.290 7.372	0.284 7.204
6.75 (10.86)	0.360 9.144	0.350 8.897	0.341 8.663	0.332 8.441	0.324 8.230	0.316 8.029	0.309 7.838	0.301 7.655	0.295 7.481
7.00 (11.26)	0.373 9.483	0.363 9.226	0.354 8.984	0.345 8.753	0.336 8.534	0.328 8.326	0.320 8.128	0.313 7.939	0.305 7.759
7.25 (11.66)	0.387 9.821	0.376 9.556	0.366 9.304	0.357 9.066	0.348 8.839	0.340 8.624	0.331 8.418	0.324 8.223	0.316 8.036
7.50 (12.07)	0.400 10.160	0.389 9.885	0.379 9.625	0.369 9.378	0.360 9.144	0.351 8.921	0.343 8.709	0.335 8.506	0.327 8.313

8 Blade Reel FOC Table

Mow Speed	Reel RPM								
	1800	1850	1900	1950	2000	2050	2100	2150	2200
MPH (KPH)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)	Inch (mm)
1.0 (1.61)	0.073 1.863	0.071 1.812	0.069 1.765	0.068 1.719	0.066 1.676	0.064 1.636	0.063 1.597	0.061 1.559	0.060 1.524
1.25 (2.01)	0.092 2.328	0.089 2.265	0.087 2.206	0.085 2.149	0.083 2.096	0.080 2.044	0.079 1.996	0.077 1.949	0.075 1.905
1.50 (2.41)	0.110 2.794	0.107 2.718	0.104 2.647	0.102 2.579	0.099 2.515	0.097 2.453	0.094 2.395	0.092 2.339	0.090 2.286
1.75 (2.82)	0.128 3.260	0.125 3.172	0.122 3.088	0.118 3.009	0.116 2.934	0.113 2.862	0.110 2.794	0.107 2.729	0.105 2.667
2.00 (3.22)	0.147 3.725	0.143 3.625	0.139 3.529	0.135 3.439	0.132 3.353	0.129 3.271	0.126 3.193	0.123 3.119	0.120 3.048
2.25 (3.62)	0.165 4.191	0.161 4.078	0.156 3.970	0.152 3.869	0.149 3.772	0.145 3.680	0.141 3.592	0.138 3.509	0.135 3.429
2.50 (4.02)	0.183 4.657	0.178 4.531	0.174 4.412	0.169 4.298	0.165 4.191	0.161 4.089	0.157 3.991	0.153 3.899	0.150 3.810
2.75 (4.43)	0.202 5.122	0.196 4.984	0.191 4.853	0.186 4.728	0.182 4.610	0.177 4.498	0.173 4.391	0.169 4.288	0.165 4.191
3.00 (4.83)	0.220 5.588	0.214 5.437	0.208 5.294	0.203 5.158	0.198 5.029	0.193 4.907	0.189 4.790	0.184 4.678	0.180 4.572
3.25 (5.23)	0.238 6.054	0.232 5.890	0.226 5.735	0.220 5.588	0.215 5.448	0.209 5.315	0.204 5.189	0.200 5.068	0.195 4.953
3.50 (5.63)	0.257 6.519	0.250 6.343	0.243 6.176	0.237 6.018	0.231 5.867	0.225 5.724	0.220 5.588	0.215 5.458	0.210 5.334
3.75 (6.04)	0.275 6.985	0.268 6.796	0.261 6.617	0.254 6.448	0.248 6.287	0.241 6.133	0.236 5.987	0.230 5.848	0.225 5.715
4.00 (6.44)	0.293 7.451	0.021 7.249	0.278 7.059	0.271 6.878	0.264 6.706	0.258 6.542	0.251 6.386	0.246 6.238	0.240 6.096
4.25 (6.84)	0.312 7.916	0.303 7.702	0.295 7.5	0.288 7.307	0.281 7.125	0.274 6.951	0.267 6.785	0.261 6.628	0.255 6.477
4.50 (7.24)	0.330 8.382	0.321 8.155	0.313 7.941	0.305 7.737	0.297 7.544	0.290 7.360	0.283 7.185	0.276 7.017	0.270 6.858
4.75 (7.64)	0.348 8.848	0.339 8.609	0.330 8.382	0.322 8.167	0.314 7.963	0.306 7.769	0.299 7.584	0.292 7.407	0.285 7.239
5.00 (8.04)	0.367 9.131	0.357 9.062	0.347 8.823	0.338 8.597	0.330 8.382	0.322 8.178	0.314 7.983	0.307 7.797	0.300 7.620
5.25 (8.45)	0.385 9.779	0.375 9.515	0.365 9.264	0.355 9.027	0.347 8.801	0.338 83586	0.330 8.382	0.322 8.187	0.315 8.001
5.50 (8.85)	0.403 10.245	0.392 9.968	0.382 9.705	0.372 9.457	0.363 9.220	0.354 8.995	0.346 8.781	0.338 8.577	0.330 8.382
5.75 (9.25)	0.422 10.710	0.410 10.421	0.399 10.147	0.389 9.886	0.380 9.639	0.370 9.404	0.361 9.180	0.353 8.967	0.345 8.763
6.00 (9.66)	0.440 11.176	0.428 10.874	0.417 10.588	0.406 10.316	0.396 10.058	0.386 9.813	0.377 9.579	0.368 9.357	0.360 9.144
6.25 (10.06)	0.458 11.642	0.446 11.327	0.434 11.029	0.423 10.746	0.413 10.478	0.402 10.222	0.393 9.979	0.384 9.747	0.375 9.525
6.50 (10.46)	0.477 12.107	0.464 11.780	0.452 11.470	0.440 11.176	0.429 10.897	0.419 10.631	0.409 10.378	0.399 10.136	0.390 9.906
6.75 (10.86)	0.495 12.573	0.482 12.233	0.469 11.911	0.457 11.606	0.446 11.316	0.435 11.040	0.424 10.777	0.414 10.526	0.405 10.287
7.00 (11.26)	0.513 13.039	0.499 12.686	0.486 12.352	0.474 12.036	0.462 11.735	0.451 11.449	0.440 11.176	0.430 10.916	0.420 10.668
7.25 (11.66)	0.532 13.504	0.517 13.139	0.504 12.794	0.491 12.466	0.479 12.154	0.467 11.857	0.456 11.575	0.445 11.306	0.435 11.049
7.50 (12.07)	0.550 13.970	0.535 13.592	0.521 13.235	0.508 12.895	0.495 12.573	0.483 12.266	0.471 11.974	0.460 11.696	0.450 11.430

8.11 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**	**Lubri-cated**	**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)

9.1 PROBLEM SOLVING - GENERAL

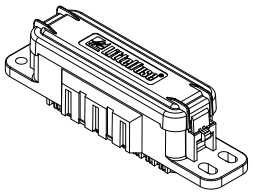
Problem	Possible Cause/Items to Check	Additional Items to Check
Key switch ON - No power to LDU	48VDC Battery or BMS not connected or discharged.	Check battery connections and voltage.
	No 12V power to LDU. Check power from MCU J1-6. Check for open connection or shorted wire to GND at armrest connector or MCU connector.	Cycle power once corrected.
	Main Isolator switch not on.	Check to see if isolator switch is in the On position.
Key switch ON - No power to MCU	Main Isolator switch not on.	Check to see if isolator switch is in the On position.
	Main contactor not on due to circuit breaker tripped.	Check to see if 48V circuit breaker 3 (F25) is tripped.
	Over-current protection device in PDU tripped. Check for open connection.	MCU Powered from J1-12 of PDU.
No Traction Movement	Ensure Machine was started. Check LDU Green Lightning Bolt for steady on.	If flashing initiate start sequence.
	Traction Contactor is off. Check MCU LED J2-6 should be on when contactor is on. If off see next item.	Over-current protection device in PDU tripped. Check 300A fuse.
	Check if Seat Switch is functioning. Check MCU LED J3-11 should be on when on seat and off when off seat.	Check switch and harness connection.
	No CAN communication.	Check connections.
	Parking Brake not releasing	Manually release parking brake with optional Emergency Brake release Kit. remove kit and cycle power.
	Overcurrent protection device in PDU tripped. Check for open connection or shorted wire to GND for throttle pedal power, TCU logic power, and park brake power.	Cycle power once corrected.
	Check for 48v power at TCU	
No steering (Electric steering system)	SCU does not have power.	Check to see if steering circuit breaker 2 (F26) is tripped.
	Fault Code on LDU	Review any fault codes and take appropriate action.
	TPS not set correctly.	Check correct steering adjustment, Air gap of 3-5mm between TPS and magnet.
Manual Actuator Mode not working	Park brake off. Check LDU Park Brake LED should be on.	Cycle power.
	No CAN communication.	Check connections.
	Fault Code on LDU	Review any fault codes and take appropriate action.
	Mow switch is in ON position.	Ensure Mow switch is in OFF position.

One or more reel motors won't run	Mow switch is in OFF position.	Ensure Mow switch is in ON position.
	Machine not moving. (applicable if FOC is not zero)	Reel motors should come on when machine starts moving forward.
	Fault Code on LDU	Review any fault codes and take appropriate action.
	No power to reels.	Check fusebox 2, F206-210
Reel motor temperature or current high when mowing.	Excessive amount of grass being cut.	Reduce mower speed, increase FOC, or change height of cut.
Actuators raise and motors shut off while mowing	Low Battery Power. LDU-Red 48V Battery LED will be on.	Recharge Batteries.
	Reel or Actuator Fault. Check reel fault code displayed.	Review fault codes to determine which reel or actuator is faulted.
Steering wheel has no resistance	Over-current protection device in PDU tripped. Check steering circuit breaker 2 (F26). Check for open connection or shorted wire to GND for Lord brake.	Cycle power once corrected.
Headlights don't turn on	Check fusebox 1, F106 and F107. (F105 for ROPS work lights). Check for open connection or shorted wire to GND for headlight(s).	Cycle power once corrected.

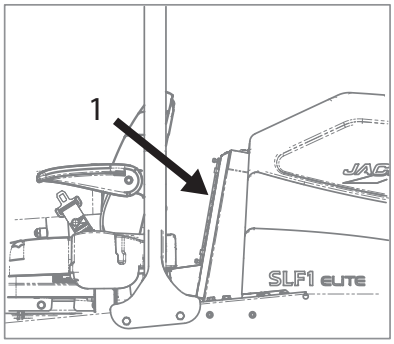
9.2 FUSE LOCATION

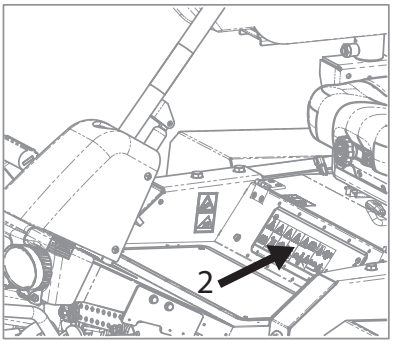
Fuse Box 1 is located behind the hood bulkhead panel. Remove the panel using the 1/4 turn fasteners.

Fuse Box 2 is located behind the foot platform rear access panel. Remove the panel using the 1/4 turn fasteners.



Fuse Box



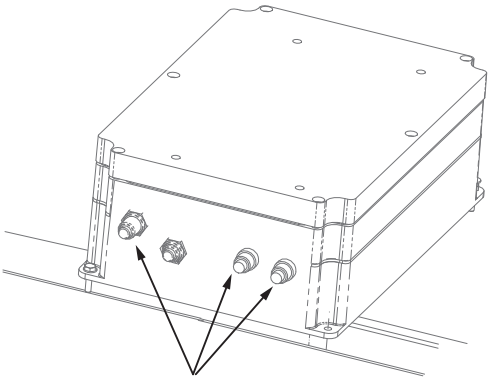


RESETTABLE FUSE LOCATIONS

The resettable PDU fuses are located under the operators seat plate. The PDU has 3 buttons that can be used to reset the PDU circuit breakers. Access can be gained by lifting the seat and seat plate.

To reset circuit breakers, depress the buttons and release.

Always investigate the cause of blown or tripped fuses. Under lying issues may require attention and could potentially cause irreparable damage if ignored.



PDU Circuit Breakers

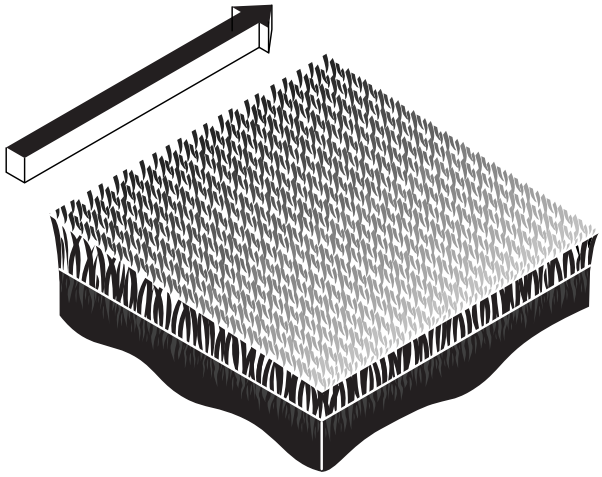
10.1 QUALITY OF CUT PROBLEM SOLVING

If required perform a “test-cut” to assess the performance of the mower before you begin the repairs.
When the work is completed, repeat the “test-cut” to check the mower performance.

The following items must be checked and set correctly to make sure of an effective assessment.

1. Blade Sharpness
2. Blade Speed
3. Mowing (Ground) Speed
4. Height-of-Cut (HOC)
5. Rake Angle
6. Caster/Roller and Roller Bearing Condition
7. Tyre pressures
8. General wear and tear of the machine

10.2 STEP CUTTING

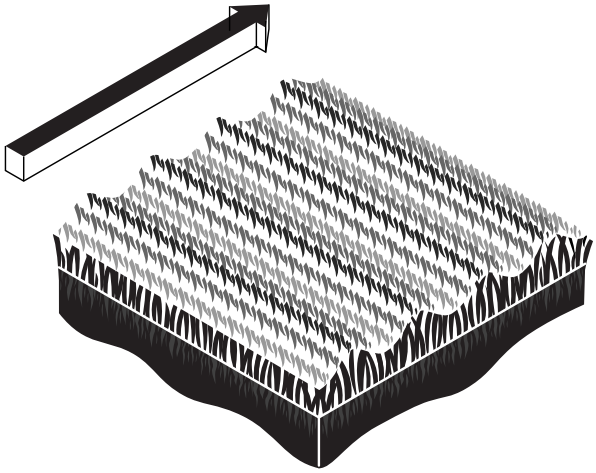


“Step cutting” occurs when the grass is cut higher on one side. The cause is mechanical wear or incorrect setting of the roller or deck caster.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Correction
The HOC (height-of-cut) settings are different on the side of one cutting implement.	Check HOC adjustment of cutting implement
Worn roller bearings or deck caster wheels.	Check and replace the roller bearings, deck caster wheels.
Changes in turf density	Change the direction of cut.
The machine ride height is uneven side to side.	Check and adjust the tyre pressure.
General wear and tear of the machine.	Check machine for any damaged or worn parts.

10.3 MARCELLING

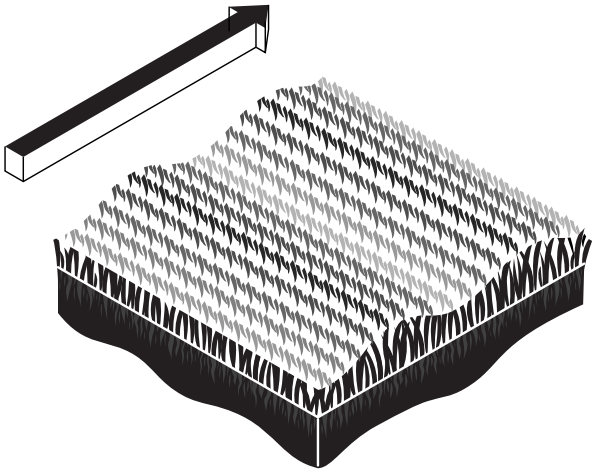


Marcelling is a repeated pattern of different cutting heights, that causes an appearance that is like a wave. In most cases, the wave tip-to-tip distance is 2 in. (5 cm) or less.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
The cut (ground) speed is higher than normal.	Reduce the cut (ground) speed.
The HOC (height-of-cut) settings is too low for the turf conditions.	Check HOC adjustment of cutting units.
The cutting reel diameter is worn.	Check the cutting reel diameter and replace if necessary.

10.4 WASHBOARDING



TN0159

NOTE: Arrow indicates direction of travel.

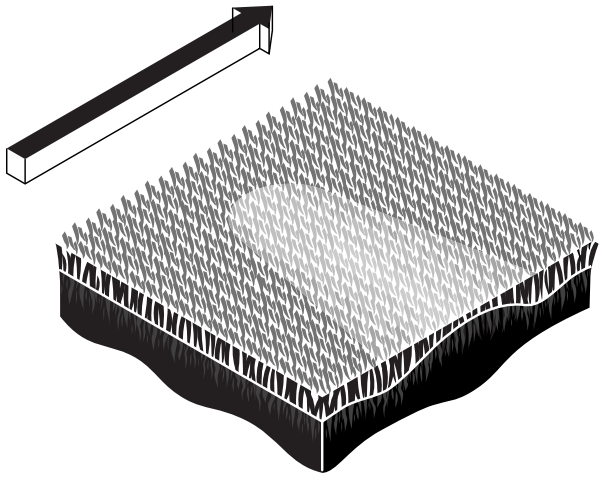
Washboarding is a repeated pattern of different cutting heights, that causes an appearance that is like a wave. In most cases, the wave tip-to-tip distance is approximately 6—8 in. (15—20 cm). A change in the color (from light-to-dark) is also seen.

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

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

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.
The Turf Groomer was used during the cleanup pass.	Only use the Turf Groomer in a straight line.
Not enough reel speed, reel speed is not set to specification.	Check/adjust the reel speed.

10.5 SCALPING

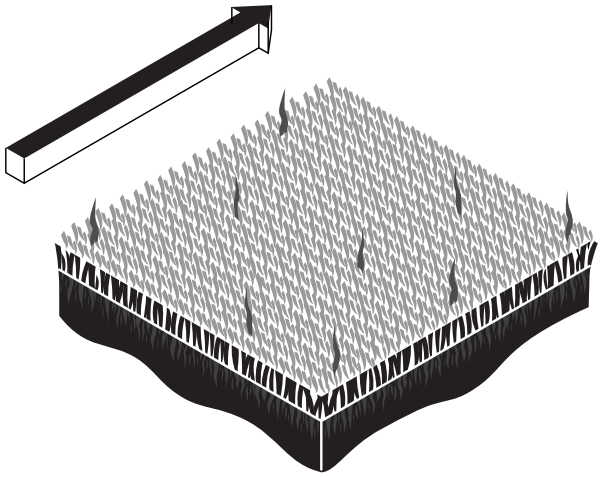


"Scalping" is a condition in which some areas are cut shorter than the set height of cut. This results in very short grass or brown areas. The cause is a low height-of-cut (HOC) setting, rough surface.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Correction
The HOC (height-of-cut) settings are low for the conditions.	Check and adjust the HOC settings.
The mower cannot follow the ground in this direction.	Change the direction of cut.
The height of grass is being reduced too much in one pass.	Mow more often or raise the height of cut.
Damaged anti-scalp skid/roller	Replace or repair
Rotary Deck caster stance too wide	Move deck caster towards the centre of the deck

10.6 STRAGGLERS

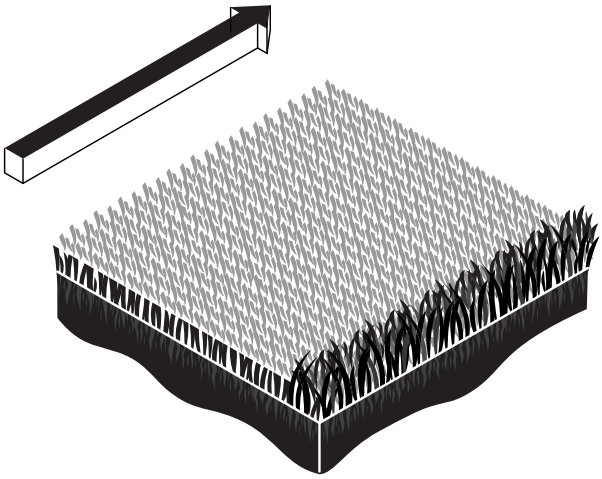


“Stragglers” are separated blades of incorrectly cut grass.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Correction
The cutting blades are blunt.	Replace or sharpen blades.
Cutting Speed too fast for grass conditions.	Decrease the cutting speed.
Too much grass is being removed in one pass.	Mow more often or raise the height of cut.
Grass lain flat in direction of cut.	Change the direction of cut on each cut.

10.7 STREAKS

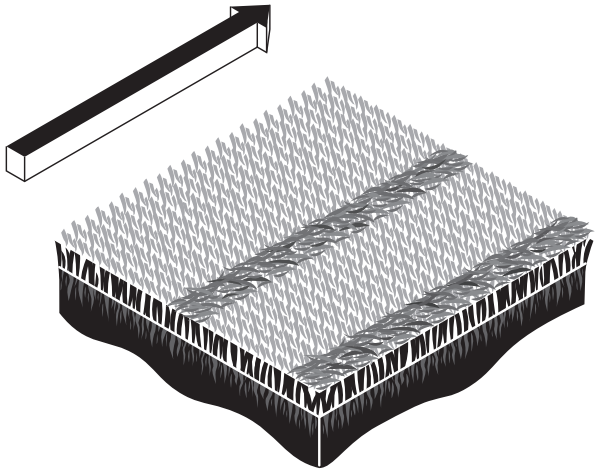


A streak is a strip of longer grass in the cutting area. The cause is a damaged blade.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Correction
Damaged or worn blades.	Replace the blades.
Blades fitted incorrectly.	Install blades correctly.
Low lift blades do not lift the grass sufficiently to be cut.	Try high lift blades.
Front castor wheels flattened grass before it is cut.	On rotary deck, move the castor wheels to the outer edges of the deck and remove anti scalp rollers.
Wet grass is flattened before the cut.	Mow when ground conditions have improved.

10.8 WINDROWING

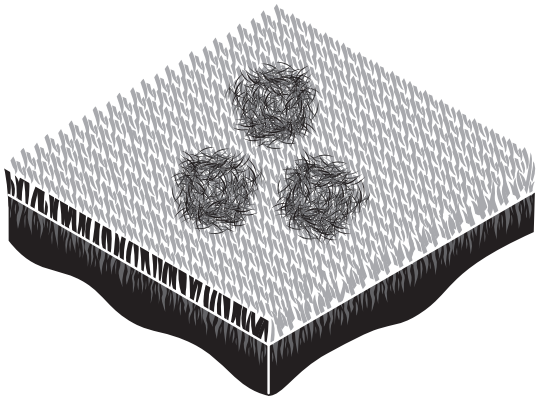


"Windrowing" is an increase of cut grass arranged in rows in the discharge area of the rotary cutting implement, this appears as cut grass in the direction of travel.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Remedy
The Height of grass is being reduced by too much in one pass.	Mow more often or raise the height of cut. Try high lift blades.
Incorrect blade choice.	Use original Jacobsen blades: Low Lift, High Lift or Eliminator blades.
Damaged baffles.	Check for damage, repair/replace.
Mowing while grass is very wet.	Mow when grass conditions improve.

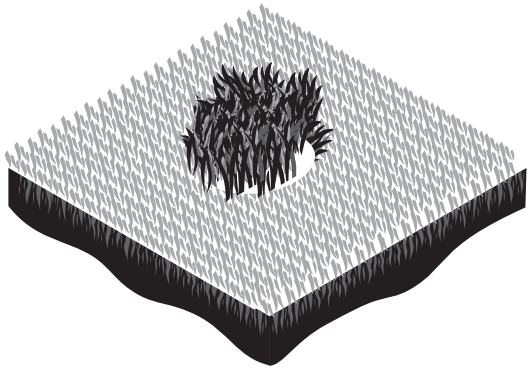
10.9 CLUMPING



"Clumping." This problem is identified by the appearance of clumps of grass in the discharge area.

Possible Cause	Correction
Build up of cut grass in front of cutting units.	Clean dirt and debris from rollers regularly, reduce volume of cut grass.
Extreme volume of grass is not discharged quickly enough from the deck.	Consider reducing Cutting speed and reduce amount of grass cut.
Mowing while grass is very wet.	Mow when grass conditions improve.
Grass discharge build up on machine dropping off.	Remove grass from machine regularly.

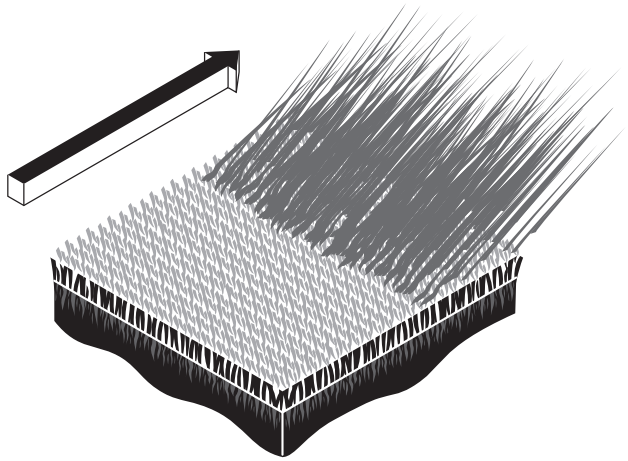
10.10 TORN CROWNS



"Torn Crowns" This problem is identified when clumps of grass (Crowns) are torn up rather than cut.

Possible Cause	Correction
Too much material.	Cut more frequently, increase HOC.
Worn blade edge.	Sharpen or Replace damaged blades.
Cutting too fast for conditions.	Decrease the cutting speed.

10.11 LAYING UNCUT GRASS



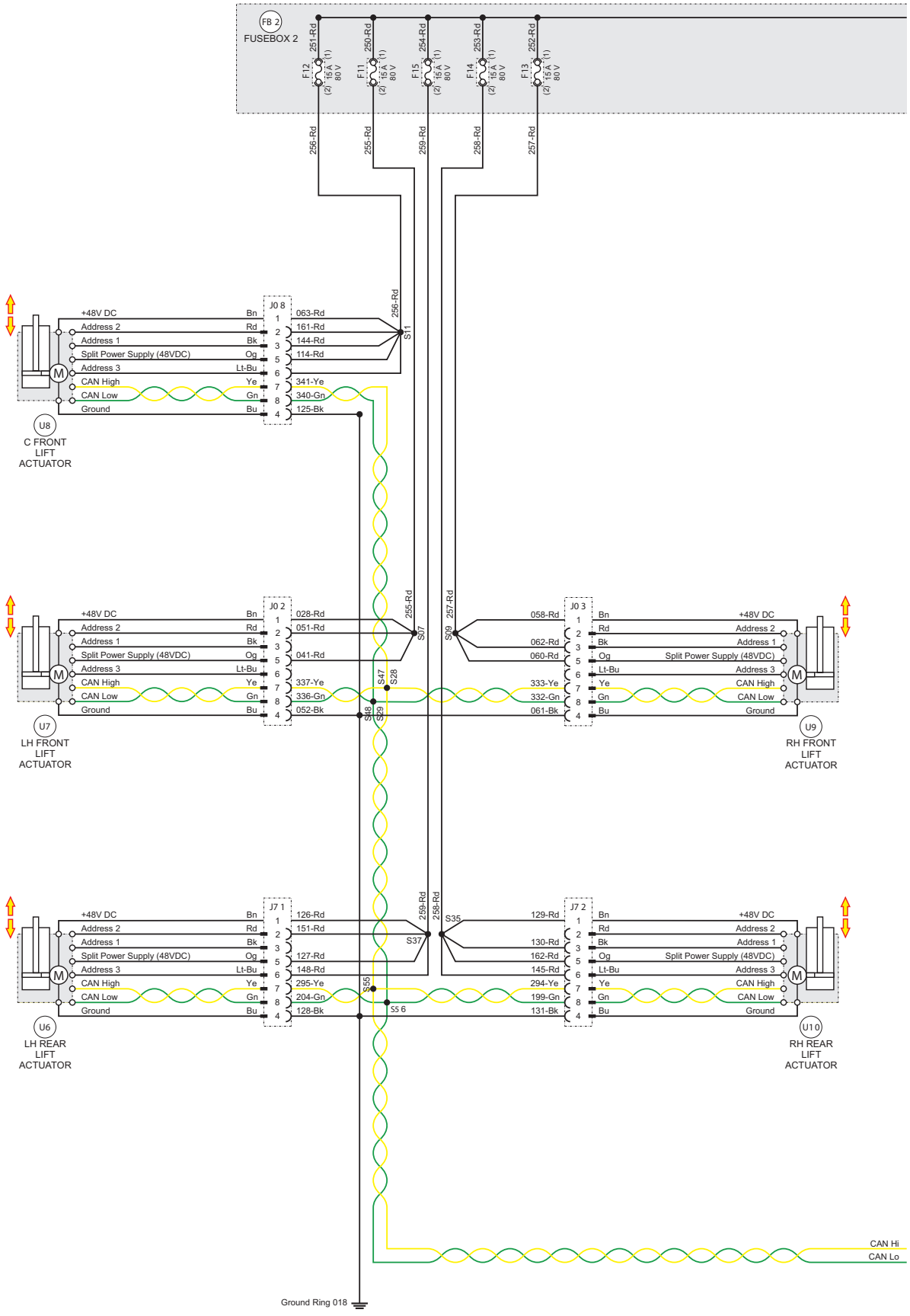
TN1234

“Laying uncut grass.” This problem is identified by areas of grass that have been left uncut and laid flat.

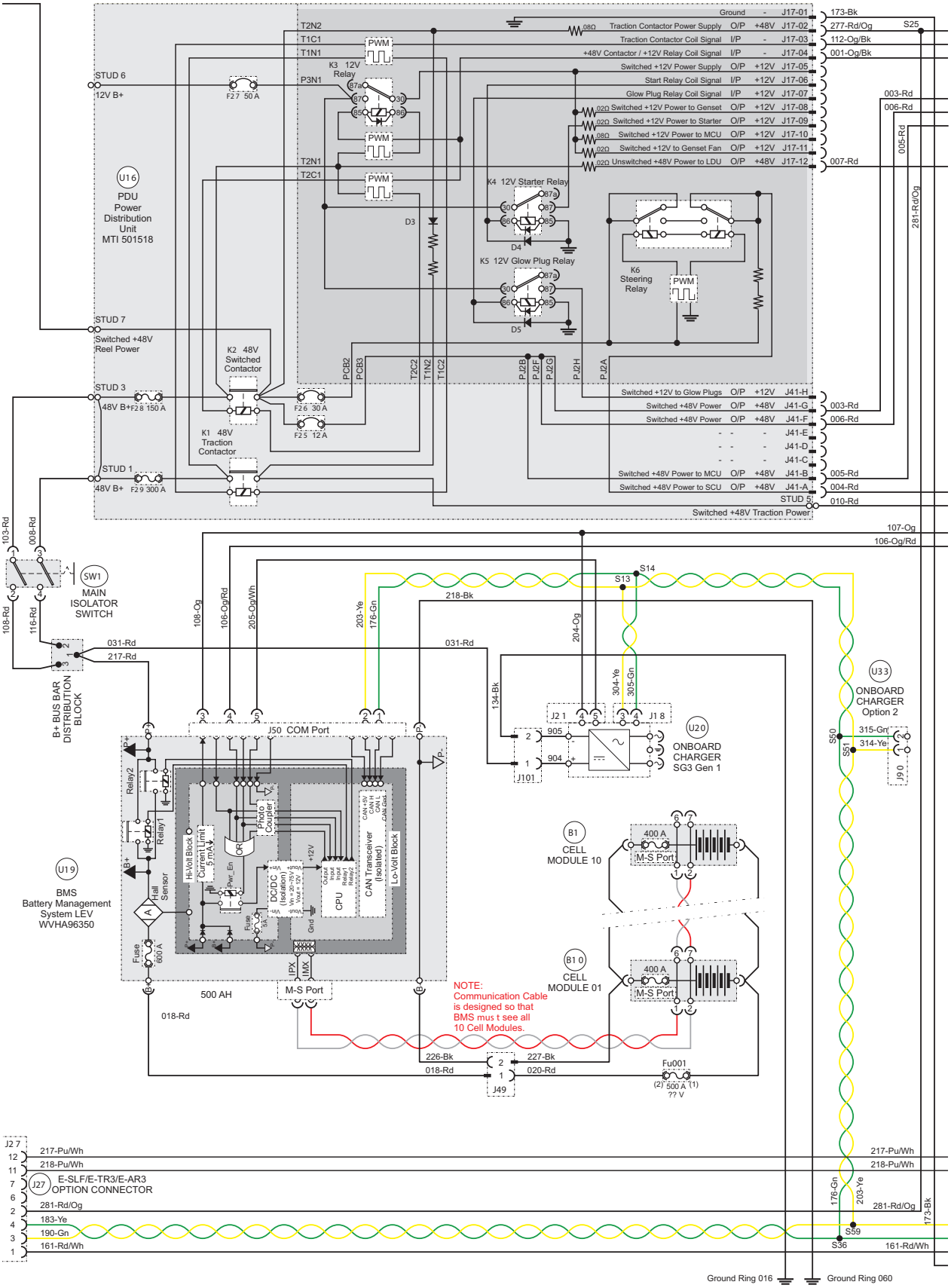
NOTE: *Arrow indicates direction of travel.*

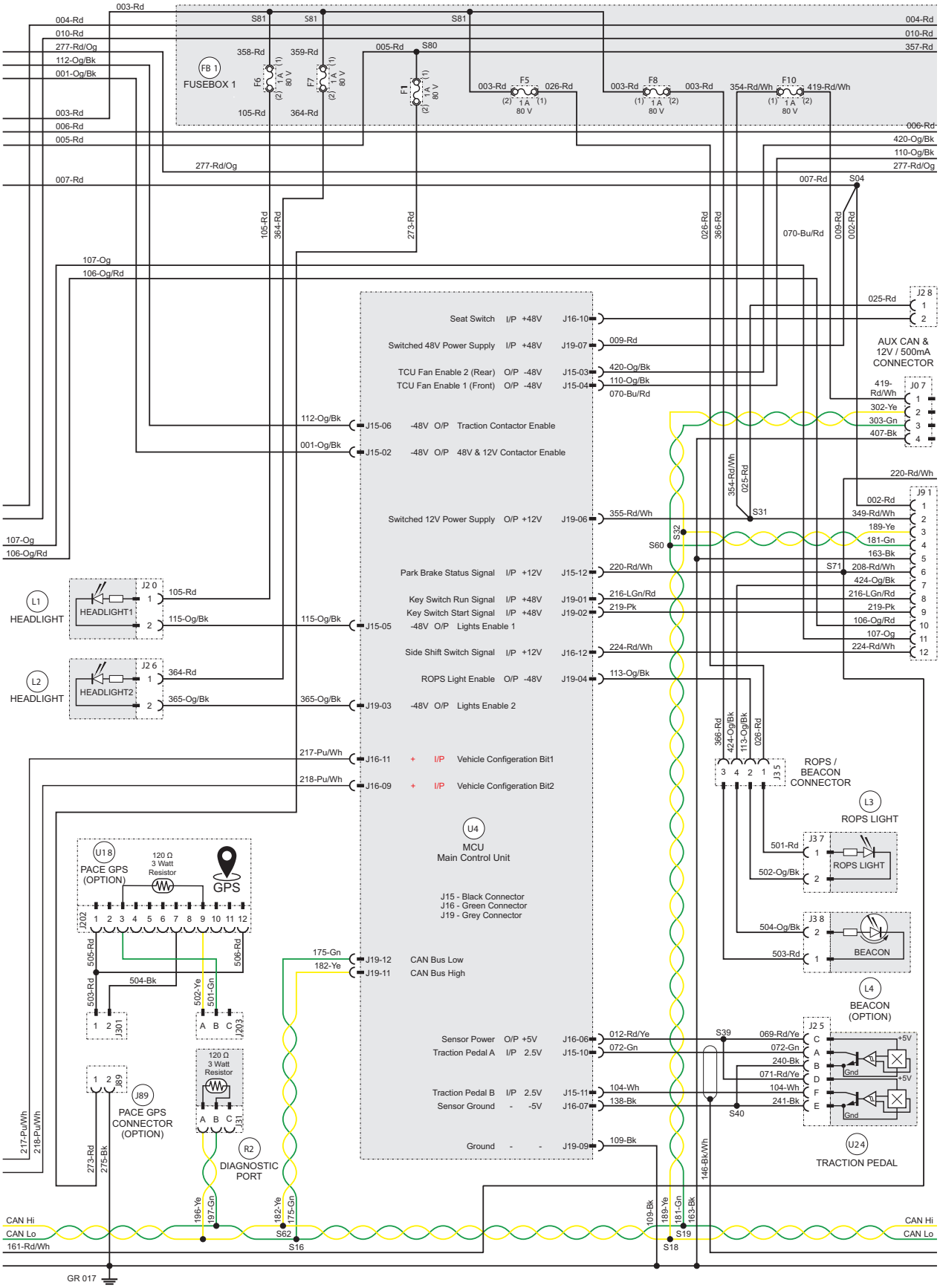
Possible Cause	Correction
Mowing (ground) speed is too fast.	Cut more frequently, increase HOC.
HOC set close to the actual grass height.	Reduce HOC.
Too much material to clear rear of unit, brought round the unit pushing over the grass.	Reduce mowing (ground) speed.
Excessive cut grass wrapped on the front of the cutting blades resulting in blunt blades beating the grass down.	Cut when grass conditions improve. Remove excessive grass build up. Sharpen or replace damaged blades.
Grass always cut in same direction.	Cut grass in opposite direction.

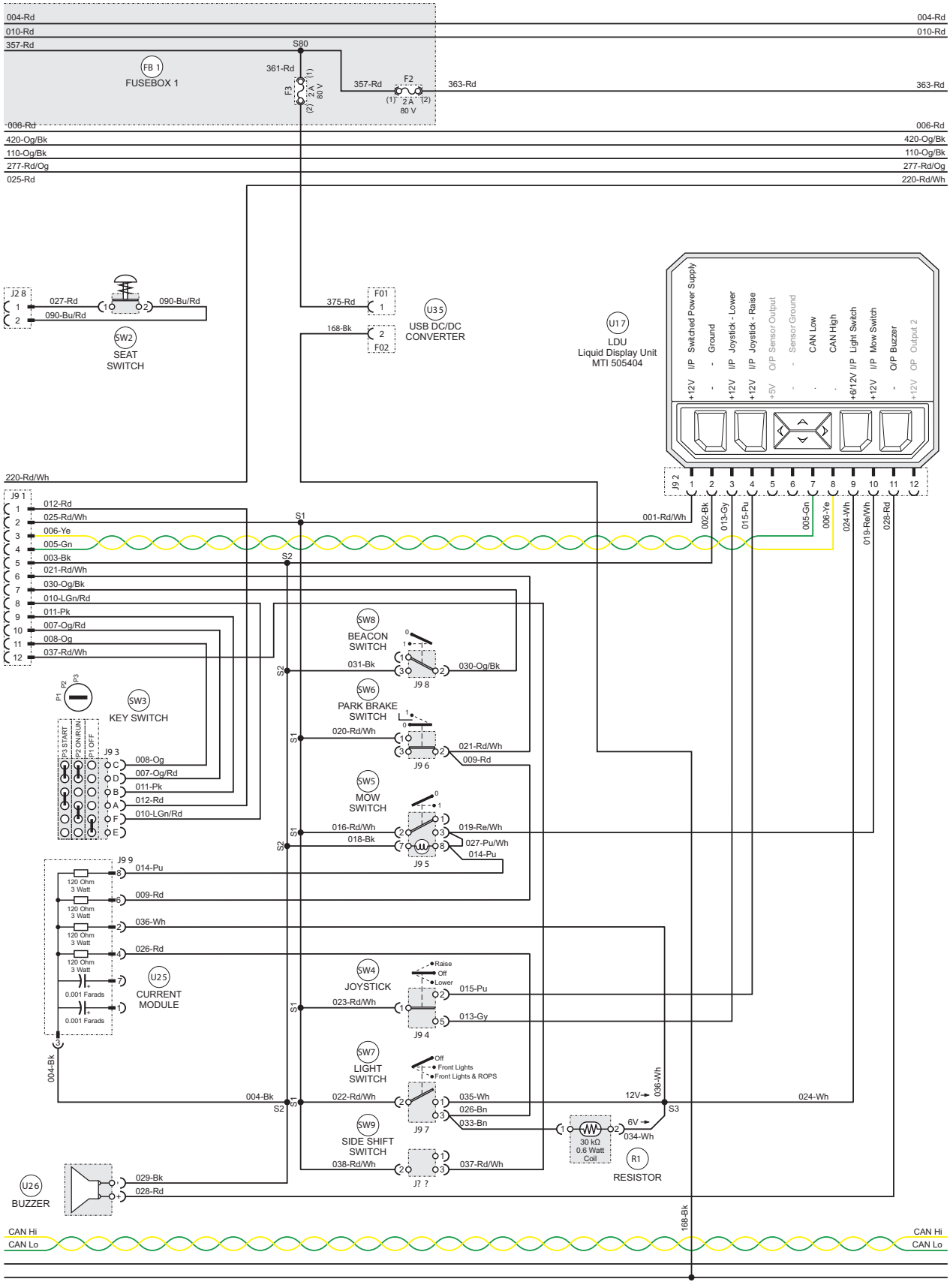
11.1 ELECTRICAL SCHEMATIC

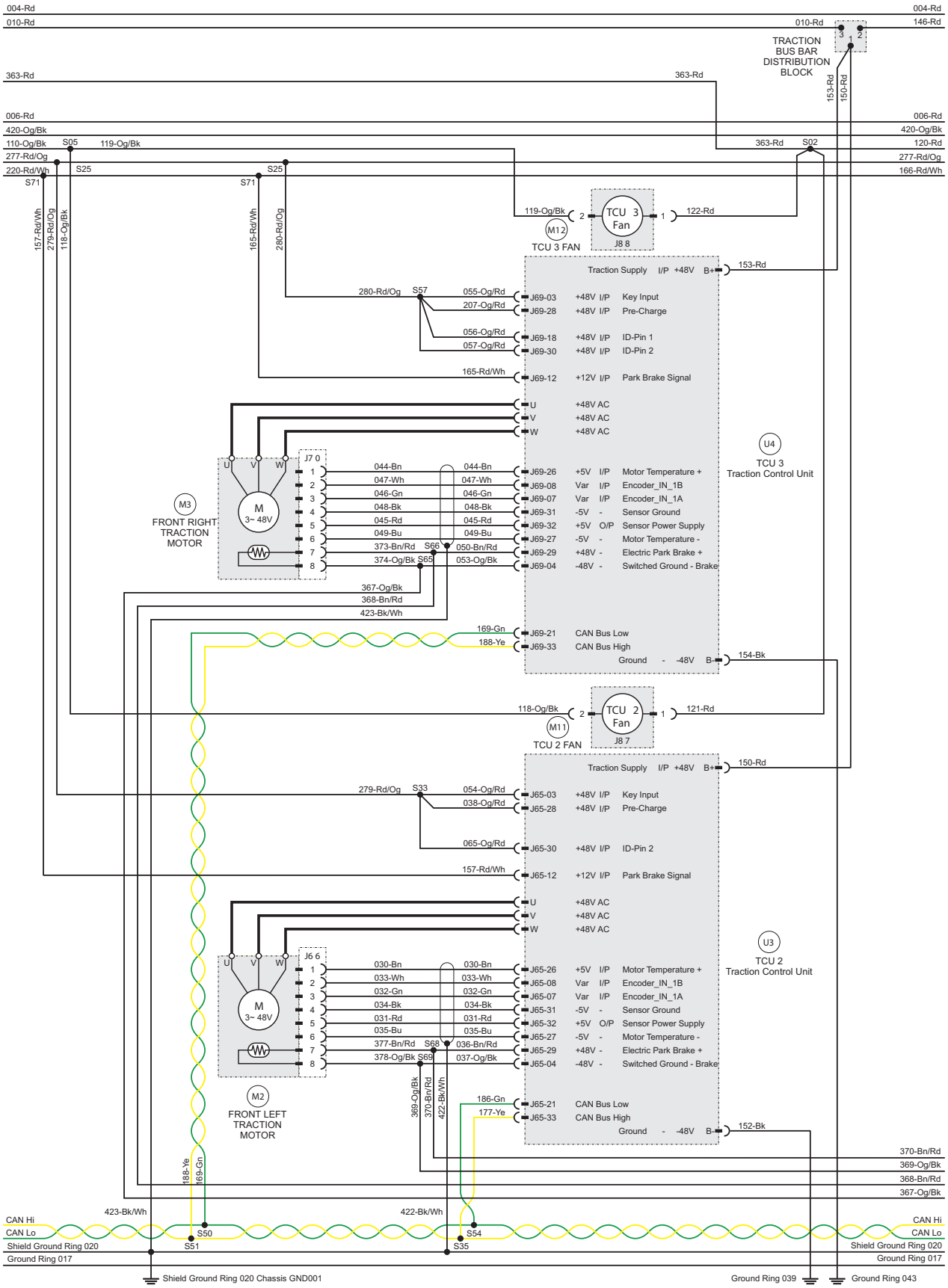


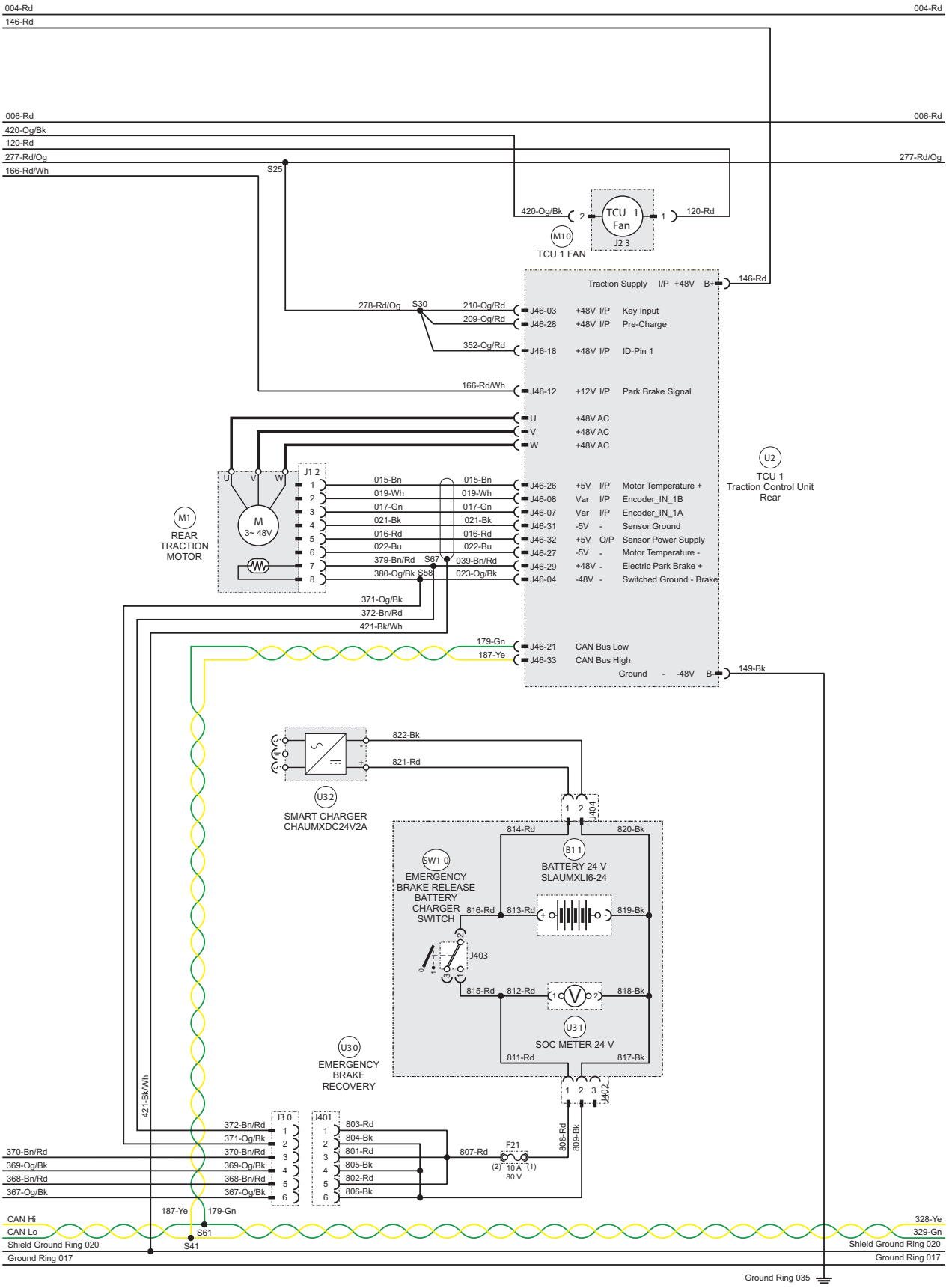

FB 2
FUSEBOX 2
F17 402-Rd (2) 40 A 80 V
F16 401-Rd (2) 40 A 80 V
F20 405-Rd (2) 40 A 80 V
F19 404-Rd (2) 40 A 80 V
F18 403-Rd (2) 40 A 80 V
087-Rd
086-Rd
101-Rd
089-Rd
088-Rd
M7
C FRONT REEL
U13
C FRONT REEL MOTOR CONTROLLER
M6
LH FRONT REEL MOTOR
U12
LH FRONT REEL MOTOR CONTROLLER
U14
RH FRONT REEL MOTOR CONTROLLER
M8
RH FRONT REEL MOTOR
M5
LH REAR REEL MOTOR
U11
LH REAR REEL MOTOR CONTROLLER
U15
RH REAR REEL MOTOR CONTROLLER
M9
RH REAR REEL MOTOR
S12
S17
S44
S52
S34
S49
E-SLF/E-TR3/E-AR3 OPTION CONNECTOR J27
CAN Hi
CAN Lo
Ground Ring 019

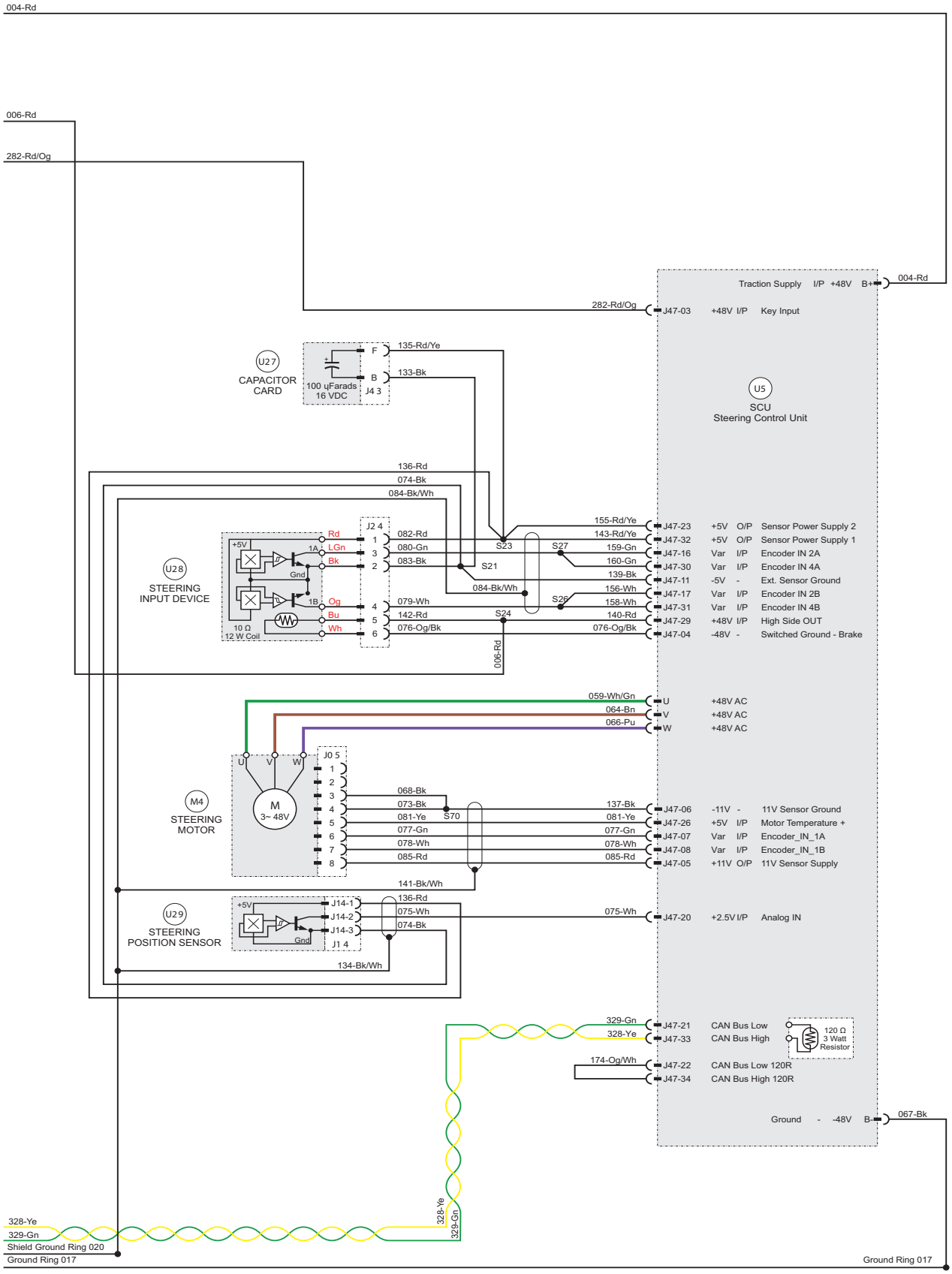

U16
PDU
Power
Distribution
Unit
MTI 501518
STUD 6
12V B+
STUD 7
Switched +48V
Reel Power
STUD 3
48V B+
STUD 1
48V B+
K1 48V
Traction
Contactor
K2 48V
Switched
Contactor
K3 12V
Relay
K4 12V Starter Relay
K5 12V Glow Plug Relay
K6
Steering
Relay
PWM
D3
D4
D5
Ground - J17-01
Traction Contactor Power Supply O/P +48V J17-02
Traction Contactor Coil Signal I/P - J17-03
+48V Contactor / +12V Relay Coil Signal I/P - J17-04
Switched +12V Power Supply O/P +12V J17-05
Start Relay Coil Signal I/P +12V J17-06
Glow Plug Relay Coil Signal I/P +12V J17-07
Switched +12V Power to Genset O/P +12V J17-08
Switched +12V Power to Starter O/P +12V J17-09
Switched +12V Power to MCU O/P +12V J17-10
Switched +12V to Genset Fan O/P +12V J17-11
Unswitched +48V Power to LDU O/P +48V J17-12
Switched +12V to Glow Plugs O/P +12V J41-H
Switched +48V Power O/P +48V J41-G
Switched +48V Power O/P +48V J41-F
J41-E
J41-D
J41-C
Switched +48V Power to MCU O/P +48V J41-B
Switched +48V Power to SCU O/P +48V J41-A
STUD 5
Switched +48V Traction Power
SW1
MAIN
ISOLATOR
SWITCH
B+ BUS BAR
DISTRIBUTION
BLOCK
U19
BMS
Battery Management
System LEV
WVHA96350
J50 COM Port
M-S Port
500 AH
U20
ONBOARD
CHARGER
SG3 Gen 1
U33
ONBOARD
CHARGER
Option 2
B1
CELL
MODULE 10
B1 0
CELL
MODULE 01
400 A
NOTE:
Communication Cable
is designed so that
BMS mus t see all
10 Cell Modules.
J27
E-SLF/E-TR3/E-AR3
OPTION CONNECTOR
Ground Ring 016
Ground Ring 060


FUSEBOX 1
MCU
Main Control Unit
J15 - Black Connector
J16 - Green Connector
J19 - Grey Connector
Seat Switch I/P +48V J16-10
Switched 48V Power Supply I/P +48V J19-07
TCU Fan Enable 2 (Rear) O/P -48V J15-03
TCU Fan Enable 1 (Front) O/P -48V J15-04
J15-06 -48V O/P Traction Contactor Enable
J15-02 -48V O/P 48V & 12V Contactor Enable
Switched 12V Power Supply O/P +12V J19-06
Park Brake Status Signal I/P +12V J15-12
Key Switch Run Signal I/P +48V J19-01
Key Switch Start Signal I/P +48V J19-02
J15-05 -48V O/P Lights Enable 1
Side Shift Switch Signal I/P +12V J16-12
ROPS Light Enable O/P -48V J19-04
J19-03 -48V O/P Lights Enable 2
J16-11 + I/P Vehicle Configeration Bit1
J16-09 + I/P Vehicle Configeration Bit2
J19-12 CAN Bus Low
J19-11 CAN Bus High
Sensor Power O/P +5V J16-06
Traction Pedal A I/P 2.5V J15-10
Traction Pedal B I/P 2.5V J15-11
Sensor Ground - -5V J16-07
Ground - - J19-09
AUX CAN & 12V / 500mA CONNECTOR
ROPS / BEACON CONNECTOR
ROPS LIGHT
BEACON
BEACON (OPTION)
TRACTION PEDAL
HEADLIGHT
HEADLIGHT
PACE GPS (OPTION)
PACE GPS CONNECTOR (OPTION)
DIAGNOSTIC PORT
120 Ω 3 Watt Resistor
GPS
CAN Hi
CAN Lo
GR 017


004-Rd
010-Rd
357-Rd
FB 1
FUSEBOX 1
S80
361-Rd
F3
2 A
80 V
357-Rd
F2
2 A
80 V
363-Rd
004-Rd
010-Rd
363-Rd
006-Rd
420-Og/Bk
110-Og/Bk
277-Rd/Og
025-Rd
006-Rd
420-Og/Bk
110-Og/Bk
277-Rd/Og
220-Rd/Wh
J2 8
027-Rd
090-Bu/Rd
090-Bu/Rd
SW2
SEAT
SWITCH
375-Rd
F01
168-Bk
F02
U35
USB DC/DC
CONVERTER
U17
LDU
Liquid Display Unit
MTI 505404
+12V I/P Switched Power Supply
- Ground
+12V I/P Joystick - Lower
+12V I/P Joystick - Raise
+5V O/P Sensor Output
- Sensor Ground
CAN Low
CAN High
+6/12V I/P Light Switch
+12V I/P Mow Switch
O/P Buzzer
+12V O/P Output 2
J9 2
220-Rd/Wh
J9 1
012-Rd
025-Rd/Wh
006-Ye
005-Gn
003-Bk
021-Rd/Wh
030-Og/Bk
010-LGn/Rd
011-Pk
007-Og/Rd
008-Og
037-Rd/Wh
001-Rd/Wh
002-Bk
013-Gy
015-Pu
005-Gn
006-Ye
024-Wh
019-Re/Wh
028-Rd
S1
S2
SW8
BEACON
SWITCH
031-Bk
030-Og/Bk
J9 8
SW6
PARK BRAKE
SWITCH
020-Rd/Wh
021-Rd/Wh
009-Rd
J9 6
SW5
MOW
SWITCH
016-Rd/Wh
018-Bk
019-Re/Wh
027-Pu/Wh
014-Pu
J9 5
SW3
KEY SWITCH
P1 P2 P3
P3 START
P2 ON/RUN
P1 OFF
J9 3
008-Og
007-Og/Rd
011-Pk
012-Rd
010-LGn/Rd
J9 9
120 Ohm
3 Watt
0.001 Farads
U25
CURRENT
MODULE
014-Pu
009-Rd
036-Wh
026-Rd
004-Bk
SW4
JOYSTICK
Raise
Off
Lower
023-Rd/Wh
015-Pu
013-Gy
J9 4
SW7
LIGHT
SWITCH
Off
Front Lights
Front Lights & ROPS
022-Rd/Wh
035-Wh
026-Bn
033-Bn
J9 7
SW9
SIDE SHIFT
SWITCH
038-Rd/Wh
037-Rd/Wh
J? ?
12V
036-Wh
S3
024-Wh
6V
034-Wh
30 kΩ
0.6 Watt
Coil
R1
RESISTOR
U26
BUZZER
029-Bk
028-Rd
168-Bk
CAN Hi
CAN Lo
CAN Hi
CAN Lo


004-Rd
010-Rd
004-Rd
146-Rd
TRACTION BUS BAR DISTRIBUTION BLOCK
153-Rd
150-Rd
363-Rd
006-Rd
420-Og/Bk
110-Og/Bk
119-Og/Bk
277-Rd/Og
220-Rd/Wh
S05
S25
S71
S02
120-Rd
166-Rd/Wh
157-Rd/Wh
279-Rd/Og
118-Og/Bk
165-Rd/Wh
280-Rd/Og
TCU 3 Fan
J8 8
M12
TCU 3 FAN
122-Rd
Traction Supply I/P +48V B+
153-Rd
S57
055-Og/Rd
207-Og/Rd
056-Og/Rd
057-Og/Rd
165-Rd/Wh
J69-03 +48V I/P Key Input
J69-28 +48V I/P Pre-Charge
J69-18 +48V I/P ID-Pin 1
J69-30 +48V I/P ID-Pin 2
J69-12 +12V I/P Park Brake Signal
U +48V AC
V +48V AC
W +48V AC
U4
TCU 3
Traction Control Unit
M3
FRONT RIGHT TRACTION MOTOR
M 3~ 48V
J7 0
044-Bn
047-Wh
046-Gn
048-Bk
045-Rd
049-Bu
373-Bn/Rd
374-Og/Bk
S66
S65
050-Bn/Rd
053-Og/Bk
J69-26 +5V I/P Motor Temperature +
J69-08 Var I/P Encoder_IN_1B
J69-07 Var I/P Encoder_IN_1A
J69-31 -5V - Sensor Ground
J69-32 +5V O/P Sensor Power Supply
J69-27 -5V - Motor Temperature -
J69-29 +48V - Electric Park Brake +
J69-04 -48V - Switched Ground - Brake
367-Og/Bk
368-Bn/Rd
423-Bk/Wh
169-Gn
188-Ye
J69-21 CAN Bus Low
J69-33 CAN Bus High
Ground - -48V B-
154-Bk
118-Og/Bk
TCU 2 Fan
J8 7
M11
TCU 2 FAN
121-Rd
Traction Supply I/P +48V B+
150-Rd
279-Rd/Og
S33
054-Og/Rd
038-Og/Rd
065-Og/Rd
157-Rd/Wh
J65-03 +48V I/P Key Input
J65-28 +48V I/P Pre-Charge
J65-30 +48V I/P ID-Pin 2
J65-12 +12V I/P Park Brake Signal
U +48V AC
V +48V AC
W +48V AC
U3
TCU 2
Traction Control Unit
J6 6
030-Bn
033-Wh
032-Gn
034-Bk
031-Rd
035-Bu
377-Bn/Rd
378-Og/Bk
S68
S69
036-Bn/Rd
037-Og/Bk
J65-26 +5V I/P Motor Temperature +
J65-08 Var I/P Encoder_IN_1B
J65-07 Var I/P Encoder_IN_1A
J65-31 -5V - Sensor Ground
J65-32 +5V O/P Sensor Power Supply
J65-27 -5V - Motor Temperature -
J65-29 +48V - Electric Park Brake +
J65-04 -48V - Switched Ground - Brake
M2
FRONT LEFT TRACTION MOTOR
369-Og/Bk
370-Bn/Rd
422-Bk/Wh
186-Gn
177-Ye
J65-21 CAN Bus Low
J65-33 CAN Bus High
Ground - -48V B-
152-Bk
370-Bn/Rd
369-Og/Bk
368-Bn/Rd
367-Og/Bk
188-Ye
169-Gn
423-Bk/Wh
422-Bk/Wh
CAN Hi
CAN Lo
Shield Ground Ring 020
Ground Ring 017
S50
S51
S54
S35
Shield Ground Ring 020 Chassis GND001
Ground Ring 039
Ground Ring 043


004-Rd
146-Rd
006-Rd
420-Og/Bk
120-Rd
277-Rd/Og
166-Rd/Wh
S25
TCU 1 Fan
M10
TCU 1 FAN
J2 3
Traction Supply I/P +48V B+
146-Rd
278-Rd/Og
S30
210-Og/Rd
209-Og/Rd
352-Og/Rd
J46-03 +48V I/P Key Input
J46-28 +48V I/P Pre-Charge
J46-18 +48V I/P ID-Pin 1
166-Rd/Wh
J46-12 +12V I/P Park Brake Signal
U +48V AC
V +48V AC
W +48V AC
U2
TCU 1
Traction Control Unit
Rear
M1
REAR
TRACTION
MOTOR
M
3~ 48V
J1 2
015-Bn
019-Wh
017-Gn
021-Bk
016-Rd
022-Bu
379-Bn/Rd
380-Og/Bk
S67
S58
039-Bn/Rd
023-Og/Bk
J46-26 +5V I/P Motor Temperature +
J46-08 Var I/P Encoder_IN_1B
J46-07 Var I/P Encoder_IN_1A
J46-31 -5V - Sensor Ground
J46-32 +5V O/P Sensor Power Supply
J46-27 -5V - Motor Temperature -
J46-29 +48V - Electric Park Brake +
J46-04 -48V - Switched Ground - Brake
371-Og/Bk
372-Bn/Rd
421-Bk/Wh
179-Gn
187-Ye
J46-21 CAN Bus Low
J46-33 CAN Bus High
Ground - -48V B-
149-Bk
822-Bk
821-Rd
U32
SMART CHARGER
CHAUMXDC24V2A
J404
814-Rd
820-Bk
B11
BATTERY 24 V
SLAUMXLI6-24
SW1 0
EMERGENCY
BRAKE RELEASE
BATTERY
CHARGER
SWITCH
816-Rd
813-Rd
819-Bk
J403
815-Rd
812-Rd
818-Bk
U31
SOC METER 24 V
811-Rd
817-Bk
U30
EMERGENCY
BRAKE
RECOVERY
J402
421-Bk/Wh
J3 0
J401
372-Bn/Rd
371-Og/Bk
370-Bn/Rd
369-Og/Bk
368-Bn/Rd
367-Og/Bk
803-Rd
804-Bk
801-Rd
805-Bk
802-Rd
806-Bk
807-Rd
F21
10 A
80 V
808-Rd
809-Bk
370-Bn/Rd
369-Og/Bk
368-Bn/Rd
367-Og/Bk
187-Ye
179-Gn
CAN Hi
CAN Lo
Shield Ground Ring 020
Ground Ring 017
S61
S41
328-Ye
329-Gn
Shield Ground Ring 020
Ground Ring 017
Ground Ring 035

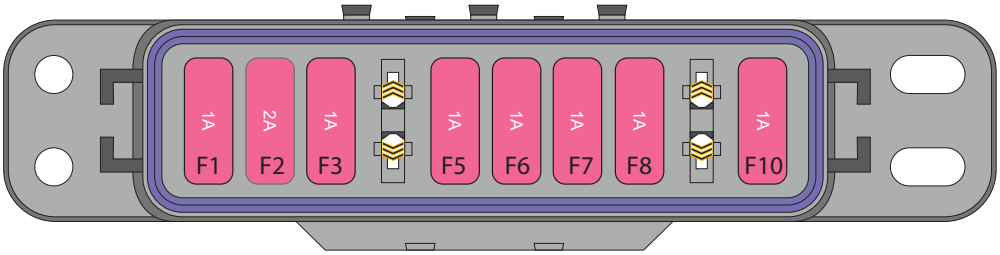

004-Rd
006-Rd
282-Rd/Og
Traction Supply I/P +48V B+
004-Rd
282-Rd/Og
J47-03 +48V I/P Key Input
U27
CAPACITOR CARD
100 uFarads 16 VDC
J4 3
F
B
135-Rd/Ye
133-Bk
U5
SCU
Steering Control Unit
136-Rd
074-Bk
084-Bk/Wh
U28
STEERING INPUT DEVICE
+5V
Gnd
10 Ω 12 W Coil
Rd
LGn
Bk
Og
Bu
Wh
1A
1B
J2 4
082-Rd
080-Gn
083-Bk
079-Wh
142-Rd
076-Og/Bk
S23
S21
S24
S27
S26
084-Bk/Wh
006-Rd
155-Rd/Ye
143-Rd/Ye
159-Gn
160-Gn
139-Bk
156-Wh
158-Wh
140-Rd
076-Og/Bk
J47-23 +5V O/P Sensor Power Supply 2
J47-32 +5V O/P Sensor Power Supply 1
J47-16 Var I/P Encoder IN 2A
J47-30 Var I/P Encoder IN 4A
J47-11 -5V - Ext. Sensor Ground
J47-17 Var I/P Encoder IN 2B
J47-31 Var I/P Encoder IN 4B
J47-29 +48V I/P High Side OUT
J47-04 -48V - Switched Ground - Brake
059-Wh/Gn
064-Bn
066-Pu
U
V
W
+48V AC
M4
STEERING MOTOR
M
3~ 48V
J0 5
068-Bk
073-Bk
081-Ye
077-Gn
078-Wh
085-Rd
S70
137-Bk
081-Ye
077-Gn
078-Wh
085-Rd
J47-06 -11V - 11V Sensor Ground
J47-26 +5V I/P Motor Temperature +
J47-07 Var I/P Encoder_IN_1A
J47-08 Var I/P Encoder_IN_1B
J47-05 +11V O/P 11V Sensor Supply
141-Bk/Wh
U29
STEERING POSITION SENSOR
J14-1
J14-2
J14-3
J1 4
136-Rd
075-Wh
074-Bk
134-Bk/Wh
075-Wh
J47-20 +2.5V I/P Analog IN
329-Gn
328-Ye
J47-21 CAN Bus Low
J47-33 CAN Bus High
120 Ω 3 Watt Resistor
174-Og/Wh
J47-22 CAN Bus Low 120R
J47-34 CAN Bus High 120R
Ground - -48V B-
067-Bk
328-Ye
329-Gn
Shield Ground Ring 020
Ground Ring 017
Ground Ring 017

11.2 FUSES

FUSE BOX 1 - Located behind the hood bulkhead panel.

Component	Rating	Type	Description
F1	1 Amp	Mini	PACE GPS
F2	2 Amp	Mini	TCU Fans
F3	2 Amp	Mini	USB Convertor
F4			Not in use
F5	1 Amp	Mini	ROPS Work Lights
F6	1 Amp	Mini	Front Work Lamps
F7	1 Amp	Mini	Front Work Lamps
F8	1 Amp	Mini	Beacon
F9			Not in use
F10	1 Amp	Mini	Auxiliary

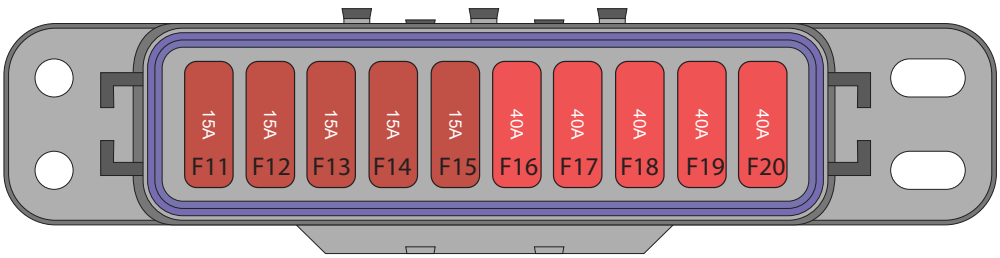
FUSE BOX 1



FUSE BOX 2 - Located behind the foot platform access panel.

Component	Rating	Type	Description
F11	15 Amp	Mini	LH Front lift actuator.
F12	15 Amp	Mini	CTR Front lift actuator.
F13	15 Amp	Mini	RH Front lift actuator.
F14	15 Amp	Mini	RH Rear lift actuator.
F15	15 Amp	Mini	LH Rear lift actuator.
F16	40 Amp	Mini	LH Front reel motor controller
F17	40 Amp	Mini	CTR Front reel motor controller.
F18	40 Amp	Mini	RH Front reel motor controller
F19	40 Amp	Mini	RH Rear reel motor controller
F20	40 Amp	Mini	LH Rear reel motor controller

FUSE BOX 2



12.1 GUARANTEE

WARRANTY

Warranty is subject to specific terms and conditions, e.g. wearing parts, unapproved modifications, etc. are not included. For a full set of warranty conditions, contact your local dealer or distributor.

NOTICE

The use of components not provided by the manufacturer under this warranty or maintenance or repair that is improperly or incorrectly performed may void this warranty.

SERVICE

A network of authorised Sales and Service dealers has been established and these details are available from your supplier.

When service attention, or spares, are required for the machine, within or after the warranty period your supplier or any authorised dealer should be contacted. Always quote the registered serial number of the machine. If any damage is apparent when delivery is made, report the details at once to the supplier of the machine.

Jake

A SIGNATURE CUT, TRUSTED FOR OVER 100 YEARS

JACOBSEN

bsi.

ISO 9001 Quality Management — Cert No. FS609275

ISO 14001 Environmental Management — Cert No. EMS609276

OHSAS 18001 Occupational Health & Safety Management — Cert No. OHS609277

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