Jake

A SIGNATURE CUT, TRUSTED FOR OVER 100 YEARS

JACOBSEN

SAFETY, OPERATION & MAINTENANCE MANUAL

Jacobsen F305 & F407 Ride on Reel Mower

with KUBOTA - V1505-CR-TE5

Fairway F305
Product code: 10011560
Series: AAA

Fairway F407
Product code: 10011568
Series: AAB

⚠ 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

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United Kingdom

RJL AGCB

10033001-C-GB

1 CONTENTS

2.1 IMPORTANT

The Jacobsen F305 & F407 are Diesel engined self propelled Reel mowers. The hydraulic systems are for the traction drive, the cutting unit lift and the lower and cutting unit drives and steering.

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

This SAFETY AND OPERATORS MANUAL is part of the machine and must stay with the machine always. Suppliers of both original and used machines need to keep the documentation that comes with the machine.

You must use the machine to cut the grass only and not 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.

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

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

Discard worn parts, taking note of the environmental result, use the systems available in the country where the machine is used. 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 European conformity is controlled.

2006/42/EC
These instructions are the Original instructions confirmed by Jacobsen Limited

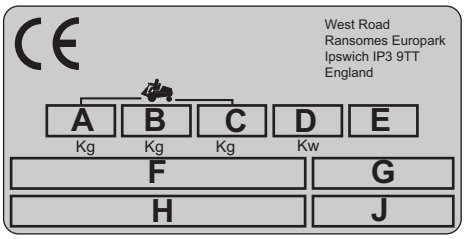
CALIFORNIA PROPOSITION 65

⚠ WARNING

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

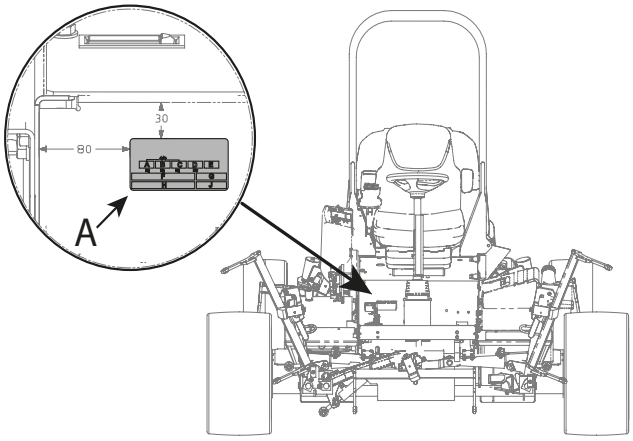
2.2 PRODUCT IDENTIFICATION

A Maximum front axle load in Kg (for machines being driven on the highway)
B Gross weight (mass) in Kg
C Maximum rear axle load in Kg (for machines being driven on the highway)
D Power in Kw
E Date code
F Machine type (Designation)
G Product code
H Product name
J Serial number



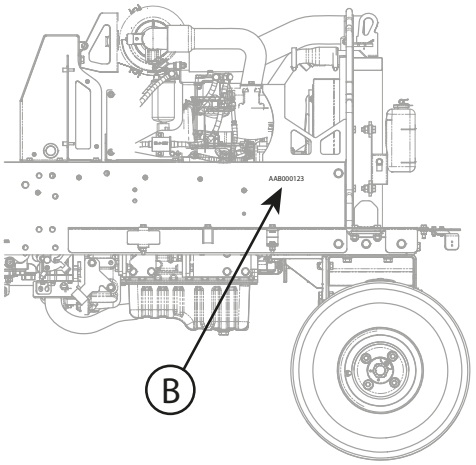
Location of Serial number plate

The serial number plate (A) is found on the chassis under the position for the operator seat.



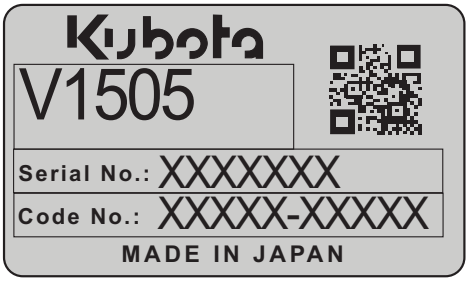
Chassis Stamp

The Serial number and date code (B) are marked on the chassis, located at rear of machine on left hand chassis rail.



Engine Identification

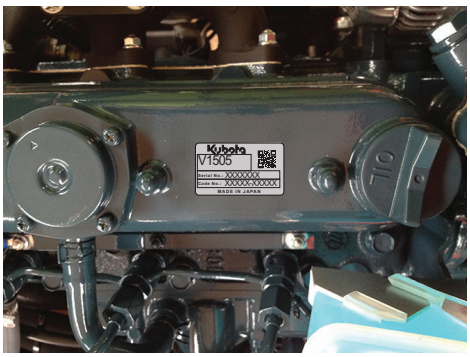
Serial Plate



Location of Serial number plate

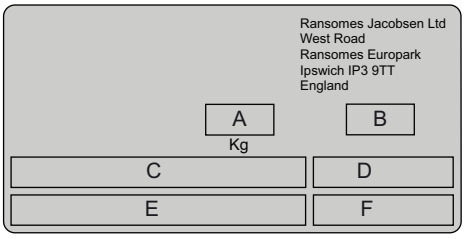
The engine serial number is found on the top of the valve cover toward the front of the mower. Label shows the engine group and serial number.

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



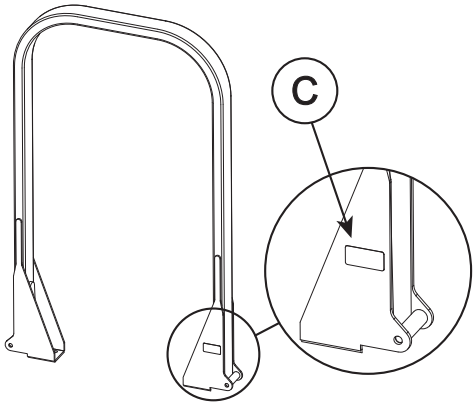
ROPS Serial Plate

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 at the base of the front of the ROPS main beam.



2.3 GUIDELINES FOR THE DISPOSAL OF SCRAP PRODUCTS

2.3.1 DURING SERVICE LIFE

Used oil, oil filters and engine coolant are hazardous materials. Recommended procedures must be followed for their safe removal.

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

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

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

2.3.2 END OF SERVICE LIFE

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

- Park the machine in a location to use all of the necessary lifting equipment.
- Use correct tools and Personal Protective Equipment (PPE) and take instruction from the technical manuals applicable to the machine.
- Remove and store correctly
  1. Batteries
  2. Fuel
  3. Engine coolant
  4. Oils
- Disassemble the structure of the machine and refer to the technical manuals where applicable. Give attention to parts that have mechanical pressure or tension applied to the part in the machine, including springs.
- Items that continue to have a service life must be separated and returned to the local store.
- 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
    - Aluminum
    - Brass
    - Copper
    - Plastic materials
    - Identified
    - Can be recycled
    - Can not be recycled
    - Not identified
    - Rubber
    - Electrical and Electronic Components
- If an item is not easily separated into different material groups, the material must be added to the “General discarded materials” area.
- Do not burn discarded materials.

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

2.4 PARTS MANUAL

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

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

1. Website – www.Jacobsen.com. Select the “SUPPORT” tab. You now have access to Parts drawings and lists to help with the identification of spare parts.

2. Website – www.Jacobsen.com. You now have access to a PDF version of the parts manual.

3. Complete the form included in the technical manual pack supplied with the machine for one of the two options below
   a. A disc that contains an electronic copy of the Parts Book.
   b. A paper copy of the parts manual.

2.5 KEY NUMBERS

Record the key numbers shown below:

Starter Switch:- -

Diesel tank:- -

Record the machine and engine numbers shown below:
The machine serial number is found on the registration plate and the engine serial number can be found on the rocker cover.

Machine Number:-- -

Engine Number:-- -

Notes

3.1 HOW TO OPERATE SAFELY

⚠ WARNING

EQUIPMENT OPERATED INCORRECTLY OR WITHOUT TRAINING CAN BE DANGEROUS.
Know the location and correct operation of controls. Operators without experience must receive instruction from another person that knows the correct operation of the equipment before you operate the mower.

Only use parts, accessories and attachments approved by Jacobsen Limited.

3.1.1 SAFE OPERATION

a Read the Operator's Manual and other training material. If the operator or technician can not read this manual, the owner is responsible to describe this material to the operators and technicians. Manuals in additional languages may be available on the Jacobsen website.

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

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

c Never use a mower near 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.
— Any use of the machine without verification of the hazard area can lead to serious or fatal accidents.

d Any use of the machine without verification of the hazard area can lead to serious or fatal accidents.

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

f Never carry passengers.

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

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

3.1.2 PREPARATION

a When you operate the mower, wear correct clothing, slip resistant work shoes or boots, work gloves, hard hat, safety glasses and hearing protection. Long hair, loose clothing or jewelry can be caught in moving parts.

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

c Never operate equipment that is not in correct order or without decals, guards, shields, deflectors or other protective devices fastened. When you mow with a side discharge deck, **DO NOT** operate the cutting unit without the discharge chute installed.

d Inspect the mower before you operate the mower. Check the tires pressure, engine oil level, the radiator coolant level and the air cleaner indicator. Fuel is flammable. Use caution when you add the fuel to the mower.

e Operate the mower in daylight or in good artificial light. Use caution when you operate the mower during bad weather. Never operate the mower with lightning in the area.

f Inspect the area to select the accessories and attachments that are needed to correctly and safely do the job. Only use parts, accessories and attachments approved by Jacobsen.

g Be careful of holes in the terrain and other hazards that are not visible.

h Inspect the area where the equipment is operated. Remove all objects you can find before you operate. Be careful of obstructions above the ground (low tree limbs, electrical wires) and also underground obstacles (sprinklers, pipes, tree roots). Enter a new area carefully. Look for possible hazards.

i Inspect the cutting system before you start the mower. Make sure the blades are free to rotate. When you rotate one blade, other blades can rotate.

3.1.3 OPERATION

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

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

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

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

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

f To guard against over turning or loss of control:

– Operate the mower up and down on the face of slopes (vertically), but not across the face (horizontally).

– Do not start or stop suddenly on slopes.

– Decrease the speed when you operate on slopes or when you must turn. Use caution when you change direction. Turf condition can change the mower stability.

– Use caution when you operate the mower near drop-offs, ditches or embankments.

– Be careful of holes in the terrain and other hazards that are not visible.

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

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

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

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

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

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

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

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

o Before you leave the operator compartment, for any reason:

– Disengage all the drives and lower attachments to the ground.

– Engage the park brake.

– Stop the engine and remove the key.

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

q Decrease the throttle setting before you stop the engine.

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

3.1.4 ROPS

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

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

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

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

e Inspect the ROPS for damage. Keep hardware fastened.

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

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

h Jacobsen must approve any changes to the ROPS.

3.1.5 SAFE HANDLING OF FUELS

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

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

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

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

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

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

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

h Do not over fill the fuel tank. Leave at least 1 inch (25 mm) below the filler neck.

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

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

3.1.6 MAINTENANCE AND STORAGE

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

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

c Never work on a mower that is lifted only by a Jack. Always use Axle stands.

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

e When the mower is parked, put into storage or left without an operator, lower the cutting device unless a positive mechanical lock is used.
- Do not keep fuel near flames or drain the fuel inside a building.

f Disconnect the battery before you service the mower. Always disconnect the negative battery cable before the positive battery cable. Always connect the positive battery cable before the negative battery cable.

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

h 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.

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

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

k Take care working on cutting units and moving parts with stored energy.

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

m The hydraulic fluid pressure can have enough force to enter your skin. If hydraulic fluid has entered your skin, seek medical attention immediately.

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

o Keep the mower and the engine clean.

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

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

r **DO NOT** operate the machine if you have worn or damaged parts for safety. Replace damaged or worn decals. Only use parts, accessories and attachments approved by Jacobsen.

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

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

3.1.7 LOADING MOWER ONTO A TRAILER

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

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

c Use 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.

3.1.8 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:
Only drive the machine at road speed when you are on a highway. You must not select road speed on grass areas or rough roads and gravel tracks.

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 stops the engine when the operator leaves the seat a.) without the park brake engaged and b.) the mow switch is not 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. Stop the engine and remove the ignition key.
2. Keep your hands, feet, and clothing away from moving parts. Wait for all movement to stop before you clean, adjust, or service the 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 keep its maximum 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

California Proposition 65
Engine exhaust, some of its constituents, and some vehicle components contain or release chemicals known to the state of California to cause cancer and birth defects or other reproductive harm.

WARNING

To prevent injury from the hot oil at high pressure, DO NOT use your hands to check for oil leaks.
Make sure that you use paper or cardboard.
Release of hydraulic fluid at high pressure has enough force to enter through the skin. If the fluid enters through the skin, you must seek medical attention immediately.

WARNING

When the machine is driven off-road, a seat belt must be worn only when a ROPS frame is in position.
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

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

WARNING

You must not use this machine to tow other vehicles.

WARNING

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

⚠ WARNING

Vibration Exposure Limits
Exposure limits are calculated as a combination of the vibration level (magnitude) of the tool and the Daily Exposure Time (Trigger Time). e.g. A product with 5m/s² vibration can be used up to 2 hours/day to reach the EAV and up to 8 hours/day to reach the ELV.
Exposure Action Value (EAV) - Daily vibration exposure A(8) = 2.5m/s²
Where daily vibration exposure A(8) is below 2.5m/s² the risk is relatively low and no action need be taken.
Exposure Limit Value (ELV) - Daily Vibration Exposure A(8) = 5.0m/s²
If several tools are 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 engine and go inside a building.

⚠ CAUTION

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

⚠ CAUTION

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

4.1 ENGINE SPECIFICATIONS

Model:		V1505-CR-TE5 (EPA/CARB Tier4 + EU Stage V
Type:		Vertical, water cooled 4-cycle diesel engine
Number of Cylinders		4
Bore & Stroke	mm (in.)	78.0 x 78.4 (3.07 x 3.09)
Total Displacement	L(Cu in.)	1.498 (91.41)
Combustion Chamber		Direct injection type
Rated output / Speed*1	kW / min (rpm) HP / min (rpm)	33.0 / 3000 (44.9 / 3000)
Max. torque / Rotating speed N-m / min (rpm) (lb-ft / min (rpm)		 118.6 / 2000 (87.5 / 2000)
Maximum bare speed min (rpm)		3220
Maximum bare idling speed min (rpm)		1000 to 1100
Order of Firing		1-3-4-2
Direction of Rotation		Counter-clockwise (viewed from flywheel side)
Compression ratio		17.6
Fuel		Diesel Fuel No.2-DULS
Lubrication (API Classification)		CJ-4 or CK-4
Dimension (length x width x height)	mm (in.)	787 x 455 x 691 (31 x 17.9 x 27.2)
Dry Weight	kg (lbs)	173 (341.7)
Starting system		Cell starter
Starting motor		12V, 1.2kW
Charging Generator		12V, 720W
Recommended battery capacity		12V, 55AH
EU engine family name		LKBXL01.5A1D
CO_2 Emission data g/kWh Non-road steady-state test cycle Non-road transient test cycle		804.1 848.0

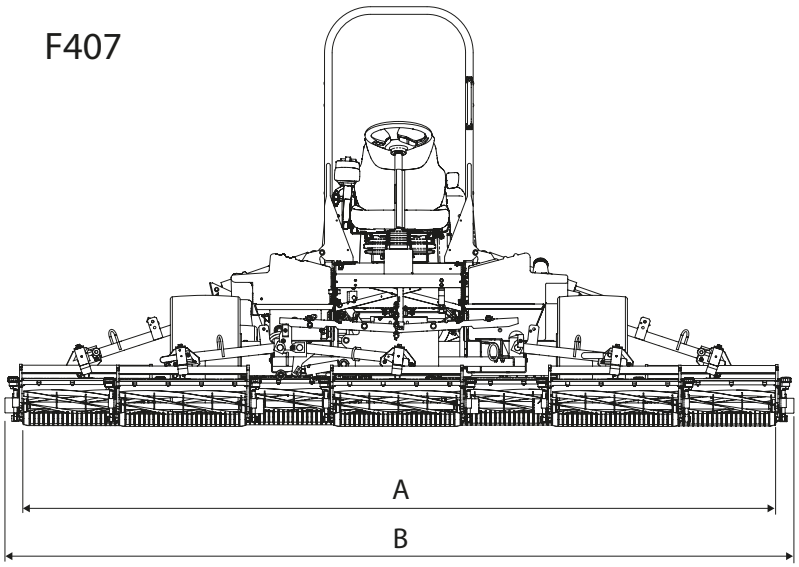
4.2 DIMENSIONS & WEIGHTS

A	Width of Cut F305	295cm	116”
A	Width of Cut F407	400cm	157.5”
B	Maximum width Cutting: F305	331cm	130.3”
B	Maximum width Cutting: F407	431cm	169.7”
C	Maximum width Transport (minimum): F407 / F305	329cm	129.5”
D	Maximum height with ISO21299 ROPS Frame up - All	215cm	84.6”
E	Total Length Cutting / Transport	295cm	116”
F	Total Length Cutting with grass-boxes	320cm	126“
G	Wheel Base - All	165cm	65“
H	Wheel Track Front- Measured Centre to centre	205cm	80.7“
	Wheel Track Front - Measured Outer face to Outer face	240cm	94.5“
J	Wheel Track Rear - Measured Centre to centre	175cm	69“
	Wheel Track Rear - Measured Outer face to Outer face	199cm	78.3“
	Turning Circle Outside Diameter	740cm	291.3“
	Weight of Machine, F305 with ROPS. No Fuel, No Units (yokes only)	1230kg	2712lb
	Weight of Machine, F407 with ROPS. No Fuel, No Units (yokes only)	1413kg	3115lb
	Ground Clearance (with Roller Brush Kits fitted)	12cm (7cm)	4” (2.7”)
	Weight of Fuel 45.4liters (13.5 US Gallons)	43.5kg	96lb
	Weight of one 7 Knife Cutting Unit (Floating)	67 kg	147lb
	Weight of one 11 Knife Cutting Unit (Floating)	69 kg	151lb

4.3 CUTTING UNIT SPECIFICATION

	Fairway 7K	Fairway 11K
Construction	Welded pressed steel construction	
Reel Length	660mm (26”)	660mm (26”)
Number of Knives	7	11
Reel Diameter (New)	165mm (6.5”)	165mm (6.5”)
Minimum Reel Diameter (Before Replacement)	148mm (5.8”)	148mm (5.8”)
Head Height of Cut	12 mm - 47 mm (0.47”- 1.85”)	
Rear Roll	75mm (2.95”) Diameter	
Height of Cut Adjustment	Threaded screw system front and rear and three-position course adjustment on rear roll	
Transmission	By direct drive through splined hydraulic motor to splined reel.	
Maximum Reel Speed rpm	1200 rpm	

F407



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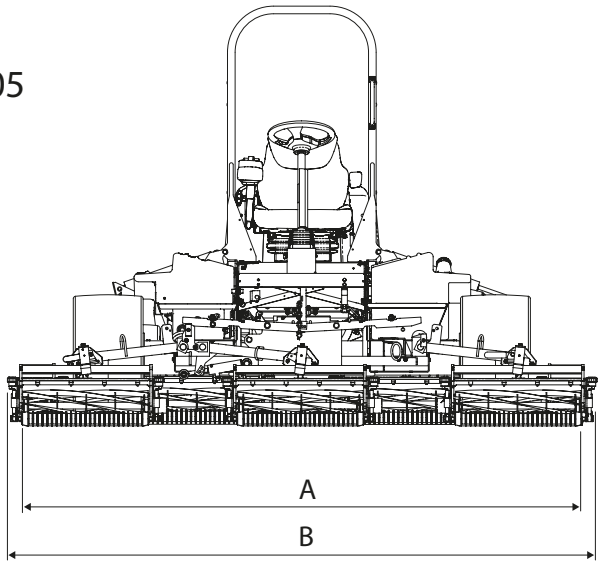
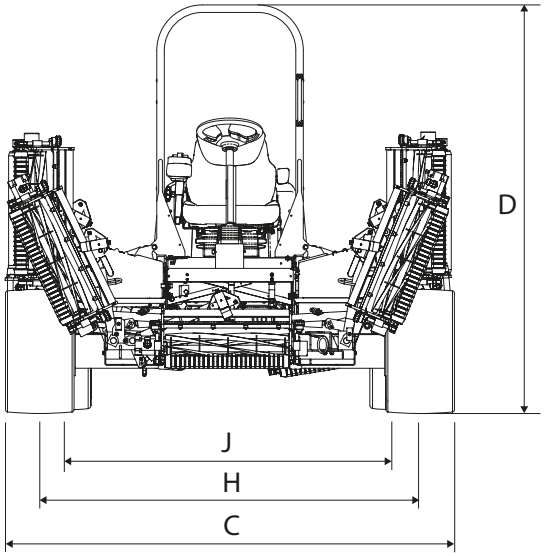
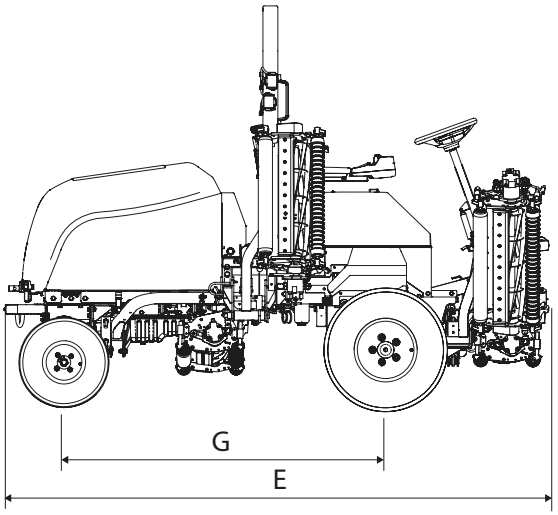






F407 illustrated for reference.

4.4 MACHINE SPECIFICATION

TIRE PRESSURE						
Product	Front Wheel			Rear Wheel		
	Tire Size	Tire Type	Tire Pressure	Tire Size	Tire Type	Tire Pressure
Standard Tire	26.5 X 14.00 -12	OTR Ultra Chevron	0.83 - 1.03 bar (12-15psi)	20 x 10.00-8	OTR Grassmaster	0.83- 1.24bar (12-18psi)

Frame construction: Heavy duty fabricated steel chassis with box section frame rails.

Cutting unit drive: Fixed displacement hydraulic motors connected to the cutting unit.

Transmission: On Demand 4-wheel drive. Direct coupled variable displacement pump to direct coupled 398 cc for POCLAIN Front Motors,
338 cc rear wheel motors.

Speeds:

Cutting: 0 - 12 km/h (0-7.5mph) Forward
0 - 6.4 km/h (0-4mph) Reverse

Transport: 0 - 14 km/h (0-8.7mph) Forward
0 - 6.4 km/h (0-4mph) Reverse

Steering: Hydrostatic power steering, with an adjustable tilt on the steering wheel.

Ground pressure: **F407** 173Kpa / 1.77Kg/cm² / 25PSI

(Figure quoted as guide only and will depend on configuration of machine. Value measured with 7knife units and brush kits, Weight transfer disengaged. tire pressures @18PSI.)

Brakes: Hydrostatic braking with hydraulic parking brakes on front wheels.

Battery: 80 Ah – 680 CCA (Supplied with **Y**uasa L26-80)

4.5 CUTTING PERFORMANCE

66 cuts per metre at 12km/hr with 11 knife reels.
42 cuts per metre at 12km/hr with 7 knife reels.

F407

4.32 hectares/hr.at 12kph (7.5mph)

F305

3.17 hectares/hr.at 12kph (7.5mph)
10% allowance is included for normal overlaps and turning at the end of each cut.

4.6 VIBRATION LEVEL

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

The Machinery Safety Directive 2006/42/EC
By compliance to:
The Lawnmower Standard BS EN ISO 5395
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)

F305 Hand / Arm Acceleration Level	Series AAA with ROPS
	Max. LH or RH Accelerations m/s²
	Mean Value of X, Y, Z Aeq
	0.54.x ± 0.54

F407 Hand / Arm Acceleration Level	Series AAB with ROPS
	Max. LH or RH Accelerations m/s²
	Mean Value of X, Y, Z Aeq
	0.33 ± 0.54

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

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

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

F305 Whole Body Acceleration Level	Series AAA with ROPS
	Max. Accelerations m/s²
	Mean Value of X, Y, Z Aeq
	0.30± 0.27

F407 Whole Body Acceleration Level	Series AAB with ROPS
	Max. Accelerations m/s²
	Mean Value of X, Y, Z Aeq
	0.52 ± 0.27

4.7 NOISE

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

The Machinery Safety Directive 2006/42/EC
And
Exposure Of Workers To The Risks Arising From Physical Agents (Noise) Directive 2003/10/EC

By compliance to:
The Lawnmower Standard BS EN ISO 5395:2013
And
Sound Pressure Standard EN ISO 3746: 2010

F305 with ROPS Measured Sound Pressure 81 dB(A) ± 1.24 LWA
F407 with ROPS Measured Sound Pressure 81dB(A) ± 1.24 LWA

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

The Machinery Safety Directive 2006/42/EC
And
Noise Emission In The Environment By Equipment For Use Outdoors
Directive 2000/14/EC

By compliance to:
Sound Power Standard EN ISO 3744:1995

F305 Measured Sound Power 99.46dB(A) ± 1.24 LWA
F407 Measured Sound Power 98.7dB(A) ± 1.24 LWA

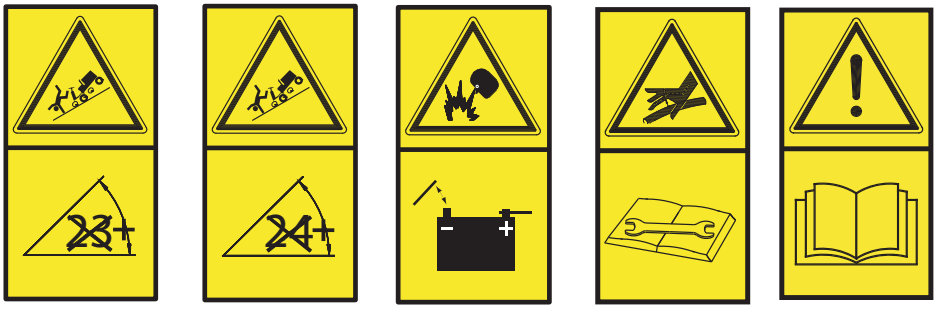
4.8 SLOPES

F305 – DO NOT USE ON SLOPES GREATER THAN 24°. This slope was calculated using static stability measurements according to the requirements of BS EN ISO 5395

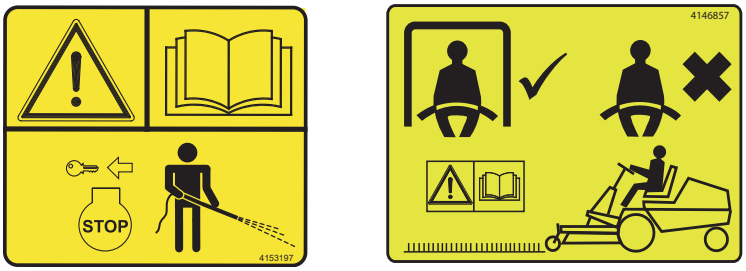
F407– DO NOT USE ON SLOPES GREATER THAN 23°. This slope was calculated using static stability measurements according to the requirements of BS EN ISO 5395

5.1 SAFETY DECALS

A B C D E F



G G H J K



L M

A. 00903492 Stay Away From Hot Surfaces.
B. 009034880 Fan Blade, Do Not Open Or Remove The Safety Shields While The Engine Is In Operation.
C. 009034900 Drive Belt, Do Not Remove The Safety Shields While The Engine Is In Operation.
D. 009114340 Caution, Diesel Fuel.
E. 4118415 Caution, Engine Coolant Under Pressure.
F. 009034890 Keep A Safe Distance From The Machine.
G. 10036835 Maximum Working Slope 24° F305.
G. 10036836 Maximum Working Slope 23° F407.
H. 009114100 Danger Of Explosion If The Battery Terminals Are Short Circuited.
J. 009034930 Prevent Contact With Hydraulic-Oil Release Under Pressure. Read Operator Manual.
K. 009034910 Read The Operator Manual.
L. 4153197 Caution, Stop The Engine And Remove The Starter Key Before Pressure Washing.
M. 4146857 Use Seat Belt When ROPS is Used When Cutting

5.2 INSTRUCTION DECALS

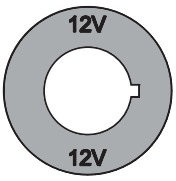
A

B

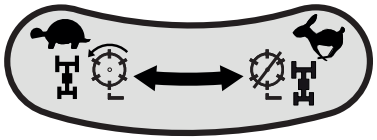
C

D

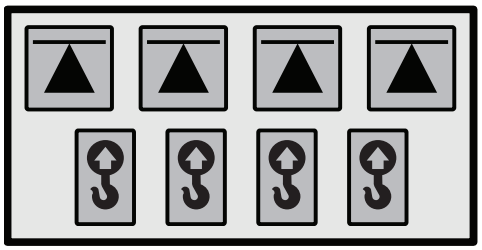
E



F

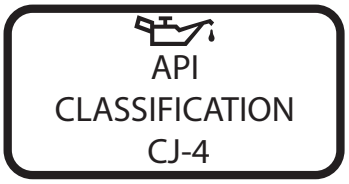


G



H

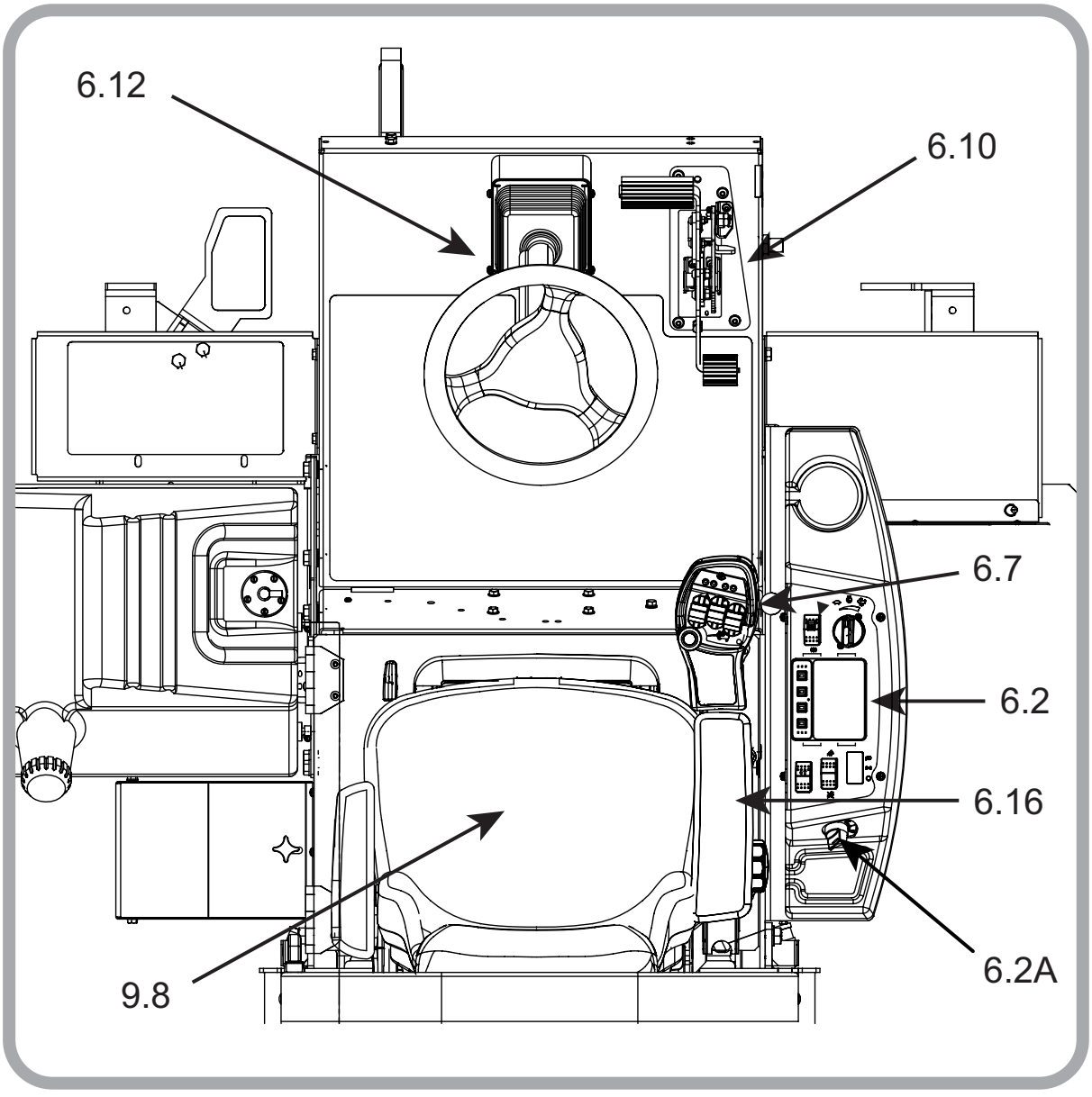
I



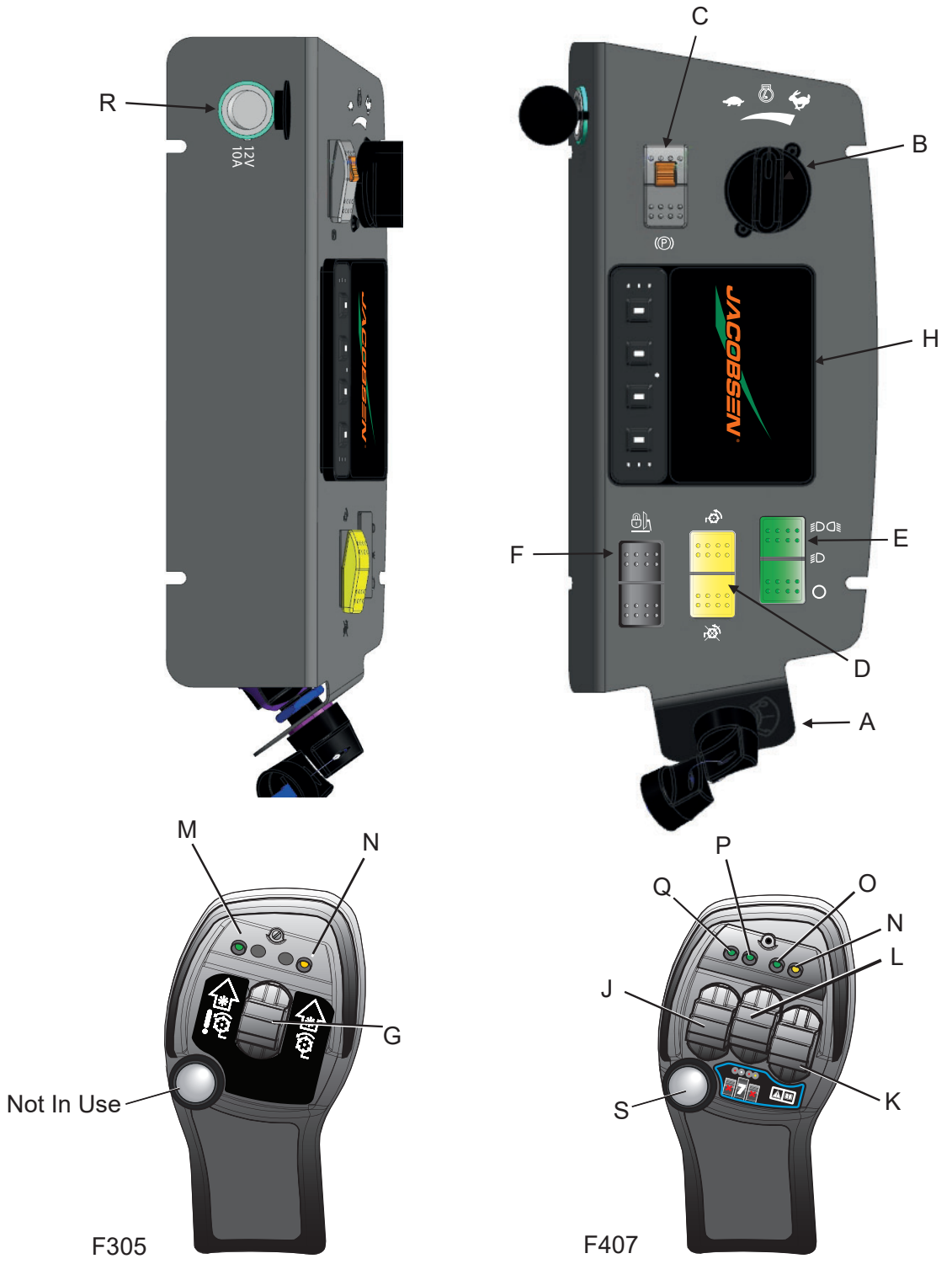
J

A Beacon
B Parking Brake
C Cutting Implement PTO Drive
D Throttle
E Traction Pedal, Forward / Reverse
F Power socket 12 volt
G Mow / Transport lever
H Maximum Sound Power Level
I Jack & Hook Point
J Engine Oil Classification

6.1 OPERATOR WORKSTATION



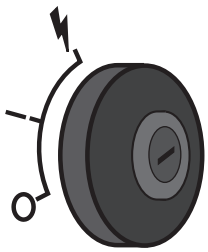
6.2 CONTROL PANEL



A: Starter Key Switch
B: Throttle Control
C: Park Brake Switch
D: Cutter Switch (PTO)
E: Work Light (optional)
F: Wing Lock Switch (F407)
G: Cutting Units Lift/Lower Control Switch
H: Visual Display
J: Left Hand Wing Cutting Unit Lift/Lower Control
K: Right Hand Wing Cutting Unit Lift/Lower Control
L: Centre Cutting Units Lift/Lower Control
M: Cutting Units Position Indicator Lamp
N: Cutters (PTO) Indicator Lamp
O: Right Hand Wing Cutting Unit Position Lamp
P: Centre Cutting Units Position Lamp
Q: Left Hand Wing Cutting Unit Position Lamp
R: Auxiliary Power Socket 12v
S: Cutting Unit Lift Mode Switch

6.2.A STARTER KEY SWITCH

The Starter Key (A) must be turned clockwise to the 'start' position to start the engine. After starting, the key must be released and allowed to return automatically to the 'on' position for normal running.



NOTE: The glow plugs will auto pre-heat depending on the coolant temperature before cranking begins.

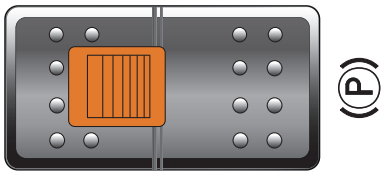
6.2.B THROTTLE CONTROL ROTARY

Rotate the Throttle Control to the right to increase the engine speed and towards the left to decrease the engine speed.

NOTE: Operate the machine with the engine at full speed.

6.2.C PARK BRAKE

When the engine is running the Park Brake is applied by sliding back the orange button on the rocker and depressing the switch on the control panel. When the engine is switched off the Park Brake is automatically applied.
To release the parking brake depress the opposite end of the rocker switch.

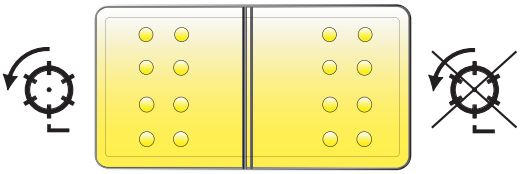


DO NOT apply the brake when the machine is moving.

When the Park Brake is applied, the parking symbol is shown on the visual display.
When the machine is in motion, DO NOT apply the brake.

6.2.D CUTTER SWITCH (PTO)

To commence cutting ensure speed limiter is in mow position and the units have been lowered.
Push bottom of the rocker switch and move joystick towards the lower position.

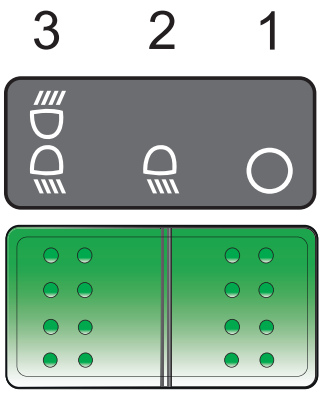


To stop cutter unit rotation push top of rocker switch.
Cutting units stop rotating automatically when raised or the operator leaves the seat.

6.2.E LIGHT SWITCH (OPTIONAL)

Switches the road lights on and off.
Position 1. OFF
Position 2. Front Only
Position 3. Front / Rear

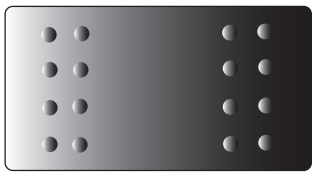
NOTE: Position 3 requires ignition to be on.



6.2.F WING LOCK SWITCH

Engages the Wing Cutting Unit lift arm locks for transport, preventing unintentional lowering of the cutting units whilst driving.

Press the forward part of the rocker switch to engage. Press the rear part of the switch to disengage. The wing unit lock icon is displayed on the visual display screen when engaged.



6.3 VISUAL DISPLAY

The visual display is activated when the ignition is turned on.

6.3.1 STARTUP SCREEN

When the Ignition Key is turned to the start position, this screen is shown.

The Hour Meter will show total hours of engine operation.

6.3.2 WARNING / SERVICE SCREEN

After the Start-up Screen the Warning Screen is shown, the screen is visible for four seconds. If the machine is within 5 hours of the next service, a warning is shown. An operator input is needed to continue to the Home Screen. 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 Home Screen.

ICONS

1. Park Brake Engaged
2. DPF Inhibit
3. DPF Regeneration Request
4. DPF Regeneration Ongoing
5 Cutter Indicator (Flashes if not in off position on start up)
6. Water In Fuel Warning
7. Wing Lock
8. Foot Pedal Warning (Flashes if not in neutral position on start up)
9. Seat Warning (Flashes if not occupied or disconnected on start up)
10 Fuel Indicator (Below bar graph)
11. Engine Temperature Indicator (Below bar graph)
12. Check Engine
13. Weight Transfer
14 Engine Able To Start
15. Engine Unable To Start
16. Backlap Engaged

6.3.3 HOME SCREEN

The Home Screen will give the operator alternative button functions when **Button 4** has been pressed once

Buttons numbered left to right:
Button 1:DPF Regen Start
Button 2:DPF Regen Inhibit ***Note** - Refer to section 8.16 Diesel Particulate filter for full details.
Button 3: Exit
Button 4: When pressed once this will bring you to the Main Menu.

6.3.4 ENGINE START

When the Ignition Key is turned to the start position, this screen is shown. If the Park Brake is applied, the Cutting Unit Switch is in the OFF position, the Foot Pedal is in the Neutral position, and the operator is in the seat, the engine will start.

This screen shows the fuel bar graph on the left side. The colour changes from green to red as the fuel level decreases. The engine temperature gauge is on the right side. The colour changes from green to red as the temperature increases.

6.3.5 THE ENGINE WILL NOT START

When the Ignition Key is turned to the start position this screen is shown. If any of the icons flash:

- The Park Brake is not applied.
- The Cutter Switch is not in the OFF position.
- The Foot Pedal is not in the neutral position.
- The operator is not in the seat.

Note: The engine will not start until all the items in the list are correct. The red LEDs either side of the display will flash and the key icon in the centre will appear red.

GENERAL NOTES FOR WARNING SCREENS

The number in the bottom right of the screen indicates the total number of faults recorded. Press the button below the ✓ to confirm the fault.

6.3.6 MAIN MENU

The arrow is moved up and down using **Button 2** and **3, Button 4** then enters the selected page, **Button 1** returns to the Home Screen. There will be four options within this menu:

- Clock
- Service
- Settings
- Language.

6.3.7 CLOCK & DATE ADJUST

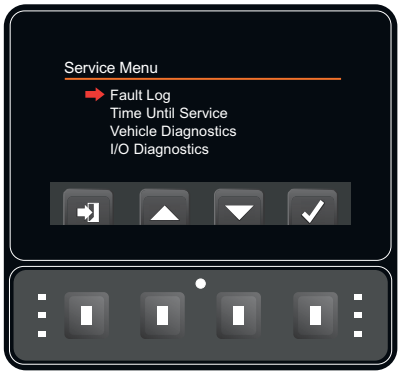
Button 3 is used to traverse the time and date digits, and **Button 2** is used to increment. As well as adjusting the Time and Date, this page can be used to change the Date Time format between EU and US.

Once amended **Button 1** is used to save and exit back to the Main Menu.

6.4 SERVICE MENU

The arrow can be moved up and down using **Buttons 2** and **3**, **Button 4** then enters the selected page, **Button 1** returns to the Main Menu. There are five options within this menu:

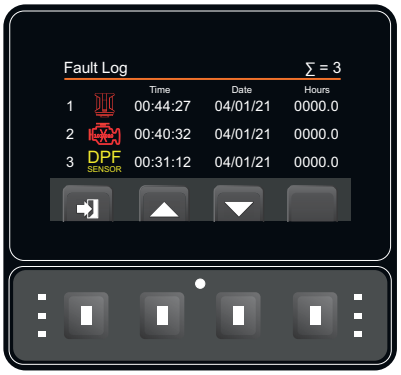
- Fault Log
- Time Until Service
- Vehicle Diagnostics
- I/O Diagnostics



6.5 FAULT LOG

The first page within the Fault Log makes it possible to see any Fault Popup Warnings that have occurred and been cleared, that are however still active. **Button 2 & 3** can be used to scroll through if there is more than one, **Button 1** exits to the Service Menu.

Button 4 takes the screen to the second Fault Log page which displays a list of the last 100 faults along with the Time, Date and Engine Hours that the fault occurred.The number in the top right hand corner shows the total number of faults recorded, and **Button 1** can be used to exit to the Service Menu.

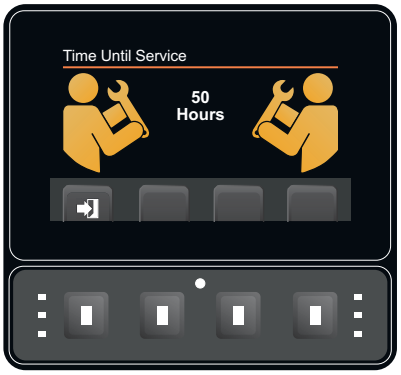


Note: The fault displayed is an example and the actual popup seen by the operator may be different.

6.5.1 TIME UNTIL SERVICE

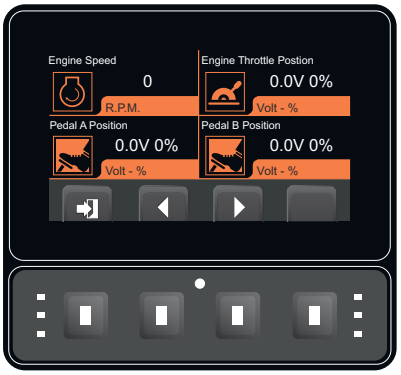
This screen gives the number of engine hours until the next service inspection is required.

To reset the service interval press & hold **Button 2, 3 & 4** until the figure changes. **Note:** this should only be done once the required service has been completed.



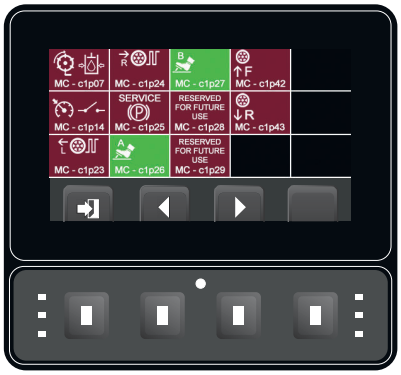
6.5.2 VEHICLE DIAGNOSTICS

These screens give access to various machine parameters. **Buttons 2 & 3** can be used to scroll between the pages, **Button 1** returns to the Service Menu.



6.5.3 I/O DIAGNOSTICS

These screens give access to various controller input and output Pin functions and their state to be used for diagnostic trouble shooting. **Buttons 2 & 3** can be used to scroll between the pages, **Button 1** returns to the Service Menu.



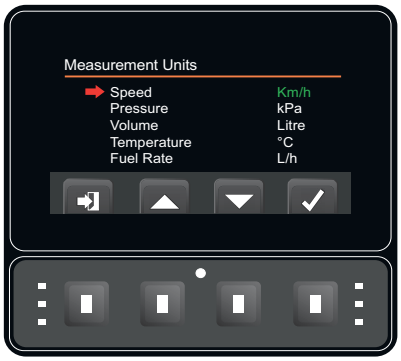
6.5.4 SETTINGS

Within the settings Menu you will find the three options:

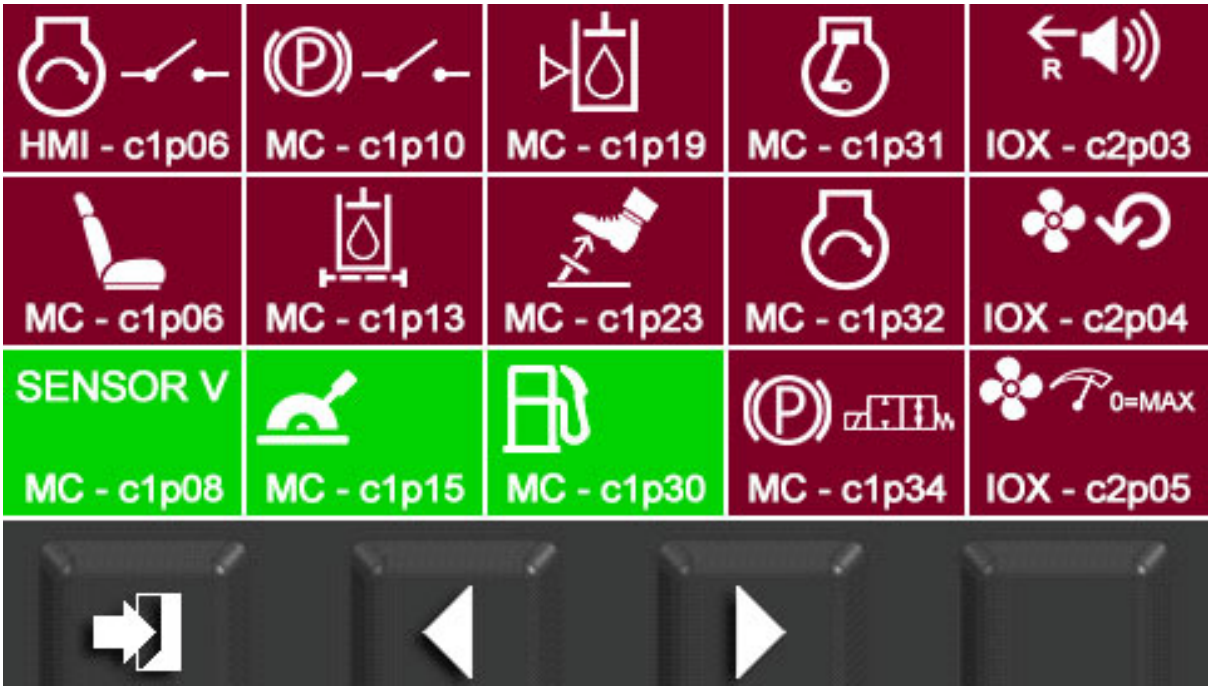
- Weight Transfer
- Measurement Units
- Pin
- Brightness

6.5.5 MEASUREMENT UNITS

Buttons 2 & 3 move the arrow up and down the list, **Button 4** selects parameter to be altered, then **Button 2 & 3** scroll between the unit types. When amended as necessary **Button 1** then saves the setting.

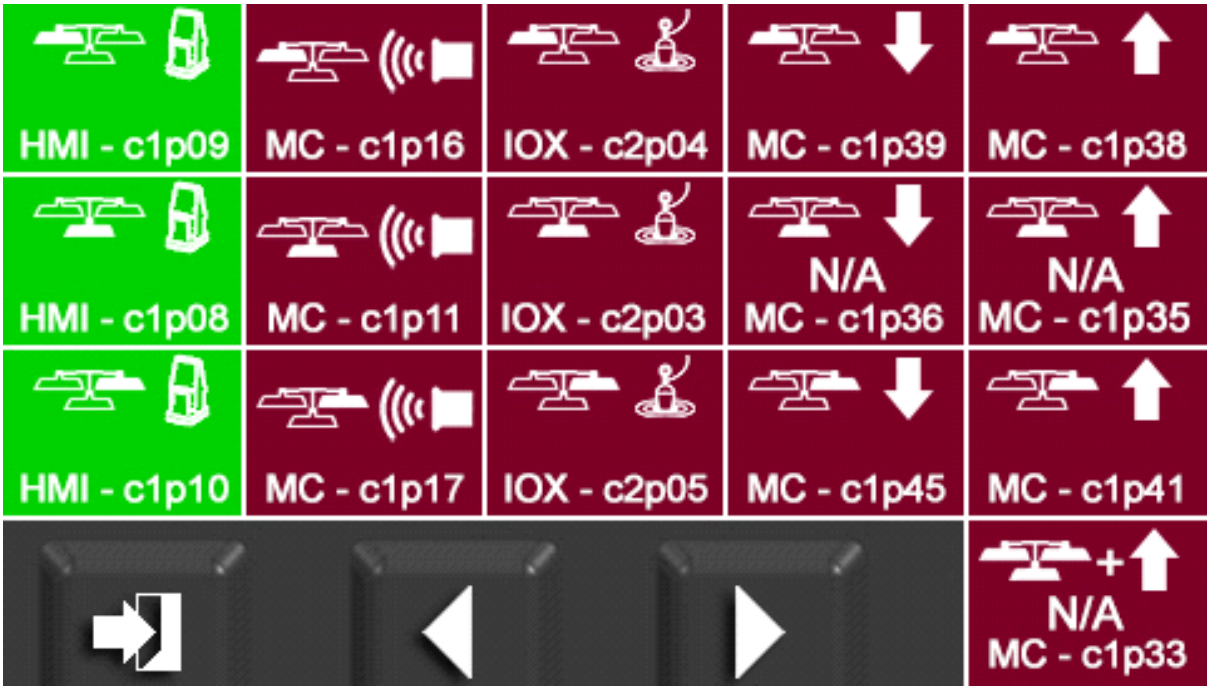


General



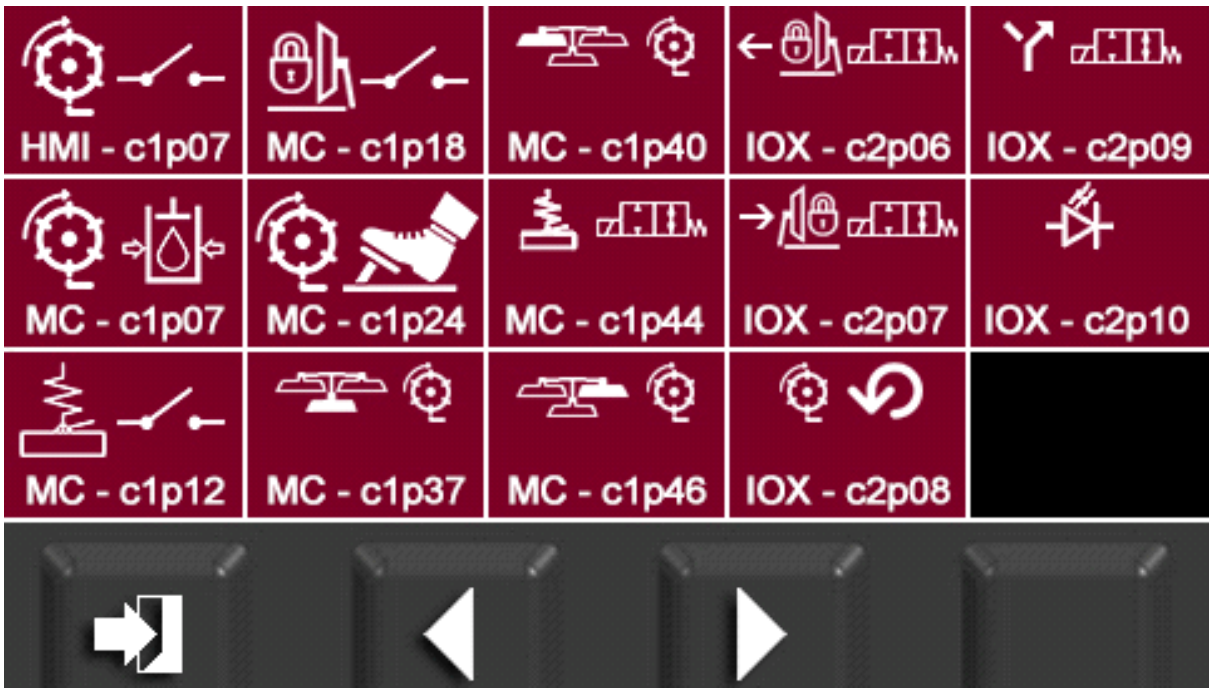
Ref	Module	Pin Number	Function	Note
1	HMI	c1p06	Engine Ignition Key Input	
2	Main Controller	c1p10	Park Brake Switch Input	
3	Main Controller	c1p19	Hydraulic Oil Level Switch Input	Not used on F305/F407
4	Main Controller	c1p31	Engine Run Interlock Output	
5	Expansion Module	c2p03	Reverse Beeper Output	Not used on F305/F407
6	Main Controller	c1p06	Seat Switch Input	
7	Main Controller	c1p13	Hydraulic Oil Filter Switch Input	
8	Main Controller	c1p23	Traction Neutral Switch Input	
9	Main Controller	c1p32	Engine Start Interlock Output	
10	Expansion Module	c2p04	Cooling Fan Direction Output	Not used on F305/F407
11	Main Controller	c1p08	Sensor Power Supply	
12	Main Controller	c1p15	Throttle Input	
13	Main Controller	c1p30	Fuel Level Sensor Input	
14	Main Controller	c1p34	Park Brake Solenoid Output	
15	Expansion Module	c2p05	Cooling Fan Speed Output	Not used on F305/F407

Cutting Units



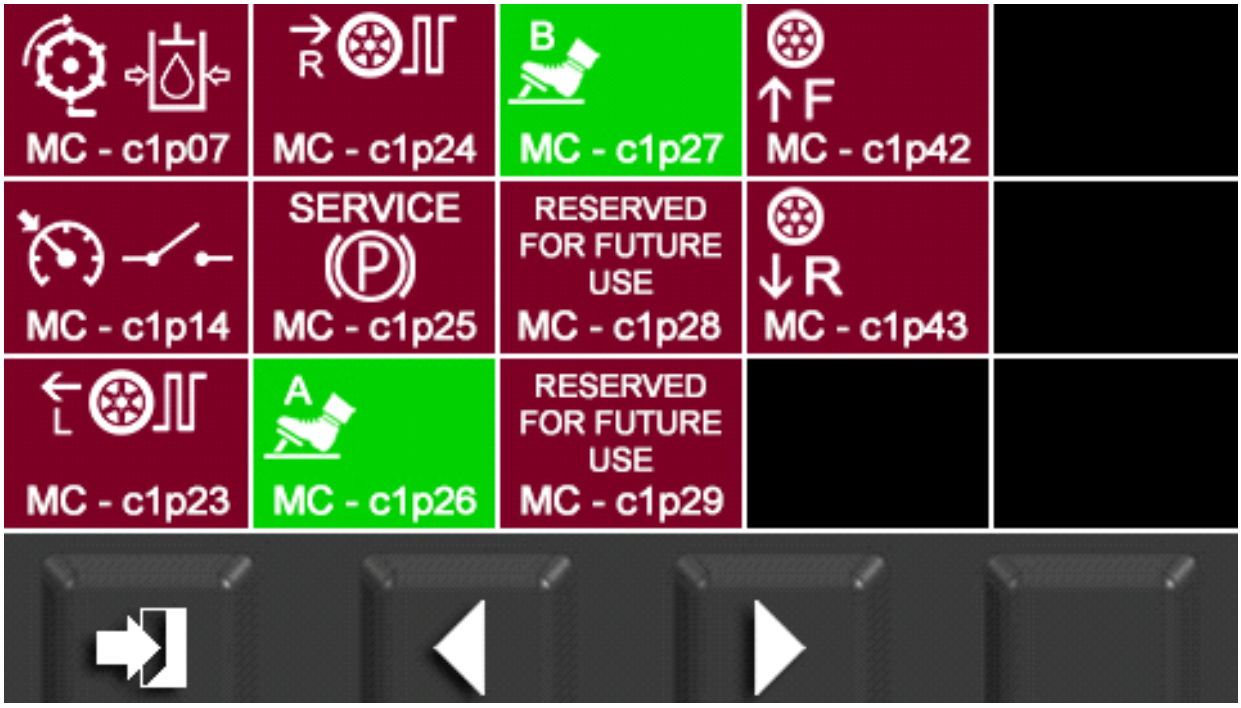
Ref	Module	Pin Number	Function	Note
1	HMI	c1p09	Left Hand Joystick Input	Not used on F305
2	Main Controller	c1p16	Left Hand Position Sensor Input	Not used on F305
3	Expansion Module	c2p04	Left Hand Float Solenoid Output	Not used on F305
4	Main Controller	c1p39	Left Hand Lower Solenoid Output	Not used on F305
5	Main Controller	c1p38	Left Hand Raise Solenoid Output	Not used on F305
6	HMI	c1p08	Centre/Front Joystick Input	
7	Main Controller	c1p11	Centre/Front Position Sensor Input	
8	Expansion Module	c2p03	Centre/Front Float Solenoid Output	
9	Main Controller	c1p36	Centre/Front Lower Solenoid Output	
10	Main Controller	c1p35	Centre/Front Raise Solenoid Output	
11	HMI	c1p10	Right Hand Joystick Input	Not used on F305
12	Main Controller	c1p17	Right Hand Position Sensor Input	Not used on F305
13	Expansion Module	c2p05	Right Hand Float Solenoid Output	Not used on F305
14	Main Controller	c1p45	Right Hand Lower Solenoid Output	Not used on F305
15	Main Controller	c1p41	Right Hand Raise Solenoid Output	Not used on F305
16	Main Controller	c1p33	Raise Enable Solenoid Output	

Cutters



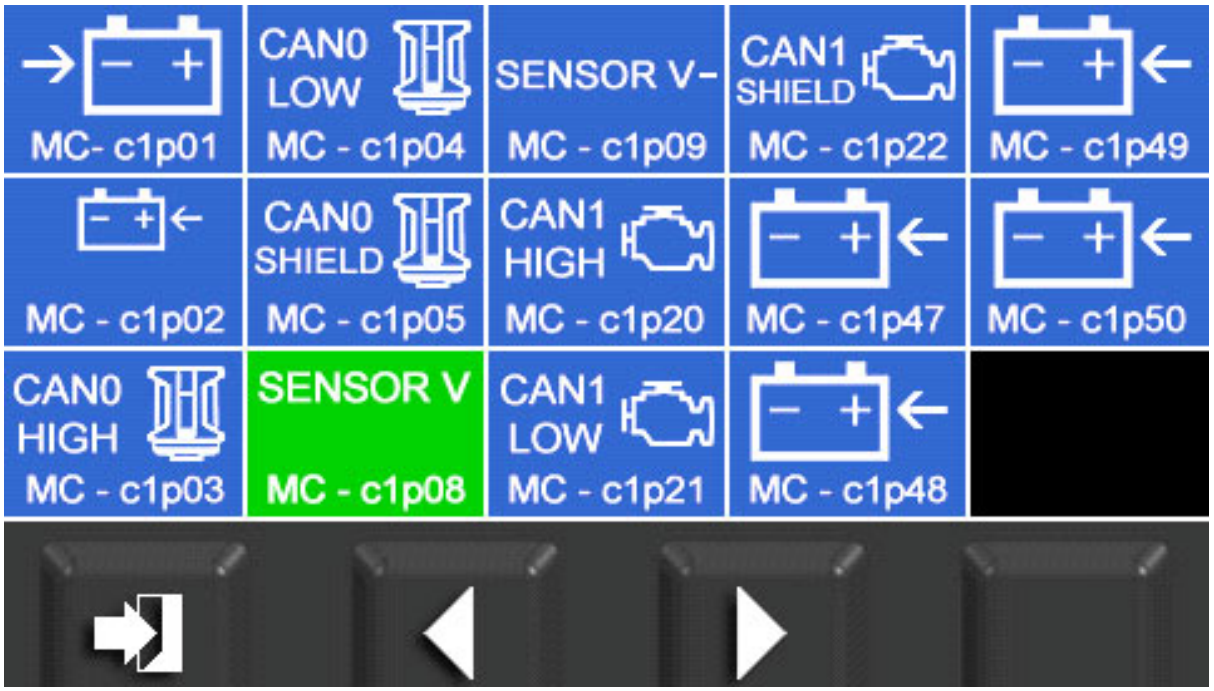
Ref	Module	Pin Number	Function	Note
1	HMI	c1p07	Cutter Switch (PTO) Input	
2	Main Controller	c1p18	Wing Disable Switch Input	Not used on F305
3	Main Controller	c1p40	Left Hand Cut Solenoid Output	Not used on F305
4	Expansion Module	c2p06	Left Hand Transport Lock Solenoid Output	Not used on F305/ F407
5	Expansion Module	c2p09	Diverter Valve Output	Not used on F305
6	Main Controller	c1p07	Cutting Circuit Pressure Switch Input	Not used on F305/ F407
7	Main Controller	c1p24	Mow/Transport Speed Switch Input	
8	Main Controller	c1p44	Weight Transfer Solenoid Output	
9	Expansion Module	c2p07	Right Hand Transport Lock Solenoid Output	Not used on F305/ F407
10	Expansion Module	c2p10	Mode Selector LED Output	Not used on F305
11	Main Controller	c1p12	Weight Transfer Switch Input	
12	Main Controller	c1p37	Centre/Front Cut Solenoid Output	
13	Main Controller	c1p46	Right Hand Cut Solenoid Output	Not used on F305
14	Expansion Module	c2p08	Backlap Solenoid Output	
15	-	-	-	

Traction



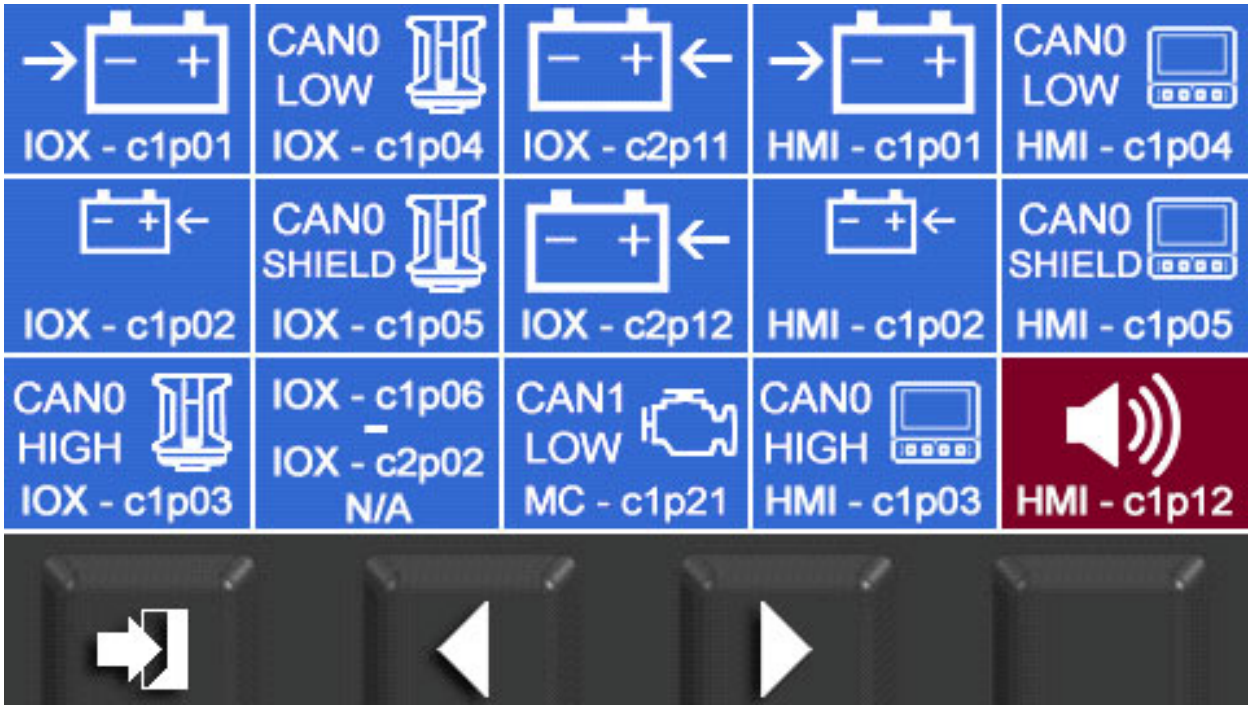
Ref	Module	Pin Number	Function	Note
1	Main Controller	c1p07	Cutting Circuit Pressure Switch Input	Not used on F305/F407
2	Main Controller	c1p24	Right Hand Wheel Speed Sensor Input	Not used on F305/F407
3	Main Controller	c1p27	Traction Pedal Signal B Input	Not used on F305/F407
4	Main Controller	c1p42	EDC Coil Forwards Output	Not used on F305/F407
5	-	-		
6	Main Controller	c1p14	Cruise Control Switch Input	Not used on F305/F407
7	Main Controller	c1p25	Service Brake Switch Input	Not used on F305/F407
8	Main Controller	c1p28	Reserved	Not used on F305/F407
9	Main Controller	c1p43	EDC Coil Reverse Output	Not used on F305/F407
10	-	-		
11	Main Controller	c1p23	Left Hand Wheel Speed Sensor Input	Not used on F305/F407
12	Main Controller	c1p26	Traction Pedal Signal A Input	Not used on F305/F407
13	Main Controller	c1p29	Reserved	Not used on F305/F407
14	-	-		
15	-	-		

Main Controller Miscellaneous Pins



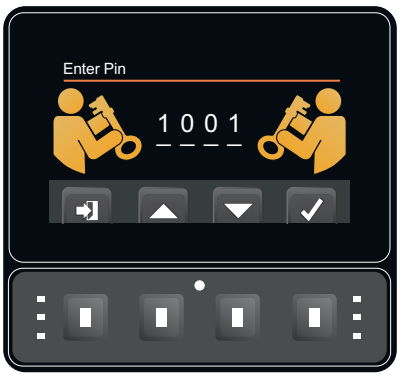
Ref	Module	Pin Number	Function	Note
1	Main Controller	c1p01	Battery Negative	
2	Main Controller	c1p04	CAN 0 Low	
3	Main Controller	c1p09	Sensor Power Ground	
4	Main Controller	c1p22	CAN 1 Shield	
5	Main Controller	c1p49	Battery Positive	
6	Main Controller	c1p02	Battery Positive	
7	Main Controller	c1p05	CAN 0 Shield	
8	Main Controller	c1p20	CAN 1 High	
9	Main Controller	c1p47	Battery Positive	
10	Main Controller	c1p50	Battery Positive	
11	Main Controller	c1p03	CAN 0 High	
12	Main Controller	c1p08	Sensor Power Positive	
13	Main Controller	c1p21	CAN 1 Low	
14	Main Controller	c1p48	Battery Positive	
15	-	-	-	

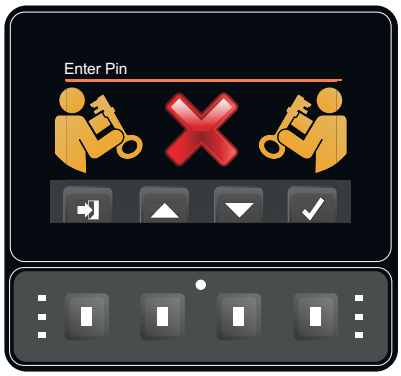
Miscellaneous Pins Continued



Ref	Module	Pin Number	Function	Note
1	Expander Module	c1p01	Battery Negative	Not used on F305
2	Expander Module	c1p04	CAN 0 Low	Not used on F305
3	Expander Module	c2p11	Battery Positive	Not used on F305
4	HMI	c1p01	Battery Negative	
5	HMI	c1p04	CAN 0 Low	
6	Expander Module	c1p02	Battery Positive	Not used on F305
7	Expander Module	c1p05	CAN 0 Shield	Not used on F305
8	Expander Module	c2p12	Battery Positive	Not used on F305
9	HMI	c1p02	Battery Positive	
10	HMI	c1p05	CAN 0 Shield	
11	Expander Module	c1p03	CAN 0 High	Not used on F305
12	Expander Module	c1p06 to c2p02	Not used	Not used on F305
13	Main Controller	c1p21	CAN 1 Low	
14	HMI	c1p03	CAN 0 High	
15	HMI	c1p12	Alarm Buzzer Output	

6.5.6 PIN





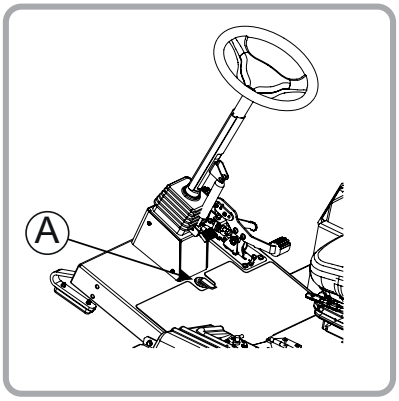
This screen gives access to the following parameters and machine functions that can be altered:

- Cross Cut
- Weight Transfer
- Set Default Parameters
- Change PIN

The default owner's Pin is 1001, however Jacobsen recommend this is changed.

6.5.7 CROSS CUT

Cross Cut function raises the cutting units to a partially raised position, allowing the operator to avoid obstructions without having to fully lift the cutter deck. The Cutter PTO will disengage within 3 seconds of reaching Cross Cut position. If lowered again within 2 minutes the Cutter PTO will re-engage automatically. After 2 minutes of continued use in Cross Cut the PTO will have to be manually reactivated using the PTO switch.



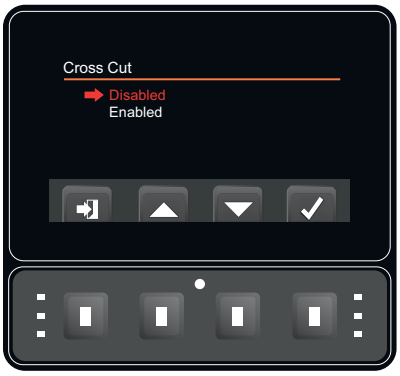
Cross cut function on the **F305** is mechanically controlled via a foot operated lever (A) on the Operator Platform. The units will only lift to cross cut position unless this lever is pressed, enabling the units to fully lift. (Section.6.7).

Cross cut function on the **F407** is both mechanically controlled via the foot operated lever (A) for the centre units and electronically controlled for Wing units.

Setting Cross Cut:

Using the **PIN** Menu, **Buttons 2 and 3** to arrow up and down**,** and **Button 4** to select Cross Cut, this gives you the option to Enable or Disable

- Disabled - The units will only lift while the lift joystick is held
- Enabled - The units will lift to a predetermined height with a short single activation of the lift joystick

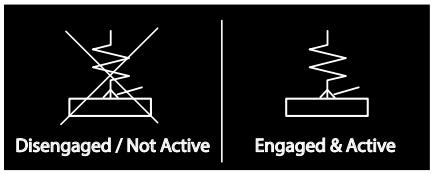


To activate Cross Cut, with the cutting units in lowered position move the Lift /Lower switch momentarily to the rear in a quick motion. To deactivate, move the switch lever fully forward. refer to (Section 6.7)

6.5.8 WEIGHT TRANSFER

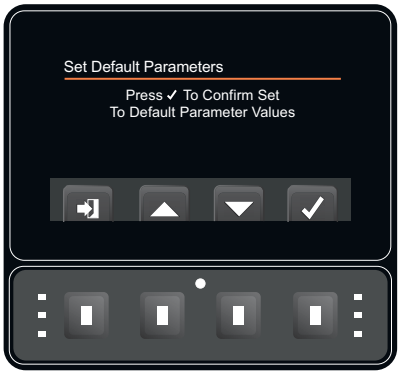
Weight transfer function transfers ground pressure between the cutting units and the road wheels, giving either optimal ground following of units or increased traction at the wheels. Weight Transfer can be selected from the **Settings** menu (Section.6.5.4), and then **Enabled** or **Disabled** within the **Weight transfer** menu. Use **Button 2 and 3** to navigate the two options and then **Button 4** to select.

Once enabled the weight transfer will be active unless a lift or lower commands is given (Section.6.7). Weight Transfer will automatically be disabled to allow the units to lift and lower. There will be a few seconds delay before Weight Transfer automatically re-engages after the lift or lower command is given which varies depending on which unit is raised or lowered.
The weight Transfer icon displays on home screen and shows whether it is currently active or not. The weight transfer pressure can be adjusted as instructed in Section 9.2.



6.5.9 RESET DEFAULT PARAMETERS

The machine will have factory set defaults. You can reset to factory settings by Using the PIN Menu **Buttons 2 and 3** to arrow up and down**,** and **Button 4** to select Set Default Parameters. Press arrow to confirm.



6.5.10 CHANGE PIN

Using the PIN Menu **Buttons 2 and 3** to arrow down to the bottom of the list**,** and **Button 4** to select Change Pin, this gives you the option to change from the default Owner's PIN Number.

6.5.11 BRIGHTNESS

Using the PIN Menu **Buttons 2 and 3** to arrow down to the bottom of the list, and **Button 4** to select Brightness, this gives you the option to change from day to night mode.

The top line is used to alter the brightness in daytime mode. The middle line is used to alter the brightness in night time mode. Bottom line is used to set the threshold at which the screen automatically changes from day-time to night time mode and vice-versa.

6.5.12 LANGUAGE MENU

When you access the language selection page, the check mark appears next to the selected language.

When the check mark is moved up and down, the language does not change until **Button 4** is used to select and store the language. At that point the title bar changes to the new selected language.
The options will always be in the correct language.

English, Deutsch, Francais, Dansk, Svensk, Nederlands and Español.

6.5.13 BACKLAPPING

To enable backlapping,

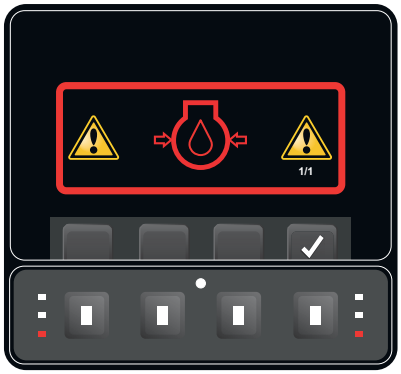
1. Start the machine (6.3.4). Reduce Engine Speed to Minimum Low Idle. Ensure Park Brake is on.
2. From the home screen, Navigate through screens: MAIN MENU > SETTINGS > PIN.
3. Enter Pin **"1001"** and confirm with **Button 4.**
4. Scroll to Enable and select using **Button 4**. Text will change to Green once selected.
5. Exit the menu's using Button1 returning to Home Screen.
6. Lower Cutting units and Engage Cutters as normal. The Units will now be rotating in reverse direction to allow backlapping operation. (See Section 7.11) The Cutters Icon on screen will now change to display Backlap Engaged.
7. The Backlap function will Automatically default to Off for normal cutting operation when Ignition Key Switch is turned off. Alternatively you can disable by stopping the Cutters using PTO Switch and repeating the steps 2 to 4 and selecting Backlap Disable.

6.6 WARNING SCREENS

When malfunctions occur, the following warning screens are displayed.

6.6.1 WARNING OIL PRESSURE FAULT

When this screen is shown, the engine oil pressure has decreased below the normal level. If this happens during operation, or does not go off when the engine is run at more than 1000 rpm. Stop the engine and check the oil level. Top up if necessary.
If the fault persists, do not use the machine at all and contact your local Jacobsen dealer.



6.6.2 WARNING ENGINE OVERHEAT

When this screen is shown, the engine temperature has risen above the normal levels.

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

Clean the radiator and screens of all grass and debris.warning ENGINE FAULT
When this screen is shown, there is an engine fault. Stop the engine as soon as possible and contact your local Jacobsen Dealer.

When this fault occurs the machine's engine may automatically reduce the power available.

6.6.3 WARNING BATTERY FAULT

When this screen is shown, the battery is not charging or there is a charge circuit fault.

6.6.4 WARNING CHARGE FILTER BLOCKED

When this screen is shown, the hydraulic-charge filter is blocked and needs replacing.
Replace the filter element at the earliest opportunity.

6.6.5 WARNING SERVICE REQUIRED

When this screen is shown, the machine needs a service. Refer to section 6.5.1 to reset counter.

6.6.6 JOYSTICK FAULT

When this screen is shown, there is a fault with the Unit Lift/Lower Control. Stop the engine as soon as possible and contact your local Jacobsen Dealer.

6.6.7 EMISSION FAULT - DELTA-P SENSOR OR ABNORMAL DELTA-P

When this screen is shown, the engine controller (ECU) is reporting an abnormal DPF Differential Pressure or a fault with the sensor itself. The output from the engine may be reduced. Stop the engine as soon as possible and contact your local Jacobsen Dealer.

6.6.8 EMISSION FAULT - EGR NOx CONTROL

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

6.6.9 EMISSION FAULT - MAF SENSOR

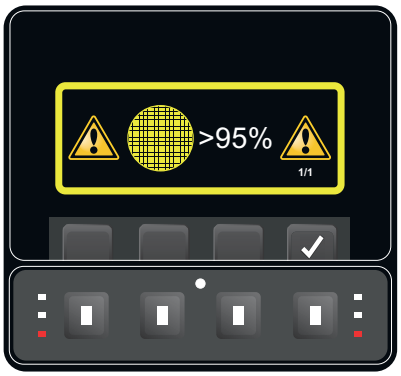
When this screen is shown, the engine controller (ECU) is reporting a fault with the MAF (Mass Air Flow) sensor. The output from the engine will be reduced. Stop the engine as soon as possible and contact your local Jacobsen Dealer.

6.6.10 EMISSION FAULT - DPF SENSOR

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

6.6.11 CLEAN DPF ASH

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



6.6.12 ECU COMMUNICATION FAULT

When this screen is shown, there is a communication fault with the engine controller (ECU). Stop the engine as soon as possible and contact your local Jacobsen Dealer.

6.6.13 MCU / DISPLAY COMMUNICATION FAULT

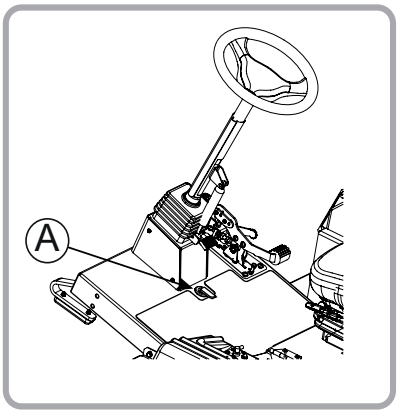
When this screen is shown, there is a communication fault with the machine controller (MCU) and/or display. Stop the engine as soon as possible and contact your local Jacobsen Dealer.

6.7 CUTTING UNIT LIFT / LOWER

To lift or lower the Cutting Units, the machine must first be set to Mow Mode by moving the Mow Speed Lever into Mow position. (Section.6.11).

F305

The Cutting Unit Lift / Lower control lever will raise and lower all cutting units simultaneously. The units will only lift to a partial Cross Cut position (Section.6.5.7) unless the foot operated lever (A) is pressed and held. This will then enable the units to lift to full transport position.



• To lower the Cutting Units move the Lift/Lower control lever fully forward and release.

• To raise the Cutting Units move the Lift /Lower control lever rearwards and release. If full lift to transport position is required simultaneously press the foot lever (A) whilst operating the lift control lever.

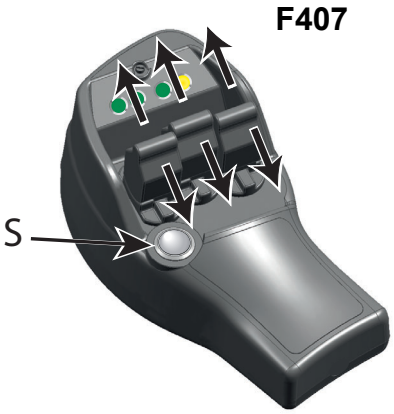
F305

F407 - There are Two Lift Mode functions available.

1. Independent Mode: The five centre units will lift and lower simultaneously by operating the Centre Control Lever. The outer Wing Units will lift and lower independently. Operating the left hand lever will operate the left hand Wing Unit. The right hand lever will operate right hand Wing Unit.

2. Linked Mode: When the Mode Switch (S) is pressed. All seven units will lift and lower simultaneously by operating the Centre Control Lever. The two outer control levers will become disabled and the Wing Units will no longer operate independently of the five centre units.

F407



• To lower the Cutting Units move the required Lift/Lower control levers fully forward and release.

• To raise to Cross Cut position, with Cross Cut Enabled, move the required Lift /Lower control levers rearwards and release.

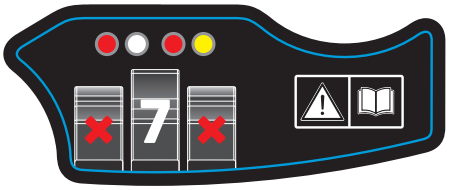
• To raise to full to transport position. Simultaneously press the foot lever (A) whilst operating the lift control levers. Move the required Lift /Lower control levers rearwards and hold until required units are fully raised.

With Wing Lock activated, the Wing Units cannot be lowered in either mode setting.

6.8 CUTTING UNIT POSITION & MODE INDICATOR LAMP

The lamps (M) illuminate green when the Cutting Units are lowered to the ground.

F407 only - When Linked Lift Mode is activated (Section.6.7), the Left and Right control Lever LED indicators will illuminate Red to indicate that the respective levers are disabled.

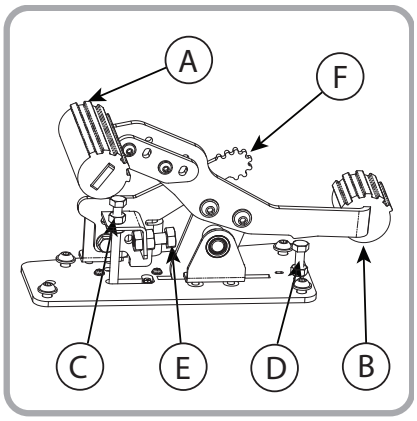


6.9 CUTTER SWITCH (PTO) ENGAGED INDICATOR LAMP

This lamp (N) illuminates amber when the Cutter Switch (PTO) is in the on position.

6.10 TRACTION PEDAL

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



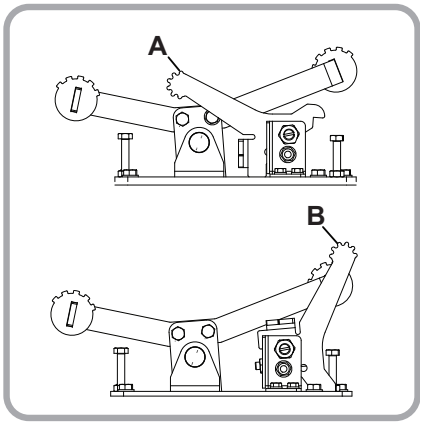
- Carefully press the top (A) of the foot pedal to reach the forward speed that you need.
- To stop - Carefully return the foot pedal to the Neutral position.
- To move in the reverse direction press the bottom (B) of the foot pedal.

There are fixed stops for the forward transport speed (C) and for the reverse transport speed (D). When the mow speed lever (F) is in the Mow Position, the pedal will contact the adjustable mow speed stop (E).

NOTE: Allow the machine to come to a stop before you engage reverse drive. When the parking brake is applied, DO NOT press the traction pedal.

6.11 MOW SPEED LEVER

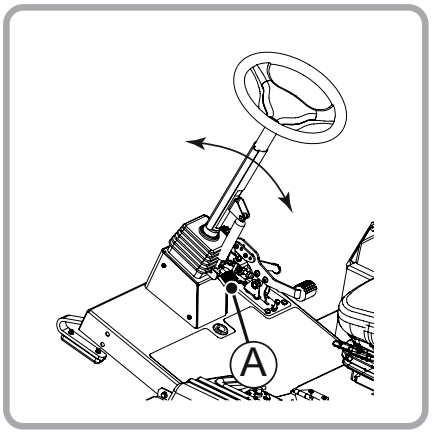
The mow speed lever is used to limit the forward speed while mowing.



- When you mow, rotate the mow speed stop lever to mow position (A) so the traction pedal contacts the stop when the traction pedal is pressed. The mow speed stop can be adjusted to set specific mow speeds.
- To travel at full speed, rotate the mow speed lever to transport position (B).

6.12 STEERING TILT CONTROL

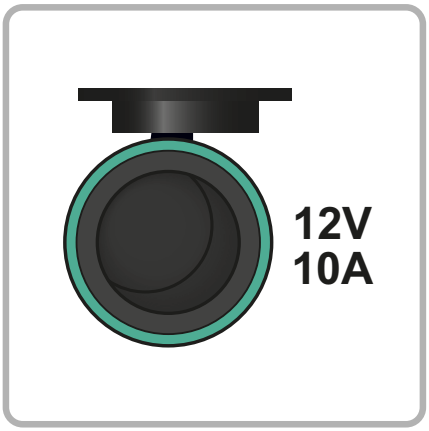
When the operators seat is in the correct position to operate the Traction Pedal comfortably, push the small Foot Pedal (A) at the base of the steering column, and tilt the column backward or forward to the correct position. Release the small Foot Pedal to lock the steering column in position.



6.13 POWER OUTLET

The auxiliary power outlet is on the side of the control panel. It is for use with mobile phone chargers and accessories.

Automotive 12 Volt, 10 Amp power outlet.

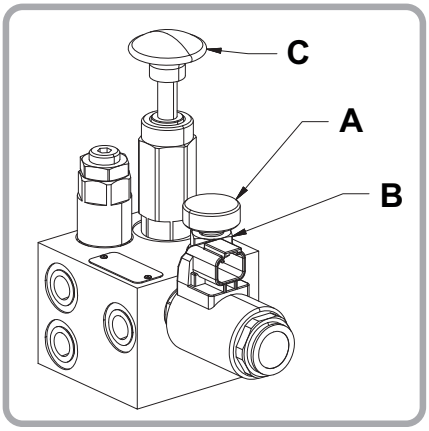


6.14 PARK BRAKE RELEASE VALVE

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

To release the Parking Brake:

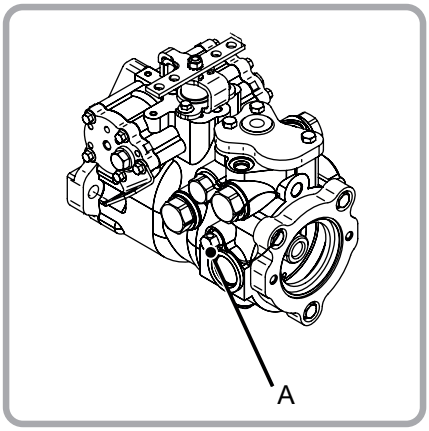
- Unscrew Lock wheel (B) by rotating counter-clockwise.
- Rotate Hand wheel (A) clockwise until resistance is felt.
- Using the Hand pump (C), create sufficient pressure to release the brakes (50 to 60 strokes should give 90 seconds of brake release).
- When complete rotate Hand wheel (A) counter-clockwise 3 turns and lock using Lock wheel (B).
-



6.15 FREE WHEEL

To push the machine, disengage the Park Brake, (see section 6.14)

- Turn screw (A) located on the left hand side of the transmission pump 1 turn counter-clockwise. Set the steering wheel so that the rear wheels are pointing straight ahead.
- After pushing the machine, return the Park Brake valve, (see section 6.15) to its normal position and screw (A) on the pump to its operating position.



⚠ WARNING

THE FREE WHEEL FACILITY IS FOR RECOVERY PURPOSES ONLY.

DO NOT TOW THE MACHINE FOR MORE THAN A FEW METRES, OR ALLOW THE MACHINE TO FREE WHEEL DOWN SLOPES EVEN WHEN UNLOADING DOWN RAMPS.

6.16 SEAT RIGHT HAND ARM REST & POD

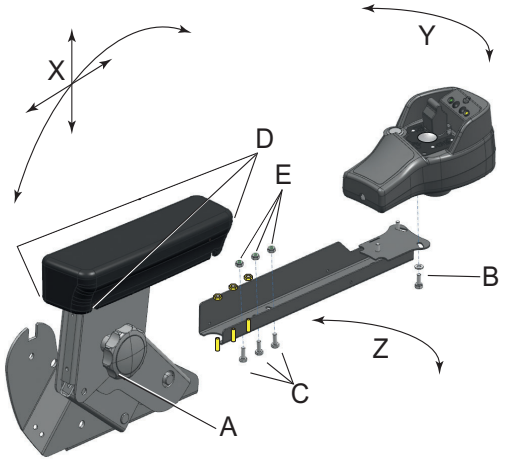
The right hand arm rest of the seat has an extension mounted to it which carries the control pod.

To obtain a comfortable operating position:

a) Release hand wheel (A).

b) Using both hands grip the arm rest and lift or lower the arm rest. It will move in a circular motion (X) either moving up and forward or down and rearwards.

c) When the desired position is obtained lock by tightening the hand wheel (A).



The pod can be pivoted in the horizontal plane (Y), independently of the arm as follows:

a) Loosening the three screws (B) holding the pod to the arm rest extension.

b) Swivel pod to desired position.

c) Tighten the three screws (B).

The whole arm rest extension can be pivoted in the horizontal plane (Z) as follows:

a) Remove the arm rest cushion by removing the four screws (D).

b) Loosen the three locknut's (E) fitted to studs (C).

c) Swivel the arm rest extension to the desired position.

d) Tighten the three locknut's (E)

e) Refit the arm rest cushion with the four screws (D)

7.1 DAILY INSPECTION

⚠ CAUTION

The daily inspection should be performed only when the engine is off and all fluids are cold. Lower units to the ground, engage Park Brake, stop engine and remove Ignition Key.

1. Perform a visual inspection of the entire machine, look for signs of wear, loose hardware and missing or damaged components. Check for fuel and oil leaks to ensure connections are tight and hoses and tubes are in good condition.

2. Check the fuel supply, radiator coolant level, crankcase oil level, hydraulic oil level and the air cleaner is clean. All fluids must be at the full mark with the engine cold.

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

4. Check all tires for proper inflation.

Once checks 1-4 are complete, start machine and test the operator presence control. (Section 7.2).

7.2 OPERATOR PRESENCE AND SAFETY INTERLOCK SYSTEM

1. The operator presence & safety interlock system prevents the engine from starting unless the operator is seated, Park Brake is on, the Cutter Engage (PTO) switch is off, and the Traction Pedal is in the neutral position. The system stops the engine after 3 seconds if the operator leaves the seat and the Park Brake is off. If the operator leaves the seat with the Cutter Engage (PTO) switch on and the Park Brake on only the cutters will stop.

2. Perform each of the following tests to ensure the operator presence & safety interlock system is functioning properly. Stop the test and have the system inspected and repaired if any of the tests fail as listed below:

Test 1	Represents normal starting procedures, With the operator seated, the Park Brake on, the Cutter Engage (PTO) switch off and the Tractor Pedal in the neutral position, the engine starts.
Test 2	The engine must not start if the operator is not seated.
Test 3	The engine must not start if the park brake is off.
Test 4	The engine must not start if the Cutter Engage (PTO) is switch on.
Test 5	The engine must not start if the Traction Pedal is out of neutral.
Test 6	Start the engine in the normal manner and turn the Cutter Engage (PTO) switch on. Lift your weight off the seat, the Cutter PTO will disengage within 3 seconds.
Test 7	Start the engine in the normal manner. Turn the Park Brake off and the Cutter Engage (PTO) switch on. Lift your weight off the seat, the engine should stop after 3 seconds.

Test	Operator Seated		Park Brake Switch		Cutter Engage (PTO) Switch		Traction Pedal		Engine Starts	
	Yes	No	On	Off	On	Off	Neutral	Out of Neutral	Yes	No
1	✓		✓			✓	✓		✓	
2		✓	✓			✓	✓			✓
3	✓			✓		✓	✓			✓
4	✓		✓		✓		✓			✓
5	✓		✓			✓		✓		✓
6	✓	✹	✓		✓		✓		✹	
7	✓	◆		✓	✓		✓		◆	
✹	Lift your weight off the seat. The cutting implement PTO will disengage within 3 seconds.									
◆	Lift your weight off the seat. The engine must stop after 3 seconds.									

7.3 OPERATING PROCEDURE

⚠ WARNING

Never operate the equipment with the operator presence & safety interlock system disengaged or malfunctioning. Do not disconnect or bypass any switch.

⚠ CAUTION

To help prevent injury, always wear safety glasses, safety footwear, a hard hat and ear protection

1. Under no circumstances must the engine be started without the operator seated on the machine.
2. Do not operate machine or attachments with loose, damaged or missing components. Whenever possible mow when grass is dry.
3. First mow in a test area to become thoroughly familiar with the operation of the machine and controls.
4. Study the area to determine the best and safest operating procedure. Consider the height of the grass, type of terrain, and condition of the surface. Each condition will require certain adjustments or precautions.
5. Do not direct discharge of material toward bystanders, nor allow anyone near the machine while in operation. The owner/operator is responsible for injuries inflicted to bystanders and/or damage to their property. Use discretion when mowing near gravel areas (roadway, parking areas, cart paths, etc). Stones discharged from the unit may cause serious injuries to bystanders and/or damage the equipment.Turn PTO cutter switch off and raise the units when crossing sidewalks or roads. Look out for traffic.
6. Stop and inspect the equipment for damage immediately after striking an obstruction or if the machine begins to vibrate abnormally. Have the equipment repaired before resuming operation. Do not operate machine or attachments with loose, damaged or missing components.

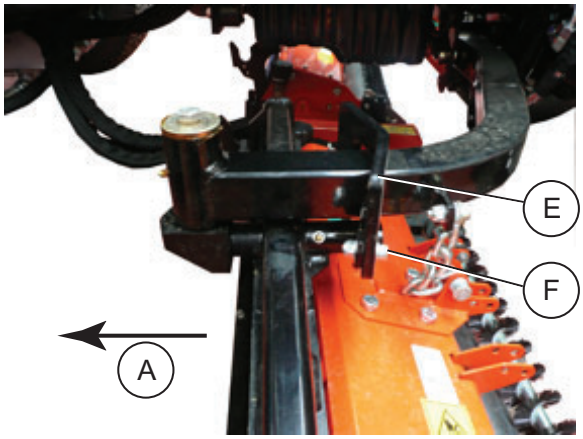
⚠ WARNING

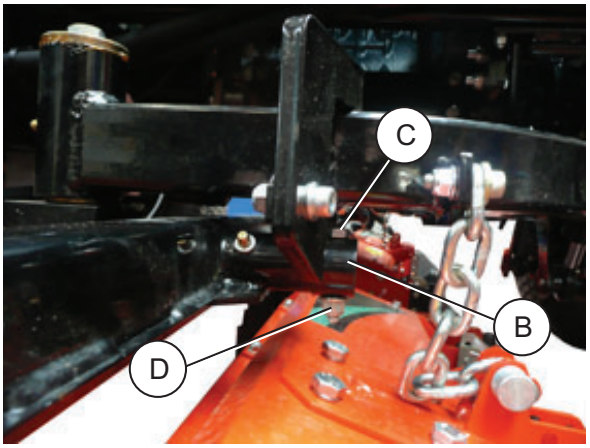
Refer to machine Safe Working Slope Angles in this manual.

7.4 FITTING CUTTING UNIT

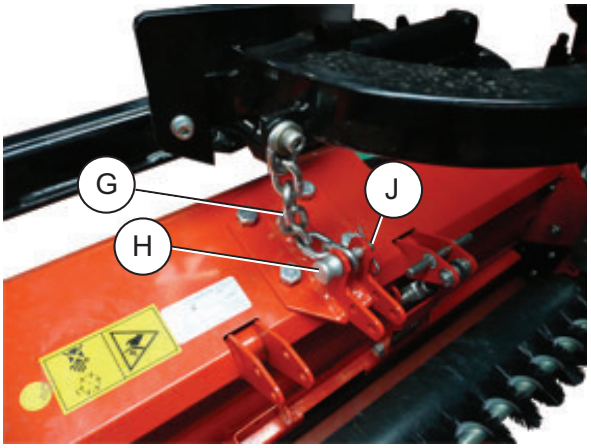
Cutting Unit Mounting

1. Start the engine and lower the lift arms, stop engine and remove ignition key.
2. Position cutting unit under lift arm. Apply thin coating of grease to shaft and slide yoke onto shaft in direction A.
3. Fit retainer (B) to shaft and insert bolt (C) through retainer and shaft, fit nut (D).
4. Fit retainer plate (E) and secure with screws and nuts (F)





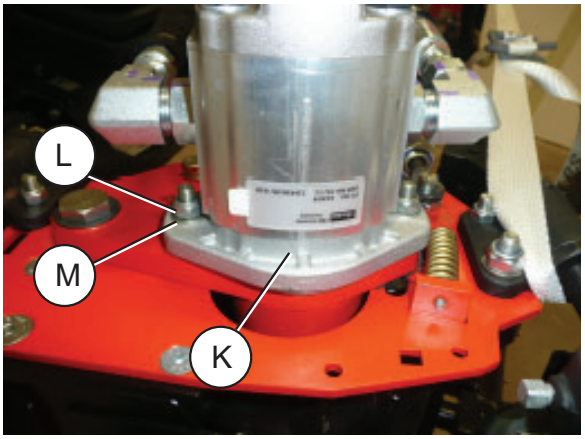
5. Fit chain (G) to clevis on rear of cutting unit using pin (H) and 'R' clip (J).



Hydraulic Motor Mounting

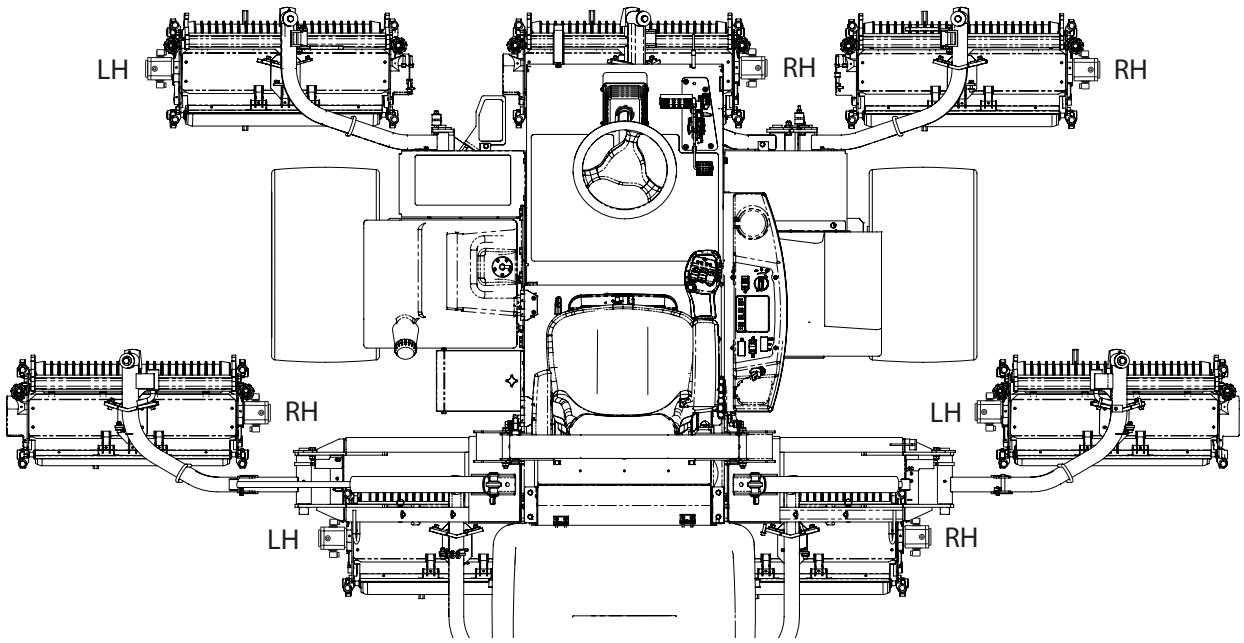
1. Lubricate the motor and reel splines with Shell Gadus S2 Grease or equivalent.

2. Assemble hydraulic motor (K) to bearing housing, secure with nuts (L) and washers (M) to studs.



LH = Left Hand Drive

RH = Right Hand Drive



7.5 OPERATION OF THE MACHINE

Read the Safety Instructions.

BEFORE OPERATING FOR THE FIRST TIME

- Check and adjust tires pressure, if necessary, see section 4.4 Specification.
- Add diesel fuel to tank if necessary.
- Check engine oil and top-up, if necessary.
- Check radiator coolant and top-up, if necessary (50% antifreeze solution).
- Make sure you understand the information contained in the previous sections.

7.6 STARTING THE ENGINE

The following procedure is for starting cold engines.

1. Ensure the FWD/REV pedal is in the neutral position, the mow switch is off, the throttle setting is in a mid position and the Park Brake is applied.

2. Turn the ignition switch fully clockwise and hold until the engine starts (approximately 5-10 sec.)

3. The glow plugs are auto timed depending on the coolant temperature for operating the starter motor (This should only take a few seconds)

4. When the engine starts, release the key immediately and it will return to the RUN position.

NOTES:

- If the engine fails to start after two attempts wait 5-10 seconds and try again.
- The starter motor must not be run continuously for longer than 30 seconds or it may fail.

7.7 DRIVING

- Release brake - Make sure the Park Brake is released before attempting to go forward or reverse.
- Forward - Gently depress the top of the FWD/REV foot pedal to reach desired ground speed.
- Reverse - Gently depress the bottom of the FWD/REV foot pedal to reach desired ground speed.
- To stop - Gently return the FWD/REV foot pedal to the neutral position.
- To hold the vehicle stationary on a slope it may be necessary to apply a certain amount of forward / reverse. (See 6.11)

⚠ CAUTION

Use complete foot to operate both forward and reverse. Do not move pedal suddenly–always operate slowly and smoothly. Do not move pedal violently from forward to reverse or vice versa. The foot should always be kept firmly on the pedal to maintain full control of the drive pedal.

7.8 MOWING

1. Ensure Speed limiter is in mow position. (Section 6.11)
2. Lower the required cutting units.
3. Engage the cutting mechanism by pressing the cutting PTO switch forward.
4. Release the Park Brake and begin driving forward.

NOTE: Always set the throttle to full engine revs for mowing. When the engine is labouring, reduce forward speed by easing back on the FWD/REV foot pedal. A performance indicator lamp on the control pod will illuminate red as the engine starts to labour.

7.9 TO STOP THE ENGINE

1. Disengage drive to the cutting units with the cutter PTO switch.
2. Remove foot from the FWD/REV pedal.
3. Set the Park Brake.
4. Reduce Engine Speed to Low Idle.
5. Turn the ignition key to OFF.

7.10 UNBLOCKING CUTTER UNITS

⚠ CAUTION

It is important to note: there will be remaining hydraulic pressure within the system that can cause the cutting reels to rotate when the obstruction is removed. Therefore keep your hands, feet and clothing away from cutting units at all times. Wear appropriate PPE.

HOW TO REMOVE A BLOCKAGE FROM CUTTING UNITS

1. With the cutting units running, Press Button one on the Display screen. This will Reverse the directional drive of the cutting units for three seconds to assist in clearing obstruction.In the event that this does not remove the blockage proceed to step 2.
2. Disengage the power to the cutting units with the cutting unit switch. When all rotation has stopped, lift the cutting units into the transport position.
3. Move the machine to a flat level surface.
4. Set the parking brake.
5. Move the throttle control lever to the slow position.
6. Turn the ignition key to the OFF position and remove the key.
7. Use the Jacobsen “Cutting Unit Tool” part number 4184540, or stout stick, put into the reel between the blades.
8. Rotate the reel with either the “Cutting Unit Tool” or “Stout Stick” until the obstruction has been removed.
9. Inspect all the cutting surfaces for damage, when necessary replace the damaged components.

7.11 BACKLAPPING

This mower has the ability to allow the reel to be driven in reverse direction for backlapping See section 6.5.13

- Backlapping is a process which will lightly hone the reel to the bottom blade while installed on the mower.
- If significant amounts of metal are to be removed then the cutting unit must be reground on a special grinding machine.
- Before any backlapping is done, Jacobsen recommends that the backlapping procedure must be risk assessed as a workshop process by the manager of the machine.
- Backlapping must only be done by approved personnel.
- Jacobsen recommend that backlap paste is only applied to the reel when it is stationery, the engine is off and the parking brake applied.
- When applying backlap paste the reel must only be rotated by appropriately sized piece of wood and not by hand.
- Place reels in the most accessible position for applying the paste.
- After applying the backlap paste the person backlapping must return to the seat, engage the relevant controls and run the reels in reverse.
- When the desired finish is achieved switch off the mower, clean off any surplus paste, reset the reel to bottom blade and return the controls to the normal mow positions.

Jacobsen backlap paste:

Backlap Paste	Part Number
80 grit backlap paste, 4.5kg tin	5002488
120 grit backlap paste, 4.5kg tin	5002489
80 grit backlap paste, 9kg tin	5002490
120 grit backlap paste, 9kg tin	5002491

PROCEDURE

1. Apply an even coat of Backlapping compound to the entire length of each blade of the reel.
2. Set Engine Speed control to Minimum Low Idle Speed ensuring reels will rotate at there slowest speed.
3. Start the engine.
4. Set Backlap Enable (6.5.13) & engage PTO
5. Apply the Backlapping paste and gradually adjust Reel to Bedknife. Repeat until Blade is uniformly sharp.
6. Once complete, switch the cutting unit switch (PTO to the off position) and shut off the engine.
7. Wash all of the Backlapping compound from all of the heads. Once they are thoroughly cleaned and dry, apply a light film of oil to the cutting edges to help prevent rust.
8. After Backlapping, the reel to bottom blade adjustment must be made again.

7.11.1 Backlap Reel Speed Adjustment

The Backlap reel speed will be set to maximum permissible RPM from factory. If a slower reel speed is desired it can be adjusted at the cutter valve located under seat plate on Left hand side chassis rail.

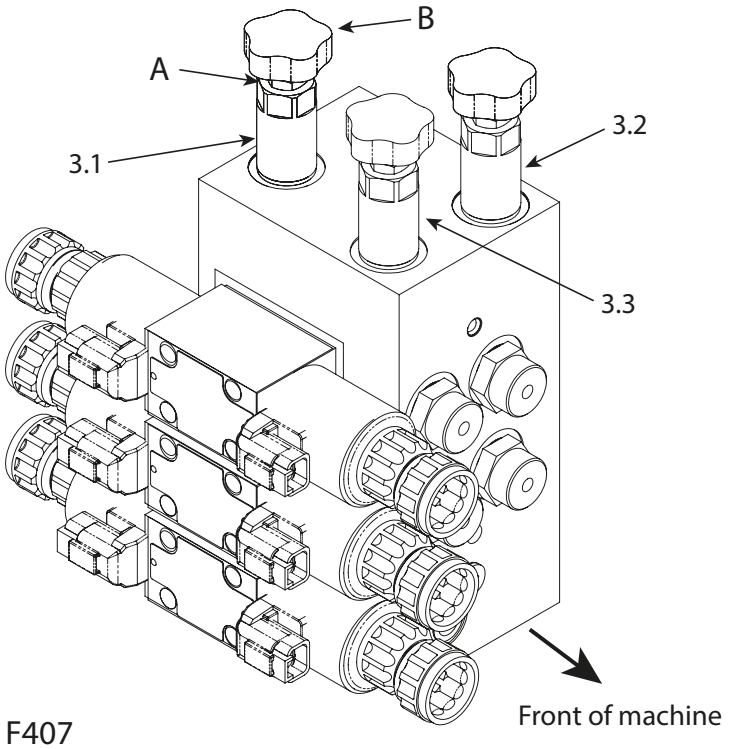
F407 - There are three hand wheel adjustment screws on top of the cutter valve. These are labelled for identification.

3.1 – Adjusts Centre five units,
3.2 – Adjusts the Left Hand Wing Unit,
3.3 – Adjusts the Right Hand Wing Unit

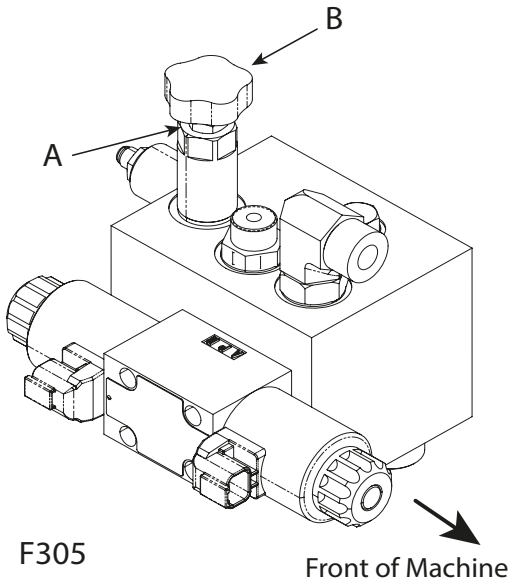
F305 - There is a single hand wheel adjustment screw on top of the cutter valve.

To adjust the speed, select the required valve screw, Back off the lock nut (A). Screw the Hand wheel (B) Clockwise to decrease reel speed or counter-clockwise to increase reel speed. The amount of adjustment is limited by valve screw length. Do not force the valve past its natural stop.

Measure reel speed and continue to adjust until desired speed is achieved. Tighten the Lock Nut.



F407



F305

7.12 TRANSPORTATION ON A TRAILER OR FLATBED

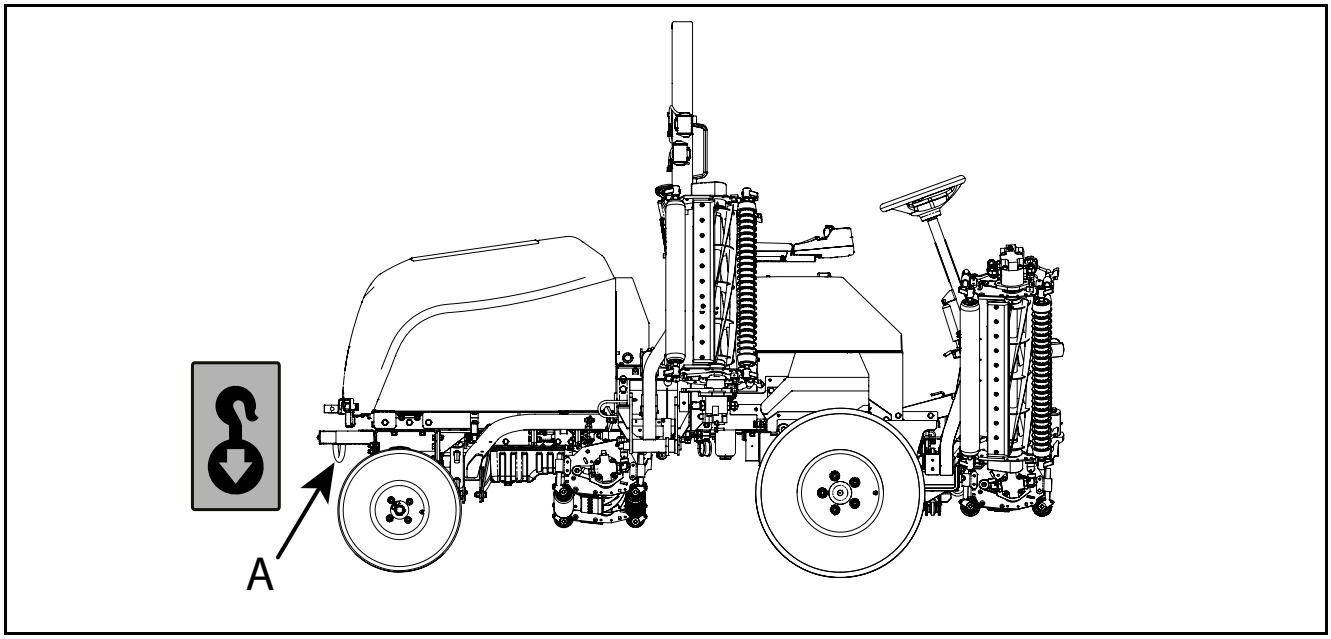
1. Jacobsen advises securely fastening the front of the mower down by either strapping over the front axle or the road wheels using suitable equipment. The tie-down loops at (A) are for securing the rear of the machine.

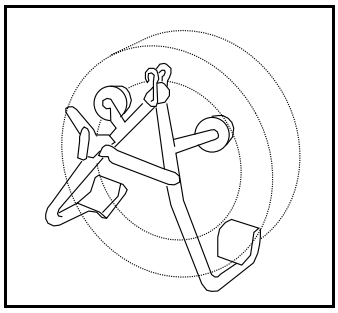
2. Make sure that all tie down straps are tight. Make sure that the units are locked in the transport position. Check the fuel and hydraulic tank caps are tight. Make sure that no part of the mower can fall during transport. It is advisable to securely strap Wing Units up when in the raised position.

3. Always follow the given maximum transport load weight for the towing vehicle used.

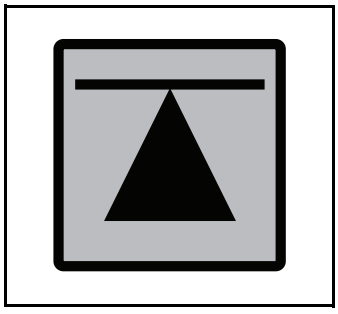
4. Ensure that you know the working weight of your mower configuration. Select a suitable vehicle for transporting the mower ensuring equipment is fully secured on the trailer before transport.

5. Read the safety and operation manual of the transport vehicle before you load.





Slinging
When slinging the mower, damage free clamps must be used, see the illustration, with an approved lift frame.



Jacking
Check machine Jack points indicated by the decal shown.Two for each axle on four wheel vehicles. Other axle types are different, check the Safety and Operations Manual for the safe jack points.

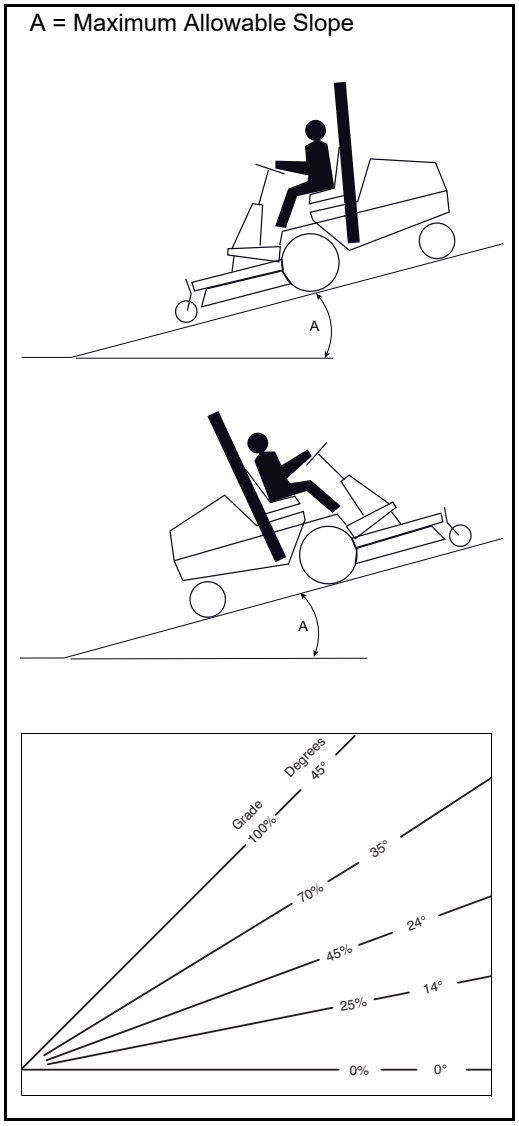
7.13 MOWING ON SLOPES

The mower has been designed for good traction and stability under normal mowing conditions. Use caution when operating on slopes, especially when the grass is wet. Wet conditions reduces traction and steering control.

⚠ WARNING

To minimize the possibility of overturning, the safest method for operating on hills and terraces is to travel up and down the face of the slope (vertically), not across the face (horizontally). Avoid unnecessary turns, travel at reduced speeds, and stay alert for hidden hazards.

1. Always mow with the engine at full throttle, control forward speed using traction foot pedal to maintain proper cutting.
2. Use Weight Transfer / Traction Boost control as required to improve weight distribution between cutting units and machine.
3. If the mower tends to slide or the tires begin to mark the turf, angle mower into a less steep slope until traction is regained or tires marking stops.
4. If mower continues to slide or mark the turf, the slope is too steep for safe operation. Do not make another attempt to climb, and back down slowly.
5. When descending a steep slope, always lower units to the ground to reduce the risk of mower overturning.

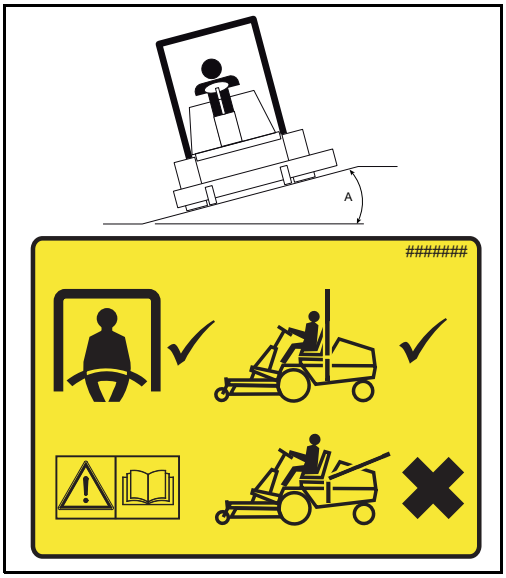


⚠ WARNING

When the machine is being used, whether cutting grass or not, on slopes, the ROPS frame must be deployed and the seat belt used.

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

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.

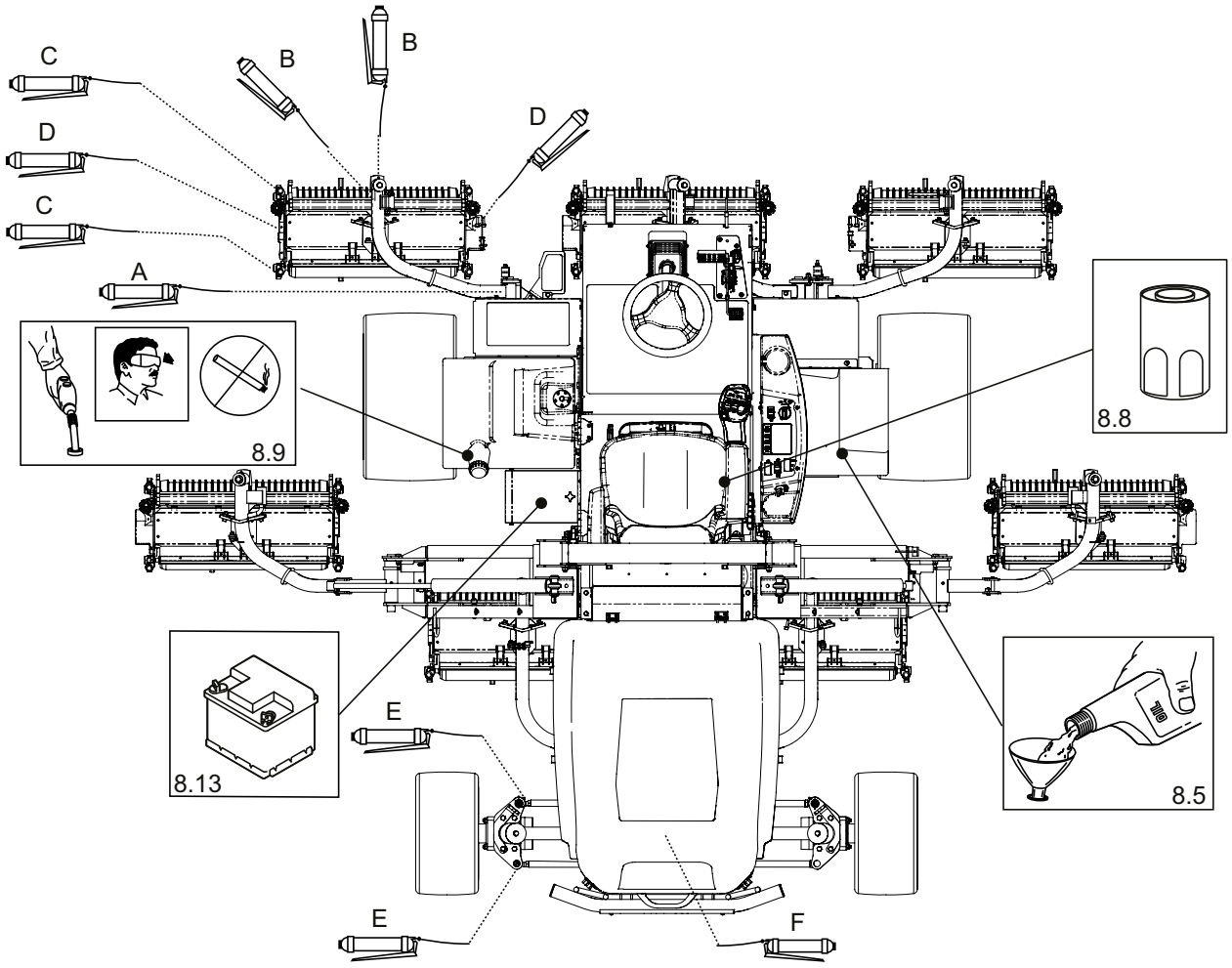


8.1 MAINTENANCE & LUBRICATION CHART

GENERAL MAINTENANCE AND LUBRICATION CHART		
Interval	**Item**	**Section**
First 50 hours	● **Visual inspection for damage or wear** ● **Check reel & bottom blade condition** ● **Change Hydraulic Charge Filter Element or earlier if screen indicates.**	**-** **9.4** **8.8**
Daily **10 hours**	● **Check pivot points, Lift arms, Rear Axle. Grease if required.** ● **Check Safety Interlock System.** ● **Check Hydraulic Fluid Level** ● **Check Tires Pressure** ● **Check Engine Bay & Cooling System for Debris**	**8.1** **7.2** **8.5** **4.4** **8.2**
Weekly **Every 50 hours**	● **Check for Loose Components.** ● **Check for Hydraulic Leaks.** ● **Lubricate Cutting Unit grease points.**	**-** **-** **8.24**
End of season **Every 1000 hours**	● **Check Battery Condition.** ● **Change Hydraulic Oil & Filter** ● **Check Hydraulic hoses for damage and wear**	**8.13** **8.8** **8.17**
Lubricate these fittings minimum weekly or more as conditions and use requires. **A = Arm Pivot B = Unit Mount Pivots C = Roller Bearing D = Motor & Bearing Housing** **E = Steering Joints F = Axle Pivot**		

FLUID REQUIREMENTS		
Description	**Quantity**	**Type**
Engine Oil - System Total	5 liters	10W 30 (See specification below)
Hydraulic Oil - System Total	23.8 liters	ISO VG 46
Radiator Coolant - System Total	8.5 litres	50% Anti-Freeze
Fuel	45.4litres	EN590 (ASTM D975) Ultra Low Sulfur Diesel / (No.2 DULS)
Grease	As required	Shell Gadus 2 or equivalent

ENGINE OIL: MUST BE TO A.P.I. CLASSIFICATION CJ-4 GRADE.	
Temperature	**Viscosity**
Above 25°C (77°F)	SAE30 or SAE10W-30 or 15W-40
0°C to 25°C (32°F to 77°F)	SAE10W-30 or 15W-40
Below 0°C (32°F)	SAE10W-30



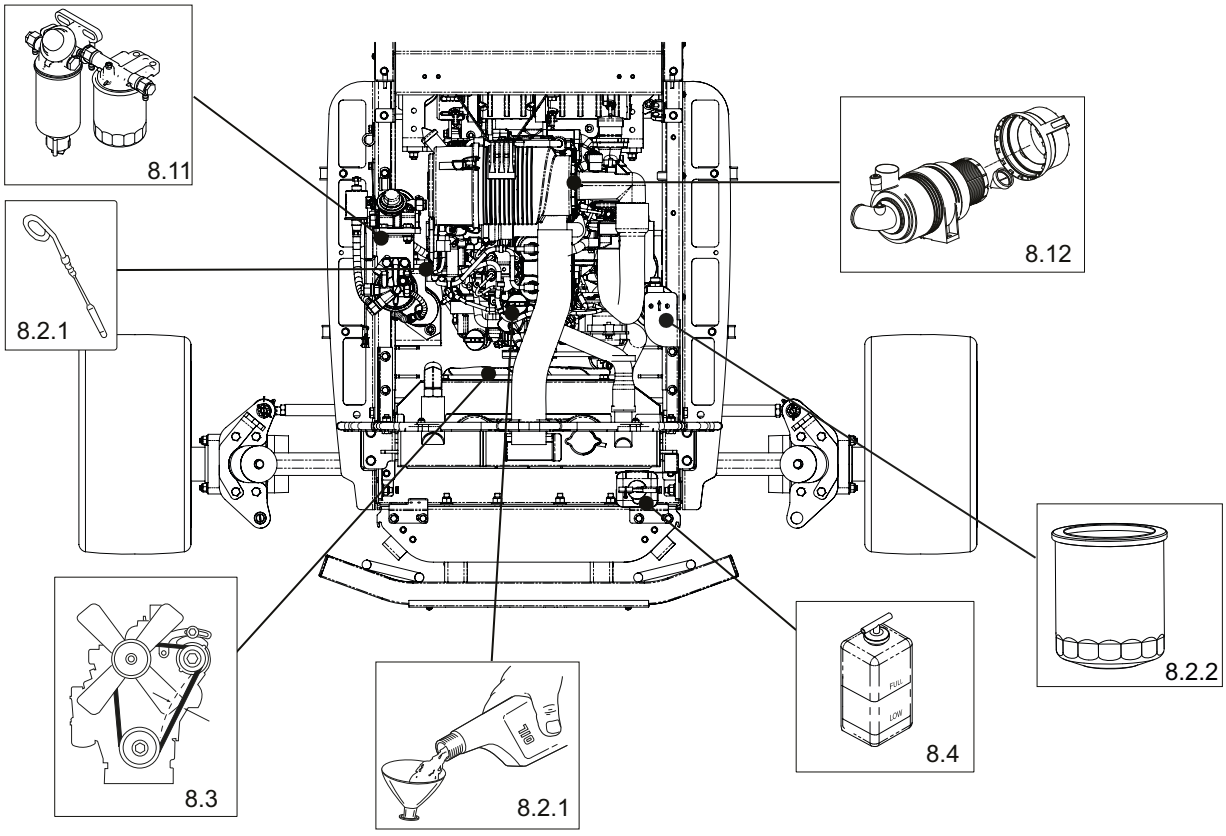
F405 Illustrated. Service points are common for F305.

8.1.1 ENGINE SERVICE INTERVAL

ENGINE SERVICE INTERVAL CHART				
Interval	**Item**	**Section**		
Daily **10 hours**	● **Check engine oil level.** ● **Check fuel level.** ● **Check coolant level.** ● **Check alternator belt tension.** ● **Press together the air cleaner dust valve.**	**8.2.1** **6.3.4** **8.4** **8.3** **8.12**		
Every 50 hours	● **Check fuel pipes and clamps.** ● **Drain water separator (A).**	**-** **8.11**		
Every 100 hours	● **Check the air cleaner service indicator.** ● **Clean fuel filter.** ● **Check alternator belt tension.** ● **Drain water separator (A).**	**8.12** **8.11** **8.3** **8.11**		
Every 250 hours	● **Check radiator hoses and clamps.** ● **Check air cleaner element.** ● **Adjust alternator belt tension.** ● **Check air intake hose.**	**-** **8.12** **8.3** **8.12**		
Every 400 hours	● **Change engine oil.** ● **Change engine oil and filter cartridge.**	**X** **X**	○ ○	
Every 500 hours	● **Replace fuel filter Cartridge.** ● **Clean water separator.** ● **Remove the sediment in fuel tank.** ● **Clean water jacket and radiator internally.** ● **Replace the alternator belt.** ● **Clean inlet filter on Fuel Pickup.**	**X** **8.11** **-** **-** **8.3** **8.11**	 ***3** ***3** ***3** ***3** ***3**	
Every 1000 hours	● **Check the valve clearances.**	**–**	***3**	
Every 1500 hours	● **Check fuel injector tip.** ● **Check EGR cooler.**	**–**	***3** ***3** ***3**	**@** **@** **@**
Every 3000 hours	● **Check turbocharger.** ● **Clean DPF.** ● **Check EGR system.**	**–**	***3** ***3** ***3**	**@** **@** **@**
Every Year	● **Check DPF related piping.** ● **Check EGR piping.** ● **Check air intake hoses.** ● **Check exhaust manifold for cracks or gas leak, looseness or damage.**	**–**	 ***3** ***3** ***3**	

Interval	Item	Section	
Every 2 Years	● Replace oil separator related rubber piping.	–	*3
	● Replace DPF related rubber piping.		*3
	● Replace intake air line and suction air pressure takeout rubber piping.		*3
	● Replace boost sensor pressure rubber piping.		*3
	● Replace EGR cooler rubber piping.		*3
	● Replace water rubber piping.		*3
	● Replace lubricant rubber piping.		*3
	● Change radiator coolant.		-
	● Replace radiator hoses and clamp bands.		*3
	● Replace fuel pipes and clamp bands.		*3
	● Replace intake air line.		*3
	● Replace fan belt (or every 500 hours).		*3

- **The jobs indicated by ○ must be done after the first 50 hours of operation.**
  ***3 Consult your local Kubota dealer for this service.**
- **The items listed above (@ marked) are registered as emission related critical parts by Kubota in the U.S.EPA non road emission regulation. As the engine owner you are responsible for the performance of the required maintenance on the engine according to the above instruction. Please see Warranty Statement for detail.**
- **The items listed above other than @ marked items are not necessary to keep the emission-related warranty valid.**
- **Failure to perform the maintenance will cause problems that will significantly degrade.**



⚠ WARNING

Before you clean, adjust or repair this equipment, push PTO switch to the 'OFF' position, lower front and wing cutting units to the ground, turn on the park brake switch, stop the engine and remove the key.
Make sure the mower is parked on a solid and level surface. Never work on a mower that is lifted only by the jack. Always use Axle Stands.

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

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

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

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

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

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

NOTICE

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

8.2 ENGINE GENERAL

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

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

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

- Allow the engine to reach a temperature of at least 60° C (140° F) before operation at full load.
- Check the engine oil level two times each day. Higher than normal oil use can occur during the first 50 hours.
- Change the engine oil and oil filter after the first 50 hours of operation.
- Check the fan belt.
- Refer to the Engine manual for specified maintenance intervals. If the injection pump, injectors or the fuel system need service, contact your Jacobsen Dealer.

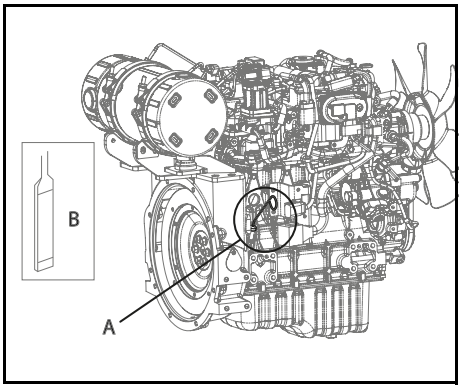
8.2.1 ENGINE LUBRICATION

Check Engine Oil Level

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

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

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

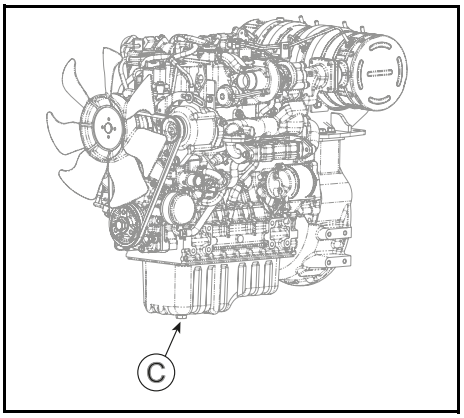


8.2.2 CHANGE ENGINE OIL

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

(b) Drain engine oil into a container.

(c) Replace the drain plug (C) If Oil Filter is not being replaced, fill the engine with the correct quantity and grade of oil through the filler.



Change Engine Oil Filter

(a) Remove the oil filter cartridge (D).

(b) Let the engine oil flow into a container.

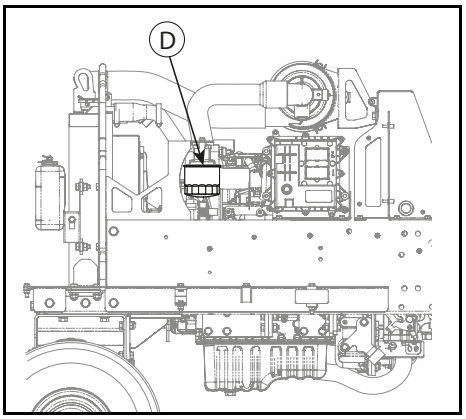
(c) Clean area of any residue oil.

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

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

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

(g) Fill the engine with the correct quantity and grade of oil through the filler.



⚠ CAUTION

Allow Engine oil to cool sufficiently before attempting work. Hot Oil can cause Severe Burns. Engine oil can cause damage to your skin. Use gloves. If engine oil touches your skin, clean the area immediately.

⚠ CAUTION

Discard engine oil as recommended by local authorities.

8.3 ENGINE ALTERNATOR BELT

Check and adjust the alternator belt

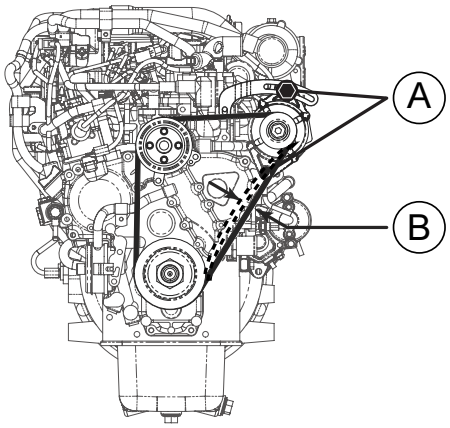
The alternator belt tension is adjusted to prevent the stress on the alternator bearings and to prevent movement on the alternator pulley. Use the procedure shown below to check the belt tension at the center of the belt between crank shaft and alternator pulleys.

Alternator belt

1. Loosen the alternator bolt (A) and the pivot bolt below the alternator.
2. Move the alternator to tighten or loosen the belt. A deflection of 7 to 9 mm

   is needed at the center (B) with a load 10Kgf (98N/22lbs) for a new belt.

   A deflection of 8 - 10mm is needed for a used belt.
3. Tighten the bolts.



8.4 ENGINE COOLANT

⚠ WARNING

The engine fan could start up unexpectedly.

⚠ WARNING

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

⚠ CAUTION

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

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

Drain and fill the cooling system each year. Empty and clean the recovery bottle. Mix clean water with antifreeze for the coldest ambient temperature. Read and follow the instructions on the antifreeze container and the engine manual.
Keep the radiator, engine oil cooler and hydraulic oil cooler air passages clean. Use Low Pressure compressed air to clean the fins. It is not recommended to use water to clean radiator.

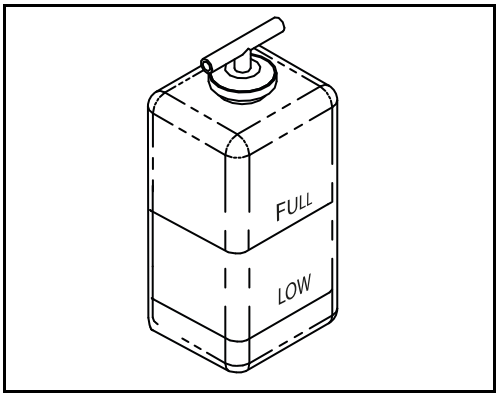
⚠ CAUTION

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

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

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

Check the engine coolant level

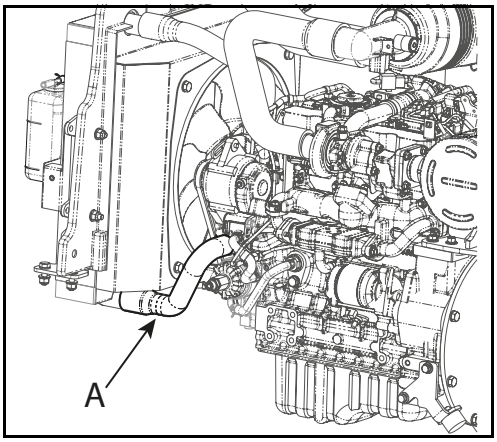


(a) The level of coolant in a cold expansion tank must be between the indicators.

(b) If you need to fill the tank, remove the plastic cap and fill with the correct antifreeze mixture (see section 8.1).

(c) Replace the plastic cap ensure feed tube is still attached.

How to change coolant



(a) To drain coolant, remove the bottom hose (A) from the radiator. Drain the engine coolant into a container.

(b) Replace the bottom hose (A) on to the radiator. Make sure all the hose clips are tight.

(c) Fill the cooling system with the correct antifreeze mixture, (Section 8.1.) Fill system through the radiator cap.

(d) The level of coolant in a cold expansion tank must be between the indicators.

(e) Run the engine for approximately 5 minutes or until the thermostat opens.

(f) Check the level of coolant in expansion tank. Fill the tank if more coolant is needed.

⚠ CAUTION

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

⚠ CAUTION

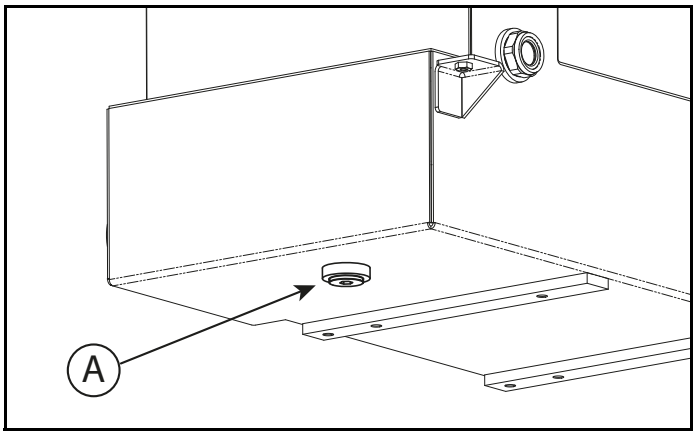
Discard antifreeze in accordance with local Authority recommendations.

8.5 HYDRAULIC SYSTEM

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

- Component failure
- Water or foam is in the hydraulic fluid
- The hydraulic fluid has a rancid odour (indication of high heat)
- Every 1000 hours or each year, which occurs first.

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



Change The Hydraulic Oil

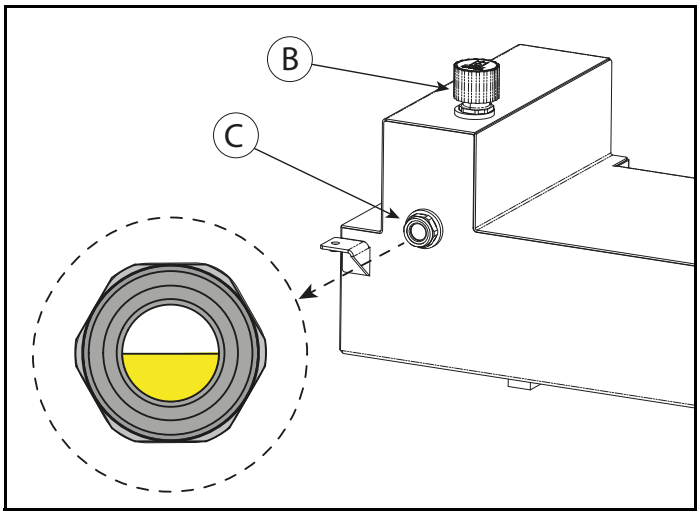
a Clean the area around the oil filler cap (B) to prevent dirt entering the hydraulic system.

b Remove the drain plug (A) from the bottom of the tank.

c After the oil has drained, reinstall the plug. Remove filler cap (B) and fill the tank with hydraulic fluid until it reaches approximately halfway on the level sight glass (C).

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

e When all air is removed from the hydraulic-fluid, check the oil level using the sight glass and add oil as required.



IMPORTANT

If you open the closed hydraulic transmission circuit, you need to fill the circuit with oil before the circuit is used again. When you fill the hydraulic tank, use only clean oil. It is recommended the hydraulic oil must go through a Minimum 25micron absolute filter before the oil enters the tank.

⚠ CAUTION

The Hydraulic Oil Can Damage Your Skin. Use Gloves When You Use Hydraulic Oil. If Hydraulic Oil Touches Your Skin, Clean The Area Immediately.

⚠ CAUTION

Discard Used Hydraulic Oil As Shown In Local Safety Regulations.

8.6 HYDRAULIC SYSTEM FLUSHING

From factory the machine will be delivered with Greenscare™ biodegradable vegetable oil. should the machine have had a replacement mineral oil added, before reverting back to vegetable oil it is important to flush the entire system of old oil before replacing with new.
Terresolve™ EnviroLogic ® BioFlush is a carefully designed fluid which helps to flush and remove petroleum oil from hydraulic systems. This is done when converting hydraulic systems to the use of biodegradable fluids.

EnviroLogic ® BioFlush will condition the internal hydraulic system to help optimize both overall system performance and fluid biodegradability.

1. Run equipment until warm. Drain petroleum hydraulic fluid and replace all hydraulic filters.
2. Fill system with EnviroLogic ® BioFlush. Run equipment for 5 minutes until fluid is completely circulated.
3. Drain the BioFlush and replace hydraulic filters.
4. Fill system with approved Greenscare™ biodegradable ISO VG 46 hydraulic oil.

The hydraulic system is now optimised for fluid biodegradability in the event of leakage.
When changing from vegetable to mineral oil there is no need to flush the system.

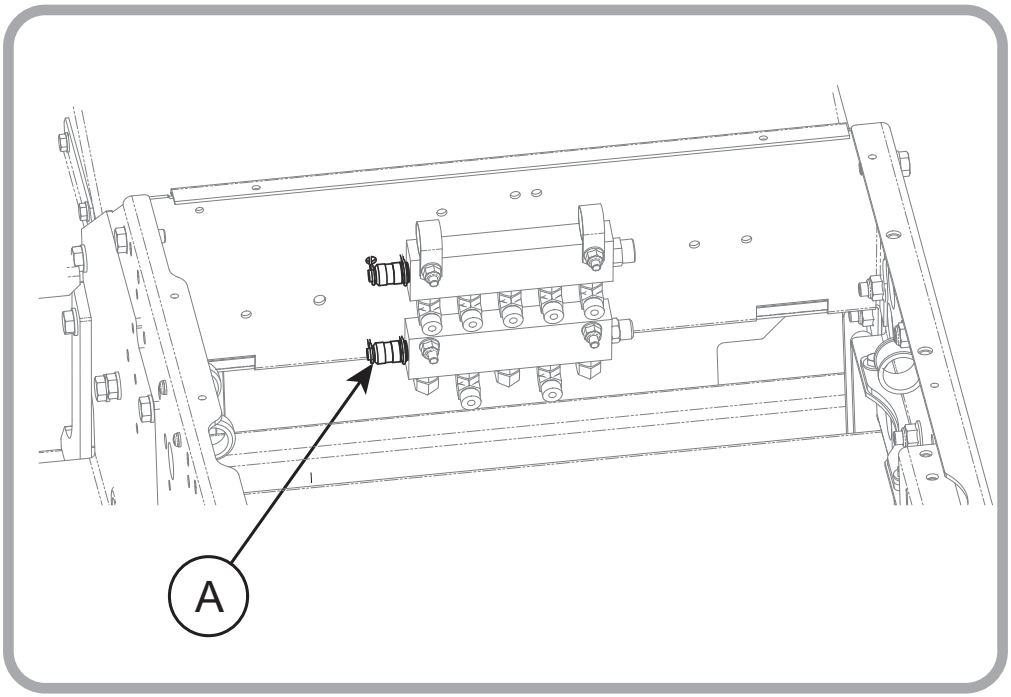
8.7 HYDRAULIC TEST PORT

Hydraulic service test ports are provided to enable oil condition to be checked should any problems with the hydraulic system are experienced

All tests, unless stated otherwise, must be carried out with the hydraulic oil at normal working temperature.

TEST PORT

A. Return Manifold Test Port - Located under operators platform on forward bulkhead.
NOTE: Any hydraulic related issues contact your Jacobsen dealer for a full fault diagnosis.



8.8 HYDRAULIC FILTER

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

NOTICE

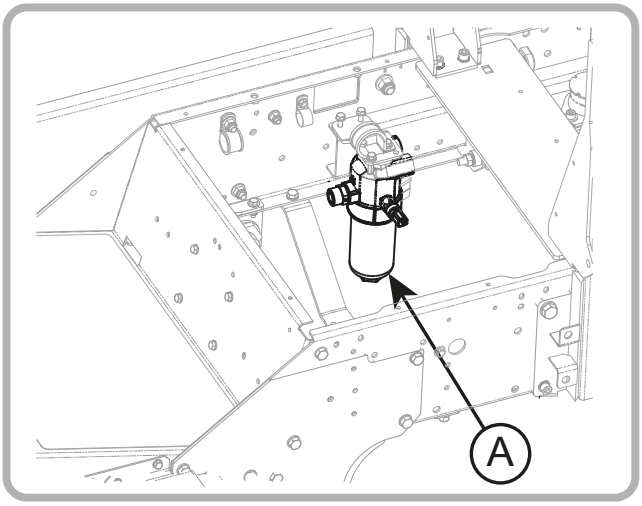
During cold weather, the oil filter warning light can illuminate until the hydraulic fluid becomes warm. Wait until the oil becomes warm and the warning light turn off before you operate the mower.

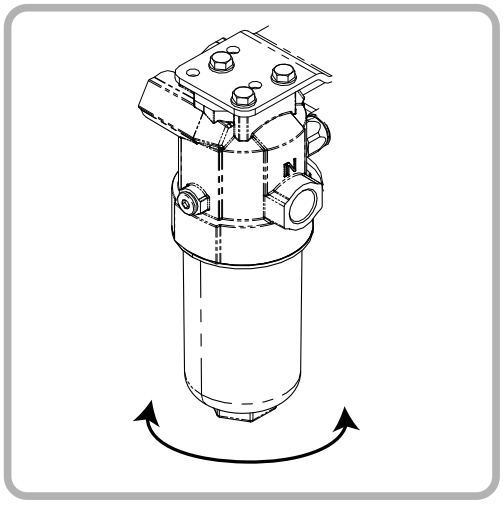
When you replace the filter, -

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

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

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





⚠ CAUTION

The Hydraulic Oil Can Damage Your Skin. Use Gloves When You Use Hydraulic Oil. If Hydraulic Oil Touches Your Skin, Clean The Area Immediately.

⚠ CAUTION

Discard Used Hydraulic Oil As Shown In Local Safety Regulations.

⚠ CAUTION

Contact with Hydraulic Oil can damage your skin. Use gloves when working with Hydraulic Oil. If you come in contact with Hydraulic Oil, wash it off immediately

8.9 FUEL

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

Fill the fuel tank to less than 25 mm (1 inch) below the filler neck.

⚠ WARNING

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

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

If the fuel spills, do not try to start the engine, but move the mower away from the area. Until fuel vapors are removed, do not allow the sparks, open flame or other types of ignition.

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

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

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

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

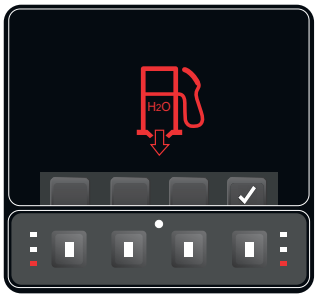
Keep the fuel according to your local, state or federal regulations. Below are some items you should be aware of.

What you need to do	Reasons to do it
Ask your fuel supplier if there are records showing the amount of water mixed in with the Diesel fuel supplied.	Water in the fuel is harmful to the high-pressure injection equipment. Kubota recommends that water content must not be more than 0.05%
Ensure that Bio content to your Diesel fuel does not exceed 7% as described in ASTM D6751 or EN 14214	Higher Bio Diesel content has been proven to absorb more moisture from the atmosphere. The moisture and Bio content can result in the development of molds and bacteria. These accelerate the blocking of fuel filters.
Ask your fuel supplier to verify that fuel being delivered meets the lubricity level required set in ASTM D6079	Low emission Diesel engines use higher pressure injection equipment. The tolerances in the injection equipment require the fuel to provide lubrication.
Ask your fuel supplier to verify that fuel being delivered has less than 1milligram of solid contaminant per litre of fuel.	Any particles in the fuel can damage parts within the fuel injection system, reducing performance. The vehicle fuel system will provide protection, but the cleaner the fuel into the vehicle, the lower the chance of a particle by passing the filtration system.

8.10 FUEL SYSTEM

Use Diesel to B.S. EN590 or ASTM D975 (Ultra Low Sulfur)

8.11 WATER SEPARATOR



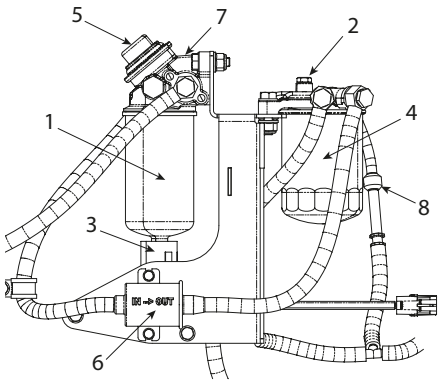
If water is not removed from the fuel, damage to the fuel-injection system can occur. When water in fuel icon is displayed or at service interval, drain the water from the water separator.

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

FUEL FILTER

Replace the fuel filter

a. Stop the engine.
b. Open the air valve (No.2) at the top of the filter to release system pressure.
c. Remove fuel filter cartridge. Clean any fuel that spills.
d. Assemble new filter cartridge to the filter base. Tighten the cartridge with your hand.
e. Bleed air from the fuel system.



1 Water Separator
2 Air Vent
3 Drain Valve
4 Fuel Filter
5 Priming Pump
6 Fuel Pump
7 Air Vent
8 Check Valve

How to bleed the air from the fuel system

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

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

⚠ CAUTION

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

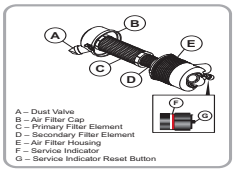
⚠ CAUTION

Discard diesel fuel in accordance with Local Authority Regulations

8.12 AIR CLEANER

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

Check the dust valve (A) each day by pressing the valve together allowing any dust particles to fall out of the air cleaner cover.



Unnecessary removal of the elements to inspect or clean increases the risk of dust and other particles to enter the engine.

When service is needed, first clean the outside of the filter housing, then remove the old primary (C) and secondary (D) elements carefully.

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

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

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

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

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

8.13 BATTERY

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

⚠ CAUTION

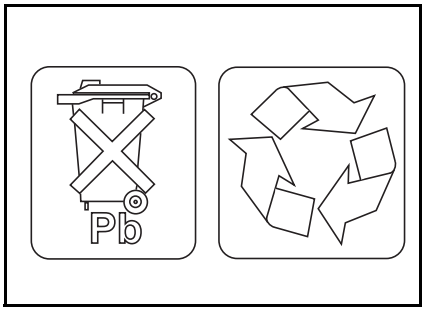
When you service the battery, always use the tools with insulation, wear protective glasses and protective clothing.
Discard used batteries as Directed in your local regulations.

⚠ WARNING

The battery contains corrosive acid. Prevent contact with the battery acid.
Always wash your hands after you service a battery.

⚠ WARNING

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



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

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

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

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

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

Jump Starting the Mower

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

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

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

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

⚠ WARNING

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

8.14 BATTERY CHARGING

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

⚠ WARNING

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

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

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

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

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

8.15 ENGINE EXHAUST

⚠ WARNING

The exhaust fumes contain carbon monoxide. The carbon monoxide in the exhaust fumes can increase to dangerous levels. To protect you from carbon monoxide poisoning, inspect the complete exhaust system every month and replace damaged components immediately.

NEVER operate the engine without sufficient ventilation.

The temperature of the exhaust components can be greater than 1150° F (625° C).

To prevent burns, do not touch a hot exhaust system.

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

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

8.16 DIESEL PARTICULATE FILTER

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

⚠ WARNING

During active or parked regeneration, the temperature of the exhaust components can be more than 1150° F (625° C). To prevent burns, do not touch a hot exhaust system and do not stand or reach into exhaust gas area from exhaust pipe outlet. To prevent fires, make sure the engine area is kept clean and the grass clippings are not near exhaust components. During parked regeneration turn rear wheels fully to the right and lift and secure all cutting units.

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

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

Inhibit Regen State - When the Regen Inhibit button is pressed on the display (**Button 4** then **Button 2**), the engine cannot enter the Active Regen state until the Regen Inhibit button is pressed again, or the engine is turned off then on. Inhibit Regen does not prevent a Passive Regen. If the fuel tank is near empty or the machine is in an area where a higher than normal exhaust temperature could cause a hazard press the Regen Inhibit button to inhibit a regen.

Active Regen State - When the level of particle material reaches a certain point, the engine will enter Active Regen state. Operation of the mower is not changed. The exhaust temperature can be more than 1150° F (625° C) during Active Regen. The high exhaust temperatures during Active Regen will illuminate the High Exhaust Temperature icon on the display.

Parked Regen State - When a Parked Regen is needed, the Regen Request on the display will be illuminated. Park the mower on concrete or gravel to prevent damage to the turf, turn rear wheels fully to the right and lift and secure all cutting units. Engage the Park Brake, but do not stop the engine. Press the Regen Start button on the display (**Button 4** then **Button 1**) to start the Parked Regen. During the Parked Regen the Regen Request icon will illuminate on the display, and the high exhaust temperatures during Parked Regen will illuminate the High-Exhaust Temperature icon. Do not disengage the Park Brake, stop the engine or move the mower during the Parked Regen.

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

Level 0 - Normal operation of mower with Passive Regen. When particles reach the Active Regen level, the engine controller will change to Level 1. When the engine controller is at Level 0, the Active and Parked Regen is disabled.

Level 1 - Engine will enter Active Regen state unless Inhibit Regen switch is in the INHIBIT position. Normal Active Regen is completed in approximately 20 minutes. If the particle material level does not decrease to the Passive Regen level in 30 minutes (1800 seconds), the engine controller will change to Level 2. When the engine controller is at Level 1, the Parked Regen is disabled

Level 2 - Regen Request display will illuminate. Engine will enter Active Regen state unless the Inhibit Regen switch has been pressed. When the mower is parked and the Park Brake is engaged, the Parked Regen state is available. If the engine is operated at Level 2 without a Regen for approximately 1 to 1-1/2 hours, the engine controller will change to Level 3.

Level 3 - Regen Request will illuminate. The engine power output is decreased and Active Regen is disabled. When the mower is parked and the parking brake is engaged, the Parked Regen state is available. If the engine is operated at Level 3 without a Regen for approximately 1 to 1-1/2 hours, the engine controller will change to Level 4.

Level 4 - High Exhaust Temperature display will illuminate. The engine power output is decreased significantly. Active and Parked Regen is disabled. The Kubota Diagmaster tool is needed to start a Regen. If the engine is operated at level 4 without a Regen for approximately 1 to 1-1/2 hours, the engine controller will change to Level 5.

Level 5 - High Exhaust Temperature display will flash quickly. The engine power output is decreased significantly. An authorised Kubota Engine Service Center must clean the DPF before the mower is used.

8.17 HYDRAULIC HOSES

⚠ WARNING

To prevent injury from the hot, high pressure oil, never use your hands to check for oil leaks.

Use paper or cardboard to find leaks.

The hydraulic fluid pressure can have enough force to enter your skin. If hydraulic fluid has entered your skin, please seek medical attention as soon as possible.

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

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

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

Completely inspect all tubes, hoses and connections in accordance with the maintenance chart.

IMPORTANT: If the hydraulic fluid becomes contaminated, damage to the hydraulic system can occur.

Before you disconnect any hydraulic component, clean the area around the fittings and the ends of the hoses to stop the entry of contaminates into the system.

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

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

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

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

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

8.18 TIRES

Keep the tires correctly inflated to achieve optimum traction and tire life. Inspect the tread wear.

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

Keep tires inflated at the correct pressure (see section 4.4)

⚠ CAUTION

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

8.19 WHEEL MOUNTING PROCEDURE

⚠ WARNING

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

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

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

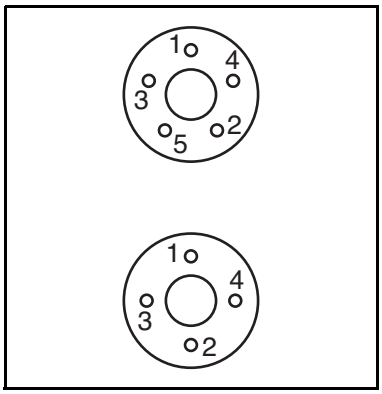
Put the wheel on the hub. Inspect the wheel to make sure of full contact between surface of wheel and hub.

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

Check and torque hardware each day until the following torque is kept:

Front - 102-122 Nm (76-90 lbf-ft).

Rear - 65-85 Nm (48-62 lbf-ft).

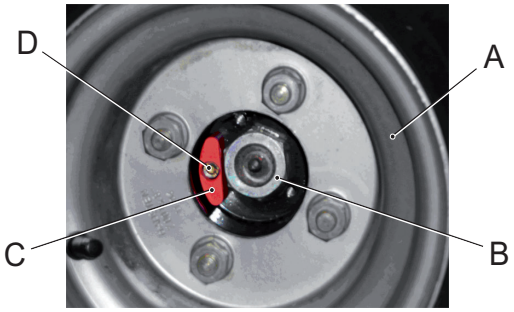


8.20 REAR HUB NUT LOCK / APPLICATION AND INSPECTION

The Hub Nut Lock is a quick visual indicator to the security of the Hub Nut. Due to its design and colouring the Hub Nut Lock is easily visible from a distance even when the tractor unit is in use or is parked.

Daily:
Visual checks must be conducted to check that the Wheel Nut Locks are in place. If missing replacement components must be sourced before using the equipment.

The Hub Nut **(B)** should be tightened to 400 Nm (295 lbf-ft). If necessary, over torque the Wheel Nut to allow the Hub Nut lock **(C)** to be fitted. Never under torque.



A	Wheel Rim
B	Hub Nut
C	Hub Nut Lock
D	Hub Nut Lock Screw

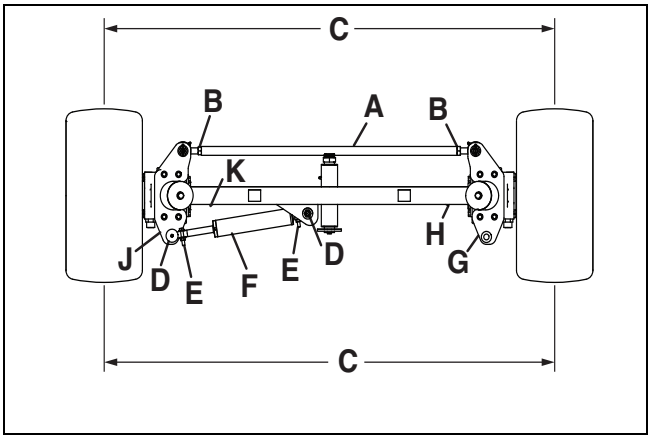
8.21 STEERING ROD AND STEERING LINK CHECK

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

1. Turn the rear wheels to the straight position.
2. Loosen the jam nuts (B) on both ends of the tie rod (A).
3. Rotate the tie rod (A) to get the correct toe-in (C). the Toe-in must not be more than +1/16 inch (+ 1.6 mm).
4. Tighten the jam nuts (B).

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

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



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

Check the clearance between the left side steering arm (J) left side axle stop. Adjust ball joints (D) as required until steering stop clearance is 5/16 inch (8 mm) for both full left and full right turns

8.22 MACHINE MAINTENANCE

Other Regular Service

- Verify proper operation of safety interlock switches (Seat switch, etc.)
- Ensure nuts and bolts remain tight.
- visually inspect for hydraulic leaks.
- Keep engine bay clear of debris.
- Keep tire pressure at correct level. (See section 4.4)
- Follow the engine manufacturer's maintenance recommendations.
- If a label becomes worn or removed, see the LABELS section of this manual or the tractor Parts Manual for replacement information.

NOTE: When washing machine with pressure spray washers or steam cleaners, avoid washing electrical components, instruments, air intakes and bearing areas. When cleaning machine, always comply to local legislation regarding waste water and contaminates.

Storage

- Store fuel in an approved container in a cool dry place.
- Keep the machine and fuel containers in a locked storage place to prevent tampering and to keep children from playing with them.
- Do not store fuel or petrol/diesel fuel powered equipment in any closed area where heating appliances, pilot lights or any sort of open flame is present.
- Before storing, allow the engine to cool, and drain fuel completely from fuel tanks and containers
- Maximum safety and best mowing results can only be expected if the mower is maintained and operated properly.

8.23 ROPS

A folding Roll Over Protective Structure (ROPS) is included with this mower. Inspect the ROPS as indicated in he Maintenance chart for loose hardware or damage.

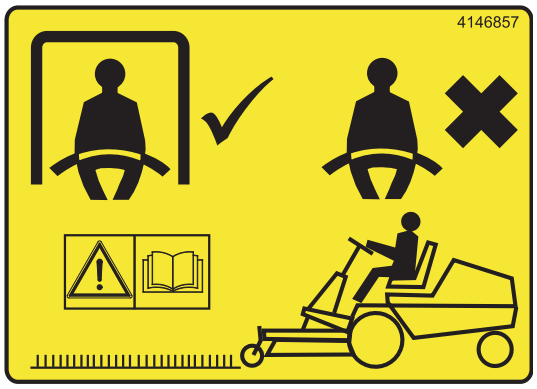
⚠ CAUTION

Check the ROPS fasteners before use. Do no welding to any part of the ROPS. Do not change the ROPS structure. Replace damaged ROPS. Do not try to correct a damaged ROPS.

Inspect the seat, as indicated in the Maintenance chart, 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 Maintenance chart.

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



⚠ WARNING

The seat belt must always be worn when the ROPS frame is in the raised 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: Sect;20.7)

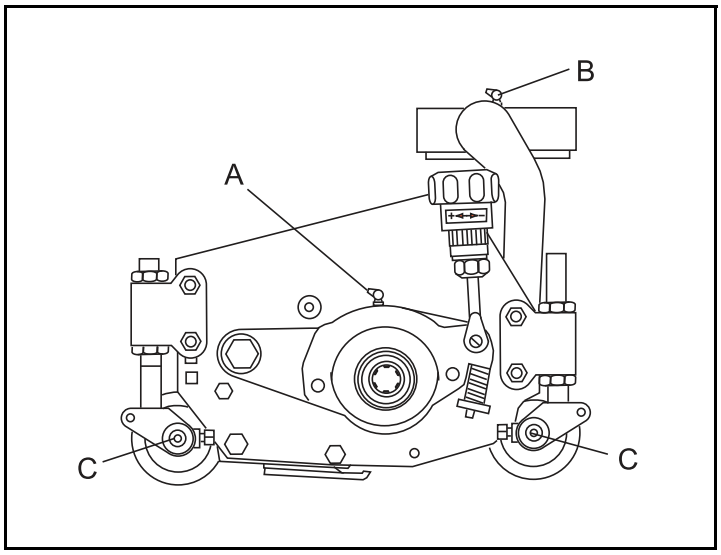
Ransomes Jacobsen Limited, recommend that the owner operator of the machine complete site specific risk assessment on the machine to find any conditions that do not follow this rule.

8.24 LUBRICATION OF CUTTING UNITS

Cutting reel bearings (A).

Unit Pivot (B.

Roll Bearings (C)



REEL ON CUT ADJUSTERS

If the adjusters are removed from the machine, the adjuster must be half filled with gear oil EP90.

HYDRAULIC MOTOR DRIVE SHAFT (EVERY 200 HOURS)

Lower all cutting units down to ground level. Before you leave the drive position, stop the engine and make sure all moving parts have stopped. Apply the brakes and disengage all drives. Remove the starter key.
To remove the direct-drive hydraulic motor from the cutting unit, remove the nuts and washers that hold the motor to the bearing housing studs. Carefully remove the motor from the bearing housing. You must not to allow the motor shaft or the inner splines of the cutting reel to become dirty. If the motor shaft or the inner splines become dirty, remove all of the grease to clean the splines. Lubricate the motor and reel splines with Shell Gadus S2 Grease Part number 4273711 before you assemble the motor again.

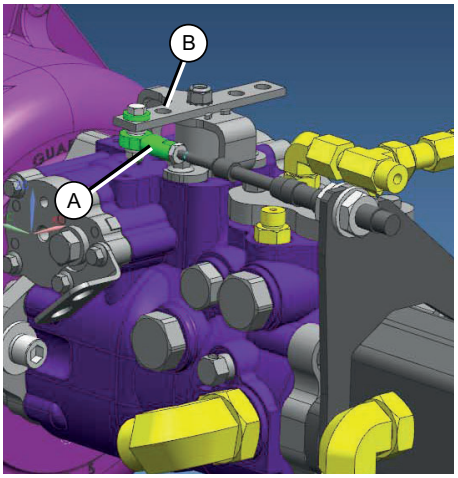
REMOVAL OF HYDRAULIC MOTOR
To remove the hydraulic motor, remove the two screws and washers that hold the motor to the bearing housing. Carefully remove the motor with the cardan shaft.

NOTE: When you remove the motor, the cardan shaft and the inner splines of the motor and cutting reel shaft must not become dirty. If the motor shaft or the inner splines become dirty, remove all of the grease to clean the splines. Lubricate the motor and cutting reel shaft with Shell Gadus S2 grease before you assemble the motor again.

Notes

9.1 TRACTION CONTROL PEDAL

The LPV transmission pump has an internal neutralizing mechanism which cannot be adjusted. If the machine does however creep carry out the following.



1. Lift and support the machine so that both front and rear wheel are off the ground and free to rotate.
2. Remove ball joint from pump lever to allow pump to neutralize. (A)
3. Start engine, manually move the pump control lever and release to ensure wheels stop rotating.
4. Operate foot pedal to ensure cable is free.
5. Reattach ball joint to pump lever.
6. Move the foot pedal in forward & reverse directions to ensure there is no creep in neutral position.

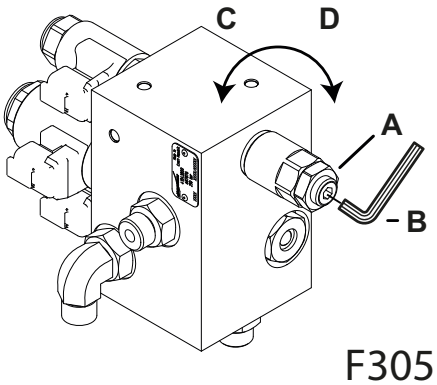
⚠ WARNING

Properly support raised machinery with
Axle stands

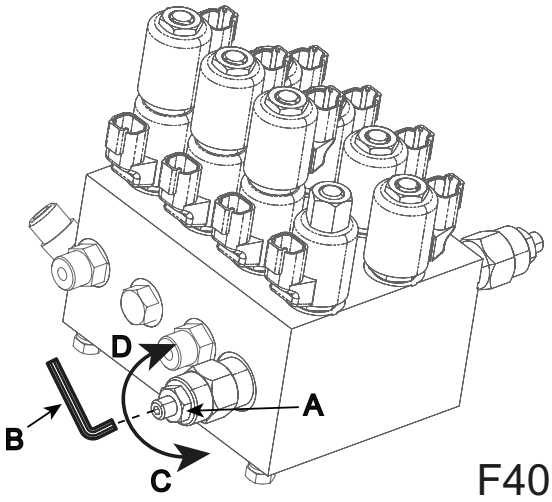
9.2 WEIGHT TRANSFER ADJUSTMENT

The weight transfer bias can be adjusted on the lift valve. The valve is accessible from under the Hydraulic tank cover.To adjust:

1. Loosen the locknut **A** whilst holding the threaded shaft still with the Allen Key **B**.
2. To increase weight onto the drive wheels when the weight transfer is engaged, use an Allen Key **B** to rotate the threaded shaft clockwise in direction **D**. This improves traction and slope climbing performance. To reduce weight on the drive wheels when the weight transfer is engaged, rotate the threaded shaft counter clockwise in direction **C**. This increases the ground weight of the cutting unit and will reduce the possibility of unit “bounce” on undulating ground. It is recommended that the Allen key **B** is turned a 1/4 turn at a time and the weight transfer tested.
3. Tighten locknut **A**. whilst holding the threaded shaft still with the Allen Key **B**. **DO NOT OVERTIGHTEN.**



F305

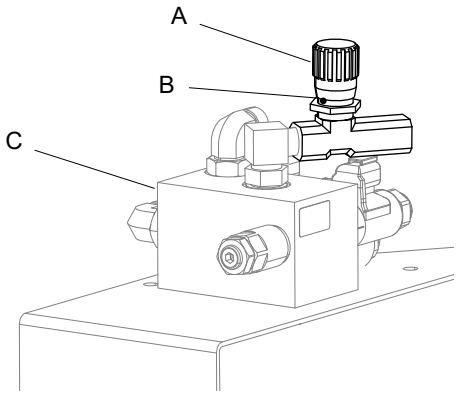


F407

9.3 LIFT AND LOWER RATE ADJUSTMENT

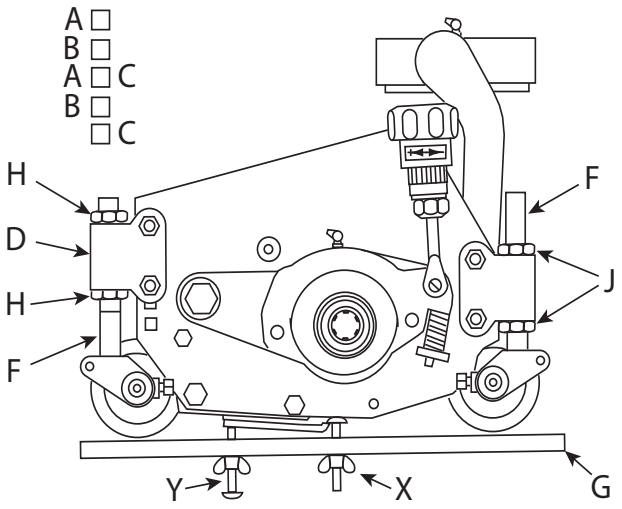
The rate of speed at which the cutting units lift and lower is preset at factory. This can be altered by adjusting the control valve (A) located on top of the lift valve (C).

To adjust the valve, release the locking grub screw (B). Rotate the control Knob (A) clockwise to reduce lift & lower rate or turn Counter clockwise to increase the lift & lower rate. Always check when hydraulic system is at working temperature. When desired rate has been achieved, lock the control knob position by tightening the grub screw (B).



9.4 CUTTING UNIT - SETTING HEIGHT OF CUT

First set the rear roll parallel to the bottom blade (bedknife). Set the minimum-height of cut setting for the three ranges of height. Adjust the setting with the three sets of holes in the mounting housing (D) at positions 'A', 'B' and 'C'.
Setting the minimum height with the mounting housings (D) in position 'A' allows a parallel-minimum height in positions 'B' and 'C'. Select the range and set the correct height of cut when you adjust the front roll carriage screws (F) and locknut's (J).



TO SET REAR ROLL

Use a new bottom blade (bedknife).

1. Set the height of cut setting bar (G) shown below:
   a.Screw X to 12 mm (0.47”) under the head.
   b.Screw Y to 6.5 mm (0.255”) to screw thread tip.

Note:The difference between screw X and screw Y is 5.5 mm (0.22”)

2. Set the roll carriage mounting housing (D) bolts into holes 'A'.
3. Put the setting bar (G) as shown at one end of the bottom blade with the screw head X over the lip. The screw thread Y tip must touch against the base of the blade.
4. Adjust the roll to the setting bar (G) while the two locknut's (H) **hold the setting bar screws in contact.**
5. Repeat for other end of bottom blade (bedknife).

Height of Cut Range	Minimum Height of Cut	Maximum Height of Cut
Holes ‘A’	12mm / 0.47”	19mm / 0.75”
Holes ‘B’	19mm / 0.75”	35mm / 1.38”
Holes ‘C’	27mm / 1.06”	47mm / 1.85”

⚠ CAUTION

The height of cut range for each set of holes is set from the requirement of the cutting unit to float. An increase in the maximum height of cut in any of the ranges can decrease the ability of the cutting unit to float.

TO SET HEIGHT OF CUT

Select the range of height in which the machine will cut. **Adjust the front roll only.**

1. Set the height of cut setting bar (G) with the procedure shown below:
   a.The screw X is set to the height of cut needed under the head.
   b.The screw Y is not used.

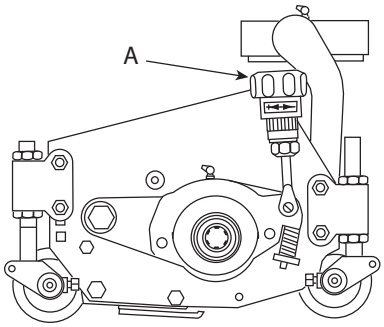
2. At one end of the bottom blade (bedknife) put the setting bar (G) on rear roll. Make sure that the screw head is over the bottom blade lip.

3. Adjust the front roll to the setting bar with the two front locknut's (J).

4. Repeat for the other end of the bottom blade.

9.5 CUTTING REEL TO BOTTOM BLADE

Make sure that the cutting reel is installed in position with the bottom blade correctly. Hold a piece of thin paper between the edge of the blade and the spiral cutters and turn the reel manually.



If the cut on the paper is smooth along the full length of the bottom blade, then the adjustment is correct. If the cut is not smooth, the blade must be adjusted. MAKE SURE THAT THE REEL IS TIGHTENED TO THE CORRECT LEVEL. If the reel is worn, you need to backlap the reel before the adjustment.

To adjust:
1. To adjust the reel to the bottom blade, lift and turn the left and right hand-wheels (A). Make sure that the reel is adjusted equally between left and right. Rotate in a clockwise direction to add to the level of cut. Rotate in an anticlockwise direction to remove the level of cut. Turn the hand-wheel until it engages with the notches in the ring that locks the reel. The adjuster has notches and each notch moves the reel by approximately 0.04 mm (0.0015”).

THE ADJUSTMENT HAS A SELF-LOCKING MECHANISM. THERE IS NO REASON TO UNLOCK OR LOCK THE MECHANISM.

IMPORTANT:

In rough ground conditions it is important to secure the nuts into position and secure the bearing housings to the side frame. The housings run in adjustment slots that keep the reel to the adjustment settings for the bottom blade. The adjustment depends on the previous experience with the machine. The nuts must be tightened completely and loosened by 1/2 turn.Adjust the hand-wheel and do not lock the nuts.

9.6 CUTTING REEL BEARINGS

Do not adjust the cutting reel bearings. The cutting reel bearings self adjusting taper roller bearings.

9.7 FRONT AND REAR ROLL BEARINGS

Do not adjust the roll bearings. The roll bearings are self adjusting taper roller bearin

9.8 GENERAL INSTRUCTIONS FOR GRAMMER SEAT

- The operating instructions must be read in full before use.
- The driver's seat may only be fitted, serviced and repaired by specialist personnel, In accordance with national regulations and the vehicle manufacturer's fitting instructions.
- The national fitting regulations can be obtained from GRAMMER or from agencies of the company, or from the vehicle manufacturer.
- A correctly functioning and individually adjusted driver's seat is essential to your health.
- Take adequate care of your seat and have it serviced regularly to ensure that it functions correctly.
- The functional checks are to be carried out at least as regularly as vehicle services (see maintenance plan for vehicle).
- These operating instructions must always be kept with the driver's seat. If the seat is passed on to a third party, it must be accompanied by the relevant operating instructions.

Safety instructions

If you need to connect cables to the vehicle supply network, strictly observe the following instructions:

Before you connect a seat switch, seat heater or compressor, you must obtain the relevant electrical data for the respective vehicle with reference to voltage, protection and the kind of connections from the manufacturer, from GRAMMER or the company's agencies.

DC	Compressor	Seat Heat/ Compressor
12V	10A	20A
24V	10A	15A
48V	10A	10A

Seat Switch - Current Carrying Capacity	
12V DC	10mA (min.)
250V DC	5A (max)

- For safety reasons, the installation and connection to the vehicle supply network must be carried out by authorized specialist personnel only.
- The seat connections must be protected independently of other vehicle components.

Notes Concerning Seat Switch:

Minimum and maximum current carrying capacity for purely resistive load.
In case of inductive or capacitive load, the manufacturer must install a protective circuit breaker for the consumers in the vehicle. If there are any uncertainties, please ask the vehicle manufacturer before making connections.

Driver's seats that have been adjusted incorrectly have a smaller moving area. To prevent damage to the driver's back and to the seat, the seat must be adjusted for the driver's weight before use and before every change of driver.

To prevent injury, no objects must be placed within the moving area of the driver's seat.

Before commissioning of the driver's seat, ensure packaging material has been removed from the seat cushion and the backrest upholstery.

To eliminate any risk of accident, the settings must be checked to ensure they are correctly engaged before the vehicle is driven.
Adjustments must not be made while driving.

After removal of the backrest upholstery, the backrest frame must be supported, for example held in place, before the backrest adjuster is operated. If you fail to do so, there is a danger that the backrest frame may jerk forward and cause injury.

Any changes to the series standard of the seat (for example fitting parts which are not original GRAMMER parts) may impair the safety standard to which it has been tested.
Functions may be impaired, threatening your safety. For this reason, any changes in design of the seat must be approved by GRAMMER.
During the removal and installation of the driver's seat, the corresponding instructions by the specific vehicle manufacturer must be strictly observed!

Do not hold onto the covers for lifting the driver's seats. If you do so anyway, there is an increased risk of injury due to loosening or breaking covers.

Before you remove the driver's seat, disconnect all plug-in connections between the seat and the vehicle supply network. When you replace the plug-in connectors, make sure they are tight to prevent ingress of dust and water.

Seatbelts must be fastened before driving. The seatbelt must be replaced after an accident.
Where seatbelts are fitted to the driver's seat, the seat and seat mounting must be checked additionally by specialist personnel after an accident has occurred.
Fasteners must be checked regularly for a tight seat. If the seat wobbles there may be loose bolts or other faults.
If you notice that the seat does not function correctly (for example a defective seat suspension; improper curvature of the lumbar support or damaged bellows), contact a specialist workshop immediately to arrange for repairs to be carried out.
If you fail to do so, your health may be affected and the risk of accident increased.

Before the vehicle is used, switches that might be in the seat (for shutting down mechanical equipment when the driver leaves his/her seat) must be checked for proper function

If malfunctions are detected, the vehicle must not be driven.
– INCREASED RISK OF ACCIDENT –

Loads must not be placed on seats with a built in switch, except for the driver's weight during normal use, as the vehicle may otherwise start to move by itself.
– INCREASED RISK OF ACCIDENT –

If you take off the weight from the seat while driving, this will cause the vehicle to stop.
Do not indent the bellows while there is load on the driver's seat.
– RISK OF CRUSHING –

Make sure that the interior of drivers seat remains free of foreign particles or liquids.

The driver's seat is not watertight and must be protected against splashes of water!
Any conversion or refitting work on a GRAMMER driver's seat must be performed exclusively in authorised workshops by trained or suitably qualified personnel and in adherence with the applicable operating, maintenance and installation instructions and in compliance with all relevant national regulations.
Improper installation and assembly bear the risk of personal injury or property damage and the proper function of the driver's seat or mounted parts can no longer be guaranteed.

9.9 SEAT (GRAMMER MSG85)

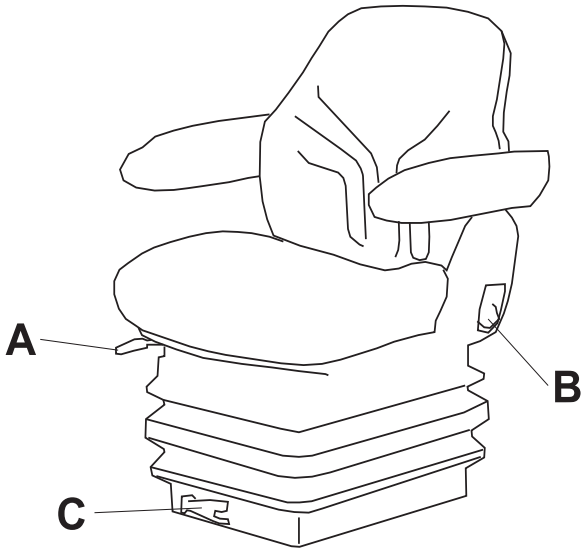
⚠ WARNING

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

The seat can be adjusted for operator's weight and leg reach to provide a comfortable position for operating the machine.

1. ADJUSTMENT FOR OPERATOR WEIGHT

To Adjust:
Rotate knob (A) to the right to increase the operator weight setting. Turn to the left to decrease the operator weight The set weight is indicated on the yellow face dial next to the lever. Set at the correct weight of the operator before operation. Failure to do so will compromise the machine safety devices.



2. FORE AND AFT ADJUSTMENT

To Adjust:
The position of the adjusting lever is on the right hand side of the seat below the seat cushion (B). By moving the lever towards the seat, the seat can be slid backwards and forwards. When in the desired position release the lever to locate in one of the pre-set positions.

3. BACK REST ADJUSTMENT

The back rest has three preset positions

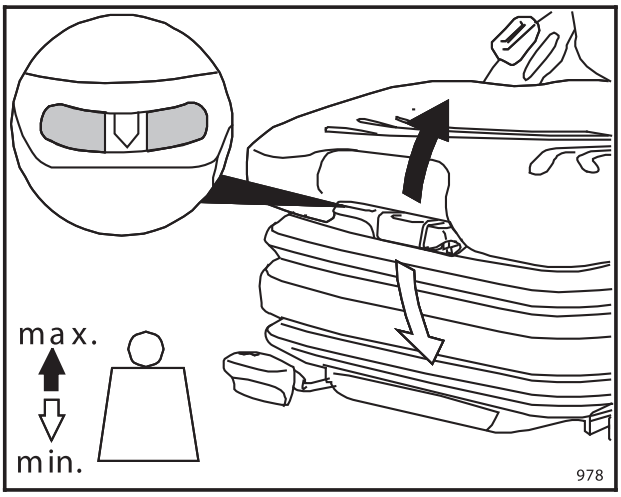
To Adjust:
The position of the release lever is on the left hand side of the seat back rest (C). Move the lever upwards to move the upper part of the back rest forward. Move the lever downwards to move the upper part of the back rest rearwards.

NOTE: THE SEAT IS FITTED WITH A MICRO-SWITCH TO SENSE OPERATOR PRESENCE. WHEN THE MACHINE IS FITTED WITH ROPS FRAME OR CAB A LAP BELT IS FITTED AND SHOULD BE WORN AT ALL TIMES.

9.10 AIR SUSPENSION SEAT (GRAMMER MSG75-521)

1. WEIGHT ADJUSTMENT

The seat is adjusted for the driver's weight by pulling or pressing the lever for seat weight adjustment and with the driver sitting on the seat.



The driver's weight is adjusted correctly when the arrow is in the middle clear area of the viewing window.

Within this viewing area, the individual height can be adjusted to a minimum spring movement.

When the minimum/maximum weight adjustment has been reached, you can hear it reaching the upper or lower end stop.

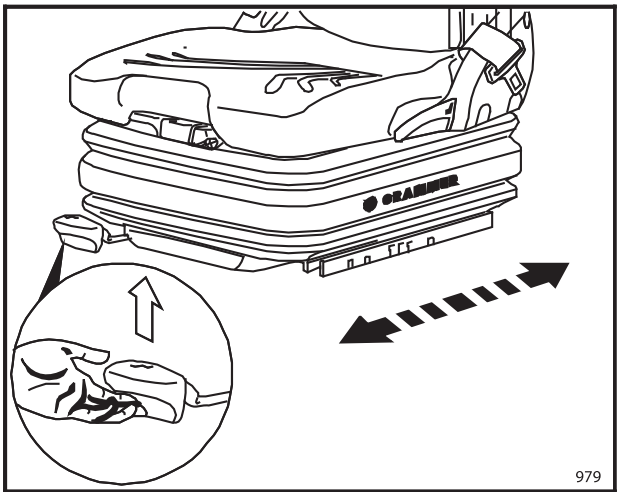
To prevent damage to the health and material, the setting for the driver's weight must be checked and adjusted individually before the vehicle is driven.

In order to prevent compressor damage during weight adjustment, the compressor must be operated no longer than 1 minute.

2. FORE/AFT ADJUSTMENT

The fore/aft adjustment is released by lifting the locking lever.

WARNING! Risk of accident!
Do not operate the locking lever while driving.



WARNING! Risk of crushing!
Only touch the lever at the indented grip, do not reach back under the lever.

After the adjustment, the locking lever must latch into the desired position with an audible click. It must not be possible to move the driver's seat into another position when it is locked.

Do not lift the locking lever with your leg or calf.

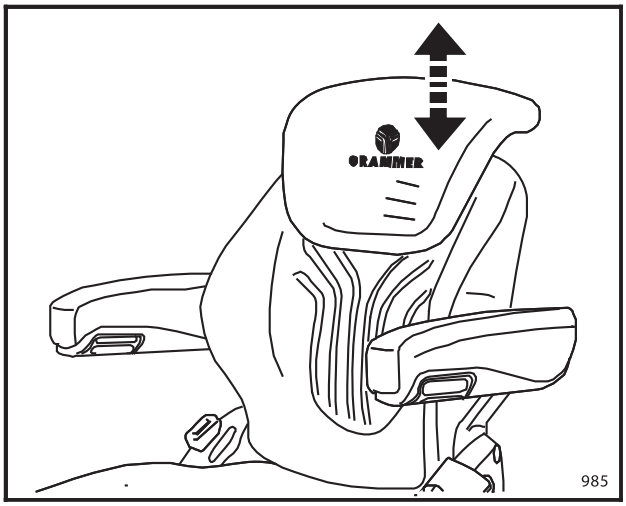
3. BACKREST EXTENSION

The backrest extension can be individually adjusted by pulling it upwards or pushing it downwards over the various locking increments up the end stop.

To remove the backrest extension, pull it upwards over the end stop.

4. LUMBAR SUPPORT

The lumbar support increases both the seating comfort and the performance of the driver.

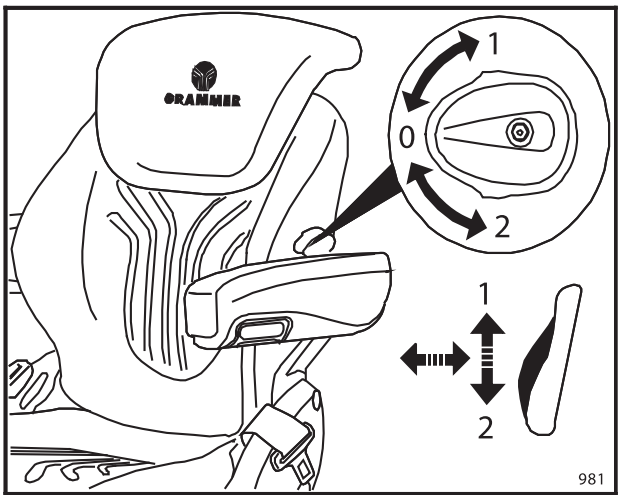


By turning the adjustment knob upwards, the curvature in the upper part of the backrest cushion can be adjusted. By turning the knob downwards, the curvature in the lower part of the backrest cushion can be adjusted.

0 = No curvature
1 = Max. curvature at the top
2 = Max. curvature at the bottom

5. ARMRESTS

The armrests can be folded up if required and the height individually adjusted.



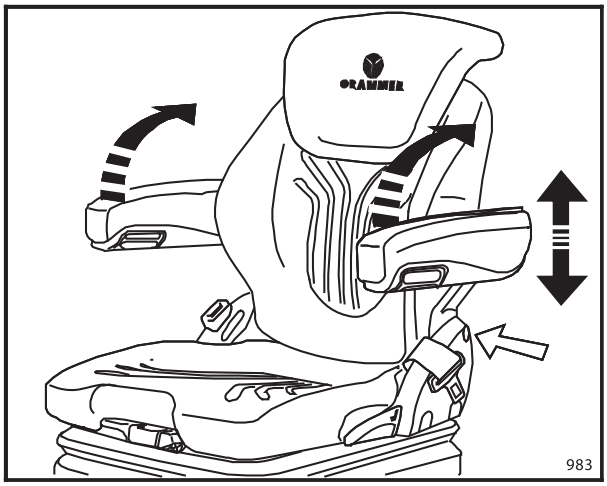
To adjust the armrests for height, separate the round cap (see arrow) from the cover, loosen the hexagon nut (size 13 mm) behind it and adjust the armrests to the desired position (5-steps) and tighten the nut again.

Replace the cap onto the nut.

6. ARMREST ADJUSTMENT *

The inclination of the armrests can be modified by turning the adjustment knob.

When turning the knob to the outside (+) the front part of the armrest will be lifted, when turning the knob to inside (-) it will be lowered.

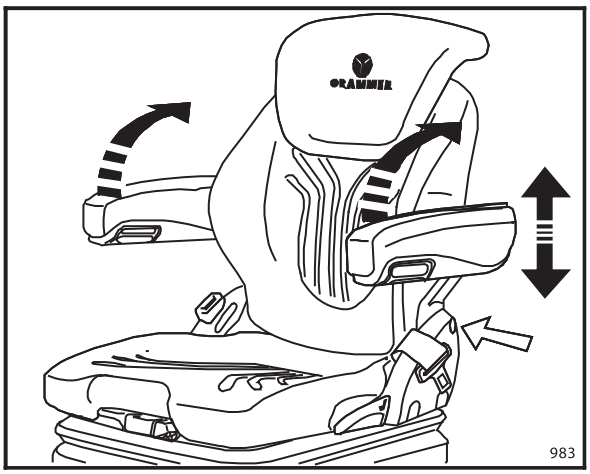


9. BACKREST ADJUSTMENT

Moving the locking lever upwards loosens the notching of the backrest adjustment.

After the adjustment, the locking lever must latch into the desired position. It must not be possible to move the backrest into another position when it is locked.

For an ergonomic use the backrest can be adjusted in a range of –5 to +30 degrees (15 steps of 2.5 degrees each).



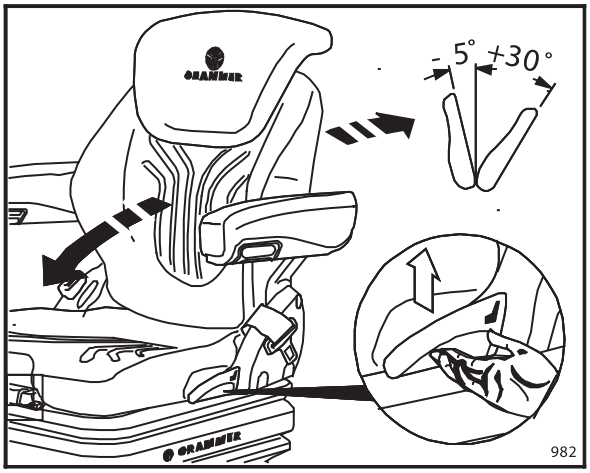
10. MAINTENANCE

Dirt can impair the function of the seat, so make sure you keep your seat clean! Upholstery does not need to be removed from the seat frame for cleaning.

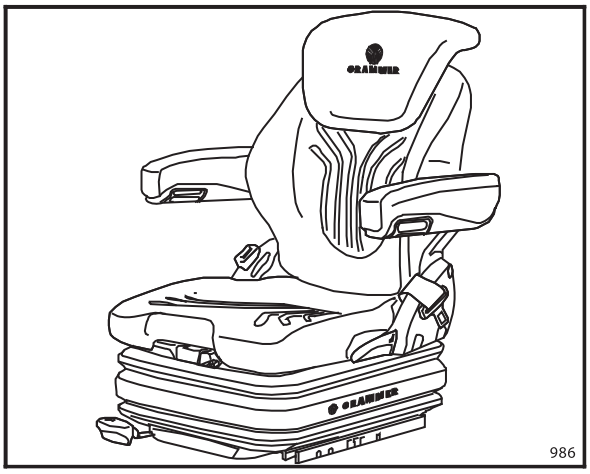
Caution: Take care with the backrest - it may jerk forward and cause injury!
When cleaning the backrest cushion the backrest must be held in place when operating the backrest lever.

Attention: Do not clean the seat with a pressure washer!

During cleaning the upholstery must not be soaked through.



Us a standard commercially available upholstery or plastic cleaning agent. Test first for compatibility on a small, concealed area.



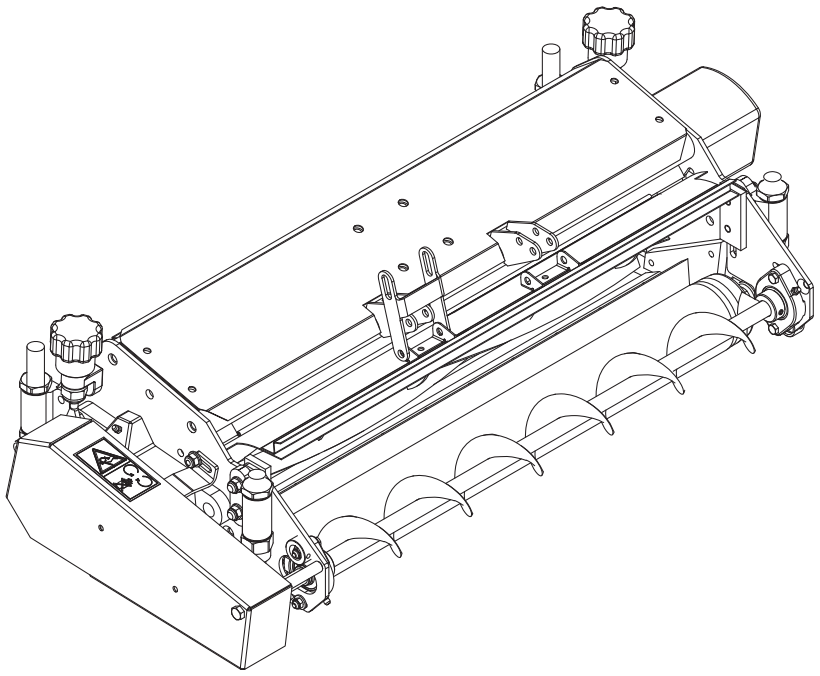
10.1 REAR ROLLER BRUSH KITS

Field Kit number:

F305 - 10031704-F30-5-F
F407 - 10031704-F40-7-F

Factory Fit:

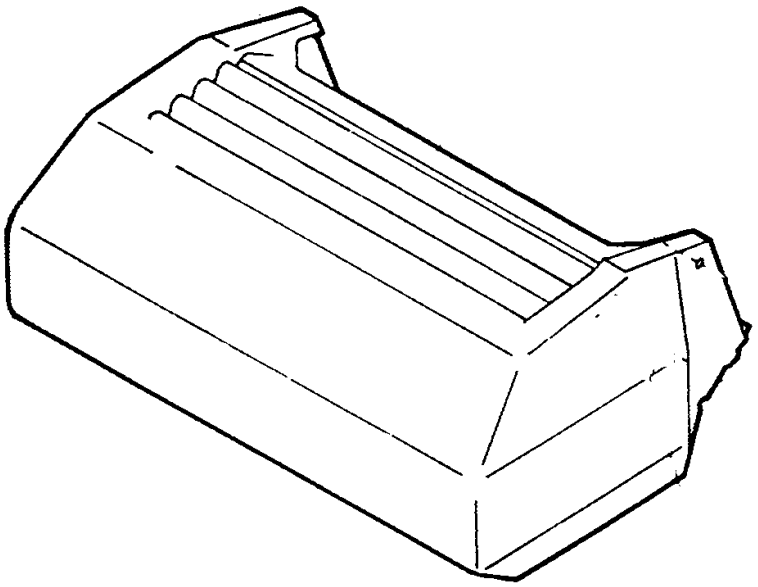
F305 - 10031704-F30-5-P
F407 - 10031704-F40-7-P



10.2 GRASS CATCHER KITS

Grass Catcher Kit 26” Reel (5 Units)
kit Number JMAB302.

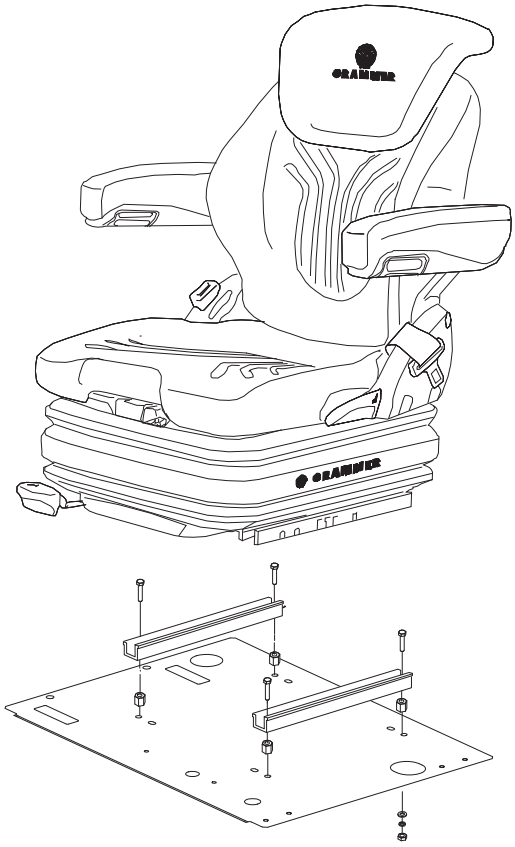
Grass Catcher Kit 26” Reel (7 Units)
kit Number JMAB545



10.3 AIR SUSPENSION SEAT KITS

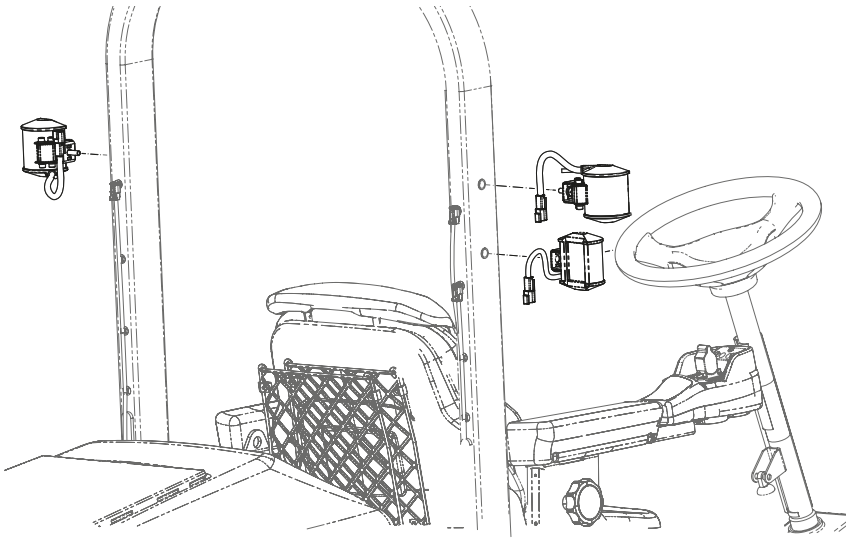
Air Suspension Seat Kit for F305
Kit number LMAC201.

Air Suspension Seat Kit for F407
Kit number LMAC277.



10.4 WORK LIGHT KIT

Work Light Kit number 10013067



11.1 PROBLEM SOLVING GENERAL

Symptoms	Possible Causes	Action
Engine will not start	Glow plug has not timed out	Reset ignition switch and allow glow plug to time out before cranking engine.
	Battery low on charge or defective.	Inspect condition of battery and battery connections.
	Fuel tank empty or fuel contaminated.	Fill tank with fresh fuel. Change filter. Bleed air from lines.
	Blown fuse.	Replace Fuse.
	Defective starter relay.	Test and replace relay if necessary.
	Brake switch is not on.	Ensure brake switch is on.
	Mow switch set to cut.	Set mow switch to off.
	Transport pedal not in neutral.	Remove foot from pedal, cheek pedal returns to the neutral position.
Engine hard to start or runs poorly.	Fuel tank empty or fuel contaminated.	Fill tank with fresh fuel. Change filter. Bleed air from lines.
	Air Cleaner blocked or dirty.	Check air cleaner, replace as neccesary.
	Injectors, fuel pump.	Consult engine manual.
	Other Engine Problem.	Consult engine troubleshooting guide.
Engine Stops	Fuel tank empty.	Fill with fresh fuel and bleed lines.
	Interlocks not set before leaving operators seat.	Ensure Parking Brake is on & Mow switch is in the off position.
Engine Overheating	Coolant level low.	Inspect and add 50/50 antifreeze solution if required
	Radiator air intake restricted.	Clean wire mesh guard at radiator.
	Waterpump/alternator belt or fan belt loose or broken.	Inspect waterpump/alternator belt and fan belt. Tighten if neccesary.
Battery not holding charge. Battery light on	Loose or corroded battery terminals.	Inspect terminals, clean and tighten as required.
	Low electrolyte level in battery.	Refill battery with distilled water.
	Alternator belt loose or broken.	Inspect waterpump/alternator belt. Tighten if neccesary.
	Alternator defective.	See engine manual.
Decks cut unevenly Poor quality of cut.	Cutting blades are worn.	Replace blades.
	Engine speed too low.	Check engine speed, run engine at full throttle.
	Cutter motors worn.	Check case drain leakage & flow check cutting circuit.
	Ground speed to high.	Set work speed stop.

12 QUALITY OF CUT TROUBLESHOOTING

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

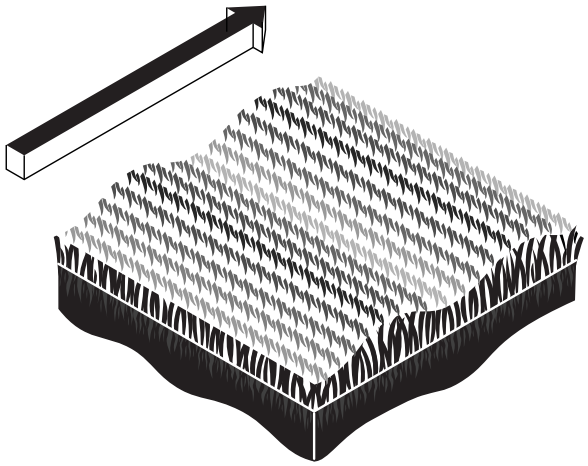
This area must have turf conditions that are known and do not change across the area. This type of area allows an accurate inspection of the performance of the mower to be made.

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

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

1. Cut (Ground) Speed.
2. The Reel Bearing Condition And Adjustment Before A Load (End Play).
3. The Reel and Bedknife are Sharp.
4. Bedknife Alignment to Reel.
5. Reel-to-Bedknife Contact.
6. Height-of-Cut (HOC).
7. Roller and Roller Bearing Condition.

12.1 WASHBOARDING



TN0159

NOTE: *Arrow indicates direction of travel.*

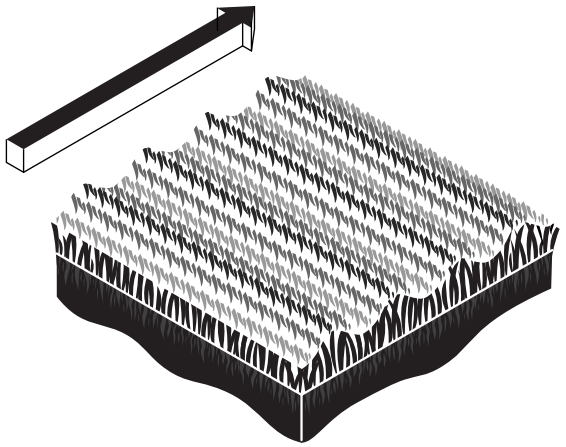
Washboarding is a repeated pattern of different cutting heights, that causes an appearance that is like a wave. In most cases, the wave tip-to-tip distance is approximately 6—8 in. (15—20 cm).

A change in the colour (from light-to-dark) is also seen. The cause of this condition can be a movement from side-to-side in the cutting unit (s). This condition is found on the mowers with cutting units held under the machine, but other causes can give the same result.

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

Possible Cause	Solution
The cut (ground) speed is higher than normal.	Decrease the cut (ground) speed.
Grass attaches to the roller.	Clean the roller and use scrapers or brushes.
The roller is out of round.	Replace the roller.
Cut in the same direction.	Change the direction of cut when you use the machine.
A groomer is used when the final cut is made.	The groomers must be used only in a straight line.

12.2 MARCELLING



TN0220

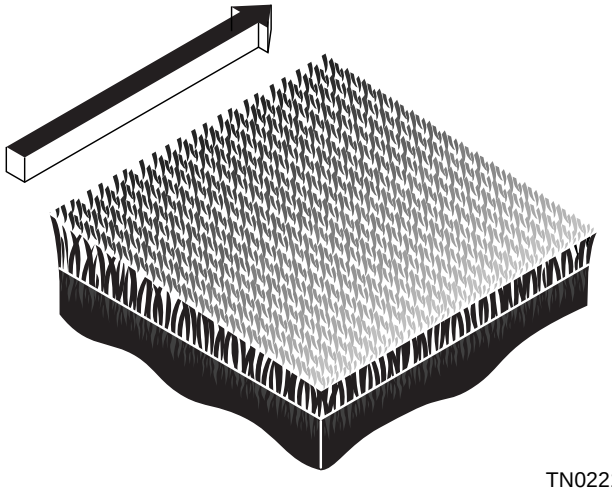
Marcelling, like washboarding, is a repeated pattern of different cutting heights, that causes an appearance that is like a wave.

In most cases, the wave tip-to-tip distance is 2 inches (5 cm).

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
The cut (ground) speed is higher than normal.	Decrease the cut (ground) speed.
The height-of-cut setting is not high enough for the turf conditions.	Make sure that the height of cut is adjusted to the turf conditions.
Cutting reel diameter is worn.	Check the cutting reel diameter. When the reel is worn, the reel must be replaced.

12.3 STEP CUTTING



TN0221

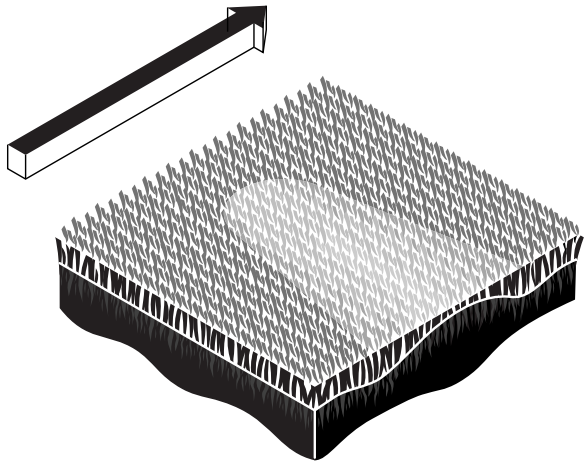
Step cutting occurs when the grass is cut higher on one side of a reel than the other side. Step cutting can occur when one cutting unit is higher than another cutting unit.

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

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
HOC (height-of-cut) settings are different from one side of a reel to the other side or from one cutting unit to another unit.	Check the HOC (height-of-cut) of the cutting units.
The front roller bearings are worn.	Check and replace front roller bearings.
Reel-to-bedknife contact is different from one side of the cutting unit to the other side, or from one cutting unit to another side.	Check the contact between the reel and the bedknife.
The cutting reel can not rotate at full speed.	Check and remove the cutting reel movement obstruction.
Differences in turf density.	Change the direction of cut.
Machine weight distribution is not equal.	Check and adjust the tire pressures.

12.4 SCALPING



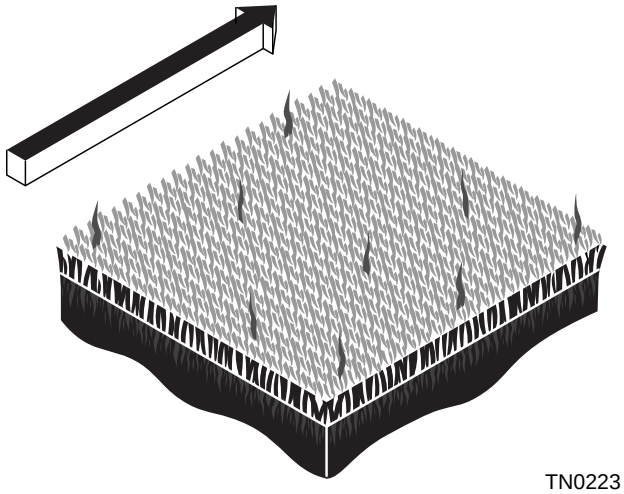
TN0222

Scalping is a condition in which a areas of grass are cut shorter than the adjacent areas. The area can be light green or brown. A low height-of-cut (HOC) setting or turf that is not level can cause scalping.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
HOC (height-of-cut) settings are lower than normal.	Check the HOC (height-of-cut) settings.
Incorrect reel-to-bedknife adjustment.	Adjust reel-to-bedknife setting for the correct HOC.
Turf is not level and the mower can not follow the turf.	Change the direction of cut.
The mower cuts more grass than the machine can cut.	Cut the grass more frequently.
Cut (ground) speed is higher than the machine can cut.	Decrease the cut (ground) speed.

12.5 STRAGGLERS



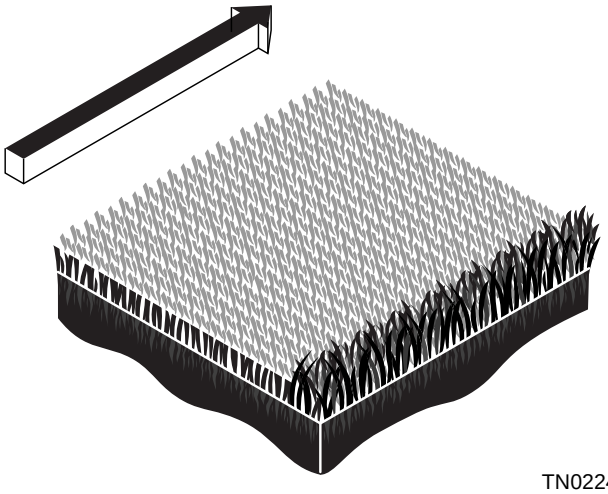
Stragglers are separated blades of grass that are not cut, or are cut incorrectly.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
The bedknife is incorrectly adjusted.	Adjust reel-to-bedknife setting.
The edges of the reel or bottom blade are not sharp.	Sharpen or replace the reel blade and bedknife as necessary.
The cut (ground) speed is higher than normal.	Decrease the cut (ground) speed.
The grass is higher than the level at which the machine can cut correctly.	Cut the grass more frequently.
Cut in the same direction.	Change the direction of cut more frequently.
Surface damage to the reel or bedknife.	Grind, sharpen or replace the reel blades and bedknife as necessary.

12.6 STREAKS

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

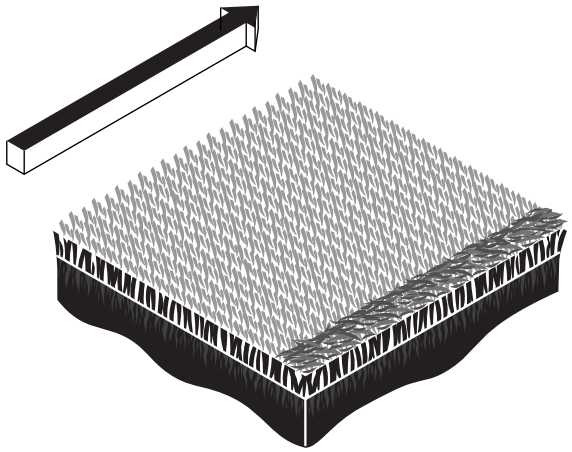


TN0224

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
Damaged bedknife.	Replace the bedknife.
The reel is damaged or the reel is worn at different heights.	Inspect the reel. Replace the reel when the reel is damaged.
Loose bedknife fasteners, or fasteners are not included.	Check the bedknife screws. Tighten the loose screws. Replace the screws that are not included.
The machine turns at a rate that is faster than the machine can turn and cut correctly. The cutting units do not overlap around turns or on side hills.	Turn less fast to allow the cutting units to overlap. Change the direction of cut or pattern on the side hills.
The tires twist the grass before the grass is cut.	Check and adjust the tire pressures.
The machine compresses the wet grass before the grass is cut.	Cut the grass when the grass is dry.

12.7 WINDROWING



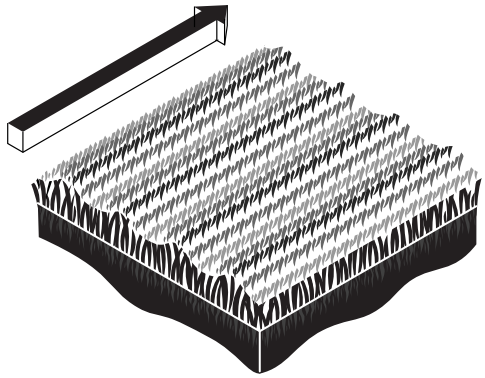
TN0225

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

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
The grass is higher than the level at which the machine can cut correctly.	Cut the grass more frequently.
Mowing the grass while the grass is wet.	Cut when the grass is dry.
Grass attaches to the roller.	Clean the roller and scraper.
Grass attaches to the bedknife.	Adjust reel-to-bedknife setting.

12.8 RIFLING OR TRAMLINING

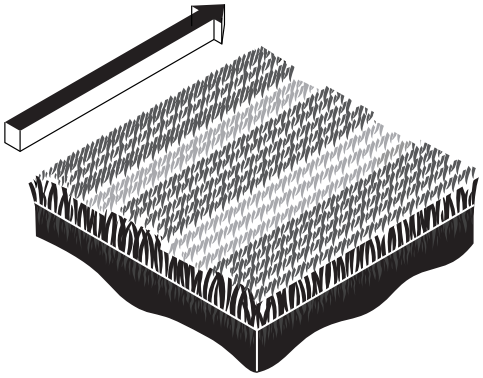


Rifling or tramlining is a pattern of different cutting heights, that causes a cut appearance like a wave. The cause of rifling can be a heavy contact point across a reel or a bedknife.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
The reel or the bedknife are worn at different levels.	Inspect the bedknife and reel. Sharpen or replace the reel and bedknife as necessary.
The bedknife screws are not included or loose, or over tightened.	Install, replace or tighten the bedknife screws to the correct torque setting.
The cut (ground) speed is higher than normal.	Decrease the cut (ground) speed.

12.9 MISMATCHED CUTTING UNITS

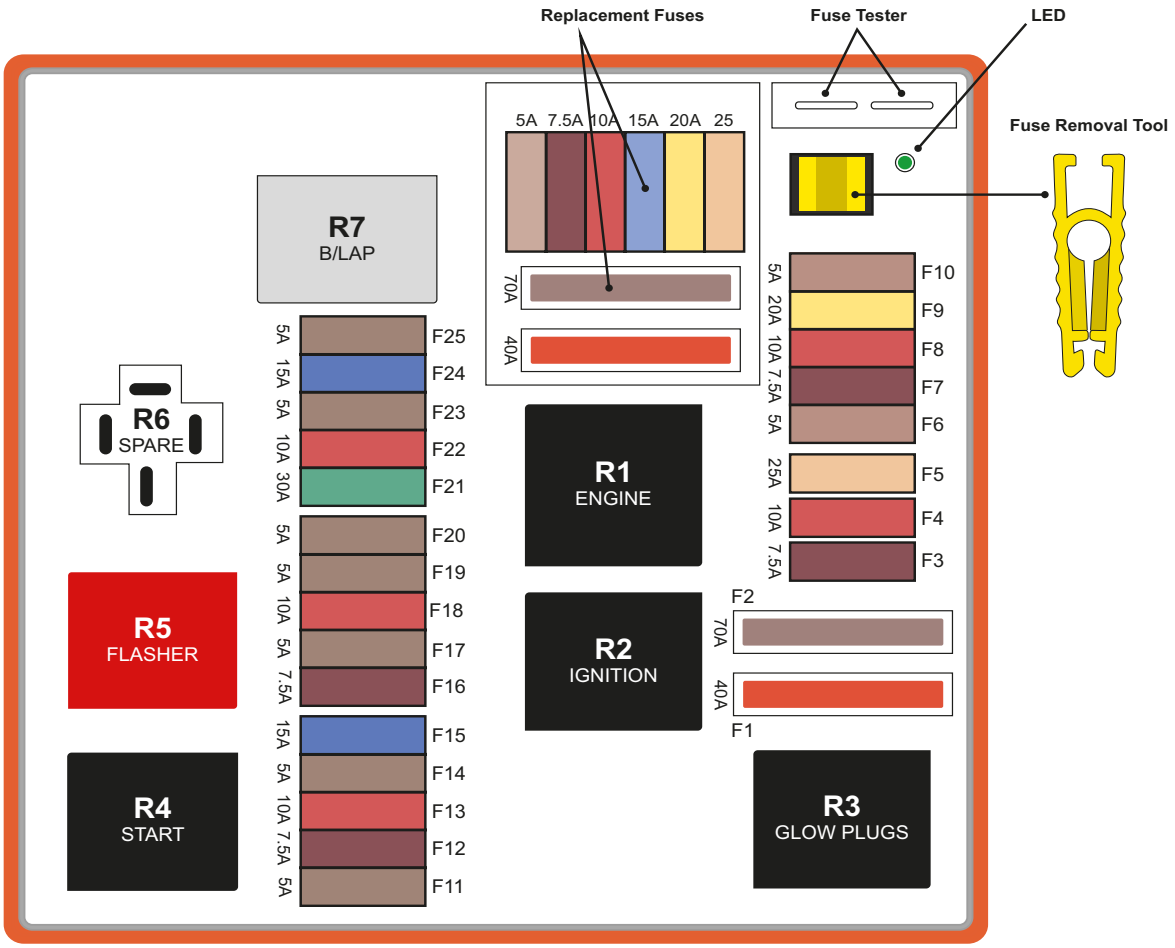


Mismatched cutting units is a pattern of different cutting heights, that give the grass a stepped appearance. This appearance is normally because of a mismatched HOC (height-of-cut) adjustment from one cutting unit to another unit.

NOTE: *Arrow indicates direction of travel.*

Possible Cause	Solution
HOC is different from one cutting unit to another cutting unit.	Check and adjust HOC on cutting units.
Difference in mower ride height side to side.	Check and adjust the pressure of the tires.

13.1 ELECTRICAL FUSES & RELAYS



TESTING A FUSE

In the top right hand corner there is a tool that can be used to remove a fuse from its location. The tabs on the fuse should then be inserted into the slots that can be seen in the top RH corner so that they touch the sides of the hole. If the fuse is OK the green LED will light up.

Also there are several spare replacement fuses available in the fuse box.

FUSE NO.	RATING	FUNCTION
F1	40 Amp	Glow Plugs
F2	70 Amp	Ignition On
F3	7.5 Amp	Hazard Lights (Optional)
F4	10 Amp	Starter
F5	25 Amp	Engine Master
F6	5 Amp	EGR Valve
F7	7.5 Amp	Fuel Pump
F8	10 Amp	Engine Sensors
F9	20 Amp	Engine Controller
F10	5 Amp	Engine Controller Start Signal
F11	5 Amp	Indicators (Optional)
F12	7.5 Amp	Side Lights (Optional)
F13	10 Amp	Horn & Beacon
F14	5 Amp	Brake Lights & DRLs (Optional)
F15	15 Amp	Dipped Beam Headlights (Optional)
F16	10 Amp	Proximity Sensors
F17	5 Amp	Control Panel Switches
F18	10 Amp	Air Seat (Optional)
F19	5 Amp	Display
F20	5 Amp	Alternator
F21	30 Amp	Machine Controller
F22	10 Amp	Accessory Socket
F23	5 Amp	Inclinometer (Optional)
F24	15 Amp	Spare
F25	5 Amp	Not Used

RELAY	RATING	FUNCTION
R1	40 Amp	Engine Master Relay
R2	70 Amp	Ignition Relay
R3	70 Amp	Glow Plug Relay
R4	40 Amp	Starter Relay
R5	40 Amp	Flasher Relay (Optional)
R6	-	Spare
R7	-	Backlap Relay

14 TORQUES

FINE PITCH METRIC THREADS					
Dia (mm)	Grade 4.6	Grade 4.8	Grade 8.8	Grade 10.9	Grade 12.9
	(Nm)	(Nm)	(Nm)	(Nm)	(Nm)
6	0	0	0	0	0
8	12	16	32	45	54
10	24	31	63	88	106
12	42	57	113	159	191
14	67	90	179	252	302
16	103	137	274	385	462
20	209	279	557	783	940
22	281	375	750	1055	1266
24	354	472	944	1327	1593
27	514	686	1371	1928	2314
30	715	954	1908	2683	3219
33	964	1286	2572	3616	4340
36	1196	1594	3189	4484	5381

COARSE PITCH METRIC THREADS					
Dia (mm)	Grade 4.6	Grade 4.8	Grade 8.8	Grade 10.9	Grade 12.9
	(Nm)	(Nm)	(Nm)	(Nm)	(Nm)
6	5	6	12	17	21
8	11	15	30	42	51
10	22	30	59	84	100
12	39	52	104	146	175
14	62	82	165	232	278
16	96	129	257	362	434
20	188	251	502	706	847
22	256	341	683	960	1152
24	325	434	868	1220	1464
27	476	635	1269	1785	2142
30	646	862	1723	2424	2908
33	822	1097	2193	3084	3701
36	1129	1506	3012	4235	5082

UNF THREADS					
Dia (in)	Grade A	Grade S	Grade T	Grade V	Grade X
	(lbf. ft)	(lbf. ft)	(lbf. ft)	(lbf. ft)	(lbf. ft)
1/4	3.8	10.4	11.3	14.3	17.3
5/16	7.7	20.8	22.5	28.5	34.5
3/8	13.9	37.7	40.7	51.6	62.5
7/16	21.9	59.5	64.2	81.4	98.6
1/2	33.7	91.5	98.7	125	152
9/16	48.2	131	141	179	217
5/8	67.4	183	197	250	303
3/4	118	319	344	437	529
7/8	188	509	550	697	645
1	279	757	817	1036	1255
1 1/8	405	1099	1186	1504	1823
1 1/4	563	1529	1650	2093	2535
1 3/8	759	2061	2224	2821	3418

UNC THREADS					
Dia (in)	Grade A	Grade S	Grade T	Grade V	Grade X
	(lbf. ft)	(lbf. ft)	(lbf. ft)	(lbf. ft)	(lbf. ft)
1/4	3.4	9.2	9.9	12.6	15.2
5/16	7	18.9	20.4	25.8	31.3
3/8	12.3	33.5	36.1	45.8	55.5
7/16	19.7	53.5	57.8	73.2	88.7
1/2	30.1	81.6	88	112	135
9/16	43.3	117	127	161	195
5/8	59.8	162	175	222	269
3/4	106	288	310	394	477
7/8	171	464	500	635	769
1	256	695	749	950	1152
1 1/8	363	984	1062	1347	1632
1 1/4	511	1387	1497	1899	2300
1 3/8	670	1820	1963	2490	3017

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

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