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McCONEL

ROBOPOWER

140HP UNMANNED TRACTOR

Operator Manual

Machines from Serial No. 111300001 ►



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 go to the McConnel Limited web site at www.mcconnel.com, log onto 'Dealer Inside' and select the 'Machine Registration button' which can be found in the Service Section of the site. Confirm to the customer that the machine has been registered in the section below.

Should you experience any problems registering a machine in this manner please contact the McConnel Service Department on 01584 875848.

Registration Verification

Dealer Name:
Dealer Address:
Customer Name:
Date of Warranty Registration:/...../..... Dealer Signature:

NOTE TO CUSTOMER / OWNER

Please ensure that the above section above has been completed and signed by the selling dealer to verify that 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 machines 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

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 12 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 McConnell 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. McConnell 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 McConnell 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 McConnell 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 McConnell 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 McConnell 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 McConnell Ltd Service Dealer, within 30 days of the date of repair.*
- 2.05. *Following examination of the claim and parts, McConnell Ltd will pay, at their discretion, for any valid claim the invoiced cost of any parts supplied by McConnell 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 McConnell Ltd. is final.*

3. LIMITATION OF LIABILITY

- 3.01. *McConnell 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. *McConnell Ltd makes no warranty as to the design, capability, capacity or suitability for use of the goods.*
- 3.03. *Except as provided herein, McConnell 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

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1 – GENERAL DESCRIPTION

1.1– BACKGROUND INFORMATION

This is the operator's manual of the construction in the meaning of the the Machinery Directive 2006/42/EC and successive modifications and integrations.

Do not destroy, do not modify, integrate only with additional papers.

Manual Code: EENUM11000

Review n°: 00 Edition: 11/2013

Type of machine: Mower selfpropelled

Model: RoboPOWER

This manual is valid from S/N:

ROBOP111300001

- McCONNEL ROBOPOWER -

1.2 - TRAINING REQUESTED TO THE OPERATOR

Attentive reading of this manual:

- Every operator and personnel responsible for the maintenance of the machine must read entirely with the maximum attention this manual and respect the contents herein.
- the employer has the obligation of ascertaining that the operator possesses the requisite aptitude tests for the driving of the machine and has taken attentive vision of the manual.

1.3 - WARNINGS FOR USE

The norms of functioning contained in this manual are valid exclusively for the machine: McCONNEL RoboPOWER.

The operator's manual must be read and utilized in the following mode:

- Read attentively the instruction manual and consider it an integral part of the machine;
- The instruction manual must be easily within reach of the personnel responsible for the driving and for the maintenance;
- Look after the manual for all the duration of the machine;
- Ensure that any update is incorporated in the text;
- Supply the manual to any other user or successive owner of the machine;
- Use the manual in mode such so as not to damage all or in part the contents;
- Do not remove, tear up or rewrite for any motive parts of the manual;
- Conserve the manual in zone protected from damp and heat;
- In case the manual is lost or partially ruined and therefore it is not possible to read the contents completely, request a new manual from the manufacturer.

Pay the maximum attention to the following symbols and to their meaning. Their function is highlight to information particular such as:

WARNING:

In reference to integrations or suggestions for the correct use of the machine.

ATTENTION :



In reference to situations of danger that, if not avoided;
MAY result in MINOR INJURY

DANGER:



In reference to situations of danger that, if not avoided;
WILL result in DEATH or VERY SERIOUS INJURY

1.4 - PREMISE

The machine shown in this manual may differ slightly from your machine, but will be similar enough to help you understand our instructions.

The norms of service described in this manual, constitute part integral of the delivery of the machine. These norms, furthermore, are meant for the operator already expressly taught for drive this type of machine and contain all the information necessary and indispensable for the safety of functioning and the optimal use, not incorrect, of the machine. Hurried and incomplete preparations cause improvisation and this causes many accidents; before initiating work, read attentively and respect scrupulously the following suggestions:

- 1) Get confident, before starting to manoeuvre the machine, of any operation and admissible position of functioning;
- 2) The operator must always have the instruction manual available at any moment;
- 3) Schedule every service with care;
- 4) Know in detail where and how is foreseen the use of the machine: use on the ground, time taken, limitation of the movements caused by the presence of buildings, electric lines and similar;
- 5) Before work ensure that the measures of safety function correctly and have no doubts on their functioning; in case of the contrary do not utilize in any case the machine;
- 6) Observe accurately the warnings relating to special dangers contained in this manual;
- 7) Constant preventive and accurate maintenance always guarantees elevated safety of functioning of the machine. Never delay necessary repairs and carry them out only and exclusively with specialized personnel, and use only original spare.

1.4.1 - MANUAL UPDATE

The information, descriptions and illustrations contained in this manual reflect the state of the art at the time of sale of the machine.

The Manufacturer reserves the right to make, at any time, any changes to the machines for technical or commercial reasons. In the event that such changes do not require (for security reasons) the manufacturer to act on the machines sold so far, will not be sent updates of the same manual or the information contained herein is considered inadequate. Any additions that the manufacturer deems appropriate to provide below will need to be kept with the manual and considered an integral part of it.

1.4.2 - COPYRIGHT

The copyright of this manual belongs to the Manufacturer. This manual contains text, illustrations and drawings of a technical nature that can not be disclosed or transmitted to third parties, in whole or in part, without the written permission of the manufacturer of the machine.

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1.5 - GUARANTEE

The parts supplied by the manufacturer enjoy of a guarantee of 12 months starting from the putting into service, proven by the documentation delivered to the customer.

The manufacturer reserves the right to repair, or substitute, the parts recognized as defective by it during the period of guarantee.

With the substitution of the piece retained defective, the manufacturer retains itself free from any other costs sustained by the concessionary and by the customer of the concessionary such as damage presumed, present or future, such as lost earnings, penalty, etc...

The ordinary and extraordinary maintenance must occur following the instructions contained in this manual. For all cases not included and for every type of assistance contact McConnel Ltd. by email or fax, even in the case of agreement taken telephonically.

McConnel Limited assumes no responsibility for eventual delays or lack of interventions.

McConnel Limited does not retain itself responsible for eventual damage or malfunctioning due to technical interventions carried out on the machine by non-authorized personnel.

1.6 - RESPONSABILITY

The McConnel Limited retains itself exonerated from every responsibility and obligation for any accident to persons or things that can occur caused by:

- Lacking observance of the instructions contained in this manual regarding the driving, the use and the maintenance of the machine;
- Violent actions or erroneous manoeuvres in the use and in the maintenance of the machine;
- Modifications made to the machine without prior written authorization from McConnel Limited;
- Occurrences however foreign to the normal and correct use of the machine.

In any case, whenever the user blames the accident to a defect of the machine, they must demonstrate that the damage occurred was a principal and direct consequence of such "defect".

ATTENTION :



For the repairs of maintenance or repairs carried out always use exclusive pieces of spare original parts.

The McConnel Limited declines any responsibility for damage for nonconformity of the above.

The machine is guaranteed according to the contract stipulated in the sale.

The guarantee nevertheless expires whenever the norms and instructions of use.

- McCONNEL ROBOPOWER -

1.7 - PERMITTED USED

The RoboPOWER is a machine constructed to be used by professional personnel, principally for work in cutting materials that grow on the ground such as: grass, sticks, bushes and hedges with a maximum diameter of 3 cm. The appropriate utilization foresees not working with the cutting cuttinghead lifted from the ground. Every other utilization is not appropriate and the manufacturer declines any responsibility for eventual damage to persons, things or the machine that can derive from it. The machine is suitable for machining and chopping up to a speed of 4-5 km/h depending on the soil conditions in which it works and the nature of material (i.e. length, whether it is wet or dry, density, etc..) and on a slope to maximum 45°. This machine is usually used during the day; if required for use at night or in conditions of reduced visibility, the machine should be used with an auxiliary lighting system. Operate in daylight or good artificial light that gives visibility of at least 100 metres

1.8 - MISUSE OR NOT PERMITTED

ATTENTION :



In this paragraph are indicated some of the improper or not consented uses; being impossible to foresee all the possible improper uses, if particular occasions for the use of the machine present themselves, before carrying out the work, contact McConnel Limited.

WARNING:

The instructions regarding safety, use and maintenance are supplied in this manual, it is vital that the owner, the operator and service engineers read this manual fully before operating or maintaining the machine.

It is recommended that all users practice operating the machine in a safe open location so that they are fully familiar with controls, functions, and all aspects of machine operation before they attempt to use the machine in a working environment.

Categorically avoid the following uses:

- Use of the machine by minors, inexperienced persons, and persons not licensed.
- Use of the machine for the lifting of persons or things.
- Use of the mower as pile driver.
- Use of the machine for towing purposes.
- Use of the machine for cutting of wood materials and hedges with a diameter in excess of 3cm.
- It should not be used on surfaces contaminated by glass, loose stones, pieces of iron or other foreign objects that could be ejected by the blades or cause damage the mower
- Operating the machine and accessories near or on materials physical and chemical that have characteristics that are classified as hazardous (eg. flammable materials, toxic explosive, etc.).
- Overloading the machine beyond the limits allowed;
- Increase the length of the machines arms without the authorization of the manufacturer;
- It is forbidden to drive or manoeuvre the machine on public roads.

- McCONNEL ROBOPOWER -

DANGER:



Use of the machine in some the instances mentioned above risk tipping or structural failure of the machine that can result in a risk of injury or death to the operator.

1.9 - RUNNING AND TESTING OF THE MACHINE

Every machine is scrupulously checked and tested before delivery. A new machine must however be used with caution for the first 50 hours to provided a 'running in' period for various components.

If the machine is placed under to an excessive workload during the initial phase of functioning, its potential performance will be prematurely compromised and its functionality reduced in a short period of time.

In the running in period pay great attention to the following points:

- After starting, allow the engine to run at low revs for 5-6 minutes.
- Avoid making the machine work to its maximum limit for the first 100 hours of work and avoid any sudden acceleration or deceleration.

After the first 100 hours of use the following preventative maintenance must be carried out:

- Engine oil replacement
- Engine oil filter replacement
- Fuel filters replacement
- Gearbox oil replacement.

ATTENTION :



During the replacement of oil filters, inspect their internal parts to check for the presence of deposits; if deposits are present verify the possible cause before you attempt to restart or use the machine.

- McCONNEL ROBOPOWER -

2 - DESCRIPTION OF THE MACHINE

2.1 - DESCRIPTION OF THE MACHINE

Remote-controlled mower, specific for mowing grass, shrubs, maintenance the green roadsides and embankments etc. ..

Equipped with quick release hydraulic connection allowing the quick replacement of various types of equipment to suit operational needs.

Equipment permitted:

- mower
- snow blower
- PTO driven mulching heads
- hydraulic sweeper
- agricultural equipment (Cat. II)



McConnel declines any responsibility for damage of any nature caused by incorrect use and/or use of any equipment not stated above.

2.2 - NORMS FOLLOWED

The machine has been designed and constructed in the respect of the directive CE in merit for the safety and to the approximation of the legislations of the states member; in the case specific of the Machinery Directive 2006/42/CE applicable to it.

In the design have been furthermore taken in consideration the following norms:

- UNI EN ISO 12100:2010 "safety of the machinery"
- EN 60204 "safety of the machinery" (equipment electric)

as well as the technical specifications

- ISO 11684:1995
- UNI EN ISO 3767-2 : 1998



DECLARATION OF CONFORMITY

Conforming to EU Machinery Directive 2006/42/EC

We,

McCONNEL LIMITED, Temeside Works, Ludlow, Shropshire SY8 1JL, UK

Hereby declare that:

The Product; *Radio Controlled Tracked Mower*

Product Code; *RMOW*

Serial No. & Date Type

Manufactured in; *Italy*

Complies with the required provisions of the Machinery Directive 2006/42/EC
The machinery directive is supported by the following harmonized standards;

- BS EN ISO 12100 (2010) Safety of machinery – General principles for design – Risk assessment and risk reduction.
- BS EN 349 (1993) + A1 (2008) Safety of machinery - Minimum distances to avoid the entrapment with human body parts.
- BS EN ISO 14120 (2015) Safety of machinery - Guards general requirements for the design and construction of fixed and movable guards.
- BS EN 4413 (2010) Hydraulic fluid power. Safety requirements for systems and their components.

McCONNEL LIMITED operates an ISO 9001:2008 quality management system, certificate number: FM25970.

This system is continually assessed by the;

British Standards Institution (BSI), Beech House, Milton Keynes, MK14 6ES, UK
BSI is accredited by UK Accreditation Service, accreditation number: UKAS 003.
The EC declaration only applies if the machine stated above is used in accordance with the operating instructions.

Signed *Responsible Person*
CHRISTIAN DAVIES on behalf of McCONNEL LIMITED

Status: *General Manager*

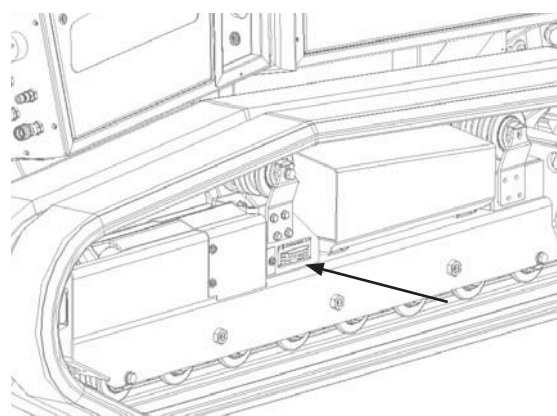
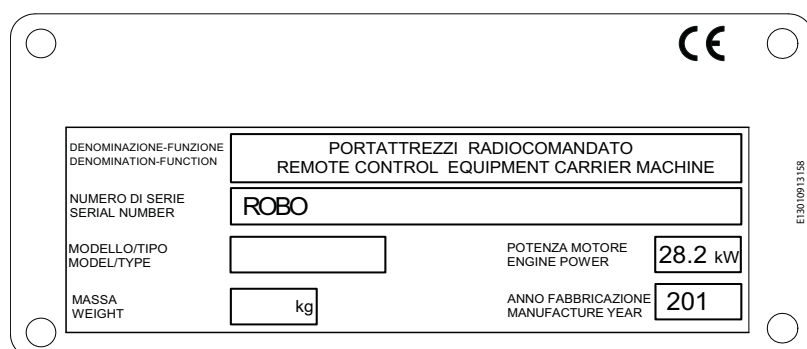
Date: *January 2018*

- McCONNEL ROBOPOWER -

2.3 - IDENTIFICATION OF THE MACHINE

The identification plate is located on the left side of the machine in the central area of the frame.

ATTENTION: Note machine S/No and use hours before contacting the McConnel Service Dept.



NOISE LEVEL

LpA = the value indicates the maximum sound level perceived by the operator at 1 meter away from the machine.

LpA
99

LwA = the value indicates the sound level outside of the machine and refers to the perceived noise by those who are close to the work area.

LwA
105

Standards ISO 3744:2010, ISO 11201:2010

ATTENTION :



Always wear personal protective equipment when operating the machine.



3 – SAFETY SECTION

3.1 – GENERAL SAFETY INSTRUCTIONS

ATTENTION :



On the machine are decals that have the purpose of rendering the use safer. Therefore it is very important replace them if not are/have more legible.

The operator not must be occasional, but must have matured a certain experience with this type of machine.

Check monthly the integrity and the functionality of the parts wearing out deriving from use: (hubs, valves, piping etc..). In case of necessity carry out the substitution with original materials.

Do not tamper with the hydraulic plant for any motive and do not remove the seal of the valve, the penalty is the expiration of every form of guarantee. For the registrations of the valves contact to mechanic authorized.

The excessive heating of the oil causes damage to the seals of the hydraulic circuit and a deterioration of the fluid itself. The heating is caused from lamination of the oil through the valve of maximum pressure.

It is necessary to check the switch emergency stop on the machine and on the remote control.

CAUTION: If the emergency switch or the stop is damaged the machine must not be operated or the operation must be immediately stopped.

The user of the machine is responsible for all damage caused to property or third parties by operation of the same.

- McCONNEL ROBOPOWER -

3.1.1 – KNOW THE MACHINE

The machine must be used exclusively by qualified personnel, who are obliged to know the dispositions and the function of all the commands, the instruments, the indicators, the lamp lights and the various sign plates.

RIGHT-HAND and LEFT-HAND sides are determined by facing in the direction the machine will travel when going forward.

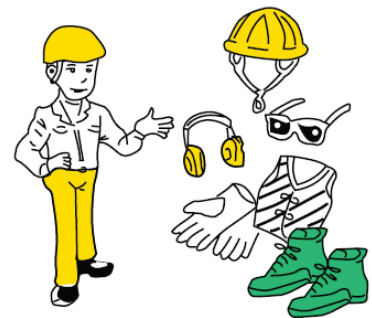
3.1.2 – WEAR PROTECTIVE CLOTHING

Wear close fitting clothing and safety equipment appropriate for the job.

While operating this machine always wear substantial footwear and long trousers. Do not operate the equipment when barefoot or wearing open sandals.

Always wear safety goggles or safety glasses with side shields when operating machine.

Wear a suitable protective device such as earplugs. Loud noise can cause impairment or loss of hearing.



3.1.3 – WARNINGS FOR THE MAINTENANCE



Apply a label “OUT OF ORDER” on the unit. Take off the key from the dashboard before starting the maintenance.

- McCONNEL ROBOPOWER -

3.1.4 – OPERATING SAFELY

- Inspect the machine before you operate and ensure hardware is tight. Repair or replace damaged, badly worn or missing parts. Ensure guards and shields are in good condition and fastened in place. Make any necessary adjustments before you operate.
- Never operate machine in a closed area where dangerous carbon monoxide fumes can collect.
- Do not operate the machine without covers, discharge guard or other safety devices in place and in fully working condition. Never operate with the front hood raised, removed or altered.
- After cleaning or repair the guards or shields devices must be re-fitted immediately.
- Always keep the machine and its accessories clean and in good working condition.
- It is strictly prohibited to modify the machine without the permission of the manufacturer. Changes to the machine are dangerous and could cause risk of injury. If these instructions are not observed, the manufacturer assumes no responsibility for the machine.
- Refuel only when machine is switched off, if possible before starting to operate whilst the fuel tank is cold. If at work you should not refuel by pouring fuel into a hot tank or if the engine is still warm - allow the machine sufficient time to cool down.
WARNING: Risk of explosion and fire hazard!
- During normal daily maintenance never wash on or near electrical components with water at high pressure (pressure washer) especially components such as:
 - **receiver and remote control**
 - **fuses and relays box**

Apply a cover or protection to these components by appropriate means before washing.

3.2 – GENERAL PRECAUTIONS

- Before carrying out any operation or manoeuvre with the machine it is obligatory to read and follow the indications contained on the manual of use and maintenance. During work it is too late. Improper utilization or an erroneous manoeuvre could cause serious damage to persons or things.
- Both operator and maintenance staff must be familiar with the machine especially for what concerns the dangers arising from misuse or improper repair.
- Before starting out all checks on the machine and equipment covering: operation, accident prevention regulations and protections ..
- Even during the appropriate utilization of the machine, stones or other things can be hurled distant. Therefore no one must find themselves in the range of danger (100 meter). Pay great attention during work near roads or buildings.
- Never carry passengers. Keep riders off
- Disengage the flails when not mowing. Shut off engine and wait for all parts to come to a complete stop before cleaning the machine.
- Never leave a running machine unattended. Always turn off flails, stop engine and remove the key.
- Working on a flat and compact, avoiding banks or slopes with steep slopes (greater than 50 °)
- Parking safely:
 - 1 - Stop machine on a level surface, not on a slope.
 - 2 - Disengage mower or any other attachments.
 - 3 - Lower attachments to the ground.
 - 4 - Stop the engine and remove the key.
- Replace immediately every warning of safety or diagram lost or deteriorated.
- Never devalue or ignore the norms of safety.
- Holding the remote control outside the scope of strangers and in particular children.
- Do not operate the machine under influence of alcohol or drugs.
- Operate machine only in daylight or good artificial light.

—3.2.1 - SAFETY WARNINGS

The machine has been designed and constructed in base of the current technical rules in act such as mowing of grass, hedges, maintenance of the green areas of roadsides, slopes, canals, drainage of water etc.... Observance of the laws, dispositions, prescriptions, ordinances and directives in act for such machines.

The materials used and the parts of equipment, as well as the procedures of production, quality guarantee and checks to satisfy the maximum exigencies of safety and reliability.

Using it for the aims specified in this manual of use, manoeuvring it with the due diligence and carrying out accurate maintenance and revisions of up to date standards, can mean high performance, continuous functionality and duration of the machine.

—3.2.2 - SAFETY INSTRUCTIONS

The manufacturer will not answer for accidents, during the use of the machine, due to the non-observance by the user, of laws, dispositions, prescriptions, and rules in act for machines used for the mowing of grass, hedges, maintenance of the green areas of roadsides, slopes, canals, drainage of water etc....

The machine is designed for the use in normal weather conditions at temperatures from 0°C at + 40°C and therefore must operate only in such environmental conditions.

As regards the activity of mowing on public roads, please refer to the rules of responsible the work being a mobile site.

—3.2.3 - SAFETY INSTRUCTIONS - STANDARD USE

The manufacturer will not answer in case of anomalies of functioning and damage if the machine:

- is used for aims diverse from those for that is destined,
- is not manoeuvred, started and maintained according to the norms of service specified in the following manual,
- is not periodically and constantly placed under maintenance such as prescribed or are used pieces of spare parts which are not original,
- is modified or the equipment is substituted without written authorization of the manufacturer, especially when the efficacy of the plant of safety has been diminished or eliminated on purpose,
- is used out of the ambit of temperature allowed.

3.2.4 - WORK SAFETY INSTRUCTION

- Clear the area of objects such as rocks, wire and toys which could be thrown by the flails.
- During the use of the machine obstacles should be avoided. The machine must not be used near steep slopes, landslides on land or in places where it may fall over.
- Watch for holes, ruts, bumps, rocks or others hidden objects. Uneven terrain could overturn the machine. Tall grass can hide obstacles.
- Pay great attention during the work, not to enter into contact with resistant objects, such as drains, wells, slopes, guardrails, railway lines etc. This could cause the breakage of the tool that would be thrown at very high speed.
- In the presence of foreign bodies on the rotor, disengage the flails immediately. In order to avoid damage or dangerous situations, turn off the engine and remove the key. After wearing work gloves, restore the rotor with the help of pliers or shears.
- if you hit an object or if abnormal vibration occurs, stop the machine and inspect it. Make repairs before you operate.
- When operate the machine, pay attention to electrical cables, particularly if you have to go underneath them, because the radio signal may be lost. In these cases, the machine turns off the engine immediately and stops.
- When the operator uses the machine, choose the distance between the operator and the mower so that the machine could be always in the visual field and that the operator can recognize all the eventual dangerous situations and to react in the correct way. Don't use the radio-control till the limit of its capacity (max. 50 m).

DANGER:



Rotating flails can cut off arms and legs, and eject objects long distances at high speed. Failure to observe safety instructions could result in serious injury or death.

3.2.5 - HYDRUALIC SYSTEM SAFETY INSTRUCTIONS

- Stop immediately in case of leakage.
- Periodically check the hoses, if there are signs of excessive wear or damage, replace immediately.
- Before working on the system put the mower on the floor (or any other mounted equipment) and turn off the engine.
- Oil and grease used should be disposed of in accordance with the emission standards.

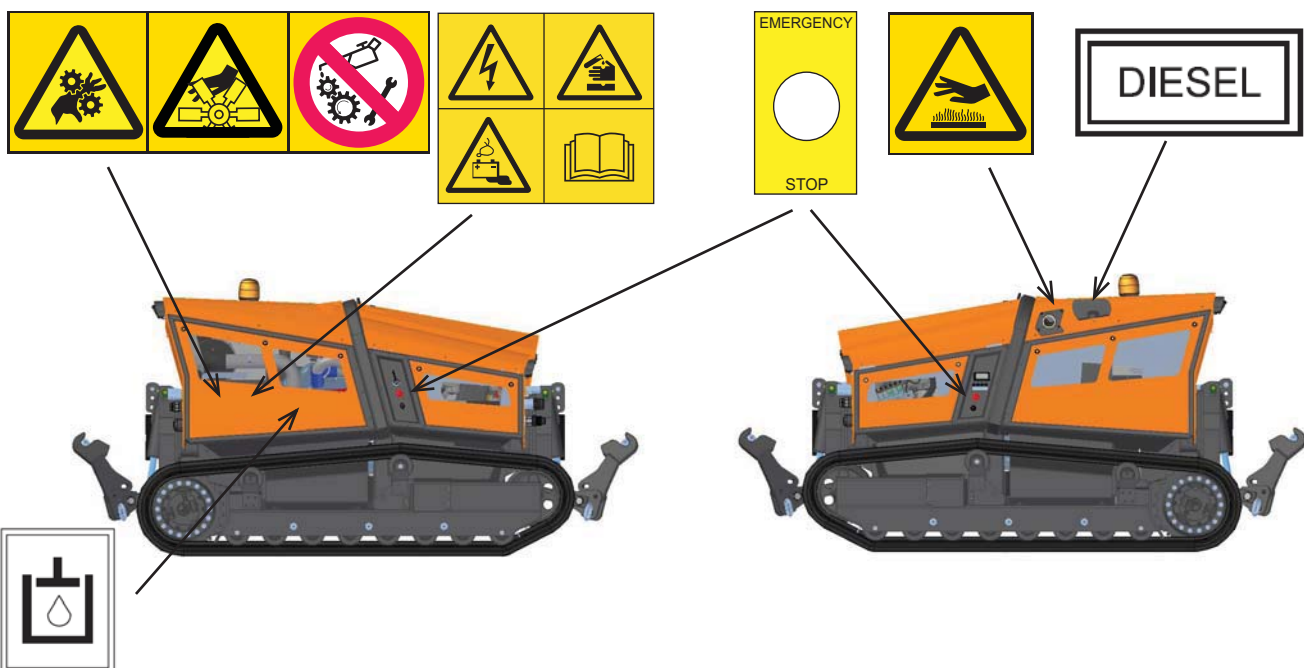
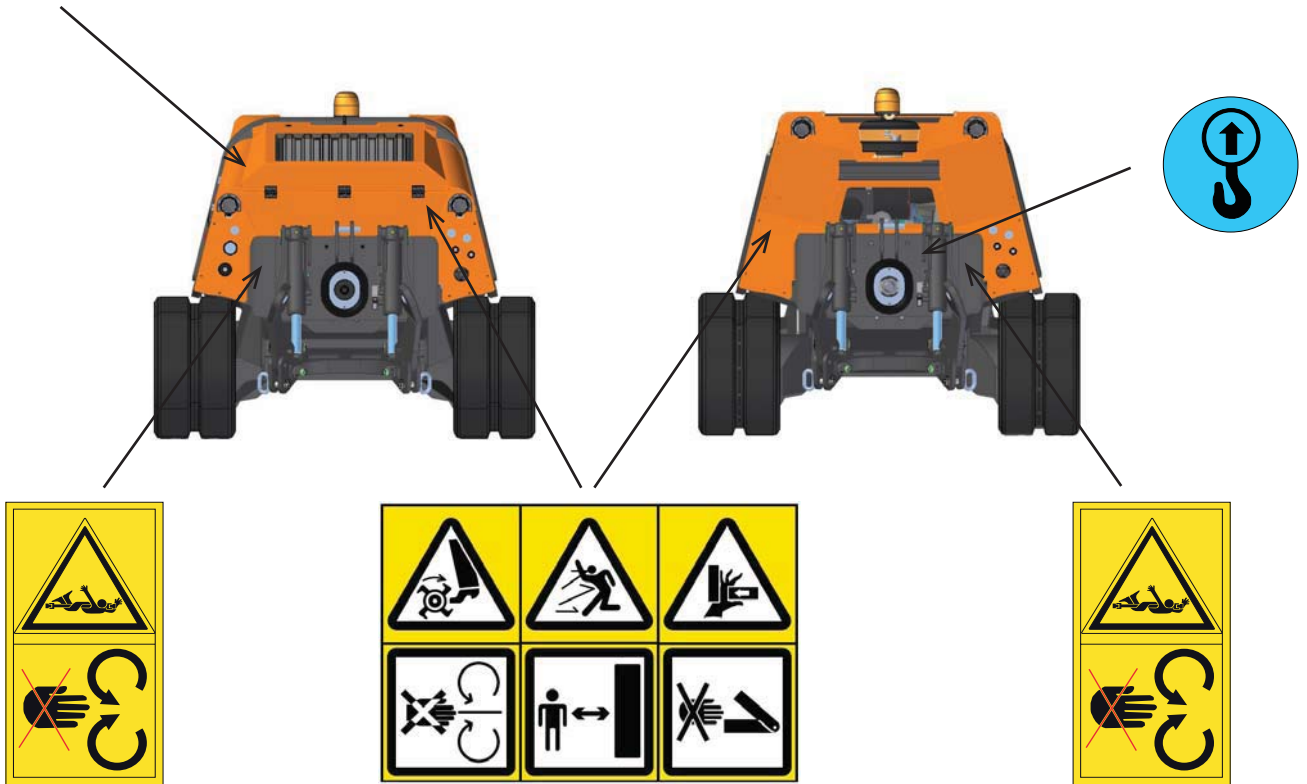
WARNING:

Never look for the loss of oil with the bare hands, but with the help of appropriate gloves. Wait until the oil has cooled down before intervening.

Drain the oil pressure before disconnecting hoses or during plant maintenance. Oil under forte pressure could penetrate the skin causing grave infections. In this case immediately consult a doctor. These operations must be executed by authorized personnel.

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3.2.6 - DECAL DESCRIPTION



- McCONNEL ROBOPOWER -

3.2.7 - DECAL DESCRIPTION

WARNING :

Make sure the good conditions of safety decals. If the decals are damaged must be replaced with original requested from the manufacturer and placed in the position indicated in the manual. Make sure that the safety decals are readable. Clean them using a damp cloth with soap and water.

a

MOWER BLADE CONTACT HAZARDS. Do not enter with hands or feet in their range of action. THROWN OBJECTS HAZARD: indicates the possibility of exit and launch of stones or other bodies and obliges one to distance oneself from the range of action of the machine. Sign of danger of crushing or shearing: do not insert limbs in the mobile parts of the machine where this diagram is placed.



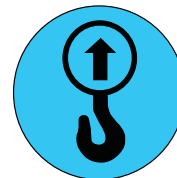
b

WARNING SPINNING DRIVELINE. The contact with rotating components can result in serious accidents. Avoid work clothes with straps, flaps or parts that can build engagement.



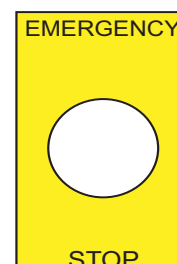
c

Lift lugs



d

Emergency stop button



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_____ e _____

Hyd. oil tank



_____ f _____

Fuel tank



_____ g _____

Signs of danger hot parts and organs in movement: indicates the presence of hot parts, such as exhaust pipes or hoods, and mechanical organs in movement.
Warnings of lubrication: indicates that is absolutely prohibited to lubricate the organs in movement and obliges switching off the engine.



_____ h _____

Avoid skin contact with exhaust manifolds and mufflers. Keep flammable materials clear of the engine.
External dry exhaust parts become very hot during operation.



_____ i _____

Hazards related to the battery.
Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.
Never check battery charge by placing a metal object across the posts. Use a volt-meter or hydrometer.
Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



_____ i _____

Wear close fitting clothing and safety equipment appropriate to the job.



3.3 - GENERAL SAFETY RULES

3.3.1 - CARE AND MAINTENANCE

The cause of many damages and accidents is due to errors of maintenance, such as:

- Lack of oil, grease and antifreeze,
- Lack of cleaning,
- Emergency Stop, functioning stop not checked daily,
- Worm in the hydraulic system (damage to the hoses, tightening loose, ecc.).
- Deficiency in the piping (damage of the floating pipes, slow starting, etc.).
- Carry out accurately the work of maintenance even for ones own safety.
- Never delay work of repairs.
- Charge the work of repairs only to personnel who are specialized or authorized.

Observe always the following norms of safety, even when one has full mastery of all the elements of manoeuvre:

- Before initiating work check that all the movements, the stop and the measures of protection function perfectly.
- Keep hands, feet, clothing, jewelry and long hair away from any moving parts, to prevent them from getting caught.
- Never leave a running machine unattended. Always turn off the blades, stop engine and remove the key.
- Slope are major factor related to loss of control and trip-over accidents, which can result in severe injury or death. Operation on all slopes requires extra caution.
Mow up and down slopes, not across.
- Watch for traffic when operating near or crossing roadways. Stop flails before crossing roads or sidewalks.
- **ATTENTION:** If you hit and object or abnormal vibration occurs, stop the machine and inspect it. Make repairs before you operate.
- If you strike a foreign object, stop and inspect the machine. Repair, if necessary, before restarting.
- When operate, especially in windy conditions, must carefully select your location so that it is not exposed to exhaust gases, dust or grass clippings.
- Not operating the machine if it is hide (hill, building, tall grass etc...).

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3.3.2 - SAFETY DURING THE REFUELLING AND TOPPING UP

Fuel, oil and some types of antifreeze are easily inflammable.

- Keep naked flames at a distance from inflammable fluids.
- Switch off the engine and do not smoke during refuelling.
- Fill up only with the engine stopped and in an area well ventilated.
- Do not permit the approach of unauthorized persons.
- During the filling up keep the pistol of filling or the tank steady and keep it always in contact with the fuel filler until to the end of the filling up to avoid sparks due to static electricity.
- At filling up close the cap of safety with care.
- Do not completely fill the tank, but allow space for the expansion of the fuel.
- Immediately dry the eventual fuel and remove.



3.3.3 - PREVENT FIRES

Prepare for Emergencies.

Be prepared if there's a fire.

Keep on hand a fire extinguisher and a first aid kit.

Keep near the telephone numbers of emergency: doctors, ambulance service, hospital, and fire.

WARNING :

The equipment of the fire extinguisher and first aid kit are the responsibility of the owner of the machine.

3.4 - PRACTICE SAFE MAINTENANCE

3.4.1 - WARNING SIGNS

Before initiating any operation of maintenance, position the machine on solid and level ground, place the equipment on the ground and arrest the engine. If other persons start the engine and work the levers of command while following operations of maintenance, one can incur dangers of serious damage or death. To avoid these dangers, before carrying out the maintenance, hang DO NOT SWITCH ON warning sign on to the steering wheel, the levers of the commands and the ignition key; if necessary, apply DO NOT SWITCH ON warning signs even around the machine and in particular on the raising handle.



3.4.2 - EQUIPMENTS

Only use equipments approved by the manufacturer of the machine, for the purpose of avoiding personal lesions, throw away tools that are worn out or damaged, of low quality or are improvised.

ATTENTION :



Equipments not approved or that have been modified without consent make expire the responsibility of the manufacturer for damage caused.

3.4.3 - PERSONNEL

The ordinary maintenance prescribed in this manual must be carried out only by adult, authorized and trained personnel

For the maintenance or revision of components not specified in this manual contact ENERGREN.

—3.4.4 - WORK UNDER THE MACHINE —

Before carrying out maintenance or repairs under the machine, lower the equipment of work to the ground or until for a lower position. Never work under the machine if it is not sustained in a safe and solid manner.

DANGER:



Do not ever move on, or under the machine when it is raised without being sufficiently supported by compliance with all safety regulations.

Be sure to use ropes, chains and lifting parts suitable for lifting the load and specific things.

—3.4.5 - KEEP CLEAN THE MACHINE —

- Machinefires and structure fires can occur if a machine is stored before allowing it to cool, if debris is not removed from critical areas of the machine, or if machine is stored near combustible materials.
- Remove grass and debris completely from engine compartment and muffler area and from on the top of frame, before and after operating machine, especially after mowing or mulching in dry conditions.
- Is not allowed to wash with water at high pressure (pressure washer) electrical components.

—3.4.6 - PERIODICAL REPLACING OF MAIN PARTS FOR SAFETY —

Check periodically the following components important for the prevention of the fires:

system of alimentation:

- Pipes for sending and return of the fuel;
- Hydraulic system: principal pipes of sending for the hydraulic pumps;
- Hydraulic system: pipes for the use from distributor to hydraulic cylinders.

Even if they must seem in good state, these components are substituted periodically with new pieces.

With the weather, these components tend in fact to deteriorate. In the case that one of these parts is defective, substitute it or repair it even if it is still not past its deadline.

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4 - TECHNICAL DATA

4.1 - TECHNICAL CHARACTERISTICS

TOTAL WEIGHT

Total weight (without equipment) Kg. 4590

ENGINE

Marca	DEUTZ	Model	TCD 2012 L4
N° cylinders.....	4	Displacement	4038 cc.
Power	103 Kw/138 Cv.	Torque max.	86 Nm@1800 rpm
Coolant	liquid	Air filter	Cartridge

ELECTRICAL LOOM

Voltage	12 VDC
Alternator	120 Amp.
Battery	18 Ah

HYD. SYSTEM

Trasmission:	N. 2 tandem piston pump in close circuit max flow 100 l/min @ 420 bar
PTO rear:	N. 1 piston pump in close circuit max flow 180 l/min @ 350 bar
Utility	Nr. 1 Gear pump, max flow 35 l/min @ 180 bar
Fan Drive	Nr. 1 Gear pump, max flow 35 l/min @ 180 bar

SPEED OF TRANSPORT

GEAR	FORWARD		BACKWARD	
	1 (Slow)	2 (Fast)	1 (Slow)	2 (Fast)
Km/h @ 3000 rpm	6	10	6	10

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TRACKS

MODEL	WEIGHT
RUBBER TRACK 400	270 Kg.

CAPACITIES

Fuel Tank Lt. 125

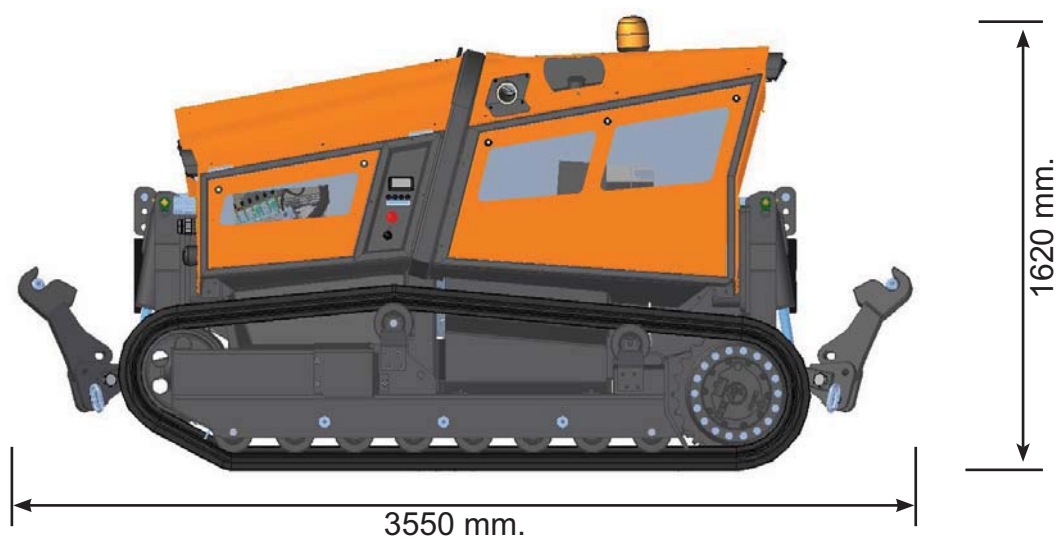
Hydr. oil tank Lt. 75

Engine oil..... Lt. 15.5

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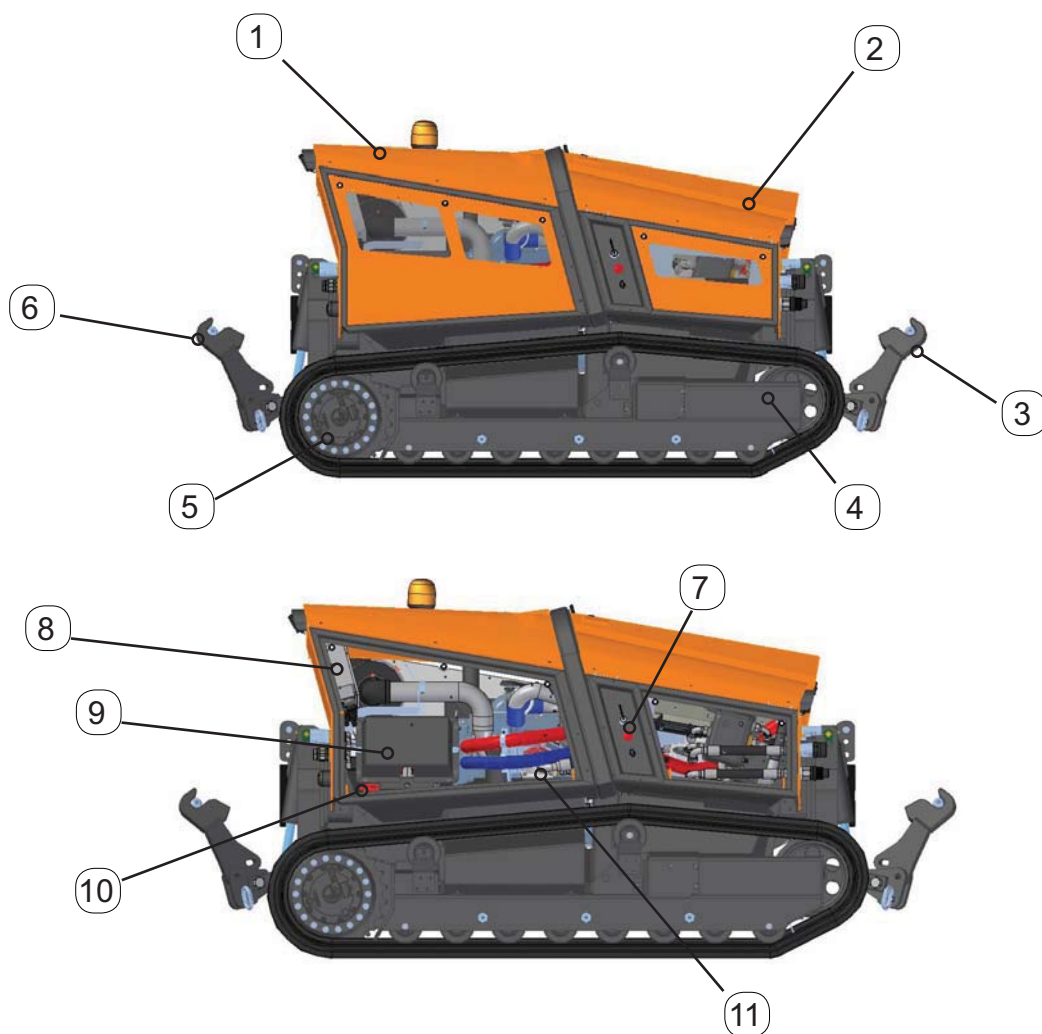
4.2 - DIMENSIONS

4.2.1 - UNIT



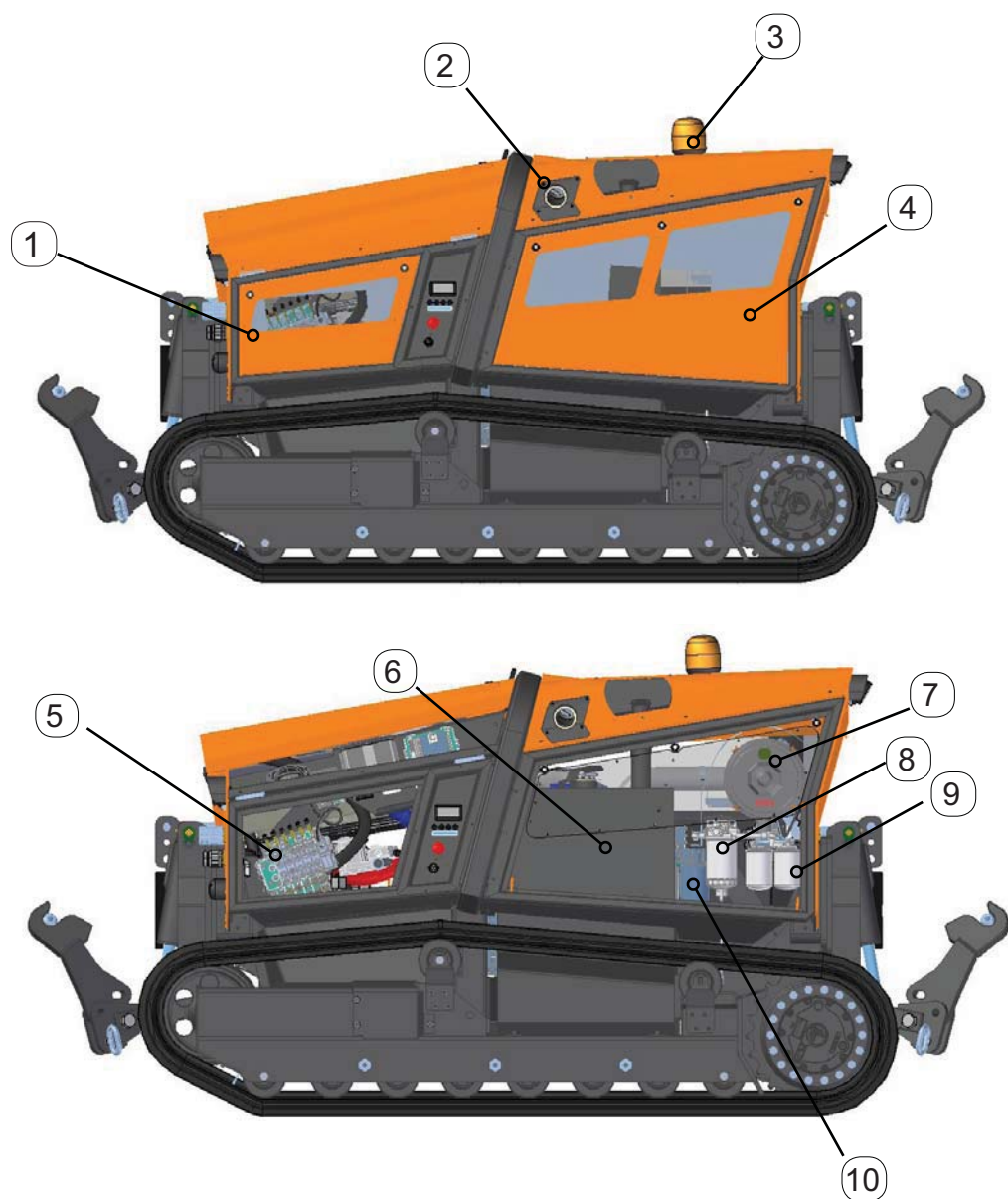
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4.3 - PARTS OF MACHINE



Right side view

1. Engine bonnet
2. Radiator bonnet
3. Front lift
4. RH track
5. Rear track gearmotor
6. Rear lift
7. Emergency stop button
8. Fuses box
9. Battery box
10. Manual battery switch
11. Hyd. oil tank



Left side view

1. Lh front hood
2. Silencer
3. Beacon
4. Lh rear hood
5. Hyd. valve
6. Diesel tank
7. Air filter
8. Fuel prefilter
9. Fuel filters
10. Beacon bracket

5 - TERMINOLOGY

5.1 - TERMS

OPERATOR

Personnel trained to manoeuvre the machine in conditions of work, movement and trained to carry out operations of normal checking and cleaning on the machine.

Must not have disabilities of any kind or problems of health.

SPECIALIZED OR MAINTENANCE PERSONNEL

Personnel trained to carry out operations of ordinary maintenance, mounting, disassembly and assembly of any components of the machine.

Must not have handicap of any kind or problems of health.

AUTHORIZED PERSONNEL

Personnel trained to carry out operations of maintenance extraordinary, mounting, disassembly and assembly of components particulars of the machine.

Must be authorized by the manufacturer in writing to intervene on the machine.

Must not have handicap of any kind or problems of health.

COLLABORATOR OF THE OPERATOR

Personnel trained to help the operator in any manoeuvre of the machine (manoeuvre in building site with visibility reduced, load and waste through means of transport, using pump action, etc...).

Must know the principal norms of safety of work.

REPAIR WORKSHOP

Authorized repair workshop with personnel trained to carry out operations of extraordinary maintenance, mounting, disassembly and assembly of components particular to the machine.

Must be authorized in writing to intervene on the machine by the manufacturer.

The operator is invited to refer to the norm UNI EN 12100-1, EN 12100-2 for the definition of the other terms utilized in this action.

- McCONNEL ROBOPOWER -

6 - OPERATING CONTROL

6.1 - CHECK UP

The operator must verify that the machine is supplied with:

- Manual of use and maintenance,
- Booklet of verification (if required),
- Insurance R.C. (if required).

In case of re-sale for “used machine” the customer/user must supply to the purchaser the manual of use and maintenance complete in all its parts, as well as the pamphlet the verification and the card of circulation (if required).

The machine is supplied of two copies of keys (starter, cabin, hoods, etc...). A copy must be delivered to the operator and one must be conserved in a safe place by the manager of the construction site (not inside of the machine!), to rescue the operator in case of eventual illness.

6.2 - CHECKS BEFORE EVERY WORKING DAY

6.2.1 - CHECK-UP OIL LEAKS

Carry out an external inspection of the machine (joints, hoses, hydraulic component, etc...) and check to see any oil leaks or other liquids.

WARNING:

Escaping fluid under pressure can penetrate the skin causing serious injury.

Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure.



Search for leaks with a piece of cardboard. Protect hands and body from high pressure fluids.

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—6.2.2 - OIL LEVEL CHECK UP

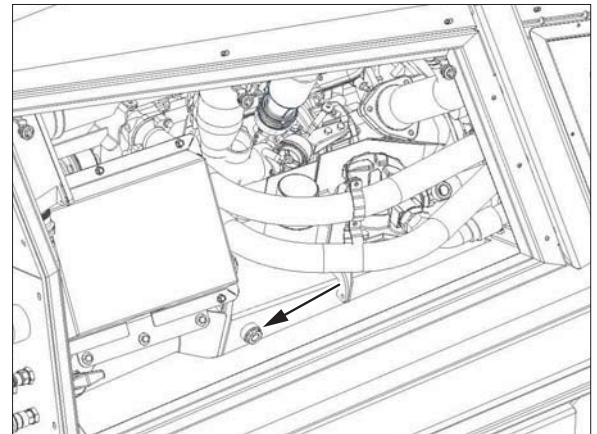
Check the engine oil level is within the limits acceptable.

IMPORTANT: Avoid damage! Failure to check the oil level regularly could lead to serious problems if oil level is out of the operating range:

- check oil level when the engine is cold and not running
- Keep oil level between the dipstick marks
- Shut off engine before adding oil.



Check the hyd. oil level is between the dipstick marks.



—6.2.3 - VERIFICATION OF CHROME PARTS

Carry out an inspection of the chrome parts of the machine (rods) and check that they are not marked or ruined.

—6.2.4 - VERIFICA DEI DISPOSITIVI DI SICUREZZA

Check that the safety devices installed on the machine work properly, in particular:

- emergency stop button on the machine
- STOP button on the remote control.

Also check the integrity of all safety guards installed on the equipment (see equipment manual attached).

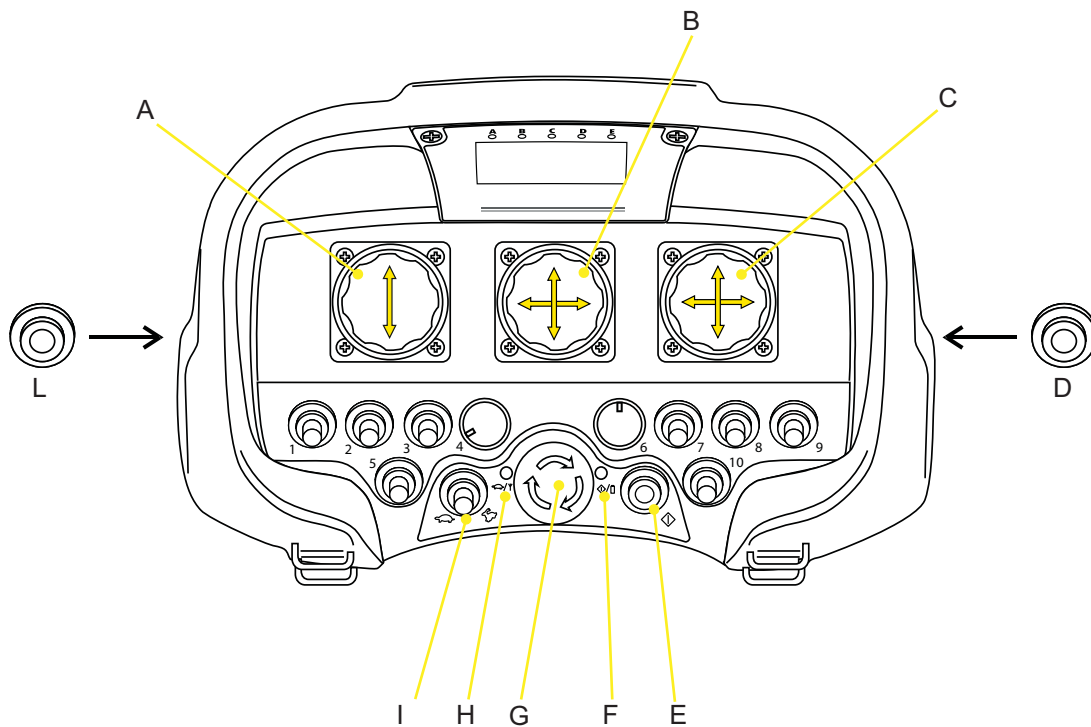
ATTENTION :



In the case there anomalies or breakages to one or more parts listed above are found; do not utilize the machine and contact specialized personnel and report the problem found.

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6.3 - ASSEMBLY

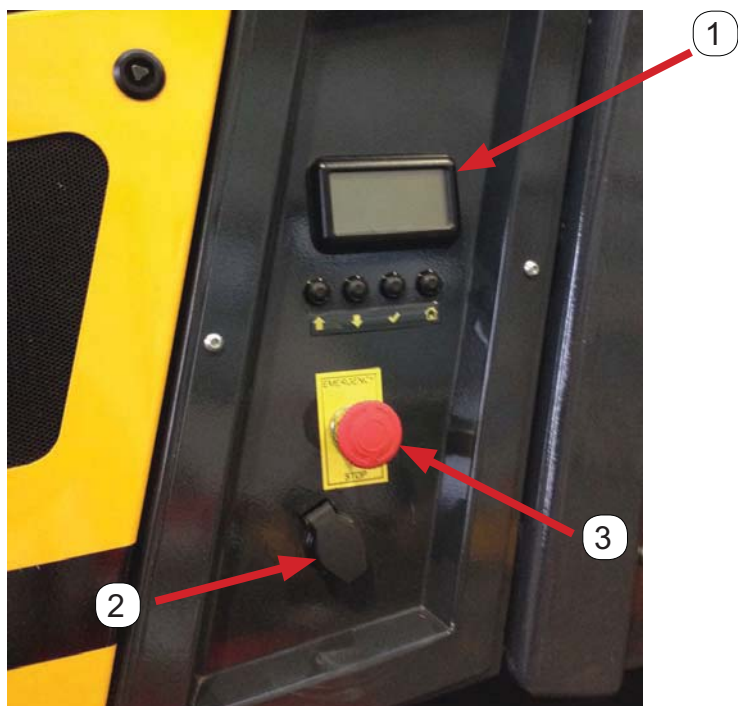


- | | | |
|----|-----------------------|-----------------------------------|
| A. | Left Joystick | Drive (Foward)/Drive (Reverse) |
| B. | Central Joystick | Aux quick connectors (front/rear) |
| C. | Right Joystick | Drive (Left)/Drive (Right) |
| D. | Lifts selector | |
| E. | Connection/Horn | |
| F. | Battery status LED | |
| G. | STOP button | |
| H. | Gear insered LED | |
| I. | Gear switch | |
| L. | Reversible fan switch | |
-
- | | |
|-----|-----------------------|
| 1. | Floating lifts swicth |
| 2. | Front PTO switch |
| 3. | Rotor revs (+) |
| 4. | Speed Bias |
| 5. | Engine Start/Stop |
| 6. | Steering Bias |
| 7. | Rear PTO switch |
| 8. | Direction swap |
| 9. | Optional |
| 10. | Engine revs |

CAUTION! Always turn ignition key OFF after stopping the engine; failure to observe this risks possible fuel pump damage due to electric pump overheating.

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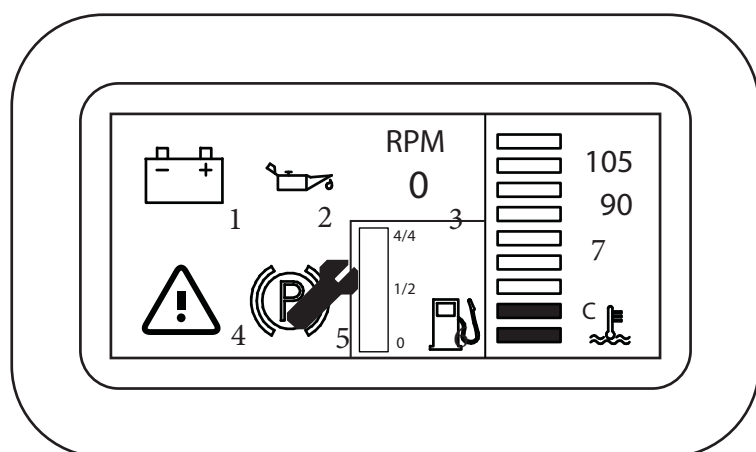
6.3.1 - DASH PANNEL



Dash Pannel

1. Display LCD
2. Ignition switch
3. Emergency stop switch

Display LCD - CANBUS



1. Alternator
2. Low pressure engine oil
3. Pre-heating (optional)
4. Engine stop
5. Service
6. Park brake
7. Temp. H₂O



- 8
- 9
- 10
- 11

8. Pg Up
9. Pg Down
10. Enter
11. Home page

- McCONNEL ROBOPOWER -

6.4 - OPERATING

ATTENTION :



Before starting the engine, study with attention the indications on safety described in this manual and check knowledge of the commands. From the moment of starting the engine, the operator is directly responsible for the damage that can derive from false manoeuvres and lacking observance of the laws in subject of safety and of circulation.

DANGER:



DO NOT use drugs or alcohol immediately before or during the use of the machine and the equipments. The use of drugs and alcohol or to be in physical or mental condition not optimal alters the concept of supervision and coordination and therefore affect the ability to use the equipment safely. Before using the machine or equip., an operator which used to using medication should consult a physician regarding any side effects of the drug that could hinder your ability to use the equipment safely. NEVER knowingly allow anyone to operate the machine when their attention or coordination is impaired. Serious injury or death to the operator or others could occur if the operator is under the influence of drugs or alcohol.

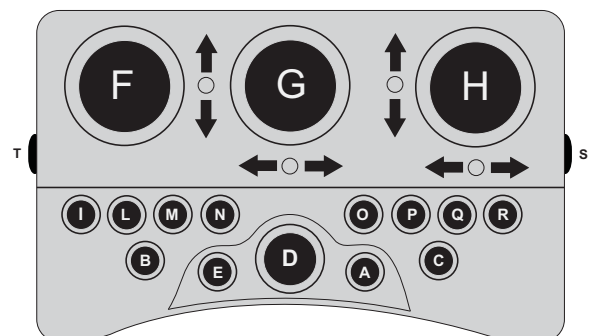
6.4.1 - STARTING THE ENGINE

- Observe all Safety Instructions.
- Do not run an engine in an enclosed area, even with doors or windows opened.
- Check the level of fuel and refuel if necessary;
- Switch on the ignition by turning the ignition key to the right. Wait a few seconds for the control of active functions, proceed with the ignition key or by using the remote control;

ATTENTION :

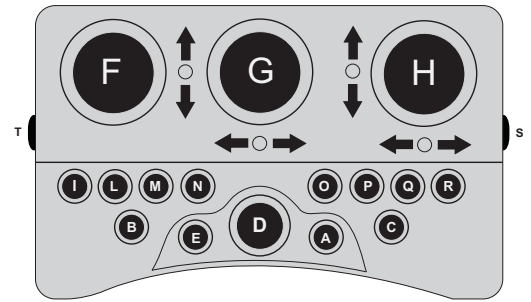
If the engine is started via key is no longer possible to make the connection with the remote control !

- When the ignition key is turned to the first position the machine will perform a sequence of system checks.



- McCONNEL ROBOPOWER -

- Turn on the control unit by rotating the Emergency Stop Switch clockwise – the button will ‘spring out’ to the ON position.
- Press and hold the button (A) down – the unit will search for the machine’s transmitter and lock onto the signal, the horn will sound to confirm that the units are linked.
- Release the horn button as soon as the confirmation sound is received.
- Press the button (B) to starting the engine.



ATTENTION :

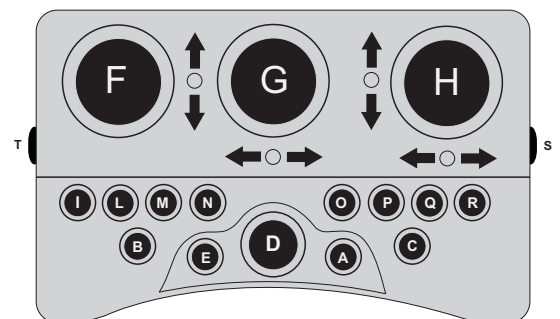


Avoid damage! Starter may be damaged if starter is operated for more than 30 seconds at a time. Wait two minutes before trying again if engine does not start.
Starter burned are not covered by warranty.

6.4.2 - GEAR SELECTOR

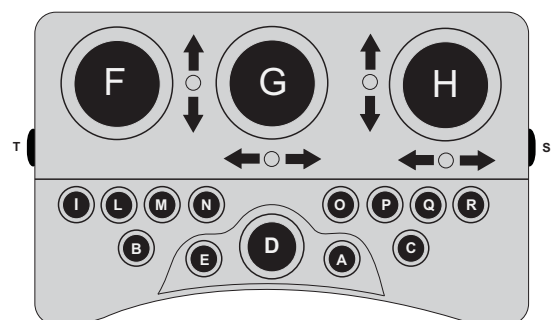
Moving the selector switch (E) to the right is part of the fast speed, moving to the left is part of the slow speed.

WARNING: Whenever you turn off the machine as you enter the slow speed.



6.4.3 - FORWARDS & BACKWARDS TRAVEL

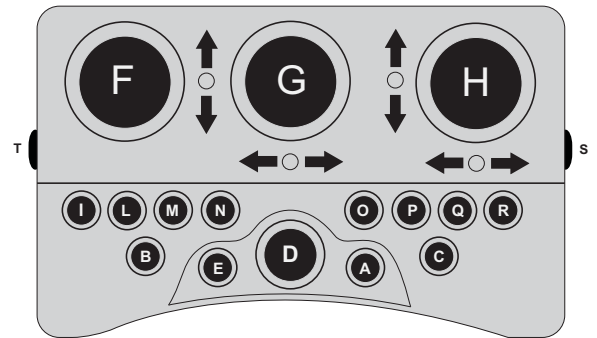
Operation of the machine’s forward and backwards movements are controlled by using the left-hand joystick (F) on the remote controls; push the lever forward to move the machine forward, pull the lever backwards to move the machine backwards. The joystick operates proportionally, therefore; the further the lever is moved the faster the machine travels. The maximum speed available will be determined by gear and potentiometer settings, switch ‘N’ and dial switch ‘E’.



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6.4.4 - BIAS POTENTIOMETER

The Speed Bias Control (Rotational Switch) 'N' determines the maximum travel speed capability of the machine, from 0 - 100%, when operating the travel joystick. It is in effect an adjustable speed governor. Adjustment is by rotating the switch to the required speed (%) position; the setting chosen will depend on numerous factors but should always be at a setting that allows the operator optimum control of the machine in work.

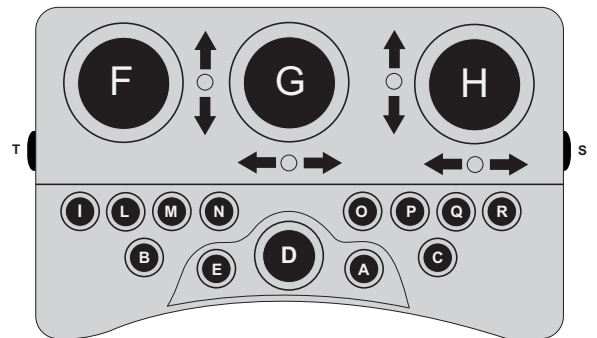


6.4.5 - STEERING DIRECTION CONTROL

The steering direction of the machine is controlled by sideways operation of the right-hand joystick (H); moving the lever to the right will steer the machine to the right and moving the lever to the left will steer the machine left.

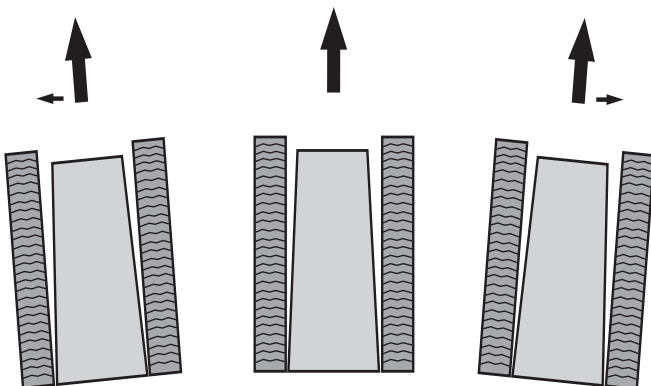
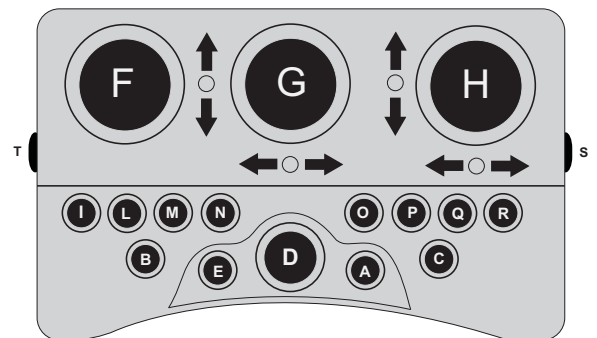
ATTENTION :

Perform this maneuver with the machine on a flat



6.4.6 - STEERING BIAS

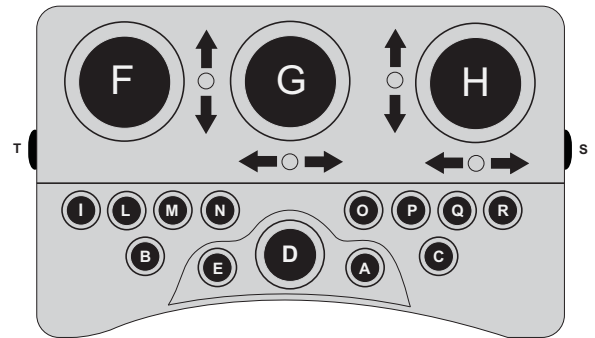
The steering bias feature allows a degree of 'Steer' to be pre-set for operating the machine across slopes, adjustment is made using the dial switch 'O'; rotate the dial either clockwise or counterclockwise for right or left bias respectively, the further it is rotated the greater the bias. Although steering will still need to be monitored and operated as normal it will be to a much lesser degree.



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6.4.7 - FORWARDS & BACKWARDS TRAVEL (DIRECTION SWAP MODE)

Direction Swap Mode is selected by activation of switch 'Q'; this swaps the machine's direction of travel on operation of joystick 'F'. The primary function of this feature is for ease of operation when the machine's particular work tool is 'rear mounted' type and requires the machine to be operated in reverse.



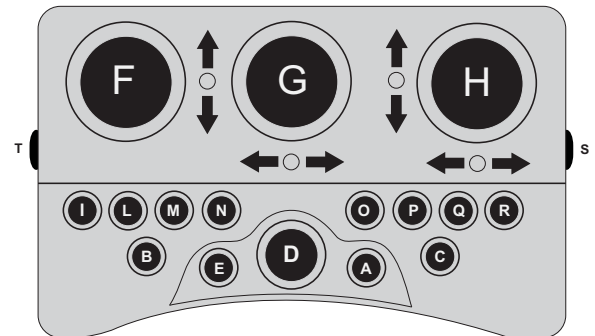
6.4.8 - FRONT LIFT

The front tool height is controlled by forward and backwards operation of the right-hand joystick (H); pushing the lever forwards will lower the tool and pulling the lever backwards will raise the tool.

ATTENZIONE :



Act only on the lift with the rotor head is stationary.



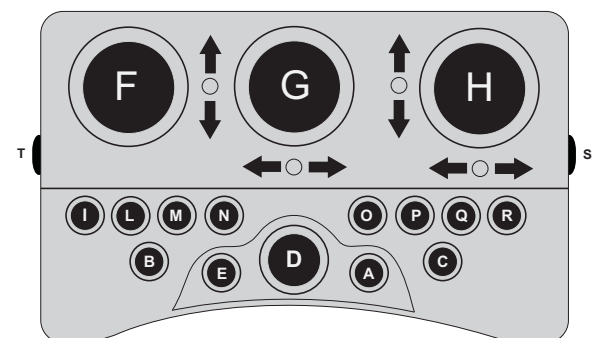
6.4.9 - FRONT PTO

The front PTO is controlled by the selectors (L) and (M). Follow the instructions below for the commissioning.

Switch (L) is for pre-selection of the rotor cutting direction; move the switch to the up position for uphill cutting or to the down position for downhill cutting

Once the rotor is running its speed can be increased or decreased as required by subsequent operations of switch (M)

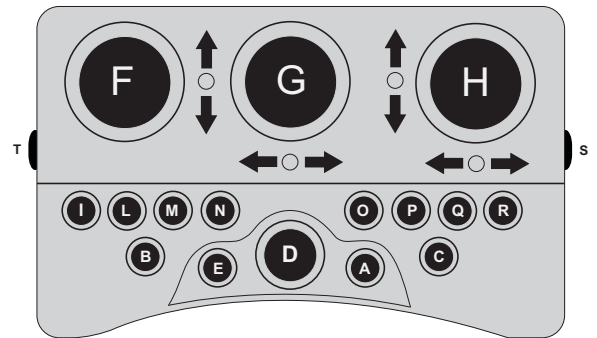
Engine revs can now be increased according to requirements, using switch (C)



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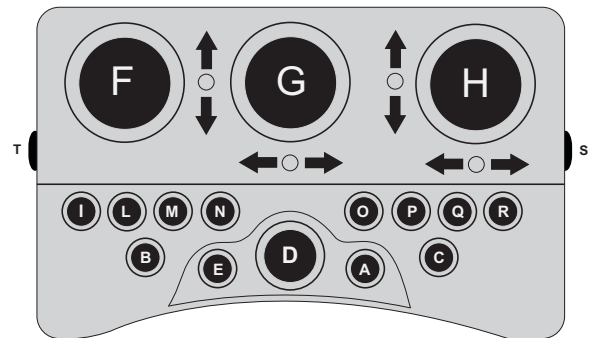
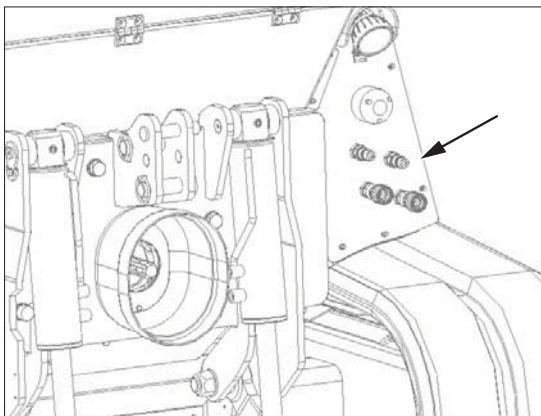
6.4.10 - PTO STOP

To stop the front PTO, first reduce the rotor speed to its minimum putting switch 'L' in '0' position, then reduce the engine revs using switch 'C'.



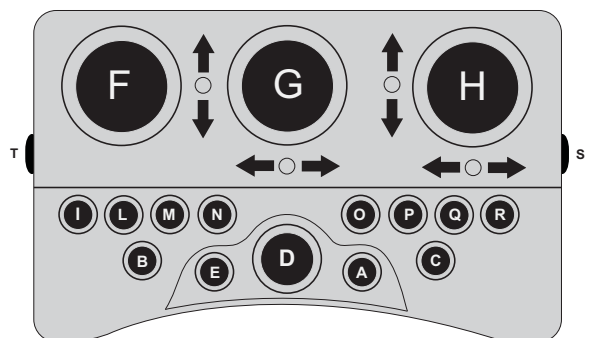
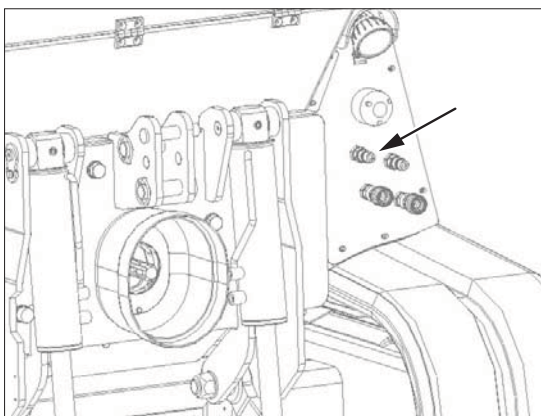
6.4.11 - UTILITY (QUICK CONNECTORS A-A1)

The machine is equipped with auxiliary hydraulic connectors. To activate move the joystick to the right or left (G).



6.4.12 - UTILITY (QUICK CONNECTORS B-B1)

The machine is equipped with auxiliary hydraulic connectors. To activate move the joystick up or down (G).

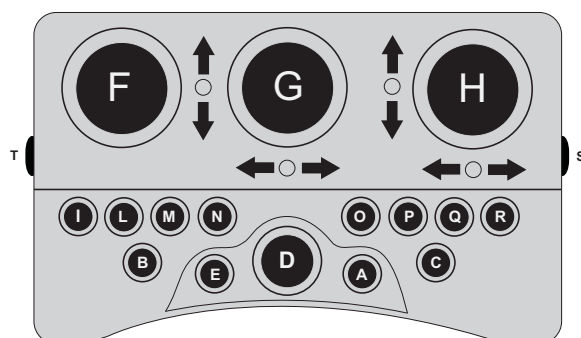


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6.4.13 - LIFT SELECTOR

Use the button (S) for select which of the two lifters to operate.

NOTE: Depending on the selected lift will be activated also the corresponding couplings.



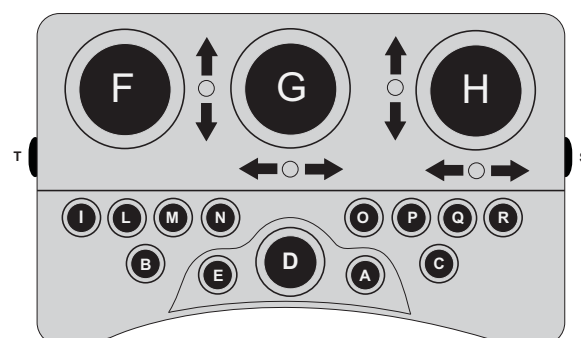
6.4.14 - REAR LIFT

The rear tool height is controlled by forward and backwards operation of the right-hand joystick (H); pushing the lever forwards will lower the tool and pulling the lever backwards will raise the tool.

ATTENZIONE :



Act only on the lift with the rotor head is stationary.

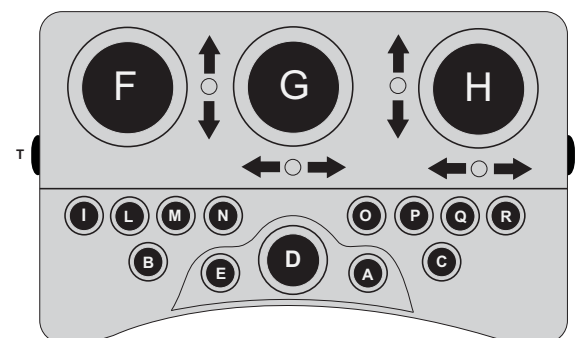


6.4.15 - REAR PTO

The rear PTO is controlled by the selector (P). Follow the instructions below for the commissioning.

Switch (P) is for pre-selection of the rotor cutting direction; move the switch to the up position for downhill cutting.

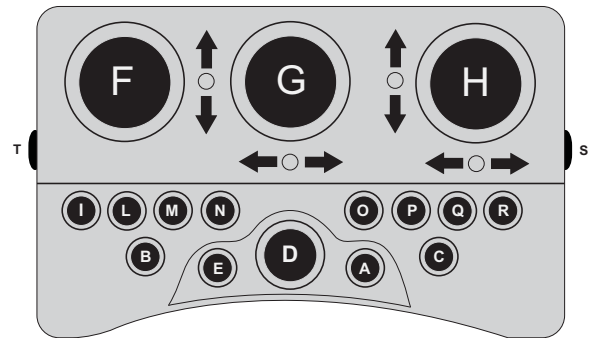
Once the rotor is running its speed can be increased or decreased as required by increasing the engine revs, using switch (C).



1800 rpm diesel = 1000 rpm PTO

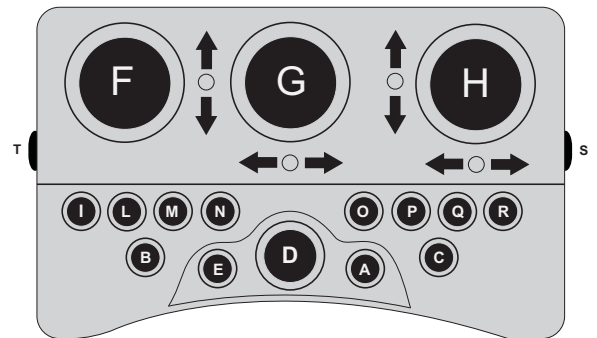
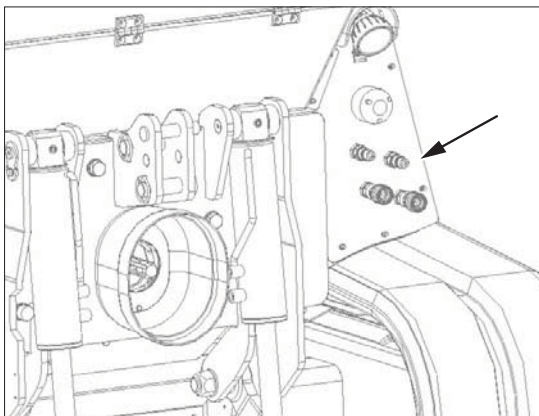
6.4.16 - PTO STOP

To stop the rear PTO, first reduce the rotor speed to its minimum putting switch 'P' in '0' position, then reduce the engine revs using switch 'C'.



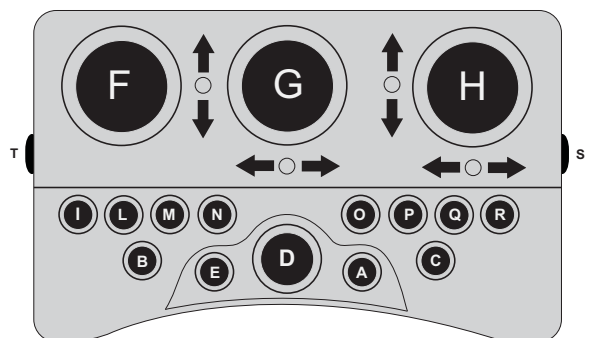
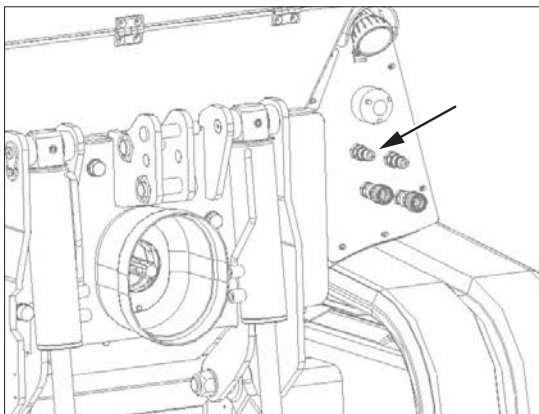
6.4.17 - UTILITY (QUICK CONNECTORS C-C1)

The machine is equipped with rear auxiliary hydraulic connectors. To activate move the joystick to the right or left (G).



6.4.18 - UTILITY (QUICK CONNECTORS D-D1)

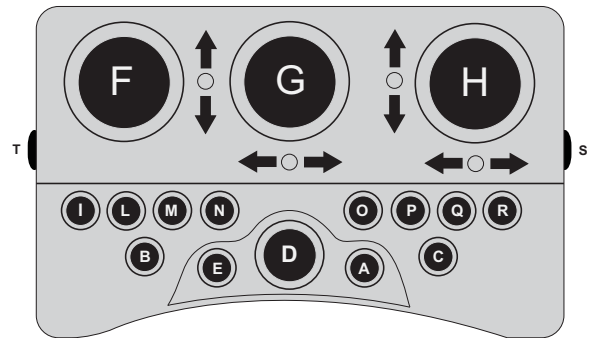
The machine is equipped with rear auxiliary hydraulic connectors. To activate move the joystick up or down (G).



—6.4.19 - LIFTERS FLOATING SYSTEM

Both lifts are provided with the floating system in the cylinders to allow the adjustment of the equipment location depending on the terrain.

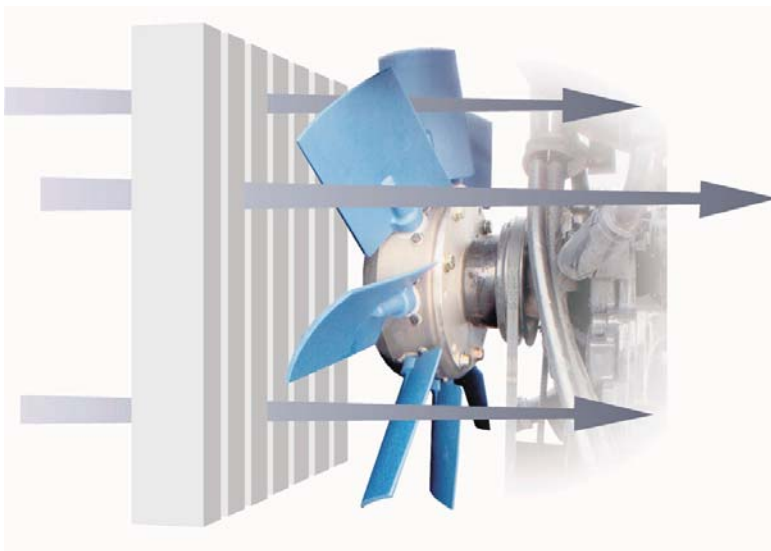
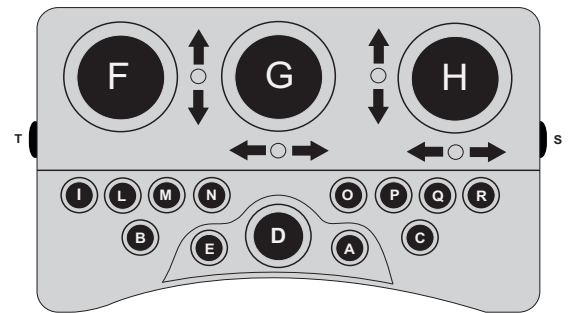
To activate the front floating system move up the switch (I). To turn it off, always move up the dial. To activate the float back move down the switch (I). To turn it off, always move down the dial.



—6.4.20 - CLEAN FIX CONTROL

The machine is provided with a hydraulic fan reversible. This feature allows the cleaning of the radiator, removing any clippings. Upon activation of the control switch 'T', the blades of the fan change angle diverting air flow back through the radiator thus removing dirt and dust particles.

The fan will automatically decrease the number of turns and then reverse the pitch of the blades. After about 30 sec. the cycle ends to resume normal operation.

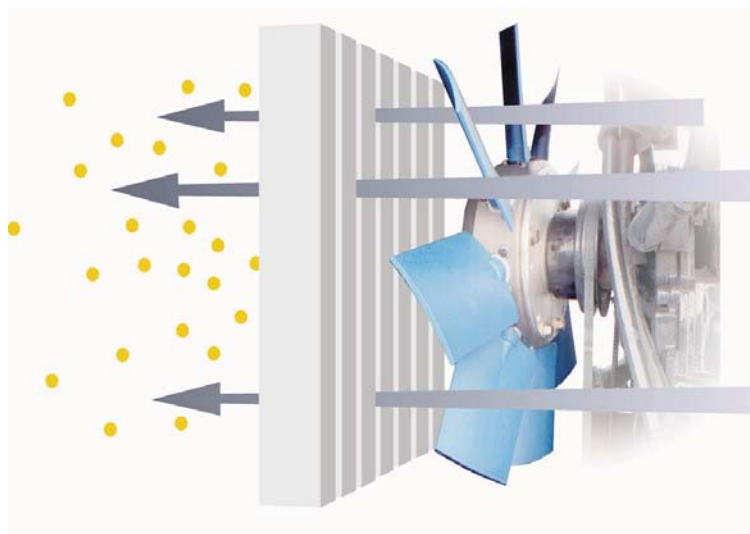


Normal fan operation.
Air drawn through radiator for cooling

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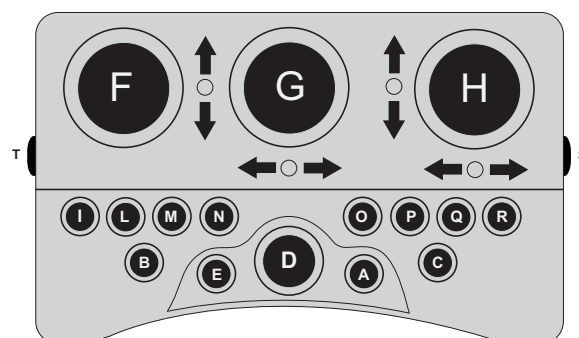
Clean-fix operation.
Air blown through radiator for cooling

CAUTION: Before proceeding with the reversal of the blades, get the minimum engine rpm, activate the inversion and then gradually increase the speed of the diesel.



—6.4.21 - OPTIONAL

Switch (R) optional.

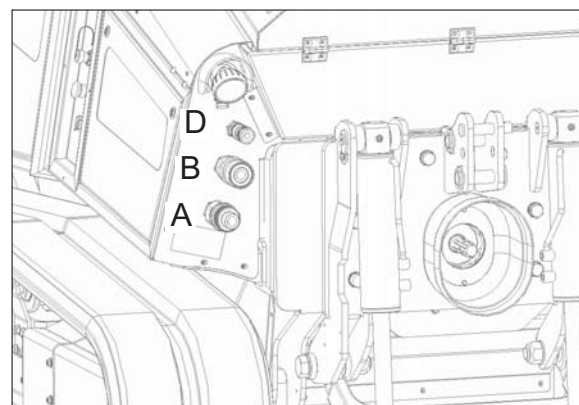


—6.4.22 - POWER CONNECTORS (FOR HYD. MOWER)

The machine is designed for the use of equipment with hydraulic motor (no PTO).

To use the hyd. connectors follow the instructions below:

- Attach the equipment on the front lift.
- Turn off the engine and disable all functions.
- Connect the pipes in their grafts
 - A e B = pressure hoses
 - D = drainage



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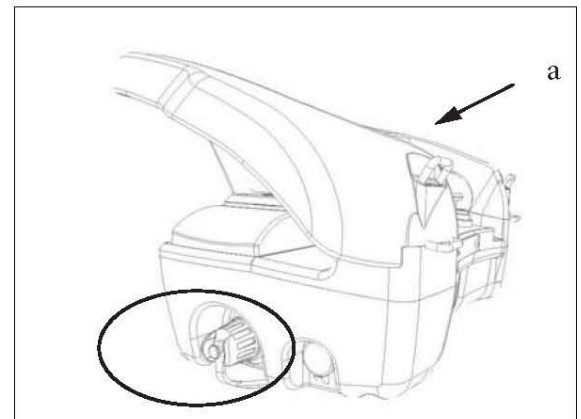
- Connect the 7-pins plug (a) supplied with the machine, into the rear power outlet (b)
- For the operation of the hyd. connectors follow the instructions in chapter 6.4.9



6.4.21 - OPTIONAL

In the remote controls, the portable control unit works with the linked central unit in radio mode through a unique identification code. When a portable control unit (or a central unit) is replaced, it's required to update this code to ensure that the system works again. The portable control unit connected with the serial cable works always (the identification code is ignored).

- 1) Remove the battery from the portable control unit. Connect the serial cable between the portable control unit (a) and the central unit (b).
- 2) Press the emergency stop button (D) of the portable control unit and turn off the central unit (switch in "OFF" position). The lights of the control and the central unit must be turned off.



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3) Turn on the central unit (switch in "REMOTE" position) and unlock the portable control unit emergency stop button.

4) Hold the ON/SIGNAL (A) button for about 10 seconds (the red light of the portable control unit turns on and short and repeated sound signals are emitted to ensure that programming is in progress, the internal display of the central unit shows "Po" and "Id").

5) When the programming is finished, the portable control unit turns off and the central unit returns in stand-by mode.

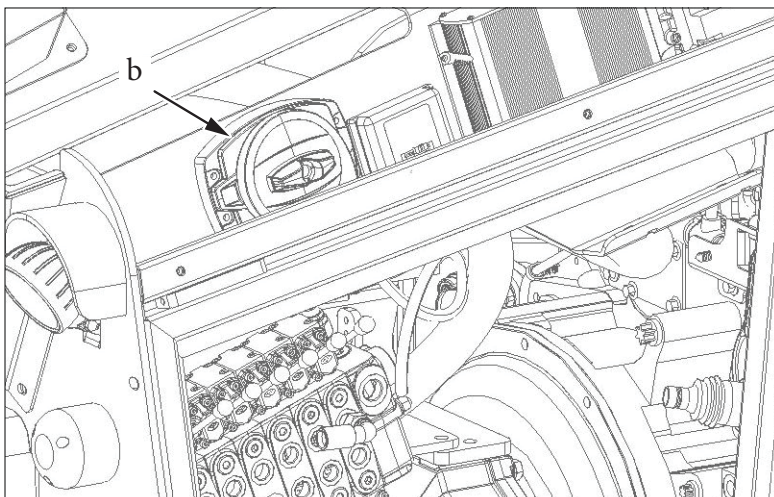
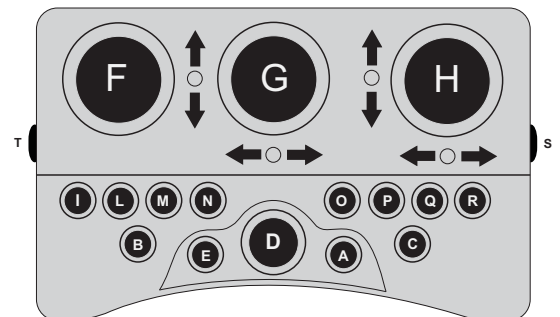
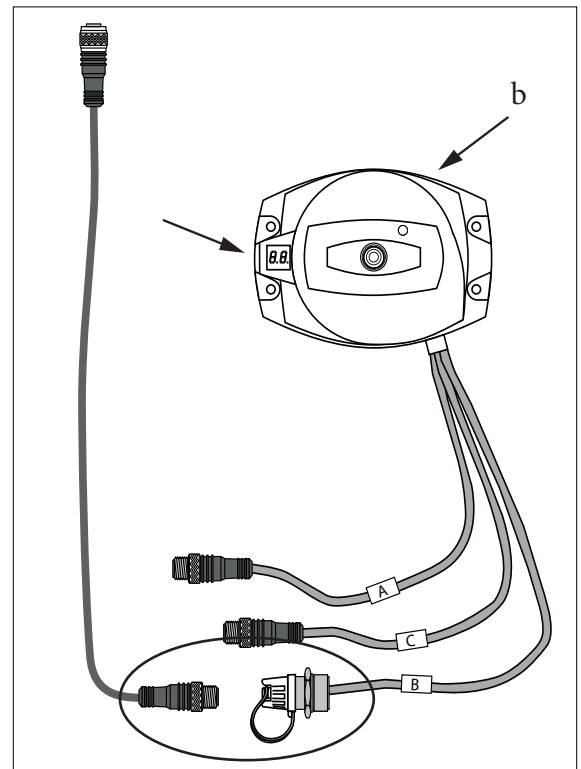
6) Leaving the cable connected, power on again the portable control unit. If everything has worked good, the display inside the receiver will show "1-".

Note: if a graphic display is installed on the portable control unit, after the second power on, it can take even one or two minutes to load the display configuration. Meanwhile, on the display, some messages will inform of the work in progress. The display inside the receiver will show a rotating segment until the process has finished.

When the display configuration has been completely transferred the display inside the receiver will show "1-".

7) Disconnect the cable, insert the battery and test the radio.

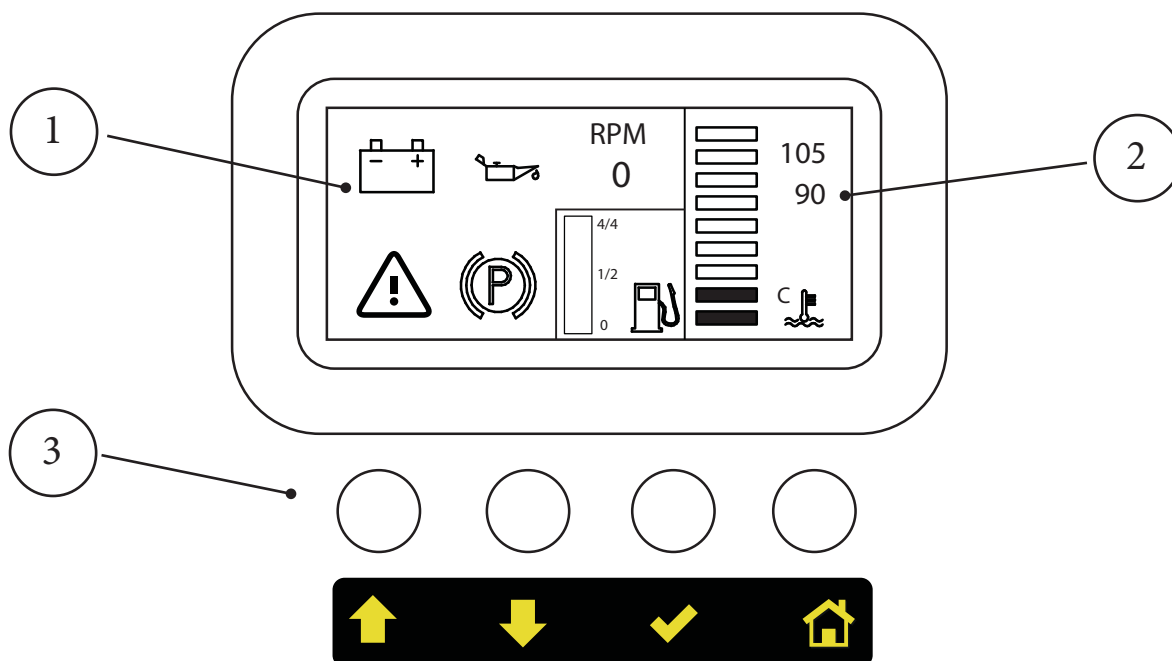
8) If something goes wrong repeat the procedure from the beginning.



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6.5 - DISPLAY LCD

- Description

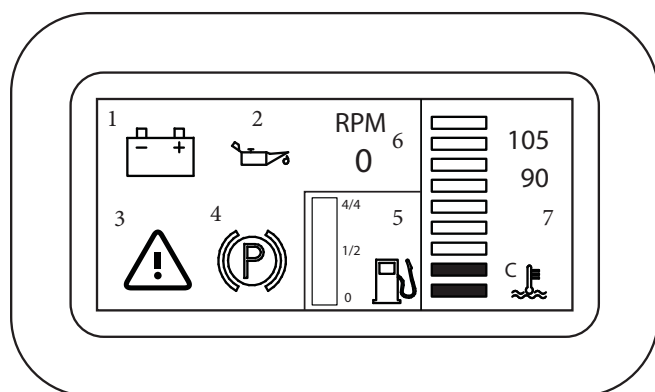


Area 1 - Warning and error codes

Area 2 - Coolant gauge

Area 3 - Buttons (Pg Up/Pg Down/Enter/Home)

- Home page

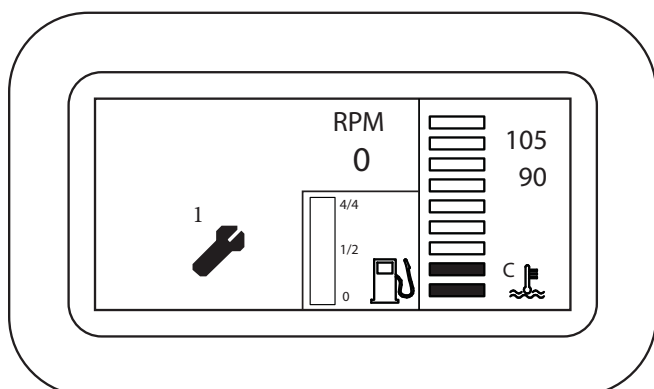


Insert the ignition key and turn on, the display will get on (without starting the engine).
In the home page is possible to see:

- Battery/alternator warning (1)
- Engine oil pressure warning (2)
- Park brake warning (4)
- Engine stop (3)
- Fuel level (5)
- Rpm engine (6)
- Coolant temp. (7)

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- Service menu

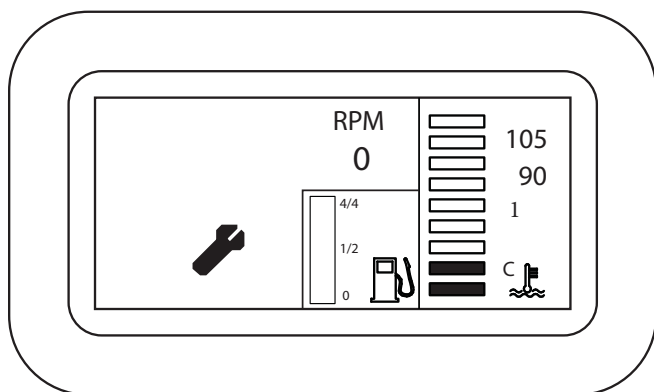


The display shows the machine hours and hours established for the coupons.

See maintenance section to achieve the scheduled hours.

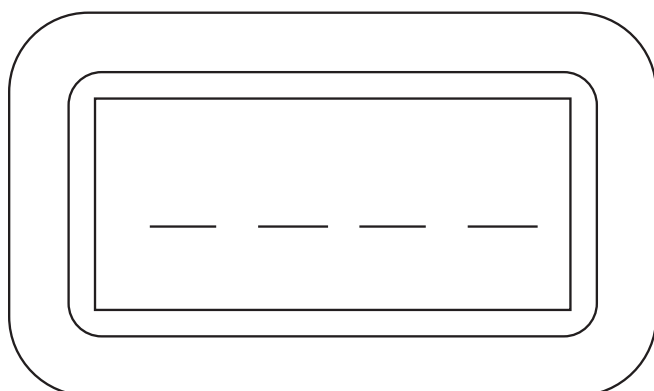
The warning (1) appears when it reaches the pre-established times for maintenance.

Press the PgUp or PgDn to display the counter, and the coupon.





ATTENTION: The Service Warning will blink every time the engine is started until the service code is inserted


- Service Code



A maintenance performed, enter the numeric code (4 digits) provided and / or contact McConnel Service Dept.

To display the page for entering the code, press and hold for 3 sec. the Enter button 

Enter the digits that make up the code by moving from left to right with the Home button. 

End the entry with the Enter button 

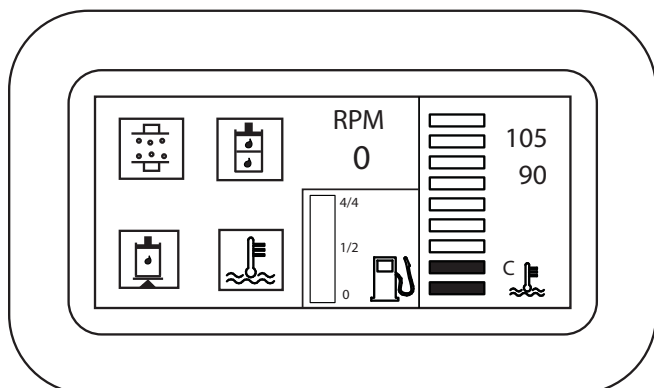
ATTENTION :



Entering the code without performing scheduled maintenance will void warranty.

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- Warning

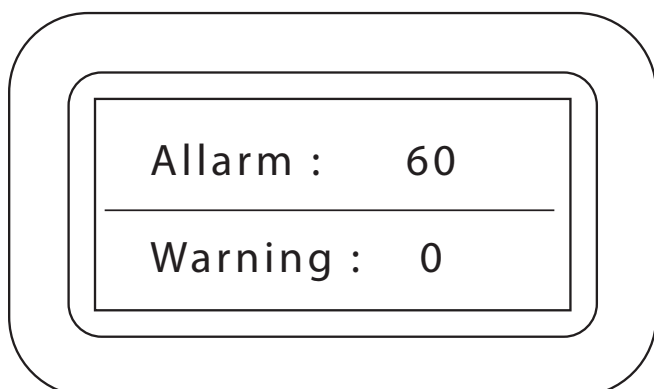


The display shows the warning that will appear when should be an issue.

	HORN	SHUT-DOWN	CAUSE	REMEDY
	YES	NO	Fuel level less than a 1/4	Fill up
	NO	NO	The parking brake is on	Go forward or reverse to release the brake
	YES	NO	Hyd. oil level less than 2/3	Fill up and check eventual leaks
	YES	YES	Low hyd. oil	Fill up and check eventual leaks
	NO	NO	The alternator doesn't load the battery	Control the alternator and the belt. Contact a Isuzu service.
	NO	YES	The air filter is clogged	Change the elements
	NO	YES	The hyd. oil filter is clogged	Change the element
	NO	NO	The preheating is on (Optional)	Wait the light comes off and proceed with the injection.
	NO	YES	Low engine oil pressure	Check engine oil level and wire connection.
	NO	YES	Engine stop	Release the emergency red switch and check eventual leds on
	NO	YES	Coolant temp. > 110° C	Clean the radiator, check the coolant level, check eventual leaks.

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- Alarm



In case of failure and / or malfunction of the display screen will display "Alarm" followed by a number (numeric) that identifies its failure.

Error code	Cause
Set 4 + number	Failure/Diplay Error
Set 6 + number	Failure/Error of Remote control comunication
Set 7 + number	Failure/Joysticks error
Set 9 + number	Failure/Level sensor error (optional)
Set 50 + number	Failure/Output CPU Error

ATTENTION :



Contact the McConnel Service Dept. for more detailed analysis of the problems.

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6.6 - TROUBLESHOOTING

Given that the most parts of the defects of working are for incorrect use of the machine, it is indicated in the following table any possible malfunctions that can verify themselves and the actions to take to avoid them.

NOTE:

- Contact McConnel Service Dept. if in doubt or if problems exist.
Always quote the Machine Serial No. and the work hours reading.

(*) If the fault or the cause that caused it is not within the specified defects, contact: McConnel Service Dept. for advice and/or repair.

6.6.1 - DIESEL ENGINE

- the light of low oil pressure remains switched on also when the engine is at high velocity.	<ul style="list-style-type: none"> • the level of the oil in the cup is low. • the oil filter is blocked. • oil not appropriate to the season. 	<ul style="list-style-type: none"> • reset the level • Substitute the filter. • substitute.
- vapour exits from the tube of air pipe radiator.	<ul style="list-style-type: none"> • level liquid low, loss of liquid • ventilator belt slow. • accumulation of mud or limestone in the plant of cooling. the plant of cooling. 	<ul style="list-style-type: none"> • add liquid, repair. • check tension belt. • substitute the liquid and clean • repair or clean.
- the indicator of water temperature engine entry in the field red for overheating. or close.	<ul style="list-style-type: none"> • fin of the radiator damaged • thermostate defective • radiator tap slow, broken or is working at high speed. group. • instrument defective 	<ul style="list-style-type: none"> (•) substitute. • tighten the tap or substitute
- the indicator of temperature water engine is always at low right scale.		(•) substitute.
- the water engine temperature is always at low left scale.	<ul style="list-style-type: none"> • thermostat defective • instrument defective. 	<ul style="list-style-type: none"> (•) substitute. (•) substitute.
- the engine doesn't start the starting motor. carburante.	<ul style="list-style-type: none"> • fuel lacking. • air in the system of fuel supply • Defect of compression (valve with space erroneous). 	<ul style="list-style-type: none"> • fill up. • vent plant. (•) record valve space.
- waste gases are white and light blue.	<ul style="list-style-type: none"> • Too much oil in the cup. • inappropriate fuel. 	<ul style="list-style-type: none"> • re-set the level. • replace with fuel according to norms
- waste gases are occasionally slightly black.	<ul style="list-style-type: none"> • air filter clogged. • injectors defective. • compression defective. 	<ul style="list-style-type: none"> • clean and replace. (•) substitute. (•) record valve space.
- occasionally the noise of the compression seems a breeze.	<ul style="list-style-type: none"> • injectors defective. • fuel at low cetanic level 	<ul style="list-style-type: none"> (•) substitute. • substitute with fule according to norms
- strange sounds (of combustion or mechanical parts)	<ul style="list-style-type: none"> • overheating. • silencer damaged internally. • excessive valve space. 	<ul style="list-style-type: none"> • see "defect of the temperature indicator". (•) substitute. (•) record valve space

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6.6.2 - ELECTRICAL LOOM

<ul style="list-style-type: none"> - the lights do not illuminate well when the engine is at high running. - the lights illuminate at intervals when engine is in running. - the alternator charge light does not switch off when the engine is running and is accelerated. - the alternator emits an abnormal noise - the starter motor does not turn when the key turns in position of starter. - the gear of the starter motor is removed and then is unhooked. - the starter motor makes turn the engine slowly. - the starter motor disengaged before the engine is started. - the light of low pressure engine oil is not switched on when the engine is stopped (starter key on "I"). - the light of charge of the alternator not is switch on when is stop the engine (ignition key on "I"). 	<ul style="list-style-type: none"> • cables defective • belt tension flow defective • alternator defective • cables defective. • alternator defective • cables defective • accumulator charge insufficient. • general fuses defective. • accumulator charge insufficient. • accumulator charge insufficient. • starter engine starter defective. • cables defective • accumulator charge insufficient. • lamp defective. • sensor of the pressure defective • lamp defective. • cables defective 	<ul style="list-style-type: none"> (•) check, repair the loose when terminals and the connections. • regulate the voltage of the belt. (•) substitute. (•) check and repair. (•) substitute. (•) check and repair. • charge the accumulator. • substitute. • charge the accumulator. • charge the accumulator. (•) substitute. (•) check and repair. • charge the accumulator. (•) substitute (•) substitute (•) substitute.
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6.6.3 - HYDRAULIC SYSTEM

<ul style="list-style-type: none"> - The pump emits a noise anomalous. 	<ul style="list-style-type: none"> • Lack of oil in the tank. • Pump defective. • Hydraulic oil not adapted to temperature 	<ul style="list-style-type: none"> Reset the level. (•) repair or substitute. • Substitute.
<ul style="list-style-type: none"> - The equipment moves only at low velocity 	<ul style="list-style-type: none"> • pump defective. • Valve maximum incorrect, or not close for presence of impurity • Filter in waste dirty 	<ul style="list-style-type: none"> (•) repair or substitute (•) calibrate or substitute. • Replace the cartridge.

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6.7 - FUSES AND RELAYS

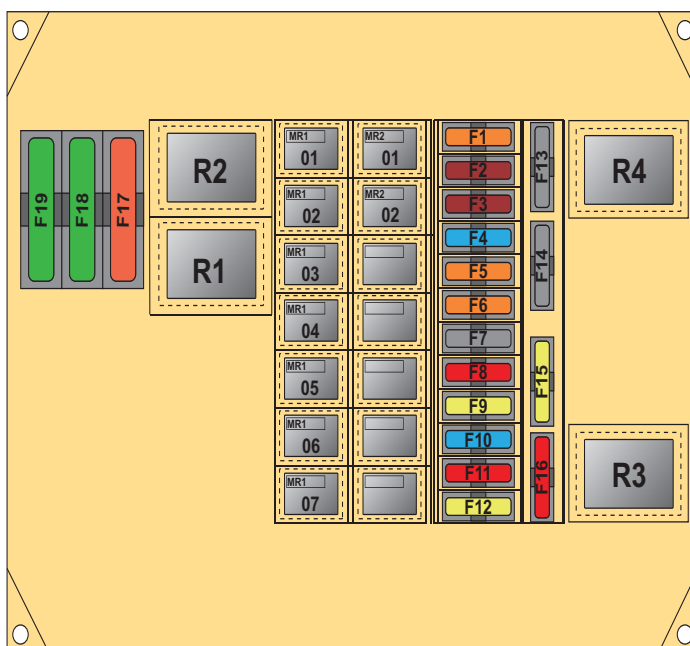
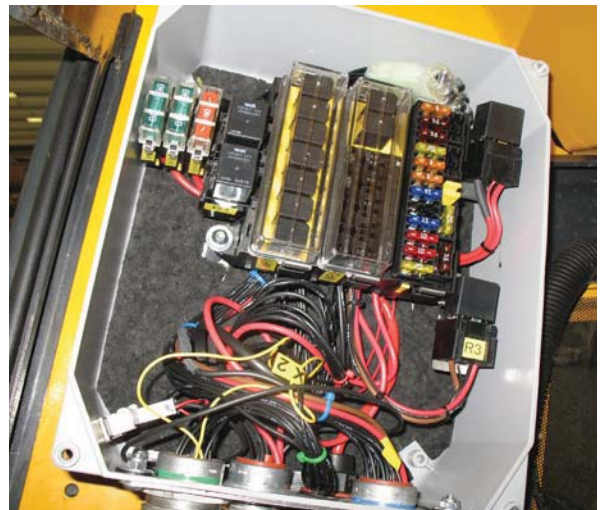
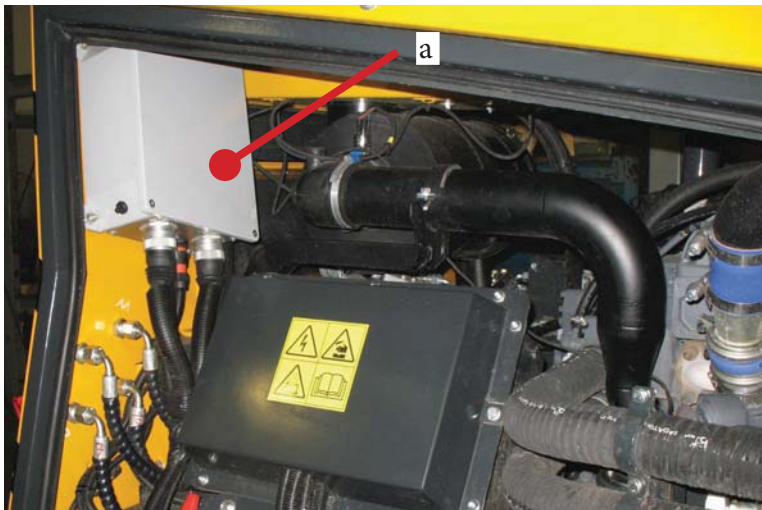
WARNING :

Before proceeding with the substitution of a fuse, ensure of having removed the ignition key. If the fuses are rusty, corroded, or not perfectly held in place, replace them only with fuses of the same capacity.

If the engine does not turn when the starter switch is taken into switched on position, check the general fuse, if necessary, replace it.

6.7.1 - FUSES AND RELAYS BOX

The fuses and relays are in the fuse box (a) fixed on the Rh side, in the engine compartment; remove the protection panel and replace the fuses or relays if necessary.



Layout fuses and relays

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Fuses and Relais

F1	Fan drive	5 Amp
F2	+15 Engine	7.5 Amp
F3	Radio control	7.5 Amp
F4	CPU 3B6 (electronic)	20 Amp
F5	Alternator	5 Amp
F6	+Sensors	5 Amp
F7	free	
F8	Beacon	10 Amp
F9	+VP3B6	20 Amp
F10	Socket 7 ways	15 Amp
F11	Gear Valve/6waysValve/Horn	10 Amp
F12	+ starter	20 Amp
F13	free	
F14	free	
F15	+30 injection key	20 Amp
F16	Socket 1 way	10 Amp

FM17	Main Fuse	40 Amp
FM18	+30 Engine	30 Amp
FM19	Work lamps	30 Amp

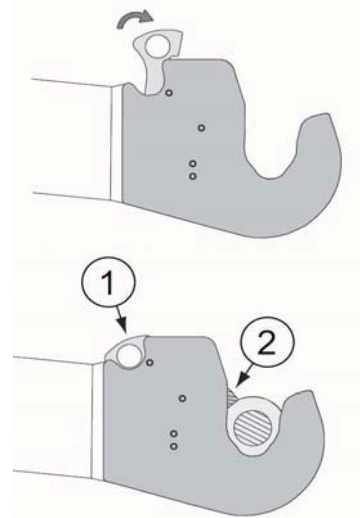
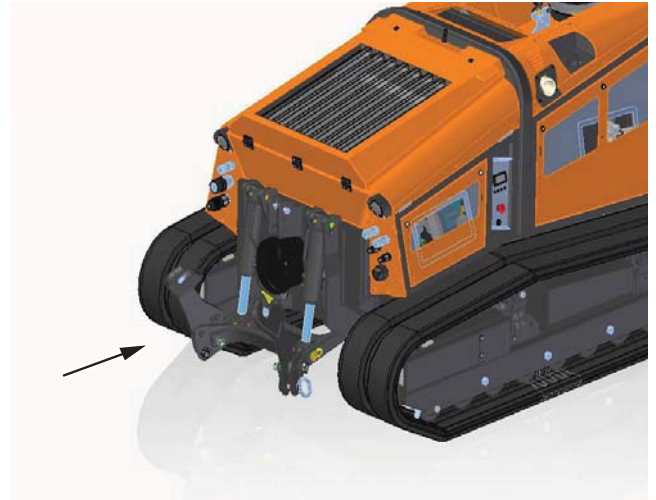
R1	+30 CPU Deutz
R2	Main Relay
R3	Starter Relay
R4	Work lamps
MR1	Shut down
MR2	No repeat starter
MR3	Remote control
MR4	Starter ok
MR5	6 ways valve for PTO
MR6	Gear valve
MR7	Horn
MR21	Brigde
MR22	Wired control

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6.8 - HOW TO PLUG AN EQUIPMENT

The machine is equipped with two lifts (front/rear) where its possible to plug equipments approved. For this operation, follow the steps:

- Start the engine, after done the link with the remote control (see cap. 6.4.1)
- Move the right joystick (H) to lower the lift.
- Lift the lever (1) and lock it in place to allow the detent ball joints.
- Drive forward slowly until the equipment will be in contact, previously placed in front of the machine.
- Slowly lift the front linkage as long as the equipment is not well lock.
- Lower the lever (1) and make sure that the latch (2) is in place.
- Connect hyd. hoses of services to the quick couplings (left side).



ATTENTION :



- Read and follow the instructions provided to ensure safety in the use of tools driven by the PTO.
- Follow the instructions provided by the manufacturer of the equipment.
- Use the prescribed safety devices and make sure they are in good condition.
- Make sure that the machine is connected properly and that does not hit the other parts of the machine when lifted.

DANGER :



When you engage or disengage gear, stand next to the machine away from the tool. Never stand on the implement or between the machine and the tool. Before connecting the quick couplings, the equipment must be mechanically connected to the machine.

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6.9 - HOW TO USE THE PTO

Before connecting the equipment to the power take-off of the machine, make sure that the tool is compatible with the speed of the PTO in use (1000 rpm, front / rear)

ATTENTION :



- Observe all safety instructions on the gear driven by the PTO - Stop the engine and PTO before connecting the tool to the machine.
- Check that the work area of the tool is clear before starting the PTO.
- Any maintenance shaft PTO must be carried out only with the PTO disengaged, the engine stopped and the ignition key removed.

- After you have switched off the PTO, the tool continues to rotate for a bit of time (regardless of the brake). Do not approach the equipment until it has stopped completely.

- Make sure the PTO shaft length is correct respect to the tool operated by the PTO.
The shaft of the curvature to operate in full vertically and horizontally.
IMPORTANT: a shaft too long can cause damage.

- Fit the PTO shaft according to the instructions of the manufacturer.



DANGER :

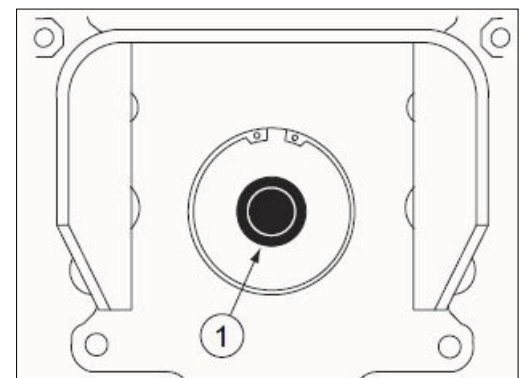


When attaching the PTO shaft, make sure that the protection is not damaged. Always ensure the protection to a fixed part of the frame of the machine or equipment.

- Engage the PTO at a low speed in order to protect the PTO

- During the winter, make sure that the transmission oil and hydraulic oil are warm before engaging the PTO.

- Always protect the end of the PTO shaft with the special cover (1) when not in use.



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6.10 - DRIVING AND MANEUVERING THE MACHINE

DANGER :



Before moving the machine, ensure of knowing perfectly the function of the commands and the normatives of safety tied to them. The operator must be close the unit. Before moving the machine, ensure that no person is in the range of action (100 m.) of the machine and that the area of action is free by obstacles.

Before each mower use, a complete inspection and service is required to ensure the mower is in a good and safe working condition. Damaged and/or broken parts should be repaired and/or replaced immediately.

Ensure rubber deflectors are in position and not damaged. Replace worn, broken, and missing sections immediately.

Inspect that all bolts and screws are in position and are properly torqued.

Inspect cutter knives and knife pins for looseness and excessive wear.

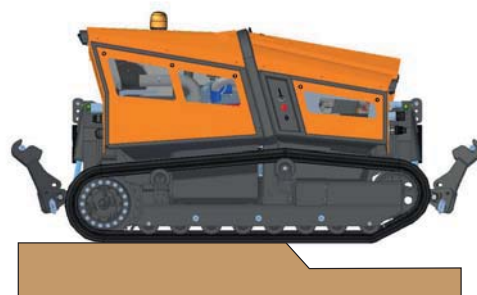
Operate on concrete or hard surface hillsides with the optional rubber track system installed.

Never operate on slopes with a gradient greater than 45 °

Never stand directly in line fall below the machine.

Do not change direction while moving on curbs, rocks or surfaces with considerable differences in height.

In these instances always move perpendicular to the obstacles.



When reversing uphill, do not steer when transferring from the level surface to the slope. If this is unavoidable, perform the maneuver gradually.

Warning:

The track can be damaged or come off its seat during this operation.



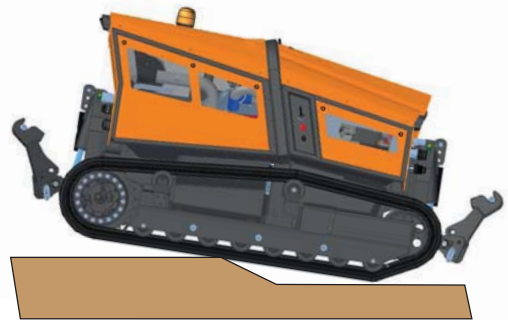
Do not move along the edge of a slope or on uneven ground with one track in the horizontal position and the other inclined or partially raised (When machine is inclined in excess of 10°). To avoid risk of track damage, always proceed with both tracks traveling on the same horizontal plane.



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When the machine maneuver over an obstacle, a space is created between the bearing roller and the track. This can cause the track to come off its seat. The same situation can occur in reverse when a space is created between bearing roller, idler roller, and track. To eliminate this risk, track guides are provided on the front part of the undercarriage.

If the machine changes direction, and the track cannot move sideways due to the presence of an obstacle, there is a risk that the track can be damaged or come off its seat; whenever possible avoid turning the machine when it is against an obstacle, if unavoidable, make maneuvers slowly and gradually until clear of the object.



DANGER :



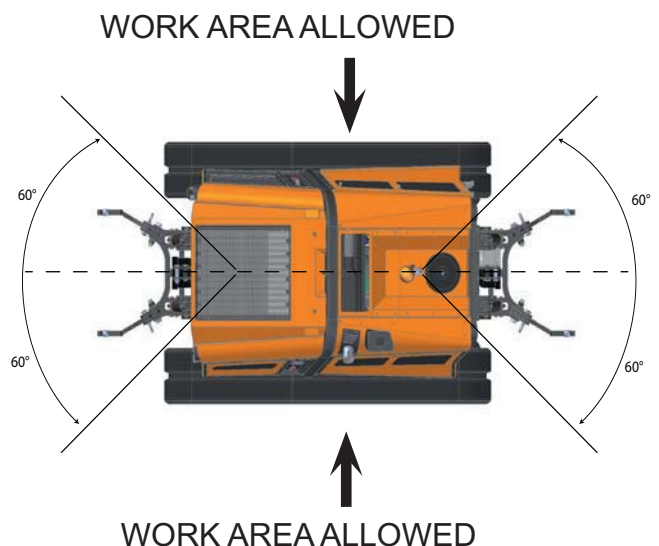
TO AVOID SERIOUS INJURY OR DEATH FROM SLIDING OR EQUIPMENT ROLLOVER:

Never attempt to operate the machine with metal cleats or spiked track on concrete hillsides or hard hillside surfaces. Operation of the spiked or cleated track on concrete or hard surface hillsides could result in sudden and violent loss of traction and control of the machine and may result in serious injury or death. (oltre 20 m)

6.11 - PLACE OF CONTROL - WORK AREA OPERATOR

The operator must always be at least 5m from the machine. It is appropriate that the operator is provided with the device DPI.

The operator must attempt to position himself in relation to the recommended cones of work, both to avoid being outside of the area of translation of the same that in the area of possible ejection of objects.



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7 - TRANSPORT AND MOVEMENT

7.1 - LORRY LOADING AND UNLOADING

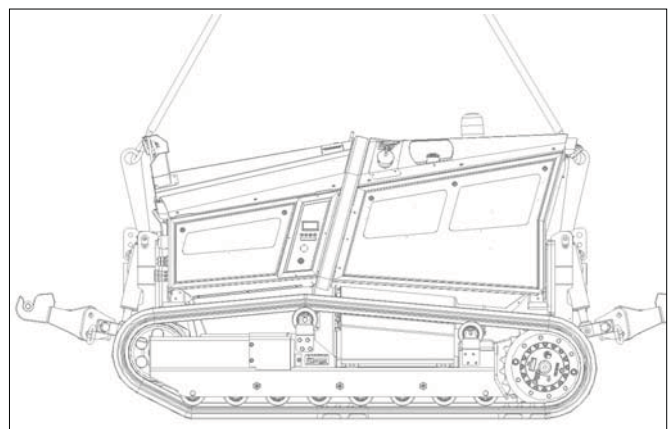
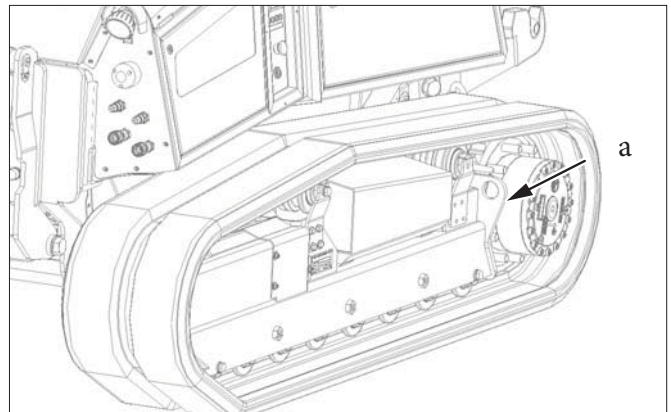
To transport the machine to / from the work site make use of suitable vehicles with a capacity greater than 8000 kg.

Use loading ramps hang up to the vehicle and positioned at the correct distance of the tracks.

ATTENTION :

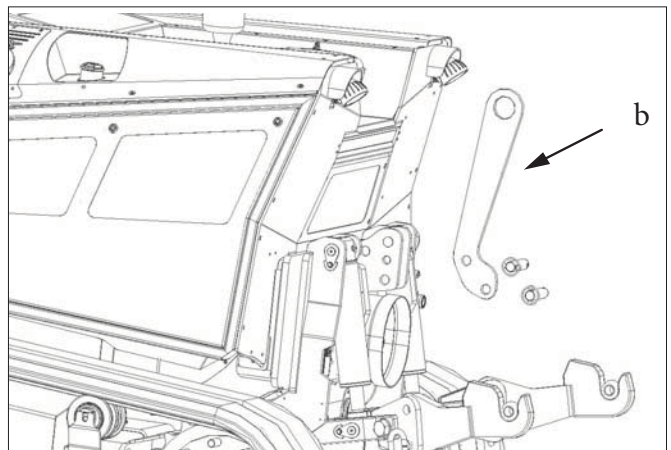


Use the hooks (a) prepared on the frame to secure the machine to the lorry.



If there is the need to lift the machine, make sure you have the appropriate cables or chains for lifting.

Attach the ropes or chains to the hooks of lifting devices (b).



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7.2 - TOWING OF THE MACHINE

DANGER :



When the machine is towed, use a metallic cable with a resistance adequate to the weight of the machine being towed.

During operation or transport, situations may arise when it may be necessary to tow the machine. The following procedures should be performed as instructed to reduce the possibility of damage to the drive motor, tracks or brake systems, and provide safe towing of the machine.

ATTENTION :



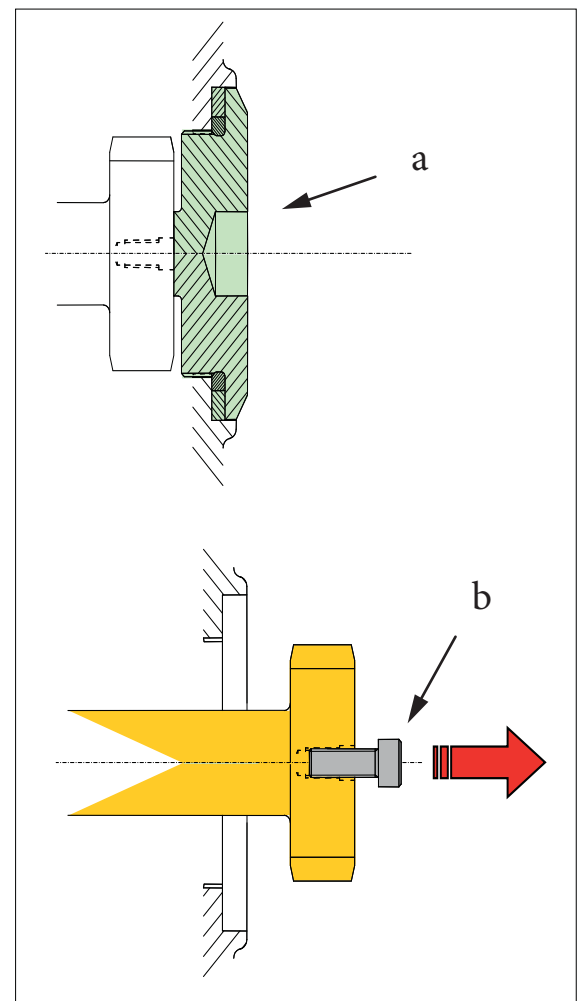
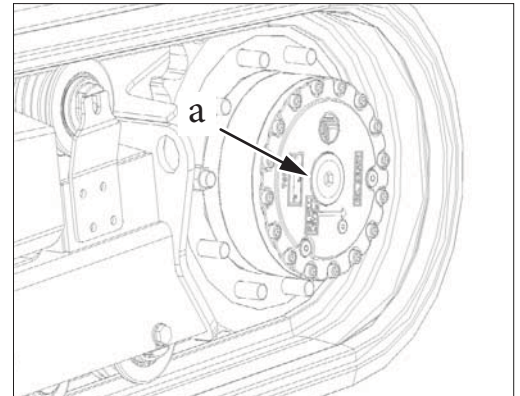
The disengagement should be inserted or off just to rest the machine on the flat surface.

- 1 - Unscrew the cap (a)
- 2 - Screw a M6x1 screw (b)
- 3 - With the aid of the screw pull the pin until it stops.
- 4 - Repeat the procedure on the other gear.

At this point both the units are unlocked and its possible to tow the machine.

WARNING :

Use only properly rated and inspected towing or lifting straps, hooks and attachments to tow or lift the machine. Straps and lifting connections should be rated at a minimum of 15 ton and be free from defects. Failure to use a suitably rated towing or lifting strap, or using a tow or lift strap which is damaged or defective may result in severe damage and could result in injury to operators or bystanders. During the tow, the regulator should never exceed 90 rpm.



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7.3 - WIRING REMOTE CONTROL

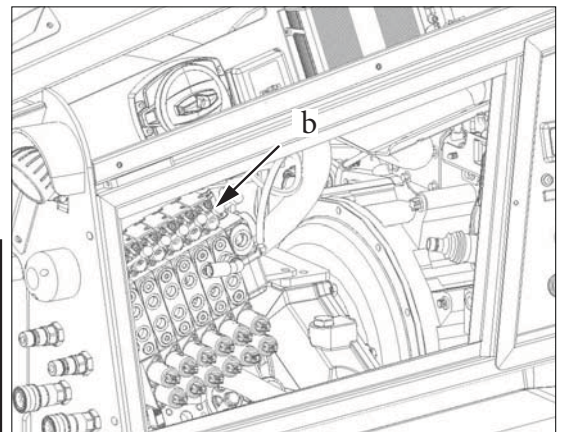
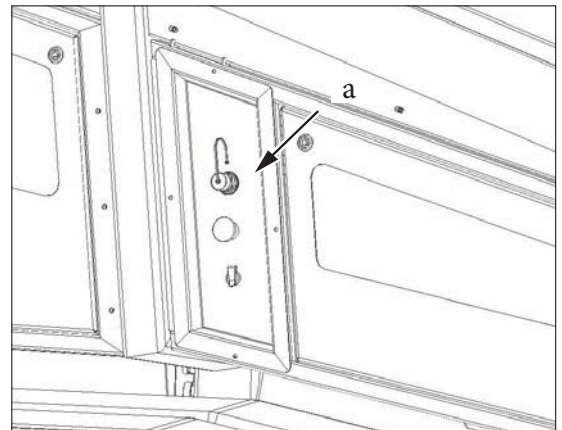
A manual track device control is provided with each machine to allow an operator to bypass the Radio Controller in the event of a failure.

To perform this procedure, follow the instructions:

- 1 - Remove the jack cover on the control panel (a).
- 2 - Insert the connector and tighten the locking ring.

At this point you can start the engine with the ignition key.

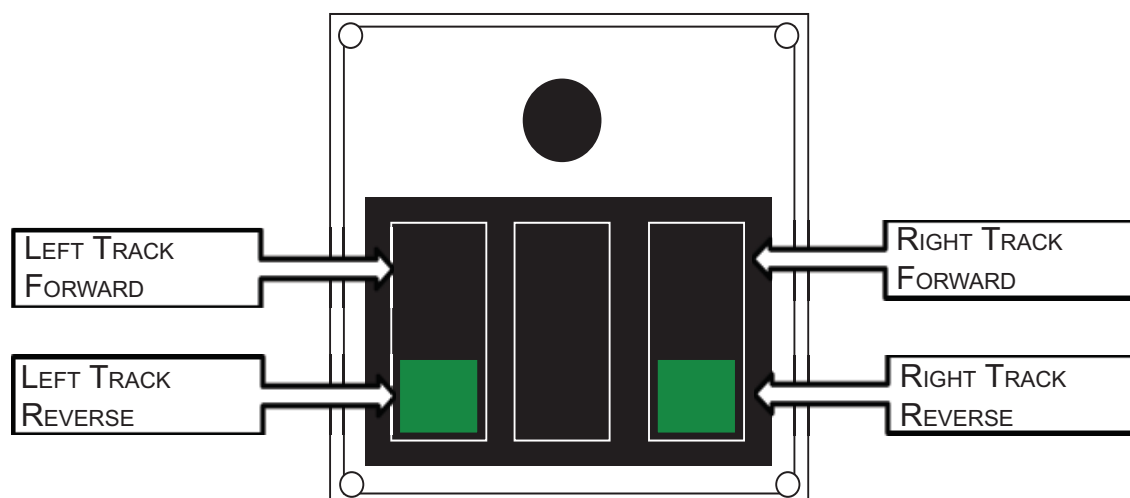
To move the lifters (front-back) use the levers directly to the valve (b).



ATTENTION :



Use the wired control only in case of emergency. With the wired control inserted are disabled all operational functions of the remote control.



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8 - STORAGE

It is recommended that the mower be stored fully lowered to ground level.

Properly preparing and storing the mower at the end of the season is critical to maintaining its appearance and to help ensure years of dependable service. The following are suggested storage procedures:

- unlocking the equipment (eg the rotor and tools) from any remaining shred;
- clean the machine thoroughly;
- carry out a general view of the machine to detect any structural damage, detect deep abrasions on the paint, make sure you hear the pre safety pictograms in their original positions, which are intact and legible;
- grease all the mechanical parts subject to friction, the locking pins and all parts of the machine not covered by the original layer of paint thus avoiding the formation of rust;
- rest, if possible, the machine in a covered place, on flat surface;
- Make sure the ignition key is removed and the radio kept in safe and protected place.
- Disconnect the battery cables, remove the batteries and store them in a dry environment with temperatures higher than 18 ° C.

ATTENTION :



If the machine, or part of it, has been taken out of service, you must harmless so they do not cause any danger.

ATTENTION :



Please note that whenever you change oils, batteries, piping rubber, tires, and of any particular machine subject to differentiated waste collection must always refer to the current provisions of law.

For the collection of waste oil is required please consult the local Government.

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8.1 - DISPOSAL AND PUTTING OUT OF SERVICE

If you decide not to use the machine, or some part of it, you must proceed with dismantling and decommissioning of the same.

Before scrapping wing is necessary to separate the parts of plastic or rubber, electrical and electronic equipment.

Recover any waste oil and dispose of them in special centers.

This operation must be carried out according to the regulations.

ATTENTION :



If the machine, or part of it, has been taken out of service, you must harmless so they do not cause any danger.

ATTENTION :



Please note that whenever you change oils, batteries, piping rubber, tires, and of any particular machine subject to differentiated waste collection must always refer to the current provisions of law.

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9 - SERVICE

ATTENTION :



The operations of maintenance must be carried out exclusively by the service assistance customers of ENERGREEN or by qualified personnel. Always wear protective equipment before performing any operation on the machine.



9.1 - PREMISE

To obtain from the machine the best performance and ensure all the organs maximum duration, it is necessary that the norms of use and maintenance are scrupulously followed by the people responsible for the machine.

It is advisable that the customers, in their own interests, read with attention this note and consult the manual every time they have the necessity of suggestions to eliminate any eventual problem. Because the machine operates normally in contact with water, sand, earth, etc., a regular lubrication is necessary, which assume a vital importance not only for a long use of the machine, but also for keep down its cost of running. For ulterior clarifications contact:

McConnel Service Department (Tel. 01584 875848).

9.2 - GENERAL NORMS

- Before carrying out any operation of maintenance, verify and/or check the machine, switch off the engine and remove the key of ignition from the cabin.
- During the disassembly and the assembly of the pieces of the machine, always use extractors, keys and equipment appropriate to not deteriorate the components specified.
- To unblock parts solidly adherent, use hammers of copper or hammers of wood.
- Separate distinctly the pieces in the various groups and partially retighten the nuts on the own spine or welding. Clean the pieces with brushes or cloths therefore wash with oil or hot water taking away the residues with air compressed.
- After sanding or drilling with abrasive bodies, accurately wash the parts ensuring the complete taking away of the abrasive dust.
- In the assembly of the various pieces, ensure that they are clean and therefore lubricate adequately.
- Pay the maximum attention to the rings of safety and to the machine pins, if they present traces of breaking proceed to the immediate substitution.
- The operations of maintenance of the loader must be carried out by authorized personnel and reported in the paragraph "register of the maintenance" on the presented action.

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9.3 - NO-ORDINARY MAINTENANCE

These are those operations of repairs and substitution of one or more components of the loader that normally are rendered necessary only after years of good working, and not altering the characteristic of the machine. In case of substantial modifications, the constructor cannot be considered responsible for eventual dangers that could occur. These interventions must be carried out by authorized personnel.

9.4 - RECOMMENDED OILS AND GREASE

GEAR	RECCOMENDED LUBRIFICANT	INTERNATIONAL SPECIFICATIONS	Qty (l ± 10%)
HYDRAULIC SYSTEM	BIODEGRADABLE PANOLIN HLP SYNTH E 46	FZG Test A/8.3/90 12° Stadio (35635,35640,35645) ISO 15'380 HEES	
HYDRAULIC SYSTEM	MINERAL Q8 ELI 1298 L	ISO 11158 Type HV DIN 51524 part 3 class HVLP	100
DRIVEMOTOR	MINERAL SAE 85W/140 SINTETIC SAE 80W/140 - SAE 75W/140	MIL-L-2105 C & API GL 5	1,8
ENGINE	PAKELO GOLDEN DIESEL HP/A SAE 15W/40	API CI-4/CH-4 ACEA E5/E3/B3/A3, CES 20.076/20.077	15,5
PINS BUSCHES BEARING	GREENPLEX EP GREASE	adhesive with high EP (Extreme Pressure) characteristics with aluminium complex soap base.	
COOLANT	PERMANENT SUPER ANTI-FREEZE LF (Diluito al 50%)	ASTM D3306 CUNA NC 956-16	

ATTENTION :



Don't mix any other kind of oil when its used Panolin HLP Synth E bio oil.
Warranty cover will be invalid if any non-genuine oils have filled in.

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9.4.1 - FUEL

- Use only recommend fuels as specified to EN 590 or ASTM D975. Use always fuel appropriate to the engine. Other fuels with different specifications can damage the engine or reduce the power.
- When carrying out the refuelling, check that on the lid of the cask of the fuel there is not water and do not fish the condensed water at the bottom.
- After having used up the fuel or after it is conditioned change the filter fuel, bleed the air from the plumbing.

DANGER :



When handling fuel or coolant, do not smoke or work near a source of heat or sparks. Store flammable fluids away from areas at risk of fire. Do not incinerate or burn containers below sure that the machine is free from dirt, grease, and debris.

9.5 - ENGINE MAINTENANCE

9.5.1 - ENGINE OIL

The choice of the engine oil is carried out with the maximum care (for the choice of the engine oil make reference to the table of paragraph 9.4); the principal maintenance that regards the engine oil are:

- Check daily the level;
- Periodic oil change.



9.5.2 - COOLANT

Check daily, before starting the engine, the level of the coolant in the radiator and restore it in the case.

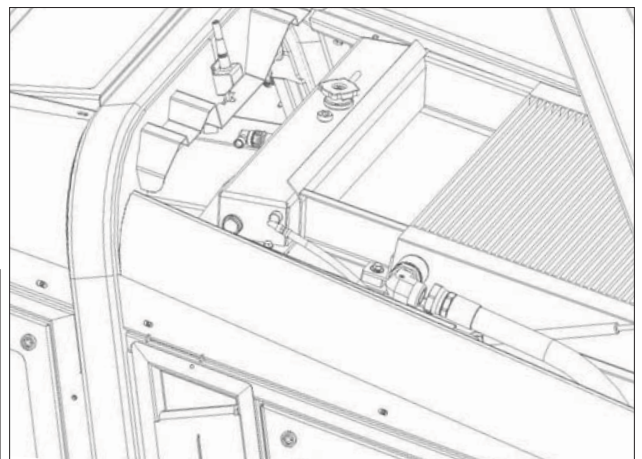
ATTENTION: Pressure tank. A warm engine may not open the cap.

ATTENTION :



An insufficient level can cause irreparable damage to the engine.
Tank under pressure.

A warm engine may not open the cap.



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9.5.3 - FUEL TANK

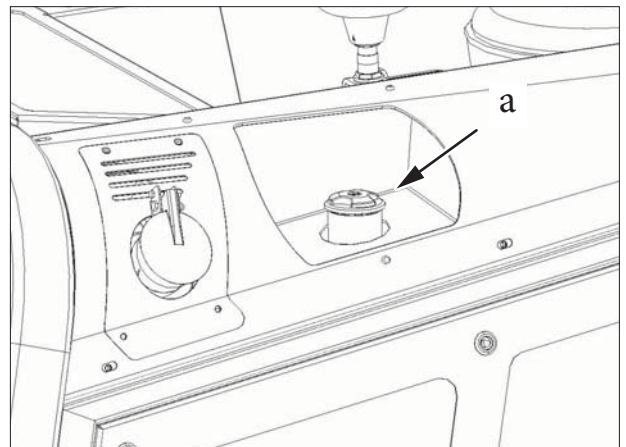
Loosen the cap and fill with fuel appropriate to the engine.

Diesel fuels specified to EN 590 or ASTM D975 are recommended.

DANGER :



When handling fuel or coolant, do not smoke or work near a source of heat or sparks. Store flammable fluids away from areas at risk of fire.



9.6 - SERVICE HYD. SYSTEM

DANGER :

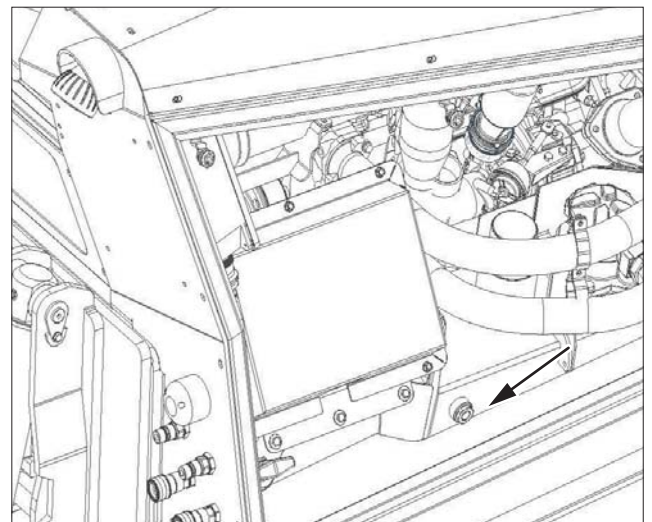


Use extreme caution when doing maintenance on the system because the oil as soon as work was completed, it is very hot. In the circuit pressure is high, not only during the use of the machine but even when the work was completed. Use a piece of cardboard to locate leaks. Protect hands and body from high pressure fluids.

The maintenance of the hydraulic system are:

- Check daily the level of the oil in the tank;
- Periodic replacement of the oil filter cartridge (1000 hours or before if the the filter is clogged);
- Periodic replacement of the hyd. oil (evry 2000 hours for mineral oil or 3000 hours for Panolin Bio oil).

Check always the Oring status when a component of the hyd. circuit is dismantled or is replaced and if are broken or damaged replace them



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9.7 - SERVICE ELECTRICAL

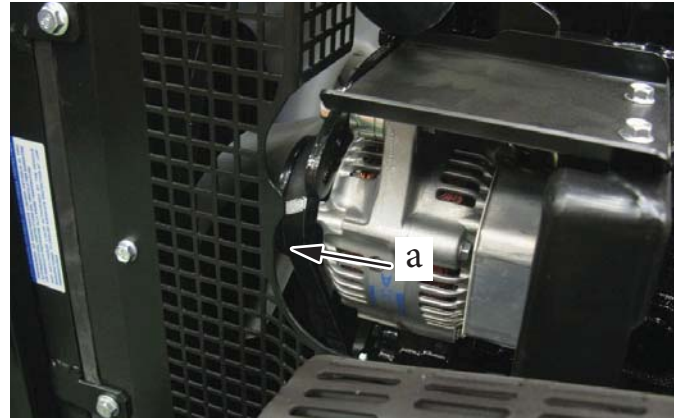
The interventions of maintenance of the electric plant are:

- Check the condition of the alternator's belt.
- Check the level of the accumulator's electrolyte.
- Check Engine Electrical Ground Connection.
- Check Automatic Belt Tensioner and Belt Wear.

Do not eliminate or install any components without prior authorization from the manufacturer.

Avoid the contact of the plant electric with water.
Protect the pins of connection with anti corrosives

Do not carry out any modifications to the electrical system without manufactures prior authorisation.



DANGER :



Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into eyes.

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Wash hands after handling.

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9.8 - PERIODIC REPLACEMENT OF SAFETY DEVICES

To guarantee the safety in any moment during the driving and the use of the machine, the operator is required to carry out the substitutions of the components listed under:

Components Interval of replacement:

- Fuel hoses Every 2 years or 4000 hours
- Hyd. hoses.....Every 4 years or 4000 hours

9.9 - MAINTENANCE AS REQUIRED

9.9.1 - CHECK, CLEANING OR REPLACING THE AIR FILTER CARTRIDGE

DANGER :



Remove the air filter only with the engine stopped and does not start the engine with the air filter open.
When cleaning, wear protective clothing.

WARNING :

The air filter assembly consists of a primary high-capacity cartridge and a safety cartridge. The main element can be cleaned with air while the safety cartridge only needs to be replaced. Replace the cartridge after 6 primary cleaning or after 1 year. Whenever replacing the cartridge needs to be replaced also the primary cartridge.

To replace the cartridges of the air filter:

Undo the latches on the dust pan and remove it



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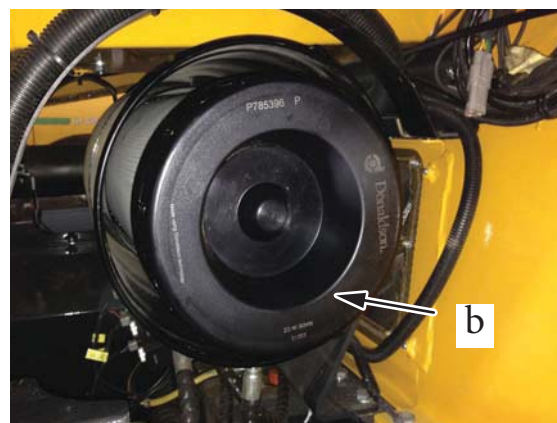
- Pull the primary cartridge, if the extraction of the cartridge is difficult make the small rotation movements and at the same time pull the cartridge, clean it with a jet of air or replace it according to necessity.
- Pull the safety cartridge, if the extraction of it, is difficult make small rotation movements and at the same time pull the cartridge, replace the safety cartridge all times that is changed the primary cartridge.
- Reassemble the air filter group inverting the operations described above.

If necessary clean the pre-filter air; loosen the butterfly screws above the prefilter, remove the lid, extract the cartridge of the filter and blow with a jet of air; re-close the pre-filter.

ATTENTION:



Don't wash the air elements. Don't use solvents. The compressed air could damage the elements! Don't oil the cartridge!

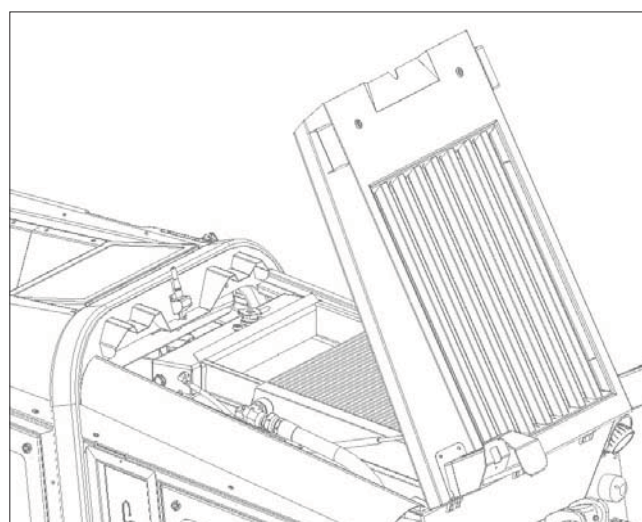


—9.9.2 - EXTERNAL CLEANING OF THE RADIATOR

During the mowing is normal that the shredded material is aspirated by the fan, obstructing the protection grids. It should therefore, use the command of the reversible fan "T" (see chap. 6.4.16) to clean the grids when needed.

WARNING :

If the diesel engine exceeds the maximum allowable temperature and the warning comes on, it automatically stops the engine (see manual DEUTZ).



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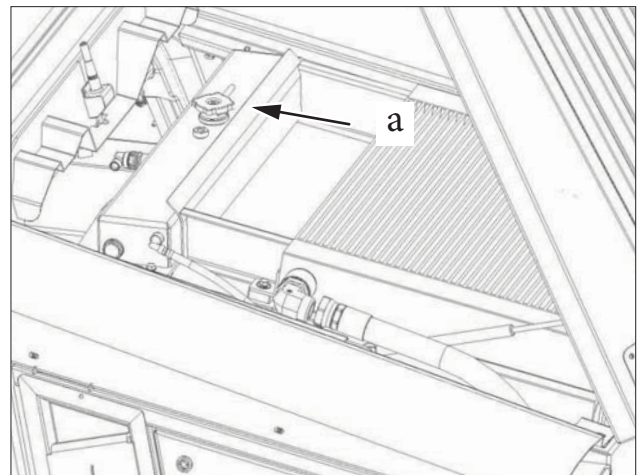
9.10 - CHECKS BEFORE EVERY WORKING DAY

Before every working day it is necessary to carry out accurately visually a check of the parts described as follows and if necessary repairs eventual anomalies come across.

- Check of screws or nuts loosened.
- Check oil, fuel, liquid refrigeration loss.
- Wearing out of the equipment devices.
- Keep clean the unit and the equipment
- Check and clean radiator
- Check operation of audible warning devices and safety-related parts such as Stop button, decals, park brake
- Checks on the protection / safety devices on the equipments (see equipment manual)

9.10.1 - COOLANT LEVEL

To check the coolant level open the lid with the appropriate key, loosen the cap of the radiator (a) slowly making vent the pressure and check with eyes the level of the coolant; the level of the liquid must be between 2 and 3 centimetres above the elements of the radiator.
If the level is low fill in liquid in the radiator until the level returns to the ideal level.
Re-close the tap and the lid.



DANGER :



Explosive release of fluids from pressurized cooling system can cause serious burns. Only remove filler cap when engine is cold or when cool enough to touch with bare hands.

Slowly loosen cap to first stop to relieve pressure before removing completely.

The check must be carried out with machine parked on level ground with the engine stopped and the equipment on the ground.

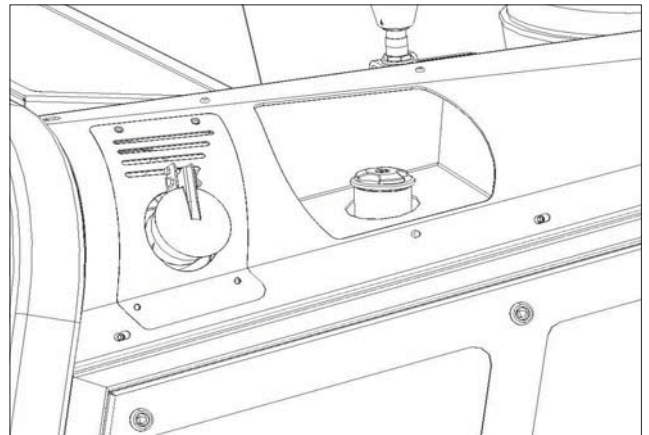
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9.10.2 - FUEL LEVEL

The fuel level in the tank is controlled visually with the engine off and with the unit on level ground. If the level goes in reserve warning up on the display and you will hear a beep.



For the topping up the fuel loosen the cap of the fuel tank (a) and refill; do not fill to the edge of the tank, but leave a space for expansion. Re-close the cap and lock by key.



DANGER :

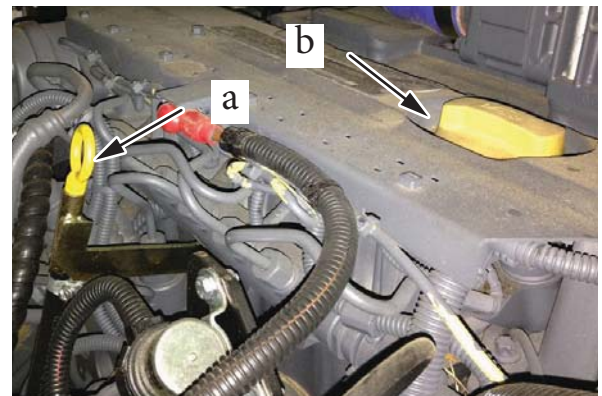


- During the filling up keep the pistol of filling or the tank steady and keep it always in contact with the fuel filler until to the end of the filling up to avoid sparks due to static electricity. Handle fuel with care: it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks. Always stop engine before refueling machine. Fill fuel tank outdoors. Prevent fires by keeping machine clean of accumulated trash, grease, and debris. Always clean up spilled fuel. Wear close fitting clothing and safety equipment appropriate to the job.

9.10.3 - ENGINE OIL

The level of the engine oil is controlled on the graduated shaft (a) and must be between the MIN. and MAX. sign.

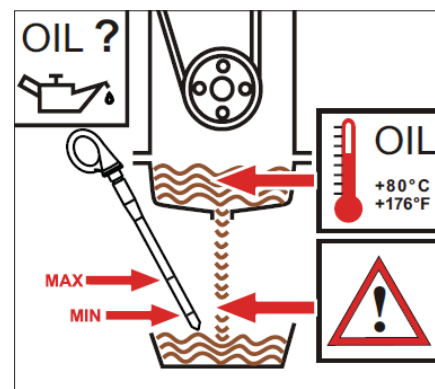
The engine oil level must be checked with the engine cold and with the machine parked on a horizontal floor. If the level of the engine oil is near to the sign of MIN. Return it unthreading the cap (b) and adding oil until the level returns in the field between MIN. and MAX.; to verify this situation during the topping up wait for some instants before carrying out the check.



DANGER :



As soon as the engine stops it is very hot, do not carry out the check of the engine oil until the engine is cold. When the level of the oil is checked or the topping up is carried out use protective clothes.



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9.10.4 - HYDRAULIC OIL LEVEL

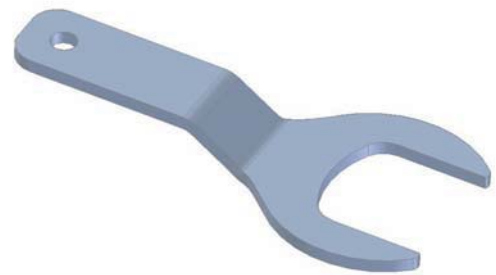
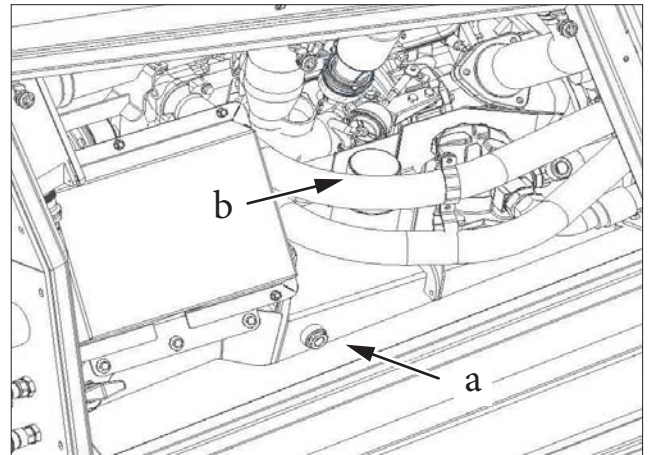
The control of the hydraulic oil level is done through the (a) visual on the side of the tank.

Oil control the machine must be on a level site.

If the level of oil appears to be little or no visible, top up as soon as possible.

To top up the hydraulic oil tank unscrew the cap (b) with the appropriate security key and pour oil up to the level reset.

Always replace the cap with the key.



WARNING :

Do not add oil beyond the MAX level, this situation could lead to leaks from tank. Restore the level only with hydraulic oil as shown in the list (see 9.4).

When using biodegradable oil Panolin HLP Synth E, there shall be no mixing with other oils.

The use of oils and / or grease not provided will invalidate the warranty.

DANGER :



Restore the oil level of the hydraulic circuit after turning off the engine diesel and having closed all the cylinders of the arm.

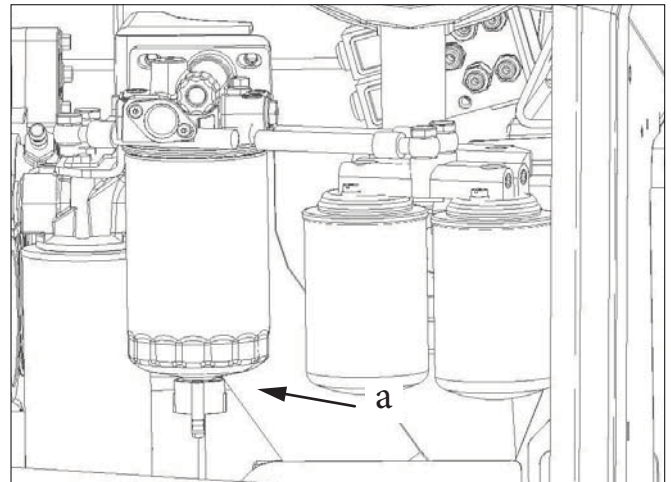
When you run the topping wear protective clothing.

—9.10.5 - FUEL WATER SEPARATOR - WATER DRAIN

Water will accumulate in the water separator bowl that will from time to time need to be purged. The frequency of this task will primarily depend on the quality of the diesel being used. The filter bowl should be regularly inspected, and water drained off as and when required.

The procedure for draining the water is as follows;

- With the engine switched off, place a suitable container under the fuel filter.
- Open the water drain valve located on the base of the filter bowl.
- Allow water to run into the container until it is gradually replaced by a flow of fuel.
- Close the drain valve.



DANGER :



This operation must be carried out at engine off. Because the fuel is highly inflammable do not bring close to naked flames and do not smoke during this operation. Re-clean immediately the soiled area at the fuel exit. During this operation wear protective clothing.

- McCONNEL ROBOPOWER -

9.11 - SERVICE EVERY 50 HOURS

9.11.1 - ELECTRICAL PLANT

This type of check is a visual check that must be carried out with the maximum expertise to avoid short-circuits of the plant that would damage the machine.

Check specifically:

- Fuses, if are corroded or rusty replace them with fuses of the same capacity.
- Battery, check the connection of the connection terminals to the battery and if they are rusty, in this case remove the rust and cover them with appropriate grease: pay great attention in the carrying out of this operation to not make contact the wire of chassis (black) with the wire of electric power feed (red).
- Starter motor, check the cables.
- Alternator, check the cables.

ATTENTION :



If the wiring show signs of short circuit contact McCONNEL SERVICE.

9.11.2 - CHECK TIGHTENING DRIVE MOTOR SCREWS

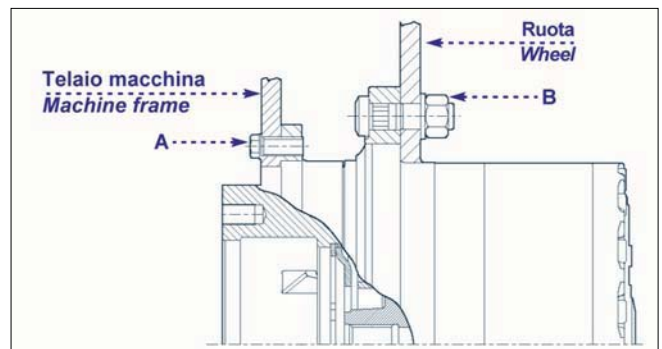
Under normal operating circumstances, no routine maintenance is required, except routine oil checks and oil changes.

Its, however, required check on the tightening of the mount screws.

Check all the screws with a torque wrench.

A = Torque max 250 Nm.

B = Torque max 550-650 Nm.



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9.12 - SERVICE AFTER INITIAL 100 HOURS

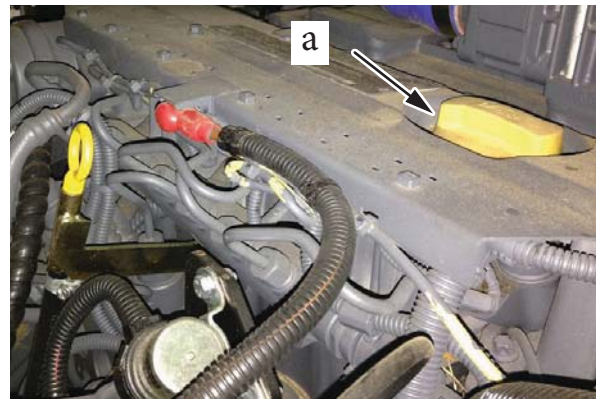
The machine is delivered new without running in so, to the first 100 hours, it is necessary to carry out the replacement of any parts such as:

- Replace engine oil and filter.
- Check coolant level.

9.12.1 - REPLACE ENGINE OIL AND FILTER

The procedure for changing the engine oil and filter is as follows:

- Run the engine for about 5 minutes to heat the oil, then turn it off.
- Rest the machine on a flat level site.
- Remove the bottom cover.
- Remove drain plug and release the oil into a suitable container - ensure the container used has sufficient capacity for the amount of oil.
- Once all the oil has been released, replace drain plug and torque to 34.5Nm
- Unscrew and remove the engine oil filter.
- Take the new filter and smear some engine oil on the rubber seal before fitting - screw the filter hand tight, then turn it approximately a further 3/4 of a turn.
- Remove filler cap and slowly refill with engine oil
- Replace filler cap and start engine.
- Run engine for 5 minutes - Stop for 3 minutes before checking the oil level is correct.



DANGER :



Do not carry out these operations as soon as the engine is off; wait for the engine to become tepid (40-45°C). The oil eventually spilled during the substitution can be cause of slipping; therefore wear protective clothes and anti-slipping boots and immediately take away every trace of oil.

Because oil and filter are considered special refuse, they must be disposed of according to the antipollution norms in act.

—9.12.2 - OIL REPLACEMENT

For the replacement of the oil of the drive motor units perform the following operations:

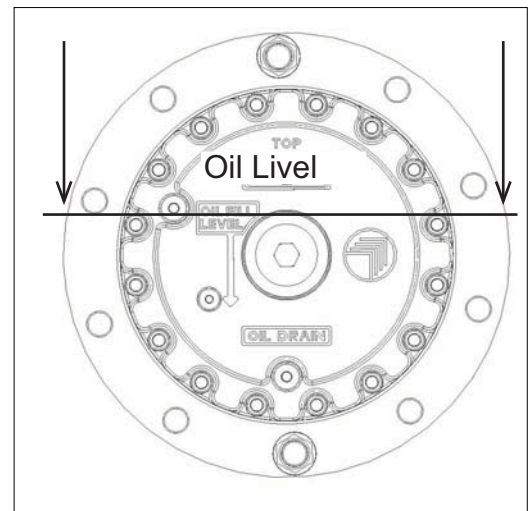
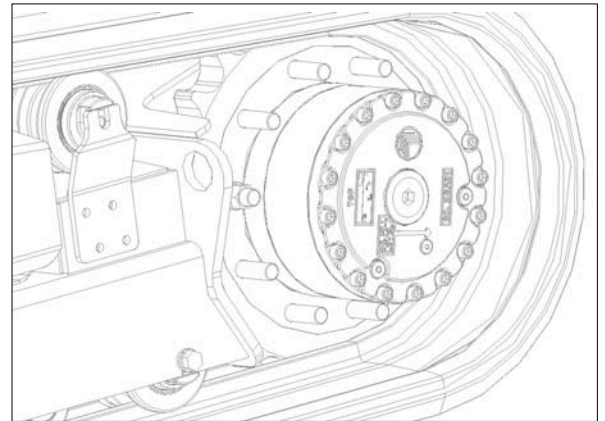
- Place the machine on a level surface, and turn the tracks until the drain plug is at the bottom of the gear-box.
- Turn off the engine and remove the ignition key;
- Open the cap level.

ATTENTION: Remove the oil plugs with extreme caution because an overpressure inside the unit could strongly expel them.

Unscrew the plugs and let the oil flow in a large enough container; in order to facilitate the draining must be oil still warm.

Wait a few minutes until all the oil is drained and then proceed to screw on the plugs.

Proceed with the oil fill-up according to the following procedures listed in Section 9.4



DANGER :



The oil may be spilled during the change could cause to slip; then wear protective clothing and sturdy shoes immediately and remove all traces of oil. Do not dispose of the oil in the natural environment but be careful to eliminate it in compliance with the relative rules and regulations that govern locally.

- McCONNEL ROBOPOWER -

9.13 - SERVICE EVERY 250 HOURS

9.13.1 - REPLACE ENGINE OIL AND FILTER

ATTENTION :

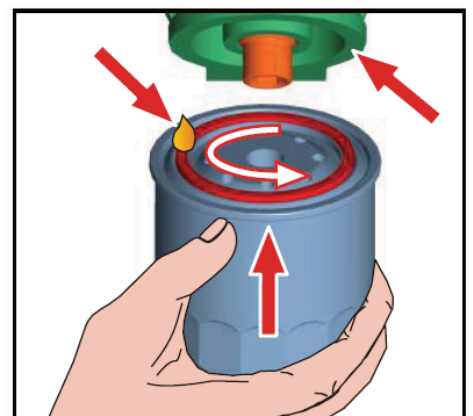
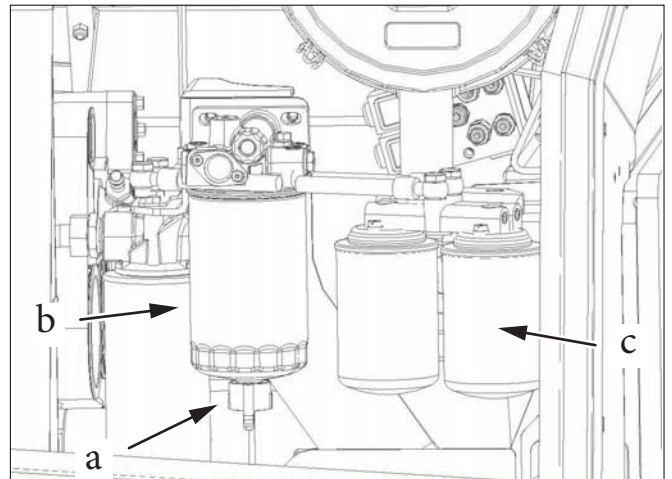


After the break-in period, change oil and filter after a maximum of 250 hours.

To replace oil follow the procedures set out in chp. 9.12.1

9.13.2 - REPLACE THE FUEL FILTER

- Close the fuel supply;
- Place a suitable container under the filter assembly and unscrew the filter bowl securing ring using a filter key.
- Unscrew the fuel filter securing ring using a filter key (c);
- Replace and screw by hand the new fuel filters. Tight with a filter key for another 1/4 round.
- Remove and replace the pre-filter element.
- Restore the fuel supply to the filter;
- Start the engine.
- Check components to ensure there is no fuel leakage.



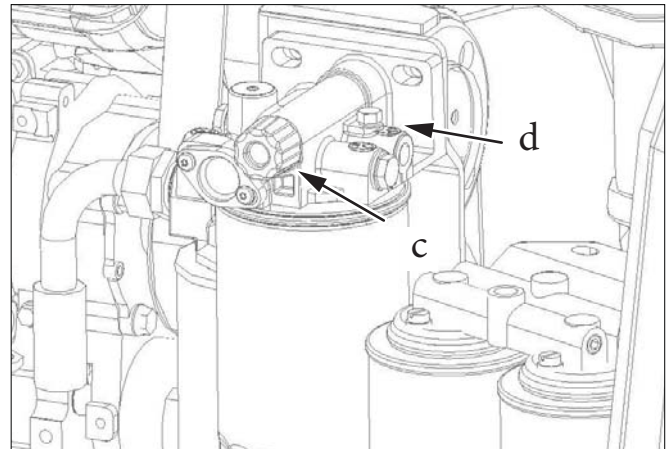
PERICOLO :



Because the fuel is a highly inflammable liquid pay great attention not to use naked flames and do not smoke during these operations. Because the filters are considered special refuse, they must be disposed of according to the antipollution norms in act. During these operations use protective clothes.

Bleed the lubrication system

- Unlock the bayonet lock of the fuel pump (c) by pressing and simultaneously rotating counter-clockwise. Now the pump piston is pushed out by the spring.
- Unscrew the breather screw on the fuel filter (d).
- Pump until feel a strong resistance and pumping continues very slowly.
- Lock the bayonet lock of the fuel feed pump by pressing and turning clockwise at the same time..
- Run the engine for about 5 minutes at idle or at a reduced load. Check the tightness of the prefilter .



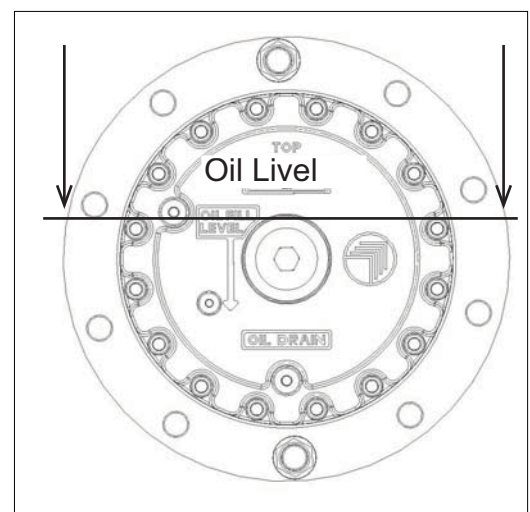
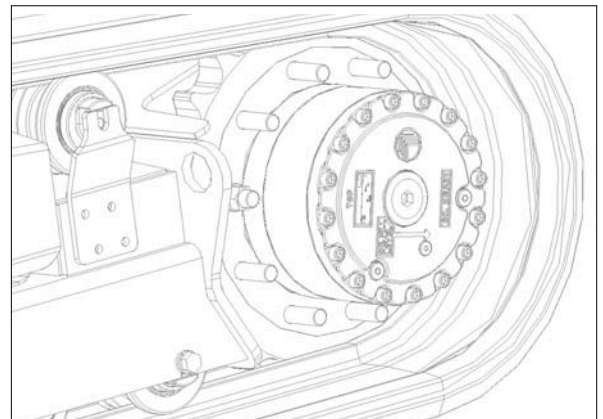
9.13.2 - OIL LEVEL CHECK

- Place the machine on a level surface, and turn the tracks until the drain plug is at the bottom of the gear-box.
- Turn off the engine and remove the ignition key;
- Unscrew the fill and level oil plugs and check the level oil.

ATTENTION: Remove the oil plugs with extreme caution because an overpressure inside the unit could strongly expel them.

Add the lubricating oil from the hole with the features listed in section 9.4 until it flows out from the level hole.

Run the garmotor, after a few minutes, stop and check the oil level.
If necessary, refill with lubricant oil

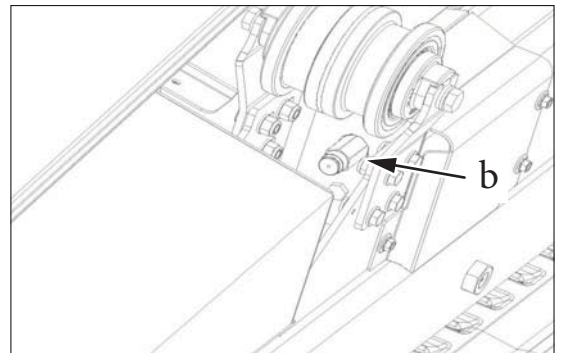
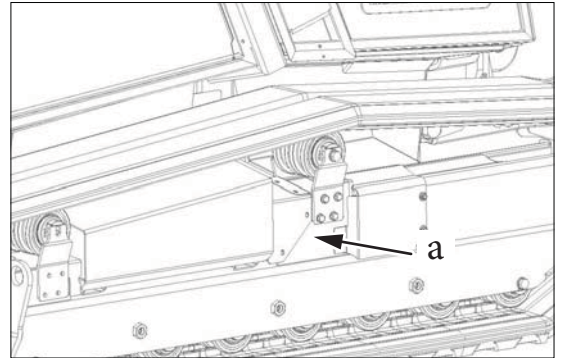


—9.13.3 - CHECK THE PRESSURE TRACK TENSIONER

Its a check to be made for the conservation and optimal maintenance of the tracks and to prevent the accidental exit out from the seat intended.

To control the pressure, remove the protective cover (a), insert the 'pump nozzle on the valve grease (b) and check the pressure gauge obtained by pumping the grease inside.

The correct tensioning pressure is 135 bar



- McCONNEL ROBOPOWER -

9.14 - SERVICE EVERY 500 HOURS

9.14.1 - OIL REPLACEMENT

For the replacement of the oil of the drive motor units perform the following operations:

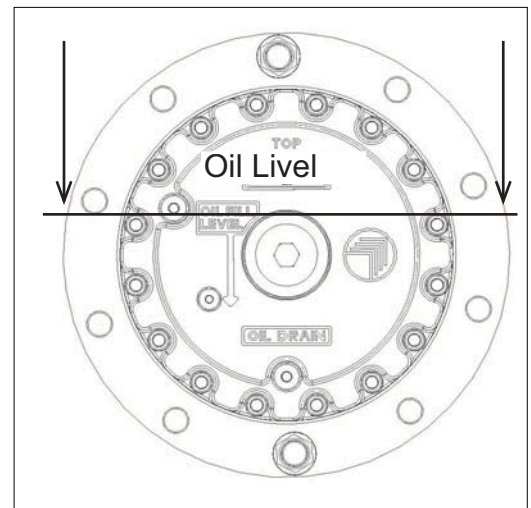
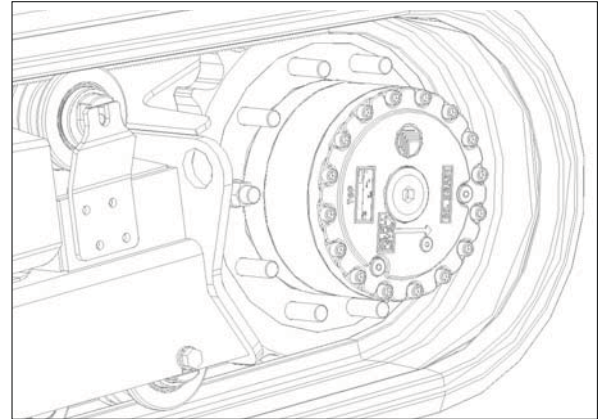
- Place the machine on a level surface, and turn the tracks until the drain plug is at the bottom of the gear-box.
- Turn off the engine and remove the ignition key;
- Open the cap level.

ATTENTION: Remove the oil plugs with extreme caution because an overpressure inside the unit could strongly expel them.

Unscrew the plugs and let the oil flow in a large enough container; in order to facilitate the draining must be oil still warm.

Wait a few minutes until all the oil is drained and then proceed to screw on the plugs.

Proceed with the oil fill-up according to the following procedures listed in Section 9.4



DANGER :



The oil may be spilled during the change could cause to slip; then wear protective clothing and sturdy shoes immediately and remove all traces of oil. Do not dispose of the oil in the natural environment but be careful to eliminate it in compliance with the relative rules and regulations that govern locally.

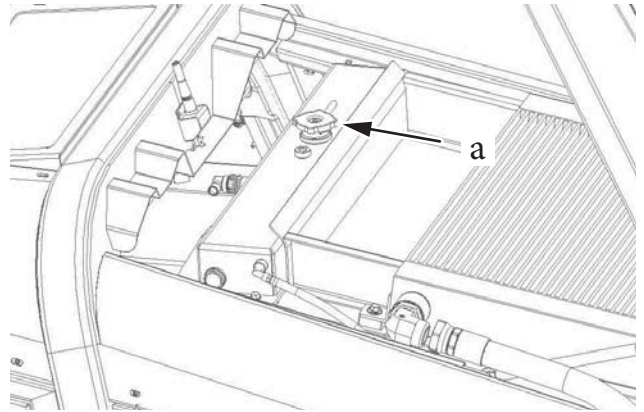
- McCONNEL ROBOPOWER -

9.15 - SERVICE EVERY 1000 HOURS

9.15.1 - COOLANT REPLACEMENT

To replace the coolant, follow the steps below:

- Rest the machine on a firm level site.
- Loosen the radiator cap (a) slowly making vent the residual pressure..
- Remove the drain plug (b) and collect the liquid in specific containers.
- Once all the liquid spilled refit the drain plug.
- Fill the radiator with coolant through the filler cap.
- Close the radiator cap.
- Start the engine and let it idle for 5 minutes, turn off the engine.
- Recheck the fluid level and, if so, top up.



DANGER :



Explosive release of fluids from pressurized cooling system can cause serious burns. Only remove filler cap when engine is cold or when cool enough to touch with bare hands.

Slowly loosen cap to first stop to relieve pressure before removing completely. The check must be carried out with machine parked on level ground with the engine stopped and the equipment on the ground.

Improper disposal of waste can threaten the environment and ecology. For disposal or recycling center, refer to the appropriate bodies (COBAT COOU, etc.)

9.15.2 - HYDRAULIC FILTER REPLECEMENT

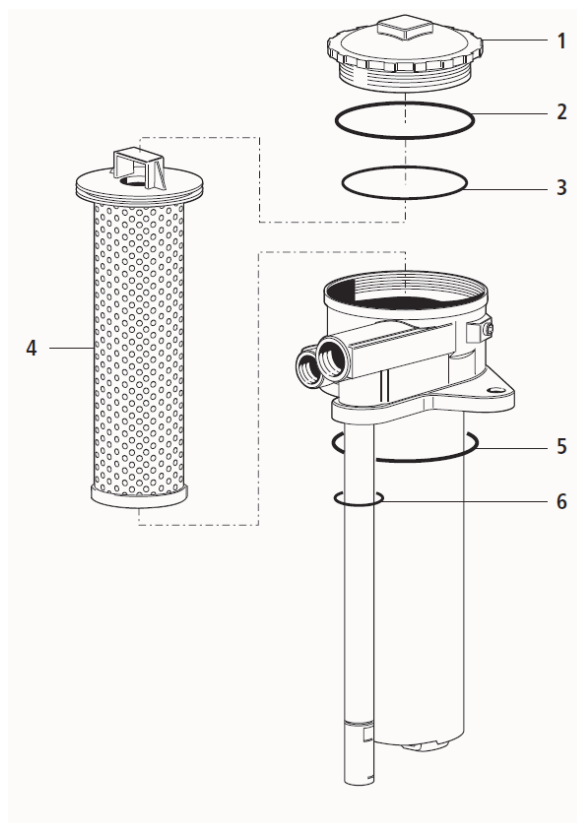
1. Unscrew the red cap on the filter (a) using a 32 mm spanner.
2. Remove the filter element by pulling the handle;
3. The filter should be done only with the original parts, and before it reached the clogging complete.
4. Screw the cap and tight. **Torque max 20 Nm.**



DANGER :



Do not carry out these operations as soon as the engine is off; wait for the engine to become tepid (40-45°C). When these operations are carried out it is possible that fuel is spilt; clean immediately the soiled zone to avoid dangers of fire and slipping. Because the filters are considered special refuse, they must be disposed of according to the antipollution norms in act. During these operations use protective clothes.



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9.16 - SERVICE EVERY 2000 HOURS

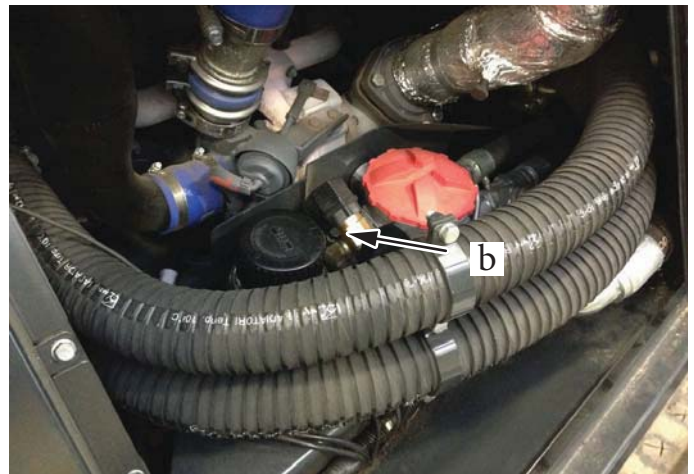
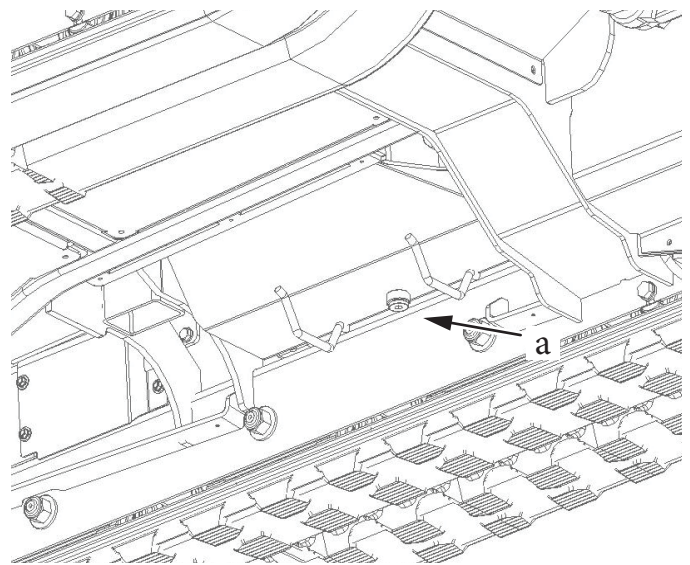
9.16.1 - HYD. OIL REPLACEMENT

To ensure proper lubrication and viscosity in the hydraulic pumps, hydraulic oil must be replaced at regular intervals.

WARNING: Always refill with the same type of oil previously removed. Do not mix different types of oils.

To change the oil, proceed as follows :

- Stop the machine on a flat and raised above the ground to ensure the operations safely.
- Remove the protective covers from the bottom and clean all parts thoroughly before proceeding with the opening of the oil drain plug (a).
- Open the filler cap of the tank (b).
- Remove the drain plug from the tank (CH. 10 mm.) Taking care to collect the used oil in a large container (at least 100 L.)
- Tighten the cap at the end of operation .
- Introducing the new hydraulic oil depending on the type used . (Qty approximately 100 L.)
- Check the level on the visual inspection .
- As soon as he reached the proper oil level , start the engine and let it run for 10 seconds, repeat process until you reach the boost pressure (20-22 bar) on the pumps .
- Shut down the engine and recheck the oil level
- If necessary, refill the oil as long as its level reaches the marking of the auction;



ATTENTION :



McConnel will only guarantee that the product is free from defects if Panolin HLP Synthetic 46 Hydraulic Oil (when indicated) is used in the hydraulic system. The use of another hydraulic oil, or a mixture of the approved Panolin HLP and another oil may severely affect the reliability of the RoboPower hydraulic system.

10 - INSTRUCTIONS FOR EMERGENCY SITUATION

—10.1 - FIRE —

In case of fire, use a CO2 extinguisher according to the standards.

In case of fire on the machine or in the case that the machine finds itself near a fire, exit immediately from the cabin, give the alarm on the construction site and contact the firemen.

11 - NOTES



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