

Safety, Operation & Maintenance Manual

Jacobsen AR3, Kubota D1105-E4B ***Jacobsen AR3, Kubota D1105-E3B***

Series: EK
Product code: AR30001

Series: FZ
Product code: AR30002

Series: GX
Product code: AR30003

Series: KG
Product code: AR30004



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.

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The Jacobsen AR3 is a diesel engined self propelled Rotary mower. The hydraulic systems are for the traction drive, the cutting unit lift and the lower and cutting unit drives and steering.

IMPORTANT: The reliability and cutting performance of this machine will depend on the its care and use. Failure to operate and maintain within the practices given in this manual will shorten component life and affect cutting performance.

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 Ransomes Jacobsen Genuine spare parts to make sure that European conformity is controlled.

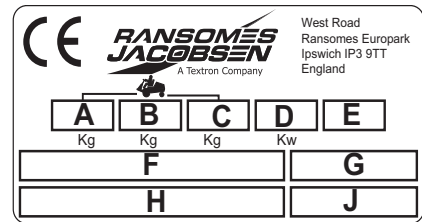
2006/42/EC

These instructions are the Original instructions confirmed by Ransomes Jacobsen Limited

2 INTRODUCTION

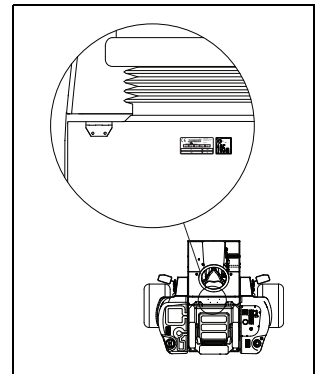
2.1 PRODUCT IDENTIFICATION

- 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



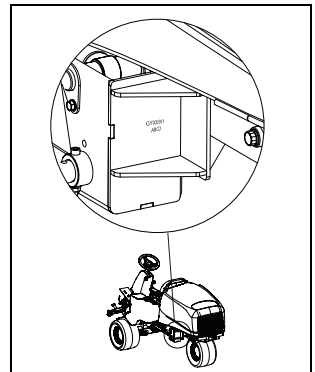
Location of Serial number plate

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



Chassis Stamp

The Serial number and date code (B) are marked on the chassis centre unit arm mounting



Engine Identification

Serial Plate



Location of Serial number plate

The engine serial number plate is found on the engine block. The label shows the engine group and serial number.

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

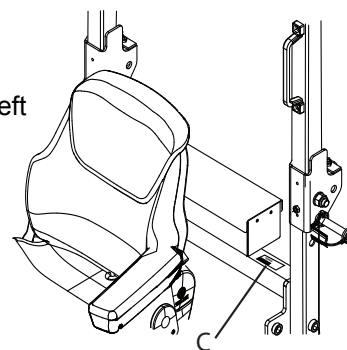


ROPS Serial Plate



ROPS Serial Plate Location

The ROPS serial plate (C) is located at the base of the of the ROPS main left hand beam.



2 INTRODUCTION

2.1 GUIDELINES FOR THE DISPOSAL OF SCRAP PRODUCTS

2.1.1 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.

2.1.2 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
 - Aluminium
 - 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 Ransomes Jacobsen Warranty Department to close their records.

2.1 PARTS MANUAL

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

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

1. Website – www.RansomesJacobsen.com. Select the “GENUINE PARTS” tab followed by the “ONLINE PARTS LOOK-UP” tab. You now have access to Parts drawings and lists to help with the identification of spare parts.
2. Website – www.ransomesjacobsen.com. Select the “SUPPORT” tab. 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.

2.2 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:-.....

3 SAFETY

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.

3.1.1 Safe Operation

- a Read the Operator's Manual and other training material. If the operator or technician can not read this manual, the owner is responsible to describe this material to the operators and technicians. Manuals in additional languages may be available on the Jacobsen or Ransomes Jacobsen website.
- a Read all of the instructions for this mower carefully. Know the controls and the correct operation of the equipment.
- b Children or 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.
- d Remember that the operator or owner is responsible for accidents or hazards that occur to other persons or their property.
- e Never carry passengers.
- f Never allow persons to operate or service the mower or its attachments without correct instructions.
- g Do not operate equipment while tired, sick or after you use alcohol or drugs.

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 tire pressure, engine oil level, the radiator coolant level and the air cleaner indicator. Fuel is flammable. Use caution when you add the fuel to the mower.
- e Operate the mower in daylight or in good artificial light. Use caution when you operate the mower during bad weather. Never operate the mower with lightning in the area.
- f Inspect the area to select the accessories and attachments that are needed to correctly and safely do the job. Only use parts, accessories and attachments approved by Jacobsen.
- g Be careful of holes in the terrain and other hazards that are not visible.
- h Inspect the area where the equipment is operated. Remove all objects you can find before you operate. Be careful of obstructions above the ground (low tree limbs, electrical wires) and also underground obstacles (sprinklers, pipes, tree roots). Enter a new area carefully. Look for possible hazards.
- i Inspect the cutting system before you start the mower. Make sure the blades are free to rotate. When you rotate one blade, other blades can rotate.

3.1.3 Operation

- a Never operate the engine without enough ventilation or in an enclosed area. The carbon monoxide in the exhaust fumes can increase to dangerous levels.
- b Never carry passengers. Keep other persons or animals away from the mower.
- c Disengage all drives and engage the parking brake before you start the engine. Only start the engine with the operator in the seat. Never start the engine with persons near the mower.
- d Keep your legs, arms and body inside the operator compartment while the mower is in operation. Keep your hands and feet away from the cutting units.
- e Do not 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 paths or roads, turn off the PTO switch, lift the mowers and travel at decreased speed. Look for traffic.
- k Stop the blades when the mower is on any surface that is not grass.
- l Do not release the cut grass in the direction of persons or allow persons near the mower while in operation.
- m Do not operate the mower with damaged guards or without safety devices in position.
- n Do not change the engine governor setting or over-speed the engine. Never change or tamper with adjusters that are closed with a seal for the engine speed control.
- o Before you leave the operator compartment, for any reason:
 - Disengage all the drives and lower attachments to the ground.
 - Engage the parking brake.
 - Stop the engine and remove the key.
- p When you hit an object or mower starts to cause the vibration that is not normal, inspect the mower for damage and make repairs.
- q Decrease the throttle setting before you stop the engine.
- r Do not use this equipment for uses that the mower was not made for.

3 SAFETY

3.1.4 ROPS

- a The ROPS is a safety device. Keep the ROPS in the vertical and locked position. Always use the seat belt when you operate the mower. Make sure the seat belt can be released quickly in an emergency.
- b Only operate the mower with the ROPS in the folded position on flat and level surfaces when necessary. Do not operate the mower with the ROPS in the folded position on slopes, near sharp edges or near water. **There is no roll over protection with the ROPS in the folded position.**
- c Check for clearance before you drive below objects. Do not contact tree branches, electrical wires or other objects with the ROPS.
- d Do not use the seat belt with the ROPS in the folded position.
- e Inspect the ROPS for damage. Keep the ROPS hardware fastened.
- f Do not weld, drill, change or bend the ROPS. Replace a damaged ROPS. Do not try to correct a damaged ROPS.
- g Do not remove the ROPS from the mower.
- h Jacobsen must approve any changes to the ROPS.

3.1.5 Safe Handling of Fuels

- a **The fuel and the fuel vapors are flammable. Use caution when you add the fuel to the mower.** The fuel vapors can cause an explosion.
- b Never use the containers that are not approved to keep or transfer fuel.
- c Never keep the mower or fuel containers near an open flame or any device that can cause the ignition of fuel or fuel vapors.
- d Never fill the fuel containers inside a vehicle or on a truck or trailer with a plastic liner. Always put the fuel container on the ground away from your vehicle before you fill the container.
- e Refuel the mower before you start the engine. When the engine is in operation or while the engine is hot, never remove the fuel cap or add fuel to the mower.
- f Refuel outdoors only and do not smoke when you add fuel. Extinguish all types of ignition.
- g The fuel nozzle must touch the rim of the fuel tank when you add fuel to the mower. Do not use a device to lock the fuel nozzle in the open position.
- h Do not over fill the fuel tank. Leave at least 1 inch (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 parking brake, stop the engine and remove the key.
- b Make sure the mower is parked on a solid and level surface.
- c Never work on a mower that is lifted only by the jack. Always use the jack stands.
- d Never allow persons to service the mower or its attachments without correct instructions.
- e When the mower is parked, put into storage or left without an operator, lower the cutting device unless a positive mechanical lock is used.

When you put the mower on a trailer or put the mower in storage, close the fuel valve. Do not keep fuel near flames or drain the fuel inside a building.

- 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 Carefully release the pressure from components with stored energy.
- l To prevent injury from the hot, high pressure oil, never use your hands to check for oil leaks. Use the paper or cardboard to find leaks.
- m The hydraulic fluid pressure can have enough force to enter your skin. If hydraulic fluid has entered your skin, a doctor must remove the hydraulic fluid surgically within a few hours or gangrene can occur.
- n When you service the hydraulic system, make sure the hydraulic fittings, tubes and hoses are tightened to the correct torque. Make sure the hydraulic system is in good condition before you start the engine.
- 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 Replace 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 When you Put the mower on a trailer

- a Be careful when you load or unload the mower on a trailer. Trailer must be wider than the mower and can carry the weight of the mower.
- b Use a full-width ramp to load or unload the mower on a trailer.
- c Use straps, chains, cables or ropes to fasten the mower to the trailer. Both front and rear straps must be sent down and toward sides of trailer.

Make sure that all latches are correctly fastened.

3 SAFETY

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 clearness. This equipment must not be operated without these devices correctly fastened in position.



WARNING

The Interlock System on this mower prevents the starting of the mower unless a.) The parking brake is Engaged. b.) The mow switch is in the OFF position, c.) The traction pedal is in the Neutral position. d) The operator is in the seat. The system stops the engine when the operator leaves the seat a.) without the parking brake engaged or 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 implements to the ground.
 - d. Engage parking brake.
 - e. Stop the engine and remove the ignition key.
2. Keep your hands, feet, and clothing away from moving parts. Wait for all movement to stop before you clean, adjust, or service the machine.
3. Keep the area of operation clear of all persons and animals.
4. Never carry any passengers.
5. Never operate the equipment without a correctly fastened grass deflector in position.

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

If additional information or service is needed. Contact your Authorized Ransomes Jacobsen Dealer, who knows the latest methods to service this equipment and can give that service.

**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, the fluid must be surgically removed within hours by a specialist doctor or gangrene may result.

**WARNING**

When the machine is driven off-road, a seat belt must be worn 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) Ransomes Jacobsen Limited recommends that the owner/user of the machine completes a local risk assessment of the machine to find any conditions that do not follow this rule, e.g. when you drive the machine next to water or on the highway.

**WARNING**

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

3 SAFETY

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/s^2 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 $a(8) = 2.5\text{m/s}^2$

Where daily vibration exposure $a(8)$ is below 2.5m/s^2 the risk is relatively low and no action need be Taken

Exposure limit value (ELV) - daily vibration exposure $a(8) = 5.0\text{m/s}^2$

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 cancel all warranties and can cause the failure of the machine.

CAUTION

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

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

4.1 ENGINE SPECIFICATION

Tier 4 Engine: Kubota 18.5KW (24.8HP) @ 3000 RPM, 3 cylinder (in line) Normally Aspirated Diesel engine, 4 stroke, water cooled, 1123cc (68.53 cu.in) with 12V 1KW electric start, 12V 40Amp Alternator

Model: D1105-E4B-RNS-1

Maximum Speed: 3150 ± 50 RPM (No load)

Idle Speed: 1650 ± 25 RPM

Oil Sump Capacity: 5.1 litres (1.35 US gals)

Fuel: No. 2-D Diesel fuel (ASTM D975)

Tier 3b Engine: Kubota 24.5KW (32.8HP) @ 3000 RPM, 3 cylinder (in line) Turbo charged Diesel engine, 4 stroke, water cooled, 1123cc (68.53 cu.in) with 12V 1KW electric start, 12V 30Amp Alternator

Model: D1105-T-E3B-RNUK-3

Maximum Speed: 3150 ± 50 RPM (No load)

Idle Speed: 1650 ± 25 RPM

Oil Sump Capacity: 5.1 litres (1.35 US gals)

Fuel: No. 2-D Diesel fuel (ASTM D975)

4.2 MACHINE SPECIFICATION

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

Cutting unit drive: Fixed displacement hydraulic motors.

Transmission: 3-wheel drive. Direct coupled variable displacement pump to direct coupled 200cc/rev front, 400cc/rev rear wheel motor.

Speeds:
Cutting: 0 - 9.5 km/h (0 - 5.9 mph) FORWARD

Transport: 0 - 14 km/h (0 - 8.5 mph) FORWARD

Reverse: 0 - 6 km/h (0 - 3.7 mph)

Steering: Hydrostatic power steering, with adjustable tilt steering wheel.

Ground pressure: 1 kg/cm² (14p.s.i.)

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

Fuel Tank Capacity: 45.4 litres (12 US galls)

Hydraulic Tank Capacity: 25 litres (6.6 US galls)

Battery: Exide 093 (SAE 500)

4.3 DIMENSIONS

A	Width of cut	183 cm	72 in
B	Transport width	200 cm	79 in
C	Overall height without ROPS	134 cm	52.7 in
D	Overall height with ROPS, add	48 cm	19 in
E	Overall Length	312 cm	123 in
F	Wheel Track	132 cm	52 in
G	Wheel Base	151 cm	59.75 in
H	Weight of Machine (less fuel)	821 kg	1810 lb
J	Weight of Cutting Unit (each)	91kg	201 lb
K	Weight of Fuel - 45.4 litres (12 US gal)	39 kg	86 lb

4 SPECIFICATION

4.4 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)

AR3 Hand / Arm Acceleration Level	Series EK, FZ, GX, KG with ROPS
	Maximum LH or RH Accelerations m/s ²
	0.80 ± 0.40

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)

AR3 Whole Body Acceleration Level	Series EK, FZ, GX, KG with ROPS
	Maximum Weighted Acceleration m/s ²
	0.49 ± 1.57

4.5 NOISE Emissions

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

The Machinery Safety Directive 2006/42/EC

And

Exposure Of Workers To The Risks Arising From Physical Agents (Noise) Directive 2003/10/EC

By compliance to:

The Lawnmower Standard BS EN ISO 5395:2013

And

Sound Pressure Standard EN ISO 3746: 2010

Measured Sound Pressure 89 dB(A) $\pm$ 0.86 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 3744:2010

104 dB(A) $\pm$ 0.86 LWA (4163101 Rear Discharge Blade)

105 dB(A) $\pm$ 0.86 LWA (4129639 Mulching Blade)

4.6 SLOPES

DO NOT USE ON SLOPES GREATER THAN 17°

The slope 17° was calculated using static stability measurements according to the requirements of BS EN ISO 5395.

4 SPECIFICATION

4.7 CUTTING UNIT SPECIFICATION

General: Three 686mm (27in) rotary mulching/rear discharge decks.

Drive: Fixed displacement hydraulic motors directly coupled to cutting unit.

Control: Cutting unit lift lever with automatic shut off and safety interlock restart.

Construction:
Heavy duty, welded pressed steel.

Cutting Blades:
Rear Discharge
Low Lift Blade

Height of cut:
Adjustable in 6 mm (0.25 in) increments
19 mm(0.75 in) to 90mm (3.5 in)

Rear roller:
Series EK 76mm (3in) diameter smooth roller.
Series FZ 90mm (3.5in) diameter smooth roller

4.8 CUTTING PERFORMANCE (AREA)

1.0 hectares/hr. at 9.5 km/hr. (2.6 acres/hr at 5.9 mph)

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

4.9 RECOMMENDED LUBRICANTS

Engine oil: Should be to MIL-L-2104C or to A.P.I. Classification CD grades. [10W-30]

TEMPERATURE	VISCOSITY
ABOVE 25°C (77°F)	SAE30 or SAE10W-30 SAE10W-40
0°C to 25°C (32°F to 77°F)	SAE20 or SAE10W-30 SAE10W-40
BELOW 0°C (32°F)	SAE10W or SAE10W-30 SAE10W-40

Grease:

For rear axle: K NATE (RJL No. 4213860), or equivalent to MIL-G-23549C, MIL-G-2345C, DIN 51 825, DIN 51 818.

General: Lithium based general purpose grease.

TYRE PRESSURE

Product	Front Wheel			Rear Wheel		
	Tyre Size	Tyre Type	Tyre Pressure	Tyre Size	Tyre Type	Tyre Pressure
AR3	20 x 12.00 - 10	Grassmaster 6pr	1.00 - 1.37 bar (14 - 20 psi)	20.00 x 10.00 - 8	Grassmaster 4pr	1.00 - 1.51 bar (14 - 22 psi)

4 SPECIFICATION

4.9 CONFORMITY CERTIFICATES

DECLARATION OF CONFORMITY • ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ • PROHLÁŠENÍ O SHODĚ • OVERENSSTEMMELSESERKLÆRING • CONFORMITEITSVERKLARING • VASTAVUSDEKLARATSIOON • VAATIMUSTENMUKAISUUSVAKUUTUS • DECLARATION DE CONFORMITE • KONFORMITÄTSERKLÄRUNG • ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ • MEGFELELŐSÉGI NYILATKOZAT • DICHIARAZIONE DI CONFORMITÀ • ATBILSTĪBAS DEKLARĀCIJA • ATITIKTIES DEKLARACIJA • DIKJARAZZJONI TAL-KONFORMITÀ • DEKLARACJA ZGODNOŚCI • DECLARAÇÃO DE CONFORMIDADE • DECLARAȚIE DE CONFORMITATE • VYHLÁSENIE O ZHODE • IZJAVA O SKLADNOSTI • DECLARACIÓN DE CONFORMIDAD • DEKLARATION OM ÖVERENSSTÄMMELSE • SAMRÆMISYFIRLÝSING • KONFORMITETSERKLÆRING • 符合性声明 • SAMRÆMISYFIRLÝSING • 適合宣言 • 적합성 선언서 • UYGUNLUK BEYANI • ДЕКЛАРАЦІЯ ПРО ВІДПОВІДНІСТЬ

Business name and full address of the manufacturer • Търговско име и пълен адрес на производителя • Obchodní jméno a plná adresa výrobce • Producentens firmanavn og fulle adresse • Bedrijfsnaam en volledige adres van de fabrikant • Toetja ärimini ja täielik address • Valmistajan toimintini ja täydellinen osoite • Nom commercial et adresse complète du fabricant • Firmenname und vollständige Adresse des Herstellers • Εταιρεία και τοποθεσία της/των κατασκευαστή/ • A gyártó üzleti neve és teljes címe • Ragione sociale e indirizzo completo del fabbricante • Uzņēmuma nosaukums un pilna ražotāja adrese • Verslo pavadinimas ir pilnas gamintojo adresas • Isem kummerčali u indirizz shih tal-fabbrikant • Nazwa firmy i pełny adres producenta • Nome da empresa e endereço completo do fabricante • Denumirea comercială și adresa completă a producătorului • Obchodný názov a úplná adresa výrobcu • Naziv podjetja in polni naslov proizvajalca • Nombre de la empresa y dirección completa del fabricante • Tillverkarens företagsnamn och kompletta adress • Fyrirtækisheiti og fullt heimilisfang framleiðanda • Firmanavn og full adresse for produsenten • 製造商の商業名称と完整地址 • Nafn fyrirtækis og fullt heimilisfang framleiðanda • 商号およびメーカーの正式住所 • 제조사의 상호명 및 주소 • Imalatçının ticari ünvanı ve açık adresi • Фірмове найменування і повна адреса виробника	Ransomes Jacobsen Limited West Road, Ransomes Europark, Ipswich, England, IP3 9TT
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Product Code • Код на продукта • Kód výrobku • Produktkode • Productcode • Toote kood • Tuotekoodi • Code produit • Produktcode • Κωδικός προϊόντος • Termékkód • Codice prodotto • Produkta kods • Kodici tal-Prodott • Kod produktu • Código do Produto • Cod produs • Kód výrobku • Označka proizvoda • Código de producto • Produktkod • Vörðunúmer • Produktkode • 产品代码 • Framleiðslunúmer • 製品コード • 제품 코드 • Ürün Kodu • Код виробу	AR30001 AR30002 AR30003 AR30004
Machine Name • Наименование на машината • Název stroje • Maskinnavn • Machinenam • Masina nimi • Laitteen nimi • Nom de la machine • Maschinenbezeichnung • Όνομασία μηχανήματος • Gėrėnė • Denominazione della macchina • Iekārtas nosaukums • Mašinos pavadinimas • Isem tal-Magna • Nazwa urządzenia • Nome da Máquina • Numele echipamentului • Název stroja • Naziv stroja • Nombre de la máquina • Maskinens namn • Heli tækis • Maskinnavn • 机器名称 • Nafn vélar • 機械名 • 기기 명칭 • Máchine Adı • Назва машини	Jacobsen AR3
Designation • Предназначение • Označení • Betegnels • Benaming • Nimetus • Tuupimerkintä • Pažymėjimas • Bezeichnung • Χαρακτηρισμός • Megnevezés • Funzione • Apzīmējums • Lithuanian • Denominazzjoni • Oznaczenie • Designação • Specificație • Oznaczenie • Namen stroja • Description • Beteckning • Merkning • Konstruktion • 名称 • Útnefning • 用途 • 지정 • Tanımı • Позначення	Ride on Rotary Mower
Serial Number • Серийн номер • Sériové číslo • Seriennummer • Seriennummer • Seerianumber • Valmistusnumero • Numéro de série • Seriennummer • Σειριακός αριθμός • Sorozatszám • Numero di serie • Sérijs numurs • Serijos numeris • Numur Serjali • Numer serjiny • Número de Série • Număr de serie • Sériové číslo • Serijska številka • Número de serie • Seriennummer • Raðnúmer • Seriennummer • 序列号 • Raðnúmer • シリアル番号 • 일련 번호 • Seri Numarası • Сери́йний номер	EK000301 - EK999999 FZ000301 - FZ999999 GX000301 - GX999999 KG000301 - KG999999
Engine • Двигател • Motor • Motor • Motor • Mootor • Mootori • Moteur • Motor • Μηχωνή • Modulénv • Motore • Dzinējs • Variklis • Sahha Netta Installata • Silnik • Motor • Motor • Motor • Motor • Motor • Vél • Motor • 发动机 • Afvél • エンジン • 엔진 • Motor • Двигун	Kubota D1105T-E3B Kubota D1105-E4B
Net Installed Power • Негна инсталирана мощност • Čistý instalovaný výkon • Installeret nettoeffekt • Netto geïnstalleerd vermogen • Installeeritud netovõimsus • Asennettu nettoteho • Puissance nominale nette • Installierte Nettoleistung • Καθαρή εγκατεστημένη ισχύς • Netto bedrjett teljesítmény • Potenza netta installata • Pareždžiat šlia jauda • Grynoji galia • Wisał tal-Qlugh • Moc zainstalowana netto • Potência instalada • Puterea instalată netă • Čistý instalovaný výkon • Neto vgrajena moč • Potencia instalada neta • Nettoeffekt • Nettoaffi vélar • Netto installeret kraft • 装机容量 • Nettoppsetningarorka • 搭載する正出力 • 정미 출력 • Net Kurulu Güç • Корисна встановлена потужність	24.5 kW @ 3000 RPM 18.5 kW @ 3000 RPM
Cutting Width • Широчина на рязане • Šírka fezu • Skærebredde • Maalbreedte • Löikelaius • Leikkuleveys • Largeur de coupe • Schnittbreite • Μήκος μιστικής • Vágási szélesség • Larghezza di taglio • Griešanas platums • Pļivimo plotis • Tikkonforma mad-Direttivi • Szerokość ciecia • Largura de Corte • Lățimea de tăiere • Šírka záberu • Širina reza • Anchura de corte • Klippbredd • Skurbreidd • Klippebredde • 剪草宽度 • Breidd sláttar •刈り取り幅 • 절단 폭 • Kesme Genişliği • Ширина різання	173 cm to 183 cm

Conforms to Directives • В съответствие с директивите • Splňuje podmínky směrníc • Er i overensstemmelse med direktiver • Voldoet aan de richtlijnen • Vastab direktiividele • Direktiivien mukainen • Conforme aux directives • Entspricht Richtlinien • Ακολουθώ τα κατά τις Οδηγές • Megfelel az irányelveknek • Conforme alle Direttive • Atbilst direktivām • Atitinka direktyvų reikalavimus • Valutazzjoni tal-Konformità • Dyrektywy związane • Cumpre as Directivas • Respectă Directivele • Je v súlade so smernicami • Skladnost z direktivami • Cuple con las Directivas • Uppfyllir direktív • Samræmist tilskipunum • I samsvar med direktiv • 符合指令 • Í samræmi við reglugerðir • 適合指令 • 규정 준수 • Su Yönergelere Uyumaktadı • Відповідає директиви	2006/42/EC (Machinery Directive) 2014/30/EU (EMC) 2000/14/EC (Noise in the Environment) 2003/10/EC (Noise Physical Agents) 2002/44/EC (Vibration Physical Agents)
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Conformity Assessment • Оценка за съответствие • Hodnocení plnění podmínek • Overensstemmelsesvurdering • Conformiteitsbeoordeling • Vastavushindamine • Vaatimustenmukaisuuden arviointi • Evaluation de conformité • Konformitätsbeurteilung • Διαπίστωση Συμμόρφωσης • Megfelelőség-értékelés • Valutazione della conformità • Atbilstības novērtējums • Atitikties įvertinimas • Livell tal-Qawwa tal-Hoss Imkejjel • Ocena zgodności • Avaliação de Conformidade • Evaluarea conformității • Vyhodnotenie zhodnosti • Ocena skladnosti • Evaluación de conformidad • Bedømming av overensstømmelse • Samræmismat • Konformitetsvurdering • 符合性评估 • Samræmismat • 適合性評価 • 적합성 평가 • Uygunluk Değerlendirilmesi • Оцінка відповідності	2006/42/EC Annex VIII
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Measured Sound Power Level • Измерено ниво на звукова мощност • Naměřený akustický výkon • Målte lydstyrkeniveau • Gemeten geluidsniveau • Mõõdetud helivõimsuse tase • Mitattu äänitehotaso • Niveau de puissance sonore mesuré • Gemessener Schalldruckpegel • Στοιχισμένο επίπεδο ηχητικής ισχύος • Mért hangteljesítményszint • Livello di potenza sonora misurato • Izmērtais skaņas jaudas līmenis • Išmatuotas garso stiprumo lygis • Livell tal-Qawwa tal-Hoss lggarantit • Moc akustyczna mierzona • Nivel sonoro medido • Nivelul măsurat al puterii acustice • Nameranā hlāidna akustiského výkonu • Izmērjena raven zvooche moči • Nivel de potencia sonora medido • Uppmätt ljudeffektivnivå • Mælt hjóðafestig • Malt lydeffektivni • 测得声功率级 • 音出力レベル測定値 • 측정된 음향 파워 레벨 • Ölcülen Ses Gücü Düzeyi • Виміряний рівень звукової потужності	104 dB(A) ± 1.05 LWA (4163101 Rear Discharge Combination / Mulching Blade) Engine Speed 3075 rpm
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Guaranteed Sound Power Level • Гарантирано ниво на звукова мощност • Garantovaný akustický výkon • Garantert lydstyrkeniveau • Gegarandeerd geluidsniveau • Garantitud helivõimsuse tase • Taattu äänitehotaso • Niveau de puissance sonore garanti • Garantierter Schalldruckpegel • Εγγυημένο επίπεδο ηχητικής ισχύος • Szavatolt hangteljesítményszint • Livello di potenza sonora garantito • Garantātais skaņas jaudas līmenis • Garantuotas garso stiprumo lygis • Livell tal-Qawwa tal-Hoss lggarantit • Moc akustyczna gwarantowana • Nivel sonoro garantado • Nivelul garantat al puterii acustice • Garantovaná hláidna akustického výkonu • Zajamčena raven zvooche moči • Nivel de potencia sonora garantizado • Garanterad ljudeffektivnivå • Hjíoðafestig sem ábyrgð er tekin á • Garanter lydeffektivni • 保证声功率级 • Trygður hjóðstyrkur • 音出力保証レベル • 보장된 음향 파워 레벨 • Garantili Ses Gücü Düzeyi • Гарантований рівень звукової потужності	105 dB(A) LWA
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Conformity Assessment Procedure (Noise) • Оценка за съответствие на процедурата (Шум) • Postup hodnocení plnění podmínek (hluk) • Procedure for overensstemmelsesvurdering (Støj) • Procedure van de conformiteitsbeoordeling (geluid) • Vastavushindamismenetulus (müra) • Vaatimustenmukaisuuden arviointimenetely (Melu) • Procédure d'évaluation de conformité (bruit) • Konformitätsbeurteilungsverfahren (Geräusch) • Διαδικασία Αξιολόγησης Συμμόρφωσης (Θόρυβος) • Megfelelőség-értékelési eljárás (Zaj) • Procedura di valutazione della conformità (rumore) • Atbilstības novērtējuma procedūra (troksnis) • Atitikties įvertinimo procedūra (garsas) • Procedura tal-Valutazzjoni tal-Konformità (Hoss) • Procedura oceny zgodności (poziom hałas) • Processo de avaliação de conformidade (nível sonoro) • Procedura de evaluare a conformității (zgomot) • Postup vyhodnocovania zhodnosti (hluk) • Postopek za ugotavljanje skladnosti (hrup) • Procedimiento de evaluación de conformidad (ruido) • Procedur för bedømming av överensstømmelse (buller) • Samræmismatsaðferð (hávaði) • Prosedyre for konformitetsvurdering (støy) • 符合性评估程序 (噪声) • Aðgerð fyrir samræmismat (Hávaði) • 適合性評價の手順 (騒音) • 적합성 평가 절차(소음) • Uygunluk Değerlendirme Prosedürü (Gürültü) • Регламент оцінки відповідності (шум)	2000/14/EC Annex VI Part 1
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UK Notified Body for 2000/14/EC • Нотифициран орган в Обединеното кралство за 2000/14/EO • Úřad certifikovaný podle směrnice č. 2000/14/EC • Det britiske bemyndigede organ for 2001/14/EF • Engels adviesorgaan voor 2000/14/EG • Ühendkuningriigi teavitatud asutus direktiivi 2000/14/EÜ mõistes • Direktiivin 2000/14/EY mukainen ilmoitettu tarkastuslaitos Iosssa-Britanniassa • Organisme notifié concernant la directive 2000/14/CE • Britische benannte Stelle für 2000/14/EG • Κοινοποιημένος Οργανισμός Ηθωυμένου για 2000/14/ΕΚ • 2000/14/ΕΚ - egyesült királyságbeli bejelentett szervezet • Organismo Notificato in GB per 2000/14/CE • 2000/14/EK AK registrētā organizācija • JK notifikuotais ištatgjs 2000/14/EC • Korp Notifikat tar-Renju Unit għat 2000/14/KE • Dopuszczona jednostka badawcza w Wielkiej Brytanii wg 2000/14/WE • Entidade notificado na Reino Unido para 2000/14/CE • Organism notificat în Marea Britanie pentru 2000/14/CE • Notifikovaný orgán Spojeného královstva pre smernicu 2000/14/ES • Britansk prijavleni organ za 2000/14/ES • Cuerpo notificado en el Reino Unido para 2000/14/CE • Anmält organ för 2000/14/EG i Storbritannien • Tillyknntur aðili í Bretlandi fyrir 2000/14/EC • Britisk teknisk for 2000/14/EF • 英國 2000/14/EC 认证机构 • Bretland Upplýsingar fyrir 2000/14/EB • UK (英國) 公認機關 • 2000/14/EC에 대한 영국 인증 기관 • 2000/14/EC için BK Onaylı Kuruluş • Британський уповноважений орган для 2000/14/EC	Number: 0359 Intertek testing & Certification Ltd Cleeve Road, Leatherhead, Surrey, KT22 7SB.
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GB **BE** **BG** **CH** **CN** **CY** **CZ** **DE** **DK** **EE** **ES** **FI** **FR** **GR** **HU** **IS** **IT**
 United Kingdom Belgium Bulgaria Switzerland China Cyprus Czech Republic Germany Denmark Estonia Spain Finland France Greece Hungary Iceland Italy

JP **KR** **LI** **LT** **LV** **MT** **NL** **NO** **PL** **PT** **RO** **RU** **SE** **SI** **SK** **TR** **UA**
 Japan Korea Liechtenstein Lithuania Latvia Malta Netherlands Norway Poland Portugal Romania Russia Sweden Slovenia Slovakia Turkey Ukraine

5 DECALS

5.1 SAFETY DECALS EC

- | | | |
|----|-----------|---|
| A. | 009034910 | Read Operator's Manual. |
| B. | 009034890 | Keep a Safe Distance from the Machine. |
| C. | 009034920 | Stay Clear of Hot Surfaces. |
| D. | 009034880 | Do Not Open or Remove Safety Shields While the Engine is Running. |
| E. | 009034940 | Caution Rotating Blades. |
| F. | 009034930 | Avoid Fluid Escaping Under Pressure. Consult Technical Manual for Service Procedures. |
| G. | 009034900 | Do Not Remove Safety Shields While Engine is Running. |
| H. | 009114100 | Danger of Explosion if the Battery Terminals are Short Circuited. |
| J. | 4333660 | Maximum permissible working slope. |
| K. | 4133706 | Caution Diesel Fuel |
| L. | 4133705 | Caution Hydraulic Oil |
| M. | 4118415 | Caution Engine Coolant under Pressure |
| N. | 4153197 | Caution, Stop Engine & Remove the Starter Key Before Pressure Washing |



A



B



C



D



E



F



G



H



J



K



L



M



N

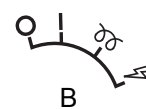
5.2 INSTRUCTION DECALS EC

Description

- | | |
|----|---------------------------|
| A. | Maximum Sound Power Level |
| B. | Ignition Switch |
| C. | Throttle Control |
| D. | Cutting Unit Lift |
| E. | Fwd/Rev Traction Pedal |
| F. | Weight Transfer |
| G. | Parking Brake |
| H. | Jacking Point |
| J. | Slipping Point |



A



B



C



D



E



F



G



H



J

5.3 SAFETY DECALS USA

BRIESMAS

Lai izvairītos no bojājumiem, strādājot ar akumulatoru:

1. Vienmēr savienojiet melno zemējuma kabeli pēdējo un atvienojiet to pirmo.
2. Nelaidiet tuvumā dzirksteles un liesmas un izvairieties no saskarsmes ar skābi.

Lai izvairītos no bojājumiem pievienojot akumulatoru:

1. Savienojiet pozitīvās (+) spaiļes ar pozitīvajām (+) spaiļēm.
2. Savienojiet negatīvās (-) spaiļes no laba akumulatora ar mašīnas karkasu, kam ir izlādējies akumulators.

3001435

BRĪDINĀJUMS

Lai izvairītos no nopietniem ievainojumiem, nekad neatvienojiet un nebojājiēd sēdekļa slēdzi.

Lai iegūtu vairāk informācijas, izlasiet rokasgrāmatu.

365339

WARNING

TO PREVENT POSSIBLE INJURY TO YOU OR OTHERS, DO NOT OPERATE THIS UNIT WITH GUARD REMOVED

521720

WARNING

- Fit roll over protective structure before using this machine on slopes greater than 10°.
- Do not use on slopes greater than 15°.
- Keep bystanders away

4139980

WARNING

1. Read operator's manual. Do not allow untrained operators to use machine.
2. Keep shields in place and hardware securely fastened.
3. Before you clean, adjust or repair this equipment, disengage all drives, engage parking brake and stop engine.
4. Keep hands, feet and clothing away from moving parts.
5. Never carry passengers.
6. Keep bystanders away.

361854

IMPORTANT

This machine uses GreensCare 68, a biodegradable hydraulic fluid. (Order 5003103 for 5 gal. pail)

Use of 10W30 is an approved alternate fluid. Use will compromise all biodegradable properties of GreensCare 68 hydraulic fluid.

4108880

ADVERTENCIA

1. Leer el manual del operador. No permitir que personas no capacitadas para ello usen la máquina.
2. Mantener los protectores en su lugar y sus tornillos debidamente fijados.
3. Antes de limpiar, ajustar o reparar este equipo, desengranar todas los mandos, aplicar el freno de estacionamiento y apagar el motor.
4. Mantener las manos, los pies y la ropa alejados de las piezas en movimiento.
5. No conducir como pasajero ni llevar pasajeros en máquinas sin asiento para ello.
6. Mantener a las demás personas alejadas durante el funcionamiento de la máquina.
7. Si no sabe leer inglés, solicitarle a otra persona que le lea y explique el contenido de las etiquetas y del manual de la máquina.

340630

OPERATION

READ MANUAL BEFORE OPERATING
REPLACEMENT MANUAL AVAILABLE FROM:
JACOBSEN TEXTRON - CHARLOTTE, NC



To Start	To Stop / Park
1. Parking Brake.....On	1. Traction Pedal.....Neutral
2. Traction Pedal.....Neutral	2. Mower Switch.....Off
3. Mower Switch.....Off	3. Parking Brake.....On
4. Throttle.....Half	4. Throttle.....Slow
5. Ignition.....On	5. Ignition.....Off
6. Glow Plug Light.....Off	6. Remove Key
7. Ignition.....Start	
To Drive / Transport	To Mow
1. Follow "To Start" instructions	1. Follow "To Start" instructions
2. Mower Switch.....Off	2. Throttle.....Fast
3. Cutting Units.....Raise	3. Mower Switch.....Mow
4. Parking Brake.....Off	4. Parking Brake.....Off
5. Throttle.....Fast	5. Cutting Units.....Lower
6. Slowly depress traction pedal	6. Slowly depress traction pedal

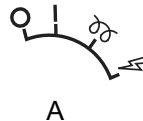
4124445



5.4 INSTRUCTION DECALS USA

Description

- A. Ignition Switch
- B. Throttle Control
- C. Cutting Unit Lift
- D. Fwd/Rev Traction Pedal
- E. Weight Transfer
- F. Parking Brake
- G. Jacking Point
- H. Slings Point



A



D



B



C



G



H

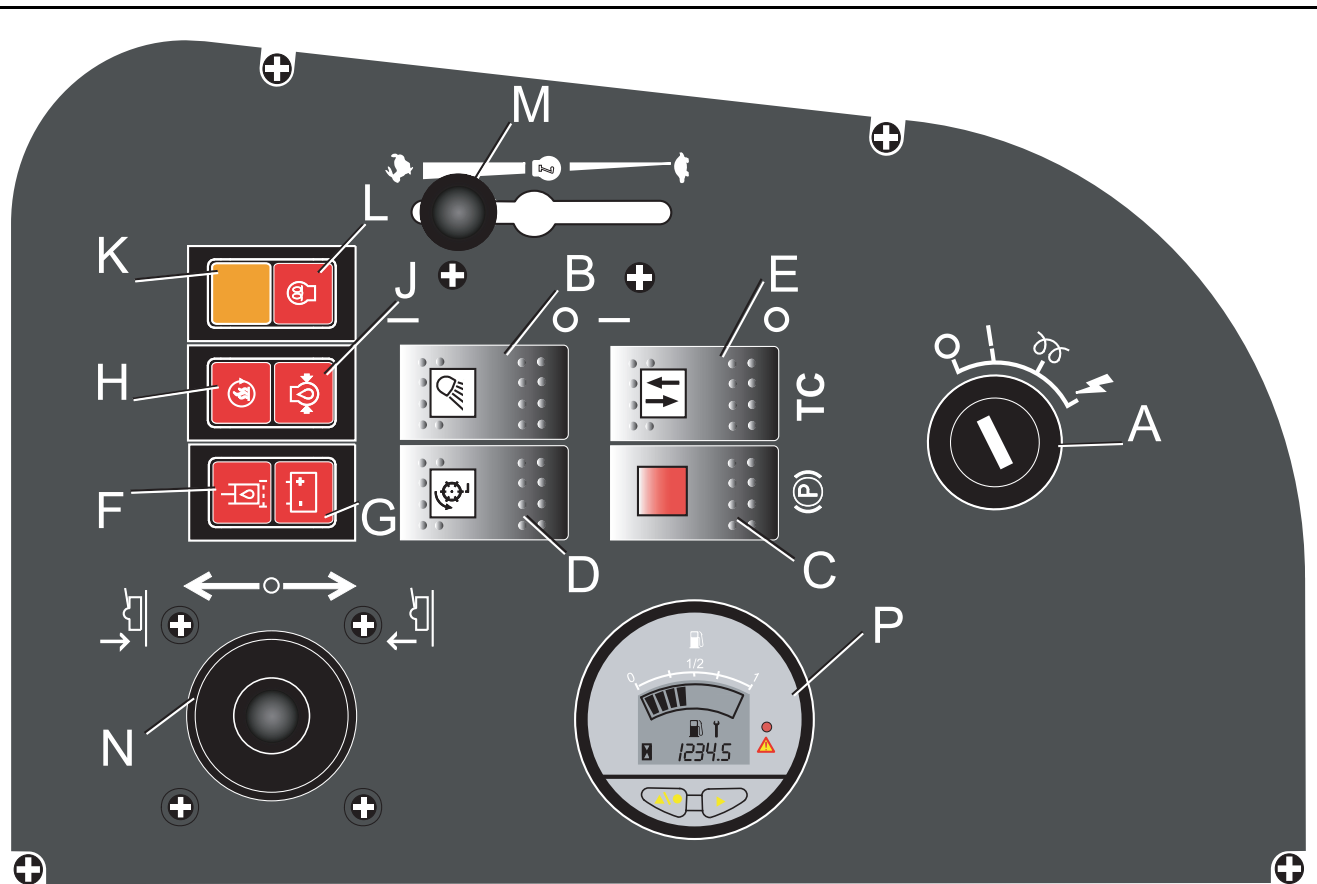


F



E

6 CONTROLS



6.1 INSTRUMENT PANEL

A: Starter Key Switch

B: Working Light Switch

C: Parking Brake Switch

D: Cutter Switch

E: Weight Transfer Switch

F: Blocked Hydraulic Filter Warning Lamp

G: Charge Warning Lamp

H: Engine Coolant Temperature Warning Lamp

J: Engine Oil Pressure Warning Lamp

K: Control Module Fault Warning Lamp

L: Engine Preheat Indicator Lamp

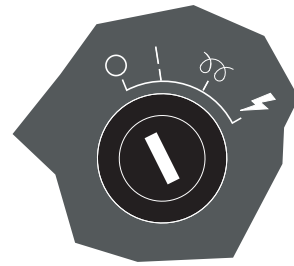
M: Throttle Control Lever

N: Joystick Unit Lift/Lower Control

P: Multi-Function Gauge

6.1A STARTER KEY SWITCH

The starter key (A) should be turned clockwise to the 'pre-heat' (No. 2) position to heat the glowplugs when the green warning lamp goes out, on warning lamp display module, turn the starter key clockwise to the 'start' (No. 3) position to start the engine. After starting, the key should be released and allowed to return automatically to the 'on' (No. 1) position for normal running.

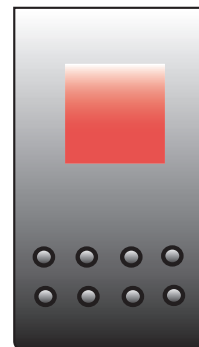
**6.1B PARKING BRAKES**

When the engine is running the Parking brake is applied by sliding back the orange button on the rocker and depressing the switch on the control panel.

When the engine is switch off the parking 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.

**6.1C WORKING LIGHT SWITCH**

Push bottom of the rocker switch to turn light on. When the working light is on the switch is illuminated. Push top of rocker switch to turn working light off.

**6.1D CUTTING UNIT SWITCH**

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.)

**WARNING**

If units are lowered with the cutting switch engaged they will start immediately.

6 CONTROLS

6.1E WEIGHT TRANSFER SWITCH

This switch allows the operator to transfer weight off the cutting units onto the machine. This gives the machine better traction.

Depress the rocker switch to transfer weight off the cutting units, the warning lamp will illuminate.

When the switch is in the off position weight is transferred back onto the units, the warning lamp will go out.

Note: The weight transfer comes factory set. If adjustment is required this can be done by using an allen key to adjust the valve under the left hand side of the foot plate. See section 9.2



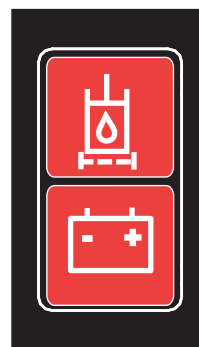
TC

6.1F BLOCKED HYDRAULIC FILTER INDICATOR LAMP.

Monitors Hydraulic filter condition. Coloured red, Illuminates prior to filter bypass valve operating, when illuminated filter requires changing. The lamp should illuminate while the engine is preheating as a test. It is not unusual for the lamp to stay light for up to 3 minutes after a very cold start. But should not stay on for longer than 5 minutes during operation.

6.1G. CHARGING WARNING LAMP

Colour red, on when ignition is switched on and will go out when the engine is started. If the light comes on while the engine is running, the fan belt may be slipping or broken or a fault in the electrical system is indicated and should be investigated. **STOP IMMEDIATELY.**



6.1H ENGINE COOLANT TEMPERATURE WARNING LAMP

Colour red, on when the engine coolant temperature reaches a preset level (Note: an audible alarm is also activated). If the lamp comes on and alarm sounds bring the machine to a stop, disengage the cutting units, apply the parking brake and stop the engine.

6.1J. ENGINE OIL PRESSURE WARNING LAMP

Colour red, on when the ignition is switched on, and will go out once the engine has started. If the light comes on while the engine is running - **STOP IMMEDIATELY** as this indicates that the engine oil pressure is too low. Check the level of oil in the sump and top up as necessary. Check the oil pressure sender switch. Continued operation may cause extensive damage to the engine.



6.1K SAFETY MODULE MALFUNCTION

Colour orange, on when the safety module malfunctions. Stop machine and turn off ignition leave for a few seconds and switch ignition back on. If the indicator lamp is still on, contact your Dealer.

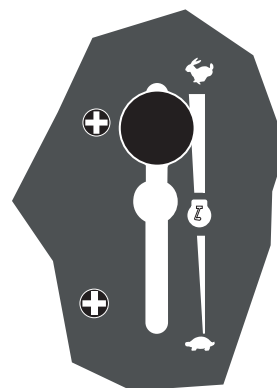
**6.1L ENGINE PREHEAT INDICATOR LAMP**

Colour red, on when the ignition switch is turned clockwise to the pre-heat position. Once the lamp goes out the engine can be started.

6.1M THROTTLE CONTROL LEVER

The lever should be moved away from the operator to increase the engine speed and towards the operator to decrease the engine speed.

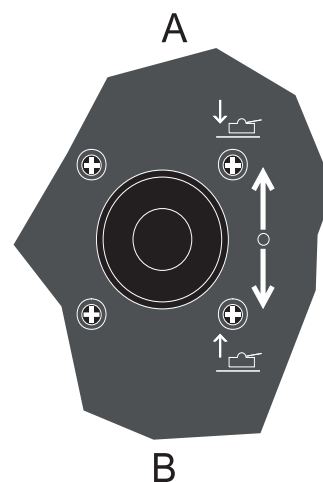
NOTE: Engine should be used at full speed.

**6.1N JOYSTICK UNIT LIFT/LOWER CONTROL**

The joystick can be operated in 2 directions (single Axis) A, B.

A One touch lower. Lower all cutting units.

B Raise all cutting units.
(Needs to be held at position B for lifting units into transport position)



6 CONTROLS

6.1P MULTI-FUNCTION GAUGE(Prior to s/n GX000396)

The various functions can be selected using the left hand button

The fuel level is displayed on a digital bargraph in the upper segment of the display. The clock, time to service and hourmeter is displayed in the lower segment of the display in numeric format.

Low fuel level

The bargraph, black fuel pump symbol and red LED above warning triangle will flash

Service Required

The black spanner symbol and red LED above warning triangle will flash

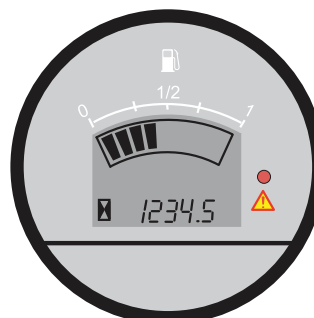
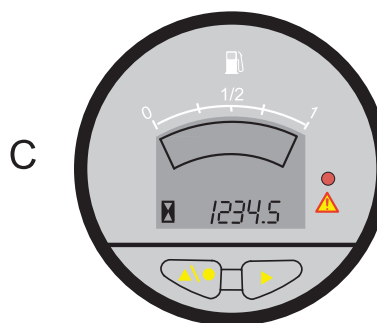
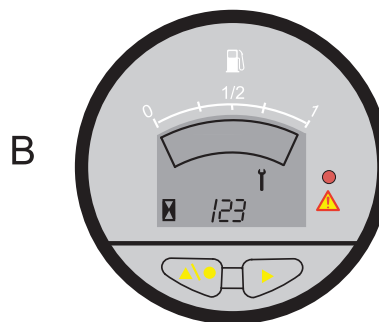
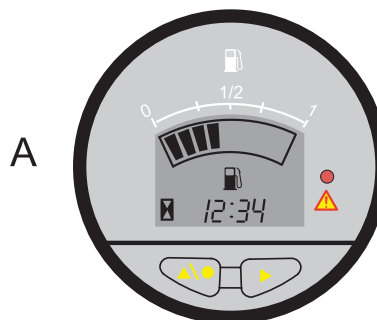
- A. Clock Function / Fuel Gauge Function
- B. Time To Service Function
- C. Total Hours Function

Setting the Time-Of-Day Clock

The display will flash the two "HOURS" digits. Press the right button  to increment by one hour, or hold the button to increment continuously. When the desired number of hours is reached, press the left button  once. The display will flash the two "minutes" digits. Press the right button  to increment by one minute or hold the button to increment continuously. When the desired number of minutes is reached, press the left button  once.

MULTI-FUNCTION GAUGE(From s/n GX000396)

The gauge has no adjusting or setting buttons and displays fuel level and total hours



6.2 TRACTION FOOT PEDAL

A. Forward Travel (Traction Pedal)

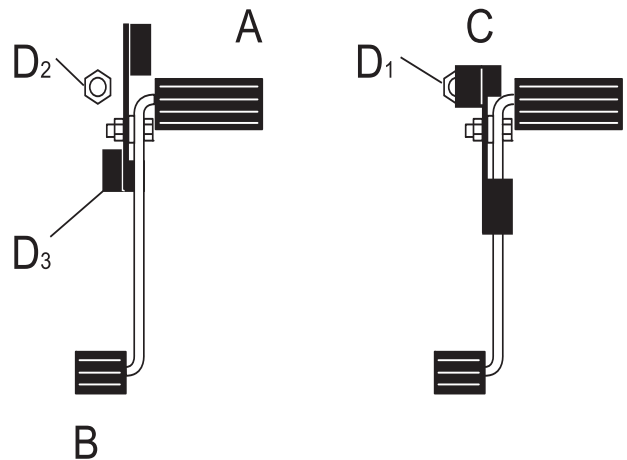
Press front of pedal down for forward travel. Release pedal to slow tractor and stop. Do not press traction pedal when parking brake is set and parking brake light (W) is lit.

B. Reverse Travel (Traction Pedal)

Press rear of pedal down for reverse travel. Release pedal to slow tractor and stop. Allow tractor to come to a complete stop before reversing direction. Do not press traction pedal when parking brake is set and parking brake light (W) is lit.

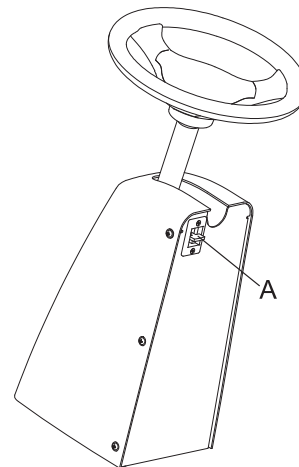
C. Mow Speed Stop

Limits forward speed while mowing. To operate at lower travel speed while mowing, rotate lever so it contacts stop screw (D1) on floor board when forward travel pedal is pressed. To travel at full speed, set lever in position shown (D3). Stop screw (D2) can be adjusted to set specific mow speeds.



6.3 STEERING TILT CONTROL

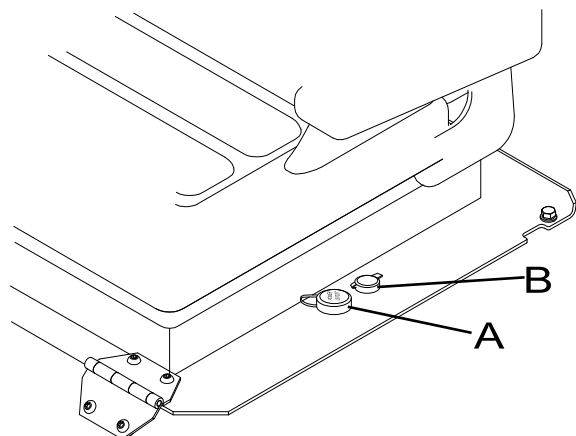
Pull lever A up to release steering column. Tilt column up or down to position desired. Release lever A to lock steering column in place.



6.4 Power Outlet

The Auxiliary Power Outlets are situated on the left hand side of the seat on the seat plate.

- A Automotive 12V Power Outlet (Cigar Lighter)
- B Accessory 12V Power Outlet

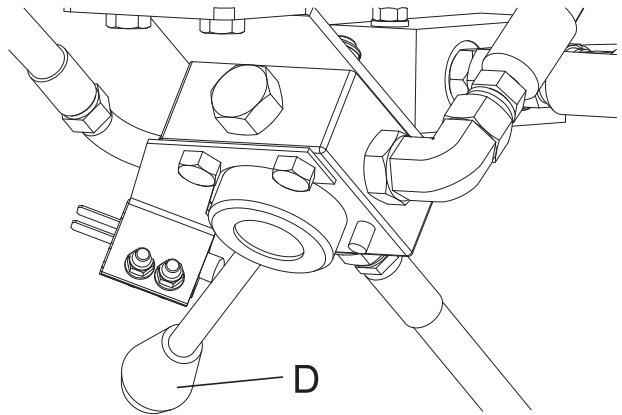


6 CONTROLS

6.5 PARKING BRAKE RELEASE VALVE

The Parking Brake Release Valve is situated under the Operators Platform, close to the front axle. It is used to release the parking brake when the engine is not running

The Parking brake can be released by rotating the lever D to the right (when viewed from the front of the machine) and turning the steering wheel clockwise until resistance is felt.



6.6 TRANSPORT LATCHES (Optional)

Transport latches **A** are fitted for the front cutting units.



WARNING

Cutting unit transport latches are a secondary safety device.

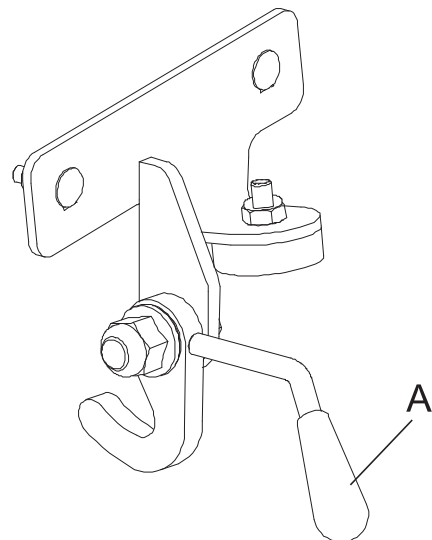
When transporting the machine the cutting units should be held in the transport position on the hydraulics with the transport latches engaged.

1. Park the machine on level ground.
2. Whilst seated in the driving position with the engine at operating speed raise the cutting units fully by operating lift joystick, return the joystick to the neutral position.

DO NOT move the joystick into the lower position.

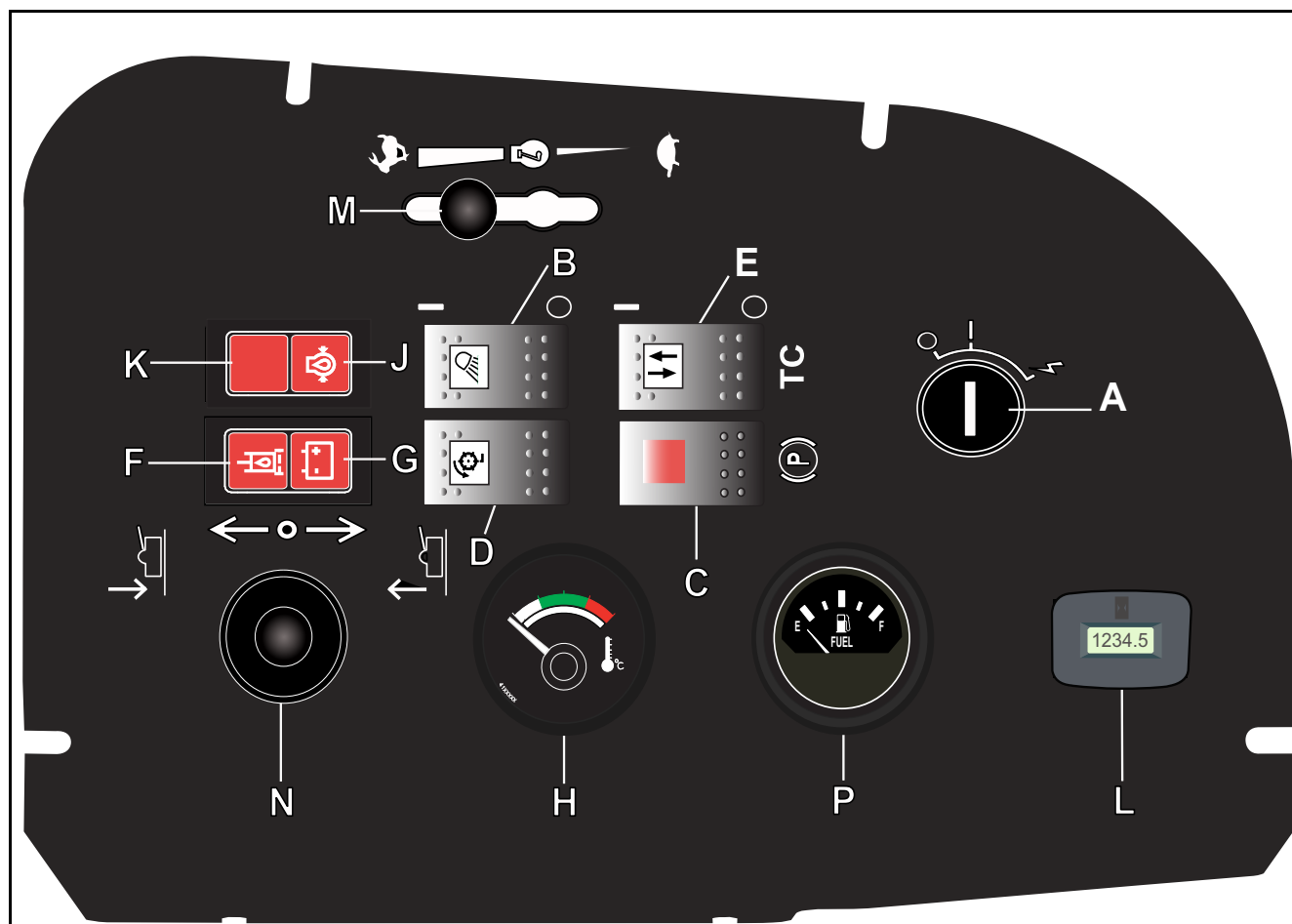
3. Disengage drives, stop the engine and make sure all moving parts are stationary. Apply brakes and remove the starter key.
4. Transport latches can now be engaged or released.

Before releasing transport latches it is important that all cutting units are fully raised.



[illegible]

6 CONTROLS - FROM SERIAL NUMBER GX100869 & KG000440



6.1 INSTRUMENT PANEL

A: Starter Key Switch

B: Working Light Switch

C: Parking Brake Switch

D: Cutter Switch

E: Weight Transfer Switch

F: Blocked Hydraulic Filter Warning Lamp

G: Charge Warning Lamp

H: Engine coolant Temperature

J: Engine Oil Pressure Warning Lamp

K: Control Module Fault Warning Lamp

L: Hour Meter

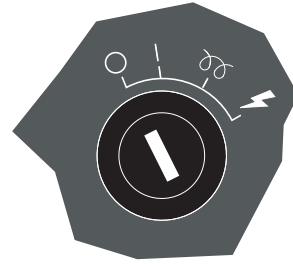
M: Throttle Control Lever

N: Joystick Unit Lift/Lower Control

P: Fuel Gauge

6.1A STARTER KEY SWITCH

The starter key (A) should be turned clockwise to the 'Pre-heat' (No. 1) position to heat the glow plugs, allow five seconds to elapse, before turning the starter key clockwise to the 'start' (No. 2) position to start the engine. After starting, the key should be released and allowed to return automatically to the 'on' (No. 1) position for normal running.

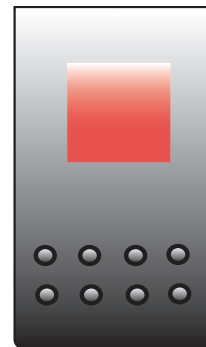
**6.1B PARKING BRAKES**

When the engine is running the Parking brake is applied by sliding back the orange button on the rocker and depressing the switch on the control panel.

When the engine is switch off the parking 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.

**6.1C WORKING LIGHT SWITCH**

Push bottom of the rocker switch to turn light on. When the working light is on the switch is illuminated. Push top of rocker switch to turn working light off.

**6.1D CUTTING UNIT SWITCH**

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.)

**WARNING**

If units are lowered with the cutting switch engaged they will start immediately.

6 CONTROLS - FROM SERIAL NUMBER GX100869 & KG000440

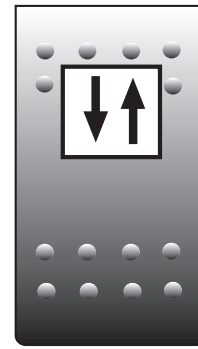
6.1E WEIGHT TRANSFER SWITCH

This switch allows the operator to transfer weight off the cutting units onto the machine. This gives the machine better traction.

Depress the rocker switch to transfer weight off the cutting units, the warning lamp will illuminate.

When the switch is in the off position weight is transferred back onto the units, the warning lamp will go out.

Note: The weight transfer comes factory set. If adjustment is required this can be done by using an Allen key to adjust the valve under the left hand side of the foot plate. See section 9.2



TC

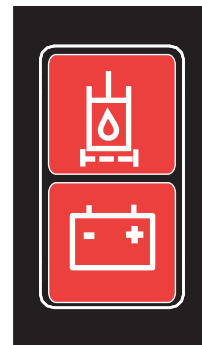
6.1F BLOCKED HYDRAULIC FILTER INDICATOR LAMP.

Monitors Hydraulic filter condition. Coloured red, Illuminates prior to filter bypass valve operating, when illuminated filter requires changing. The lamp should illuminate while the engine is preheating as a test. It is not unusual for the lamp to stay light for up to 3 minutes after a very cold start. But should not stay on for longer than 5 minutes during operation.

6.1G. CHARGING WARNING LAMP

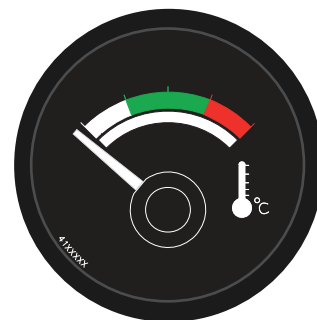
Colour red, on when ignition is switched on and will go out when the engine is started. If the light comes on while the engine is running, the fan belt may be slipping or broken or a fault in the electrical system is indicated and should be investigated.

STOP IMMEDIATELY.



6.1H ENGINE COOLANT TEMPERATURE WARNING LAMP

Gauge indicates engine coolant temperature.



6.1J. ENGINE OIL PRESSURE WARNING LAMP

Colour red, on when the ignition is switched on, and will go out once the engine has started. If the light comes on while the engine is running - **STOP IMMEDIATELY** as this indicates that the engine oil pressure is too low. Check the level of oil in the sump and top up as necessary. Check the oil pressure sender switch. Continued operation may cause extensive damage to the engine.

**6.1K MULTIFUNCTION WARNING LIGHT**

When the ignition key is in the ON position, the red LED is on continuously. When any of the safety interlocks are not in their neutral position, the red LED flashes the applicable code.

One flash every two seconds - Seat switch is not activated.

Two flashes every two seconds - Parking brake is not applied.

Three flashes every two seconds - Reel drive engaged.

If the red LED continues to flash, the engine will not start.

The red LED illuminates to indicate the operation of the glow plugs (diesel engine only). When the operator starts the engine the LED will flash until the engine has started, the red LED will stay illuminated for two to three seconds then turns off.

If the engine is over temperature (Diesel Only), the red LED flashes and the buzzer sounds twice every four seconds.

**6.1L HOURMETER**

Records the number of hours the engine has run. Use the hour meter to manage a good scheduled maintenance program (refer to the Maintenance Guide).

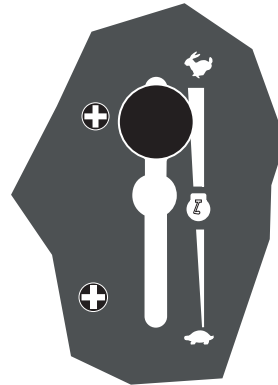


6 CONTROLS - FROM SERIAL NUMBER GX100869 & KG000440

6.1M THROTTLE CONTROL LEVER

The lever should be moved away from the operator to increase the engine speed and towards the operator to decrease the engine speed.

NOTE: Engine should be used at full speed.

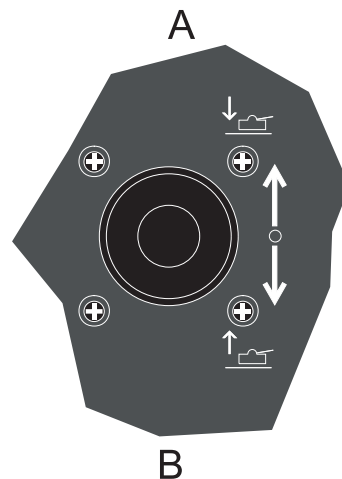


6.1N JOYSTICK UNIT LIFT/LOWER CONTROL

The joystick can be operated in 2 directions (single Axis) A, B.

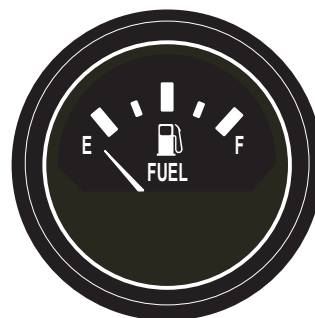
A One touch lower. Lower all cutting units.

B Raise all cutting units.
(Needs to be held at position B for lifting units into transport position)



6.1P FUEL GAUGE

The fuel gauge indicates the quantity of fuel in the vehicle.



6.2 TRACTION FOOT PEDAL

A. Forward Travel (Traction Pedal)

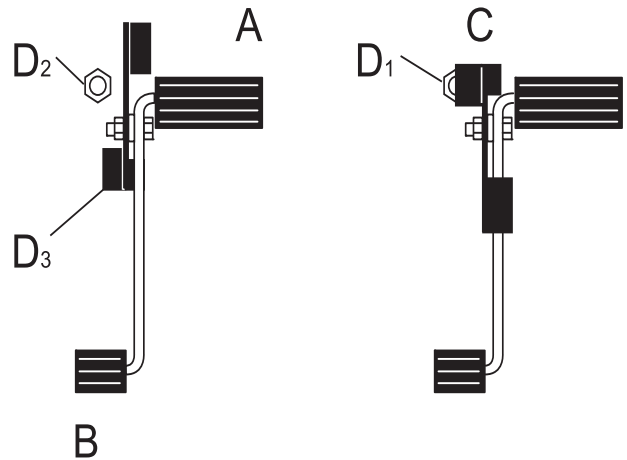
Press front of pedal down for forward travel. Release pedal to slow tractor and stop. Do not press traction pedal when parking brake is set and parking brake light (W) is lit.

B. Reverse Travel (Traction Pedal)

Press rear of pedal down for reverse travel. Release pedal to slow tractor and stop. Allow tractor to come to a complete stop before reversing direction. Do not press traction pedal when parking brake is set and parking brake light (W) is lit.

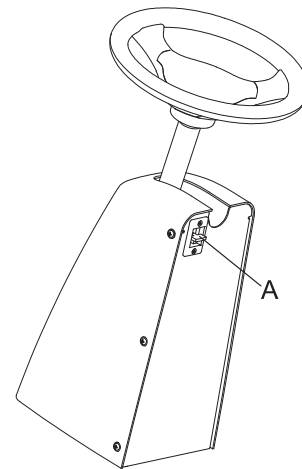
C. Mow Speed Stop

Limits forward speed while mowing. To operate at lower travel speed while mowing, rotate lever so it contacts stop screw (D1) on floor board when forward travel pedal is pressed. To travel at full speed, set lever in position shown (D3). Stop screw (D2) can be adjusted to set specific mow speeds.



6.3 STEERING TILT CONTROL

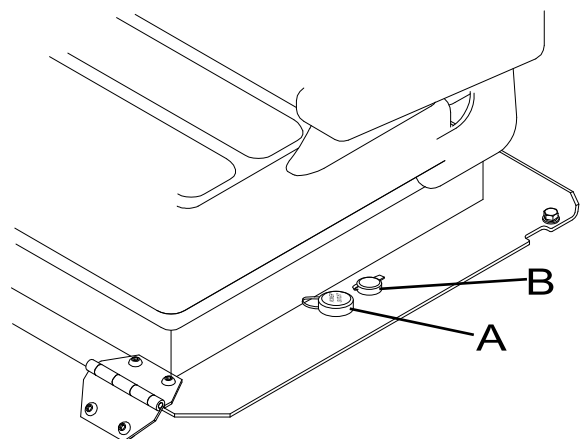
Pull lever A up to release steering column. Tilt column up or down to position desired. Release lever A to lock steering column in place.



6.4 Power Outlet

The Auxiliary Power Outlets are situated on the left hand side of the seat on the seat plate.

- A Automotive 12V Power Outlet (Cigar Lighter)
- B Accessory 12V Power Outlet

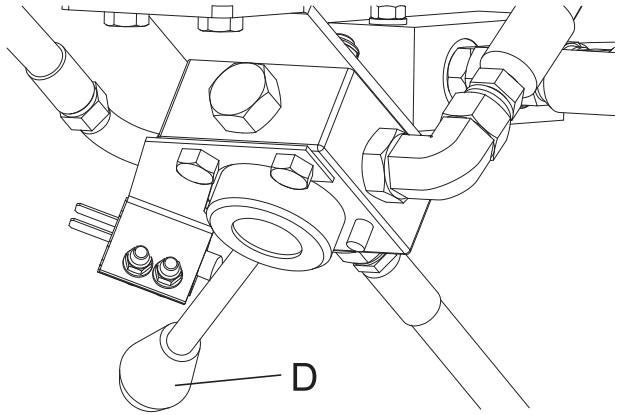


6 CONTROLS - FROM SERIAL NUMBER GX100869 & KG000440

6.5 PARKING BRAKE RELEASE VALVE

The Parking Brake Release Valve is situated under the Operators Platform, close to the front axle. It is used to release the parking brake when the engine is not running

The Parking brake can be released by rotating the lever **D** to the right (when viewed from the front of the machine) and turning the steering wheel clockwise until resistance is felt



6.6 TRANSPORT LATCHES

Transport latches **A** are fitted for the front cutting units.



WARNING

Cutting unit transport latches are a secondary safety device.

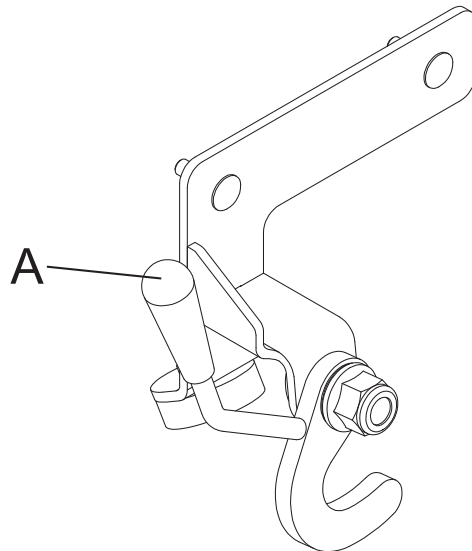
When transporting the machine the cutting units should be held in the transport position on the hydraulics with the transport latches engaged.

1. Park the machine on level ground.
2. Whilst seated in the driving position with the engine at operating speed raise the cutting units fully by operating lift joystick, return the joystick to the neutral position.

DO NOT move the joystick into the lower position.

3. Disengage drives, stop the engine and make sure all moving parts are stationary. Apply brakes and remove the starter key.
4. Transport latches can now be engaged or released.

Before releasing transport latches it is important that all cutting units are fully raised.



7.1 DAILY INSPECTION



CAUTION

The daily inspection should be performed only when the engine is off and all fluids are cold. Lower implements to the ground, engage parking brake, stop engine and remove ignition key.

1. Perform a visual inspection of the entire unit, 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 and 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 tyres for proper inflation.
5. Test the operator presence and safety interlock system.

7 OPERATION

7.2 OPERATOR PRESENCE AND SAFETY INTERLOCK SYSTEM

- The operator presence & safety interlock system prevents the engine from starting unless the parking brake is on, and the mowing device is switched off. The system also stops the engine if the operator leaves the seat with the mowing device engaged or the neutral latch depressed.



WARNING

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

- 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:

- The engine **does not** start in test 1;
- The engine **does** start during tests 2 or 3.
- The engine **continues** to run during test 4.

- Refer to the chart below for each test and follow the check (☺) marks across the chart. Shut engine off between each test.

Test 1: Represents normal starting procedure. The operator is seated, parking brake is on, the operators feet are off the pedals and the mower engagement device is off. The engine should start.

Test 2: The engine must not start if the mower engage device is on.

Test 3: The engine must not start if the Traction Pedal is depressed.

Test 4: Start the engine in the normal manner, then turn mower engage device on and lift your weight off the seat. ☹

Test	Operator Seated		Parking Brake Switch		Mower Switch		Traction Pedal in Neutral		Engine Starts	
	Yes	No	Yes	No	On	Off	Yes	No	Yes	No
1	✓		✓			✓	✓		✓	
2	✓		✓		✓		✓			✓
3	✓			✓		✓		✓		✓
4	✓	*	✓		✓		✓		*	
* Lift your weight off seat. The cutting units must stop rotating within seven (7) seconds										

7.3 OPERATING PROCEDURE



CAUTION

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

1. Under no circumstances should the engine be started without the operator seated on the tractor.
2. Do not operate tractor 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 tractor and control levers.
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. Never 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.



CAUTION

Pick up all debris you can find before mowing. Enter a new area cautiously always operate at speeds that allow you to have complete control of the tractor

6. Use discretion when mowing near gravel areas (roadway, parking areas, cart paths, etc.). Stones discharged from the implement may cause serious injuries to bystanders and/or damage the equipment.
7. Disengage the drive motors and raise the implements when crossing paths or roads. Look out for traffic.
8. 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.



WARNING

Before you clean, adjust, or repair this equipment, always disengage all drives, lower implements to the ground, engage parking brake, stop engine and remove key from ignition switch to prevent injuries.

7 OPERATION



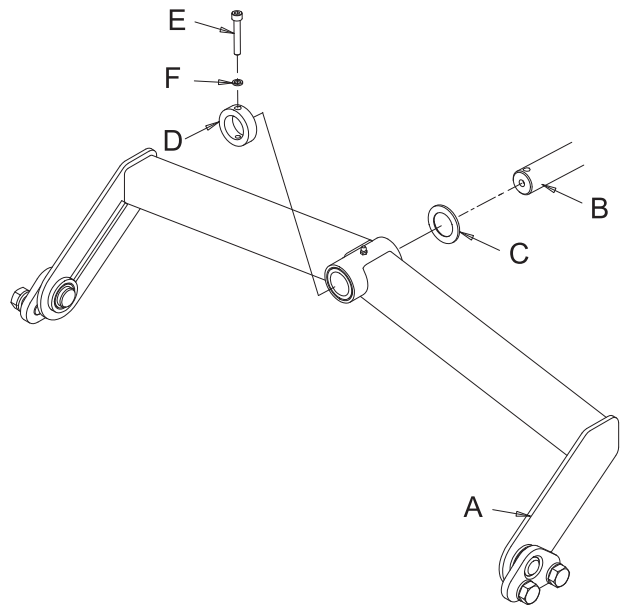
WARNING

DO NOT USE ON SLOPES GREATER THAN 17°

9. Slow down and use extra care on hillsides. Read Section 3.7. Use caution when operating near drop off points.
10. Never use your hands to clean cutting units. Use a brush to remove grass clippings from blades. Blades are extremely sharp and can cause serious injuries

7.4 FITTING THE CUTTING UNITS TO THE MACHINE

1. With the lift arms in the lowered position slide the cutting unit pivot yoke (A) up to the mounting shaft (B).
2. Fit Washer (C) to shaft (B).
3. Smear bushes with grease.
4. Align the shaft (B) with the cutting unit pivot yoke (A).
5. Slide pivot yoke (A) on to the mounting shaft (B).
6. Fit Collar (D) to mounting shaft (B).
7. Secure with cap screw (E) and lockwasher (F).



OPERATION OF THE MACHINE



Read the Safety Instructions.

BEFORE OPERATING FOR THE FIRST TIME

- Check and adjust tyre pressure, if necessary, section 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.

7.5 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 parking brake is applied.
2. Turn the ignition switch to position No.2 and hold until the glow plug light goes off (5-10 sec.)
3. Turn ignition key fully clockwise to the start position and operate the starter motor until the engine starts (This should only take a few seconds)
4. When the engine starts, release the key immediately and it will return to the RUN position.
5. If the engine does not start, preheat the glow plugs and try again.

NOTES:

- **Warm engine** - When the engine is warm because of surrounding temperature or recent operation, step No.2 of the cold engine starting procedure may be omitted (no need to preheat glow plugs).
- If the engine fails to start after two attempts (with preheat if necessary), wait 20 seconds and try again.
- The starter motor should never be run continuously for longer than 30 seconds or it may fail.

7.6 DRIVING

- **Release brake** - Make sure the parking 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 reverse traction.

NOTES:

- Use complete foot to operate both forward and reverse.

NOTES:

- Use complete foot to operate both forward and reverse.
- Do not move pedal suddenly—always operate slowly and smoothly. Never move pedal violently from forward to reverse or vice versa.
- Always keep foot firmly on the foot pedal—a too relaxed foot control may result in a jerky motion.

7.7 MOWING

1. Lower the units with the cutting unit lift/lower control.
2. Ensure speed limiter is in mow position.
3. Engage the cutting mechanism by pushing on the lower half of cutting unit switch.
4. Release the parking brake and begin driving forward.

NOTE:

Always set the throttle to full engine revs. for mowing, even when the grass is heavy. When the engine is labouring, reduce forward speed by easing back on the FWD/REV foot pedal.

7.8 TO STOP THE ENGINE

1. Disengage drive to the cutting units with the cutting unit switch.
2. Remove foot from the FWD/REV pedal.
3. Set the parking brake.
3. Move the throttle control lever to the SLOW position.
4. Turn the ignition key to OFF.

7 OPERATION

7.9 TRANSPORTING

Transport speed is for highway use only. Never select transport speed or 2 wheel drive off road. Transport in 2 wheel drive only. Make sure that the cutting units are held in the lifted position with the safety catches engaged.

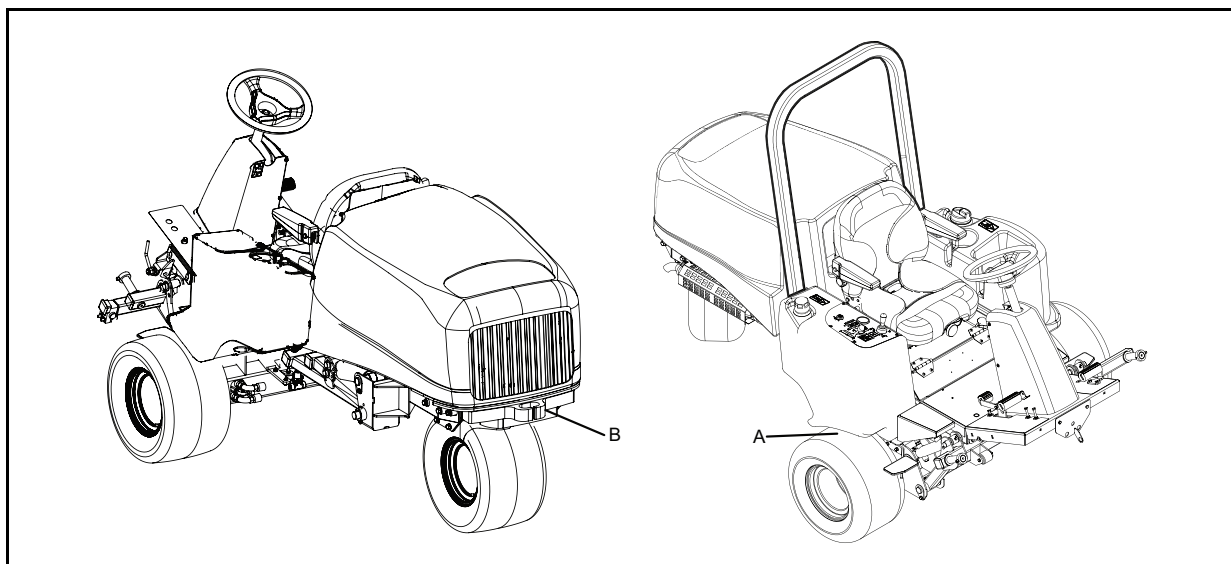
1. Start the engine and set the throttle lever to full speed position.
2. Release the parking brake and after ensuring that the pedal control lever is in the transport position, press the upper part of the foot pedal. The machine will move in a forward direction.
3. Continue to push down on the foot until the desired speed of the machine is reached. The foot should always be kept firmly on the pedal to maintain full control of the drive pedal.

7.10 TRANSPORTING ON A TRAILER OR FLATBED

Use straps over the front wheels (A) and the loop at the rear (B) to fasten the mower to the transport vehicle.

Make sure that all tie down straps are tight. Make sure that the decks 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.

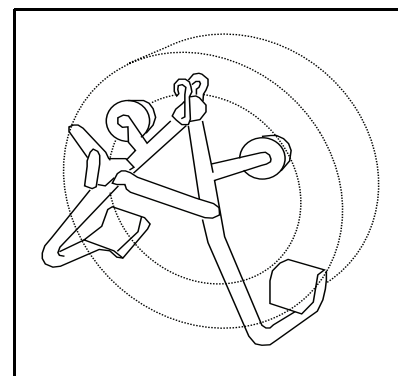
Always follow the given maximum transport load weight for the vehicle used.



Do Not carry more than the maximum weight shown on the transport vehicle plate.

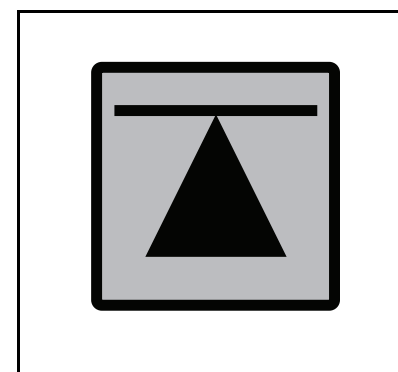
Slings

When slinging the mower, damage free clamps must be used, see the illustration, with an approved lift frame. Information is available at www.tipnlift.co.uk.



Jacking

The 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 OPERATION

7.9 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 grass 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 control as required to improve weight distribution between decks and mower.
3. If the mower tends to slide or the tyres begin to mark the turf, angle mower into a less steep slope until traction is regained or tyre 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 implements to the ground to reduce the risk of mower overturning.

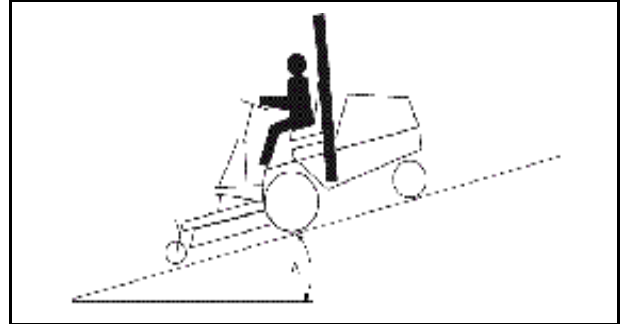
Correct tyre pressure is essential for maximum traction.

See Specification

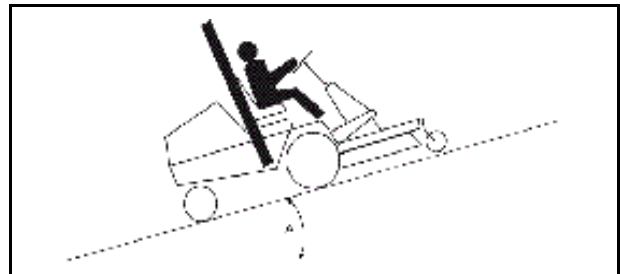


WARNING

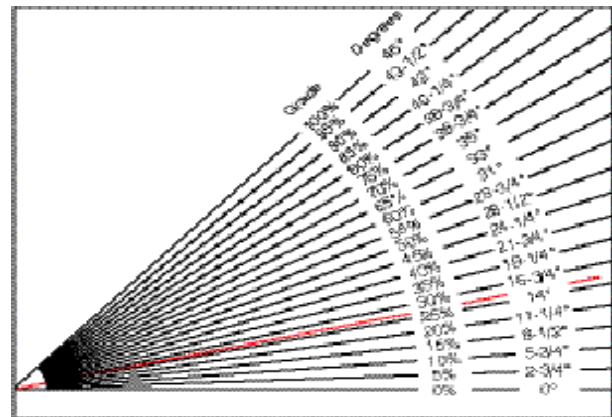
DO NOT USE ON SLOPES GREATER THAN 17°



A = Maximum Allowable Slope.



A = Maximum Allowable Slope.



Degrees are shown to the nearest 1/4°.

General slope of roadway embankment - 45°

Steepest grass area - 31°

Slope of average roof - 19-1/4°

2nd class highway maximum grade 4-1/2°

Toll road or freeway - 1-3/4°

If it is necessary to mow across a short slope, ensure the right hand cutting unit is the lowest.

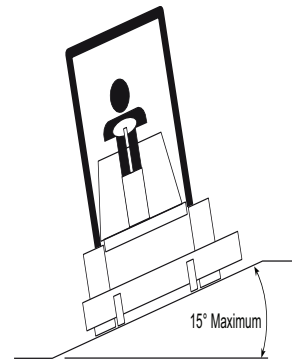


WARNING

When the machine is being used, whether cutting grass or not, on slopes, the ROPS frame should 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, Rollover

Ransomes Jacobsen Limited recommends that a local risk assessment is completed by the owner/user of the machine to determine the risks associated with working on slopes.



A = Maximum Allowable Slope.



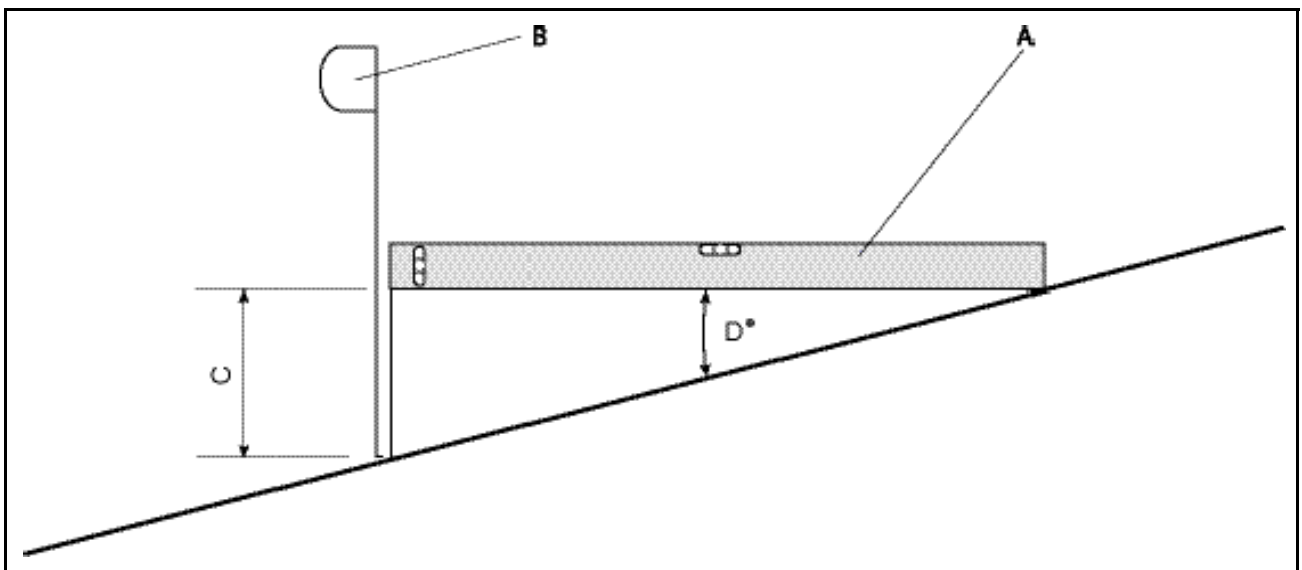
How to calculate a slope

Tools:

Spirit level 1 metre long.

Tape measure.

With the spirit level (A) positioned horizontally measure the distance (C) with tape measure (B) Use the chart to calculate either the slope angle or the % grade D of the slope.



7 OPERATION

SLOPE CALCULATION CHART

Use Either of these columns but not both		The result of what you are measuring	
Height 'C' in inches measured with a 1 yard horizontal edge 'A'	Height 'C' in millimeters measured with a 1 metre horizontal edge 'A'	Slope Angle 'D' measured in Degrees	Slope Angle 'D' measured in Grade%
3		4.8	8.3
	100	5.7	10.0
	150	8.5	15.0
6		9.5	16.7
	200	11.3	20.0
7.5		11.8	20.8
	225	12.7	22.5
9	250	14.0	25.0
	275	15.4	27.5
10		15.5	27.8
	300	16.7	30.0
11		17.0	30.6
	325	18.0	32.5
12		18.4	33.3
	350	19.3	35.0
13		19.9	36.1
	375	20.6	37.5
14		21.3	38.9
	400	21.8	40.0
15		22.6	41.7
	425	23.0	42.5
16		24.0	44.4
	475	25.4	47.5
18	500	26.6	50.0
20		29.1	55.6
	600	31.0	60.0
25		34.8	69.4
	800	38.7	80.0
30		39.8	83.3
	900	42.0	90.0
36	1000	45.0	100.0

INCLINOMETER

Use of Inclinator when fitted.

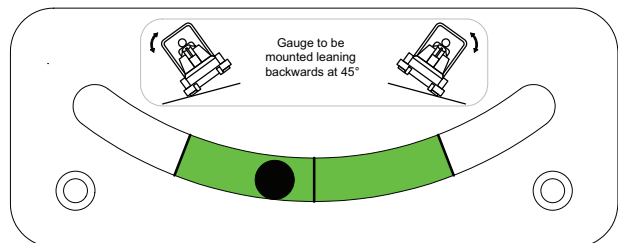
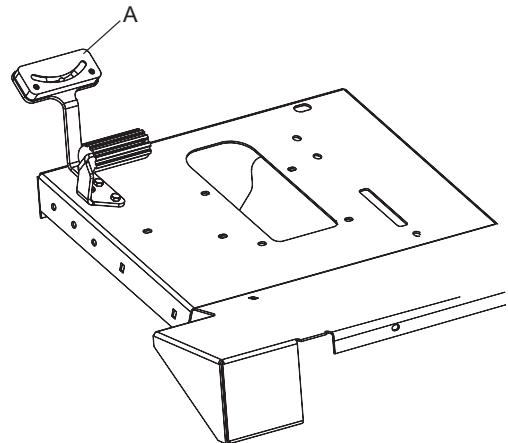
The Inclinator (A) is located on the left hand side of the footplate forward of the foot rest.

When working on slopes the device indicates when the machine is working within stability limits (the ball is within the green area).

When the ball is outside the green area this indicates the machine is at risk of roll over.

NOTE

The Inclinator only works on side slopes

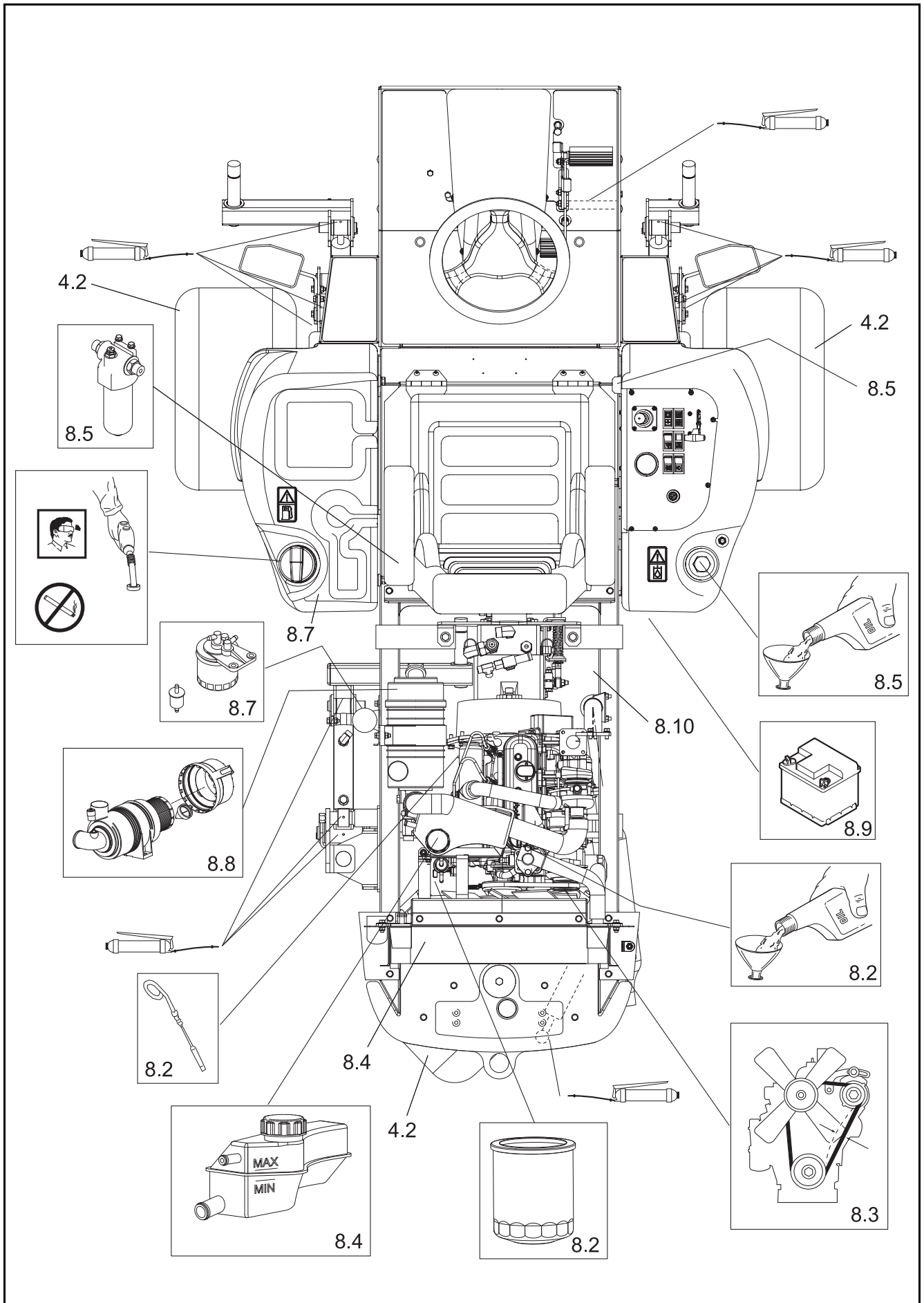


8 MAINTENANCE AND LUBRICATION

8.1 Maintenance & Lubrication Chart

MAINTENANCE AND LUBRICATION CHART		
Interval	Item	Section
First 50 hours	● Change Engine Oil	8.2
	● Check Fan Belt Tension	8.3
	● Change Hydraulic Filter	8.5
Daily 10 hours	● Check Engine Oil Level	8.2
	● Check Safety Interlock System.	7.2
	● Check Coolant Level	8.4
	● Check Hydraulic Fluid Level	8.5
	● Check Tyre Pressure	4.2
	● Check Engine Bay for Debris	8.10
Weekly Every 50 hours	● Check for Loose Components.	8.10
	● Check for Hydraulic Leaks.	8.10
	● Check Fan Belt Tension	8.3
	● Check Air Filter Tell Tail Indicator *	8.8
Every 250 hours	● Change Engine Oil and Oil Filter	8.2
End of season	● Check Battery Condition.	8.9
Every 1000 hours	● Change Hydraulic Oil & Filter	8.2
	● Change Air Filter Element *	8.8
	● Replace Fuel Filters	8.7
	● Change Hydraulic Oil and Filter	8.5
	● Drain and Clean Fuel Tank	8.7
	● Drain and Replace Engine Coolant	8.4
Lubricate all Grease fittings weekly (see diagram)		
* Check more often in dusty conditions		
IMPORTANT		
Refer to Engine Manufacturers Manual for Additional Engine Maintenance Procedures		

FLUID REQUIREMENTS			
		Quantity	Type
A	Engine Oil (with filter)	5.1 litres (1.35 US gals)	10W 30
B	Hydraulic Oil (with filter)	37.9 litres (10 US gals)	Greenscare 46 (ISO VG 46) Bio Degradable Oil
C	Radiator Coolant	5.2 litres (1.37 US gals)	50% Anti-Freeze
D	Fuel	45.4 litres (12 US gals)	No 2-D (ASTM D975) Diesel



8 MAINTENANCE AND LUBRICATION

8.2 ENGINE LUBRICATION

Check Engine Oil Level

Check the engine oil level before starting or more than five minutes after stopping the engine.

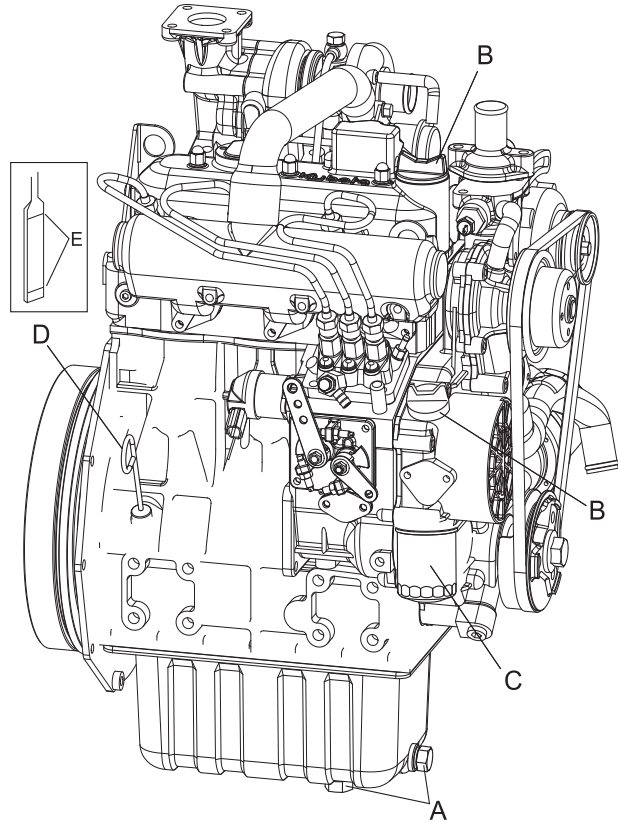
- With the machine on level ground, remove the dipstick, wipe it clean and replace.
- Take the dipstick out again, and check the oil level. It should be between level marks (E) on dipstick.

Change Engine Oil.

- Warm up the engine first and then shut it off. Remove oil drain plug (A) from the bottom of the crankcase and wipe it off.
- Drain engine oil in to a suitable container.
- Replace the drain plug (A) and fill engine with the correct quantity & grade of oil through one of the fillers (B).

Change Engine Oil Filter

- Remove single-unit cartridge (C)
- Collect engine oil in a suitable container.
- Clean area on crankcase.
- Apply thin coat of oil to cartridge gasket before installing.
- Tighten filter by hand only.
- Check for oil leaks around the cartridge gasket after engine is started.



CAUTION

Dispose of used engine oil in accordance with local regulations.

CAUTION

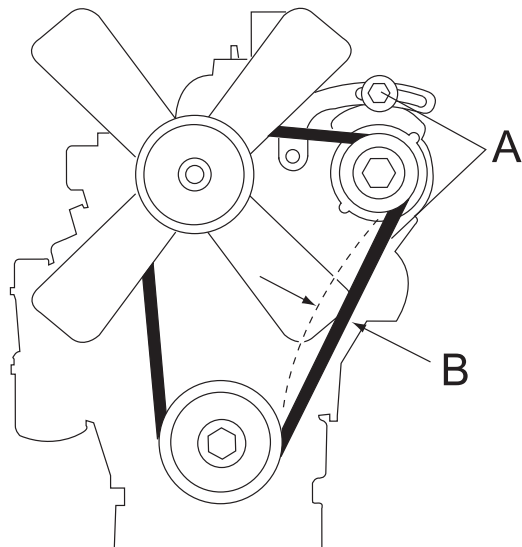
Contact with engine oil can damage your skin. use gloves when working with engine oil. If you come in contact with engine oil, wash it off immediately.

8.3 ENGINE: FAN BELT

Check & Adjust Fan Belt.

The fan belt is adjusted so that it has sufficient tension to avoid undue stress on alternator bearings but does not slip on the alternator pulley. Use the following procedure to check the belt tension at the mid-point of the belt between crank shaft and alternator pulleys.

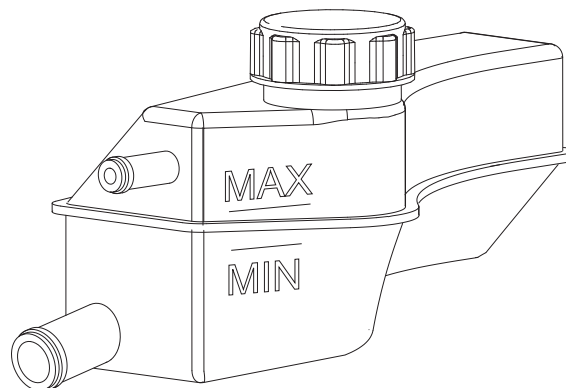
- Loosen alternator bolt (A) and pivot bolt on the underside of the Alternator.
- Move the alternator to tighten or loosen the belt so that a deflection of 7 to 9 mm is achieved at the mid-span (B) with a load 10Kg (98N/22lbs) for a new belt, and 8 to 10mm for a used belt.
- Re-tighten bolts .



8.4 ENGINE COOLANT

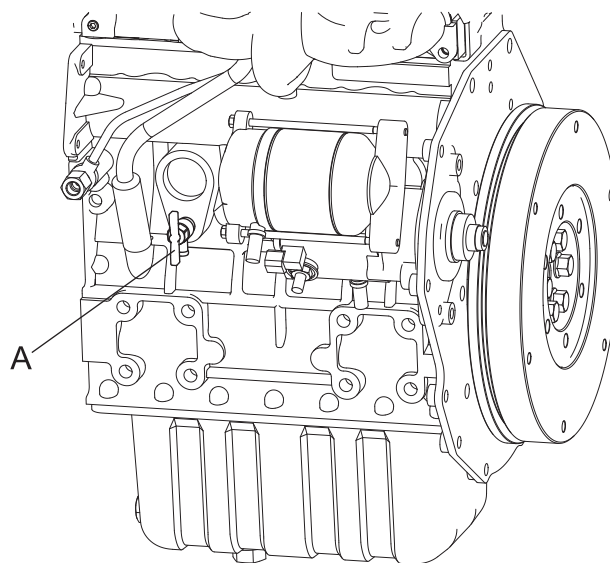
Check Engine Coolant Level

- (a) The level of coolant in the expansion tank should be between the MAX and MIN level indicators when cold.
- (b) If topping up is required, remove the plastic cap and top up using the correct anti-freeze mixture, see section 9.1.
- (c) Replace the plastic cap when finished.



Changing Coolant

- (a) To drain coolant, open cock on engine block (A) and remove hose from radiator (B).
- (b) Close drain cock on engine block (A) and replace hose back on to radiator. Ensure all hose clips are tight.
- (c) Refill the cooling system with the correct anti-freeze mixture, see section 9.1. Fill system through expansion tank.
- (d) The level of coolant in the expansion tank should be between the MAX and MIN level indicators when cold.
- (e) Run the engine for approximately 5 minutes or until the thermostat opens.
- (f) Check level of coolant in expansion tank and top up if necessary.

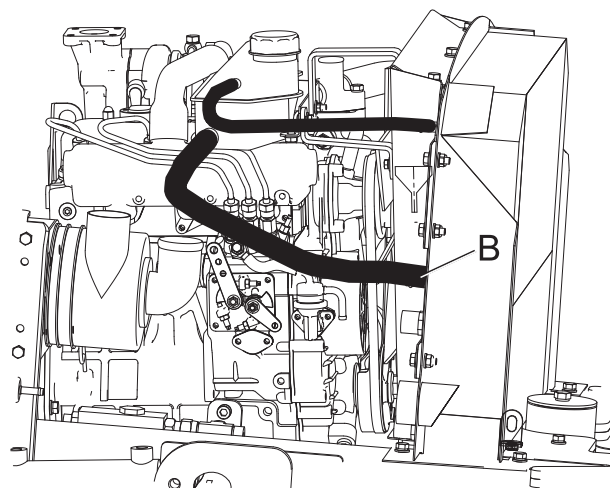


CAUTION

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

CAUTION

Dispose of used anti-freeze in accordance with local regulations.



8 MAINTENANCE AND LUBRICATION

8.5 HYDRAULIC SYSTEM

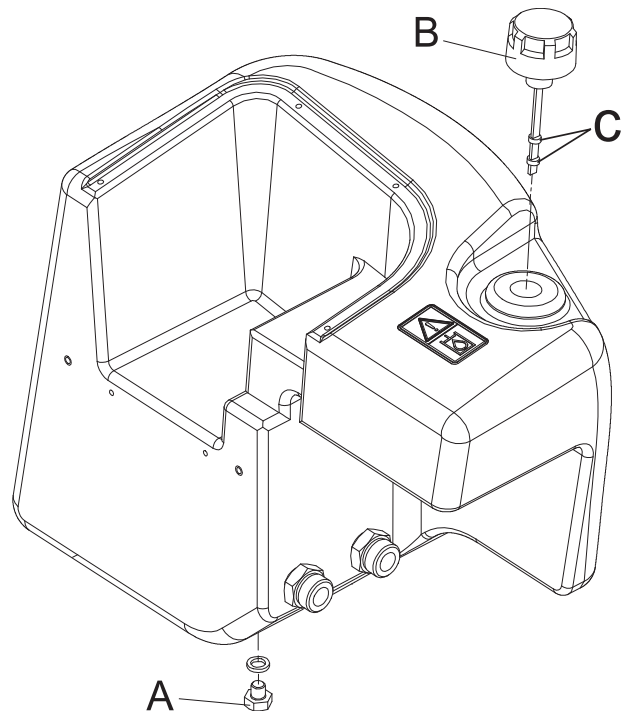
Check Hydraulic Oil Level

Check hydraulic oil level using dipstick attached to the filler cap (B). The correct level is between the two markers (C).

Change Hydraulic Oil

- Remove drain plug (A) if fitted from bottom of hydraulic tank and wipe off plug. Or remove pump suction hose (D)
- Allow tank to drain and replace plug or pump suction hose.
- Refill tank with the correct quantity and grade of Hydraulic Oil through the filler cap. (B).

IMPORTANT-Whenever the closed loop transmission circuit has been broken into, it is essential that the circuit is flushed prior to use. Absolute cleanliness must be observed when filling the hydraulic tank. Oil must be filtered through a 25 micron filter before entering the hydraulic tank.



Change Hydraulic Oil Filter

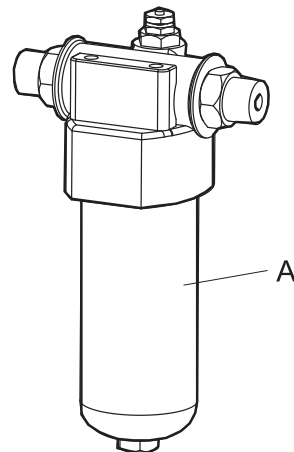
- Wipe filter canister (A) and housing to remove any dirt present.
- Place a suitable drip tray under the filter.
- Unscrew filter and dispose of safely.
- Replace with new filter canister (A).
- Coat the top outside lip of the filter canister with a thin film of oil, fill filter with clean hydraulic fluid and refit the filter canister.
- Filter should be replaced before refilling hydraulic tank.

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.

CAUTION

Dispose of used hydraulic oil in accordance with local regulations.



8.6 HYDRAULIC TEST PORTS

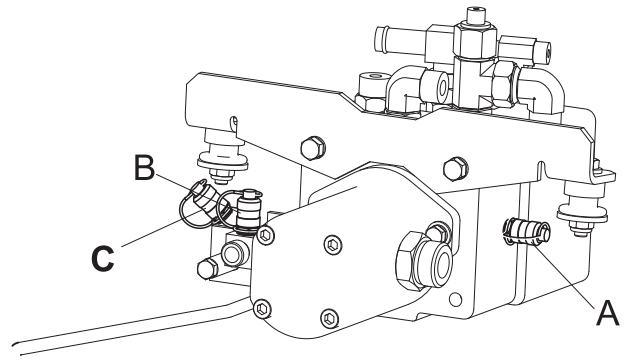
If any problems are experienced with the hydraulic system service ports are provided to enable pressures to be checked.

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

TEST PORTS

- A. Transmission pressure: 210 bar (3045 psi).
- B. Deck drive pressure: 210 bar (3045 psi).
- C. Steering and lift pressure 110 bar (1595 psi).

NOTE: Any servicing of the hydraulic system must be carried out by trained service personnel.



8 MAINTENANCE AND LUBRICATION

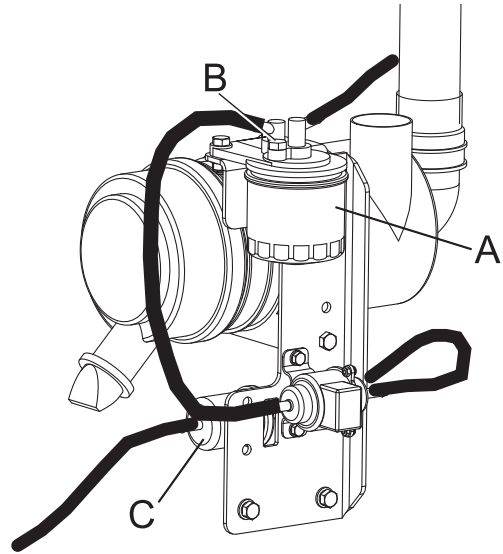
8.7 FUEL SYSTEM

Use Diesel fuel No.2-D (ASTM D975)

See engine manufacturer's manual for additional information.

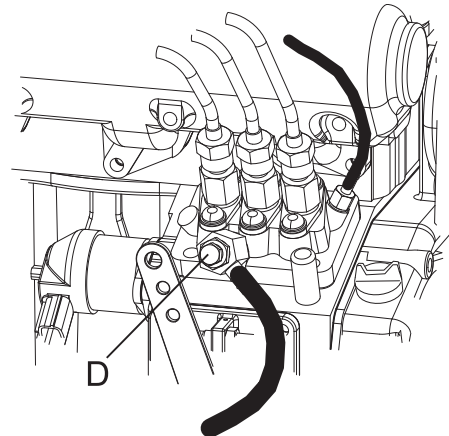
Bleeding air from fuel system

- Turn the ignition switch to the ON position (don't start engine).
- Open air vent (B) on Fuel filter housing to allow air to escape.
- Retighten air vent.
- Open air vent (D) on side of injection pump to allow air to escape.
- Retighten air vent.
- Turn ignition to OFF.



Changing fuel filter

- Unscrew filter (A) from filter head.
- Remove filter and discard.
- Fit new filter to head.
- Bleed air from system as described above.

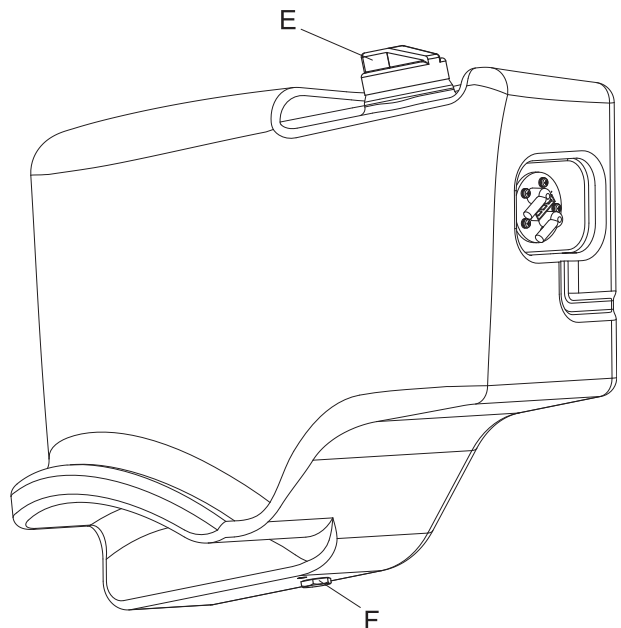


Replace In-line fuel (C)

Draining Fuel Tank

- Remove filler cap (E).
- Remove drain plug (F).
- Drain diesel fuel in to a suitable container.
- Replace drain plug (F) and filler cap (E).

NOTE: If refilling fuel tank, bleed the system as described above.



CAUTION

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

CAUTION

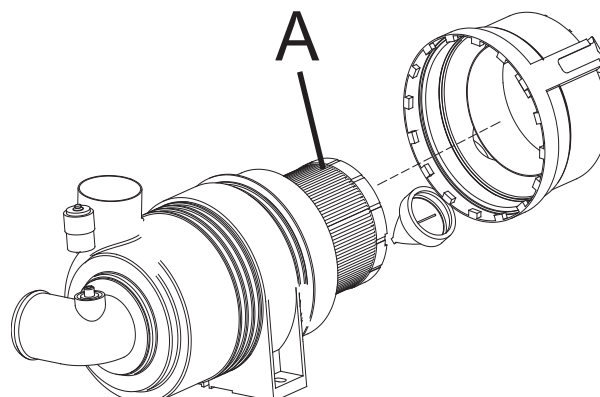
Dispose of used diesel fuel in accordance with local regulations.

8.8 AIR CLEANER

Cleaning the air filter

NOTE: After 6 cleanings replace the filter element.

- Raise engine cover.
- Remove end cap of air filter cartridge.
- Remove loose dirt from element with compressed air working from the clean to dirty side, using compressed air max 6 bar , with nozzle 5cm from element.
- reinstall filter element (press firmly against rear shoulder)
- Replace end cap and fasten with clips



Change air filter

- Raise engine cover.
- Remove end cap of air filter cartridge.
- Remove accumulated dust or dirt.
- Remove filter element (A) (pull straight out firmly)
- install new filter element (press firmly against rear shoulder)
- Replace end cap and fasten with clips

NOTE: Extensive damage to engine can result from an inadequate air supply.

8.9 BATTERY

- Keep fluid levels above battery plates.
- Keep battery post corrosion free



WARNING

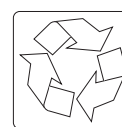
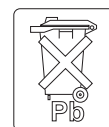
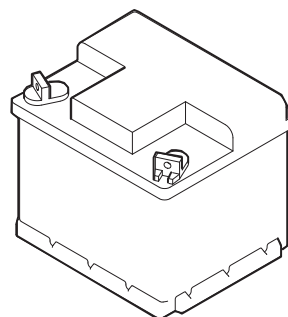
Battery posts, terminals and related accessories contain lead and lead compounds.

WASH HANDS AFTER HANDLING



WARNING

Wear eye protection when servicing battery.



CAUTION

Dispose of used batteries in accordance with local regulations.

8 MAINTENANCE AND LUBRICATION

8.10 MACHINE MAINTENANCE

Other Regular Service.

- Verify proper operation of safety interlock switches (Neutral switch, Seat switch, etc.)
- Ensure nuts and bolts remain tight.
- visually inspect for hydraulic leaks.
- Keep engine bay clear of debris.
- Keep tyre pressure at correct level. See section 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 bearing areas because cleaning solutions might penetrate bearing seals and cause premature bearing failure.

Storage

- Store petrol or diesel 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.
- When the vehicle is not being used for an extended period, the tyre pressures must be increased. Inflate to the maximum rating on the tyre wall to make sure that flat spots do not occur. Decreased the tyre pressure before the vehicle is put into operation.
- Maximum safety and best mowing results can only be expected if the mower is maintained and operated properly.

8.11 FREEWHEEL CONTROL

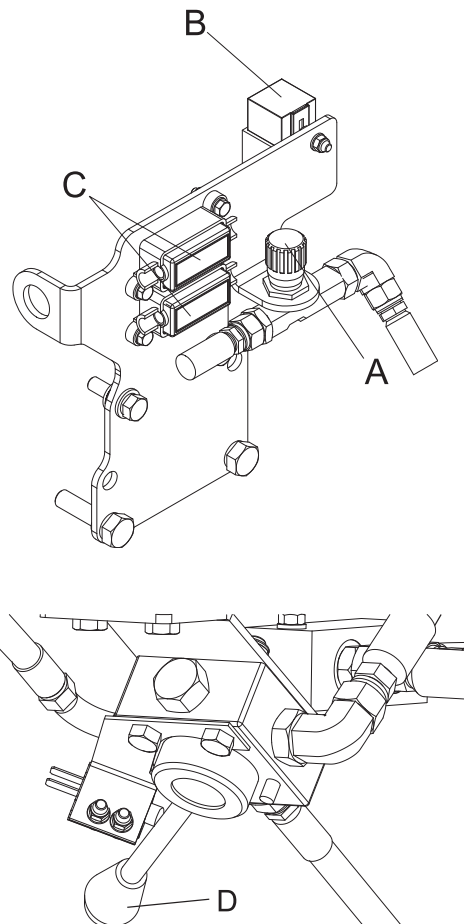
The free wheel control is provided to allow the machine to be moved when the engine is stationary. Before the machine can be moved the Parking Brake must be released. The brake release valve is situated under the Operators Platform close to the front axle.

Move the Parking brake release lever **D** to the right when viewed from the front of the machine. Rotate the steering wheel clockwise to release the parking brake.

The freewheel control is situated in the engine compartment between the engine and the seat. To gain access lift the engine cover. Rotate the control knob **A** fully anticlockwise to obtain the transmission free wheel function.

Rotate the freewheel control knob **A** fully clockwise to return the transmission system to normal operation.

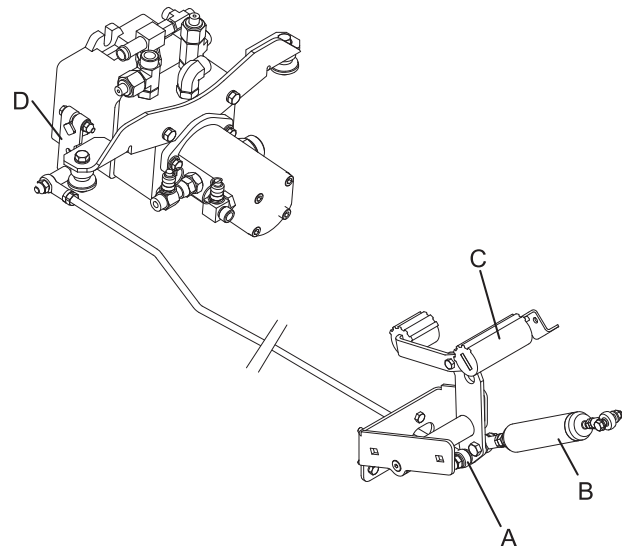
DO NOT Do not tow the machine for more than a few meters, or allow the machine to free wheel down slopes even when unloading down ramps.



9.1 TRACTION CONTROL PEDAL

Adjustment to eliminate wheel creep.

1. Lift and support both front and rear wheels.
2. Remove ball joint **A** from foot pedal **C** to allow damper **B** to set pedal neutral position.
3. Start engine, manually move the pump control lever **D** until wheels stop rotating.
4. Adjust ball joint **A** until holes in foot pedal and ball joint align.
5. Reattach ball joint to foot pedal.
6. Move the foot pedal in forward & reverse directions to ensure there is no creep in neutral position.



WARNING

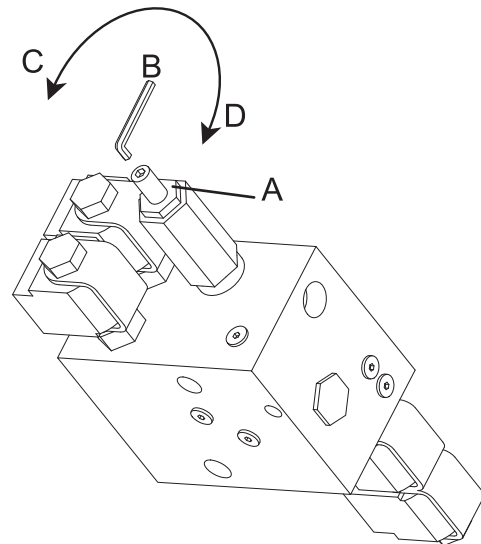
Properly support raised machinery with jack stands.

9.2 WEIGHT TRANSFER ADJUSTMENT

The weight transfer bias can be adjusted on the lift valve. The valve is accessible from the front of the machine and is situated under the right hand side of the footplate when facing the machine (left hand side when viewed from the operating position).

To adjust:

1. Loosen the locknut **A** whilst holding the threaded shaft still with the Allen Key **B**.
2. Using an Allen key **B** rotate the threaded shaft clockwise in direction **D** to increase weight onto the drive wheels when the traction control switch is operated on the control panel. This improves slope climbing performance. To reduce weight on the drive wheels when the traction control switch is operated on the control panel, rotate the threaded shaft counter clockwise in direction **C**. This increases the ground weight of the cutting unit and will reduce the possibility of cutting unit "bounce" when working at high speed on undulating ground. It is recommended that the Allen key 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**.



9 ADJUSTMENTS

9.3 HEIGHT OF CUT

Cutting height for decks can be adjusted from 3/4 to 4 in. (19-101.6 mm) in 1/2 in. (13 mm) increments. Actual cutting height may vary somewhat from the heights given depending on turf conditions and other factors.

Note: When cutting undulating areas, lower cutting heights may cause scalping. Adjust height accordingly to prevent turf damage.

To Change the Height of Cut

1. Park the tractor on a flat, level surface. Fully lower cutting units. Place blocks under deck housing so they are supported on all sides.
2. Refer to the chart provided for desired cutting height.



WARNING

To prevent serious injury, lower deck until it is resting completely on the supports. This will prevent it from accidentally lowering while making adjustments. Disengage all drives, engage parking brake, stop engine and remove ignition key.

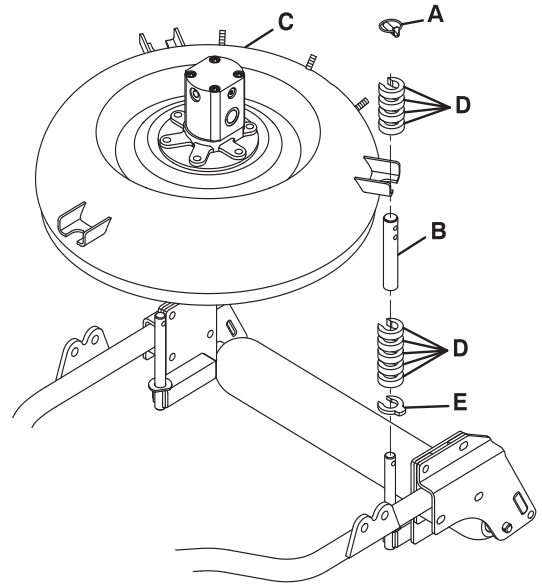


CAUTION

Use proper lifting techniques when lifting or lowering deck housing. The deck housing assemblies weight approximately 25kg (55Lbs)

Range of Cut				
Height of Cut		13mm (1/2") Spacers Below Deck Housing	13mm (1/2") Spacers Above Deck Housing	6mm (1/4") Spacer Location
mm	inch			
19	3/4	0	9	Above Housing
25	1	0	9	Below Housing
32	1-1/4	1	8	Above Housing
38	1-1/2	1	8	Below Housing
44	1-3/4	2	7	Above Housing
50	2	2	7	Below Housing
57	2-1/4	3	6	Above Housing
64	2-1/2	3	6	Below Housing
70	2-3/4	4	5	Above Housing
76	3	4	5	Below Housing
83	3-1/4	5	4	Above Housing
90	3-1/2	5	4	Below Housing

3. **To lower height of cut**, remove all three snap lock pins (A). Lift outer spindle shaft (B) slightly and remove 13mm (1/2") spacers (D) and / or 6mm (1/4") spacer (E) from bottom one at a time until desired height is obtained. Carefully remove blocks and lower deck housing (C). Place remaining spacers on top of spindle and insert snap lock pins.
4. **To raise height of cut**, remove all three snap lock pins (A). Carefully lift deck housing (C) above desired cutting height and support with blocks. Add 13mm (1/2") spacers (D) and / or 6mm (1/4") spacer (E) as required until desired height of cut is obtained. Lower deck housing. Place remaining spacers on top of spindle and insert snap lock pins. Washer is always on top, under snap lock pin.



WARNING

Never use the machine without the decks being fitted with either the rear discharge chute or the blanking plate.



WARNING

The decks should only be mounted with the discharge aperture to the rear.



CAUTION

For best quality of cut, always place same number of spacers under each housing on all three spindles. Adjust all decks to the same cutting height.

9 ADJUSTMENTS

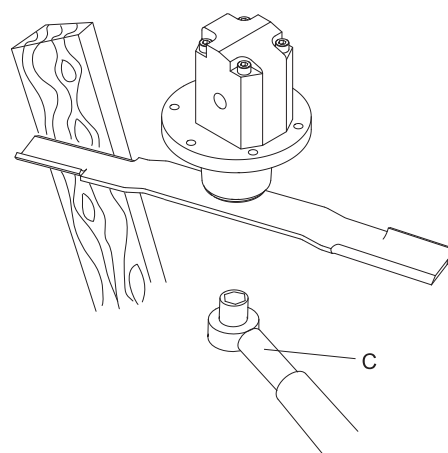
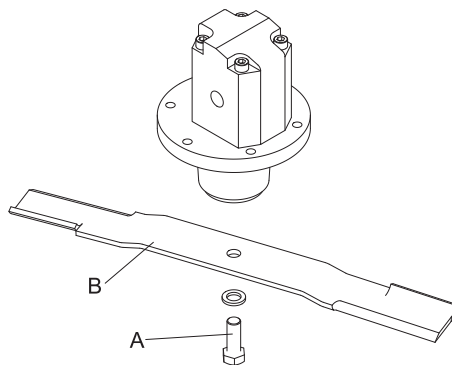
9.4 BLADE CHANGE



CAUTION

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

1. Remove blade bolt (A).
2. Remove blade (B) from deck .
3. Fit new blade.
3. Replace blade assembly to hydraulic motor spindle.
4. Tighten blade bolt with torque wrench (C) set to 95N-m (70 ft-lb) torque.



9.5 BLADE SHARPENING

Blades may be sharpened by filing or grinding. When sharpening, maintain blade balance within 19.4 g/cm (5/8 oz/in). Failure to keep the blade balanced causes excess vibration, blade wear and shortened blade life, and may harm other mechanical components of the machine as well.

To check blade balance

1. Determine if there is a lighter end.
2. Attach a 3.9g (1/8 oz) weight to the lighter end 127mm (5in) from the centre of the blade.
3. If the blade is adequately balanced, the weight should convert the light end into the heaviest end. If correction is required, file or grind the heavy end to obtain balance.

NOTES:

- Do not overheat or weaken blades when sharpening.
- Do not straighten bent blades.
- * If the lift portion of the blade is worn thin, replace with a new blade.
- Replace cracked or bent blades.
- For greatest safety always use genuine replacement blades .

9.6 SPEED LIMITER

The transport and mow speeds are factory set and should not need altering.

NOTE: Textron Turf Care cannot be held responsible for loss of performance or machine damage if these speeds are adjusted outside the speeds shown in the machine specification.

9.7 SEAT (Milsco CE-200)

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

A. ADJUSTMENT FOR OPERATOR WEIGHT

To Adjust:

Whilst sitting on the seat push knob A downwards and allow it to slid back upwards until a comfortable amount of suspension is found.

B. FORE AND AFT ADJUSTMENT

To Adjust:

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

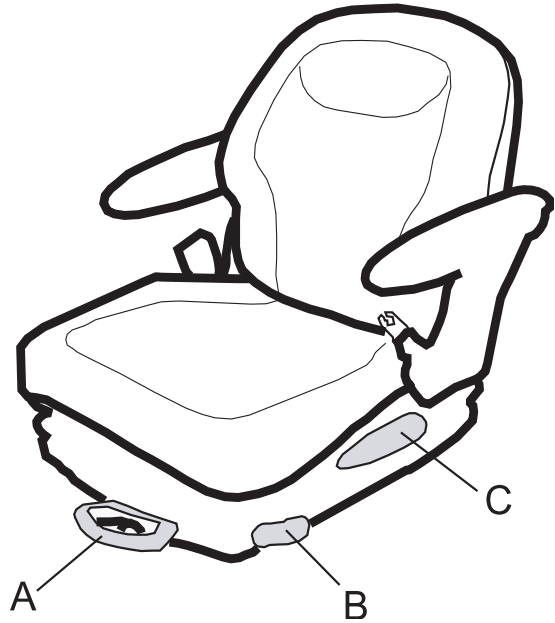
C. BACK REST ADJUSTMENT

The back rest has three preset positions

To Adjust:

Move the lever upwards and slid the seat cushion backwards and forwards to obtain a comfortable back rest position.

NOTE: The seat is fitted with a microswitch to sense operator presence. When the machine is fitted with a ROPS frame or cab a lap belt is fitted and should be worn at all times



9 ADJUSTMENTS

9.8 SEAT (Michigan V5300)

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

A. ADJUSTMENT FOR OPERATOR WEIGHT

To Adjust:

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

B. FORE AND AFT ADJUSTMENT

To Adjust:

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

C. BACK REST ADJUSTMENT

To Adjust:

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

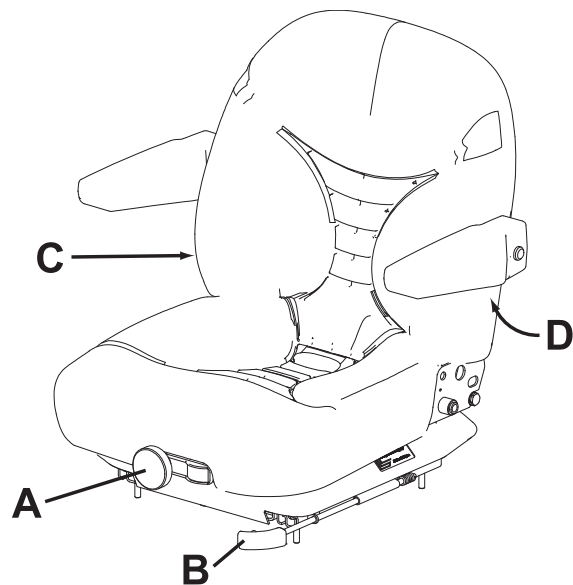
D. ARM REST ADJUSTMENT

To Adjust:

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

NOTE: The seat is fitted with a microswitch to sense operator presence.

When the machine is fitted with a OPS frame or cab a lap belt is fitted and should be worn at all times



9.9 GENERAL INSTRUCTIONS FOR GRAMMER SEATS

- The operating instructions must be read in full before use.
- The operating instructions must be kept in the vehicle and always be at hand.
- 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 should 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 should be placed within the moving area** of the driver's seat.

Before commissioning of the driver's seat, possible **packaging material** has to be 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!

9 ADJUSTMENTS

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 (dust, water).

Seatbelts can be retrofitted to the driver's seat. Seatbelts **may only be fitted on the approval of the vehicle manufacturer**, as they increase the load in the seat mounting area. Seatbelts must be fitted in accordance with specific national regulations and guidelines, and must be approved by **GRAMMER**.

Retrofitted seatbelts must be fastened **before driving**.

The seat belt 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 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.

Guarantee

GRAMMER can provide no guarantee for damage resulting from incorrect assembly, use or repair of the driver's seats.

Further details on the guarantee granted by **GRAMMER** are stated on the invoice or the delivery note. Warranty claims against **GRAMMER** beyond the guarantee obligations described there are excluded.

9.10 SEAT (Grammer MSG85)

The seat can be adjusted for leg reach, back rest angle and operator weight to provide a comfortable position for operating the machine.

A. FORE AND AFT ADJUSTMENT

To Adjust:

The position of the adjusting lever (B) is on the right hand side of the seat below the seat cushion . By pulling the lever up, 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.

B. BACK REST ADJUSTMENT

To Adjust:

The position of the release lever (B) is on the left hand side of the seat. While sitting on the seat pull the release lever upwards to release the back rest. (The back rest is spring loaded to fold onto the seat cushion.) Lean back to obtain the desired position for the back rest and release the lever to locate in one of the pre set positions.

C. WEIGHT ADJUSTMENT

To Adjust:

The position of the operator weight adjust lever (C) is on the front of the seat. To Change the operator weight sitting pull the lever out and rotate the lever while sitting on the seat.

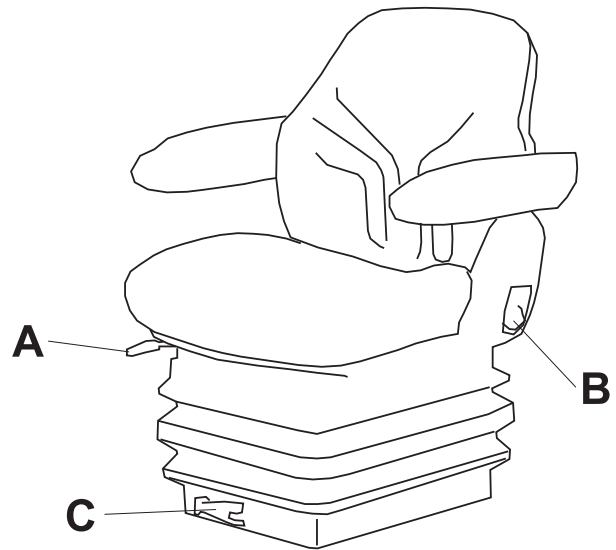
D. HEIGHT ADJUSTMENT

To adjust:

When sitting on the seat the height can be adjusted by holding the edge of the seat cushion, pushing your weight down and lifting as the cushion as the suspension returns to its normal position. There are three pr-set positions, once the heighest has been achived the seat returns to its lowest position.

NOTE:The seat is fitted with a microswitch to sense operator presence.

When the machine is fitted with an OPS frame a lap belt is fitted and should be worn at all times



9 ADJUSTMENTS

9.11 AIR SUSPENSION SEAT (Grammer MSG75 -521)

9.11.1 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.

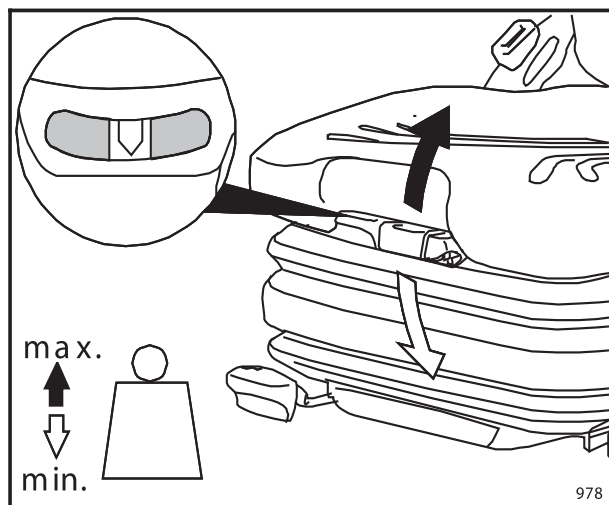
The driver's weight is adjusted correctly when the arrow is in the middle clear area of the viewing window.

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 avoid compressor damage during weight adjustment, the compressor must be operated no longer than 1 minute.



9.11.2 FORE/AFT ADJUSTMENT

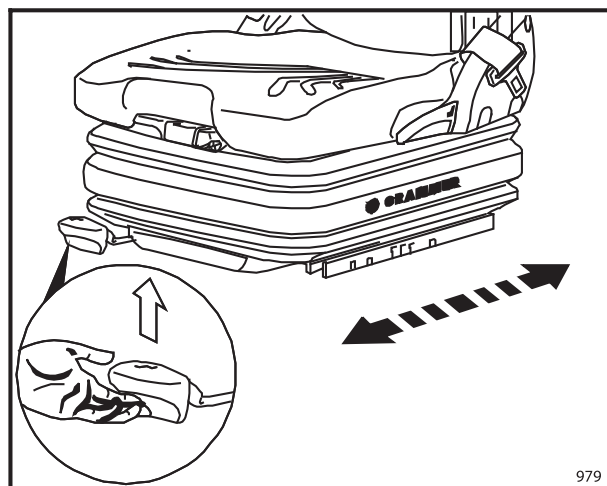
The fore/aft adjustment is released by lifting the locking lever.

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 should 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.

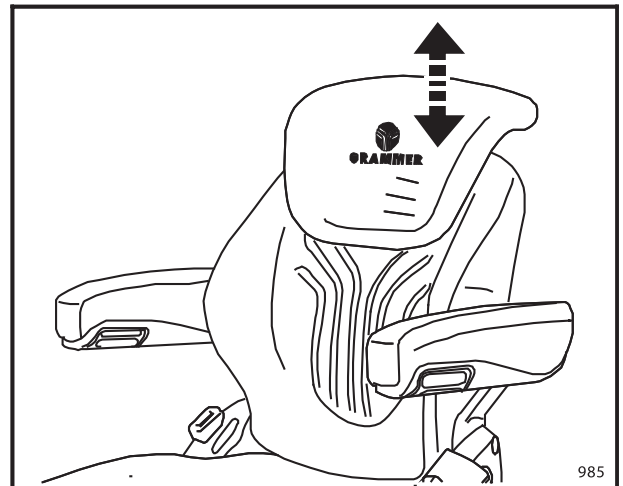


9.11.3 BACKREST EXTENSION * **

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.

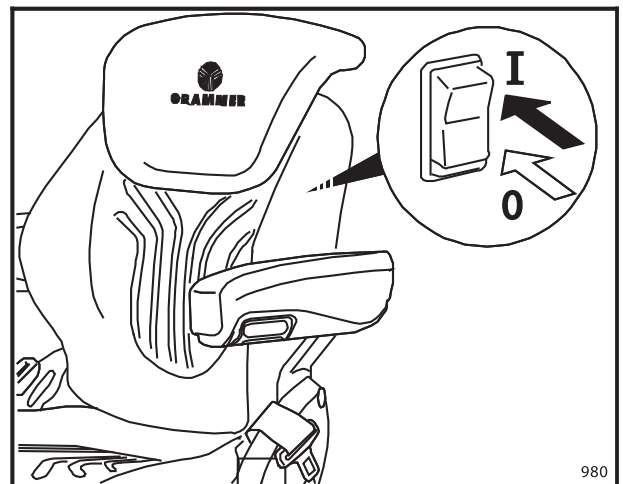
- * If Fitted
- ** Optional Extra

**9.11.4 SEAT HEATER * ****

The seat heater can be turned on/off by pressing the switch.

- 1 = seat heater OFF
- 2 = seat heater ON

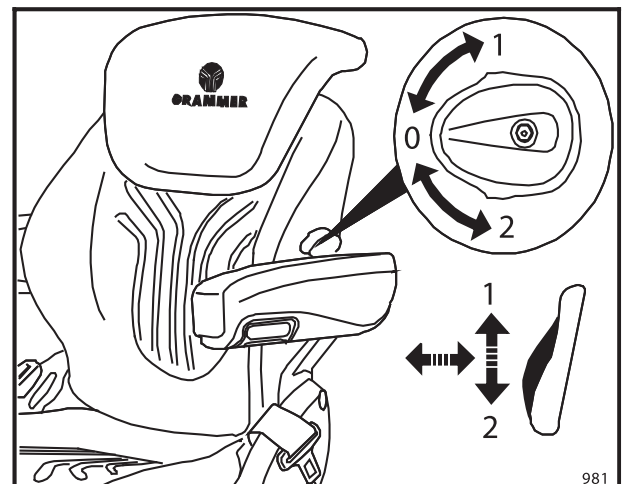
- * If Fitted
- ** Optional Extra

**9.11.5 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



9 ADJUSTMENTS

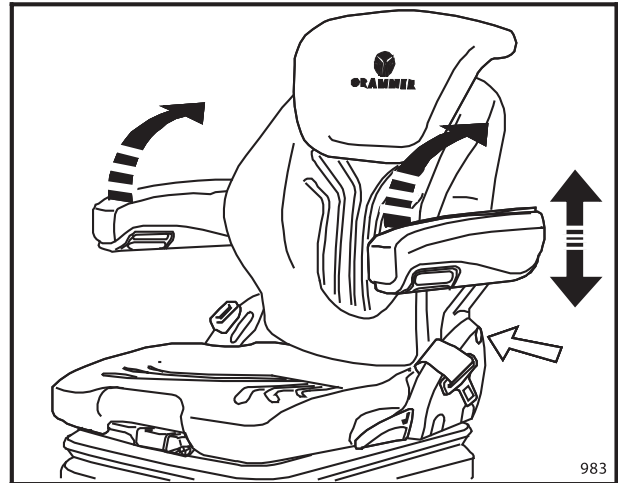
9.11.6 ARMRESTS * **

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.

- * If Fitted
- ** Optional Extra



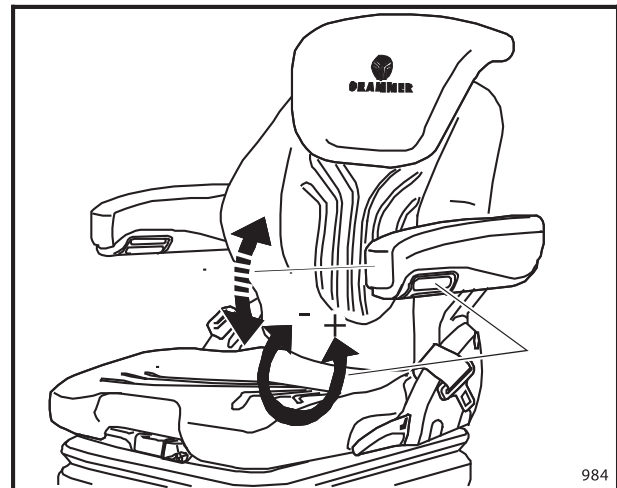
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9.11.7 ARMREST ADJUSTMENT *

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.

- * If Fitted
- ** Optional Extra



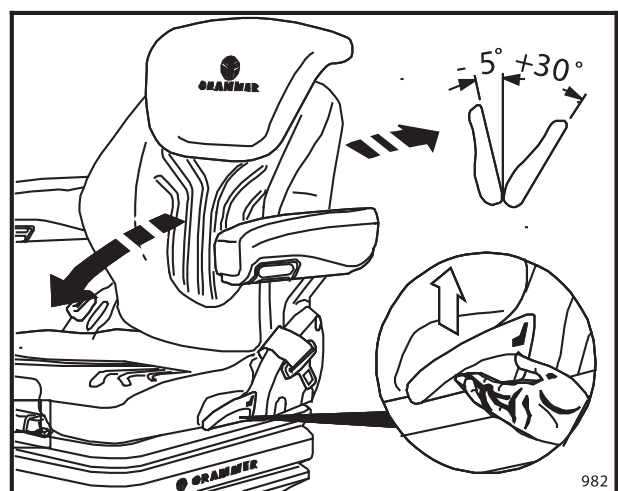
984

9.11.8 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 should 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).



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9.11.9 MAINTENANCE

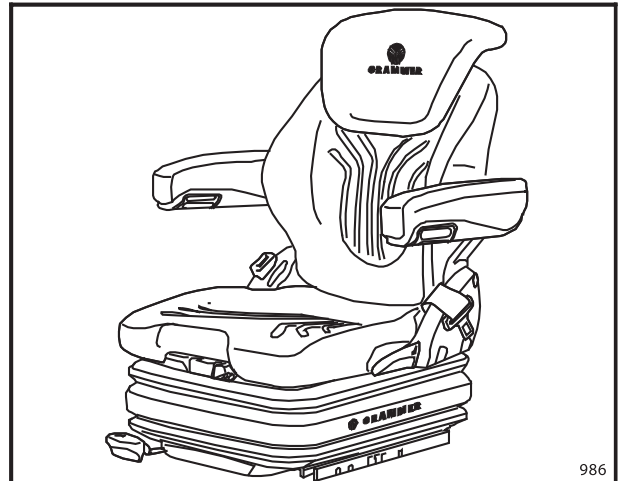
Dirt can impair the function of the seat, so make sure you keep your seat clean! Upholstery does not need to be removed from the seat frame for cleaning.

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 should not be soaked through.

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



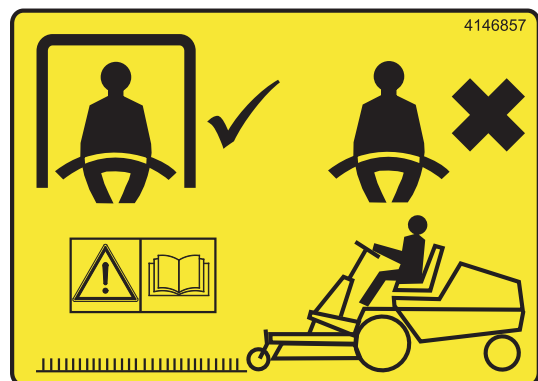
986

DANGER

When the machine is being used off road, whether cutting grass or not, the seat belt should only be worn when a ROPS frame is in place and deployed.

This rationale is based on the fact that a seat belt must be worn with a ROPS to comply with The Machinery Directive 98/37/EC sections 3.2.2, Seating & 3.4.3, Rollover.

Ransomes Jacobsen Limited recommends that a local risk assessment is completed by the owner/user of the machine to determine any exceptions to this seat belt wearing rule. e.g. use of the machine next to water or on the highway.



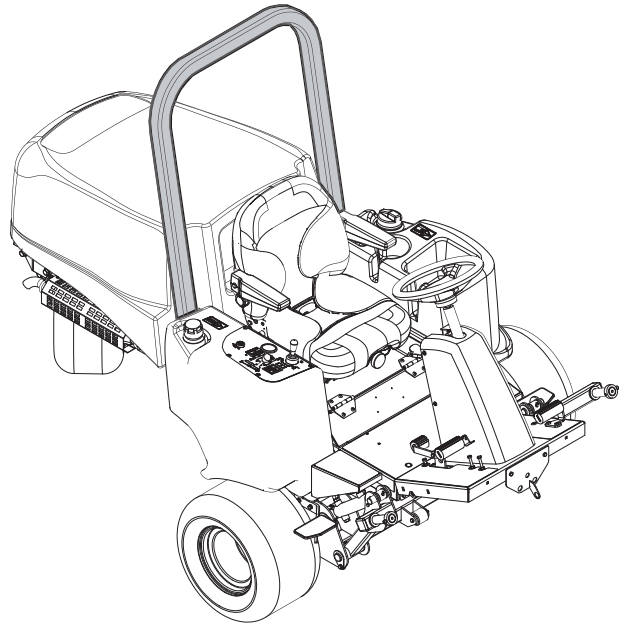
10 ACCESSORIES

10.1 OPS FRAME (LMAC164)



WARNING

When an OPS frame is fitted to a machine, a seat belt must be fitted and worn by the operator.



10.2 TRANSPORT LATCH KIT (LMAC174)

A transport latch kit is available for the front lift arms

10.3 WORKING LAMP KIT (LMAC163)

A Working lamp kit is available to fit two lamps to the front of the operator platform

11.1 ENGINE GENERAL

The problem solving chart below lists basic problems that may occur during start-up and operation. For more detailed information regarding the hydraulic and electrical systems contact your area Jacobsen Distributor.

Symptoms	Possible Causes	Action
Engine will not start.	1. Glow Plug has not timed out.	1. Reset ignition switch and allow glow plug to time out before cranking engine.
	2. Battery low on charge or defective.	2. Inspect condition of battery and battery connections.
	3. Fuel tank empty or fuel contaminated.	3. Fill tank with fresh fuel. Change filter, Bleed air from lines.
	4. Blown Fuse.	4. Replace Fuse.
	5. Defective Starter Relay.	5. Test and replace relay if necessary.
	6. Brake switch is not on.	6. Ensure brake switch is on.
	7. Mow switch set to cut.	7. Set mow switch to off.
	8. Transport pedal not in neutral	8. Remove foot from pedal, cheek pedal returns to the neutral position.
Engine hard to start or runs poorly.	1. Fuel tank empty or fuel contaminated.	1. Fill tank with fresh fuel. Change filter, Bleed air from lines.
	2. Air Cleaner blocked or dirty.	2. Check air cleaner, replace as necessary.
	3. Injectors, fuel pump.	3. Consult engine manual.
	4. Other Engine Problem	4. Consult engine troubleshooting guide.
Engine Stops.	1. Fuel tank empty	1. Fill with fresh fuel and bleed lines
	2. Interlocks not set before leaving operators seat	2. Ensure Parking Brake is on & Mow switch is in the off position.
Engine Overheating.	1. Coolant level low	1. Inspect and add 50/50 antifreeze solution if required.
	2. Radiator air intake restricted	2. Clean wire mesh guard at radiator.
	3. Waterpump/alternator belt or fan belt loose or broken.	3. Inspect waterpump/alternator belt and fan belt. Tighten if necessary.
Battery not holding charge. Battery light on.	1. Loose or corroded battery terminals.	1. Inspect terminals, clean and tighten as required.
	2. Low electrolyte level in battery.	2. Refill battery with distilled water
	3. Alternator belt loose or broken.	3. Inspect waterpump/alternator belt. Tighten if necessary.
	4. Alternator defective.	4. See engine manual.
Decks cut unevenly. Poor quality of cut.	1. Cutting blades are worn.	1. Replace blades.
	2. Engine speed too low.	2. Check engine speed, run engine at full throttle.
	3. Cutter motors worn.	3. Check case drain leakage & flow check cutting circuit.
	4. Ground speed too high	4. Set work speed stop.
	5. Ground weight incorrectly adjusted	5. Adjust ground weight control valve until correct ground weight is achieved.

11 PROBLEM SOLVING

11.2 Quality of Cut Troubleshooting

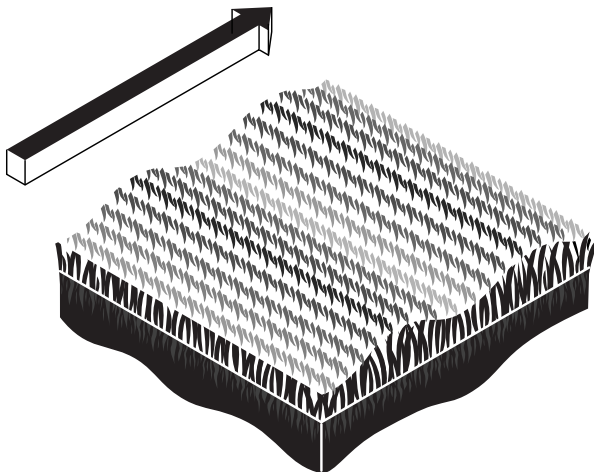
It is recommended that a “test cut” be performed to evaluate the mower’s performance before beginning repairs. An area should be available where “test cuts” can be made. This area should provide known and consistent turf conditions to allow accurate evaluation of the mower’s performance.

Another “test cut” should be performed after the completion of the repairs and/or adjustments to verify the mower’s performance.

Before performing a “test cut” to diagnose cut appearance and mower performance, the following items should be verified to ensure an accurate “test cut.”

1. Mowing (Ground) Speed
2. Blade Sharpness
3. Height-of-Cut (HOC)
4. Roller and Roller Bearing Condition
5. Blade Speed

11.2.1 Washboarding

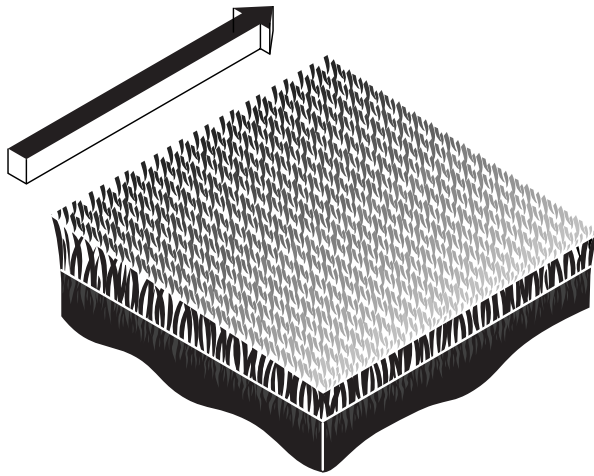


NOTE: Arrow indicates direction of travel.

Washboarding is a cyclical pattern of varying cutting heights, resulting in a wave-like cut appearance. In most cases, the wave tip-to-tip distance is approximately 6—8 in. (15—20 cm). Color variation (light-to-dark) may also be noticed. This condition is usually caused by a rocking motion in the cutting unit(s). This condition is found mostly on mowers with multiple (suspended) cutting units. Washboarding may also be caused by variations in the turf.

Probable Cause	Remedy
Mowing (ground) speed is too fast.	Reduce mowing (ground) speed.
Grass build-up on roller.	Clean the roller and scraper.
Roller is out of round.	Replace roller.
Mowing in the same direction.	Change mowing direction regularly.
Cutting units have too much or too little weight on them.	Use weight transfer switch to transfer weight on or off cutting units. (Refer to Parts & Maintenance Manual.)
Insufficient engine speed, not set to specification.	Check/adjust engine speed. (Refer to Parts & Maintenance Manual.)
Hydraulic system and/or rotary drive motor performance is reduced.	Check hydraulic system performance (pump output, motor operation, valve operation, relief valve settings, etc.).

11.2.2 Step Cutting



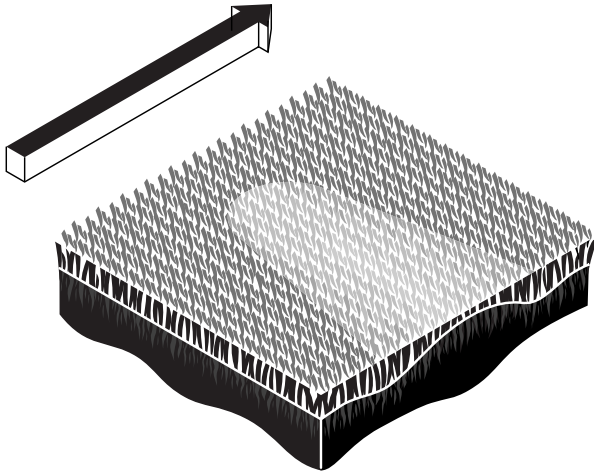
Step cutting occurs when grass is cut taller on one side of a cutting unit than the other or on one side of mower to the other. This is usually caused by mechanical wear or an incorrect roller or deck caster adjustment.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
HOC (height-of-cut) settings are different from one side of a cutting unit to the other or from one cutting unit to another.	Check HOC adjustment of cutting units. (Refer to Parts & Maintenance Manual.)
Worn roller bearings or deck caster wheels.	Check/replace roller bearings and/or deck caster wheels.
Cutting unit movement is restricted.	Check/remove cutting unit movement restriction.
Variations in turf density	Change mowing direction.
Machine ride height is uneven side to side.	Check/adjust proper tire inflation pressure. (Refer to Parts & Maintenance Manual.)
Cutting unit height is uneven side to side.	Check/adjust for even mower weight distribution.

11 PROBLEM SOLVING

11.2.3 Scalping

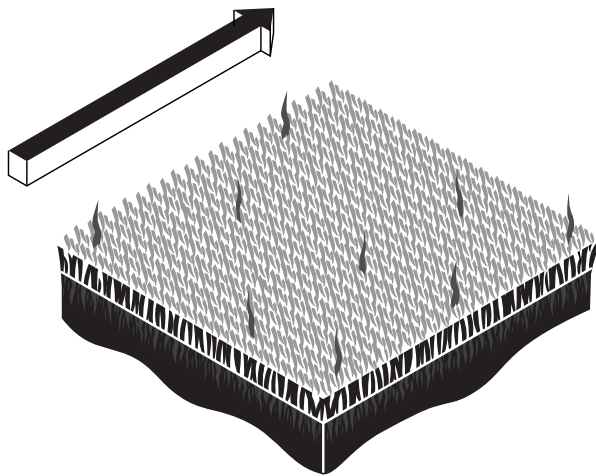


Scalping is a condition in which areas of grass are cut noticeably shorter than the surrounding areas, resulting in a light green or even brown patch. This is usually caused by an excessively low height-of-cut setting and/or uneven turf.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
HOC (height-of-cut) settings are lower than normal.	Check and adjust the HOC settings. (Refer to Parts & Maintenance Manual.)
Turf too uneven for the mower to follow.	Change mowing direction.
Cutting too much grass at one time.	Mow more often.
Mowing (ground) speed is too fast.	Reduce mowing (ground) speed.

11.2.4 Stragglers



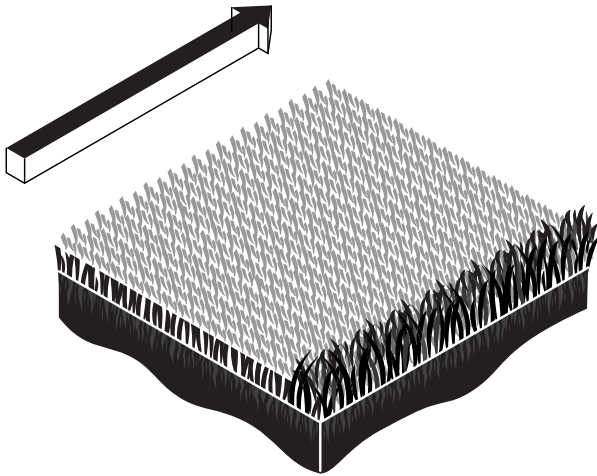
Stragglers are scattered blades of uncut or poorly cut grass.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
Dull cutting blade(s).	Sharpen blade(s). (Refer to Parts & Maintenance Manual.)
Mowing (ground) speed is too fast.	Reduce mowing (ground) speed.
Grass is too tall.	Mow more often.
Mowing in the same direction.	Change mowing direction regularly.

11 PROBLEM SOLVING

11.2.5 Streaks

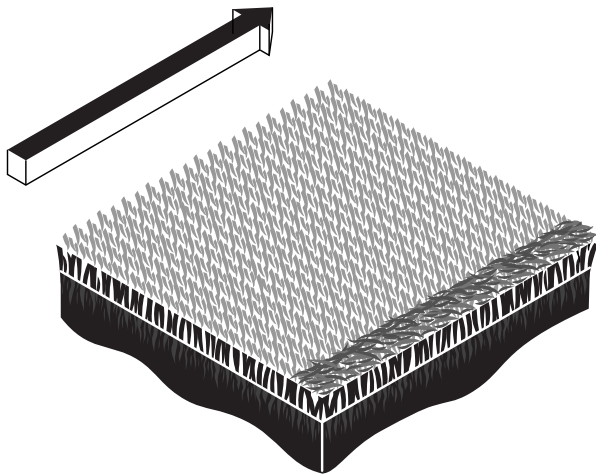


A streak is a line of uncut grass. This is usually caused by a damaged blade.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
Damaged blade(s).	Replace blade(s).
Turning too aggressively. Cutting units don't overlap during turns or on side hills.	Turn less aggressively to allow cutting units to overlap. Change mowing direction or pattern on side hills.
Tire mats down grass before it is cut.	Check/adjust tire inflation pressure. (Refer to Parts & Maintenance Manual.)
Wet grass is matted down before it is cut.	Cut when grass is dry.

11.2.6 Windrowing



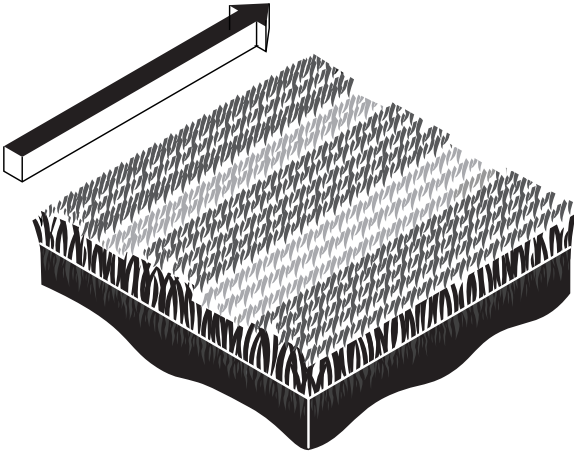
Windrowing is the deposit of clippings concentrated at one end of cutting unit(s) or between cutting units, forming line(s) in the direction of travel.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
Grass is too tall.	Mow more often.
Mowing while grass is wet.	Mow when grass is dry.
Grass built up on roller.	Clean rollers and scrapers.
Grass collecting on mower or cutting unit frame.	Clear cutting unit(s) discharge deflector.

11 PROBLEM SOLVING

11.2.7 Mismatched Cutting Units



Mismatched cutting units is a pattern of varying cutting heights, resulting in a stepped cut appearance, usually due to mismatched HOC (height-of-cut) adjustment from one cutting unit to another.

NOTE: Arrow indicates direction of travel.

Probable Cause	Remedy
HOC inconsistent from one cutting unit to another.	Check/adjust HOC on cutting units to same height. (Refer to Parts & Maintenance Manual.)
Difference in rotary cutting unit speeds.	Check operation of rotary cutting motor(s) and repair/replace as necessary.
Difference in mower ride height side to side.	Check/adjust tire inflation pressure. (Refer to Parts & Maintenance Manual.)
	Check/adjust for even mower weight distribution.

[illegible]

12 TORQUES

13.1 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

CORSE 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

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
1 1/2	889	2414	2605	3303	4002

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	845
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
1 1/2	996	2703	2917	3699	4482

14.1 GUARANTEE

WARRANTY

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

NOTICE

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

SERVICE

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

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



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