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McCONNEL

AGRIBUGGY2 AB-30

Low Ground Pressure Vehicle

Operator Instruction Manual

IMPORTANT

VERIFICATION OF WARRANTY REGISTRATION

Dealer Warranty Information & Registration Verification

It is imperative that the selling dealer registers this machine with McConnel Limited before delivery to the end user – failure to do so may affect the validity of the machine warranty.

To register machines; log onto https://my.mcconnel.com and select 'Machine Registration' which can be found in the 'Warranty' section of the site. **Confirm to the customer that the machine has been registered by completing the verification form below.**

Registration Verification Serial No.

Dealer Name: ……

Dealer Address: ……

Customer Name: ……

Date of Warranty Registration: ……/……/..…. Dealer Signature: ……

Note to Customer / Owner

Please ensure the section above has been completed and signed by the dealer to verify your machine has been registered with McConnel Limited.

IMPORTANT: During the initial 'bedding in' period of a new machine it is the customer's responsibility to regularly inspect all nuts, bolts and hose connections for tightness and re-tighten if required. New hydraulic connections occasionally weep small amounts of oil as the seals and joints settle in – where this occurs it can be cured by re-tightening the connection – *refer to torque settings chart below.* The tasks stated above should be performed on an hourly basis during the first day of work and at least daily thereafter as part of the machine's general maintenance procedure.

CAUTION: DO NOT OVER TORQUE HYDRAULIC FITTINGS AND HOSES

Torque Settings for Hydraulic Fittings

Hydraulic Hose Ends		
BSP	**Setting**	**Metric**
1/4"	18 Nm	19 mm
3/8"	31 Nm	22 mm
1/2"	49 Nm	27 mm
5/8"	60 Nm	30 mm
3/4"	80 Nm	32 mm
1"	125 Nm	41 mm
1.1/4"	190 Nm	50 mm
1.1/2"	250 Nm	55 mm
2"	420 Nm	70 mm

Port Adaptors with Bonded Seals		
BSP	**Setting**	**Metric**
1/4"	34 Nm	19 mm
3/8"	47 Nm	22 mm
1/2"	102 Nm	27 mm
5/8"	122 Nm	30 mm
3/4"	149 Nm	32 mm
1"	203 Nm	41 mm
1.1/4"	305 Nm	50 mm
1.1/2"	305 Nm	55 mm
2"	400 Nm	70 mm

Low Ground Pressure Vehicle

OPERATOR INSTRUCTION MANUAL

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AGRIBUGGY2 AB-30

OPERATOR INSTRUCTION MANUAL

INTRODUCTION

THIS MANUAL SHOULD BE KEPT WITH THE MACHINE AT ALL TIMES AND SHOULD BE READ BY ALL OPERATORS BEFORE USING, MAINTAINING OR REPAIRING THE MACHINE.

The Agribuggy2 AB-30 is powered by a diesel engine with automatic transmission and transfer box, providing mechanical drive to hub reduction axles. As standard it is four-wheel drive and has all wheel steer. To optimise weight distribution between all wheels it is of forward control configuration and constructed to achieve low ground pressure whilst maintaining durability.

IT IS SOLELY INTENDED for use in agricultural or similar operations, it has been designed specifically for use as a crop spraying and fertiliser spreading and therefore does not come within the scope of the Agriculture (Tractor Cabs) regulations. It should, therefore, not be used for any other purpose and should not be used for towing or be fitted with any other equipment unless approved by the manufacturer. The use of this machine in any other way is considered to be contrary to the intended use. The manufacturer accepts no liability for damage or personal injury resulting from improper use. These risks will be borne solely by the user. Improper use includes, but is not limited to, the overloading of the machine and operating at excessive speeds for the prevailing conditions and or operation being performed. Operators are warned that improper use may lead to serious loss and injury. In the case of improper use, the warranty may be invalidated and will be at the discretion of the manufacturer.

Road Safety – When driving on public roads it is important to obey road safety regulations.

It is imperative that only correctly qualified people undertake operation, maintenance, and repair of this machine.

After reading this manual and becoming acquainted with the Agribuggy it is recommended that you fill the sprayer with water only and have a trial run in a grass or stubble field. It is important that you get used to all aspects of operating the machine before applying chemicals.

Contents

WARRANTY POLICY

WARRANTY REGISTRATION

All machines must be registered, by the selling dealer with McConnel Ltd, before delivery to the end user. On receipt of the goods it is the buyer's responsibility to check that the Verification of Warranty Registration in the Operator's Manual has been completed by the selling dealer.

1. LIMITED WARRANTIES

1.01. All mounted machines supplied by McConnel Ltd are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 12 months, unless a different period is specified.

All Self Propelled Machines supplied by McConnel Ltd are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 24 months or 1500 hours. Engine warranty will be specific to the Manufacturer of that unit.

1.02. All spare parts supplied by McConnel Ltd and purchased by the end user are warranted to be free from defects in material and workmanship from the date of sale to the original purchaser for a period of 6 months. All parts warranty claims must be supported by a copy of the failed part invoice to the end user. We cannot consider claims for which sales invoices are not available.

1.03. The warranty offered by McConnel Ltd is limited to the making good by repair or replacement for the purchaser any part or parts found, upon examination at its factory, to be defective under normal use and service due to defects in material or workmanship. Returned parts must be complete and unexamined. Pack the component(s) carefully so that any transit damage is avoided. All ports on hydraulic items should be drained of oil and securely plugged to prevent seepage and foreign body ingress. Certain other components, electrical items for example, may require particular care when packing to avoid damage in transit.

1.04. This warranty does not extend to any product from which McConnel Ltd's serial number plate has been removed or altered.

1.05. The warranty policy is valid for machines registered in line with the terms and conditions detailed and on the basis that the machines do not extend a period of 24 months or greater since their original purchase date, that is the original invoice date from McConnel Limited.

Machines that are held in stock for more than 24 months cannot be registered for warranty.

1.06. This warranty does not apply to any part of the goods, which has been subjected to improper or abnormal use, negligence, alteration, modification, fitment of non-genuine parts, accident damage, or damage resulting from contact with overhead power lines, damage caused by foreign objects (e.g. stones, iron, material other than vegetation), failure due to lack of maintenance, use of incorrect oil or lubricants, contamination of the oil, or which has served its normal life. This warranty does not apply to any expendable items such as blades, belts, clutch linings, filter elements, flails, flap kits, skids, soil engaging parts, shields, guards, wear pads, pneumatic tyres or tracks.

1.07. Temporary repairs and consequential loss - i.e. oil, downtime and associated parts are specifically excluded from the warranty.

1.08. Warranty on hoses is limited to 12 months and does not include hoses which have suffered external damage. Only complete hoses may be returned under warranty, any which have been cut or repaired will be rejected.

1.09. Machines must be repaired immediately a problem arises. Continued use of the machine after a problem has occurred can result in further component failures, for which McConnel Ltd cannot be held liable, and may have safety implications.

1.10. If in exceptional circumstances a non-McConnel Ltd part is used to effect a repair, warranty reimbursement will be at no more than McConnel Ltd.'s standard dealer cost for the genuine part.

1.11. Except as provided herein, no employee, agent, dealer or other person is authorised to give any warranties of any nature on behalf of McConnel Ltd.

1.12. For machine warranty periods in excess of 12 months the following additional exclusions shall apply:

1.12.1. Hoses, exposed pipes and hydraulic tank breathers.

1.12.2. Filters.

1.12.3. Rubber mountings.

1.12.4. External electric wiring.

1.12.5. Bearings and seals

1.12.6. External Cables, Linkages

1.12.7. Loose/Corroded Connections, Light Units, LED's

1.12.8. Comfort items such as Operator Seat, Ventilation, Audio Equipment

1.13. All service work, particularly filter changes, must be carried out in accordance with the manufacturer's service schedule. Failure to comply will invalidate the warranty. In the event of a claim, proof of the service work being carried out may be required.

1.14. Repeat or additional repairs resulting from incorrect diagnosis or poor quality previous repair work are excluded from warranty.

NB Warranty cover will be invalid if any non-genuine parts have been fitted or used. Use of non-genuine parts may seriously affect the machine's performance and safety. McConnel Ltd cannot be held responsible for any failures or safety implications that arise due to the use of non-genuine parts.

2. REMEDIES AND PROCEDURES

2.01. The warranty is not effective unless the Selling Dealer registers the machine, via the McConnel web site and confirms the registration to the purchaser by completing the confirmation form in the operator's manual.

2.02. Any fault must be reported to an authorised McConnel Ltd dealer as soon as it occurs. Continued use of a machine, after a fault has occurred, can result in further component failure for which McConnel Ltd cannot be held liable.

2.03. Repairs should be undertaken within two days of the failure. Claims submitted for repairs undertaken more than 2 weeks after a failure has occurred, or 2 days after the parts were supplied will be rejected, unless the delay has been authorised by McConnel Ltd. Please note that failure by the customer to release the machine for repair will not be accepted as a reason for delay in repair or submitting warranty claims.

2.04. All claims must be submitted, by an authorised McConnel Ltd Service Dealer, within 30 days of the date of repair.

2.05. Following examination of the claim and parts, McConnel Ltd will pay, at their discretion, for any valid claim the invoiced cost of any parts supplied by McConnel Ltd and appropriate labour and mileage allowances if applicable.

2.06. The submission of a claim is not a guarantee of payment.

2.07. Any decision reached by McConnel Ltd. is final.

3. LIMITATION OF LIABILITY

3.01. McConnel Ltd disclaims any express (except as set forth herein) and implied warranties with respect to the goods including, but not limited to, merchantability and fitness for a particular purpose.

3.02. McConnel Ltd makes no warranty as to the design, capability, capacity or suitability for use of the goods.

3.03. Except as provided herein, McConnel Ltd shall have no liability or responsibility to the purchaser or any other person or entity with respect to any liability, loss, or damage caused or alleged to be caused directly or indirectly by the goods including, but not limited to, any indirect, special, consequential, or

incidental damages resulting from the use or operation of the goods or any breach of this warranty. Notwithstanding the above limitations and warranties, the manufacturer's liability hereunder for damages incurred by the purchaser or others shall not exceed the price of the goods.

3.04. No action arising out of any claimed breach of this warranty or transactions under this warranty may be brought more than one (1) year after the cause of the action has occurred.

4. MISCELLANEOUS

4.01. McConnel Ltd may waive compliance with any of the terms of this limited warranty, but no waiver of any terms shall be deemed to be a waiver of any other term.

4.02. If any provision of this limited warranty shall violate any applicable law and is held to be unenforceable, then the invalidity of such provision shall not invalidate any other provisions herein.

4.03. Applicable law may provide rights and benefits to the purchaser in addition to those provided herein.

McConnel Limited

Safety Information & Precautions

THIS IS THE SAFETY ALERT SYMBOL

WHEN YOU SEE THIS SYMBOL IN THIS MANUAL BE ALERT TO THE POTENTIAL FOR PERSONAL INJURY.

MAKE SURE WHEN READING THROUGH THIS MANUAL YOU OBSERVE ALL SPECIAL NOTE WARNINGS TO AVOID EITHER PERSONAL INJURY OR MACHINE DAMAGE.

1. Read this manual thoroughly before operating the machine.
2. Always operate the machine in a proper and safe manner observing all safety and traffic regulations.
3. The machine should not be driven at speeds in excess of 30mph. (50kph).
4. Maximum laden weight should not exceed 10 tonnes.
5. When operating in adverse terrain be aware of machine limitations and the centre of gravity of load tyre pressures etc.
5. Never allow children or unqualified persons to operate the machine.
6. Ensure operators are fully trained in the use and approved to operate the machine before commencing operation.
7. Always wear your safety belt securely fastened.
8. Always wear all the appropriate PPE (personal protective equipment).
9. Avoid operating the machine near ditches and embankments; reduce speed when negotiating turns, slopes, and on rough and slippery surfaces.
10. Do not operate on hazardous inclines where there is a danger of overturning.
11. Do not permit other persons to ride on the machine.
12. Keep the machine in good mechanical working order. Unauthorised modifications to the machine may impair the safety and function of the machine and could invalidate warranty.
13. Replace all damaged or unreadable safety decals immediately; replacements are available from your local dealer.

Operators Cab 

1. Jumping in and out of the cab or getting into or out of the cab without care and attention can result in injury.
2. The cab step folds away when the machine is in operation, before using the step ensure it is positioned correctly and locked in position.
3. Always use the grab handles provided as an aid to entering the cab. Before opening or closing the doors always ensure that no one is standing in the near vicinity to prevent possible injury.
4. Never attempt to start the machine from anywhere except seated in the driving seat. Never start the engine with the main gearbox or power take-off engaged. The forward/reverse lever must be in the neutral position before the starter will operate.
5. Always stop the engine before working on the machine. Ensure the ignition key is removed.
6. Adjust the seat position to suit and driver's weight setting on the seat suspension before starting the machine. Do not attempt to adjust the seat position whilst driving the vehicle.
7. Do not attempt to adjust the steering column whilst the vehicle is in motion. After adjustment, ensure the steering column is firmly tightened before driving the vehicle.
8. Always ensure the driver's door is closed when using the vehicle.
9. Do not make alterations, drill holes or weld anything on the cab.

Brakes

1. Ensure the park brake is applied prior to leaving the vehicle.
2. Ensure that the park brake is in the park position and the operator is sitting in seat before starting the engine.
3. Excessive use of the vehicles brakes when travelling down steep gradients may cause overheating and brake fade. Always select a low gear when descending a steep gradient to make use of engine braking.

Electrical

1. Disconnect main battery leads before working on the electrical circuit, always disconnect the (-) terminal first.
2. Isolate controls to prevent actions by others that could result in dangerous movement and possible injury.
3. To avoid overloading the electrical circuits in the event of a fault, do not attempt to fit a fuse in excess of the recommended amperage. Failure to observe this warning may result in an electrical fire.
4. Persistent fuse failure is an indication of an electrical fault; do not continue to use the machine until the fault has been diagnosed and rectified by a qualified auto-electrician.

Steering

Please remember that 'Road Mode' must ALWAYS be engaged for use on the road.
The rest of the steering modes are intended ONLY for fieldwork at the lower speeds.

Maintenance

1. Maintenance work should only be undertaken by a skilled vehicle mechanic fully conversant with the Agribuggy vehicle and sprayer systems.
2. Wheel chocks must be used at all times when performing maintenance and/or service duties.
3. Before carrying out any repairs or welding on the Agribuggy, the sprayer, or the spreader, remove all chemical and fertiliser residues with a pressure washer or steam cleaner together with a suitable detergent and brushing if necessary - Burning chemical fumes are extremely toxic - Ammonium Nitrate (e.g. Nitram) can be explosive. Chemical residues are extremely hazardous to anyone working on the machine. Disconnect both the positive (+) and negative (-) battery cables from the battery. Attach the welder ground cable no more than 0.61 meters [2 feet] from the part being welded. Do not connect the ground clamp of the welder to any of the sensors, wiring harness, electronic control units or the components. Direct welding of any electronic components must not be attempted. Sensors, wiring harness, and electronic control unit should be removed if nearby welding will expose these components to temperatures beyond normal operation. Additionally, all electronic control unit connectors must be disconnected.
4. When the ‘STOP’ warning is displayed on the Machine Control Unit (MCU), the vehicle must be stopped as soon as safety conditions permit and the fault rectified before continuing.
5. Always use the correct PPE personal protective equipment when maintaining the machine.
6. Never start or run the engine when the engine hood / panels are open.
7. Never run the engine in a closed environment. Always ensure there is sufficient ventilation to allow fumes to disperse safely.
8. Check and ensure that nobody is near power take off (PTO) shafts or any PTO driven implement before engaging the PTO valve. Never work on a machine with the PTO or engine running.
9. Before carrying out service work, stop the engine and allow it to cool. Always follow the recommended service proceedings.
10. Do not attempt to remove the radiator header tank filler whilst the engine is running or when the engine is still hot.
11. Do not attempt to fill, or top up, a hot engine with cold coolant.
12. Engine coolant/antifreeze is a toxic substance that must not be consumed or allowed to come into contact with the skin or eyes. Thoroughly rinse any affected areas with water. In the event of excessive skin or eye contact, seek medical attention immediately.
13. Avoid fluids under pressure coming into contact with the skin. Relieve system pressures first before working on high pressure pipes and/or fittings, etc., tighten all loosened connections before re-applying pressure, be aware that the machine has hydraulic accumulators in the hydraulic circuit.

14. If fluid is ‘injected’ into the skin due to accidental contact with high-pressure fluid, consult a doctor immediately.

Maintenance (continued)

15. Hydraulic hoses can fail if physically damaged, kinked or through age and exposure. All hoses must be inspected regularly and replaced immediately if worn or damaged, particular attention should be paid to steering and braking hoses.
16. Hydraulic fluid connections can loosen due to damage and vibration. Connections should be regularly checked, and any loose connections tightened. Pay particular attention to steering and brake hoses.
17. When checking for the source of a hydraulic oil leak use a sheet of card, keep skin protected at all times.
18. Prolonged and repeated contact with oil may cause serious skin disorders, including dermatitis and cancer. Wash thoroughly after contact. Keep oils out of reach of children.
19. Diesel exhaust fluid (DEF) contains urea. Do not get the substance in your eyes. In case of contact flush eyes immediately with large amounts of water for a minimum of 15 minutes. Do not swallow, in the event of ingestion contact a physician immediately.
20. If safety critical faults are found during the daily/weekly checks and inspections they must be rectified before using the vehicle.
21. Do not run the engine with the vehicle parked in a confined area – exhaust gases are poisonous which can be fatal if inhaled. Always use suitable extraction equipment.

22. Fuel spillages are highly inflammable; avoid naked flames and switch engine off when filling the fuel tank.
23. Care should be taken to prevent contamination of any drains and waterways; fuel spillages should be dealt with in accordance with local regulations governing the disposal of waste.

24. Keep clear of rotating components such as fans, drive shafts and drive belts.
25. Use the designated attaching points for mounting implements. Contact McConnel Limited for a copy of the body builder's instructions drawing for implements and/or attachments to be carried on the machine chassis.
26. Caution: Battery gases can explode. Keep sparks and naked flames away from batteries. Never check battery charge by placing a metal object across the posts; use a voltmeter or hydrometer. Always remove the ground (-) battery clamp first and replace it last.
27. When working in the vicinity of the machines wheels, be aware of the danger of becoming trapped and/or crushed between the chassis and wheel, never place yourself in any position of risk.

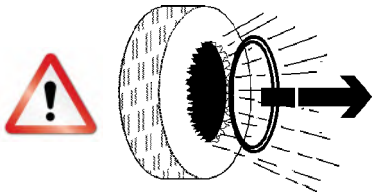
Cleaning the Machine

1. Keep the machine clean and free of corrosive substances. Do not allow dirt/fertilisers to build up on the engine, particularly ammonium nitrate; this can create a fire hazard!
2. Before cleaning the machine ensure that the engine is switched off, handbrake is on, and ignition key is removed.
3. Keep steps, pedals, and floor clean at all times. Remove grease, oil, dust, and mud; slippery surfaces are hazardous.

IMPORTANT: If any factory or field repairs need to be performed on a contaminated machine, we reserve the right to either refuse to carry out the work, or to charge for any necessary cleaning required.

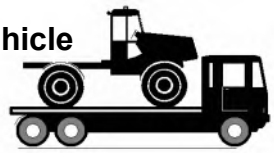
Tyres and Pressures

1. Always follow correct safety procedures when fitting tyres and/or inflating them. Ensure any tyres fitted are fully capable of carrying the required load. Never over inflate a tyre. Consult your tyre dealer for advice.
2. Service tyres safely, check tyres for cuts, bubbles, damaged rims, and missing wheel nuts, where necessary replace with specified parts.
   Do not service tyres unless you have sufficient experience and the correct equipment.



3. Contact with air under pressure can cause personal injury. Only inflate the tyre to the recommended pressure quoted in the tyre manufacturer's handbook.
4. Failure to follow the manufacturers recommended inflation pressures may lead to distinct deterioration in performance and tyre life. Tyre condition should be checked at regular intervals to prevent potentially dangerous operation of the vehicle.
5. Do not operate the vehicle overloaded, or with under inflated tyres; tyre temperatures may rise to dangerously high levels resulting in tearing and blowouts.
6. Wheels are heavy objects; care must be exercised when removing or replacing wheels on the axle to avoid risk of injury or damage to wheel studs. Ensure that the vehicle is securely supported before attempting to remove wheel(s).
7. It is important to tighten the wheels nuts to the correct torque and in the correct tightening sequence - refer to maintenance section for details.
8. When changing wheels, you must adjust the steering stops on the front and rear axle to prevent the tyres from coming into contact with the chassis - refer to the set-up procedure for steering stops.

Towing and Recovery of Vehicle



1. Before attempting to tow the vehicle, conditions must be assessed to make sure the safest possible method is employed, and no risk is taken by ensuring suitable equipment is used. Towing of the vehicle should only be with a rigid tow bar.
2. Ensure that all wheels are chocked prior to removal of the rigid tow bar between the vehicles.
3. The towing speed must never exceed 10 km/h under any circumstances and tow distance must not be more than 10 km; failure to obey these conditions will cause damage due to lack of lubrication.

The Agribuggy is fitted with a hydraulic braking system and should not be towed when the engine is switched off; the brake system will have no assistance without the engine running. Towing of the vehicle should only be with a rigid connector.

CAUTION Spraying

1. The cab cannot fully protect against inhaling vapour, aerosol, or dust when operating in an environment where pesticides are present; wear appropriate clothing and if pesticides instructions call for it wear a respirator inside and outside the cab.
2. To prevent ingress of hazardous substances into cab: ensure doors and windows are closed, all seals on doors and windows are in good condition, grommets for cables in the cab are sealed properly, the air conditioning fan is ON, and cab air filters are of the correct type and in good condition.
3. Wear personal protective equipment as called for in the pesticide instructions when leaving the cab to enter a treated area when mixing and loading chemicals, and when working on contaminated equipment such as nozzles.
4. Before entering the cab remove any clothing soiled with pesticide and ensure footwear is free from contamination.
5. Clean hazardous pesticides of the vehicle; during application of hazardous pesticides, pesticides residue can build up on the inside and outside of the vehicle. Clean the vehicle in accordance with current legislation as per instructions for hazardous pesticides. Wash down entire exterior of vehicle disposing of any wash water with hazardous concentrations according to published regulations.

DANGER Overhead Power Lines

1. Be aware of any Overhead Power Lines in the vicinity of the machinery during the unfolding procedure and whilst working. Ensure all components of the machine are kept at a safe distance from power lines at all times; remember electrocution can occur without actually coming into contact with a power line as electricity can ‘flashover’ when machinery is close to it.
2. Where doubt exists, contact the local Distribution Network Operator (DNO) who will be able to advise you on the operating voltage, safe minimum clearance distance for working, and any additional precautions required.

Overhead Power Lines (OHPLs)

It cannot be stressed enough the dangers involved when working in the vicinity of Overhead Power Lines (OHPLs). The lowest legal minimum height for 11,000 and 33,000 volt power lines is 5.2 metres from the ground. Agribuggy machines with standard booms mounted are capable of 3.9m vertical reach and 24m horizontal reach.

Remember electrocution can occur without actually coming into contact with a power line as electricity can 'flashover' when machinery gets close to it.

⚠WARNING

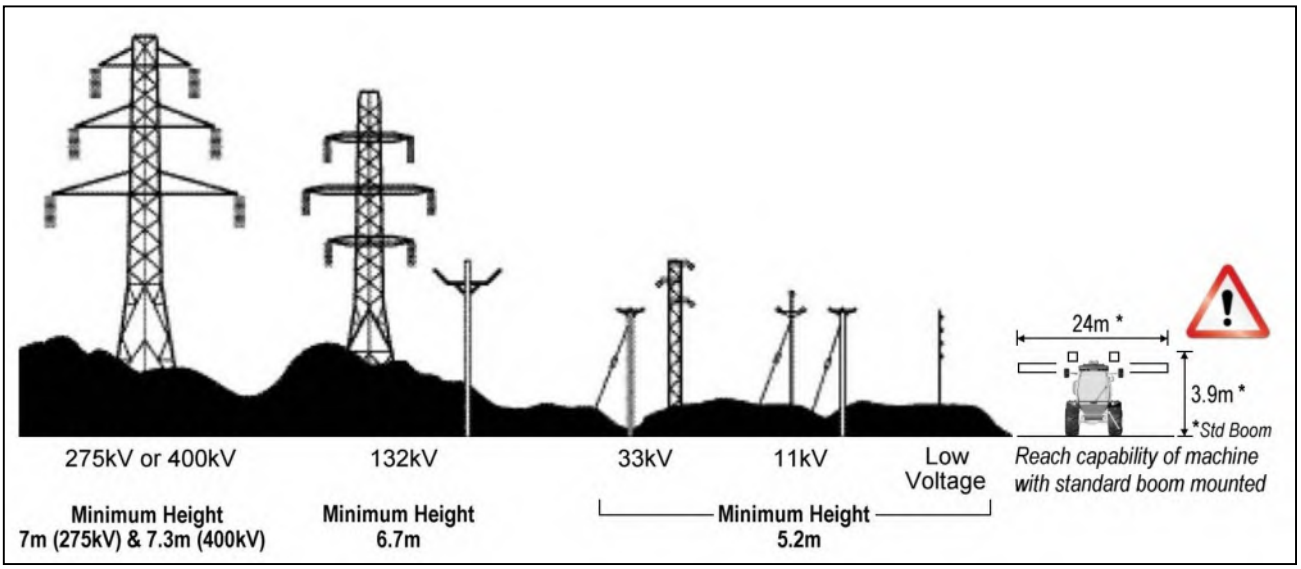
All operators must read the following information and be aware of the risks and dangers involved when working in the vicinity of Overhead Power Lines (OHPLs).

Wherever possible the safest option is always to avoid working in areas close to OHPLs.

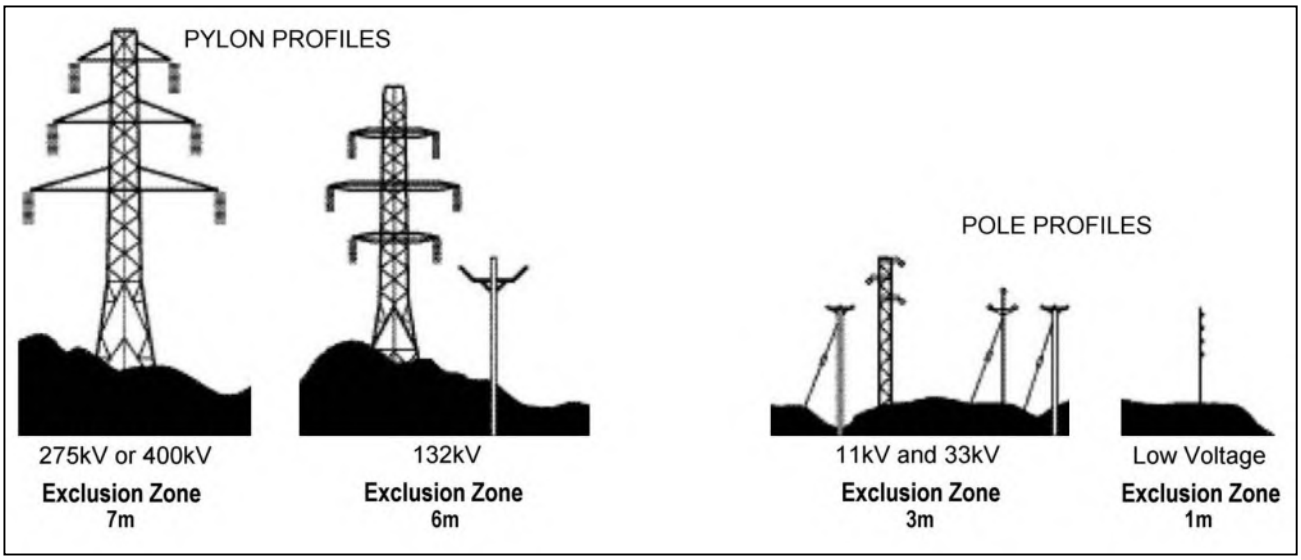
Where unavoidable, all operators must perform a risk assessment and implement a safe procedure and system of work – *see following page for details.*

All operators should perform a risk assessment before operating the machine within 10m horizontal distance of any OHPLs.

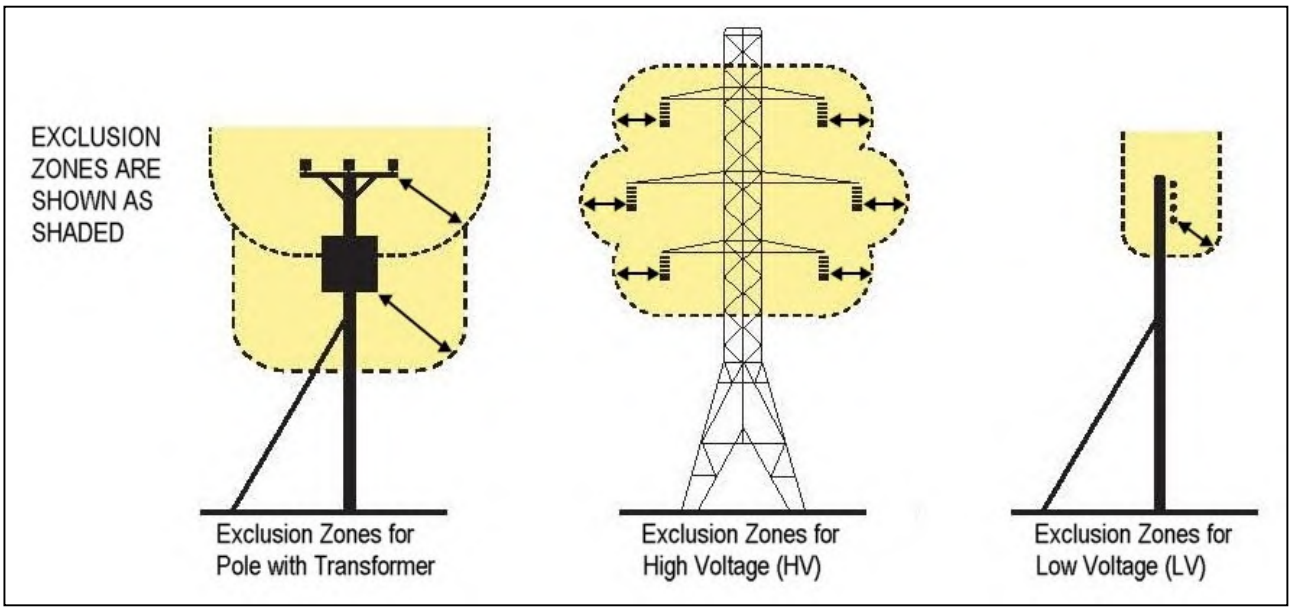
Minimum Heights for Overhead Power Lines



Absolute Minimum Exclusion Zones for Specific Overhead Power Lines



Definitions of Exclusion Zones



Risk Assessment

Before starting to work near OHPLs you should always assess the risks. The following points should be observed;

Know the risks of contacting OHPLs and the risk of flashover.

Find out the maximum height and maximum vertical reach of your machine.

Find out the location and route of all Power Lines within the work area.

Find out the operating voltage of all Power Lines within the work area.

Contact the local Distribution Network Operator (DNO) who will be able to advise you on the operating voltage, safe minimum clearance distance for working, and additional precautions required.

Never attempt to operate the machine in exclusion zones.

Always work with extreme caution and plan your work ahead to avoid high risk areas.

If doubt exists do not work in the area – never risk the safety of yourself or others.

Emergency Action for Accidents Involving Electricity

- Never touch an overhead line - even if it has been brought down by machinery or has fallen. Never assume lines are dead.
- When a machine is in contact with an overhead line, electrocution is possible if anyone touches both the machine and the ground. Stay in the machine and lower any raised parts in contact or drive the machine out of the lines if you can.
- If you need to get out to summon help or because of fire, jump out as far as you can without touching any wires or the machine - keep upright and away.
- Get the electricity company to disconnect the supply. Even if the line appears dead, do not touch it - automatic switching may reconnect the power.

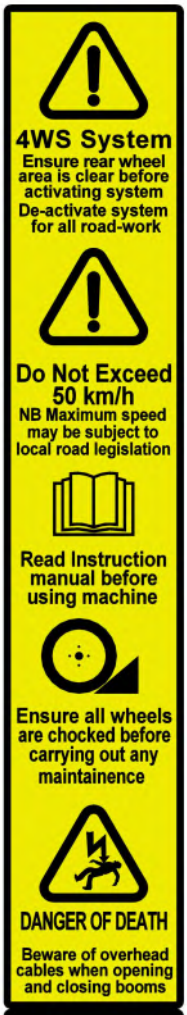
Further information and leaflets on this and other agricultural safety subjects are available on the 'Health & Safety Executive' website at the following address: www.hse.gov.uk/pubns/agindex.htm

Safety Decals

⚠WARNING

To alert the operator to potential hazards several safety decals are affixed to the vehicle. These warnings should be considered so that the risk of personal injury is minimised.

If the decals become worn or defaced they should be replaced with identical items available from your dealer.



Mounted on the right-hand B post inside the cab. Warnings regarding:

4 Wheel Steer.

Do not exceed 50 KPH (subject to local road legislation).

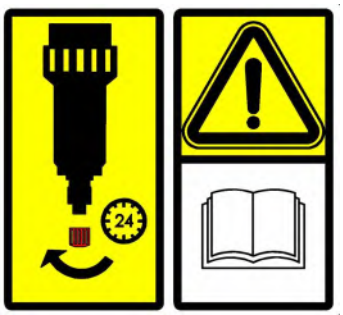
Read the Instruction manual before using the machine.

Chock wheels before performing maintenance.

Beware of overhead cables.

'**Power Cut**' contact telephone number
CALL 105

Hand wash tap: located on left-hand engine cover.



Sprayer filter, located on both the primary and secondary filters; **Flush Filters Daily**

Crush Zone; located on both chassis rails forward of rear axle.

Caution Chemicals: Located on chemical induction hopper.

Maintenance Caution; Located on side of chemical inductor.

Stop engine before accessing engine compartment; located on engine covers.

Read the Book First

105 is the national emergency number for Distribution Network Operators (DNO's); ringing this number automatically connects to the local DNO who can locate an incident and disconnect the power as soon as possible.

Operation - Driving Controls

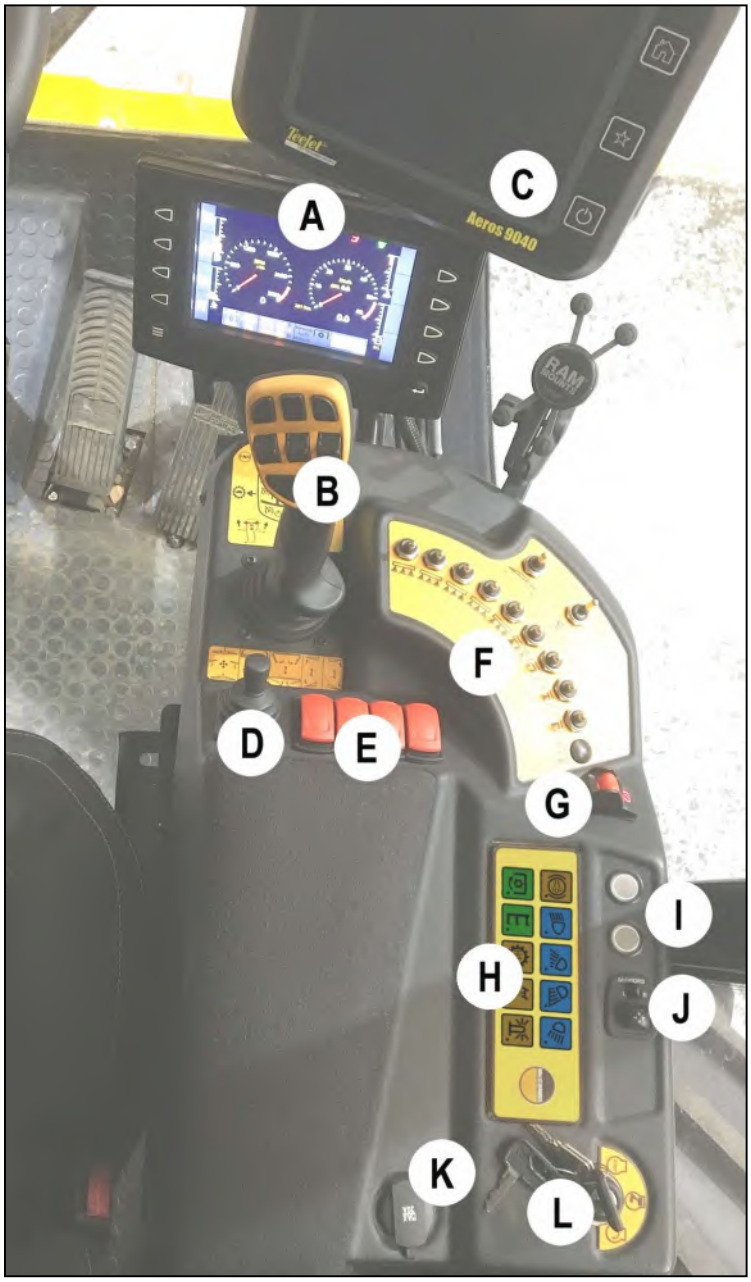
‘Running-In’ and first 100 hours of operation

There are no strict ‘running-in’ rules for the Cummins diesel engine; however, do not treat it harshly during the first fifty-hours running. Avoid consistently high speeds, but do not let the engine labour. There should always be a positive response from the throttle. Select the right gear for the job. Be prepared to reduce your working speed if necessary. Check the Machine Control Unit (MCU) frequently and keep the coolant and oil filled to their recommended levels on a daily basis.

Be aware that the engine operates with a Diesel Particulate Filter (DPF) and Selective Catalytic Reduction (SCR) system and requires Diesel Exhaust Fluid (DEF).
DEF is injected into the exhaust system to convert the nitrogen oxide (NOx) produced by the engine into nitrogen and water. When it is cold and very dry water vapor may be seen coming from the exhaust, this is normal.
Attempting to run the vehicle without DEF will result in a drastic reduction in vehicle speed.

On completion of the first 100 hours running, carry out the maintenance instructions summarised in the maintenance section of this manual.

Cab Interior and Main Controls



A) Machine Control (MCU)

B) Joystick Control

C) Sprayer Control Unit

D) Boom Control Joystick

E) Boom Control Switches

F) Section Spray Controls

G) Parking Brake

H) Switch Pad

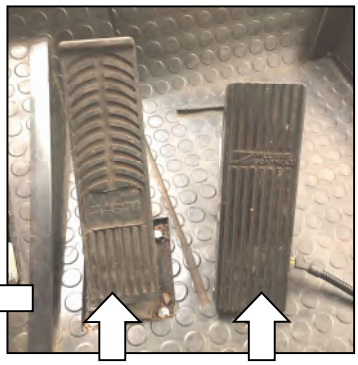
I) Sidelight / Hazzard Light Switches

J) Mirrors Adjustment Switch

K) 20 Amp Socket

L) Ignition Switch

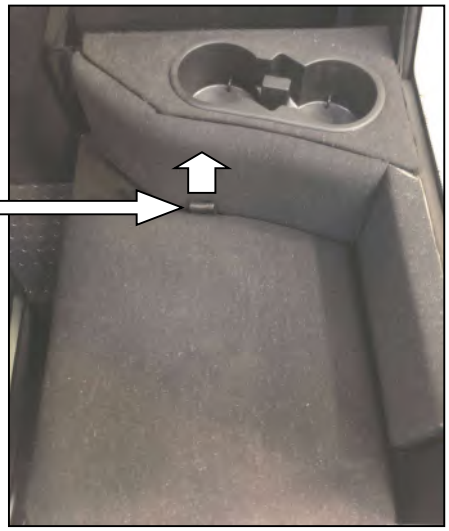
Multifunction Column Switch



Foot brake Throttle Pedal

Stowage Locker and Document Pouch

Stowage is provided under a padded cover to the left-hand side of the driver's seat. To the rear is a cup and flask holder behind which is a document pouch.



Radio

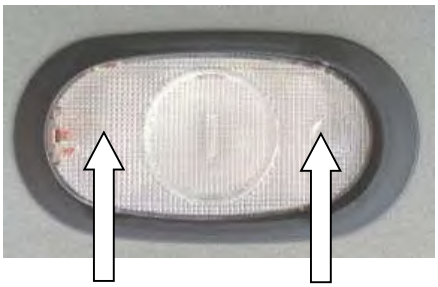
The radio is fitted in the roof panel on the right hand side of the cab. The radio is Bluetooth enabled and has a microphone mounted in the roof.

Door Switch / Interior Light / Safety Interlock

The door switch controls the interior light and is also linked to the hydraulic boom folding controls and the automatic step control.

You should always close the cab door before operating the boom folding/height controls to avoid the boom coming into contact with the door.

You should also close the cab door before raising the step. If the automatic control that raises the step when the handbrake is switched off is engaged, it will not work with the door open.



Charging Socket

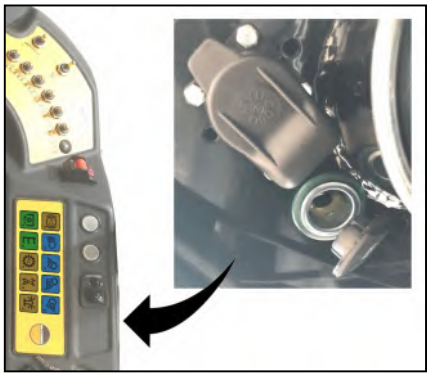
Located at rear of armrest adjacent to the ignition switch.

Note; maximum current draw of 5 AMP.

Charging Socket
5 Amp (MAX)

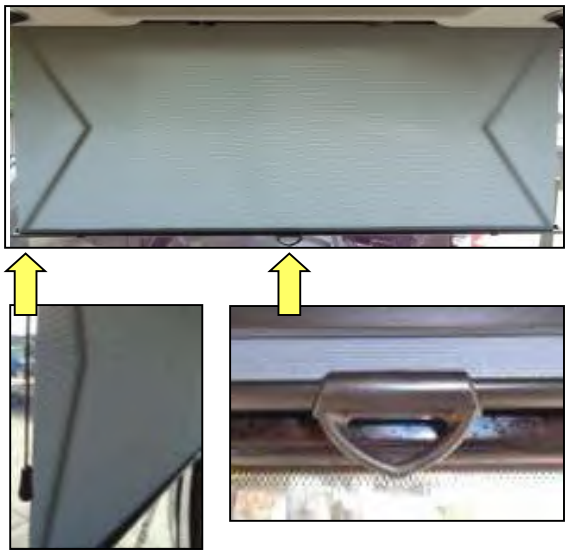
John Deere Plug & Additional Charging Socket

Located under controls panel; access is from beneath.



Sun Visor

A sun visor is provided to reduce glare. To operate the sun visor, pull the central tab downwards.
To retract, pull the cord to left hand side of the visor.



Emergency Exit

In the case of an emergency where the door cannot be opened an emergency hammer is provided; this is located on the rear left-hand side of the C post adjacent to the rear bulkhead.

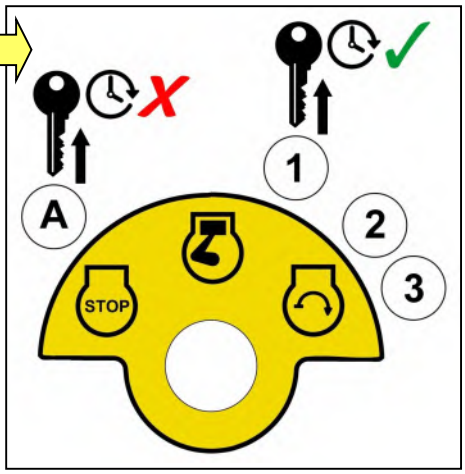
In an emergency, remove the hammer and strike the glass from which escape is safe.

SMASH the window by swinging the Emergency Hammer overhand, like a household hammer. One or two strikes should shatter the glass. Either of the two heads of the hammer can be used for this purpose.

SHEILD your eyes and face from the glass and instruct others to do the same. Still using Hammer, scrape the remaining glass from the window edges and exit the cab.

Emergency Hammer

Key Switch



A) Auxiliary Position

1) Ignition OFF

2) Ignition ON

3) Start

⚠ IMPORTANT

For parking and/or storage the key should be removed when barrel is in the OFF position (1).
It is possible to remove the key in the Auxiliary position, but auxiliary power will remain on; over extended periods this will drain the battery.

Multifunction Column Switch

Headlights
Push stalk forward for main beam.
Position stalk centre for dipped beam.
Pull stalk backwards to flash the lights.

Screen Washer
Press outer ring.

Horn
Press centre button.

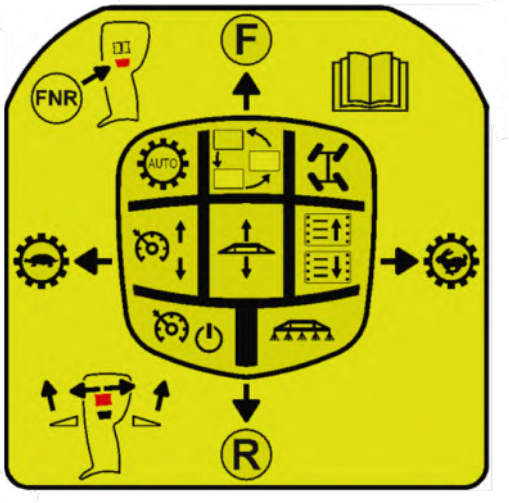
Indicators
Push stalk up to indicate right.
Pull stalk down to indicate left.

Windscreen Wipers
Rotate the centre grip anti-clockwise for continuous wipe (1st click slow, 2nd click fast).
Rotate clockwise for intermittent wipe.

Push Button Panel

1. Exhaust Brake
2. Headlights
3. Front Work Lights
4. Rear Work Lights (Cab & Sprayer)
5. Blue Sprayer Lights (if fitted)
6. PTO Engage / Disengage
7. Access Steps
8. Transfer Box High/Low
9. Centre Differential Lock
10. Beacon
11. Side/Parking Lights
12. Hazard Lights
13. Electric Mirrors Control
14. Park Brake

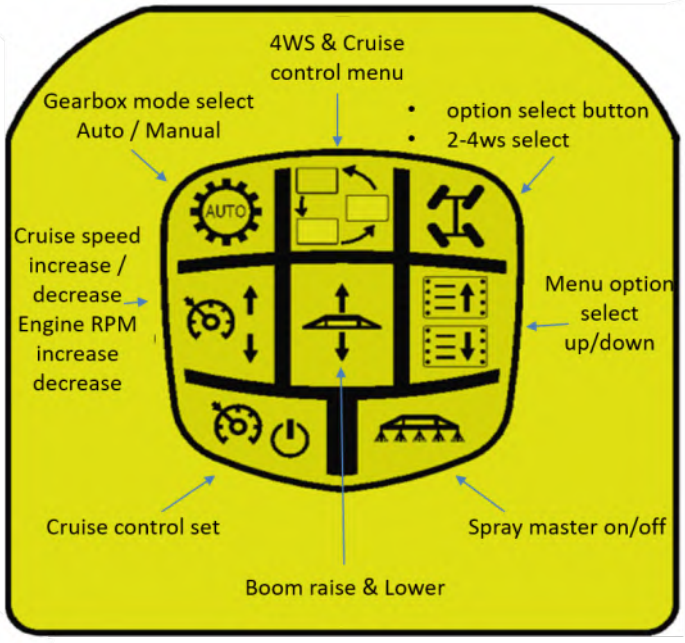
Joystick Control



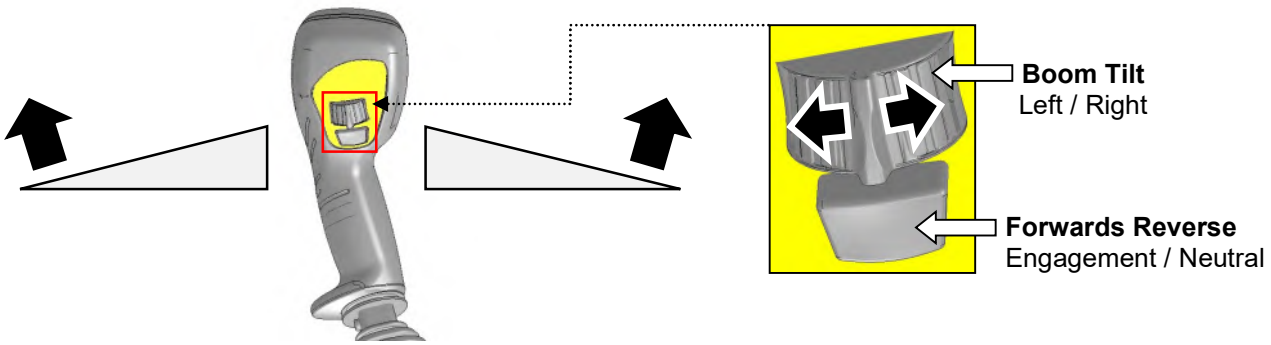
The multifunction joystick has five function buttons and three rollers on the face, with one button and one roller on the reverse. For transmission control the stick has movements fore and aft and side to side (see transmission control section). The functions are as shown on the decal located immediately in front of the joystick.

The buttons and rollers on the face have the functions as detailed below;

Cruise Control Roller Switch
Push forward: Resume / Increase.
Pull Back: Set / Decrease.



The button and roller on the obverse have the following functions;



Machine Control Unit (MCU)

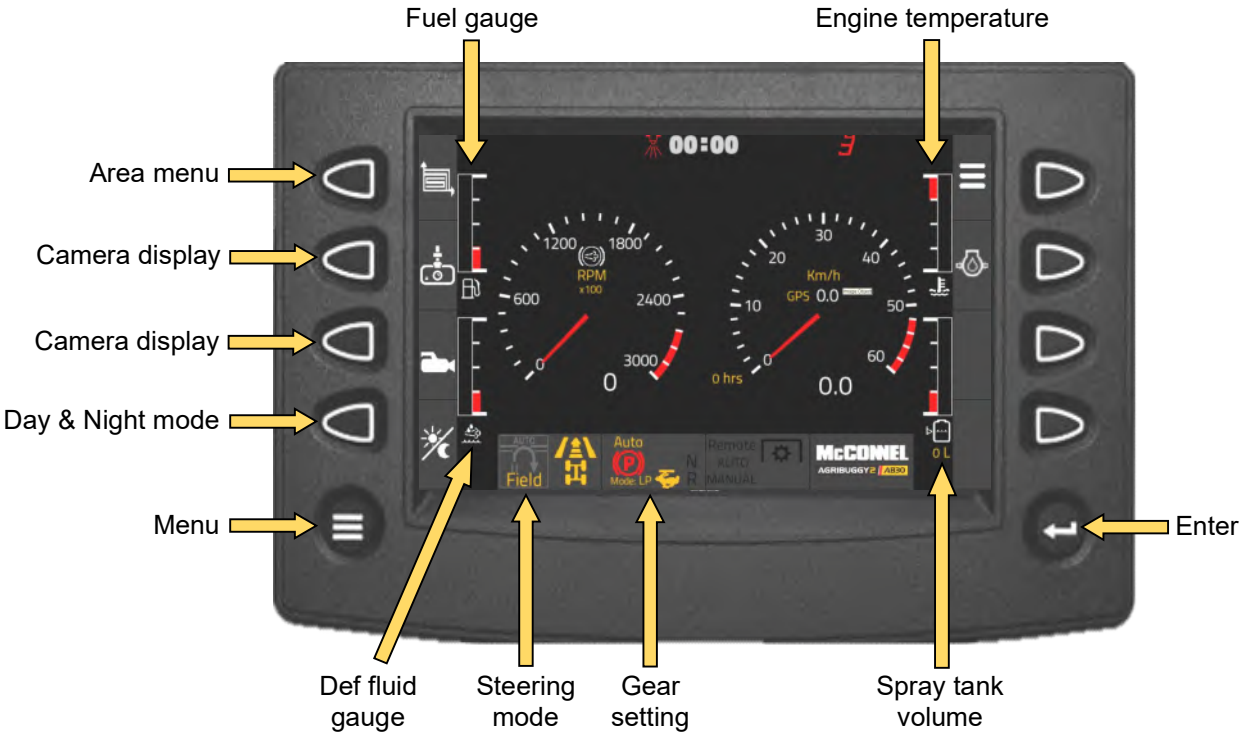
The MCU is the only display unit for the machine and not only displays a multitude of information but also controls various machine functions in conjunction with other controllers on the machine. It is an integral part of the electrical system and the machine will not function without it.

The main functions of the MCU are as follows:

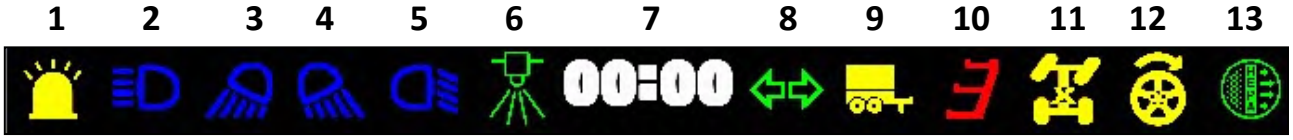
- Monitoring engine functions and errors.
- Monitoring transmission functions & errors.
- Monitoring and control of the gearshift system and interlocks.
- Monitoring machine sensors, fluid levels and warning systems.
- Monitoring of functions, errors, controlling & set-up of rear steer system in conjunction with the Plus1 controller and joystick.
- Monitoring of functions and controlling & set-up of PTO system in conjunction with the Plus1 controller and the switch panel / remote PTO panel.
- Monitoring and control of the cruise control in conjunction with the engine ECM and the joystick.
- Controlling the various safety interlock systems.
- Controlling the High/low range shift and speed interlocks.
- Controlling the step.
- Controlling the handbrake & interlocks.
- Calculating forward speed from GPS & transmission output shaft speed.
- Monitoring service intervals.
- Display of up to 3 video cameras.

Main Display – Home screen

The main home screen shows information in 3 main areas – **Main Display**, **Warning Lamps** and **Machine Info**. By pressing the function buttons at the side of the screen other screens can be accessed which are indicated by the icons down the side of the screen. These icons and the key functions will change according to the particular screen being displayed at the time. In operating mode, the machine information and warning lamps will be on display at all times.



Warning Lamps



1. Flashing Beacon

2. Headlights (Dipped Beam)

2. Headlights (Main Beam)

3. Work Lights (Front of Cab)

4. Work Lights (Rear of Cab)

5. Sprayer Lights (if fitted)

6. Spray On/Off

7. Time

8. Direction Indicators

9. Trailer Direction Indicators

10. Step Indicator
(Red = Down / Green = Up)

11. Differential Lock Engaged

12. Ground / GPS Speed Sensor

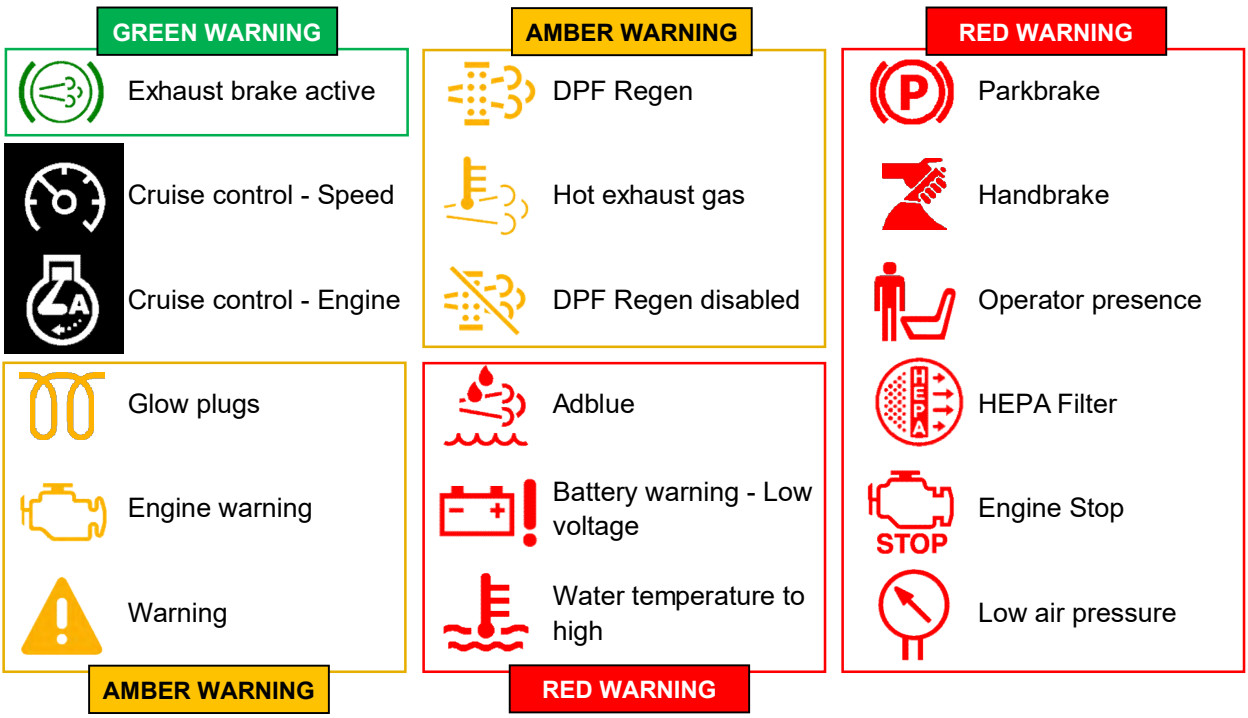
13. HEPA Filter
(High Efficiency Particulate Air)

Error Warnings

In addition to the warning lamps on the top bar, there is also an error warning system to alert the operator to various other machine problems, see list below. There are two 'action' warning levels (AMBER and RED) as described below, the action required will depend on the severity of the problem. The warning screens show what the problem is in plain English and in many cases show how the problem can be checked or resolved.

The AMBER 'splash screen' above shows a warning of medium severity which means you should stop at the first opportunity and investigate the problem. Continual use with warning indicator lit on screen will cause the engine to derate.

NOTE: For illustration purposes ALL warning icons are shown displayed on the screen above.



The **RED SYMBOLS** indicate a serious problem; you should **stop immediately** to investigate or damage to the vehicle/engine could ensue. The warning may also be a safety issue which could mean it is dangerous to continue. All RED WARNING indicators will cause the Cummins engine to derate until the highlighted issue has been rectified, more information on the problem can be found in the diagnostics menu.

If the message is medium severity (AMBER WARNING) you can temporarily hide the message(s) by pressing the "Hide" key. The hide key will then be replaced by a "Recall" key which allows you to recall the message(s) at any time.

If you require any further assistance regarding errors please contact your local McConnel dealer.

Rear Steering Information Area

Please see the appropriate section in the manual for the rear steering operating instructions.

Road mode

Auto link for headland steering mode

Two wheel to four wheel selectable steering mode

Four wheel steer delay mode

Permanent four wheel steer mode

Crab steer mode

Transmission Information Area

Please see the appropriate section in the manual for the transmission operating instructions.

Automatic mode selected

Manual mode selected

Torque converter locked

Torque converter unlocked

Park Brake

Current Gear (3rd shown)

Forwards, Neutral, Reverse indicator (Neutral selected)

Requested gear indicator when in manual mode (Forwards 3rd shown)

High range selected

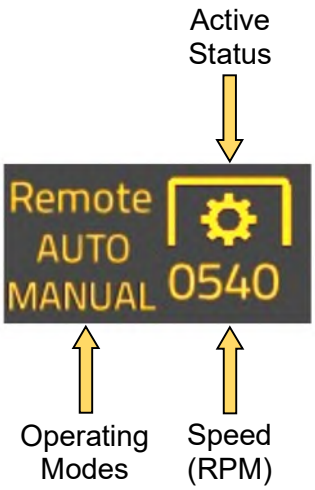
Low range selected

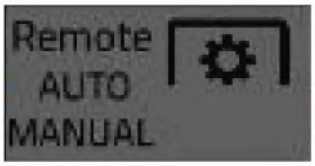
LP - Transmission set for low ground pressure tyres

RC - Transmission set for row crop tyres

PTO Information Area

Refer to appropriate section in the manual for the power take off (PTO) operating instructions.





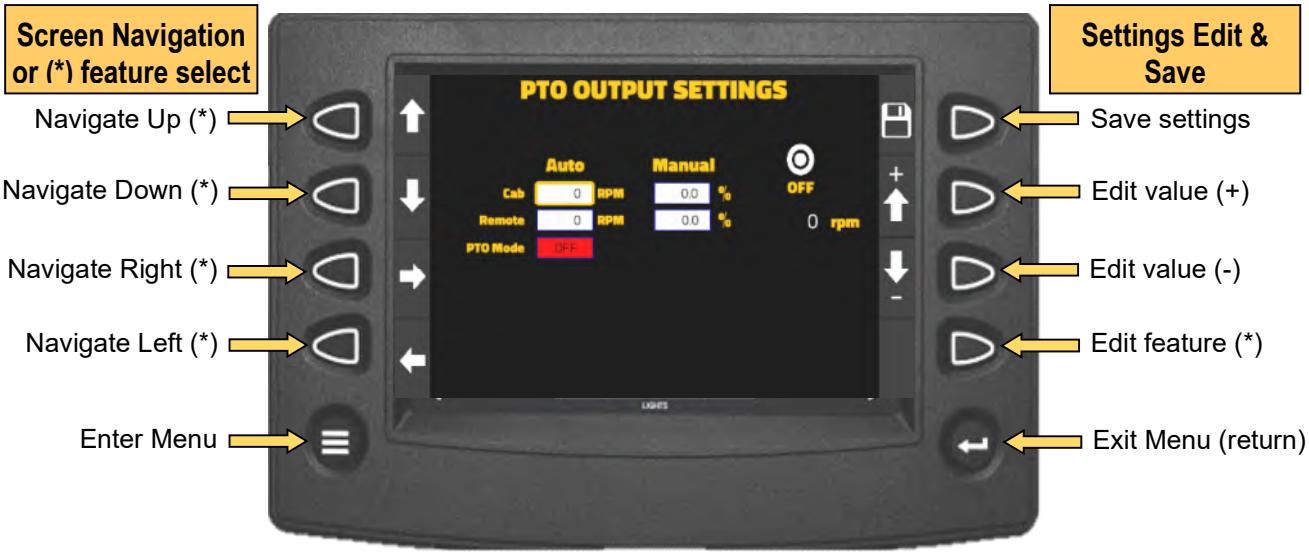
PTO Switched OFF

PTO Remote Operation

PTO Automatic Speed Control

PTO Manual Speed Control

Control Screen Navigation – Overview



Soft keys on the left of the screen are predominantly used for navigating to specific settings areas displayed on the screen, the soft key on the right of the screen are used for changing and saving the values in the selected area.

(*) In some menus the soft keys perform an alternate function; where this occurs, the screen icon next to the soft key will change to inform the user of the soft key function on that particular screen.

Operator Menu Screen

Access to the Operator Menu is by press the 'Enter Menu' soft key; the user will be presented with the screen shown below, each icon on the screen represents a settings category.

About (Info)

2. **User Settings**
3. **Time & Date Settings**
4. **Language Settings** (Currently unavailable)
5. **DPF Settings**
6. **PTO Output Settings**
7. **Boom Width Settings**
8. **Engine Diagnostics**
9. **Wheel Settings**
10. **Job Timer Settings**
11. **User Service Menu**
12. **Manufacturer Settings** (Restricted access)

To access a settings category use the navigation soft keys to highlight the required icon and press 'Enter Menu' soft key, the menu for selected category will then be displayed.

About (Info) Screen

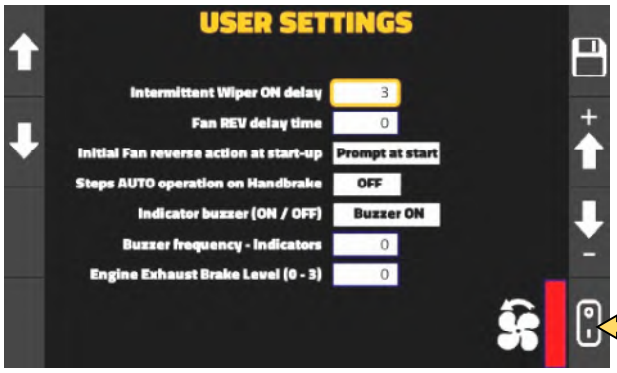
This screen is for information purposes only, no changes can be made on this screen.

Screen will state;

- Manufacturer's name.
- Product name.
- Installed software information.

User Settings Screen

This screen allows operators to customise user settings to their own preference. When saved the new settings will remain in the systems memory until any subsequent changes are made.



- Navigate to highlight the required setting.
- Change setting using 'Edit Value' (+/-) keys.
- Press 'Save settings' key to store change(s) before exiting screen.

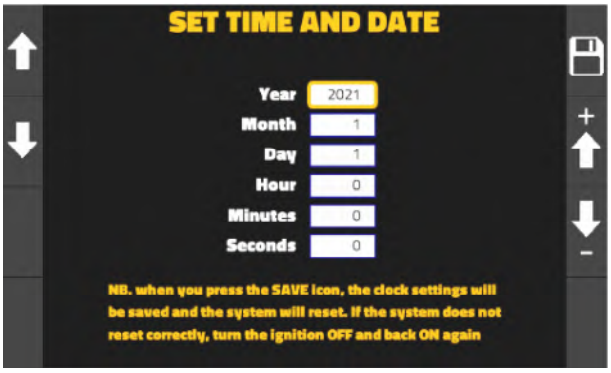
Manual **FAN REVERSE**: press key to activate.
Fan will reverse for a short time then stop before running at full forward speed for a further short period of time.

User Setting Options:

- **Intermittent Wiper ON delay**
  Option: 1 to 15 seconds (default 6 seconds)
- **Fan REVERSE delay time**
  Option: 15 to 180 minutes (default 55 minutes)
  Adjustable in 5 minute increments.
- **Initial Fan reverse action at start-up**
  Option: Prompt at start / ON / OFF (default Prompt at start)
- **Steps AUTO operation on Handbrake**
  Options: ON or OFF (default OFF)
- **Indicator buzzer (ON / OFF)**
  Option: Buzzer ON or Buzzer OFF (default ON)
- **Buzzer frequency – Indicators**
  Options: 0 to 4000 Hz (default 3900 Hz)
- **Engine Exhaust Brake Level**
  Options: 0 to 3 (default 3)
  0 = OFF, 1 = 33%, 2 = 66%, 3 = 100% (approx.)

Time & Date Settings Screen

This screen is for setting the current time and date. When set and saved, the time and date will remain in the systems memory.



Change these setting with ignition ON and engine OFF.

- Navigate to highlight the required setting.
- Change setting using 'Edit Value' (+/-) keys.
- Press 'Save settings' key to store change(s) before exiting screen.

  Display will 'reboot' to apply changes.

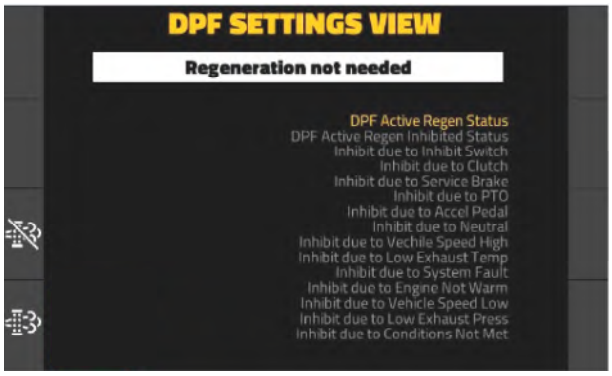
Please note: the system does not detect a time zone; where applicable, changes to clock time for Daylight Saving Time (DST) must be manually performed via this screen.

Language Selection Screen

Currently unavailable on present builds. When available, this feature will allow users to select a particular language for this control system. Default language: English (UK).

DPF Settings View Screen

This screen reports the Diesel Particulate Filter (DPF) Regeneration status.
The screen will state the current status in 1 of 4 levels as listed below;



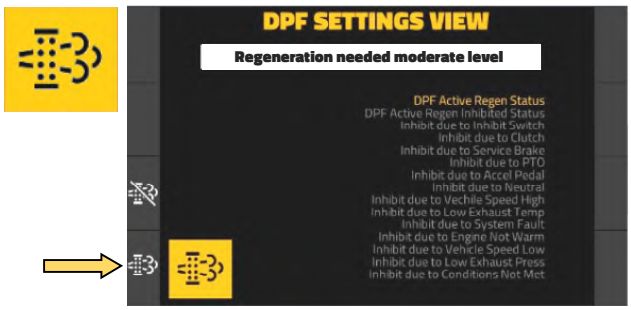
DPF Status levels:

1. Regeneration not needed.
2. Regeneration needed (low level)
3. Regeneration needed (moderate level)
4. Regeneration needed (high level)

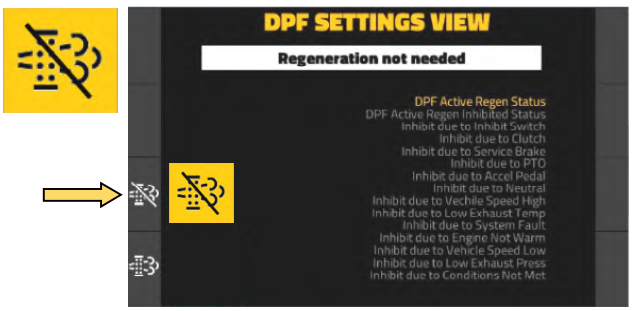
By default, when starting the engine, the system will always operate in 'active regeneration mode' and regeneration will automatically run as and when the system dictates.

If required, users can manually run the regeneration process by pressing the regeneration soft key to the left of the screen; manual regeneration will only operate if engine conditions permit, and the system is currently reporting a *'regeneration needed'* level (low, moderate, or high), it will not run if *'regeneration not needed'* is displayed on the screen.

Where deemed absolutely necessary, the system can be set to 'inhibit regeneration'; in this mode regeneration is switched OFF and will not automatically operate. This should only be selected in exceptional circumstances where the machine is located in areas where regeneration could risk a hazardous situation.



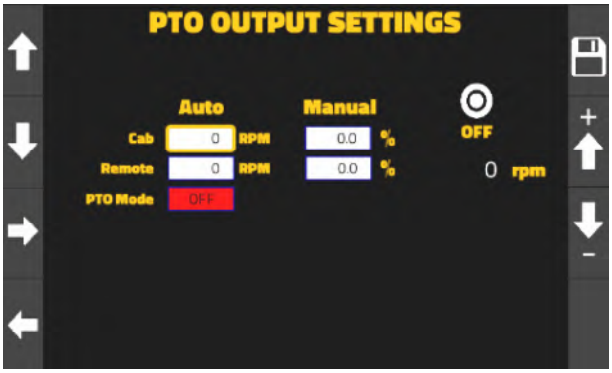
To run 'Manual Regeneration'



To set 'Inhibit Regeneration' mode

PTO Output Settings Screen

This screen reports active PTO information and current stored settings for both Cab and Remote PTO. Settings can be pre-set and saved for both outputs via this screen.



Recommended PTO 'Auto' settings:

- Cab: **400 RPM**
- Remote: **540 RPM**

Recommended max. PTO 'Manual' settings:

- Cab: **32%**
- Remote: **32%**

It is recommended that the PTO is run in 'AUTO' mode.

To set PTO speeds use the navigation soft keys on the left of the screen to 'highlight' the required area of the screen then use the soft keys on the right of the screen to set the required values and choice of PTO mode. Press the 'save' soft key to store the settings; these will remain in the system memory until any subsequent changes are made.

PTO Modes

The system offers the following PTO modes;

1. **OFF** - In this mode PTO operation is switched off and cannot be operated from cab or remote.
2. **AUTO** - In this mode PTO can be operated at the pre-set 'RPM' from cab or remote panel.
3. **MANUAL** - In this mode PTO can be operated at the pre-set '%' from cab or remote panel.

PTO Control Status

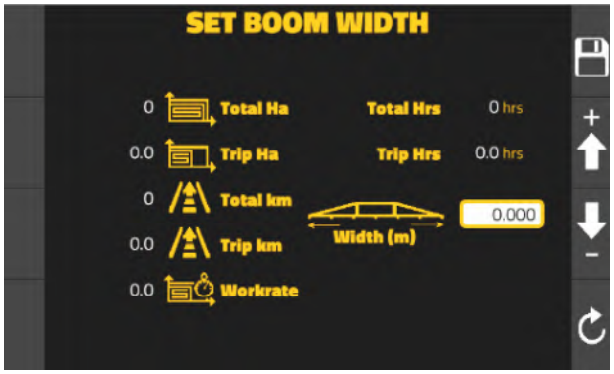
The control status of the PTO is shown on the screen and will be stated as one of the following;

1. **OFF** - PTO not operating.
2. **CAB** - PTO being operated from cab.
3. **REMOTE** - PTO being operated from remote panel.

Live speed feedback is displayed on the screen to report the current PTO speed (RPM); this is only applicable where PTO speed sensors are fitted.

Set Boom Width Screen

This screen allows the user to input the sprayer boom width; the default setting is 24 metre boom.



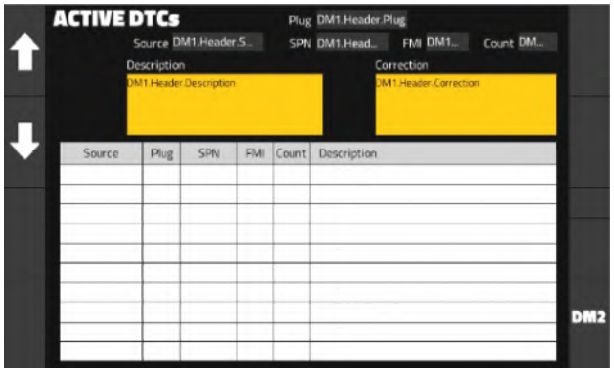
Set boom width then press 'save' to store.

Job reset.

When the correct boom width has been entered, the system will automatically record and report specific data for the current job whilst the machine operates.
When required, the recorded data can be cleared by pressing the soft key adjacent to the 'reset' icon on the right hand side of the screen.

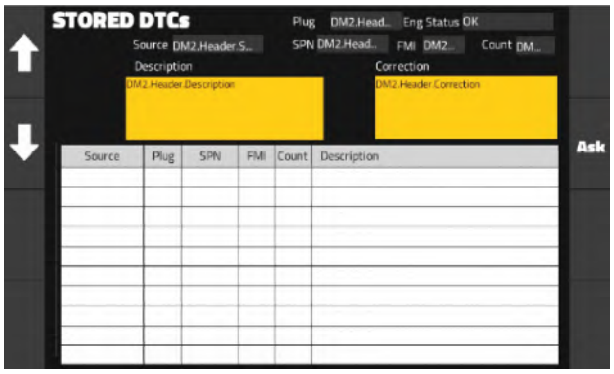
Engine Diagnostics Screens

These information screens report and record any engine fault codes that may occur. These areas should only require accessing by the user if engine problems should be experienced and fault code information is requested by a specialist engine technician.



Screen #1 – Active DTC's
Reports 'Active' DTC's (Diagnostic Trouble Code).

⇦ Press soft key to enter stored DTC's screen.



Screen #2 – Stored DTC's
Recalls 'Stored' DTC's (Diagnostic Trouble Code).

⇦ Press soft key to request stored DTC codes.

NOTE: When initially entering this screen, codes will not be shown until the soft key adjacent to 'Ask' icon is pressed; this action will request information from the engine management system and any existing stored DTC codes will listed in the table.

Wheel Size Settings Screen

This screen is for selecting the type of wheels fitted to the machine, the menu offers a list of common tyre makes and sizes and should be set to match the size and type being used.

Wheel type options:

- Custom Flotation
- Custom Rowcrop

To alter settings, use navigation soft keys to 'highlight' the settings area on the screen you wish to change, amend the settings using the value (+/-) soft keys.

The screen image will display the current wheel type setting; set the type to display the image of the particular version fitted – 'Floatation' or 'Rowcrop'.

When 'highlighted' the custom menu below the wheel image allows the make and size of tyre to be selected and the rolling circumference will automatically be shown at the bottom of the screen. Save settings before exiting the screen.

Floatation Tyre menu
Trelleborg 580/65-R22.5
Trelleborg 560/60-R22.5
Trelleborg 600/55-R26.5
Michelin 540/65-R24
Float Custom (*)

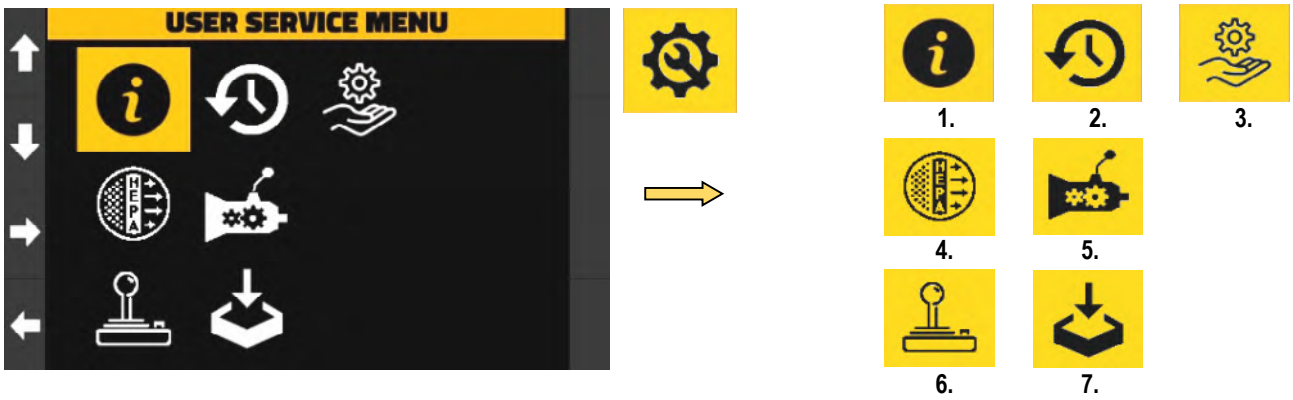
Rowcrop Tyre menu
Alliance 11.2 x R36
Alliance 11.2 x R42
Alliance 12.4 x R36
Alliance 13.6 x R36
Rowcrop Custom (*)

Custom Tyres (*)

If the particular tyres fitted are not listed in the menus; select 'Float' or 'Rowcrop' custom option and manually insert the rolling circumference (mm) of your tyres in the relevant box using the + and - soft keys. Select 'save' before exiting screen.

User Service Menu

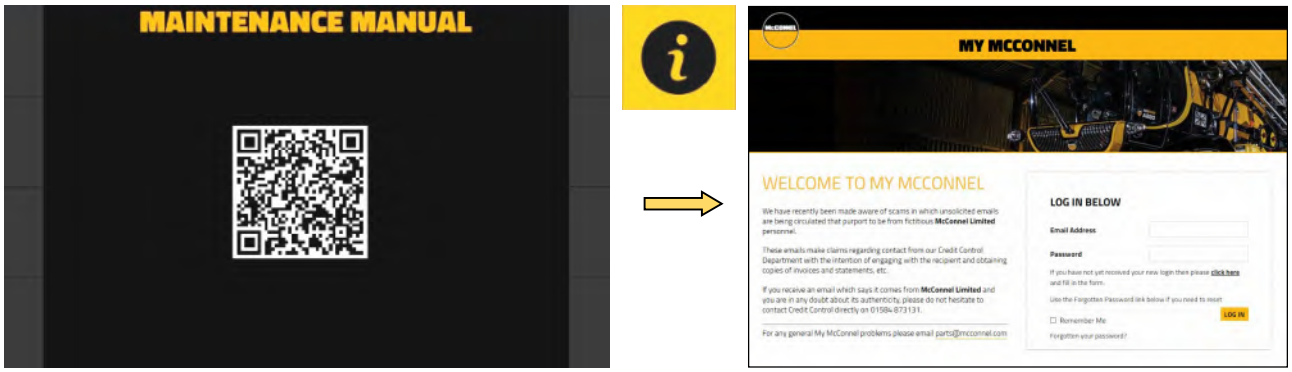
This screen provides access to service information, general maintenance, and system checks.



1. **Maintenance Manual Access**
2. **Service Info View**
3. **Manufacturer / Dealer Service Portal** (Restricted Access)
4. **Cab Filter Change (PECU)**
5. **Transmission Maintenance (Oil Level Check)**
6. **Joystick Inputs Check**
7. **Push Button Inputs Check**

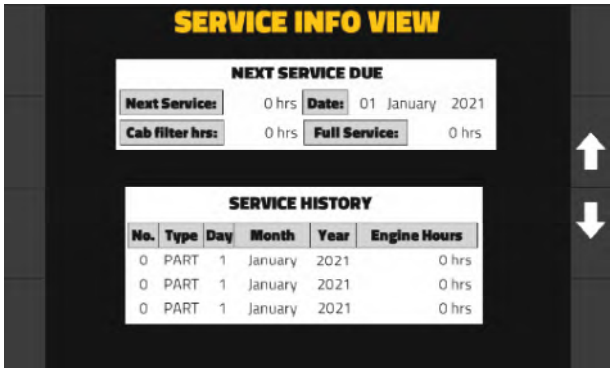
Maintenance Manual

This screen displays a QR Code for direct access to **https://my.mcconnel.com** where service and parts information is available for your machine.



Service Info View

This is a 'read only' screen for reporting important service information.



Information reported:

- Next Service due time (Hours)
- Cab Filter use time (Hours)
- Full Service due time (Hours)
- Service History (type, date and engine hours)

Manufacturer / Dealer Service Portal

Restricted access; Manufacturer and Registered Dealer access only.

PECU Filter Change

This screen notifies the user when the cabin filter is due for replacement; a 'splash screen' will be displayed on the screen when filter replacement is required.

Filter must be replaced every 200 hours.

Cabin pressure override:

OFF = **NO override** (cabin fan is active).

ON = **Override ON** (cabin fan deactivated).

Confirm filter change (time counter reset).

The 'Cabin Pressure Override' function allows the user to deactivate cab pressurisation; this can be used when the machine is not actively spraying chemicals and/or times when cab filtration is not required, in this mode cabin filter operating hours are not logged.
These settings are retained in system memory even if the vehicle is switched off and on; therefore if cab pressurisation function has been deactivated it must be re-activated before using the machine for spraying.

When 'spraying' the system must always be set to 'CABIN PRESSURE OVERRIDE' OFF

Pressurisation automatically deactivates and activates when the cab door is opened and closed.

PECU Filter Status – Home Screen

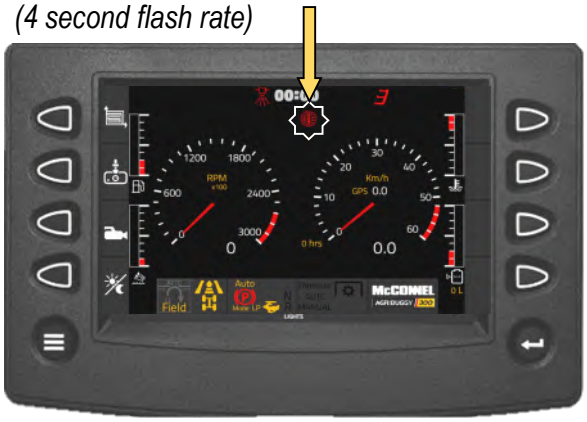
PECU filter warnings are displayed on the home screen to advise pressurisation status.

Solid GREEN Filter Icon: Cab Pressurised

Solid RED Filter Icon: Cab NOT Pressurised

Fast flashing RED Filter Icon: No CAT4 Filter fitted.
(1 second flash rate)

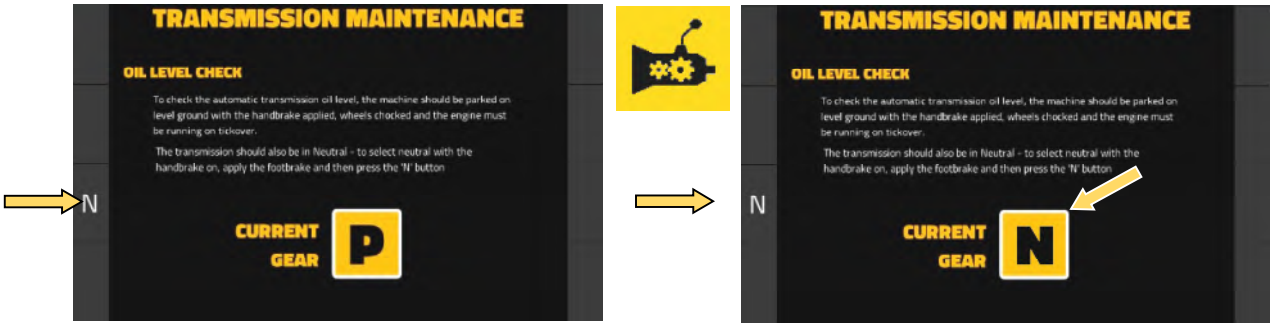
Slow flashing RED Filter Icon: Filter requires replacing
(4 second flash rate)



A 'splash screen' warning will display on the Home Screen when PECU Filter required replacing.

Transmission Maintenance (Oil Level Check)

To check transmission oil level the engine of the machine must be running (tickover); this screen allows neutral gear to be selected with the handbrake ON and the engine running.
When using this feature the machine must be parked on a firm level site with the wheels 'chocked'.



To activate this feature:
Press soft key 'N'; this will place the transmission in neutral and '**N**' will be displayed on the screen.

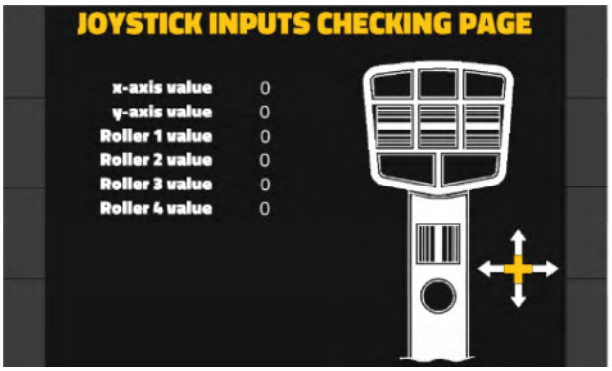
IMPORTANT: This screen must remain open when performing the transmission oil level check.

With the engine running at tickover speed the transmission oil level check can now be performed, this requires removal of the oil level plug; level is correct when oil slowly 'seeps' out of the orifice.

When the transmission oil check has been completed, exiting the screen and operating the joystick or handbrake will revert the system to its normal operating mode.

Joystick Inputs Checking Page

This screen provides a system check of the joystick to confirm controls are functioning correctly.



These checks must be performed with ignition ON and engine OFF.

Component checks;

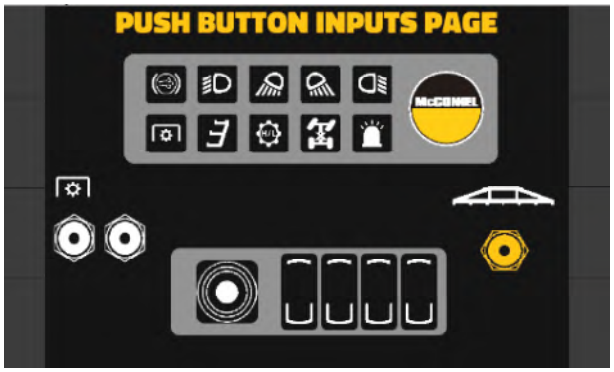
- Joystick x-axis: signal and direction check
- Roller buttons: signal and direction check
- Push buttons: signal check

When each control component is operated, its location will be highlighted on the screen image to confirm signal operation is working correctly. For directional controls, the direction is highlighted, and a signal value is displayed next to its description.

Joystick and roller buttons are directional controls that operate proportionately in two directions; the controls are working correctly when a value of '**255**' is reported at its furthest operating position in each direction and a value of '**0**' when the control is at rest.

Push Button Inputs Page

This screen provides a check of the control panel buttons to confirm they are functioning correctly.



These checks must be performed with ignition ON and engine OFF.

When each control is operated its corresponding icon on the screen image is highlighted to confirm correct switch operation

Speedometer

The speedometer on the main display calculates the road speed from the transmission output shaft speed and factory set figures for the gear ratios and the wheel size. The wheel size is taken as being the biggest wheel it is possible to fit. A GPS sensor is also fitted and the signal from this is used to calculate a correction factor which corrects the calculated speed to give a true ground speed.
If the GPS system fails or a signal is not available, then the speed is calculated as above, and no correction is made. This means that with small (low pressure) wheels fitted the speedometer will over-read by up to 15%. An indicator on the main display shows whether a GPS signal is being received and the calculated speed is being corrected. It can take a few seconds after starting to move before the speed is updated.

There is a pulsed speed output that can be used from the display by other instruments and sprayer/spreader controllers to save fitting additional shaft/wheel sensors.

Speed Limiter

For safety and legal reasons a speed limiter is fitted to the Agribuggy which limits the maximum forward speed to around 54 km/h - *icon shown opposite*. With low pressure wheels it is not possible to exceed this speed in anyway. With row crop wheels fitted it means that maximum cruising speed can be attained at lower engine revs which is both quieter for the operator and saves a significant amount of fuel.

Speed Limit

An indicator is shown on the warning display to show when the limiter is active. It does not affect how you drive the machine it simply limits the maximum engine speed.

Rear Camera

Camera images can be displayed on the screen in a minimised view or in full screen view.

Half Screen View

Full Screen View

Operation : Controls

Starting Engine

1. Ensure PTO is disengaged, handbrake applied, and gearshift is in Neutral before starting.
2. Depress the brake and turn the ignition switch to the center position; **wait for the Machine Control Unit (MCU) to boot up.**
3. Crank the engine by turning the key fully clockwise. Release key when engine starts. If it fails to start within 30 seconds, or starts and then stops, return the key to the off position, wait 2 minutes, and then repeat the above procedure.
4. Idle the engine for 3 to 5 minutes before operating with a load. After starting a cold engine, increase the engine speed (rpm) slowly to provide adequate lubrication to the bearings and to allow the oil pressure to stabilize.
5. After starting, and before shifting from neutral to forward or reverse drive, it is necessary to apply the footbrake (do not press accelerator pedal).

Stopping Engine

1. Before stopping engine ensure vehicle has completely stopped, when stationary apply the handbrake (doing so will also select 'Park' in the transmission).
2. Allow engine to ‘slow idle’ for at least 10 seconds before stopping, particularly if you have been running at high engine revs, to avoid damage to the turbo-charger bearings.
3. To stop engine turn the key anticlockwise. **Do not turn the battery isolator switch off for 120 seconds after the engine has stopped**, or until the light next to the isolator has gone out, this is to permit the DEF system to complete its purge cycle and allow ECU shutdown; *failure to observe this can result in the indication of engine fault codes.*

Battery Isolator Switch
Switch is located on right-hand side of machine to rear of cab.

⚠CAUTION
Do not turn battery isolator switch off for 120 seconds after the engine has stopped.

Handbrake

Applied by pressing the rocker switch situated on the switch panel and should only be operated when stationary and foot brake applied. Activation of the park brake also selects the park function in the transmission. To release the brake, first press the red safety catch to unlock the switch and then press down.

The park brake should not be applied whilst the vehicle is in motion except in an emergency or transmission damage may result.

The brake operates on the rear drive shaft which may result in a slight movement of the vehicle after it is applied.

Handbrake Switch

Power Steering

When turning do not hold the steering tight on full lock as this will cause the relief valve to ‘blow off’ potentially causing premature wear and excessive heat. Do not turn the steering whilst the Agribuggy is stationary, particularly when on hard surfaces, this causes unnecessary excessive pressures in the steering system, especially when wide tyres are fitted.

Throttle

When driving the Agribuggy with the foot throttle, anticipate tough spots and be ready to respond to avoid the engine losing speed. The machine is equipped with a cruise control system for automatic speed and throttle control (See MCU for details).

Automatic Transmission

The automatic transmission features a four speed main gearbox with a torque converter and a two speed transfer box. A central differential in the transfer gearbox distributes power to both front and rear axles, providing permanent four wheel drive. Using the main gearbox in conjunction with the transfer gearing produces eight forward and two reverse speeds.

Main Gearbox Selector Joystick

A safety switch on the front face of the joystick prevents inadvertent selection out of neutral or from forward into reverse. Press and hold the switch whilst selecting desired position and at the same time apply pressure to the brake pedal. For forward gears move stick forwards and for reverse rearwards (central position is neutral). When in manual driving above 3km/h, press and hold the switch and move the stick to the right to select a higher gear and left for a lower gear.

Joystick Gear Control

Safety Switch

Operating Transmission

Park Is selected automatically when the park brake is applied, in this position the transmission is locked to prevent the vehicle from rolling away.

Reverse Select **ONLY** when the vehicle is stationery and foot applied to brake pedal, pull joystick back and press Safety Switch.

Neutral Use this position when the vehicle is stationary, and the engine is to idle for a prolonged period (e.g. at traffic lights), with the hand brake in the off position and your foot on the brake pedal, just press the safety switch ones this will then put the transmission in the Neutral position.

Drive (Forwards) Select 'Drive' for all normal driving on the road; fully automatic gear changing occurs on all four forward gears according to vehicle speed and accelerator position. To select drive pressure must first be applied to the brake pedal then select forwards with the joystick. To select Drive (Forwards) the machine need to be stationary and you food on the brake, then push joystick Forwards and press safety switch then let the joystick go.

Manual To Drive in manual mode press the top left button on the joystick or move the joystick to the right or left and then press safety switch to select the desired gear. The transmission will then automatically select gears up to the set gear but no higher i.e. if 3rd gear is selected the transmission will be limited to 1st 2nd and 3rd gears only. To return to auto press the Auto button on the Joystick (Top left).

It is recommended to select:

3rd gear for field work in good operating conditions with low pressure tyres fitted.

2nd for field work in more demanding conditions and when fitted with row crop wheels. In good conditions where your forward speed is relatively low or where you only have a light load you may need to use this position to stop the gearbox changing up to third gear.

1st gear **Use at all times for steep hillside work where engine braking is required**. If you are changing down from second to first it is most important that you slow down enough to ensure that first gear is correctly selected. 1st gear is not recommended for extended periods of time because the Torque converter will not lock so transmission overheating could occur. NOTE, never use 1st, 2nd, 3rd, or 4th in high range as this could overheat the transmission.

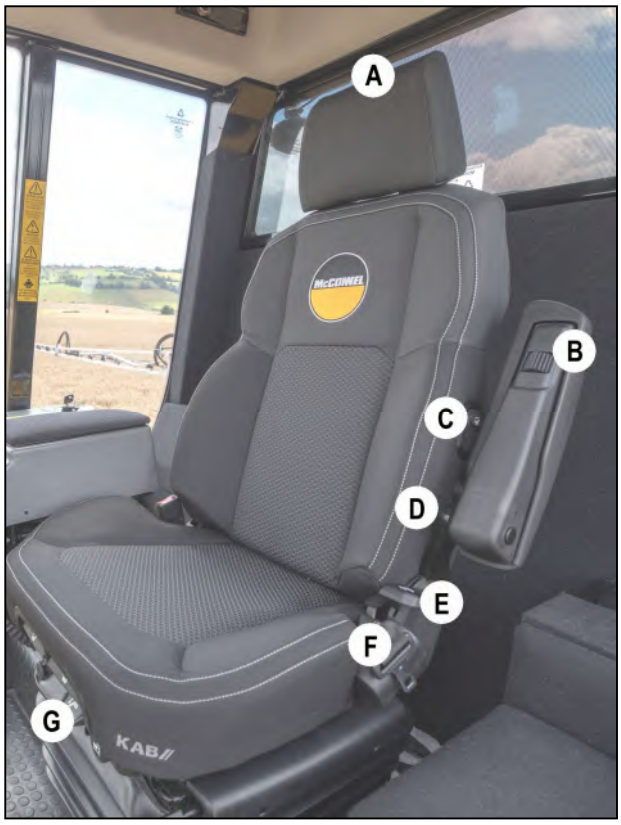
Operating : Driving

Driver Settings

Before starting the machine ensure that the seat, steering column, and mirrors are set correctly.

Driver's Seat

The driver's seat is fully adjustable as shown. To avoid risks from whole body vibration ensure that the seat is correctly adjusted before driving the vehicle.

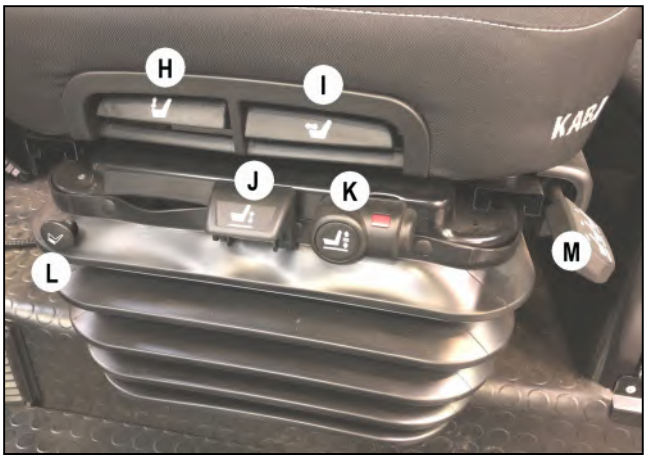


Seat Components

A) Head restraint
B) Armrest height
C) Heat Control
D) Lumbar support
E) Backrest tilt
F) Seat Belt

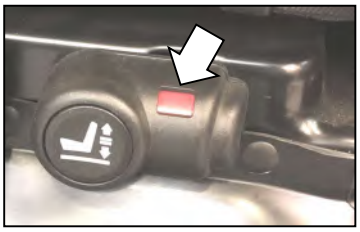
G) Base controls

H) Seat tilt adjustment
I) Seat base adjustment
J) Air adjustment
K) Weight adjustment
L) Suspension damper
M) Horizontal slide & lock



Heated Seat Control

Lumber Support Adjuster



Weight Indicator Window

Having adjusted the seat to suit, check that the window on the weight indicator is displaying green; if red is displayed adjust weight knob so that green is being shown.

The horizontal slide has three positions. Whist sat in the driving position, pull the lever fully upwards to adjust, mid position allows some damped fore and aft movement, fully down locks the slide and prevents any movement.

Steering Column

To adjust the steering wheel position, push the lever anti clockwise, move the column backwards or forwards, up or down to achieve the most suitable driving position. Turn the lever clockwise to lock.
Do not adjust whilst driving!

Mirror Adjustment

Position lever for mirror to be adjusted; right or left mirror.

Four-way button for adjusting mirror up & down or right & left.

Starting & Driving

Drivers unfamiliar with the performance characteristics of an automatic gearbox should thoroughly familiarize themselves with the following instructions before driving:

- Before starting the engine, ensure that both foot brake and handbrake are applied.
- After starting the engine, keep both brakes applied before and whilst moving the joystick to the required drive position.
- Keep the brakes applied until you are ready to move - remember, once a drive position is selected, an 'automatic' will tend to creep forwards (or backwards).
- **Never** 'rev' the engine while selecting a forward or reverse gear, or while the vehicle is stationary with a drive gear selected - remember, an 'automatic' will move immediately once the accelerator pedal is pressed.

Gear Change Speeds

With Forward gears selected, the speed at which gear changes take place will vary according to the position of the accelerator: minimum acceleration will result in low speed gear changes, while larger throttle openings will cause the gearbox to delay gear changes until faster speeds have been reached.

With practice, gear changes can be made to occur at a wide range of speeds depending on accelerator pedal pressure.

On long inclines, and in some working conditions, the gearbox will change back and forth between gears. Under these conditions it is advisable to change down to the next lower gear to stop it 'hunting'.

Kick-down

To provide extra power and acceleration through tough spots, push the accelerator pedal to the full extent of its travel in a single quick movement (known as kick-down). Up to a certain speed this will cause an immediate downshift into the lowest appropriate gear. Once the pedal is relaxed normal gear changing will resume.

Transmission Oil Temperature (Torque converter instruction)

Should the transmission overheat, a warning will be displayed on the MCU; you should **stop immediately and investigate the cause**. To avoid the transmission overheating it is important that the torque converter is always locked whilst the machine is working for prolonged periods in the field or on the road. If the engine is working hard with the torque converter unlocked the transmission will overheat very quickly.

The bottom LH icon indicates the torque converter is locked. If the torque converter will not lock it usually means you are working in too high a gear. You should change down a gear and increase the engine revs until it locks; the transmission will usually cool down very quickly.

Other common causes are low transmission oil level and/or oil cooler radiator blocked with dust and chaff.

Transfer Gearbox

The second gearbox (known as the transfer gearbox) is used to select either the high or low gear range.

The low range should be used for all field work regardless of which type of wheel is fitted.

High range should be used for road work only and allows a relatively high road speed to be used at relatively low engine revs (depending on ratios fitted).

Press to change from High to Low and Low to High

Press to engage the central diff lock and again to disconnect

Operating : Range Change, Diff-lock, Brakes

Changing Range

To change range bring the vehicle to a complete stop and select neutral. When at idle, press the H/L switch on the panel and you will see a white symbol of the requested gear on the screen.
Select reverse (R) and reverse gently for 5-10 metres, come to a complete stop and select neutral (N), then select forwards (F); the desired range will have now been selected.
The pending transfer range symbol will switch off once the vehicle is moving > 2km/h to confirm the gear change.

Waiting Gear (White)

Confirmed Gear (Yellow)

Differential Lock

The transfer gearbox is fitted with a lockable centre differential. With the differential locked, the drive shafts to the front and rear axles are (in effect) joined together, causing both to rotate at the same speed. This feature enhances traction when working in difficult and slippery conditions and when working on steep hillsides. With the differential unlocked for normal conditions and roadwork, the different running requirements of the two axles can be accommodated, thereby enabling the Agribuggy to operate permanently in four wheel drive for both road and field work.

When to use the Diff Lock

As a general rule, the differential should only be locked on slippery or loose surfaces, or on very steep hillsides. If excess wheel slip is evident then, it should of course be used. However, **do not** use it unnecessarily. **It must be disengaged for all road work.**
If the machine should become ‘stuck’ without diff-lock engaged, excessive wheel slip must not be allowed to continue in order to protect the centre diff from risk of damage.

Selecting Diff Lock

The diff lock can be engaged or disengaged either with the vehicle stationary, or when driving along. However, with the vehicle in motion it is essential to be travelling at low speed on firm ground, in a straight line and without wheel slip.
Do not engage the diff lock if one or more wheels are slipping - this could result in serious transmission damage. If wheels are slipping, ease off the accelerator before engaging the diff lock.

Engaging diff lock – Press the diff lock switch - the warning signal will show when the differential engages. NB This will only happen when the lock is actually engaged - rather than when it has been selected. Similarly it will only extinguish when the diff is actually disengaged.

Dis-engaging diff lock – Press the diff lock switch If the warning is obviously reluctant to extinguish after the diff lock has disengaged, some transmission 'windup' may be present. Reversing the vehicle for a short distance and then going forward will usually 'unwind' the transmission.

Braking System

As a safety precaution, the hydraulic braking system has dual reserved circuits; if the main circuit should fail, the others will continue to function but longer stopping distances will be experienced.
In the event of an emergency situation where engine or hydraulic failure is experienced the reserve system will only offer limited pedal operation until the system loses all its pressure.

Always observe the following precautions:

1. Never allow the vehicle to freewheel with the engine turned off (steering will also be affected).
2. If the engine should stop for any reason whilst the vehicle is in motion, bring the vehicle to a halt as quickly as traffic conditions allow.

3. Remember! Regular servicing is vital to ensure that the brake pads are examined for wear (especially when working in wet/muddy conditions) and changed periodically to ensure long term safety and optimum performance. When new brake pads have been fitted you should allow a period of time for them to 'bed in' before optimum braking is achieved.

Should you experience braking problems, or suspect any issue with the braking system, the machine must be parked up and not moved or used until the system has been fully inspected and/or repaired by a specialist engineer.

Hydraulic PTO System

For information on the optional high power PTO system (Airtec) or non-standard hydraulic systems please see appendices.

Safety

THE ENGINE MUST BE SWITCHED OFF BEFORE CONNECTING THE PTO OR MAKING ADJUSTMENTS.

Operation

The PTO is hydraulically driven, is fully independent and may therefore be engaged at any time. The PTO is controlled by the main MCU monitor.

The spray pump can be run at a maximum of 540, although Lower PTO speeds result in reduced wear and tear in the spray pump and hydraulic system, a lower speed on the PTO can also help to prevent foaming in the spray tank. It is recommended that you run the pump at a lower speed if possible, providing you can attain your application rate and sufficient agitation. Speeds of between 350 and 450rpm are normally adequate.

Operating the PTO

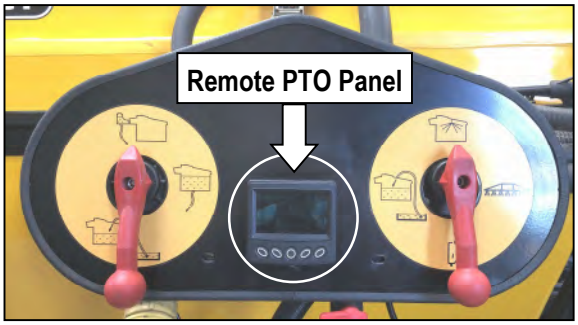
The PTO is switched 'ON' and 'OFF' by the PTO button on the switch panel (hold for ½ second). An LED on the switch indicates when it is switched on. The current speed will be shown on the PTO information display along with the current status and operating mode.

Automatic mode – In automatic mode the speed is monitored by the electronic system and adjustments are made to the hydraulic valve to maintain the preset PTO speed. This will adjust the valve and make allowances for temperature, pressures, and input flow.

Manual mode – This is a very simple control where the output of the valve is set to a given percentage. This mode can be used when there is no speed signal input that can be used to help govern the speed; this is often the case with centrifugal type spray pumps.

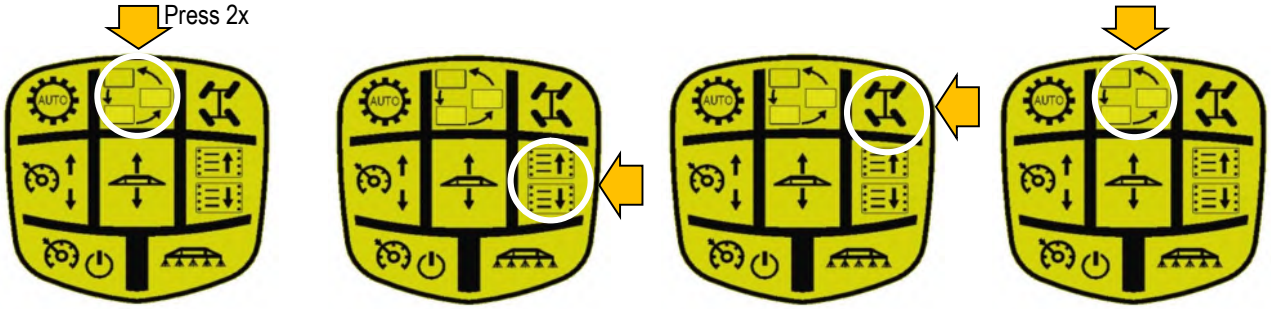
Remote mode – The PTO is controlled by a remote display on the 5-way tap panel mounted on the spray pack. This is used when filling the sprayer, the pre-set will come in at default and can then be adjusted on the remote display to suit.

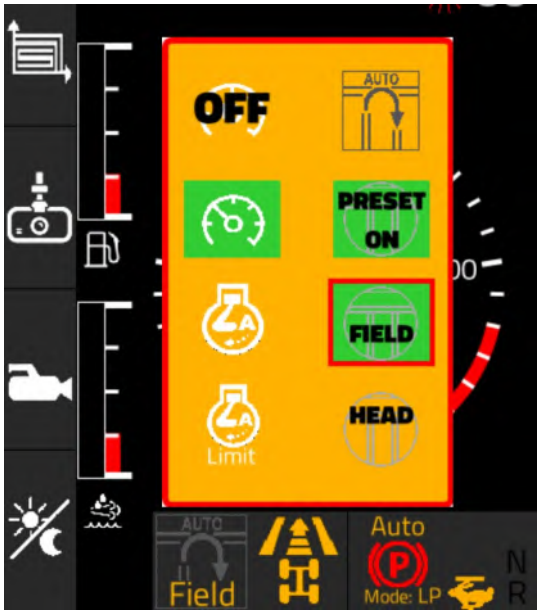
For further details on Remote PTO operation refer to operation manual for the Demount Sprayer.



Activating the Cruise Control

Access and selection of the 'cruise control system' is by operation of the joystick buttons indicated below, the mode menu button **(1)** is also used for steering mode selection; press the button once to access the steering mode menu, press the button twice to access the cruise control menu – the relevant settings menu for the particular mode will be displayed on the control screen.





The joystick decal indicates the function of each button; buttons will only operate if the appropriate cruise mode has been selected.

Mode Selection

To select a 'cruise mode' use the middle right roller to scroll up and down to select one of the modes listed below, when 'highlighted' enable the selected mode with the top right button. Press top centre button to confirm and exit the menu.

Speed mode – This mode can be used on the road and in the field to hold a preset speed input by the operator, the engine will automatically adjust the revs to keep the set speed. They can also be set using the middle left roller whilst driving where the current speed will be set. If the throttle is pressed, forward speed will increase and return to the set point once released. It can be overridden at any time by using the brake pedal or cancelling on the joystick.

Engine mode – This mode allows you to set the engine to either a pre-set speed or you can set it to the current engine speed by pressing the set button or using the left roller. There are two pre-set speeds which can be saved for field and road use. When this mode is active you can increase the speed by depressing the foot throttle.

Limit mode – This mode sets the maximum speed the engine will run at when your foot is all the way down on the throttle. This can be used for example to set a speed whilst travelling up and down the field. You can then ease back on the throttle for turning at the ends and then put your foot hard down when you start work again. Headland control is not available when in this mode.

Rear Wheel Steering System

The rear wheel steer system on the Agribuggy is controlled electronically. Signals from sensors mounted on both axles are continually monitored by the electronic control box and a varying signal is sent from the control to an electro-hydraulic proportional valve which, in turn, directs oil to the steering ram on the rear axle to ensure the rear wheels are always kept in the correct position. The rear wheel position is also continually monitored when in two wheel steer and crab modes, again, to ensure that the wheels do not "creep" and to keep them in the correct position.

Safety Precautions

1. Always ensure the rear wheel area is clear before activating the four wheel steer system.

2. Always switch to the roadwork position for speeds above 12 mph *(20 kph).*

3. Do not switch modes when travelling at speed.

4. Danger of trapping, on no account allow any person to be placed between the wheels and chassis while the engine is running, always remove the ignition key and isolate the battery before accessing the area.

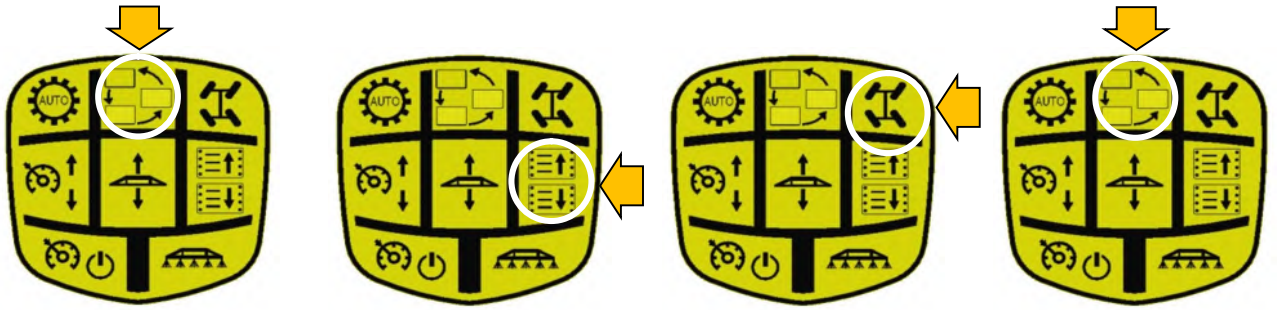
Rear Steering Activation

The rear steering system is controlled by buttons on the joystick. Options are selected from a menu on the main display. To bring up or switch off the Steering menu on the display press the top center button on the joystick – *refer to following page.*

If no buttons are pressed the pop-up menu will disappear after 5 seconds.

Steering Mode Selection

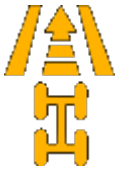
Access and selection of a steering mode is by operation of joystick buttons indicated below:



1. Enter mode menu. 2. Toggle mode options. 3. Select mode. 4. Confirm selection & exit.

(*) In applicable modes, 'toggle' operation of the 'steering' button will automatically switch between the particular steering functions available in that mode.

Mode Options



Road Mode

In the Road mode position the electronics are deactivated for safety and the rear axle will be locked hydraulically. Before switching to this position, allow the rear wheels to straighten up in Two Wheel Steer. After a few miles on the road the wheels may tend to "creep". If this happens slow down to less than 5 mph, switch back to Two wheel Steer (which will quickly straighten the rear wheels) and then switch back to Road mode again. The steering system should not be operated at speeds above 12 mph. If this speed is exceeded the system will automatically straighten the rear wheels and will shut down into road mode.

Two Wheel Steer / Auto Four Wheel Steer (*)

In Two Wheel Steer mode the rear axle position is monitored continually and fine adjustments will be made by the system to ensure the wheels keep straight. You may switch to this position at any time in the field and the rear wheels will straighten up automatically once the front wheels pass through the "Mode activation window" (see next section below). When this mode is selected you can also use the 4ws steer button to toggle between 2 and 4 wheel steer modes. If headland mode is active, it will automatically switch between 2 and 4 wheel steer mode when the sprayer is switched on/off.

Four Wheel Steer

In Four Wheel Steer mode the rear wheels will always follow the front ones and will give you the tightest turning circle. You may switch to and from this position at any time in the field and the rear wheels will re-align automatically when the front wheels pass through the "Mode activation window" (see next section below).

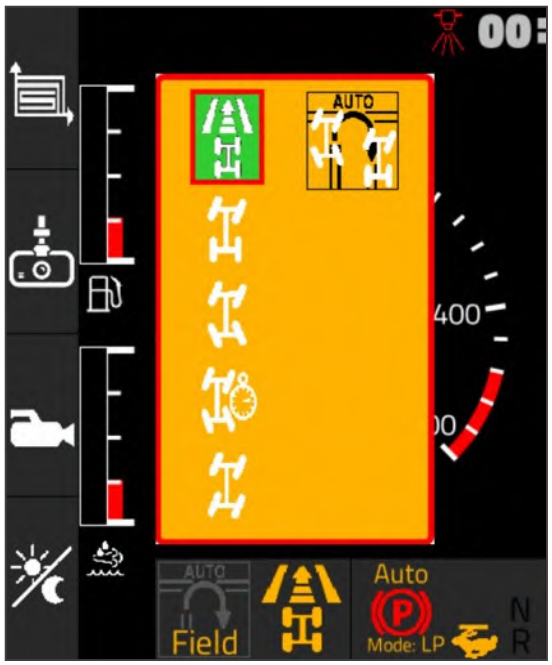
Delay Mode

In delay mode the rear wheels will only start to move when the front wheels have passed an angle of approximately 8 degrees. This is useful when spraying as it allows a degree of deviation from the straight ahead position with the front wheels without the rear wheels moving. This is better than four wheel steer as you travel down the field as it keeps the boom more stable. For headland turns the rear steering comes in once you have started the turn and the slight delay also makes for more accurate wheel tracking as you turn.

Crab Steer / Two Wheel Steer (*)

Crab steer may sometimes be useful when maneuvering in buildings and in tight corners in fields. The rear wheels turn in the same direction as the front ones allowing the machine to move sideways. When this mode is selected you can also use the 4ws steer button to toggle between crab steer and 2 wheel steer modes.

Headland Mode



To select ‘headland mode’, use the middle row right roller button on the joystick to highlight the auto box and press the top right button to turn headland mode ‘ON/OFF’. Headland mode is only available when the main mode selector is in the 2WS/Auto position. The headland mode icon will illuminate when this mode is selected. In headland mode the steering will change from 2WS to 4WS when the sprayer is switched ‘ON/OFF’ with the bottom right button.

Steering Toggle

When the steering is set to 2WS/Auto 4WS you can also use the top right select button to toggle between 2WS and 4WS modes. If headland mode is switched ‘ON’ the top right button will reverse the current setting and switching the sprayer ‘ON/OFF’ will correct the setting to 4WS with the sprayer ‘OFF’ and 2WS with the sprayer ‘ON’.

Steering Mode Activation Window

The steering will only change modes when the front wheels are within a central window. This is approximately 7 degrees either side of the straight ahead position. This is to avoid large unexpected and uncontrollable movements of the rear wheels. An indicator on the display will show when the system is waiting to change modes.

Operating : Hydraulics

Spool Valves

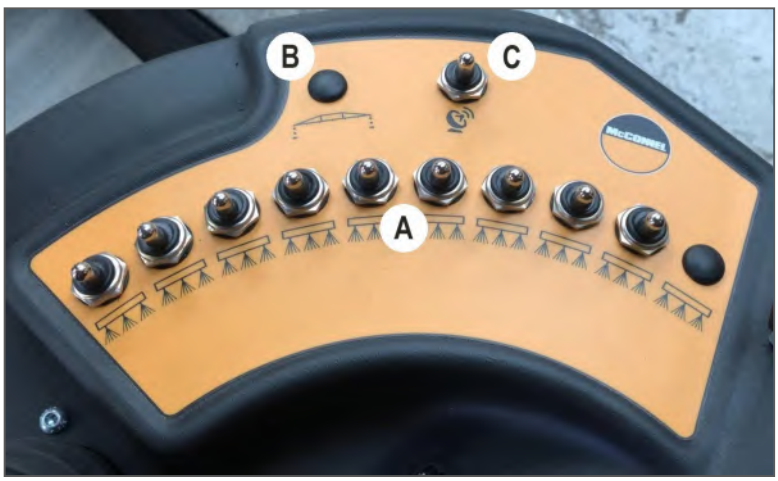
⚠WARNING **Door must be closed before operating boom controls**

Electro-hydraulic spool valves are fitted to operate the boom's, these are controlled using the 4-way "Joystick" for lift/lower and tilt (also controlled by the rollers on the main joystick), and the two toggle switches for inner and outer folding, all located on the main console. The decals behind each switch indicate its function for boom folding. There are normally 4 services fitted which can be any combination of single and double acting spools. A double acting spool can be safely used to operate a single acting service if required.

The hydraulic system/spool valve(s) fitted are only designed for intermittent operation of hydraulic cylinders and **should not be used to power motors or other hydraulic circuits**. Maximum pressure at the spools is 190bar.

Please ensure that all couplings are clean before connecting hoses and that any couplings that are not in use are protected with plugs / caps. Ingress of dirt into the hydraulic system can lead to premature wear and possible failure of major components.

A) 4-Way Joystick (Lift, Lower & Tilt)
1) Inner / 12m Control Switch
2) Outer / 24m Control Switch
3) Variable Geometry Switch LH Boom *
4) Variable Geometry Switch RH Boom *
** Optional feature*



A) Boom Section ON/OFF Switches *(7 fitted as standard).*

B) Bout Marker *(if fitted).*

C) GPS ON/OFF Switch.

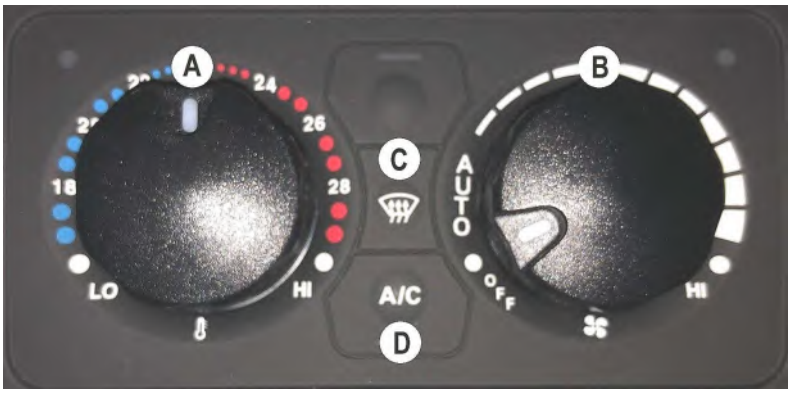
Air Conditioning & Ventilation

A climate control unit is installed in the cab roof. The unit will control the temperature of the air which may be drawn into the cab through a carbon filter or the re-circulated air within the cab.

When applying chemicals it is important that some air be drawn into the cab at all times to ensure that it is kept positively pressurised to keep dust and vapours out.

Operating - Cab Ventilation

Air Climate Controller Panel



A) Temperature Setting B) Ventilation Setting C) Defrost D) A/C

Operation

Automatic Mode: Turn right-hand control to 'Auto', the A/C light is on, select the desired target temperature with the left hand control. The ventilation will be automatically adapted to suit requirements.

Defrost / Demist: Press the 'defrost' button, the defrost LED will light up, the A/C and heater plus max blower ventilation will be activated.

Manual Mode: Select the blower speed by turning the ventilation control.

Heating Mode: Turn the temperature setting to maximum and select the desired blower speed on the ventilation control.

A/C Mode: Turn the temperature setting to the minimum, press the A/C button, the A/C LED lights up. Select the desired blower speed on the ventilation control.

Directional Air Vents

Service & Warranty

The Agribuggy carries a 24 month / 2000 hour warranty, *whichever occurs first,* on defective parts and workmanship. It does not cover faults caused by incorrect use and servicing or faults caused by fertiliser or chemical corrosion.

All servicing should be carried out as per this instruction manual particularly during the warranty period. The first service is normally carried out by the customer after the first fifty hours running. If any faults are apparent on delivery, at this first service or during the warranty period McConnel Limited would appreciate notification as soon as possible, even if the fault is rectified by the customer. McConnel Limited understand that many customers will repair straight-forward faults themselves without reporting them, however McConnel's policy is one of continual improvement and with co-operation and any suggestions and ideas, product enhancements can be made to the mutual advantage of customer and supplier.

If any problems occur with the machine, please contact McConnel Limited without delay, with whom you can discuss the best way to deal with the problem to avoid unnecessary delays. If a repair is carried out by the customer or by an outside engineer to save time, and it is wished to claim costs under warranty, McConnel Limited must be notified first, or the claim will not be accepted under any circumstances. Unauthorised repairs may affect or even invalidate any remaining warranty. Any parts replaced must be returned to us for assessment.

If McConnel Service Engineers are called out at any time, to work on the machine or if the machine has to be returned to their works for repair, it must be thoroughly cleaned to remove all chemical and fertiliser residues to enable the work to be carried out safely and effectively. If the machine is not clean, we reserve the right to either refuse to carry out the work or to charge for cleaning.

Wheel Chocks

To avoid the risk of accidental movement, wheel chocks must be tightly placed to the front and rear of a suitable wheel prior to performing close inspections, maintenance, or servicing.
When not in use the chocks are stowed on the side of the vehicle in the location shown below. Wheel chocks should be carried on the vehicle at all times to ensure they are readily available for any emergency situations.

Maintenance & Technical Information

The life of the Agribuggy will depend on the care it receives throughout its life. It is the operator's responsibility to ensure that the machine is correctly operated and that the maintenance operations outlined in this manual are carried out regularly after the specified hours of operation are reached. If you are unsure of how to carry out any of the maintenance operations, please do not hesitate to enlist the help of your local McConnel dealer.

Please remember that the Agribuggy is unlike a tractor in many ways and the standard of maintenance needs to be much higher; they are designed primarily as lightweight machines, but although the components used in their construction are lightweight the parts will generally last just as long as heavy-duty components providing they are inspected, serviced, and maintained regularly. The Agribuggy is fitted with suspension and a rubber mounted engine; consequently the drive line components are open to the elements and there are more moving parts that are subject to 'wear and tear'. In addition, engine hoses, cables, and wiring looms on the machine are also more susceptible to 'wear and tear' and therefore must be subject to regular inspection.

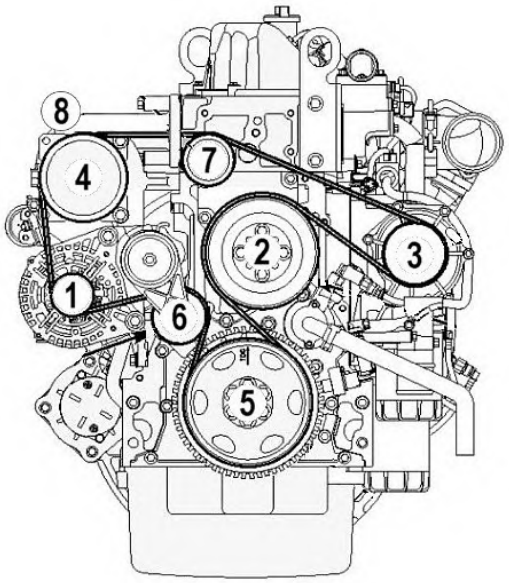
Finally, these machines are much more susceptible than tractors to general corrosion, seizure of components, and electrical problems, this is due to the mounting position of the sprayer and fertiliser spreaders - right on top of it!

When carrying out your weekly service it is well worth spending a little time looking over (and under!) the machine and checking the condition of hoses, wear on drive shafts, and for any signs of chafing or things coming loose. Also take the opportunity to go round with the oil can and lubricate anything that moves - particularly when working with fertilisers. An hour a week can save expensive down-time later on.

All nuts and bolts should be checked for tightness after the first day of operation, **especially axle U-bolts, wheel nuts, steering joints, track rod ends, and propeller shaft bolts**. Check engine and hoses for fluid leaks regularly during the first few days of operation and on a regular basis thereafter.

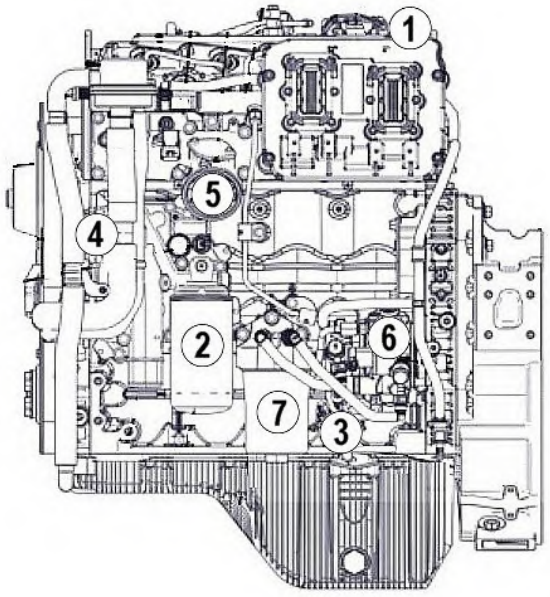
Refer to the condensed maintenance guide for general maintenance tasks and service intervals.

Engine Components : Location & Identification



Front View

1. **Alternator**
2. **Fan Drive**
3. **Water Pump**
4. **A/C Compressor**
5. **Crankshaft**
6. **Belt Tensioner**
7. **Idler Pulley**
8. **Turbo**



Left View

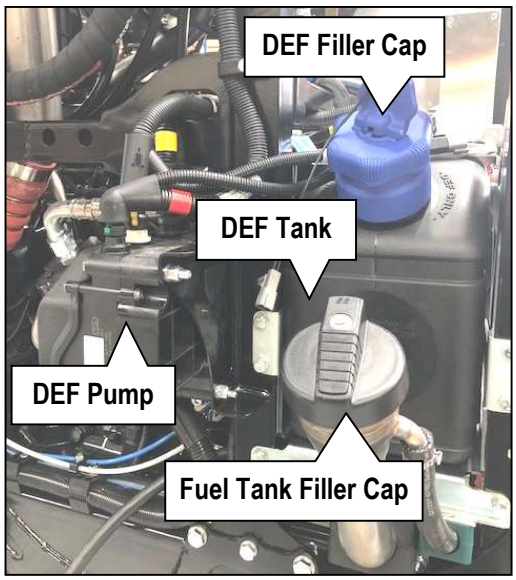
1. **Oil Filler Cap**
2. **Oil Filter**
3. **Dipstick**
4. **Water Pump**
5. **Intake Air Heater**
6. **Fuel Pump**
7. **Fuel Filter**

Diesel Exhaust Fluid (DEF) Tank

The DEF tank is mid mounted on the left-hand side of the engine bay.
The level of DEF in the tank is displayed on the MCU; when filling, the level is monitored by a sensor in the tank and the signal is routed via the engine ECU, there is a delay before the information is available to display on the MCU.

Diesel Fuel Tank

The diesel fuel tank is mounted at the rear of the chassis. The fuel filler point for the tank is located within the engine bay to the front of the DEF tank – *refer to photo.*



Daily Maintenance Points : Engine

Engine Oil Level

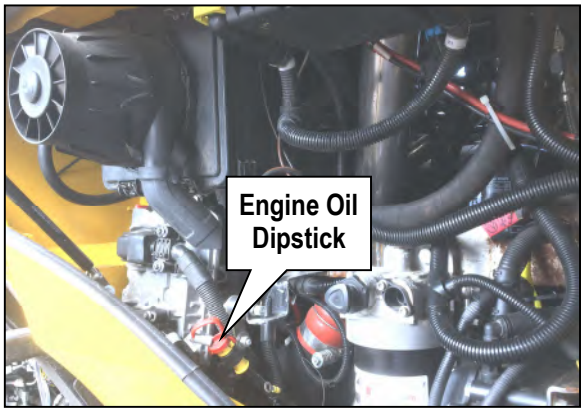
Check engine oil level daily with machine standing on level ground.

Check the oil level when the engine is hot let the engine stand for approx.15 minutes after shutting down to allow oil to drain back into the sump.

Withdraw dipstick and wipe clean, fully reinsert and withdraw to check the level.

The oil level should NEVER be allowed to fall below the bottom level mark on the dipstick.

Do not fill above 'Max' mark on dipstick



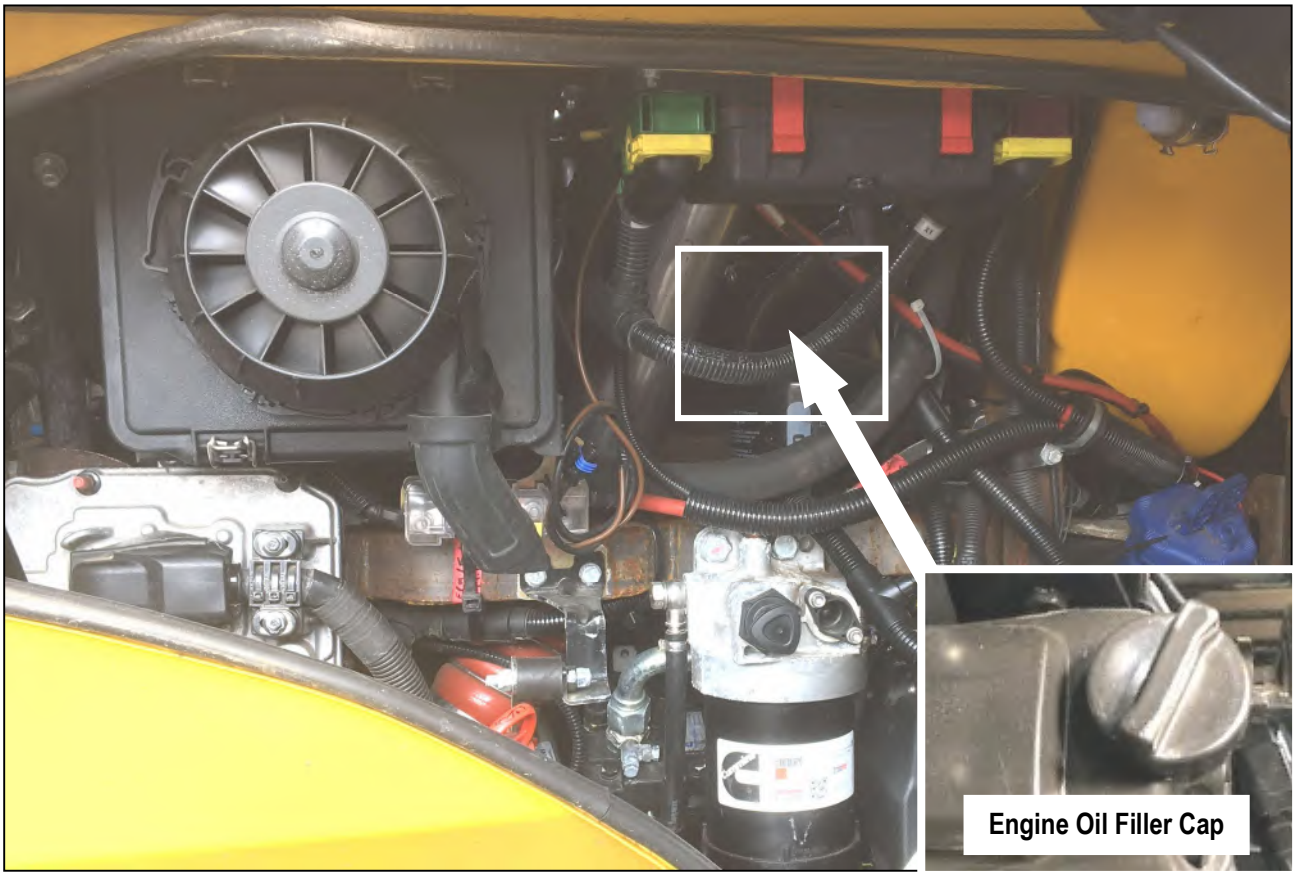
NB If it is necessary to check the oil whilst the engine is cold; follow the procedure above without starting the engine - *re-check oil level again after engine has been started and reached its working temperature.*

As a general guide:

- *If the oil level is nearer to the upper mark than the lower one then add no oil.*
- *If the oil level is nearer the bottom mark than the top one add half a litre.*
- *If the oil level is on the bottom mark or below it add one litre of oil.*

Engine Oil Filler

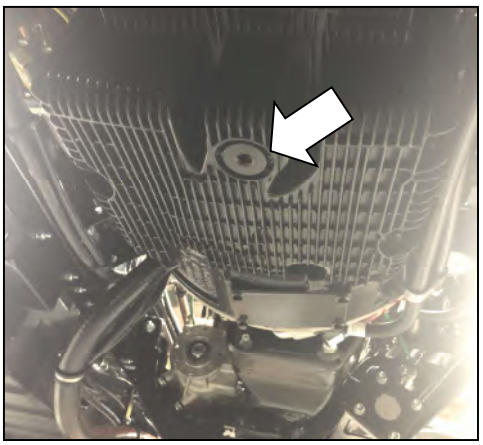
The engine oil filler cap is located on the top right-hand side of the engine rocker cover as viewed from the engine bay access panel – *refer to photo below.* Due to restrictive access to the filler point an oil filler extension kit is provided with the machine.



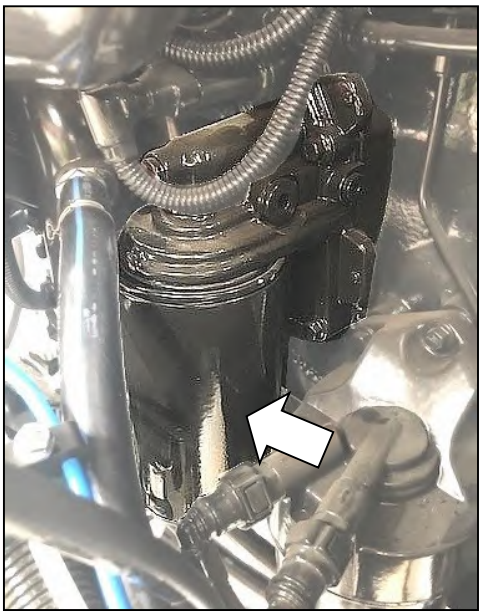
Maintenance : Changing Engine Oil

Oil and Filter Change

1. Warm engine until the water temperature reaches 60°C.
2. Park machine on a firm level site, stop engine and turn battery isolator 'OFF'. Chock wheels to prevent machine movement.
3. Remove oil filler cap from rocker cover, place suitable draining tray *(capacity at least 9 Litre)* under engine and remove drain plug from sump.
4. Clean the area around the oil filter head. Using a suitable wrench or 1/2" drive (base of filter), unscrew the oil filter canister.
5. Position a suitable draining tray underneath the filter and remove the filter from the engine casting by hand. Discard the old filter canister.
6. Thoroughly clean the gasket face of the filter head.
7. Apply a thin film of clean oil to the filter gasket surface. Fill the new filter with clean oil of the correct type.
8. Screw on new oil filter until the gasket abuts the filter head and tighten a further 1/2 turn or tighten to a torque of **38 Nm**. **DO NOT OVERTIGHTEN.**
9. Clean and check the sump drain plug (use a new O-ring if the existing one is damaged), install sump drain plug. NOTE; the drain plug is plastic, torque to **24Nm**.
10. Fill engine via filler neck in rocker cover. The engine oil capacity is **8.0 litres**.
    NB The oil filler extension kit (supplied with machine) will be required for filling the engine with oil.
11. Replace oil filler cap, run engine and check for any leaks from the oil filter.
12. Stop the engine, allow oil to settle, check and top up as necessary, **DO NOT OVERFILL**.



Engine Oil Drain Plug



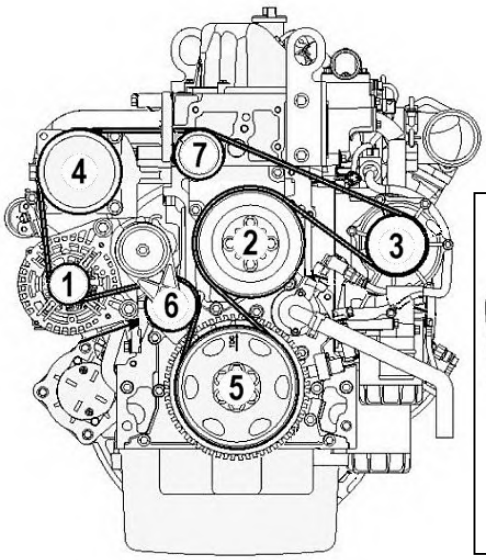
Engine Oil Filter

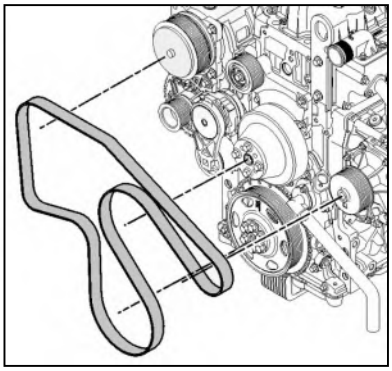
Maintenance : Drive Belt & Pulleys

The engine cooling fan and other ancillary components are driven by a multi-V 'serpentine' belt. The belt is tensioned by an automatic tensioner.

The schematic below shows the routing of the belt and identifies pulleys and driven ancillaries.

1. **Alternator Pulley**
2. **Fan Drive Pulley**
3. **Water Pump Pulley**
4. **A/C Compressor Pulley**
5. **Crankshaft Pulley**
6. **Belt Tensioner**
7. **Idler Pulley**



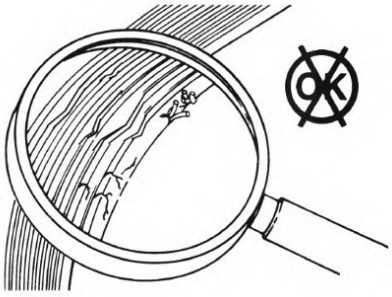


Before checking or replacing the belt; ensure starting key is removed and battery isolator is turned 'OFF' to prevent the engine from being started.

Drive Belt (Check Daily)

The drive belt should be checked on a daily basis and replaced immediately if any of the following issues are detected;

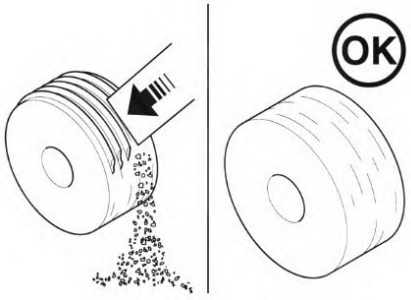
- Cracks
- Glazing
- Tears or Cuts
- Hardening
- Excessive Wear



Idler and Drive Pulleys

Idler and drive pulleys should be inspected on a regular basis for signs of wear or cracks.

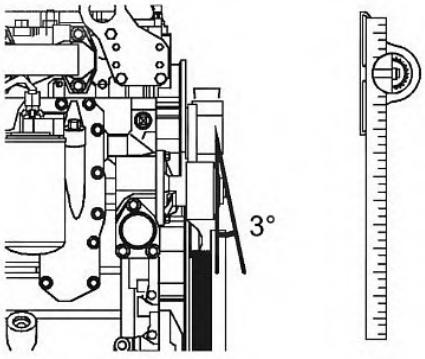
NOTE: Plastic pulleys can often accumulate 'build-up' of road dirt and/or belt material, this should not be confused with wear. Dirt can be removed using a suitable tool when checking for wear. Clean or replace pulleys as necessary.



Pully Alignment

A worn belt tensioner or misaligned pulley can cause a belt to 'walk off'. Verify on a regular basis that all pulleys are correctly aligned using a suitable pulley alignment tool.

Maximum pulley misalignment is 3 degrees.
Repair, adjust, or replace misaligned components as necessary.

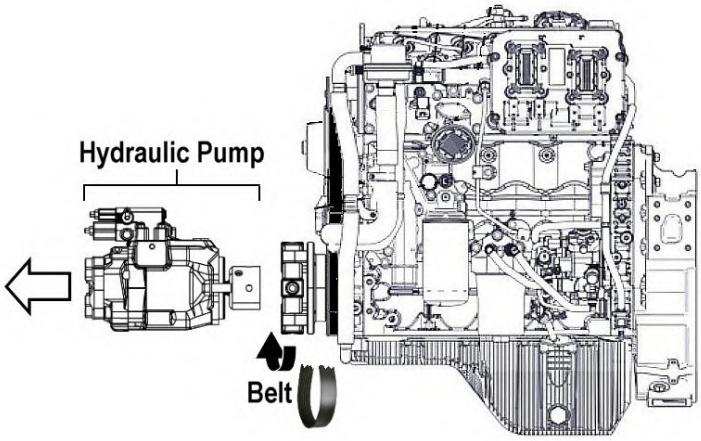


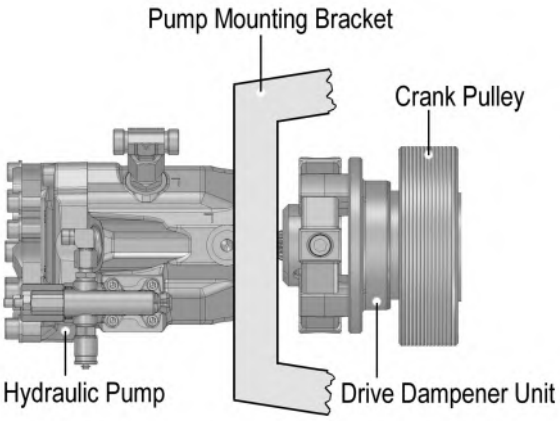
Belt Tensioner System

Belt tension is automatically controlled by a 'spring-loaded' tensioner pulley; providing the spring and drive belt are in good working condition the belt will remain correctly tensioned at all times, no manual adjustment is available or necessary.
Check tensioner pulley for signs of damage, wear, or misalignment on a regular basis.

Belt Removal & Replacement

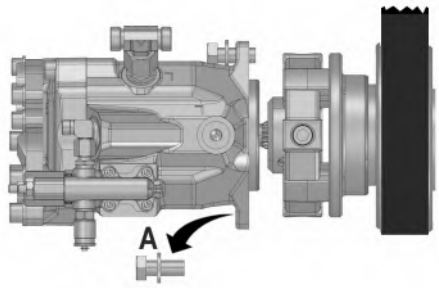
Removal and replacement of the drive belt requires separation of the hydraulic motor from the rubber drive dampener unit; this is required to provide a gap for belt removal.



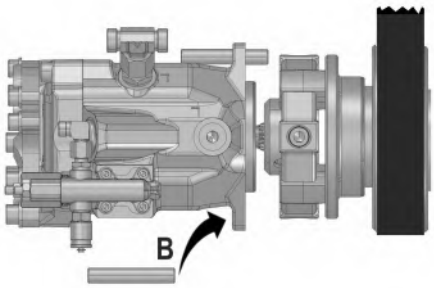


See below for hydraulic pump and drive dampener unit separation procedure.
Note: for clarity the mounting bracket is not shown in the illustrations.

Hydraulic Pump and Drive Dampener Unit Separation Procedure

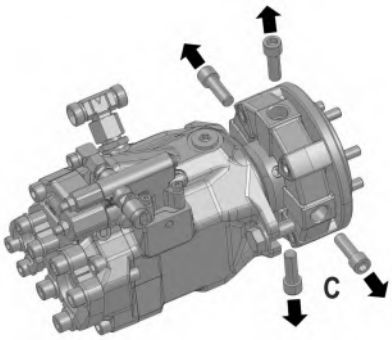


A) Remove 2x M14 bolts and washers from pump.

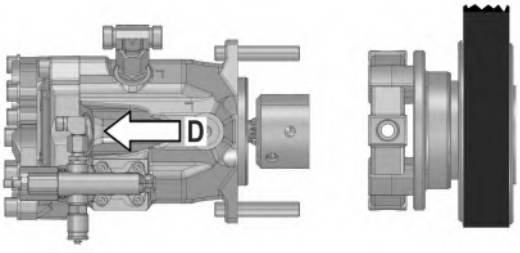


B) Install 2x M14 studs or headless bolts.

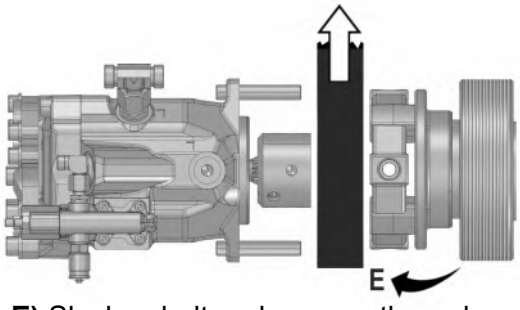
C) Remove 4x hex socket cap screws from drive dampener unit.



Note; the hydraulic pump is a heavy component, ensure it is supported on the studs at all times during the procedure.



D) Slide pump away from engine along the studs.



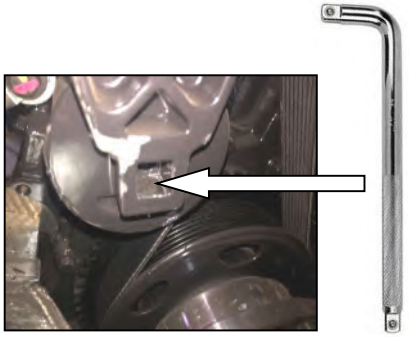
E) Slacken belt and remove through gap.

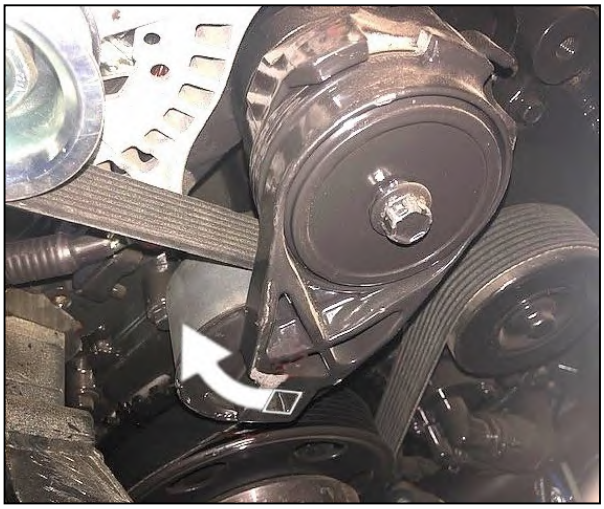
Removing Belt

CAUTION! Numerous pinch points exist on the belt run, safety gloves should be worn, and fingers kept clear of any pinch risk areas.

Before attempting to remove the drive belt it is always advisable to sketch a diagram of the belt arrangement to aid installation for correct routing.

Slackening and removal of the drive belt requires the spring-loaded tensioner to be pivoted away from the belt; a 1/2” socket wrench inserted in the tensioner housing can be used to lever the pulley away from the belt.





Lever tensioner clockwise to slacken belt

Replacing the Belt

Belt replacement is basically a reversal of the removal procedure; pivot the tensioner clockwise to allow fitment of the belt, when correctly installed carefully release the tensioner to apply tension to the belt. Check alignment of the belt with the tensioner and other pulleys.

Reconnecting Hydraulic Pump to Drive Dampener Unit

This is a reversal of the separation procedure above. The 4x hex socket cap screws that connect the units locate into holes in the pumps drive hub; ensure holes are aligned to accept cap screws. Tighten all bolts and cap screws fully.

Cooling Fan

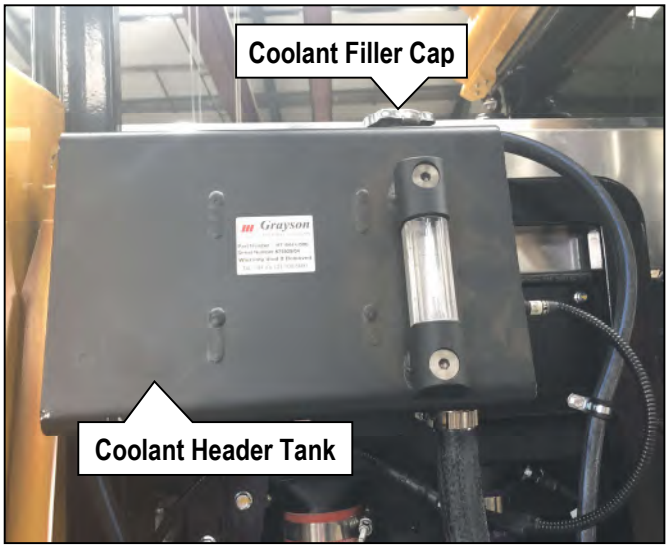
The cooling fan has a viscous coupling which does not require any maintenance.

Maintenance : Cooling System

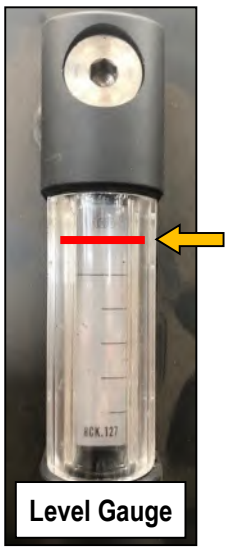
Cooling System

Do not remove the pressure cap from a hot engine. Wait until coolant temperature is below 50°C before removing the cap. **Heated coolant and steam can cause personal injury.**

Coolant should be level with the 'top mark' on the header tank sight gauge when the engine is cold. DO NOT OVERFILL. Only turn the cap to the first stop so that pressure in the system is released, then wait a few seconds before removing the cap completely.
Never use cold water to top-up the cooling system of a hot engine, particularly if the coolant level is very low; this can cause serious damage to the engine.



Shown with the machines right-hand cover panel removed



Recommended Coolant: 'ES Compleat' (Ethylene Glycol)

The system should only be topped up with a water/anti-freeze mix as specified; refer to 'Fuels, Lubricants and Coolants chart'. Ensure the pressure cap is re-tightened correctly before running the engine. The recommended coolant is 'ES Compleat' 50/50 prediluted Antifreeze/Coolant.

After 4000 hours or yearly, *whichever occurs first*, the cooling system should be flushed out and the coolant replaced. The concentration level of the coolant should be checked twice a year.

When the coolant has been replaced, or if a large quantity of coolant has been used for 'topping up', care must be taken to ensure the system is free from air. In these instances, the engine should then run, *(with cab heater turned on)*, until normal working temperature is reached – the engine should then be switched off and allowed to cool and the water level re-checked.
A fine mesh screen is fitted in front of the cab air intake grill; this should be kept clean at all times. It can be cleaned by brushing lightly or 'blowing out' with an airline

Ensure the cab lower side panels together with their respective sealing rubbers are correctly fitted at all times; this will ensure that only clean air can be drawn through the inlet grill to the condenser.

Ensure the radiator cores are kept clean; inspect the radiator regularly and clean with an air line as and when required. Use of a pressure washer is **not recommended** as these can damage the fins.

A crop deflector is fitted to the front of the machine as standard; this not only reduces crop damage, but it will also avoid blocking the condenser with pollen etc.

Maintenance : Fuel System

Fuel System

It is particularly important to keep the fuel system well maintained - if even only slight traces of contamination or water are allowed to get past the filtration system and into the injection pump, the engine performance will be seriously affected, and serious damage will be caused to the pump.

Fuel Tank

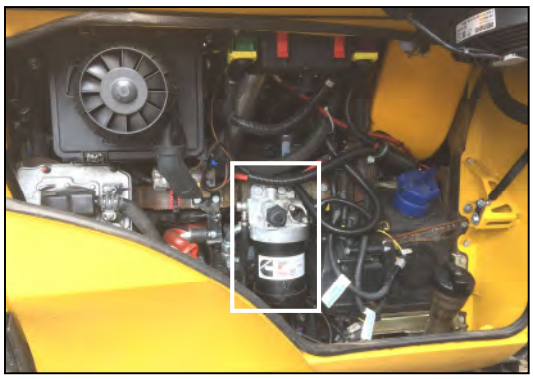
The fuel tank capacity is approx. 26 gallons *(118 litres).* Use clean diesel fuel only. Always fill the tank at the end of the day's work to avoid condensation. Take care to ensure the cap is correctly closed after filling and when washing off do not direct a pressure washer directly at, or under, the filler/breather.

Fuel Filter

The primary fuel filter element should be replaced every 1000 hours or annually, *whichever occurs first.* Access to the filter is via the engine bay.

Filter Removal

Unscrew the filter housing from the filter head to access the replaceable filter element.
When replacing the filter housing tighten to 24Nm.



Primary Fuel Filter location

Draining Fuel Filter

If erratic idling and/or low engine performance is experienced and water in the fuel is the suspected cause, the primary fuel filter should be drained to remove any accumulated water.

The procedure for draining the fuel filter is as follows;

- Switch off engine and shut off master power switch.
- Place a suitable liquid collection container under the fuel filter.
- Turn the filter drain valve **(A)** counter-clockwise sufficient enough to allow water/fuel to drain from the filter.
- Hand tighten drain valve **(A)** when water/fuel has fully drained.
- Bleed the fuel system as stated in the section below.

Dispose of the released water/fuel in a manner that is not harmful to the environment and is in accordance with local environmental regulations.

Primary Fuel Filter
A) Drain Valve
B) Priming Pump

Bleeding the Fuel System

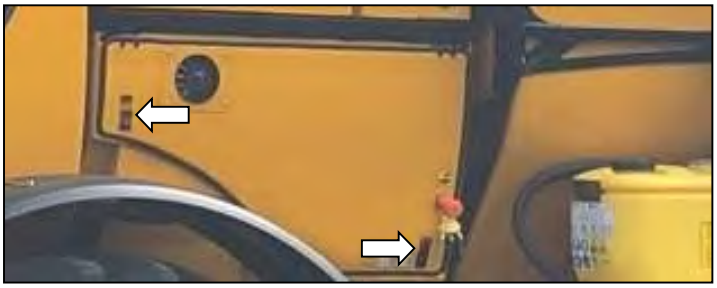
The injection pump on the engine is self-priming, however, should you change the fuel filter or run out of fuel, the system may need bleeding as far as the fuel filter - a manual priming pump **(B)** is fitted to the filter head for this purpose – *refer to illustration opposite.*
Operate the filter priming pump repeatedly until air-free fuel flows from the filter outlet.
Start the engine as normal but avoid turning the engine over continually for more than 30 seconds to avoid damage to the starter motor - *it may take several attempts*.

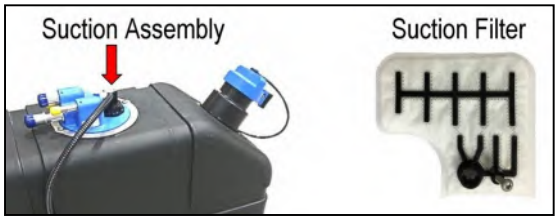
When the engine starts it may run erratically for a few minutes, *this is normal*.
On no account should any of the injector pipes / fittings be slackened in the bleeding process.

Note: *Environmental care should be taken at every stage of these processes; catch released fuel using a suitable container and dispose of fuel in accordance with local environmental regulations.*

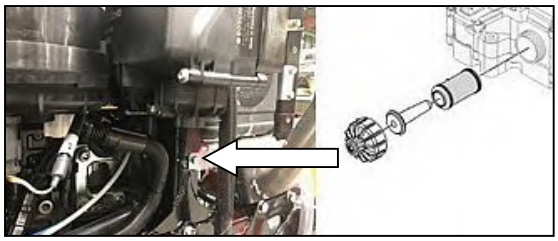
Diesel Exhaust Fluid (DEF)

The DEF tank is located mid mounted on the left-hand side in the engine compartment.
The tank has a filter attached to the suction assembly.
To access; lift engine cover, release the clamps and withdraw the tank and suction assembly.





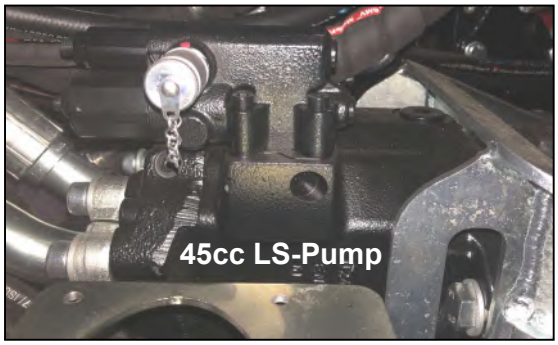
The filter is located on the base, retained by a screw.
The DEF dosing unit has a 10-micron filter.
Before removing the old filter ensure that the unit has completed its purge cycle. Turn off the battery isolator. Wipe dosing unit with a clean damp cloth to remove any dirt that could contaminate the unit.
To change the filter; remove the cap and O-ring and extract the old filter. Replace filter and O-ring with genuine new parts. Check the threads on the cap and unit, clean the cap fit the filter and new O-ring and tighten the cap; torque to **20Nm**. Re-engage battery isolator, start the vehicle and check for leaks.



Diesel Exhaust Fluid level must be checked daily.

Hydraulic System

There is one LS hydraulic pump. The hydraulic system is powered by one LS 45cc pump that is driven off the from front crank pully on engine, this pump will achieve a MAX output of 60cc. Please consult the manufacturer if you wish to drive anything other than a conventional diaphragm sprayer pump.



Do not alter the relief valve settings on either the spool valve or the flow divider without consulting the manufacturer, these are pre-set at the factory.

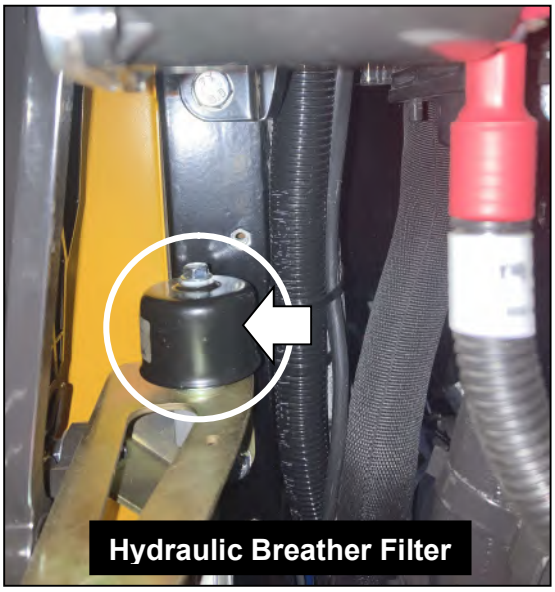
LS Pump Filler Hose

If for any reason the LS pump has been drained, or the hydraulic oil replaced, the pump must be refilled with oil before attempting to use the machine; failure to observe this may result in damage to the pump.

A dedicated hose for refilling the LS pump is located in the left-hand engine compartment above the engine air box; *refer to photo opposite*.

Hydraulic Breather Filter

Hydraulic breather filter (Part No: 154.022) is located on the left-hand side of the engine bay behind the engine ECM and below the engine air filter; the filter should be replaced every **1000 hours or annually**, whichever occurs first.



Hydraulic Oil

Ensure the hydraulic system is kept clean. Be careful when refilling the tank. Do not direct high pressure hose at filler/breather cap.
Oil level should be kept to top of the level/temperature gauge. Only use good quality clean hydraulic oil for topping-up (I.S.O VG 46). **Do not use universal oils**. The oil should always appear clear and clean, if there are any signs of cloudiness or 'milkiness' at all, the oil should be changed.

1) Hydraulic Filter Cap
2) Hydraulic Pressure Sensor
3) Hydraulic Temperature Sensor

Hydraulic Tank

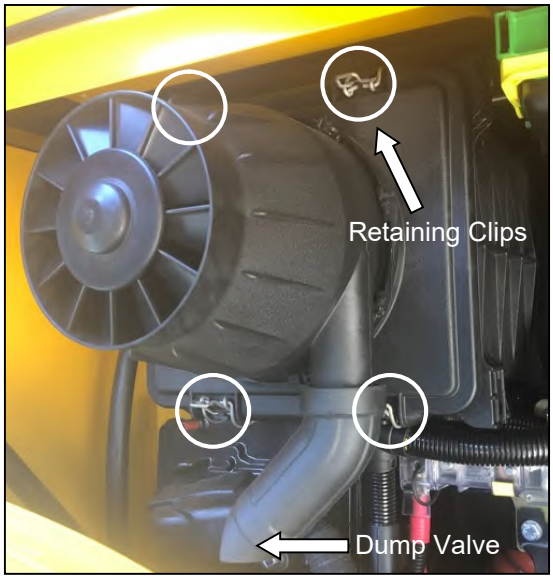
The hydraulic tank is located at the front of the chassis beneath the cab.
To access to the hydraulic oil filler cap remove the grill on the nose in front of the cab, the level gauge is on the left-hand side of the vehicle.

Maintenance : Air Cleaning

Air Cleaning System

A cyclone type air cleaner is fitted to the Agribuggy with a dry element; under normal operating conditions it should be replaced every **1000 hours**. In dusty conditions it should be replaced more regularly; *change if the air cleaner restriction warning indicates*.

When the air filter element does need servicing it must be replace it with a new one; do not attempt to clean it. Condition of the air intake hoses should be checked regularly for signs of wear or damage and should be replaced when necessary.



Dump Valve

The dump valve is situated on the end of the filter housing (see right). Squeeze the valve open to release any accumulated particles every **50 hours**.

To change the filters, release the four retaining clips and remove the lid and extract the primary filter. The secondary filter can then, if necessary, be extracted; if changing the secondary filter, fit the replacement as soon as the old one is removed to prevent dust getting into the clean side of the air intake.
Ensure the filter housing is clean internally before fitting replacement filters.


Primary Air Filter


Secondary (Safety) Filter Element

Pneumatic System

The pneumatic system consists of a compressor with intake filter, which is within the main filter assembly, a filter dryer with regulating valve, and air tanks.
The system provides pneumatic power for the following:

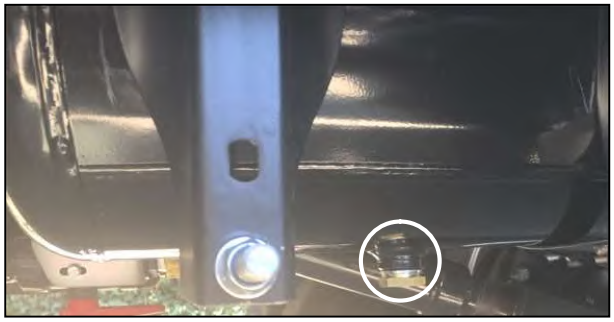
- Spray pack
- Cab step
- Park brake release
- Hi-low range selection and diff-lock

Air pressure is regulated to **8 Bar**.

The filter dryer is located between the compressor and purge and air tank.
The purge tank and air tank are drained by means of an auto drain valve located on both tanks. Before disconnecting air hoses, ensure all the air is discharged.


Intake Filter


Filter Dryer


Air Tank Auto Drain Valve

Screen Wash

The screen wash reservoir is situated in the nose at the front of the cab; to access the reservoir turn the fasteners to release the grille.

Screen Wash Reservoir

Screen Wash Reservoir Location

Maintenance : Cab Filtration

Cab Filtration and Pressurisation Unit

The Agribuggy cab is fitted with an integrated pressurisation system and category 4 filtration. The air inlet filter will filter out dust and small particles and the carbon element of the filter will filter out chemical particles and vapours. Positive pressure inside the cab will prevent particles or vapour entering. The carbon in the filter will only remain effective for up to a maximum of 6 months, whether the machine is being used or not, as the carbon degenerates when in contact with the air. If the machine is being used continuously it is recommended that the filter be changed every **100 hours**. NOTE: Always keep the inlet grill free of dirt, dust, chaff etc.

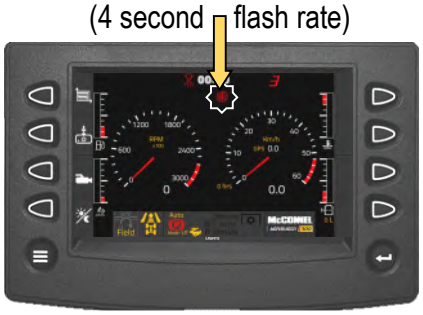
If positive pressure is not maintained in the cab the 'FILTER WARNING SYMBOL' on the MCU display will indicate solid RED.

When filter warning symbol light FLASHES RED every 4 seconds, filter should be changed.

Solid RED Filter Icon

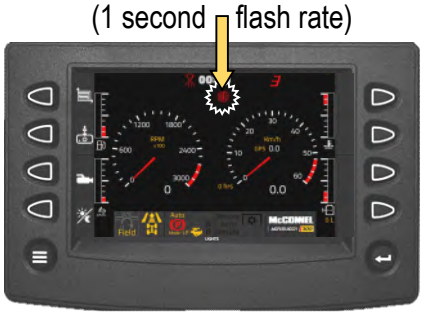
Cab NOT pressurised

Slow flashing RED Filter Icon (4 second flash rate)



Filter requires replacing

Fast flashing RED Filter Icon (1 second flash rate)



No CAT4 Filter fitted

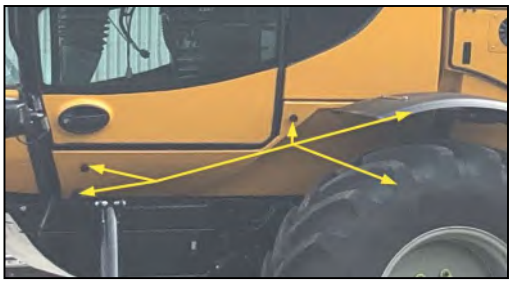
Filter Replacement

Caution: Exposure to chemicals can cause injury - wear protective equipment (PPE).

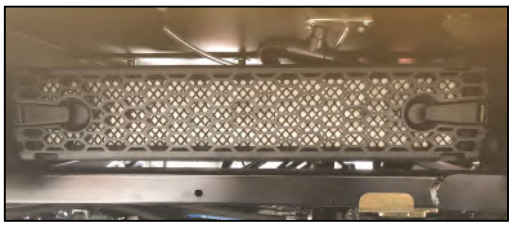
To access and replace the filter;

- Release the 5 retaining thumb screws and remove the filter access panel (cab side panel).
- Release the two clamps that secure the lid onto the filter housing and removed the lid.
- Slide filter cassette out using pull straps located on each side.

  Place the used filter in a plastic bag and dispose of in accordance with environmental regulations.
- When fitting the replacement filter, ensure that its rubber seal surrounding is located correctly to avoid contaminated air being drawn into the cab past the filter.
- Reset the filter time counter on the 'PECU Filter Change' screen of the MCU – *see screen operation section for details.*



Filter access panel – thumb screw



Filter Cartridge

Latch Clamp release

Air Conditioning

With the exception of the recirculation air filter there are no other user serviceable parts in the air conditioning system. The only regular maintenance required is cleaning the intake grill, replacement of the filter, and servicing of the compressor drive belt (see belt section for details).
It is recommended that the system is serviced annually by a qualified refrigeration engineer, at which time the receiver dryer and oil should be changed.
The system uses refrigerant gas R134A and holds 1.2 kg.

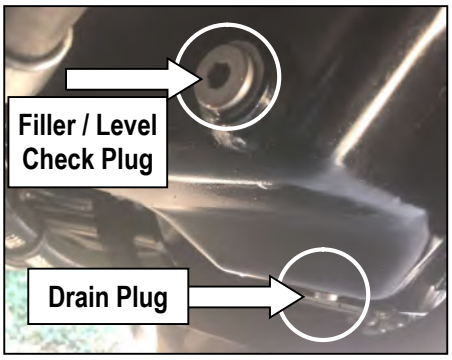
Maintenance : Gearbox, Electrical

Automatic Transmission Oil

The transmission fluid level should be checked at least every **50 hours**. It should be checked when the fluid is cold and with the engine **idling in neutral.**

Ensure the transmission fluid is kept to the level of the plug hole **- Do not overfill.**

Use **ATF TOTAL FLUID G3 ATF DEXRON III** for 'topping up'. Top up the transmission oil through the filler/level plug hole.

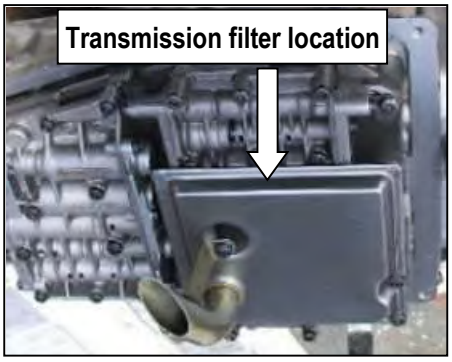


Transmission Plugs

Transmission Oil & Filter Change

The oil should be changed every **500 hours or 6 months**. When replacing transmission oil **30 fl. oz of Lubegard ATP must also be added** with every oil change.

Lubegard ATP Part No. XP136 (10 fl. oz bottle).
Transmission Capacity (Dry) : 12 Litres



The oil filter screen in the bottom of the gearbox should be replaced every **1000 hours or annually** either by McConnel Limited, your local dealer, or by a suitably qualified engineer.

The transmission oil filter is located in the transmission sump.

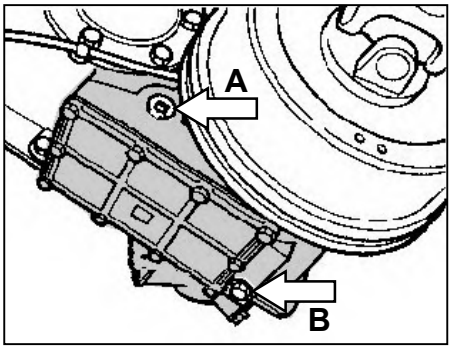
Transfer Gearbox Oil

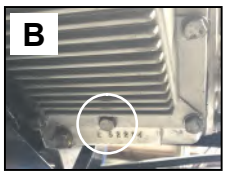
Transfer gearbox oil level should be checked every **300-500 hours** or **6-12 months**.

The oil level is checked by removing level plug '**A**'. It should be topped up through the same hole until the oil begins to run out.

The transfer gearbox oil should be drained and changed every **500 hours**; this is performed via the drain plug '**B**'.

Refill using one of the following oils;
MIL-L-2105 90W EP MIL-L-2105B, C & D 80W EP





Electrical System

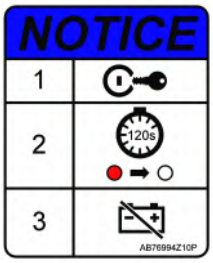
Battery

The battery fitted is 'maintenance free' and topping up is not normally required throughout the normal life of the battery. However, the level should still be checked when periodic services are carried out. Ensure terminals are kept clean and protected with petroleum jelly. Battery is mounted adjacent to the RH engine panel in front of the clothing lockers.

An isolator switch is fitted to the offside lower engine panel for use in emergencies or when any welding or repairs are being carried out to the machine, if the machine is left for more than a day this should be put in the 'OFF' position to prevent the battery from discharging.

Battery Location

Isolator Switch



DO NOT turn battery isolator switch 'OFF' for 120 seconds after the engine has stopped.

There are several ECU's (Electronic control unit) on the machine, these are as follows:

- Display Unit (MCU)
- Engine ECM
- Transmission ECU (Compushift 3 Sport)
- Steering/PTO Controller (Plus1)
- Circuit Board: Cab
- Circuit Board: Engine Bay
- Switch Panel

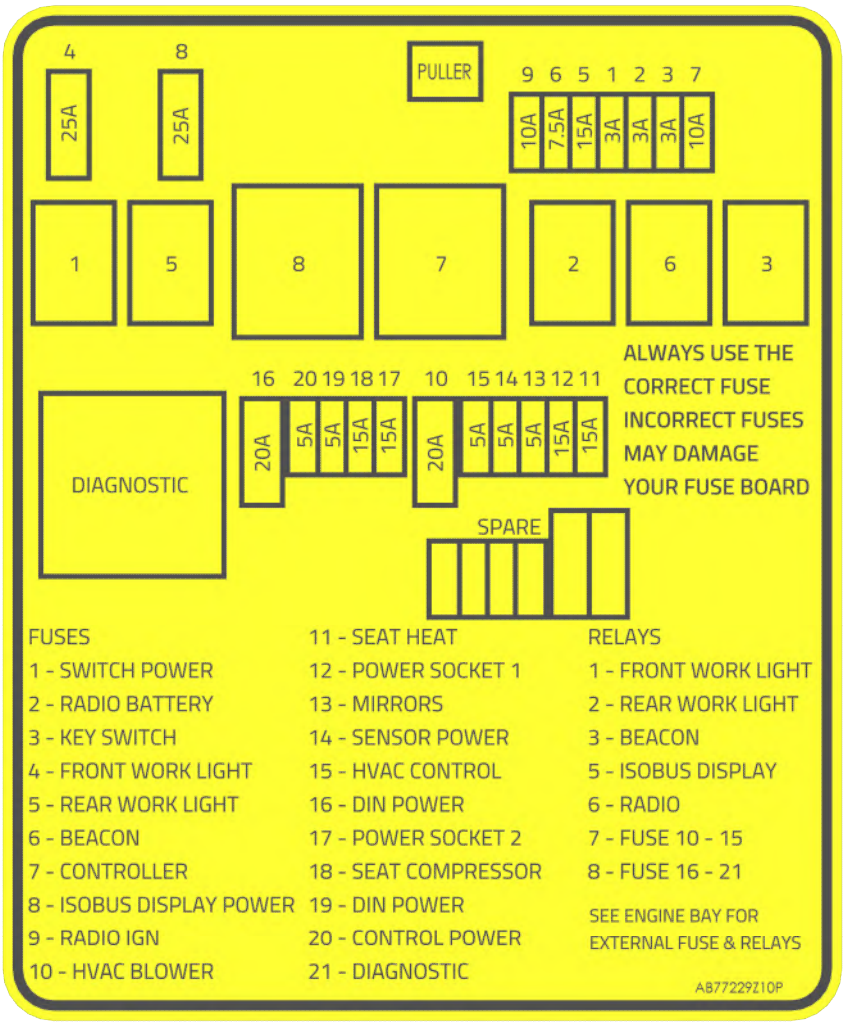
The ECU's are all connected via a J1939 Can Bus system. This system allows the ECU's to "talk" to each other via a network system which consists of just 2 wires.

The heart of the electrical system is the power distribution circuit board which is mounted in the rear right hand corner of the cab and the engine bay behind the LHS engine panel. All the machine wiring harnesses plug into this board and all the relays and fuses are mounted on it. All of the relays are operated via the can bus with the majority of the instructions being sent either by the MCU or the switch panel.

N.B. It is very important to protect all wiring connections from the corrosive effects of fertilisers and chemicals; all connections should be frequently checked, cleaned, and coated with dielectric grease, or other suitable anti-corrosive lubricant.

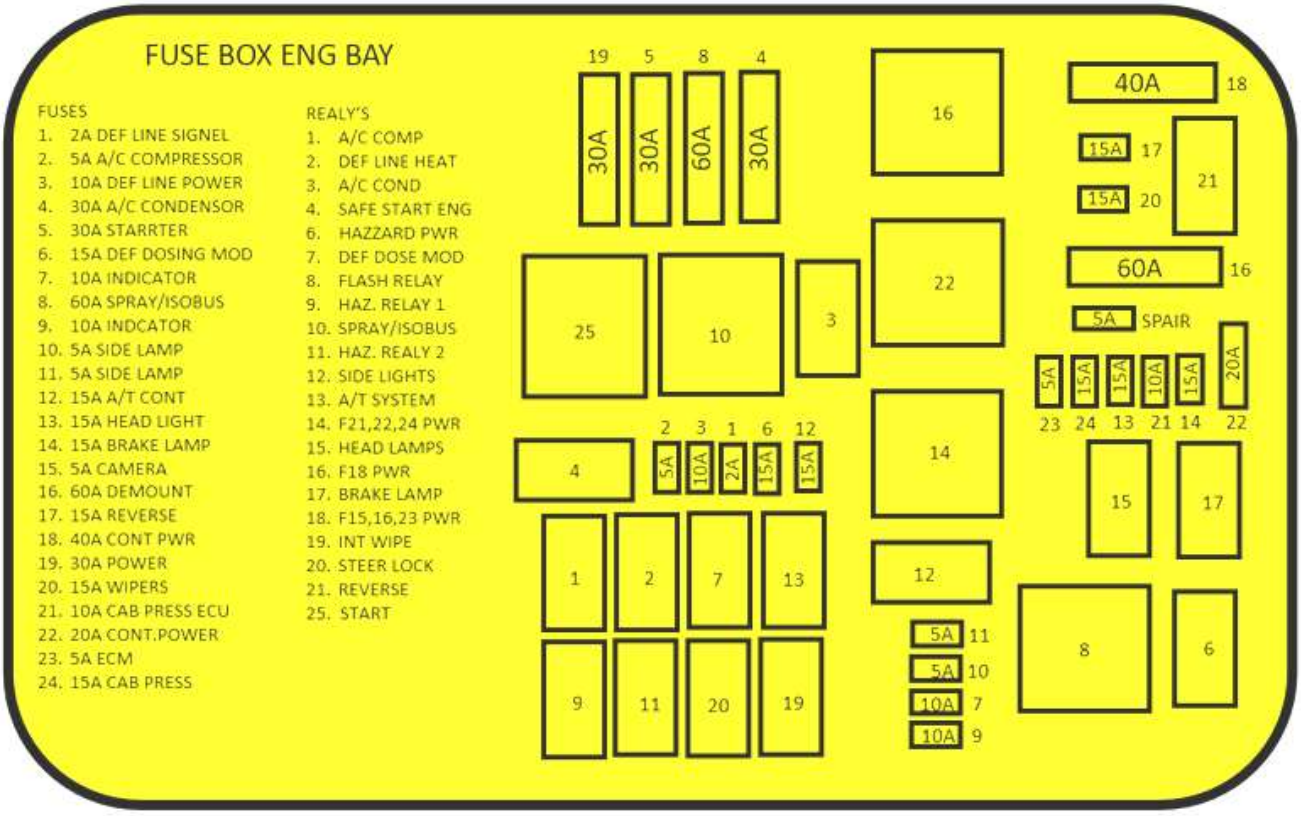
Electrical System Description

Fuses & Relays : Cab



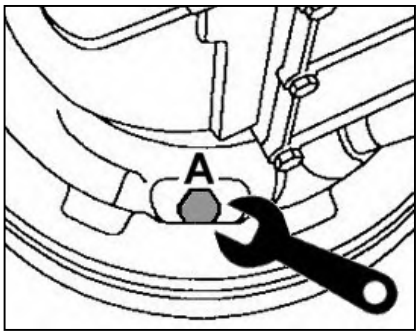
The 2 main fuse panels located in the cab and in the engine bay can be accessed by removal of their covers. If any fuses require replacement **ensure they are replaced with the correct rating or serious damage to the wiring system, and particularly the electronic circuit board, WILL OCCUR.**

Fuses & Relays : Engine Bay



Maintenance : Brakes

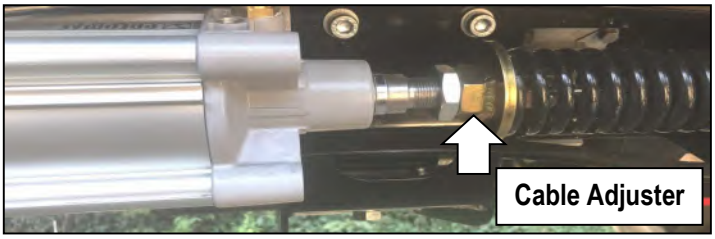
Handbrake Adjustment



1. Chock the wheels and ensure the brake lever is 'OFF'.
2. Raise one of the rear wheels clear of the ground and support the axle with an axle stand.
3. Tighten adjuster bolt '**A**' until brake drum will not rotate by hand.
4. Slacken the adjuster by turning it 1.5 turns anti-clockwise and ensure the drum rotates freely.

Handbrake adjustment should be checked every **250-500 hours**.

If the actuating cable becomes slack, the free play can be taken up by adjusting the cable fitting on the actuating cylinder end of the cable.



Shoe Replacement

If the adjuster reaches the end of its travel, the brake shoes will need replacing. To do so the rear prop shaft will need to be removed and the drum will then slide off after slackening off the adjuster.

The drums should be removed every **1000 hours** to clean the brakes. If you are working in very wet and muddy conditions or if you are spreading a lot of fertiliser they may require cleaning every **500 hours**.

Foot Brakes

The brakes are all self-adjusting discs and only need to be checked for wear periodically.
Always replace the pads before they become fully worn; *never allow them to wear right down to 'bare metal'*.

When working in muddy conditions check the pads on a weekly basis, and always if a braking issue is experienced or suspected.

If you use your Agribuggy to spread a lot of fertiliser, inspect the metal brake pipes on a regular basis for signs of corrosion and replace, as and when necessary.

The linkage from the brake pedal to the master cylinder must be lubricated regularly.

Maintenance : Steering

Steering Checks

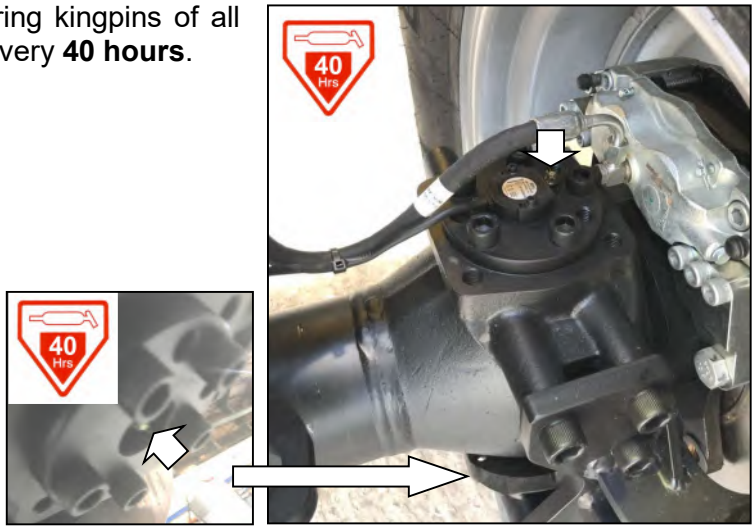
The steering on the Agribuggy is 'hydrostatic' with the oil supply for the steering unit being drawn from the main hydraulic system on the machine.

Regularly check the steering hoses for security and damage; repair and/or replace any loose or damage components immediately.

Security of mechanical elements of the steering should also be regularly checked.

Lubrication

Grease nipples are located on the steering kingpins of all four wheels; these will require greasing every **40 hours**.



Upper and Lower Kingpin Grease Points

NOTE: on all Agribuggy's the front and rear steering systems are not connected in any way, either mechanically or hydraulically.

Steering Stop Adjustment

If steering stop adjustment is required, please contact your McConnel dealer; this procedure will need to be adjusted on the 4ws programming parameters.

Maintenance : Axles

Axle Drive Shafts

The axle drive shafts are fitted with sealed universal joints and therefore require no maintenance. However, **it is essential that the swivel housing area is kept clean.** When working in adverse conditions any mud or crop debris that accumulates around the drive shaft must be washed out daily. If it is left to accumulate it will wear the hub and axle oil seals which will eventually cause oil leaks and premature wear to the wheel and drive shaft bearings.

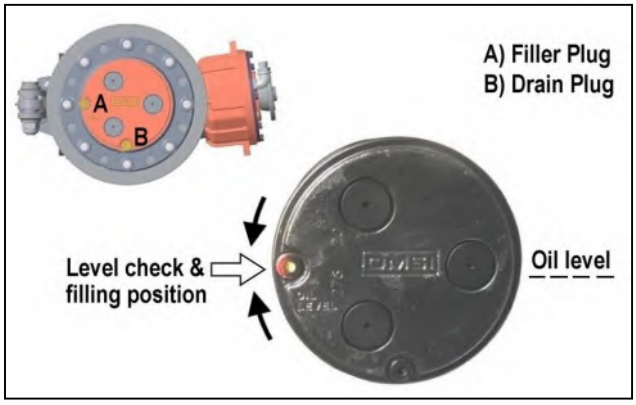
Wheel Hubs

The wheel hub/epicyclic units on the Agribuggy axles are filled with oil; the oil level should be checked every **500 hours**.

To check the oil level, the wheel hub must be rotated until the oil level/filler plug (**A**) is in the '9 o'clock' position as shown opposite.

Use SAE 80W90 API GL-5 oil for topping up.

Oil should be changed **after an initial 100 hours** and every **800 hours or annually** thereafter. To drain the oil, rotate the hub until the drain plug (**B**) is at its lowest position.



Wheel Bearings

The wheel bearings should be checked on a regular basis for signs of play. Should any play be evident they can be adjusted by McConnel, your local dealer or by a suitably trained engineer.

Axle Oil Levels

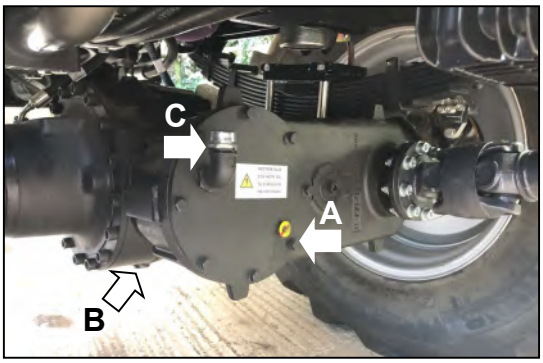
Use **SAE 80W90 API GL-5** gear oil for topping up the axle oil levels. The filler/level plugs are shown opposite.

A) Oil Level/Filler Plug

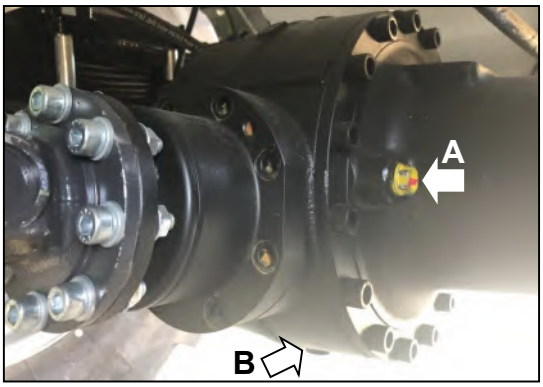
B) Oil Drain Plug

C) Breather

The axle oil should be changed every 800 hours or annually using SAE 80W90 API GL-5.



Front Axle

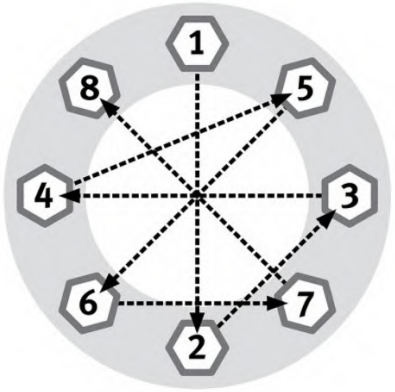


Rear Axle

Axle Breathers

Should any axle oil leaks develop, the axle breather should be removed first and checked to make sure it is not blocked; some breathers have a small ball fitted inside which is prone to seizure, particularly when the machine is used for spreading fertiliser.

Maintenance : Grease, Tyres, Cleaning



Wheel Nuts

Check wheel nut torque **(340Nm +/- 20Nm).**
Tighten the wheel nuts in the sequence shown opposite.

Wheel Alignment

The front axle and rear wheel alignment should be the same on the front and the rear; this should be set so all wheels are straight ahead with no toe in or out.

Greasing

Grease nipples are located as follows and all nipples should be greased every **40 hours**.
Axle kingpins: 4 on the front axle and 4 on the four wheel steer rear axle.

Tyres

The low pressure tyres are normally pre-set at 11 psi (0.7 bar). The pressure may be reduced in adverse conditions to as low as 8 psi (0.6 bar) depending on the load being carried, however, the main thing to watch is that the tyre side walls do not crease when loaded. If the machine is being used for long periods on the road the pressure should be increased to 14 psi (1 bar). Row crop tyres should be inflated to 35 psi (2.4 bar).

Cleaning

Mud and crop debris should be cleaned away from the steering swivel and brake callipers on a daily basis to avoid damage to axle oil seals and bearings.

Do not allow crop debris to build up on the engine, exhaust, or in any of the cooling system radiators; this should be checked on a daily basis when working in tall or dusty crops.

Great care should be taken in cleaning the machine; particularly after spreading fertiliser. Some types of fertiliser are very corrosive and if not cleaned daily, problems will soon be encountered.

The wiring system is most vulnerable, and connections should be regularly checked. The radiator is also susceptible to corrosion and every effort should be made to keep fertiliser out of the radiator core.

After 'washing off', leave engine running for a while so the engine compartment dries out.

Some types of fertiliser spreaders are prone to throwing fertiliser forwards or causing dust; if this is the case with your spreader it is advisable to fit a sheet or screen in front of the spreader to stop it entering the engine compartment.

Coating the chassis with a mixture of oil and diesel, or a proprietary anti-corrosive coating agent, after cleaning, pays dividends if you spread large amounts of fertiliser.

It also pays to go round the machine with the grease gun and an oil can on a daily basis when the machine is being used intensively for spreading fertiliser in damp conditions.

Please remember, the machine warranty does not cover problems caused by corrosion and mud/debris build up!

Maintenance Schedule

	Service Operation	Daily 10 Hours	First 100 Hours	Every 50 Hours	Every 100 Hours	250 Hours 3 mths	500 Hours 6 mths	Every 800 hrs annual	1000 Hours 1 year	2000 Hours 2 years	4000 Hours 3 years	5000 Hours 4 years
1	Check engine oil level, top up if necessary	●	●	●	-	●	●	-	●	●	●	-
2	Check air intake pipework	●	●	●	-	●	●	-	●	●	●	-
3	Check coolant level, top up if necessary	●	●	●	-	●	●	-	●	●	●	-
4	Drain water from fuel water separator	●	●	●	-	●	●	-	●	●	●	-
5	Check fan drive belt and cooling fan	●	●	●	-	●	●	-	●	●	●	-
6	Check crankcase breather tube	●	●	●	-	●	●	-	●	●	●	-
7	Check cooling radiators/steering swivels for cleanliness	●	●	●	-	●	●	-	●	●	●	-
8	Check DEF level	●	●	●	-	●	●	-	●	●	●	-
9	Check wheel nuts for tightness	●	●	●	-	●	●	-	●	●	●	-
10	Grease prop shafts & check for wear	-	●	●	-	●	●	-	●	●	●	-
11	Grease kingpins & check for wear	●	●	●	-	●	●	-	●	●	●	-
12	Lubricate electrical connections	-	●	●	-	●	●	-	●	●	●	-
13	Check brake fluid level	-	●	●	-	●	●	-	●	●	●	-
14	Check power steering fluid level	-	●	●	-	●	●	-	●	●	●	-
15	Check automatic transmission fluid level	-	●	●	-	●	●	-	●	●	●	-
16	Check/clean radiator screen	-	●	●	-	●	●	-	●	●	●	-
17	Check condition of drive belts, pulleys, pump, alternator and refrigerant compressor	-	●	-	-	●	●	-	●	●	●	-
18	Check for oil, fuel & coolant leaks	-	●	-	-	●	●	-	●	●	●	-
19	Check expansion tank pressure cap	-	●	-	-	●	●	-	●	●	●	-
20	Check battery water level	-	●	-	-	●	●	-	●	●	●	-
21	Tighten leaf spring U-bolts	-	●	-	-	●	●	-	●	●	●	-
22	Check condition of suspension bushes; replace if necessary (P/No.AB72274C00P).	-	-	-	-	-	-	●	●	●	●	●
23	Check engine, prop-shafts, steering joints are tight	-	●	-	-	●	●	-	●	●	●	-
24	Oil brake pedal linkage	-	-	-	-	●	●	-	●	●	●	-
25	Clean & adjust transmission brake	-	●	●	-	●	●	-	●	●	●	-
26	Clean & lubricate battery terminals	-	-	-	-	●	●	-	●	●	●	-
27	Check transfer gearbox oil level	-	-	-	-	●	●	-	●	●	●	-
28	Check condition & security of wiring looms	-	-	-	-	●	●	-	●	●	●	-
29	Change Fuel Filter (Canister type & Spin-on type)	-	-	-	-	-	-	-	●	●	●	-
30	Check all air, oil and water hoses for leakage, damage or deterioration	-	-	-	-	●	●	-	●	●	●	●

Maintenance Schedule (continued)

Service Operation		Daily 10 Hours	First 100 Hours	Every 50 Hours	Every 100 Hours	250 Hours 3 mths	500 Hours 6 mths	Every 800 hrs annual	1000 Hours 1 year	2000 Hours 2 years	4000 Hours 3 years	5000 Hours 4 years
31	Remove wheels, check brakes for wear and replace pads if necessary	-	-	-	-	●	●	-	●	●	●	●
32	Check axle/wheel hub oil levels	-	-	-	-	●	●	-	●	●	●	●
33	Drain fuel tank	-	-	-	-	●	●	-	●	●	●	●
34	Replace cab carbon filter	-	-	-	●	-	●	-	●	●	●	●
35	Check wheel alignment on steering axles	-	-	-	-	●	●	-	●	●	●	●
36	Check & adjust wheel bearings if necessary	-	-	-	-	●	●	-	●	●	●	●
37	Change engine oil and filter (**Specified oil MUST be used**)	-	-	-	-	-	●	-	●	●	●	●
38	Change air filter elements (vital to reduce risk of premature engine wear)	-	-	-	-	-	●	-	●	●	●	●
39	Change all axle and hub oils	-	●	-	-	-	-	●	-	-	-	-
40	Change transfer gearbox oils	-	-	-	-	-	●	-	●	●	●	●
41	Change auto transmission oil: *see 41 below* (add 30 fl. oz of Lubegard ATP with the oil)	-	-	-	-	-	●	-	●	●	●	●
42	Change auto transmission oil filter	-	-	-	-	-	-	-	●	●	●	●
44	Service A/C inc. replace receiver dryer	-	-	-	-	-	●	-	●	●	●	●
45	Replace hydraulic oil and filters, clean suction element	-	-	-	-	-	-	-	●	●	●	●
46	Replace hydraulic breather filter	-	-	-	-	-	-	-	●	●	●	●
47	Replace main drive belts and check the belt tensioner	-	-	-	-	-	-	-	-	●	●	●
48	Flush out cooling system & renew coolant	-	-	-	-	-	-	-	-	●	●	●
49	Replace compressed air inlet filter	-	-	-	-	-	-	-	●	●	●	●
50	Replace DEF dosing unit filter	-	-	-	-	-	-	-	●	●	●	●
51	Replace DEF tank suction filter	-	-	-	-	-	-	-	-	●	-	●
52	Check crankshaft pulley	-	-	-	-	-	-	-	-	●	-	●
53	Engine overhead set adjust	-	-	-	-	-	-	-	-	-	-	●
54	Check Aftertreatment Diesel Particulate Filter	-	-	-	-	-	-	-	-	-	●	●
55	Check Air Dryer System Filter	-	-	●	-	-	-	-	-	-	-	-
56	Replace Air Dryer System Filter	-	-	-	-	-	●	-	-	-	-	-

Fuels, Lubricants, Coolant etc.

Capacities are approximate and all quoted in litres

Component	Grade	Volume
Engine Crankcase	SAE 5W-40 heavy-duty engine oil to the following classifications are recommended: ACEA E-9, API CJ-4 or CK-4. High to low (on dipstick) 1.5 Litre	8 Litre Sump
Cooling System	ES Compleat CES 14603,EC-1,93K217, 48-25878, CEMS B1-Type II, MAT 3620, CSO185, 014617004, 8650-5 & 20774185.	34 Litres
Automatic transmission	TOTAL ATF FLUID G3	Service refill 5-6 Litre (Total dry 12)
Transfer box	MIL-L-2105 90W EP MIL-L-2105B, C & D 80W EP	4 Litres
Front Axle Differential	SAE 80W90 API GL-5	6.6 Litre axle +1.5 Litre transfer
Rear Axle Differential	SAE 80W90 API GL-5	6.6 Litre
Epicyclical Hubs Front Axle	SAE 80W90 API GL-5	1.3 Litre
Epicyclical Hubs Rear Axle	SAE 80W90 API GL-5	1.3 Litre
Air Reservoir Tank	-	Purge tank 5 Litre Main reservoir 20 litre
Fuel Tank	ASTM 2-D, Ultra-low sulphur diesel with a maximum sulphur content of 50 parts per million with a minimum centane number of 40. Fuel lubricity BOCLE number of 3100 or greater.	110 Litres
DEF Tank	Diesel Exhaust Fluid to ISO 22241-1 DIN 70070	15 Litres
Hydraulic Tank	ISO VG 46	100 Litre
Air Conditioning	Gas R134A	1200 gram 75 ML oil PAG46

Electrical System	
Batteries	1000A 120 Amp/Hr
Battery Terminal Ground	Negative
Alternator	135 Amp 14 Volt

Parts

All replacement parts are available from McConnel Limited. Some parts may also be available from other local sources. Only genuine replacement parts should be used during the warranty period and we strongly recommend that you do the same after the warranty has expired.

If you require any parts information, please do not hesitate to contact us.

When ordering parts please quote the Agribuggy model/build no. which can be found on a plate on the front right hand corner of the chassis.

If you are in any doubt about operating or maintaining the machine or fitting any of your own equipment, please do not hesitate to contact us.

This instruction book covers all the most important points on operation and servicing of the Agribuggy but, by no means, does it cover everything in full detail. It is updated periodically and we would therefore welcome any suggestions of further information that you would like to see included. We hope to produce a more detailed workshop manual and parts book in the not too distant future.

The manufacturer cannot be held responsible for any accident, injury, or any other occurrence resulting from the incorrect use of the machine or equipment fitted to it.

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