



USE AND MAINTENANCE MANUAL

Translation of the "original instructions"

series

Mach 4 R

ed October - 2017 / code 47302613

EN

Congratulations! You made an excellent choice. Your machine has been designed and built with advanced technological processes.

“Antonio Carraro” machines are extremely versatile and can be used for various purposes in several sectors: in farming, in industry, for public bodies, etc. In the national and international field, “Antonio Carraro” represents a high technological value and corresponds to development programs with the aim of confirming the leadership of this strong and highly innovative brand.

Antonio Carraro S.p.A.

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<http://www.antonio carraro.com>

Use and maintenance manual supplied with the machine identified by the elements listed.

. Model of machine.....

. Serial number.....

. Year of manufacture.....

Dear Customer,
You have purchased a “**Mach 4**” special articulated reversible four-track tractor

Reading the instructions and recommendations in the manual will enable you to enjoy your vehicle's performance in safety.

With this preview we only want to draw your attention to the exclusive characteristics of this vehicle.

“**Mach 4**” is designed to move independently during road travel and to operate in extreme conditions.

- Soft and loose ground
- Ground with a poor grip
- Sand and/or sandy ground
- Ground with accentuated gradients
- Ground with delicate surfaces

Preview recommendations

Each time you start work

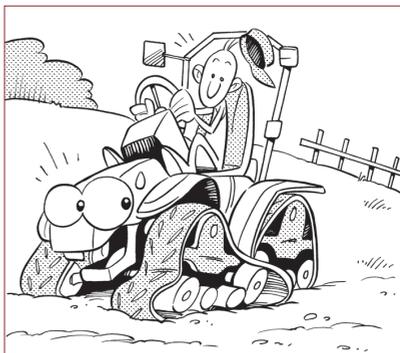
- Remove any residue that may have got into the articulations of the tracks.
- Grease all the required points.



- Check the correct tension of the tracks.

IMPORTANT Tracks too tight; premature wear of the track and of the moving parts and unnecessary power absorption.

Tracks too slack: risk of the track coming off and/or loss of grip during road travel.



- To obtain optimum performance of the track rubber, it must reach a suitable working temperature.

IMPORTANT The track rubber reaches this temperature after a certain period of time, which depends on the weather conditions (in cold climates it takes a longer time).



At the end of each day working on muddy ground

- Remove the mud that has got into the articulations and wash with a jet of water.
- Grease all the required points.
- DO NOT use the “Mach 4” with hardened mud residue to avoid premature wear of the moving parts.



“Mach 4” has been designed to give the best performances in extreme conditions and at normal working speeds. However, when conditions allow, during road travel it can reach speeds of up to 40 km/h, maintaining the same conditions of road-holding, grip and braking.

Any applied loads could modify the performance; adjust the speed so as not to compromise the safety and reliability of the vehicle.

- For correct maintenance, we invite you to read with care the paragraph “DESCRIPTION OF TRACKS”

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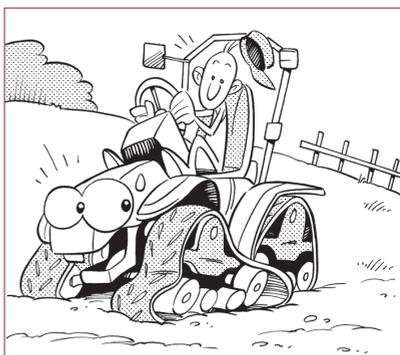
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01

GENERAL INFORMATION

01.1. PURPOSE OF THIS MANUAL

- The purpose of this manual is to transfer the 'User instructions' to the addressees (driver and operators), to prevent and minimise risks in man-machine interaction.
- The information is professionally written by the manufacturer in the original language (ITALIAN), in compliance with ISO 3600:1996 and the current Standards.
- **To facilitate reading and understanding the information, principles of communication most suitable to the addressees' characteristics have been adopted.**
- **To know the exact definition of certain specific terms used in the manual. (→ p. 9)**
- **The information may be translated into other languages to satisfy commercial and/or legal requirements.**
- **The manuals must be translated directly, without changes, from the ORIGINAL INSTRUCTIONS.**
- **Every translation (including that realised by the sender or whoever introduces the machine in the linguistic area in question) must have the wording "TRANSLATION OF THE ORIGINAL INSTRUCTIONS".**
- The manual addressees must know the machine features, respect the safety warnings and comply with the laws in force in the work place.

- Keep this manual safe for the working life of the machine, in a known and easily accessible place so that it is always readily available for consultation.
- Consult the analytic index to easily trace the specific subjects of interest.
- Some information might not completely match the actual configuration of the delivered machine or the available optional equipment and therefore cannot be disputed.
- The eventually inserted additional information does not influence legibility and does not jeopardise the level of safety.
- The illustrations may represent the machine without safety protections and devices, to make the information clearer and more immediate.
- The illustrations without the safety protections and devices **MUST NOT** be taken as reference during the normal operation of the machine.
- The manufacturer reserves the right to change the information without prior notice of any kind, as long as these modifications do not alter the safety level.
- The symbols represented and described below are used to highlight particularly important text or specifications.

**DANGER**

Warnings accompanied by this symbol indicate situations of imminent danger which, if not avoided, may cause death or serious injuries.

**ATTENTION**

Warnings accompanied by this symbol indicate potentially dangerous situations which, if not avoided, may cause slight or moderate injuries.

IMPORTANT Indicates technical and operating information of particular importance that must not be neglected, to avoid damage to the products, the processes, or contamination of the environment.

NOTA Indicates the presence of additional information.



The symbol identifies situations in which the machine must be stopped as soon as possible.

01.2. REQUESTING TECHNICAL ASSISTANCE

For any need, please contact our official service network.

- When making a request for technical assistance relating to the machine, indicate the details shown on the i/d data plate, the approximate number of hours operation, and the nature of the defect.

01.3. ACCOMPANYING DOCUMENTATION

Customers receive the following documentation along with this manual.

- Operation and service manual for the engine
- Certificate of warranty

01.4. TERMS AND DEFINITIONS

The list shows some terms and definitions, with a brief explanation of the meaning to facilitate understanding when reading.

Terms

- **ACTIO™ (Antonio Carraro Integral Oscillating Frame):** the code identifies the solid cast-iron chassis fixed to the axles and housing the tractor transmission, with longitudinal oscillation of up to 15°.
- **RSG™ (Rev-Guide System):** the code identifies the reversible driving system on a rotating turret, which allows inversion of the direction of driving.
- **CATEGORY 1 (cab):** the code identifies that the cab DOES NOT have specific protection for the driver when spraying dangerous substances.
- **CATEGORY 4 (cabin):** the code identifies that the cabin protects the driver against dusts, aerosols, and vapors.
- **PPE (Personal Protective Equipment):** must be worn by the operators, depending on the type of risk, to protect their safety during work.
- **EGR (Engine Gas Recirculation):** the code identifies the valve of the engine exhaust gas recirculation system.
- **DPF (Diesel Particulate Filter):** the code identifies the filter for reducing the polluting emissions caused by fine dust.
- **FOPS (Falling Objects Protective Structure):** the code identifies the structure that protects the driver from the risk of objects falling from above.
- **OPS (Operator Protective Structure):** the code identifies the structure that protects the driver from the risk of side penetration by objects.
- **ROPS (Roll Over Protective Structure):** the code indicates that the protective arch and the chassis/cab structures are approved and reduce the risks of injury to the driver in the event of tipping.

- **ITAC (Intelligent Tractor Antonio Carraro):** the code identifies the operative system that manages all the machine functions.
- **TMC System (Tractor Management Control):** the code identifies the operative system that automatically manages multiple working activities of the machine.
- **SIM (Shift In Motion):** the code identifies the technology that manages range shift with the machine in motion.
- **SIS (Shift In Standstill):** the code identifies the technology that manages range shift with the machine at a standstill.
 - › **PTO (Power Take Off):** the code identifies the power take-off.
 - › **D.E.:** the code identifies the double-acting hydraulic couplings.
 - › **S.E.:** the code identifies the single-acting hydraulic couplings.

Definitions

- Some definitions are written in simplified form (e.g. 'machine stopped in safe condition') without repeating the full explanation to avoid excessive redundancies.

Machine stopped in safe condition

This state foresees the listed conditions to be carried out in the indicated order.

- Position the machine on to a stable and flat surface.
- Engage the reverser lever in the 'forward gear' or 'reverse gear' position. (if present)
- Place the gear lever in 'first gear' position.
- Engage the parking brake of the machine.
- Deactivate the PTO of the machine.
 - a) With equipment carried: lower the power lift unit until it rests on the ground.
 - b) With equipment towed: engage the parking brake of the equipment.
- Switch off the engine and remove the ignition key.
- Place the safety wedges below the tracks to improve stopping conditions.

Machine stopped and on in safe condition

This state foresees the listed conditions to be carried out in the indicated order.

- Position the machine on to a stable and flat surface.
 - Bring the reverser lever to the 'neutral gear' position. (if present)
 - Bring the gear lever to the 'neutral gear' position.
 - Engage the parking brake of the machine.
 - Deactivate the PTO of the machine.
 - a) With equipment carried: lower the power lift unit until it rests on the ground.
 - b) With equipment towed: engage the parking brake of the equipment.
- Place the safety wedges below the tracks if operating conditions so require.

Machine operation

The definition indicates 'all intended uses where man-machine interaction happens'.

The man-machine interaction includes, for example, transport, driving, use, routine maintenance, etc.

"Cab" machine version

The definition indicates 'driver's seat equipped with closed cab'. May also be with air conditioning system.

"Chassis" machine version

The definition indicates 'driver's seat equipped with cab without doors and lateral windows'.

Routine maintenance

The definition indicates 'the set of service operations that must be performed in order to keep the machine functional and fully effective'.

The routine maintenance is normally scheduled by the manufacturer, who states the intervals and the necessary instructions.

Expert maintenance mechanic

The definition indicates 'a person who has received the necessary qualifications and instructions to perform interventions without risks and is authorised to do so'.

Extraordinary maintenance

The definition indicates 'the set of service operations that must be performed in order to keep the machine functional and fully effective'.
The extraordinary maintenance is not described in the 'use and maintenance' manual and must be executed by the service engineer.

Authorised workshop

The definition indicates 'structure selected and authorised by the machine manufacturer to perform routine and extraordinary maintenance'.

Residual risk

The definition indicates 'all residue risks despite all safety solutions have been used and integrated during designing'.

Operator

The definition indicates 'staff with recognised capacities able to interact during the different working phases of the machine'.

Transporter

The definition indicates 'staff with recognised capacities in charge of loading and unloading the machine onto transport means'.

Incorrect use

The definition indicates 'different use of machine to that indicated in the user manual, that may derive from easily predictable human behaviour'.

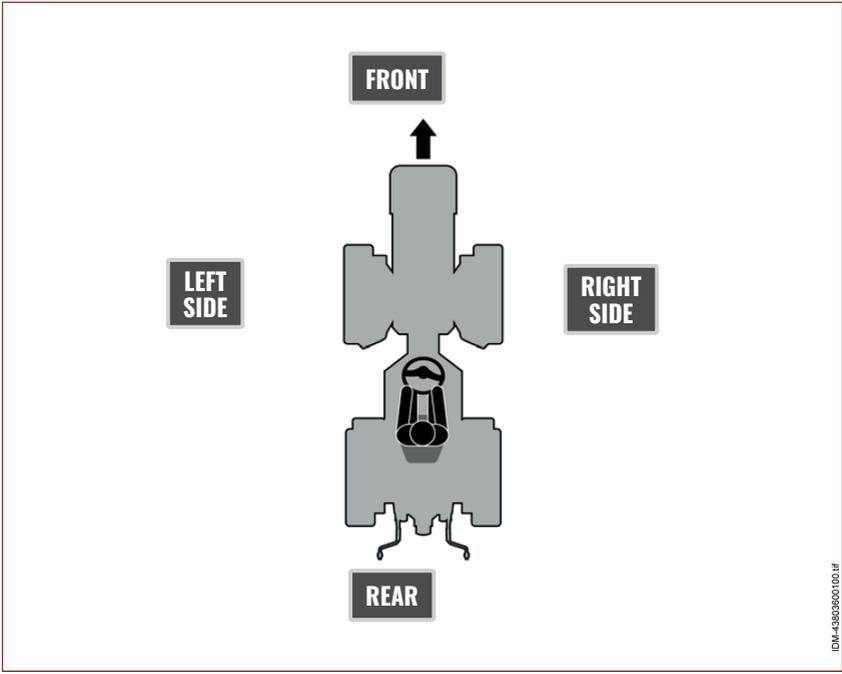
Danger area

The definition indicates 'any area in and/or near a machine in which the presence of a person constitutes a risk for his health and safety'.

Driver

The definition indicates 'staff with recognised capacities able to drive the machine during the different working phases'.

- The illustration carries the directional preferences used in the manual.





02

SAFETY INFORMATION

02.1. INTRODUCTION TO SAFETY WARNINGS

The "Safety information" section contains the warnings to make the addressees (driver and operator) interacting with the machine pay particular attention.

- The information recalls attention on the behaviours to have, in order to minimise risks during man-machine interaction.
- The list shows the safety warnings divided according to operational activity.
- **General safety warnings**
- **Safety warnings for the employer**
- **Safety warnings for handling and transport**
- **Safety warnings for the driver**
- **Safety warnings regarding circulation on roads**
- **Safety warnings before use**
- **Safety warnings for hitching and disconnection of tools (carried or towed)**
- **Safety warnings during use**
- **Safety warnings during use on sloping or uneven terrains**
- **Safety warnings regarding use with tools (carried or towed)**

- **Warnings for use with spraying tools**
- **Safety warnings regarding use in forestry**
- **Safety warnings regarding use with ballasts installed**
- **Safety warnings at end of use**
- **Safety warnings for adjustments and maintenance**
- **Safety warnings regarding environmental impact**
- **Warnings on residual risks**
- Also reported in the safety warnings are the INCORRECT USES associated with the relative operational activity.

IMPORTANT The safety warnings are also repeated in view of operational phases, to emphasise the necessary caution and behaviours the operators must have.

02.2. GENERAL SAFETY WARNINGS

The general safety warnings indicate some principles to be respected during man-machine interaction, to prevent and minimise risks over the entire envisaged life span.

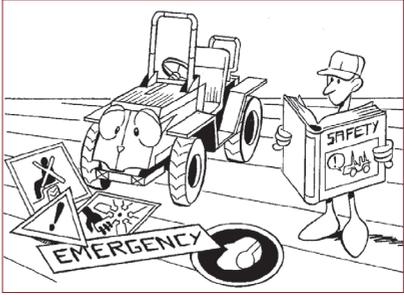
Accidents (often serious) involving the use of farming implements and machines depend on many factors.

One factor that may affect safety is often the environmental condition when working, where it is not always possible to foresee all risks.

Other factors that may determine risks during man-machine interaction, are the poor attention, behaviour and incompetence of the operators.

- As well as complying with the laws in force, during designing the manufacturer has adopted all correct manufacturing techniques.
- The Evaluation of Risks has been carried out to identify the limits of use, the dangers and estimate risk to protect personal safety.
- It has arisen from the Evaluation of Risks that the machine has been equipped with all devices that make safety intrinsic.
- The incorrect or 'negligent' use of the machine by the driver can cause accidents (even fatal) despite the adopted safety solutions.
- Use the machine **ONLY** with original safety devices installed by the manufacturer.
- The tampering and avoidance of the safety devices can cause risks (even fatal) for the operators.
- Caution is always necessary. Safety is also in the hands of the operators working the machine throughout its life span.
- It is always too late to remember what should have been done when it has already occurred.



- Carefully read the 'User instructions' in this manual and those directly applied on the machine.
 - It is important to read the 'User instructions' to minimise risks and avoid dangerous accidents.
 - The driver must ensure he has understood the 'User instructions' before interacting with the machine.
- 
- Carefully read the SAFETY WARNINGS in the 'User instructions' and those directly applied on the machine.
 - Ensure the information signals are legible and respect the reported indications.
 - The information signals can be of different shapes and colours, to signal dangers, obligations, prohibitions and indications.
 - **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.3. SAFETY WARNINGS FOR THE EMPLOYER

- Entrust driving of the machine ONLY to operators who are competent and experienced in using farming machines or similar sectors.
- Foresee a training plan for operators that may not have the necessary skills for using the machine.
- Inform the operators on the reasonably predictable INCORRECT USES and on the RESIDUAL RISKS.
- The operator must be able to read and understand the user manual and recognise the safety signals.
- The operator must prove to have the adequate competences and be in adequate conditions to carry out the activities safely.
- The employer should document the training attended by the operators, so that it can be produced in the event of a dispute.
- To avoid inadequate safety conditions DO NOT entrust unsuitable operators with driving the machine.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.4. SAFETY WARNINGS FOR HANDLING AND TRANSPORT

The safety warnings indicate some principles that the staff (driver and operators) should respect when handling and transporting the machine.

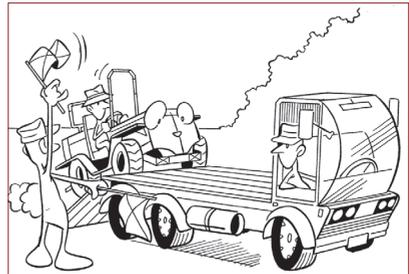
- The machine can be transported directly with the driver in the driver's seat, or with the machine loaded onto a vehicle.
- Carry out loading, unloading and transfer following the information reported directly on the machine and in the 'User instructions'.

- Staff in charge of loading and unloading onto a vehicle to transfer the machine must be competent and skilful and work cautiously.



- ONLY use suitable ramps or other systems able to ensure safe conditions during loading and unloading from the vehicle.
- ONLY use the relevant bar (correctly hooked to the hitching points of the machine) when the towed machine must be loaded/unloaded.

- An assistant may be used (situated at a safe distance) to signal the manoeuvres during loading and unloading of the machine onto the vehicle.



- ALWAYS deactivate the PTO of the machine before loading it onto the vehicle.
- Disconnect the interchangeable equipment from the machine in the event of health risks during loading and unloading onto the vehicle.
- Ensure the machine and its components are safely anchored to the vehicle.
- Verify and arrange the opportune signals, if the shape of the machine exceeds the admitted clearance for road circulation.
- Perform transport using suitable means with adequate capacity.
- On reception, check the integrity of the machine and components. In the event of damage or lack of parts, contact the manufacturer or local authorised dealer to agree on the procedure to be followed.

- Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.
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02.4.1. Incorrect uses

- The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.
- DO NOT lift the machine using lifting devices with a hook (crane) or forks (lifting truck).

02.5. SAFETY WARNINGS FOR THE DRIVER

The safety warnings highlight the attention and behaviour that the driver of the machine should adopt, in order to interact in safe conditions.

Accidents (often serious) involving the use of farming implements and machines depend on many factors.

One factor that may affect safety is often the environmental condition when working, where it is not always possible to foresee all risks.

Other factors that may determine risks during man-machine interaction, are the poor attention, behaviour and incompetence of the operators.

- ONLY use the machine after having read the manual, having identified the control functions and having simulated some manoeuvres, particularly start and stop.
 - Drive the machine ONLY if experienced in using farming machines or similar sectors.
 - The machine must ONLY be used by persons having the requirements requested by the legislations in force in the country of use.
- A black and white line drawing illustration showing a person's hands and face. The person is wearing safety glasses and is looking down at a document titled "INSTRUCTIONS". The document is open, showing some text and a diagram of a hand holding a tool. To the left of the document is a control panel with several buttons and a dial. The person's hands are positioned as if they are reading or pointing at the instructions.
- Learn the functions of all controls to correctly and naturally manoeuvre the machine.
 - Drive the machine carefully and responsibly, and try to perceive potential risks that may exist.
 - The machine must ONLY be driven in suitable psycho-physical conditions and having suitable skills to perform the activities requested.
 - Pay attention when driving and avoid being distracted (use of communication devices, drinking and eating etc.).
 - ONLY use the machine for the uses and with methods intended by the manufacturer.
 - The driver's seat must ONLY be occupied by the driver.
 - ONLY wear conforming clothing and shoes, to be able to correctly activate the controls and not become entangled in moving parts.

- Use the PPE indicated in the 'User instructions' and those envisaged by the laws in force at work.
- Always keep the first-aid kit at hand in the driver's seat (without being an obstruction) and keep it filled.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**



02.5.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- Do NOT drive the machine 'recklessly'.
- DO NOT use the machine under the influence of substances or medicines altering reflexes during driving.
- DO NOT use the machine if you do not know the function of the controls and how to perform manoeuvres naturally, correctly and without risks.
- DO NOT tamper with, exclude, eliminate or by-pass the safety devices installed on the machine.
- NEVER let inadequately trained, documented and authorised operators use the machine.
- NEVER let operators unable to read and understand the 'User instructions' and recognise the safety signals use the machine.
- DO NOT carry out different activities (e.g. answer communication devices) that may distract your attention when using and driving the machine.



- DO NOT transport persons, pets or any object in the driver's seat, in other parts of the machine or on the hitched tools.
- DO NOT wear clothing that may become entangled in moving parts or accidentally activate the controls.
- DO NOT use unsuitable shoes (bare feet, slippers, etc.) that may obstruct or prevent correctly activating the controls.



02.6. SAFETY WARNINGS REGARDING CIRCULATION ON ROADS

The safety warnings indicate some principles that the driver should observe, as well as respecting the highway code, to prevent accidents when driving on the road.

- ONLY circulate on public roads with the machine configured as envisaged upon approval.
- Before taking the machine on the road for whatever purpose, activate all the required safety devices, and those designed to ensure proper braking and road-holding. Secure any parts that could cause sudden shifting movements.
- The machine equipped with oscillating tow bar is not approved for travelling on public roads.
- Before circulating on public roads, check the effectiveness of the signal and lighting devices of the machine, and wear of the tracks.
- Adjust the drive during road circulation (town or out of town roads) to the traffic and route conditions.
- Moderate speed during road circulation with hitched tools (carried or towed).
- Consider that hitched tools modify the distribution of weights, alter stability and reduce braking efficiency.
- ONLY drive the machine on public roads with the driver's seat in the normal position and not in reverse position.
- ONLY use the accelerator with pedal control (with hand lever in 'minimum' position) when circulating on public roads.
- Travel on public roads ONLY with the lifting device locked in high position.
- When there are overhead power lines and/or underpasses, make sure that the clearance above the machine's maximum height is sufficient to avoid hazardous contact.

- When driving on flat ground, it is recommended to disconnect the front-wheel drive during road circulation to avoid unnecessary wear of the tracks and to improve manoeuvring of the machine.
- In downhill routes, especially with hitched interchangeable tools, the front wheel drive **MUST** be engaged to achieve a greater braking action.
- Before taking the machine on the road, **ALWAYS** ensure that the brake pedals are in 'latched' position to avoid dangerous skidding when braking.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.6.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- **DO NOT** use the machine with the driver's seat turned in reverse position during road circulation.
- **DO NOT** use the machine configured differently from that envisioned upon approval during road circulation.
- **DO NOT** travel on public roads with towed equipment if the machine is equipped with oscillating tow bar, since it is not approved for that.
- **DO NOT** use the accelerator control lever during road circulation.
- **DO NOT** use the brake pedals in 'independent' position during road circulation.

02.7. SAFETY WARNINGS BEFORE USE

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- For operator safety, ALWAYS evaluate the dangers associated with use, to establish whether the machine is adequately equipped.
- The dangers to be considered are risk of overturning, the falling of objects and/or materials from a height, the risk of inhaling spray plant protection products, etc.
- Clean the machine to better identify any defects and breaks.
- For correct operation, visually check the machine is in good state, without fluid leaking and without loose components.
- ONLY use the machine if the scheduled maintenance interventions have been regularly carried out.
- Check the general conditions of the tracks (intact chassis, without damage, etc.) and that the tread is not excessively worn.
- Check that the silencer is in efficient conditions for the good operation of the engine and to limit acoustic pollution.
- ALWAYS keep the ascent platforms and control pedals clean and free from mud and/or debris.
- Check that the driver's seat is clear from objects so as not to obstruct the activating of the controls.
- Check the position of the seat, of the wheel and the rearview mirrors to assure correct ergonomics and visibility from the driver's seat.
- Orientate the driver's seat (normal or turned into the reverse position) depending on the travel direction necessary for the activity to be carried out.
- Turn the driver's seat ONLY with machine not steered and stopped in safe conditions.
- After having turned the driver's seat, always check that the control devices function correctly.
- Check that all guards, protection and safety devices installed (sensors, safety arch, safety belts, etc.) are intact and efficient.
- Refill fuel in an open and aired space, with engine at ambient temperature and machine stopped in safe conditions.
- When there are overhead power lines and/or underpasses, make sure that the clearance above the machine's maximum height is sufficient to avoid hazardous contact.

- Refuel the machine without completely filling the tank in order to avoid fuel leaking (it expands if temperature rises).
- Fuel leaks or spillage on hot surfaces and on electrical components can cause fires.
- ALWAYS make sure that the safety arch is blocked correctly in the lifted position and fasten safety belts, to reduce risks in case of overturning.
- It is possible to lower the safety arch ONLY to move the machine temporarily in areas without RISK of overturning and for short distances.
- When the safety arch is lowered, the driver MUST NOT fasten the safety belts and, as he is not protected in case of overturning, he must manoeuvre the machine with the utmost caution.
- Keep cab windows clean (inside and outside) to assure maximum visibility. If fogged, activate the relative controls.
- Before doing work where there is a risk of falling objects, make sure that your protective structure is certified as a FOPS and/or OPS safety device. See cab approval plate (→ p. 50), then consult the respective paragraph. (→ p. 39)
- The machine equipped with pressurised cab and active charcoal filters allows hitching tools to spray plant protection products with lower risk of inhaling.
- ALWAYS wear the PPE to spray plant protection products to minimise the risk of inhaling, even if the cab is pressurised and with active charcoal filters.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.7.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- DO NOT use the machine if the scheduled maintenance interval has expired.
- DO NOT use the machine if the tracks are not in good condition or have technical and dimensional features different from those envisioned by the manufacturer.
- DO NOT use the machine with ballasts installed and tools disconnected, to avoid risk of instability.
- DO NOT use the machine with safety arch lifted, without having fastened the safety belts.
- Unless absolutely necessary and temporarily, DO NOT use the machine with the safety arch lowered.
- DO NOT fasten the safety belts if it is necessary to temporarily, and for short distances, move the machine with the safety arch lowered.

- DO NOT spray plant protection products without wearing the PPE, even if the cab is pressurised and with active charcoal filters.
- DO NOT do work where there is a risk of falling objects if your protective structure is not certified as a FOPS and/or OPS safety device.
See cab approval plate (→ p. 50), then consult the respective paragraph. (→ p. 39)
- DO NOT smoke while filling up with fuel and DO NOT fill the machine in potentially dangerous environments (risk of fire and/or explosion).
- DO NOT hitch towed tools unless compatible with the machine (power, effort at the towing hook, number of PTO revs, braking system, etc.).
- DO NOT use the machine with the safety devices not perfectly installed and effective.



02.8. SAFETY WARNINGS FOR HITCHING AND DISCONNECTION OF TOOLS (CARRIED OR TOWED)

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- Do not allow persons not involved in the hitching and disconnection of the interchangeable tools to approach the operational area.
- Based on the work to be carried out, evaluate the most suitable tools to be hitched (carried or towed), to prevent dangers and minimise the risks.
- Refer to the 'User instructions' of the tool to be hitched to understand the operating methods and risks associated with its use.
- Apply the specific formula (indicated by the machine manufacturer) to calculate the compatibility of the carried tool to be hitched.
- ONLY hitch carried tools conforming with the values obtained with the specific formula to maintain the machine stable.
- Anyone who plans to combine equipment NOT MANUFACTURED by the machine manufacturer must identify the risks in the machine-equipment matching and take responsibility to eliminate them.
- The machine manufacturer has evaluated and eliminated ONLY the risks of the machine with no equipment or combined with equipment manufactured by it (only for combinations specified by the manufacturer).
- Correctly install the necessary ballasts (calculated with specific formula), to ensure stability and correct adherence of the machine.
- Carry out all hitching and disconnection operations of the tools (carried or towed) ALWAYS with machine stopped in safe conditions.
- Correctly hitch the carried tools to the power lift unit to avoid accidental disconnection.
- Check that the carried tools are correctly fastened and that the power lift unit does not oscillate to avoid accidental disconnection.
- ONLY hitch the towed tools to the towing hook and NOT to the machine's trailer hook.
- The towed tools must be compatible with the machine features (power, effort at the towing hook, admitted towable weight, number of PTO revs, braking system, etc.)



- Verify that the number of PTO revolutions of the tool is compatible with that of the machine.
- ALWAYS select, using the relative machine control, the requested number of revolutions for the correct operation of the tools.
- Check that all safety protections of the cardan shaft are integral and efficient and respect the relative 'User instructions'.
- The incorrect installation of the cardan shaft and inefficiency of the safety protections can cause accidents (even fatal).
- Connect the cardan shaft first to the tool PTO (carried or towed) and then to that of the machine.
- Respect the connection sequence of the cardan shaft, to avoid fatal whiplash if the machine's PTO accidentally starts.
- ALWAYS correctly connect the safety chains to prevent the rotation of the cardan shaft protections.
- Verify that the cardan shaft (in particular upon first machine-tool coupling) has a suitable length so as not to 'stop dead' or 'slip out' during use.
- Clean and check integrity of the quick couplings and the couplings, before hydraulically connecting the tool to the machine.
- In the tool disconnection phase, insert the relative plugs to protect the hydraulic couplings and put away the pipes correctly to avoid damaging them.
- The machine can tow equipment without brakes (trailers, tankers, etc.) or with an inertia braking system or an independent mechanical system.
- The brake control with the independent mechanical system is operated via the lever to be placed in the holder on the machine. (→ p. 54)
- The towed equipment that can be attached to the machine must have a maximum weight that falls within the limits indicated by the manufacturer. (→ p. 272)
- Adjust the towing hook so that the drawbar of the towed tools is correctly positioned to avoid altering the vertical and drive effort.
- Insert the retainer devices (plugs, cotter pins, etc.) to avoid accidental disconnections and make correct electric and hydraulic tools connections.
- Use different coloured quick couplings to connect the hydraulic system of tools hitched to the machine, at front and rear of the machine (carried or towed).
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

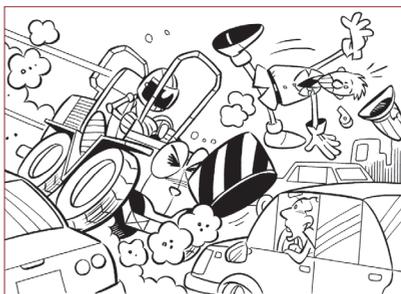
02.8.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- DO NOT use the front towing hook to tow interchangeable tools or to perform other non-pertinent activities.
- DO NOT hitch tools (carried or towed) if not compatible with the technical features of the machine.
- DO NOT hitch the front loader to the machine, if not equipped by the manufacturer with hitching points for these tools.
- DO NOT hitch tools (carried or towed) if not equipped with all safety devices correctly installed and efficient.
- DO NOT hitch the tools to the machine if the information in the relative manuals is not thorough, to avoid unforeseen residual risks.
- DO NOT use the tools (carried or towed) if the cardan shaft is not correctly connected and the safety protections are not intact.
- DO NOT connect and disconnect the tools and connect the power supply, if the machine is not stopped in safe conditions.
- DO NOT use same coloured quick couplings to connect the hydraulic system of tools hitched to the machine, at front and rear of the machine (carried or towed).
- NEVER use the emergency hook (front) to tow any interchangeable tool.

02.9. SAFETY WARNINGS DURING USE

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- ONLY use the machine in compliance with the laws disciplining the work and, in case of circulation on public roads, those requested by the highway code.
- Climb into and out of the driver's seat ONLY using the foreseen points and the appropriate platforms and handrail to avoid risk of falling.
- Before starting the engine, check that all controls are in neutral to prevent uncontrolled and dangerous start-ups.
- ONLY start the engine when sitting in the driver's seat and fasten the safety belts during working activity.
- Pre-heat the engine suitably (ticking over) using the accelerator control lever, before starting work activities.
- It is recommended to pre-heat the engine, in particular during running in and in the event of low temperatures.
- Use the accelerator control lever ONLY when starting and/or to run the engine at a constant speed during the work phases.
- Immediately stop the machine and switch the engine off if anomalies, noises and/or suspect vibrations are detected during use.
- Re-start the machine ONLY after having restored the normal use conditions.
- Moderate engine rpm to avoid disturbing when using the machine in built-up areas.
- Verify that, with the machine equipped with tools, the view from the driver's seat is sufficient to note the presence of persons or other dangers.
- Check that the work area has suitable manoeuvring space and ideal environmental conditions.
- ONLY use the machine at night with lighting devices perfectly intact and efficient.



- Immediately stop the machine if there are unauthorised persons (children, elderly people, animals, etc.) within the action range.
- ONLY climb on, descend and/or leave the driver's seat with the machine stopped in safe conditions.
- Activate the lighting devices when in poor visibility conditions and adjust driving to the environmental conditions.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**



02.9.1. Incorrect uses

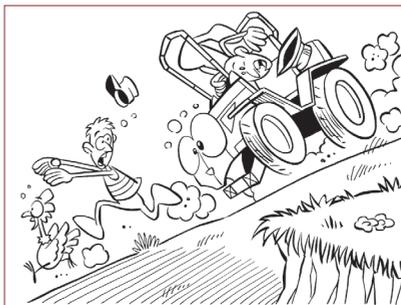
- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- DO NOT access the driver's seat from points different to those envisioned and indicated by the manufacturer in the 'User instructions'.
- DO NOT use the machine without having pre-heated the engine at adequate rev, in particular during running in or in the event of low temperatures.
- DO NOT continue using the machine if anomalies, noise or suspect vibrations are encountered.
- DO NOT continue using the machine if, from the driver's seat, the action range is not clearly visible and if there are persons and/or animals present.
- DO NOT climb on or off the machine if it is not stopped in safe conditions.
- Never leave the engine running in closed or inadequately ventilated environments. Exhaust fumes are potentially dangerous to health.
- DO NOT work at night unless all lighting devices on the machine and on the tools are perfectly intact and efficient.
- DO NOT work with risk of dangerous substances being emitted without wearing the PPE, even if the cab is pressurised and with active charcoal filters.



02.10. SAFETY WARNINGS DURING USE ON SLOPING OR UNEVEN TERRAINS

The driver must drive the machine appropriately and ALWAYS proceed with caution, especially in conditions entailing the risk of overturning. It is difficult to formulate a complete list of all the conditions linked to behavioural and environmental factors which can cause the risk of overturning. Compliance with the listed warnings can decrease but NOT completely eliminate the risk of overturning.

- ALWAYS adapt the advancement speed of the machine to the conditions of the ground and always proceed with great care.
- Pay attention to the risk of overturning when using the front loader or the three-point hitch to lift loads that can alter the machine's center of gravity.
- Pay attention to risk of overturning when working on sloping terrains, in particular with machine equipped with tools and ballasts.
- Avoid any type of obstacle which can endanger stability with the risk of the machine overturning, especially on steep terrains (ditches, holes, soft ground, etc.).
- Activate the four-wheel drive to improve holding on the ground in critical conditions (uneven, soft, with excessive gradient, etc.).
- Drive safely, with four-wheel drive engaged, to reduce the risk of the machine overturning.
- Insert a low transmission ratio before facing steep descents (to make use of the engine brake) and steep ascents (to have good traction).
- Be careful when the machine is in conditions in which it can easily tip up (such as coming out of the ditch) to avoid the risk of tipping over backwards.
- The risk of overturning increases suddenly and uncontrollably when driving too fast or if the machine is configured with 'narrow track'.
- Be careful when working on soft ground (even flat) due to adverse weather conditions (heavy rains, flooded fields, etc.)



- Pay maximum attention when operating near to ditches, slopes, channels etc. as the ground is less compact and could slide.
- Maintain control of the machine, stay in the driver's seat and avoid instinctive and unreasonable gestures in case of risk of overturning.
- In case of overturning, hold tightly onto the steering wheel and at the same time, lean towards the opposite side, pressing feet onto the footboard and back into the seat.
- Identify the escape routes (indicated in the manual) to react in case of overturning with machine equipped with cab.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**



02.10.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- DO NOT perform sudden steering actions at high speed, in order to prevent the loss of stability of the machine and the risk of overturning.
- NEVER change gear during descent on steep ground, in order to prevent the gear not being inserted correctly (gear in neutral).

02.11. SAFETY WARNINGS REGARDING USE WITH TOOLS (CARRIED OR TOWED)

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- Pair the machine with interchangeable equipment ONLY after having assessed the compatibility of the technical and operational characteristics of both.
- Combining the machine with interchangeable equipment reduces stability and increases the risk of overturning.
- Pair ONLY equipment that is compatible with the machine's technical and operational characteristics.
- Drive the machine properly and with caution, particularly when it is equipped with tall, heavy interchangeable equipment.
- To maintain stability and reduce the risk of overturning, proceed at low speed, avoid suddenly steering or reversing.
- The risk of instability and overturning increases on steep terrain or steep slopes.
- ONLY activate PTO with tools (carried or towed) in work position.
- Lift the carried tool and block it suitably during circulation on roads, so as to prevent uncontrolled and unexpected movements.
- Travel on public roads ONLY with the lifting device locked in high position.
- ONLY transfer the machine with carried tools in lifted position and activate the safety devices to hold the position.
- Moderate speed during road circulation with hitched tools (carried or towed).
- Drive cautiously to limit the risk of instability if tools (carried or towed) are hitched to the machine.
- Consider that hitched tools modify the distribution of weights, alter stability and reduce braking efficiency.
- Drive cautiously during use of hitched tools (carried or towed) envisioning the presence of other operators, to protect their safety.
- Provide information on the behaviour and methods to be respected for safety purposes, when the use of tools (hitched to machine) envisages the presence of operators.



- Adopt suitable measures to prevent dangerous movements, if the machine is equipped with tools that work in static mode (saw, woodcutter, etc.).
- Take appropriate measures in the event of falling and/or lateral penetration of material during operation.
- Before doing work where there is a risk of falling objects, make sure that your protective structure is certified as a FOPS and/or OPS safety device. See cab approval plate (→ p. 50), then consult the respective paragraph. (→ p. 39)
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.11.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- DO NOT hitch interchangeable tools to the machine (carried or towed) with technical and operational features that are not compatible with those supplied by the machine (power, mass, effort at the towing hook, category, number of PTO revs, etc.).
- DO NOT perform sudden braking or manoeuvres but adjust speed if the machine is equipped with tools (carried or towed).
- DO NOT activate the PTO of tools (carried or towed) hitched to the machine when they are not in work position or during road circulation.

02.12. WARNINGS FOR USE WITH SPRAYING TOOLS

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- Refer to the 'User instructions' of the tool to be hitched to understand the operating methods and risks associated with its use.
- The driver's seat, even if equipped with CATEGORY 1 cab, does not protect the driver against dangerous substances.
- Refer to the instructions on the plant protection products to be used, to evaluate the type of PPE to wear as protection against inhalation and contact.
- Comply with the information on the plant protection products (in particular those relating to safety), and arrange adequate preventive measures.
- Interrupt spraying if there are persons within the action range, exposed to risk of inhaling the plant protection products.
- Always keep the doors and windows closed during spraying to avoid inhaling plant protection products.
- After spraying, wash the tools and also the machine (if necessary) to eliminate plant protection product residues deposited on the surfaces.
- Carry out washing in a suitable place to avoid dispersing the washing residue in the environment.
- Park the machine with spraying tools in a non-accessible place, to avoid unauthorized persons coming into contact with the plant protection products.
- Accurately clean the PPE used during spraying and deposit them in a suitable place to maintain them efficient and functioning.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.12.1. Incorrect uses

- The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.
- DO NOT spray plant protection products without wearing the PPE, even if the cab is pressurised and with active charcoal filters.

02.13. SAFETY WARNINGS REGARDING USE IN FORESTRY (STRUCTURE NOT CERTIFIED FOPS AND/OR OPS)

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- The list gives the most common risks when using the machine in forestry.
 - › *Risk of trees, logs or other material falling from a height into the area reserved to the driver.*
 - › *Risk of side penetration of trees, logs or other material into the area reserved to the driver.*
- Carry out forestry work ONLY with the machine at a standstill, with tool hitched and driven by the PTO.
- Take appropriate measures in the event of falling and/or lateral penetration of material during operation.
- The driver protection structure IS NOT CERTIFIED as a FOPS and OPS safety device.
- The machine has no points for fitting FOPS and OPS protective devices and no attachment points for fitting front loaders.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.13.1. Incorrect uses

- The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.
- DO NOT use the machine in forestry, even equipped with a cab, if there is the risk of falling and/or lateral penetration of material.

02.14. SAFETY WARNINGS REGARDING USE IN FORESTRY (FOPS CERTIFIED STRUCTURE)

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- The driver protection structure IS CERTIFIED as a FOPS agricultural safety device, code 10 OECD, and IS NOT CERTIFIED as an OPS safety device.
- Work with the risk of objects falling from a height is allowed ONLY in an **agricultural environment**, with applications that envisage the use of equipment of handling agricultural products.
- Use in **forestry** is allowed only for work of a stationary nature, or the transport and use of the power take-off for which there is NO risk of objects falling from a height.
- Any use in forestry not included in those above is NOT allowed.
- The use of the machine for purely forestry uses IS NOT ALLOWED since it involves the following risks:
 - › *Risk of trees, logs or other material falling from a height into the area reserved to the driver.*
 - › *Risk of side penetration of trees, logs or other material into the area reserved to the driver.*
- Where there is the risk of objects falling from a height and/or of side penetration of material, operator protections must be provided with a higher safety level.
- The machine does not have points for applying OPS protection devices.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.14.1. Incorrect uses

- The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.
- DO NOT use the machine in forestry for applications other than those listed, even if equipped with a cab certified as a FOPS agricultural safety device, code 10 OECD.
- DO NOT use the machine (even with cab) with risk of side penetration of material, as IT IS NOT CERTIFIED as an OPS safety device.

02.15. SAFETY WARNINGS REGARDING USE WITH BALLASTS INSTALLED

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- To correctly balance the machine, **ONLY** proportionally install the necessary amounts of ballasts.
- To keep the machine balanced, install the same amount of ballasts on both sides.
- Apply the ballasts in the front part in order to maintain stability, when heavy and long interchangeable tools are hitched to the vehicle.
- **ALWAYS** remove the ballasts when disconnecting the carried tools in order to maintain machine stability unaltered.
- The machine with ballasts installed, but without carried tools disconnected, becomes unstable, with premature wear of the tracks and consumption of more fuel.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.15.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- **DO NOT** use the machine with ballasts installed and tools disconnected, to avoid risk of instability.
- **DO NOT** use the machine with the ballasts not suitably distributed depending on the type of interchangeable tool hitched and the conditions of the ground where the operations must be performed.
- **DO NOT** use the machine equipped with the ballasts, if they are not necessary, so as not to jeopardise its performance and functionality.
- **DO NOT** overload the machine with ballasts over the maximum weight allowed.

02.16. SAFETY WARNINGS AT END OF USE

The safety warnings indicate some principles that the staff (driver and operators) should respect during man-machine interaction.

- Safely park and stop the machine in an adequate place, so that it is not an obstruction and danger.
- Set-up suitable conditions and lock the doors (machine equipped with cab) to prevent access to unauthorised persons.
- If parking the machine in a closed place, check the environment is sufficiently aired.
- To avoid any risk of fire, allow the engine to cool down properly.
- In cold periods, remove the battery to prevent the electrolyte from freezing.
- Disconnect the battery cable (negative pole) and cover the two battery poles with Vaseline.
- In case of prolonged machine inactivity, adopt adequate procedures to preserve functioning and prevent deteriorations.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

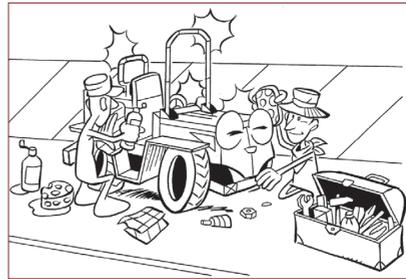
02.16.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- Do not park the machine in enclosed or unventilated spaces with the engine still warm.
- DO NOT abandon the driver's seat without having stopped the machine in safe conditions.

02.17. SAFETY WARNINGS FOR ADJUSTMENTS AND MAINTENANCE

The safety warnings indicate some principles that the staff (driver and operators) should respect when adjusting and servicing the machine.

- The warranty expires if the periodical service and the inspection and maintenance intervals indicated in the user manual are not respected.
- Services must be carried out at enabled and authorised workshops according to the manufacturer procedures.
- Keep the machine in perfect running conditions and carry out scheduled maintenance according to the frequency and methods provided by the manufacturer.
- Refer to the maintenance table to avoid using the machine if the scheduled interval has expired.
- Good maintenance will maintain the best performance, a longer working duration and a constant preservation of the safety requirements through time.
- Keep all main parts constantly clean (engine, battery, fuel tank etc.) to prevent the risk of fire owing to the accumulation of dust and residues.
- Keep the silencer in efficient conditions for the good operation of the engine and to limit acoustic pollution.
- The normal adjustments and routine maintenance must be performed by operators having competence and experience acquired and recognised in the sector of intervention.
- Carry out the interventions following indications in the user manual, ONLY using suitable tools, not worn, and with adequate equipment and/or devices.
- Provide adequate safety conditions for working in high, not easily accessible or dangerous areas.
- Access to high areas without adequate equipment can pose safety risks.
- Before carrying out adjustment and maintenance interventions in dangerous areas, set-up adequate safety conditions complying with the laws in the work place.
- Safely block the machine elements that must be lifted during adjustment and maintenance, to avoid the risk of sudden lowering.

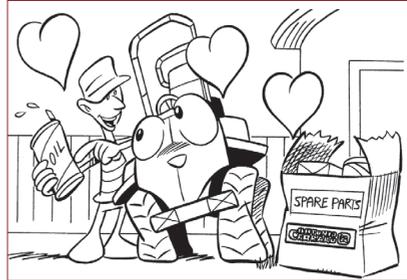


- Wear the PPE indicated in the 'User instructions' and/or on the machine and those envisioned by the laws in force at work.
- In searching for pressurised oil leaks, use suitable individual protection devices to avoid perforations of body parts.
- Before carrying out maintenance and adjustment interventions, activate all machine safety devices.
- Carry out adjustment and maintenance operations with machine stopped in safe conditions.
- Before carrying out adjustment and maintenance interventions on the engine or near-by areas, ensure the temperature of the components does not entail risk of burns.

- The operators authorised to carry out any intervention on the machine, must have experience acquired and recognised in the specific sector.
- Have the extraordinary maintenance interventions carried out ONLY by experts, able to work in compliance with the laws at work.



- Replace parts that are too worn, especially those relative to safety, ONLY using original spare parts or parts that have the exact same features.
- The use of the machine equipped with non-original components or those with different features (in particular the components relative to safety) exonerates the manufacturer from any liability and makes the warranty rights in force become null and void.



- ONLY use lubricants (oils and greases), refrigerant gas and cooling liquids recommended by the manufacturer. All this assures machine functioning and the envisaged safety level.
- **Failure to observe the information provided can result in risks to the safety and health of persons and may cause financial damage.**

02.17.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**

- DO NOT perform interventions different to those indicated in the user manual without the manufacturer's express authorisation
- DO NOT perform any intervention on the machine or interchangeable tools if the machine has not been stopped in the safe conditions indicated.
- Do not climb but use adequate equipment to reach high areas
- DO NOT carry out any interventions on the electric plant or welding operations on the machine without first disconnecting the battery and any circuit board connectors, thus preventing irreversible damage to the components.
- DO NOT clean the machine using pressurised jets of water aimed directly onto the electric components and do not use inflammable and/or corrosive products so as not to damage the components.
- DO NOT perform any intervention on the components of any pressurised circuit (hydraulic plant, air conditioning, etc.), without first having eliminated the pressure and having controlled that there is not residual energy present.
- Do not dispose of polluting materials in the environment. Dispose of all such materials in compliance with applicable legislation.

02.18. SAFETY WARNINGS REGARDING ENVIRONMENTAL IMPACT

- Every organisation has the task of applying procedures in order to identify, evaluate and control the effect that its activities (products, services, etc.) have on the environment.
- The procedures to follow in order to identify significant impact on the environment must consider the following factors:
 - › *Emissions into the atmosphere*
 - › *Discharging liquids*
 - › *Management of waste*
 - › *Contamination of the ground*
 - › *Use of raw materials and natural resources*
 - › *Local problems related to environmental impact*
- With the purpose of minimising environmental impact, the manufacturer supplies some indications below that must be taken into consideration by anyone who, for any reason, interacts with the machine during its envisaged life span.
 - › *All packaging components must be disposed of with respect to the laws in force on this subject.*
 - › *With the machine engine running in closed environments, make sure that there is suitable fresh air in order to prevent the concentration of unhealthy air for persons.*
 - › *During use and maintenance, do not disperse polluting substances into the environment (oils, greases, etc.) and dispose of them separately depending on the composition of the different products and with respect for the laws in force regarding this subject.*
 - › *Keep noise levels to a minimum to reduce acoustic pollution.*
 - › *Do not dispose of polluting materials in the environment. Dispose of all such materials in compliance with applicable legislation.*
 - › *The WEEE can contain dangerous substances with potentially noxious effects on the environment and the health of persons. Disposal must be performed correctly.*
 - › *In the disposal phase, select all components depending on their chemical features and dispose of them separately with respect to the laws in force regarding this subject.*
 - › *With reference to the WEEE Directive (Waste Electric and Electronic Elements), in the disposal phase the user must separate the electric and electronic components and dispose of them in relative authorised centres or return them still installed to the dealer on making a new purchase.*
 - › *All components, which must be separated and disposed of in a specific manner, are marked by the relevant sign.*
 - › *The abusive disposal of Waste Electric and Electronic Elements (WEEE) is punished with legal sanctions regulated by the laws in force in the territory where the infraction is committed.*

02.19. WARNINGS ON RESIDUAL RISKS

Residual risk

The definition indicates "all residue risks despite all safety solutions have been used and integrated during designing".

- The list shows the residual risks typical of this type of machine.
- **Risk of instability:** the driver must drive prudently and responsibly to avoid the risk of overturning and/or tipping the machine.
- The risk of instability could increase if work tools are hitched to the machine, if ballasts are installed, if it operated in proximity of ditches and precipices, on soft ground, on unlevelled ground and in unfavourable environmental conditions.
- **Risk of tripping:** when getting into and out of the driver's seat, the driver must take care to avoid tripping over any control devices.
- **Risk of impact or projection:** during installation of the mechanical transmission cardan shaft, the driver **MUST CONNECT IT FIRST** to the interchangeable tool and then to the machine.
- In the shaft disconnection phase, the driver **MUST ALWAYS DISCONNECT IT FIRST** from the machine transmission.
- To prevent the very dangerous 'WHIPLASH', the hitching and disconnection phases of the cardan shaft of the machine **MUST** be carried out correctly and in the sequence envisioned.
- **Risk of crushing:** the driver must hitch and disconnect the interchangeable tools **ONLY** from the driver's seat and must **NOT** allow anyone to enter the hitching area.
- **Risk of shearing:** **DO NOT** approach the cooling fan or moving parts without guards, with the upper limbs.
- **Risk of inhaling harmful substances:** the driver **MUST NOT** use the machine in closed or insufficiently aired environments.
- **ALWAYS** wear PPE to carry out work with risk of dangerous substances being emitted, even if the cab is pressurised and with active charcoal filters.
- **Risk of dragging and entangling:** **DO NOT** go near the rear and front mechanical transmission shaft in motion in order to avoid the danger of becoming entangled and being dragged.
- **Risk of friction or abrasion:** the driver must **NEVER** touch the tracks when the machine is in motion.

02.20. DESCRIPTION OF SAFETY SIGNS

The illustrations represent the safety signs and information applied to the machine. The meaning is given at the side of every sign.

- A. **General danger:** before any type of intervention, turn off the engine and remove the key.



- B. **Risk of cutting upper limbs:** do not insert your hands among the moving parts.



- C. **Danger of scalds:** pay attention to hot surfaces.



- D. **Danger of falling and being run over:** never transport persons if suitable seats are not provided, in addition to the driver's seat, to protect their safety.



- **DO NOT climb on or off the machine if it is not stopped in safe conditions.**

- E. **Danger of crushing the body:** do not stand in the operative area of the machine.



- F. **Danger of tipping:** do not use the machine if the safety arch (ROPS) is not positioned correctly.



- G. **Danger of crushing the body:** do not access the area with moving parts.



- H. **Danger of entangling:** do not approach the moving mechanical parts.



- L. **General danger:** the power take-off must be turned on exclusively to activate the equipment installed on the machine.



- M. **Warning signal:** indicates the temperature at which the coolant starts to freeze.



IMPORTANT With temperatures near to those indicated in the sign, it is necessary to replace the cooling liquid with a mixture that is effective also at lower temperatures.

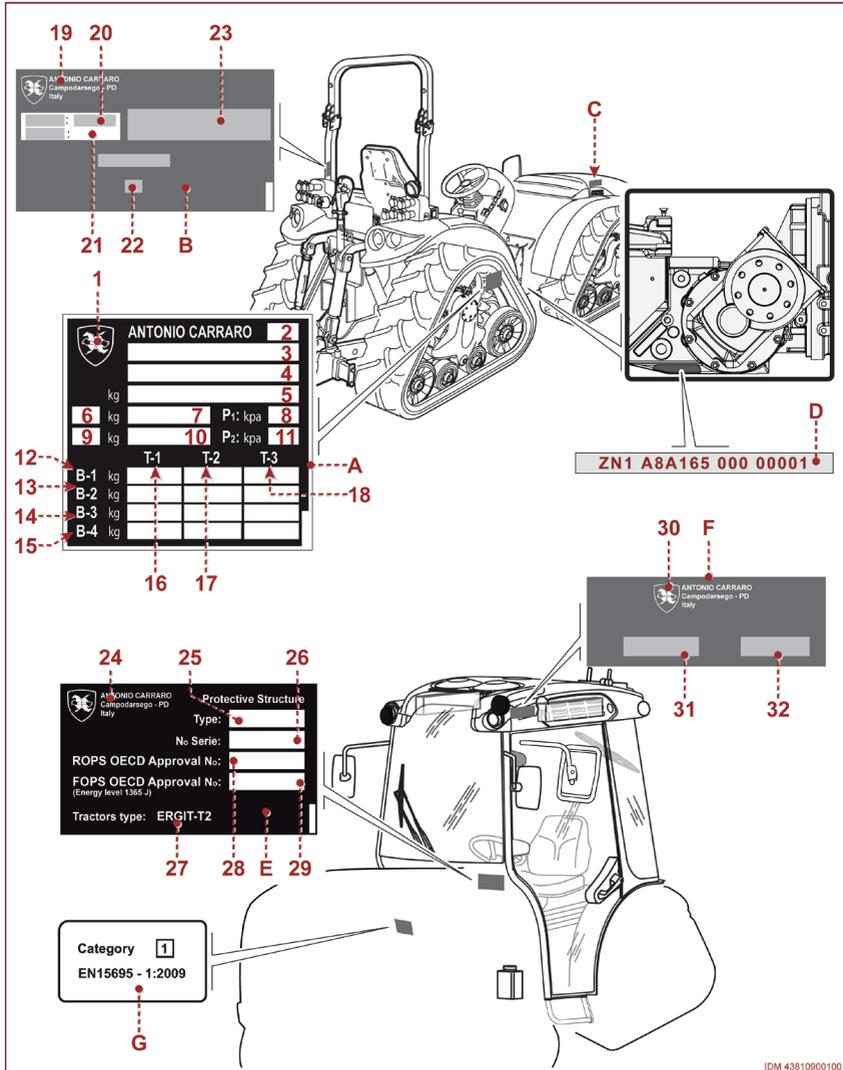


03

TECHNICAL INFORMATION

03.1. IDENTIFICATION OF MANUFACTURER AND MACHINE (EU 1322/2014)

The illustration represents the identification plates and their position.



- The list indicates the descriptions given in each individual plate.

A. Manufacturer and machine identification data plate

1. Name of manufacturer
2. Machine category

3. EU type-approval number
4. Machine serial number (V.I.N.)
5. Permissible mass: total
6. Front axle category
7. Permissible mass: front axle
8. Average front axle ground contact pressure (tracked machines)
9. Rear axle category
10. Permissible mass: rear axle
11. Average rear axle ground contact pressure (tracked machines)
12. Permissible trailer mass: unbraked
13. Permissible trailer mass: inertia braking
14. Permissible trailer mass: continuous or semi-continuous braking
15. Permissible trailer mass: assisted braking (hydraulic or pneumatic)
16. Draw-bar type
17. Draw-bar type
18. Draw-bar type

B. Safety arch approval data plate (ROPS)

19. Name of manufacturer
20. Type of structure
21. Serial number
22. Model of machine
23. CE approval number

C. Engine identification data plate

IMPORTANT See the electric motor's own instruction manual for motor identification data.

D. Machine serial number (V.I.N.)

E. Cab approval data plate

24. Name of manufacturer
25. Type of structure
26. Sticker progressive number.
27. Model of machine
28. Approval number (ROPS)
29. Approval number (FOPS)

F. Cab identification data plate

30. Name of manufacturer
31. Cab model
32. Cab serial number

G. Cab category sticker

03.2. GENERAL DESCRIPTION OF THE MACHINE

- The 'Mach 4 R' range machine is designed and manufactured to satisfy the different needs of the agricultural market.
- The machine is suitable for pushing, pulling and driving carried, semi-carried and towed interchangeable equipment.

IMPORTANT The machine does not have points for applying OPS protection devices.

- The machine is characterised by an ACTIO™ integral oscillating 'centrally articulated' type frame, to allow rapid manoeuvres even in confined spaces.
- The machine is equipped with a drive system on four tracks, called "QUADTRACK", to ensure a good grip even on difficult ground.
- The 'sharknose' line improves visibility from the driver's seat and its conformation facilitates maintenance operations.
- The engine compartment is protected by a large honeycomb grille, which guarantees efficient heat exchange.
- The machine is equipped with a RGS™ reversible driver's seat and is extremely versatile for operations on flat or hilly ground, even with accentuated gradients.
- The short width and small size, low centre of gravity and the minimum turning radius, made possible by the articulated frame, make the machine particularly suited for working with specialized crops, narrow row crops, etc.
- The machine is equipped with a Memo RPM device that allows it to store the constant engine speed values and to load them again later.
- All the functional and dimensional characteristics (power, dimensions, weights, etc.) are given in the technical specifications tables.
- The machine is available as per standard with three-point rear hydraulic power lift, towing hook, PTO and rear hydraulic couplers to control and drive the different interchangeable tools, installed to satisfy all operational requirements.
- To increase the performance, on request the machine can be equipped in the front part with a three-point hydraulic power lift, PTO and hydraulic couplers.
- From the driver's seat the driver has direct and indirect visibility (rear-view mirrors) to operate the machine for the declared uses and under safe conditions.
- To make the driver's seat more comfortable, on request the machine can be supplied in the 'cab' version. (→ p. 59)
- The machine has been subjected to various lab trials to test its performance, in particular to identify the maximum permissible gradients and the overturning limits.

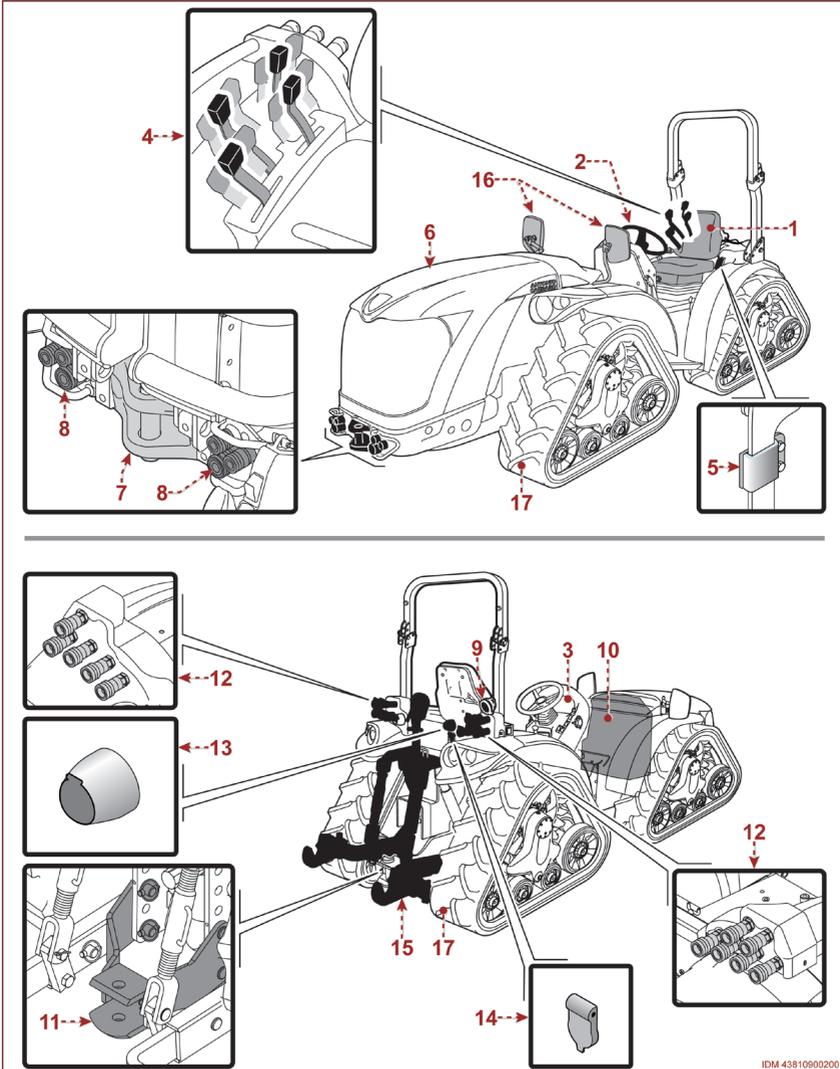
**ATTENTION**

Respect of maximum admitted slopes does not exclude the risk of overturning, as it is difficult to foresee and reproduce the possible environmental conditions in the lab.

- The machine is approved for operation on public roads ONLY with the driver's seat in the normal position and NOT turned into the reverse position.
- JUST ONE OPERATOR (driver) is requested for use of the machine, sitting at the driver's seat, with the safety arch locked in the raised position, the safety belts fastened correctly and all safety devices integral and efficient.
- The driver, as well as being adequately trained and informed on the use of the machine, MUST have adequate capability and skills for the type of working activity to be carried out and MUST be in suitable conditions to safely do so.
- **IT IS FUNDAMENTAL THAT THE DRIVER IS RESPONSIBLE AND AWARE OF THE LIMITS OF USE and behaves suitably, to safeguard his own safety and that of other persons that could be involved.**

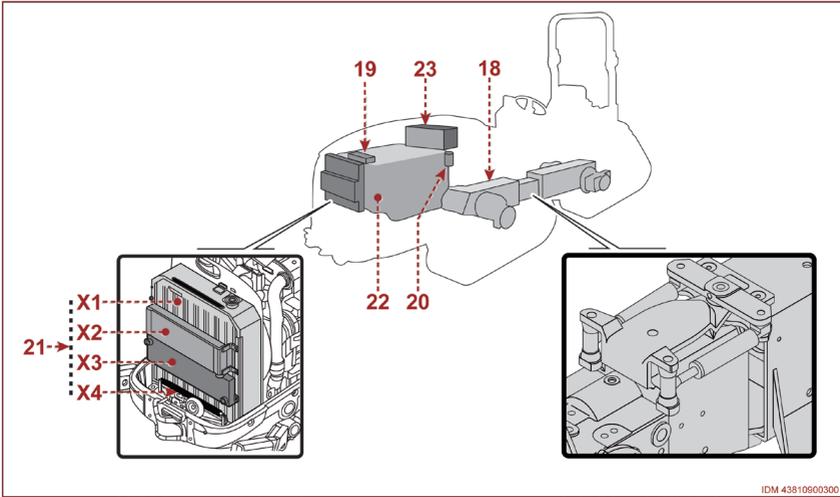
03.3. DESCRIPTION OF THE MAIN PARTS (MACHINE)

The illustration represents the main components and the list gives the description and their function.



1. **Driver's seat:** it can be turned into the reverse position or into the normal position.
 - The driver's seat is designed and built with ergonomic principles and can be adjusted by the driver to obtain different posture conditions.
 - The driver can easily control and activate all machine controls from the driver's seat.

2. **Steering unit:** allows the two articulated bodies to steer proportionally to the rotation of the steering wheel. The rotation takes place via the power steering that acts on two hydraulic cylinders connected to the articulated bodies.
3. **Instrument panel:** it is equipped with control devices (speedometer, indicators, etc.) and with controls for operating services and utilities. (→ p. 109)
4. **Hydraulic service operating levers:** they are used to control the power lift unit and the interchangeable tools (carried or towed).
 - The hydraulic system is an integral part of the machine construction. (→ p. 61)
5. **Support:** used to support the lever device of the towed interchangeable tool braking system.
6. **Bonnet:** it is equipped with a key lock and can be opened for the necessary inspections.
 - The key for opening it must be kept by the person responsible for the machine so that it is not accessible to unauthorised personnel.
7. **Front towing bracket:** for towing the machine in case of breakdown.
8. **Front hydraulic couplings (optional):** they are equipped with quick coupling fittings and are used to connect the hydraulic services of the interchangeable tools.
9. **Rear work light (adjustable):** to light the work areas in conditions with poor visibility
10. **Tank:** contains the engine fuel.
11. **Towing hook:** used to hitch the towed interchangeable tools.
 - The component can be supplied in various configurations depending on the required type-approval.
12. **Rear hydraulic couplings:** they are equipped with quick coupling fittings and are used to connect the hydraulic services of the interchangeable tools.
13. **Electric socket:** used to connect the electrical system of a hitched tool
14. **3-pole electric socket:** used to connect the tool's electrical system
15. **Power lift unit:** with three-point linkage for hitching and lifting tools.
16. **Rear-view mirrors:** they are mandatory for road circulation of the machine.
17. **Tracks:** for their description, see the respective paragraph. (→ p. 58)



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18. Transmission unit: it is of the mechanical type and includes the elements listed.

- › **Front axle:** equipped with independent gearboxes (one on each track), with differential lock and electro-hydraulic drive disengagement.
- › **Gearbox:** features 32 speed ratios (16 forward and 16 reverse) and is equipped with a synchronized shuttle.
- › The standard version is equipped with gearbox for speeds up to 30 km/h and maximum permissible weight 4800 kg.
- › **Power take-off (PTO):** it is used to transmit the power from the machine to the interchangeable tool (carried or towed).
- › **The PTO has progressive electro-hydraulic engagement and can operate at independent speed or synchronized with the ground speed of the machine.**
- › **Rear axle:** equipped with independent gearboxes (one on each track) and electro-hydraulic differential lock.

19. Air filter: cleans the air entering the engine intake.

20. DPF: the code identifies the filter for reducing the polluting emissions caused by fine dust.

21. Heat exchanger: it reduces the working temperature (engine cooling liquid, hydraulic oil etc.) and includes the elements listed.

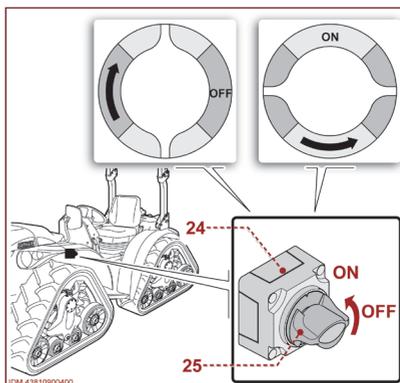
- › **Radiator (X1):** it cools the liquid of the engine cooling circuit.
- › **Radiator (X2) (optional):** cools the oil of the hydraulic circuit of the 'Joystick unit'.
- › **Radiator (X3):** cools the oil of the hydraulic system.
- › **Finned pipe (X4):** cools the engine fuel.

22. Combustion engine: develops the power to drive all the main power users on the machine (For further details refer to the technical data table).

23. Battery: it is securely fastened to the machine and is used to power the electric system.

- The connection between the battery and the electric system can be isolated using the battery cut-off switch (24).

- › **Control in the "ON" position:** the battery is connected (the key (25) remains inserted).
- › **Control in the "OFF" position:** the battery is disconnected (remove the key (25)).



- The battery cut-off switch is used to perform interventions on the electric system, leave the machine inactive for long periods and prevent start-up by unauthorised persons.
- Before doing any welding on the machine disconnect the battery cables and connectors of any electronic boards so as not to permanently damage the components.

IMPORTANT To isolate the electric system from the battery, position the control on "OFF", remove the key (25) and keep it so that it cannot be accessed by unauthorised staff.

03.4. DESCRIPTION OF TRACKS

- The tracks installed on the “**Mach 4**” tractor are high-performance and guarantee a long working life.
- The tracks were obtained after long and articulated tests carried out with different types of rubber combined with a most particular internal canvas structure.
- The long life and reliability of the system depend on the correct running-in procedures (period in which the track settles definitively on the drive system) and on correct maintenance.
- For this reason, we would like to draw your attention to correct utilization during the first period of use of the track, inviting you to respect the maintenance intervals in the running-in phase:
- List of track maintenance intervals (running-in phase).
- **After the first 16 hours**
 - › *Adjust the track tension.* (→ p. 87)
- **After the first 50 hours**
 - › *Adjust the track tension* (→ p. 87)
 - › *Check the tightness of the track screws.* (→ p. 216)
- **After the first 150 hours**
 - › *Adjust the track tension* (→ p. 87)

IMPORTANT These first three intervals are fundamental and they must be respected so as not to damage the track during running-in, which would compromise its life and safety.

- After running-in, it would be good practice to make a visual check (at least once a day) for any faults that could involve risks for driver safety.
- Depending on the working environment and on the type of use of the tractor, it might be necessary to tighten the racks more frequently (compared with the listed maintenance intervals) to make up for normal wear of the components.
- Good running-in and correct maintenance of the tracks will allow the best performance, a longer working life and a constant preservation of the safety requirements through time.

IMPORTANT DO NOT continue working if the tracks are not tightened correctly.

03.5. DESCRIPTION OF THE MAIN PARTS ("CAB" VERSION)

The "cab" version machine is approved for road circulation and is an optional outfit that must be requested in the order phase.

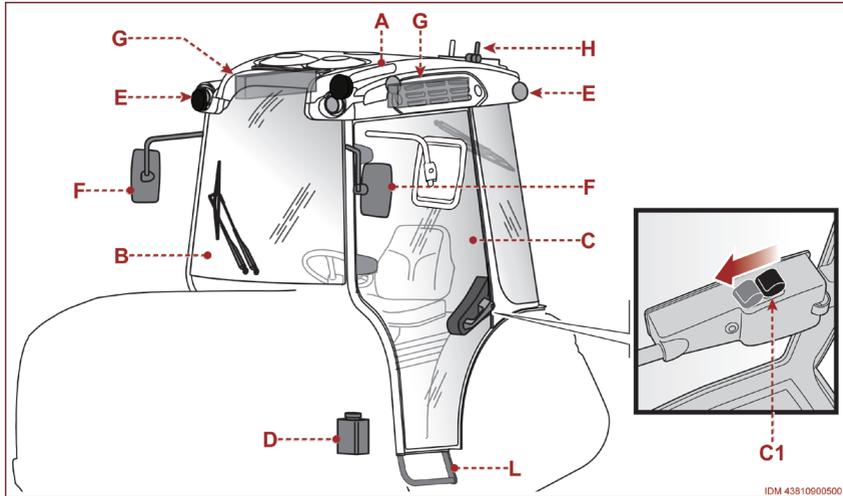


ATTENTION

The cab is CATEGORY 1 and does not protect the driver against dangerous substances.

- **For protection against inhaling harmful substances, contact the authorised Workshop and ask for the kit to transform the cab into "CATEGORY 4".**
- Always wear the PPE to avoid exposure to dangerous substances, even if the cab is pressurised and equipped with active carbon filters.
- Refer to the instructions on the plant protection products to be used, to evaluate the type of PPE to wear as protection against inhalation and contact.
- Always keep the doors and windows closed during spraying to avoid inhaling plant protection products.
- The 'cab' version does not have points for applying OPS protection devices.

- The illustration represents the main components and the list gives the description and their function.



- A. Cab:** it is approved as a ROPS safety device and it is the sound-proof version to improve driver comfort.
- The cab is equipped with the controls to activate the devices (work lights switch-on, windscreen washer, etc).
 - The cab is equipped with air-conditioning. (→ p. 144)

IMPORTANT The cab IS CERTIFIED as a FOPS agricultural safety device, code 10 OECD, and IS NOT CERTIFIED as an OPS safety device.

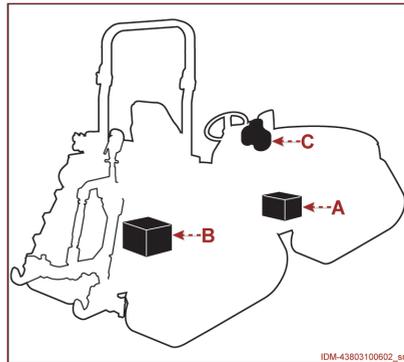
- B. Front and rear windscreen:** made of tempered glass.
- The rear windscreen is hinged at the top to be able to open it by tilting and it is equipped with gas struts to keep it in the open position.
 - Both windscreens are equipped with electric windscreen wipers, with washing system and independent activation controls.
- C. Doors:** they are positioned on both sides of the cab and are equipped with an anti-intrusion closure system.
- Use the lever (**C1**) to open the corresponding door.
 - **In case the machine overturns, the doors have the emergency exit function.**
- D. Tank:** contains the detergent solution used to wash the front and rear windscreens.
- E. Lights:** they can be moved manually to aim the light beam at the area of interest.
- F. Rear-view mirrors:** they are mandatory to approve the machine for road circulation.

- G. **Air filter:** withholds impurities in the air-conditioning system.
 - In the order phase, the machine can be requested with other types of filter.(→ p. 64)
- H. **Rotating light support:** it is equipped with a unipolar electric socket for installation of the rotating light.
- L. **Step:** facilitates access to the driver's seat.

03.6. DESCRIPTION OF HYDRAULIC CIRCUITS

The illustration represents the main components and the list gives the description and their function.

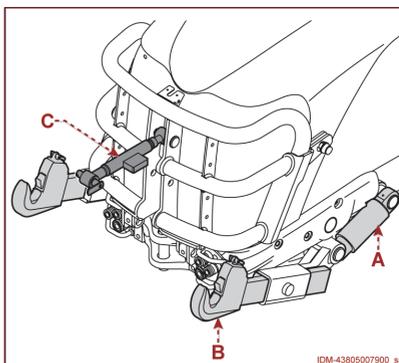
- A. **Tank:** supplies the oil to the pump of UNIT 2, which feeds the hydraulic circuits listed.
 - › *Rear power lifting unit supply circuit*
 - › *Rear hydraulic couplings supply circuit*
 - › *Steering system supply circuit*
- B. **Tank:** supplies the oil to the pump of UNIT 1, which feeds the hydraulic circuits listed.
 - › *Front wheel drive supply circuit*
 - › *Differential locking device supply circuit*
 - › *PTO drive supply circuit*
- C. **Taank:** supplies the oil to the hydraulic circuits listed.
 - › *Machine braking system supply circuit*
 - › *Clutch control supply circuit*



03.7. DESCRIPTION OF THE FRONT POWER LIFTING UNIT

The front three-point power lift unit is equipped with a "quick coupling" interchangeable implement hitching and disconnection system.

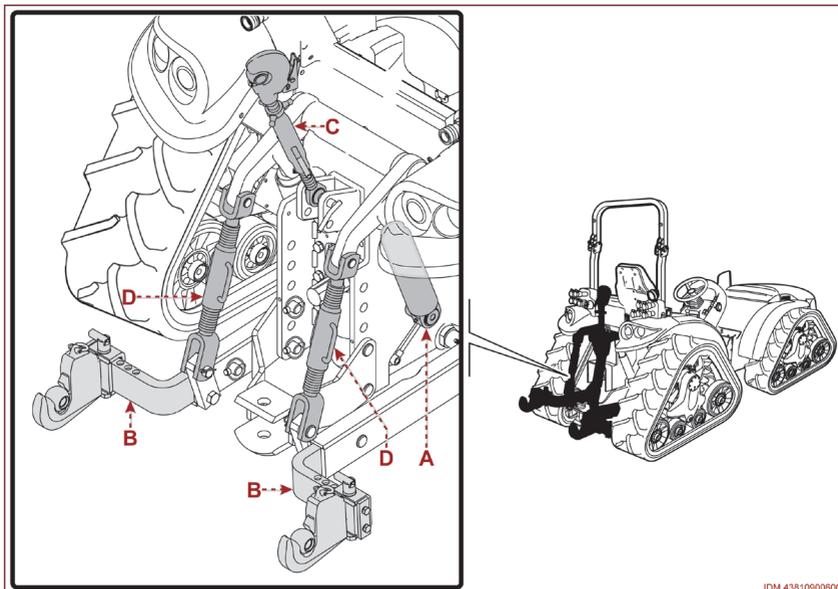
- The illustration represents the main components and the list gives the description and their function.
- A. **Hydraulic cylinders:** activate the movement of the lifting unit.
 - B. **Arms:** adjustable to adapt to the type of interchangeable tool to be hitched.
 - C. **Strut:** used to hitch the third point of the interchangeable tool.
- For information regarding the technical and dimensional features of the three-point lifting unit, see chapter "Technical data tables".



03.8. DESCRIPTION OF THE REAR POWER LIFTING UNIT

The rear three-point power lift unit is equipped with a "quick coupling" interchangeable implement hitching and disconnection system.

- The illustration represents the main components and the list gives the description and their function.

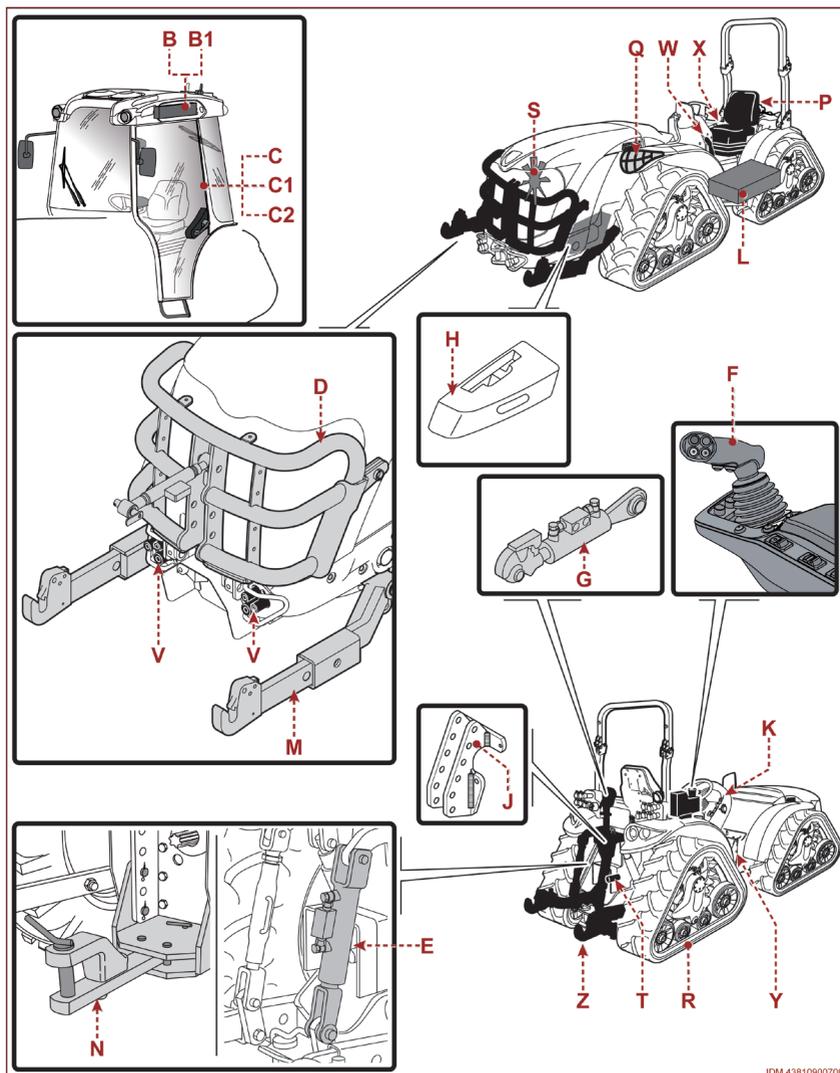


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- A. **Hydraulic cylinders**: activate the movement of the lifting unit.
 - B. **Arms**: equipped with tie-rod (**D**) for adjusting the height.
 - C. **Strut**: used to hitch the third point of the interchangeable tool.
- **For information regarding the technical and dimensional features of the three-point lifting unit, see chapter "Technical data tables".**
 - On request, the rear power lifting unit can also be supplied in other configurations. For further details, refer to the respective paragraph. (→ p. 64)

03.9. DESCRIPTION OF THE EQUIPMENT ON REQUEST

The illustration represents the accessories that can be supplied on request and the list states their description and function.



B. Active carbon air filter: for decreasing the exposure of the driver to harmful substances when spraying plant protection products

B1. Air filter ("Category 4" cab): for filtering dusts, aerosols and vapours so as to avoid the risk of inhaling harmful substances.

IMPORTANT For further details on the safety and correct use of the "Category 4" cab, consult the corresponding Use and Maintenance Manual.

- C. **Cab:** type-approved as a ROPS safety system and for on-road use and it is the soundproof version to improve driver comfort. (→ p. 59)
 - C1. **Cab:** type-approved as a ROPS safety system and for on-road use and it is the soundproof version to improve driver comfort. (→ p. 59)
 - The cab is certified in 'Category 4' for protection against inhaling harmful substances (dusts, vapours, etc.).
-

IMPORTANT For further details on the safety and correct use of the "Category 4" cab, consult the corresponding Use and Maintenance Manual.

- C2. **Transformation kit:** for converting the cab into a 'Category 4' version for protection against inhaling harmful substances (dusts, vapours, etc.).
 - D. **Protection structure (Bullbar):** protects the radiator and the engine and serves as a connection for the strut of the front lifting unit.
 - E. **Hydraulically controlled tie-rod:** installed on the rear right side, to adjust the height of the interchangeable tool coupling arm directly with the driving seat control.
 - F. **"Joystick" type control:** used to activate, when combined with one of the selection buttons and with the hold-to-run control, the auxiliary services of the interchangeable implements that are hitched to the machine.
 - When the machine is equipped with the 'Joystick' type of controls, the hydraulically controlled tie rod (**E**) is always supplied as well.
 - G. **Strut:** of the hydraulic type for coupling to the third point of the interchangeable tool.
 - H. **Side ballasts:** used to increase the stability of the machine with carried equipment attached to the rear lifting unit.
 - J. **Raised three-point hitch:** enables connecting the different interchangeable implements more easily.
 - The equipment is particularly suitable for connecting implements (eg. fork device) that must operate horizontally.
 - K. **Gearbox robotic controls:** replace the traditional controls for the reverser and for selecting the speed range ('high' or 'low'). (→ p. 116)
 - L. **Rear ballast (160 kg):** installed under the gearbox, improves the weight distribution when an implement (carried or towed) is hitched to the machine.
 - This type of equipment can only be installed by the manufacturer or by authorised service centres.
-

IMPORTANT To determine the weight and quantity of ballasts to install depending on the working requirements, see the respective paragraph. (→ p. 189) (→ p. 190)

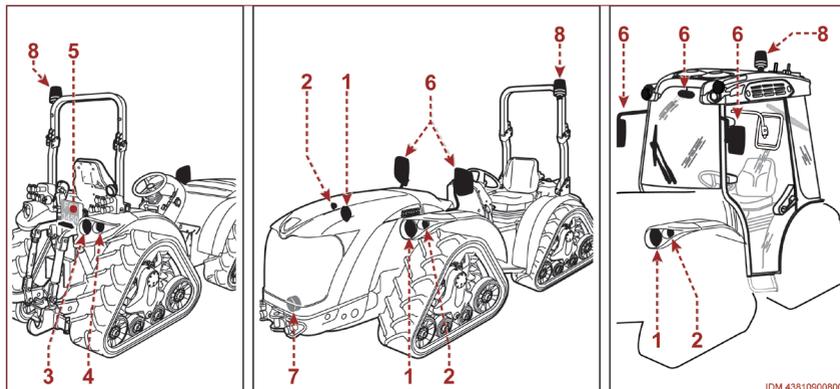
- M. **Front lifting unit:** 'three point' type.
- The unit is always supplied in combination with the protection structure (bullbar) **(D)**.
- N. **"Oscillating" tow hook:** allows you to adjust the angle of the point of attachment of the towed interchangeable equipment easily and fast.
- P. **Seat with pneumatic suspension:** for improving driver comfort.
- Q. **Protection grilles**
- R. **Increased width 1400 mm:** equipment for working on very uneven ground.
- S. **"Clean fix" device:** used for automatically cleaning dust from the front grille.
- T. **Power take-off (1000 version)**
- V. **Front hydraulic couplings:** they have quick coupling to connect the hydraulic services of the interchangeable implements.
- W. **"Superbrake" device:** acts on all the tracks to increase the braking action. (→ p. 112)
- X. **Gearbox (40 km/h version):** for increasing the speed up to 40 km/h (in this case the maximum permissible weight is 4050 kg).
- Y. **Steering brakes:** system for independently braking the rear tracks.

IMPORTANT The two brake pedals must be utilized "independently" in special operating situations only, whereas when driving on roads, the pedals must always be "latched".

- Z. **Rear lifting unit (with "Category 1" quick-coupling):** the 'three-point' type with the implement quick-coupling system.

03.10. DESCRIPTION OF DEVICES FOR DRIVING ON PUBLIC ROADS

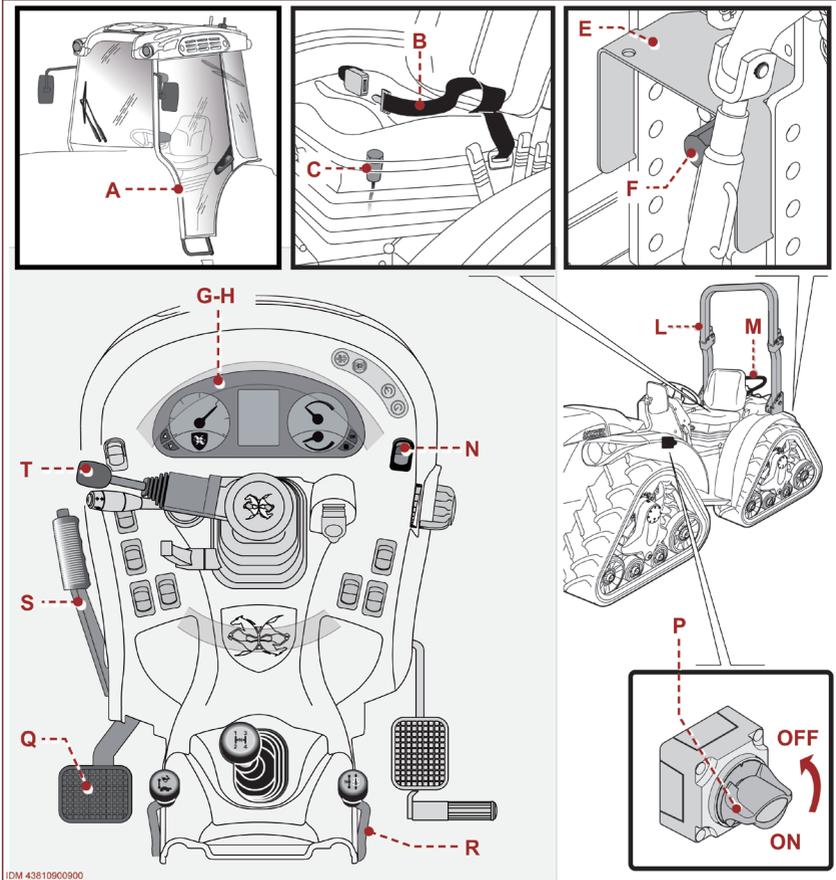
The illustration indicates the position of the devices on the machine.



1. Headlights
2. Front direction indicators
3. Tail lights
4. Rear direction indicators
5. Licence plate light
6. Rear-view mirror
7. Horn
8. Blinking light (orange) (Optional).

03.11. DESCRIPTION OF SAFETY DEVICES

The illustration represents the position of the devices and the list gives the description and their function.



- A. **Cab:** type-approved as a ROPS safety system and for on-road use and it is the soundproof version to improve driver comfort. (→ p. 59)

IMPORTANT The ROPS devices are subjected to tests to carry out the safety device function in case of overturning or side tilting.

B. Safety belt

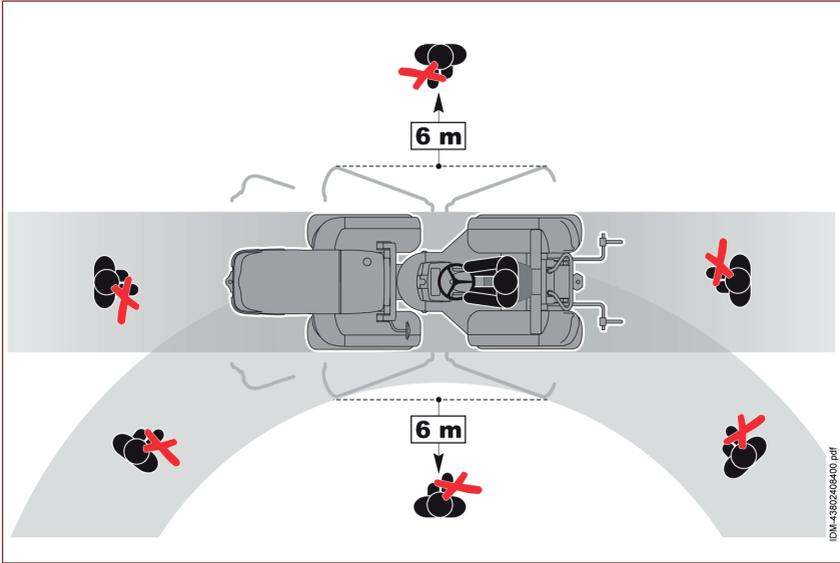
- C. **Sensor:** detects whether the operator is sitting in the driving seat.

- If the operator leaves the driving seat without applying the parking brake, the sensor activates the horn (**H**) to indicate the danger condition.

- If the operator leaves the driving seat, the PTO stops.
- E. **Protection screen:** combined with the protection of the cardan shaft, prevents contact with the power take-off of the machine.
- F. **Protective cap:** prevents accidental contact with the coupling of the power take-off and keeps it intact.
- G. **Warning lights:** individually or in combination, they indicate an operating fault or the activation of a work control. (→ p. 91)
- H. **Horn:** in combination with the lighting of the LEDs on the dashboard, indicates an operating fault.
- L. **Front safety arch (ROPS):** protects the driver in the case of overturning of the machine.
- M. **Rear safety arch (ROPS):** protects the driver in the case of overturning of the machine.
- N. **Sensor:** Whenever the power take-off is deactivated because the vehicle is switched off or unmanned, to reactivate it turn switch **(N)** to zero and turn it on again.
- P. **Battery cut-off switch:** for disconnecting the battery from the electrical system of the machine.
- Q. **Sensor:** detects the position of the clutch pedal.
 - Starting phase: when the pedal is not pressed, the sensor prevents the start-up of the engine.
- R. **Sensor:** detects the operating status of the reverser. When the reverser is activated, the sensor prevents the start-up of the engine (**Only for machines equipped with standard controls**).
- S. **Sensor:** detects the position of the parking brake. When the parking brake is not activated, the sensor prevents the start-up of the engine.
- T. **Sensor:** detects the operating status of the reverser. When the reverser is activated, the sensor prevents the start-up of the engine (**Only for machines equipped with robotic controls**).

03.13. DANGEROUS AREAS AND ZONES

The figure shows the potentially dangerous areas in which nobody should stand while the machine is in use. It is the operator's responsibility to ensure that nobody enters these areas. If necessary, stop the machine immediately and move people to a safe distance.





04

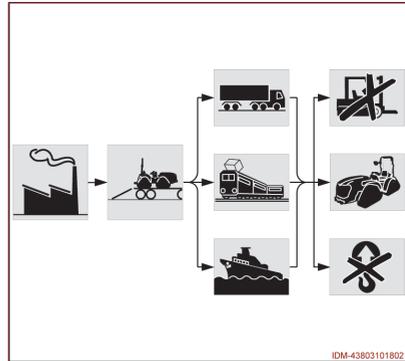
INFORMATION ON HANDLING AND TRANSPORT

04.1. RECOMMENDATIONS FOR HANDLING, LOADING AND UNLOADING

- When handling and loading, refer to the information provided by the manufacturer, indicated directly on the machine, at the driving position and in the operating manual.

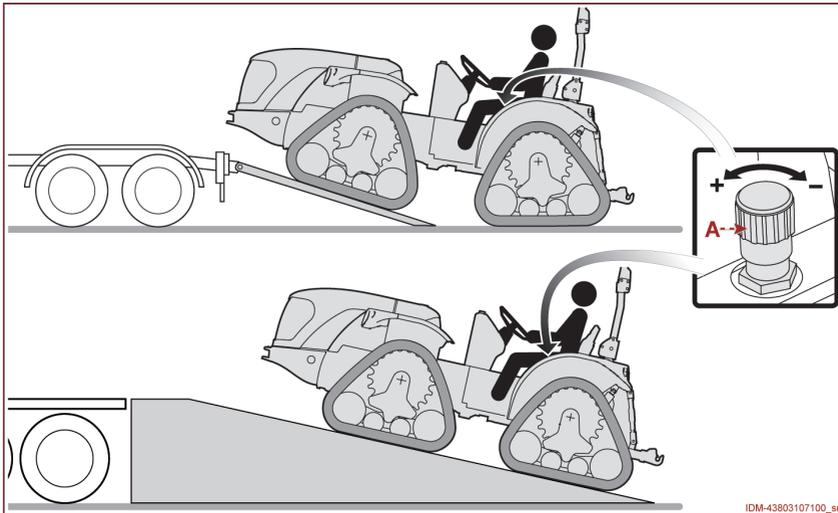
04.2. METHOD OF TRANSPORT

- Depending on the place of destination, transport can be carried out with different vehicles.
- The figure shows typical transport solutions.



04.3. LOADING AND UNLOADING METHOD

Proceed as indicated to perform this operation.



- 1\ Start the engine.
 - 2\ Raise the power lift by operating the respective controls.
For further details, refer to the paragraph (→ p. 123).
- If the machine is started up in order to move it, operators must be aware of the procedures necessary to do so in safety.
- 3\ Screw the knob **(A)** completely to lock the lifting unit in the raised position.

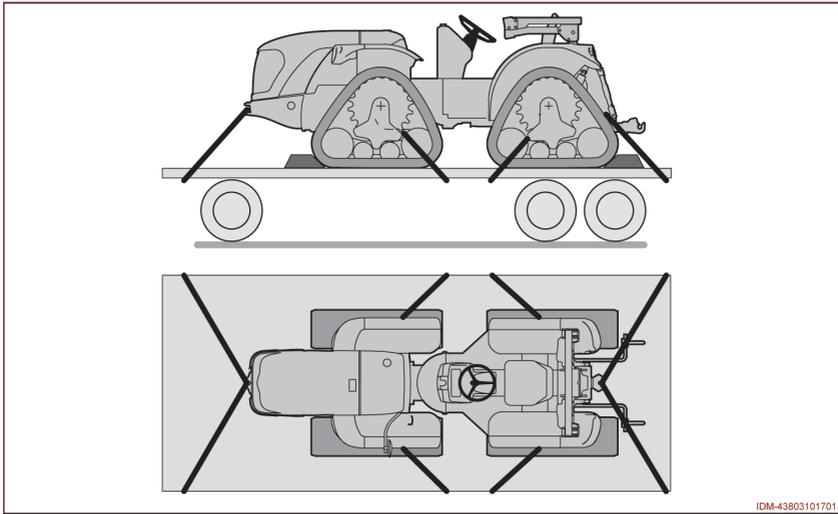
- 4\ Remain properly seated in the driving position, and drive the machine onto the transporting vehicle.



ATTENTION

Make sure that the ramps used to load the machine onto the vehicle are suitable for the weight of the machine.

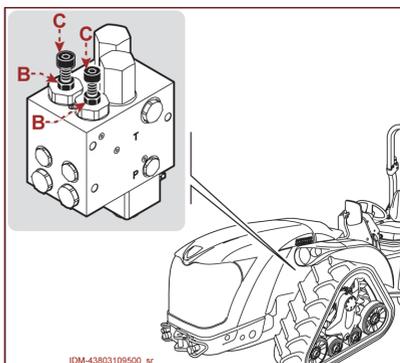
- 5\ Switch off the engine, engage the parking brake and a low gear and remove the ignition key.
- 6\ Anchor the machine to the vehicle with ropes and wheel chocks, as in the illustration.



- 7\ Check that the shape of the machine does not exceed the maximum clearance of the means of transport and, if necessary, lower the safety arch.

04.4.1. Releasing the “Superbrake” device (optional)

- If the machine is towed with the engine off, it is necessary to release the “Superbrake” device temporarily.
 - 1\ Loosen the locknuts **(B)**.
 - 2\ Tighten the screws **(C)** by about 3 and a half turns.
 - 3\ Tighten the locknuts **(B)**.
 - 4\ Tow the machine with an operator seated in the driving seat.
- After towing ALWAYS restore the machine to its original conditions as indicated.
 - 1\ Loosen the locknuts **(B)**.
 - 2\ Undo the screws **(C)** by about 3 and a half turns.
 - 3\ Tighten the locknuts **(B)**.



ATTENTION

When the machine is in motion with the engine off, the “Superbrake” device is activated only by pressing the brake pedal.

- Take great care in situations of danger which could occur due to sudden braking.



05

INFORMATION ON ADJUSTMENTS

05.1. RECOMMENDATIONS REGARDING ADJUSTMENTS

- Staff carrying out interventions must know the procedures, respect the safety warnings and adopt the necessary measures for safety in the work place.
- Unless otherwise indicated, every adjustment must be carried out with machine stopped in safe conditions.

Machine stopped in safe condition

This state foresees the listed conditions to be carried out in the indicated order.

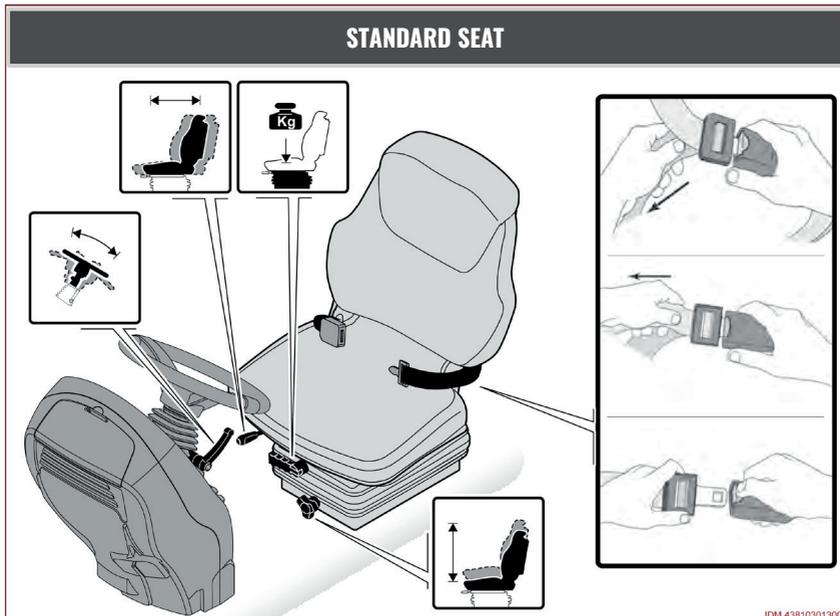
- Position the machine on to a stable and flat surface.
- Engage the reverser lever in the 'forward gear' or 'reverse gear' position. (if present)
- Place the gear lever in 'first gear' position.
- Engage the parking brake of the machine.
- Deactivate the PTO of the machine.
- a) With equipment carried: lower the power lift unit until it rests on the ground.
- b) With equipment towed: engage the parking brake of the equipment.
- Switch off the engine and remove the ignition key.
- Place the safety wedges below the tracks to improve stopping conditions.

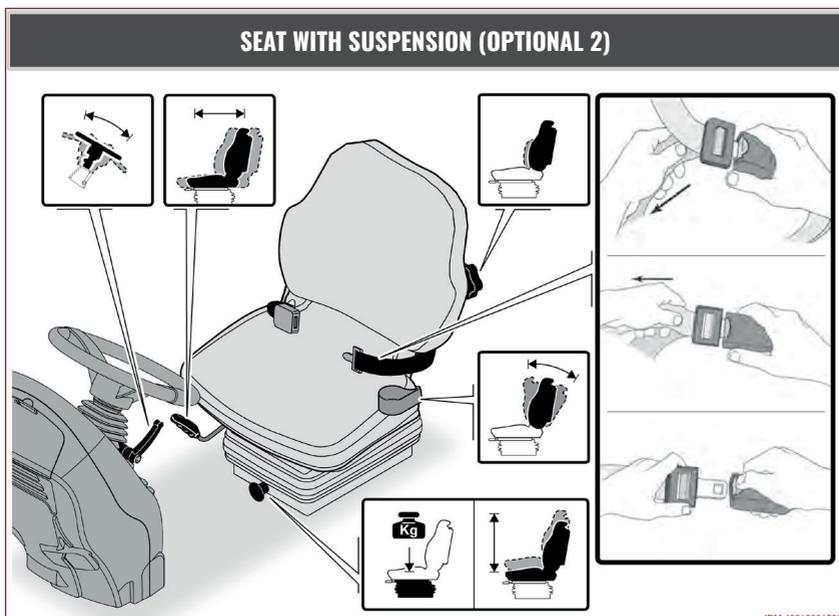
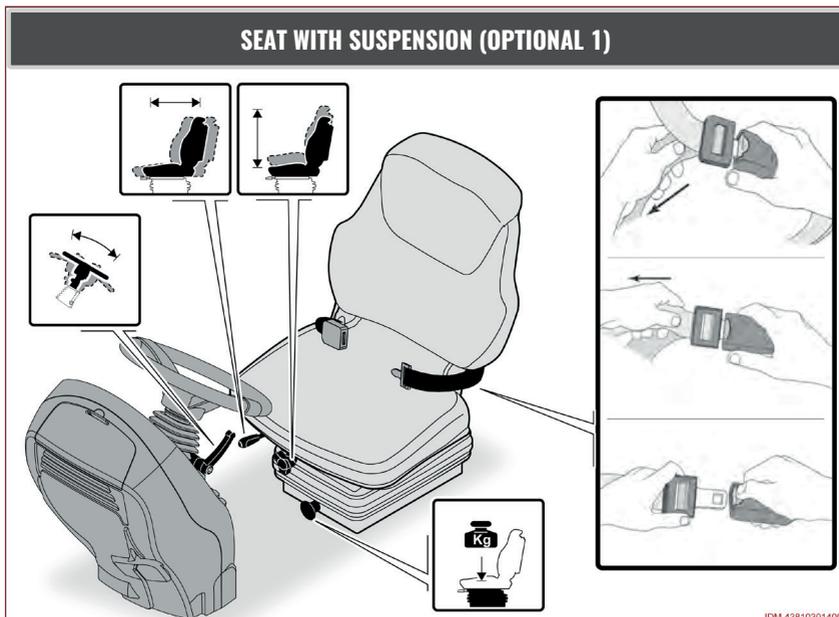
05.2. ADJUSTING THE DRIVING POSITION

To obtain suitable ergonomic conditions, the steering wheel and the driver's seat can be adjusted by the driver.

- The illustrations represent how to perform the necessary adjustments.

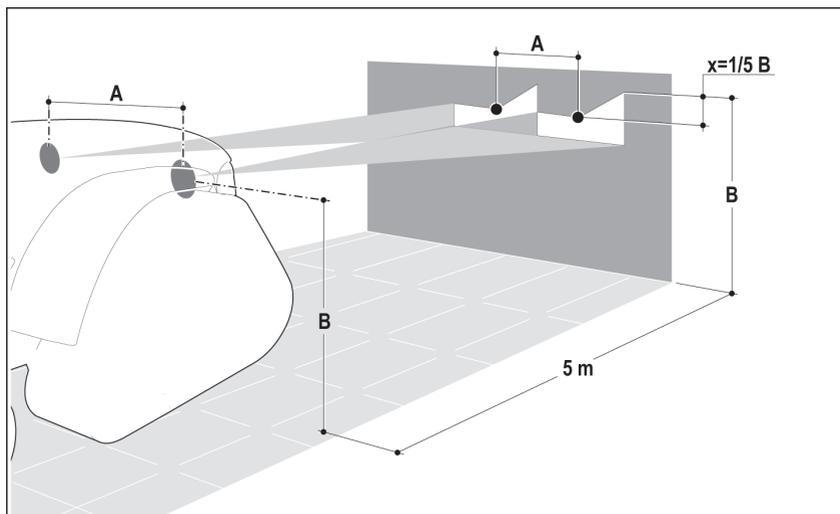
! ATTENTION
Only make adjustments with the machine stationary.
After the adjustment has been made, check that the steering wheel is blocked in position.





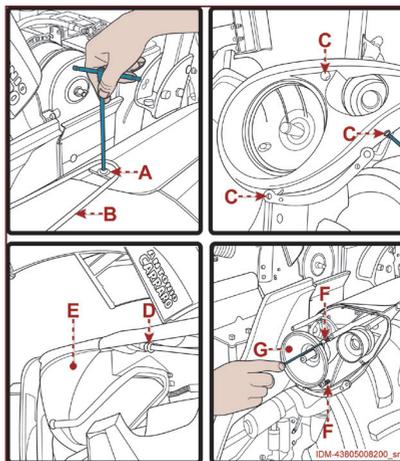
05.3. ADJUSTMENT OF HEADLIGHTS

Position the machine on level ground at a distance of 5 metres from a wall and check that it is not loaded.



- Switch on the low beam lights and check that orientation is correct (see figure).
- If the orientation is not correct, proceed as indicated.

- 1\ Undo the screws **(C)** and remove the protection grid **(D)** (if present).
- 2\ Undo the screws **(E)**.
- 3\ Undo the screw **(F)** and remove the support **(G)**.
- 4\ Turn the screws **(H)** to adjust the position of the headlights **(L)**.



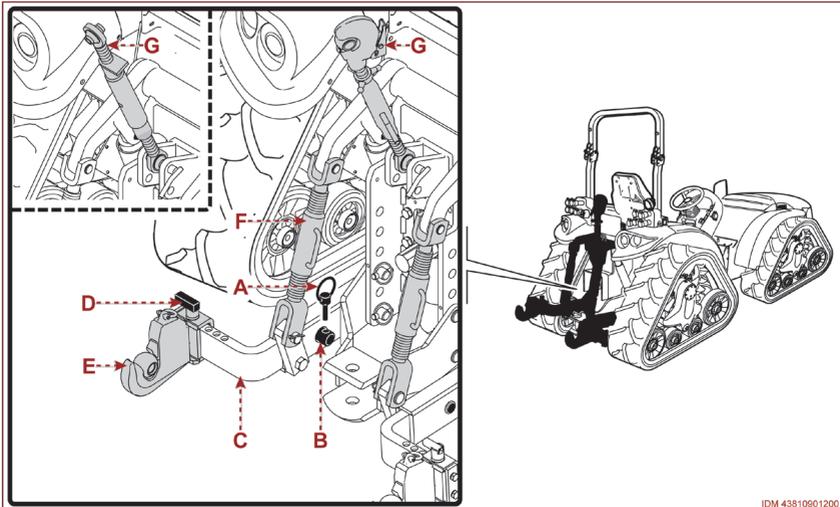
IMPORTANT When driving on the road, the headlights must be adjusted so as not to dazzle the drivers of other vehicles, and in accordance with the regulations of the highway code.

- 5\ Refit the support **(G)** and the protection grid **(D)** when you have finished.

05.4. ADJUSTMENT OF THE REAR POWER LIFT UNIT

This adjustment must be made whenever the machine is coupled with an interchangeable tool that has different hitching points from the one fitted previously.

- If it is the first time that coupling is performed with a type of carried interchangeable tool, it is necessary to check that the weight (at its barycentre) is compatible with the maximum capacity accepted at the machine hitching point.
- Evaluate whether it is necessary to install ballasts, in order to maintain the stability of the machine during working phases.

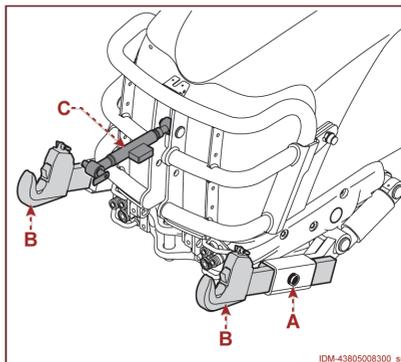


- 1\ Approach the machine to the interchangeable tool to be hitched.
- 2\ Lower the booms of the power lift unit to the height of the hitching points of the interchangeable tool.
- 3\ Stop the machine in safe conditions.
- 4\ Remove the safety cotters **(A)** and slide out the pins **(B)**.
- 5\ Adjust the projection of the boom **(C)**.
- 6\ Insert the pins **(B)** and block them with the safety pins **(A)**.
- 7\ Repeat the operation on the other side.
- 8\ Lift the pin **(D)**, adjust the position of the hook **(E)** and release the pin to lock the hook in position.
- 9\ Repeat the operation on the other side.
- 10\ Release the safety retainers of the tie-rods **(F)** and adjust them to define the height of the booms **(C)**.
- 11\ Release the safety retainer of the strut **(G)**, adjust its length and block the retainer again.

05.5. ADJUSTMENT OF THE FRONT POWER LIFT UNIT

This adjustment must be made whenever the machine is coupled with an interchangeable tool that has different hitching points from the one fitted previously.

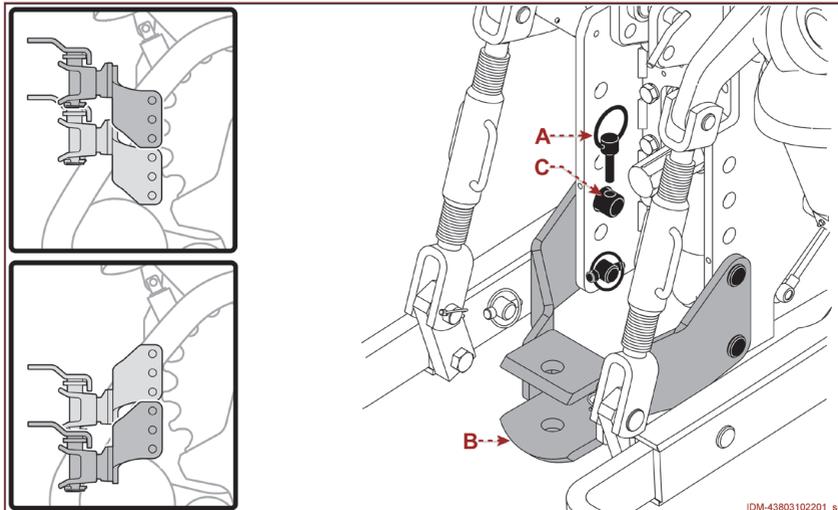
- If it is the first time that coupling is performed with a type of carried interchangeable tool, it is necessary to check that the weight (at its barycentre) is compatible with the maximum capacity accepted at the machine hitching point.
 - Evaluate whether it is necessary to install ballasts, in order to maintain the stability of the machine during working phases.
- 1\ Approach the machine to the interchangeable tool to be hitched.
 - 2\ Lower the booms **(B)** of the power lift unit to the height of the hitching points of the interchangeable tool.
 - 3\ Stop the machine in safe conditions.
 - 4\ Remove the safety cotters and slide out the pins **(A)**.
 - 5\ Adjust protrusion of the arm **(B)**.
 - 6\ Insert the pins **(A)** and block them with the safety cotters.
 - 7\ Repeat the operation on the other side.
 - 8\ Release the safety retainer of the strut **(C)**, adjust its length and block the retainer again.



05.6. ADJUSTMENT OF TOW HOOK HEIGHT

This adjustment must be made whenever the machine is coupled with an interchangeable tool that has different hitching points from the one fitted previously.

- If it is the first time that coupling is performed with a type of interchangeable tool, it is necessary to check that the maximum drive effort and the vertical effort are compatible with those of the machine tow hook.
- Evaluate whether it is necessary to install ballasts, in order to maintain the stability of the machine during working phases.



- 1\ Approach the machine to the interchangeable tool to be hitched.
- 2\ Remove the safety pins of the pins **(A)**.
- 3\ Support the rear hook **(B)** and slip out the pins **(C)**.

- **If necessary, carry out the operation with the aid of an assistant.**

- 4\ Adjust the height and position (normal or inverted) of the tow hook **(B)** and insert the pins **(C)**.
- 5\ Lock the pins **(C)** with the safety pins **(A)**.



ATTENTION

Do not hitch any towed interchangeable tool if the towing hook is damaged.

- **Check that the pins and safety pins are correctly inserted and in good condition.**

05.7. POSITION ADJUSTMENT OF THE OSCILLATING TOW BAR

This adjustment must be made whenever the machine is coupled with an interchangeable tool that has different hitching points from the one fitted previously.

- If it is the first time that coupling is performed with a type of interchangeable tool, it is necessary to check that the maximum drive effort and the vertical effort are compatible with those of the machine tow hook.
- Evaluate whether it is necessary to install ballasts, in order to maintain the stability of the machine during working phases.

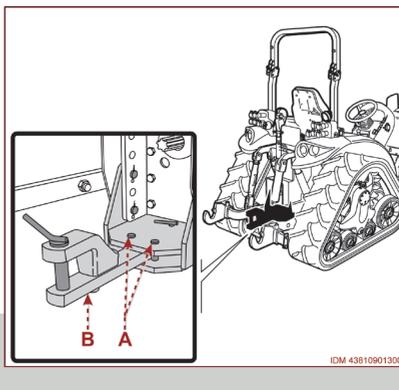
IMPORTANT The machine equipped with oscillating tow bar is not approved for travelling on public roads.

- 1\ Approach the machine to the interchangeable tool to be hitched.
- 2\ Stop the machine in safe conditions.
- 3\ Remove the safety cotters and slide out the pins **(A)**.
- 4\ Turn the tow bar **(B)** in the point corresponding to the area of interest.
- 5\ Insert the pins **(A)** and block them with the safety cotters.



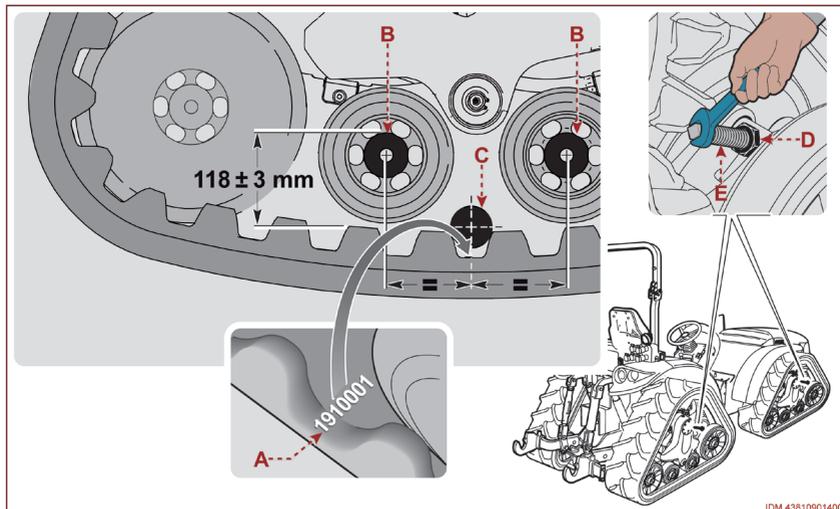
ATTENTION

Do not hitch any towed interchangeable equipment if the drawbar is damaged or if the engagement devices do not function correctly.



05.8. ADJUSTMENT OF TRACK TENSION

Proceed as indicated to perform this operation.



- 1\ Position the machine on compact, level ground, stop it and remove the ignition key.
- 2\ Lift the machine (one axle at a time).
- 3\ Position the serial number **(A)** of the track in the mid-point of the wheelbase of the rollers **(B)**.
- 4\ Prepare an iron bar **(C)**, Ø55x1345 mm (weight 22.5 to 25 kg).
- 5\ Insert the bar **(C)** in the point indicated in the figure and balance it so that all the weight is concentrated on the track.
- 6\ Slacken the nut **(D)** and turn the screw **(E)** to adjust the track tension.
 - If the measurements found are greater than those shown in the figure, tighten the screw **(E)** to tighten the track.
 - If the measurements found are smaller than those shown in the figure, undo the screw **(E)** to slacken the track.



ATTENTION

Do not make the transmission too tight to avoid deterioration of the rotating parts.

- 7\ Tighten the nut **(D)**.
- 8\ Repeat the same operation on all the tracks

IMPORTANT Whenever the tracks are changed, after having adjusted the tension, use the machine for at least 15 minutes to allow the tracks to settle and then adjust again.



06

OPERATING INSTRUCTIONS

06.1. RECOMMENDATIONS FOR USE AND FUNCTIONING

- The incidence of accidents related to the use of machines depends on many factors that are not always possible to prevent and control.
- Some accidents may depend on unforeseeable environmental factors. Many, however, are caused by 'reckless' driving.
- At first use, the driver must ONLY use the machine after having read the use and maintenance manual, having identified the control functions and having simulated some manoeuvres.
- The knowledge of the functions of all controls is important in order to perform the manoeuvres correctly and naturally.
- The machine must be driven carefully and responsibly, without losing attention in order to perceive potential risks that may exist.
- The machine must be driven ONLY if the driver is in suitable psycho-physical conditions and has suitable skills to perform the activities requested.
- Before operating the machine, the driver must make sure that all safety devices are correctly installed and functioning.

- Caution is always necessary. Safety is also in the hands of the operators working the machine throughout its life span.
- It is always too late to remember what should have been done when it has already occurred.

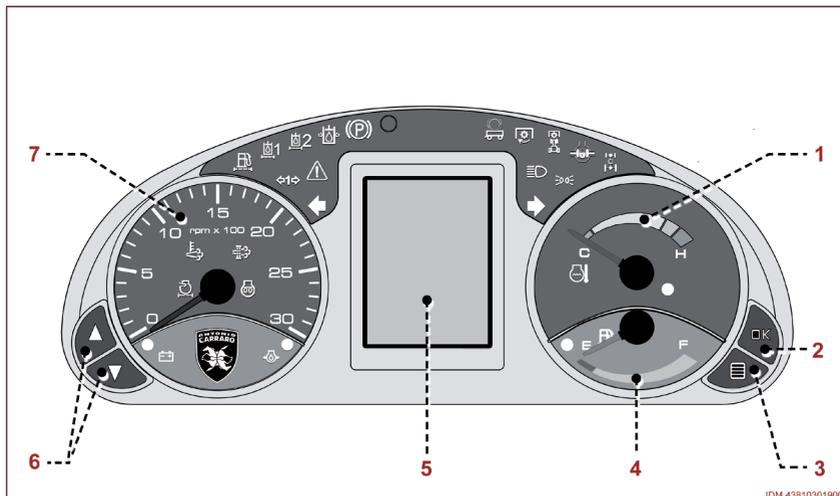
06.2. DESCRIPTION OF CONTROLS

For easier traceability and identification, the controls have been subdivided as follows.

- Instruments and warning lights. (→ p. 91)
- Dashboard controls (→ p. 109)
- Drive and stop controls (→ p. 114) (→ p. 116) (→ p. 118) (→ p. 120)
- Work controls (→ p. 122)
- Standard power lift unit controls (→ p. 123)
- 'Draft control' power lift unit controls (→ p. 112)
- Description of front power lift unit controls (→ p. 126)
- Description of 'Joystick' type controls (→ p. 131)
- Cab controls (→ p. 144)

06.3. DESCRIPTION OF INSTRUMENTS AND LEDS

The illustration represents the devices, while the list gives their description and function.



- 1\ **Temperature gauge:** indicates the temperature of the engine coolant.
1. **"OK" button:** to confirm the choices made on the multifunction display.
2. **"Menu" button:** to access the menu of the multifunction display, or return to the previous screen without saving the settings.
3. **Fuel level indicator:** indicates the fuel level in the tank.
4. **Multifunction display.** (→ p. 94)
5. **"Up"/"Down" buttons:** for selecting the item on the menu.
6. **Engine tachometer:** indicates the engine revolutions (RPM).

Symbol	Description	Type of signal	See
	General alarm: anomalies in operation of the engine or of the transmission.	Red LED	(→ p. 227)
	General alarm: indicates a safety procedure that has not been respected.	Red LED plus audible warning + unmanned icon	(→ p. 227)
	Differential lock: differential locking device activated.	Red LED	(→ p. 109)
	4 track drive off: front wheel drive deactivated.	Red LED	(→ p. 109)

Symbol	Description	Type of signal	See
	Front PTO: front power take-off activated.	Red LED	(→ p. 109)
	Rear PTO: rear power take-off activated.	Red LED	(→ p. 109)
	Hydraulic oil filter 1: unit 1 hydraulic circuit filter clogged.	Red LED	(→ p. 227)
	Hydraulic oil filter 2: unit 2 hydraulic circuit filter clogged.	Red LED	(→ p. 227)
	Air filter clogged.	Red LED + audible warning	(**) (→ p. 227)
	Hydraulic oil pressure: hydraulic oil pressure insufficient (unit 1).	Red LED + audible warning	(**) (→ p. 227)
	Parking: parking brake activated.	Red LED	(**) (→ p. 114) (→ p. 116)
	Clogged fuel pre-filter	Red LED + audible warning	(**) (→ p. 227)
	DPF temperature	Red LED + audible warning	(**) (→ p. 227)
	DPF regeneration active	Fixed amber LED	(→ p. 170)
	DPF clogged	Intermittent amber LED + audible warning	
	Battery charge: the alternator is not charging the battery.	Red LED + audible warning	(**) (→ p. 227)
	Oil pressure: engine oil pressure insufficient.	Red LED + audible warning	(**) (→ p. 227)
	Engine temperature: temperature of the coolant is too high.	Red LED + audible warning	(**) (→ p. 227)
	Glow plugs: preheating of the glow plugs.	Amber LED	(→ p. 152) (→ p. 154)
	Fuel reserve: fuel in reserve.	Amber LED	
	Full beam lights: full beam lights activated.	Blue LED	(→ p. 109)

Symbol	Description	Type of signal	See
	Side lights: side lights or low beam lights activated.	Green LED	(→ p. 109)
	Trailer indicators: direction indicators of the interchangeable equipment activated.	Green LED blinking	(→ p. 109)
	Left indicator: direction indicators on left side activated.	Green LED blinking	(→ p. 109)
	Right indicator: direction indicators on right side activated.	Green LED blinking	(→ p. 109)

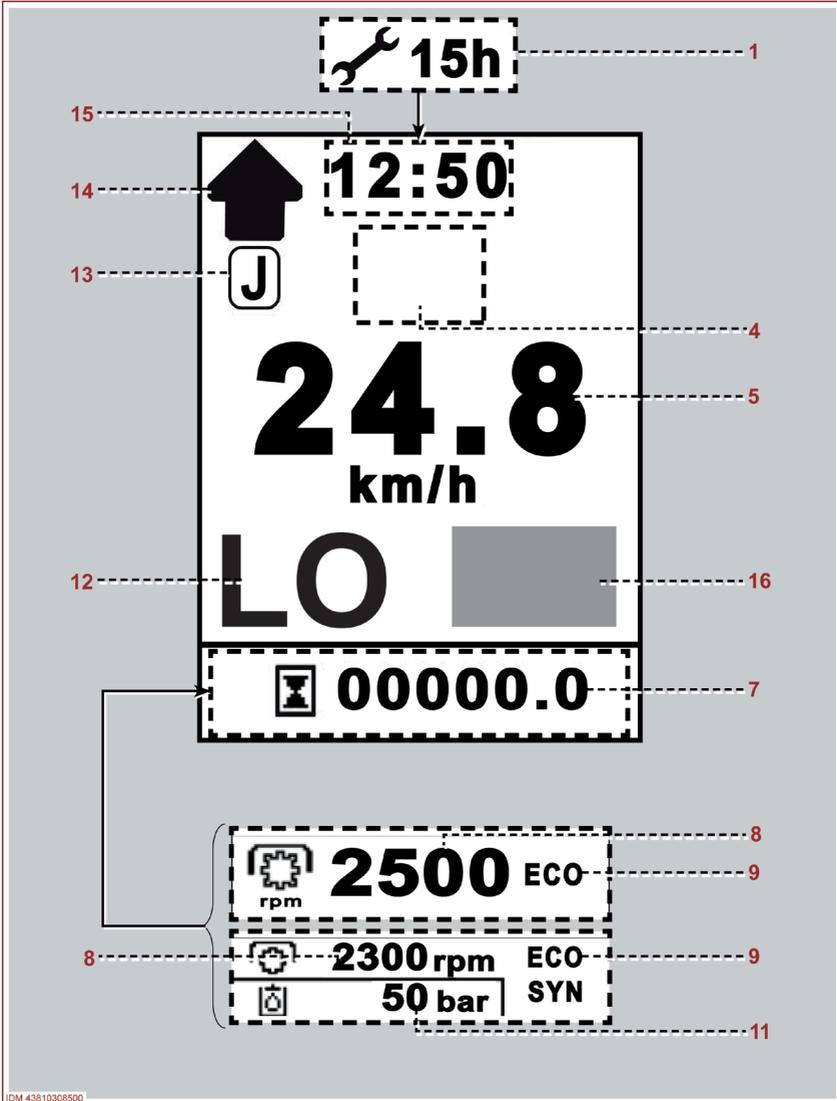
(**) The audible warning remains active only if the engine is running, until the problem is eliminated.

IMPORTANT When the LEDs combined with the audible warning switch on, stop the engine immediately so as not to cause damage. The fault continues to be signalled by the reference warning light being on even with the engine off, provided the machine has been stopped with the ignition key in position 2 (stand-by).

06.4. DESCRIPTION OF THE MULTIFUNCTION DISPLAY

06.4.1. HOME Screen

This is the normal working screen.



1. **Service indicator:** indicates the servicing deadlines. (→ p. 95)
4. The following information may be shown in the next area of the display:
 - › *DPF regeneration disabled:* indicates that DPF regeneration has been disabled with the appropriate button (→ p. 170)
 - › *Memo RPM:* displays the saved engine speed (→ p. 100)
 - › *Additional information:* allows you to view some data after selecting from the appropriate menu (→ p. 101)
5. **Speed:** shows the current machine speed.
7. **Hour counter:** shows the total or partial number of hours worked. (→ p. 96)
8. **PTO revolutions:** indicates that the independent power take-off is active and shows the number of revolutions. (→ p. 122)
9. **ECO:** indicates that the ECO function of the PTO is active. (→ p. 122)
11. **Hydraulic suspension pressure:** indicates that the hydraulic suspension is active and shows the value in bar of the hydraulic suspension preloading pressure. (If present). (→ p. 131)
12. **HI-LO:** indicates whether the HI-LO reduction gear is activated or deactivated. (If present)
13. **Joystick reverser:** indicates the reversing function controlled by the joystick is active (→ p. 114) (→ p. 116).
This function excludes the reverse control on the steering wheel.
14. **Direction of movement:** Indicates the direction of movement selected or the neutral position of the reverser. (→ p. 114) (→ p. 116)
15. **Clock:** indicates the present time. (→ p. 104)
16. **Pedal sensitivity:** indicates the pedal sensitivity curve selected from the Pedal sensitivity Menu (→ p. 98).

06.4.2. Service Indicator

The service indicator indicates only the maintenance that requires changing the oil. All the other servicing deadlines (replacing parts, checking levels, cleaning, etc.) are indicated in the respective table. (→ p. 197).

Starting the machine

After the check phase, the service message appears each time on the display for 5 seconds. Next to it are indicated the hours left until the next service.



20 hours or less to the next service

The service icon remains fixed on the display even during work phases.

Service overdue

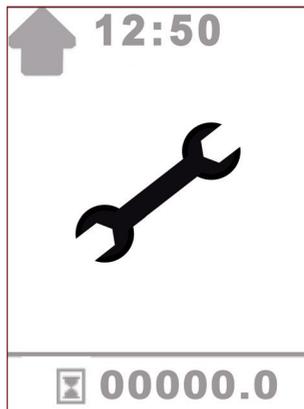
After the service deadline, the minus sign appears before the indication of the hours.

50 hours after the service deadline (-50)

At each start, after the check phase, a warning screen is displayed for 5 seconds accompanied by the continuous buzzer for 3 seconds.

Any other error signals are not displayed until the 5 seconds are up.

IMPORTANT At any time, with the panel on, the engine off and the vehicle stationary, it is possible to see the hours remaining until the next service by consulting the appropriate menu. (→ p. 103)

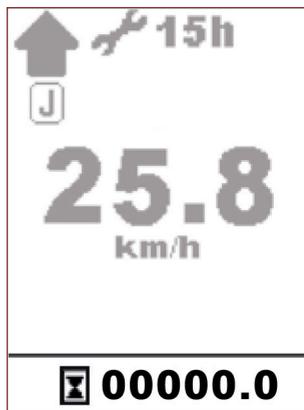


06.4.3. Hour counter

Always displays the total working hours of the machine. To change from total to partial hours and vice versa, press the button .

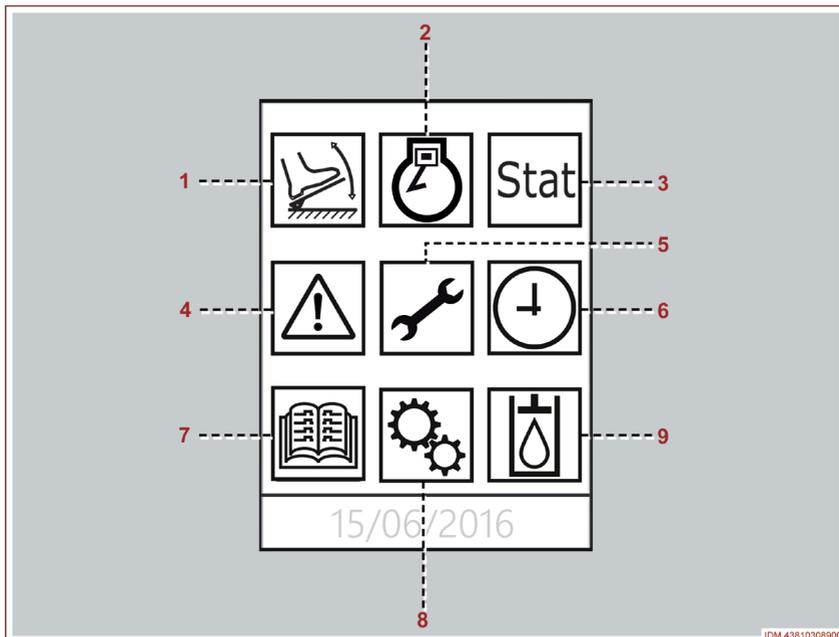
Resetting the partial hour counter

- 1\ Show the partial hour counter on the display.
- 2\ Hold down the button  for 2 seconds.



06.4.4. Menu

With the panel on, the engine off and the vehicle stationary, it is possible to access the Menu. To access the menu, press the button .



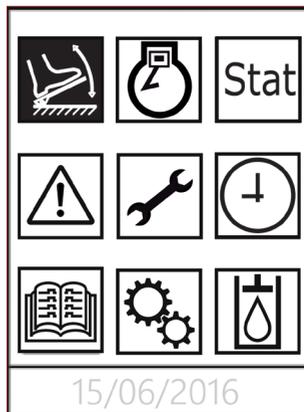
1. **Pedal Sensitivity** Menu.
 2. **Memo RPM** Menu.
 3. **Additional Information** Menu.
 4. **Warning** Menu.
 5. **Service** Menu.
 6. **Date/Time** Menu.
 7. **Info** Menu.
 8. **General Settings** Menu.
 9. Function not active.
- To leave the menus or the various sub-menus without saving the settings, press the button , again or wait 30 seconds.

NOTE In each sub-menu, after the settings have been confirmed, the word "WAIT" appears, followed by "OK" when the setting is made. The display returns to the main menu. If the word "FAIL" appears, it has not been possible to make the changes. The operation must therefore be repeated.

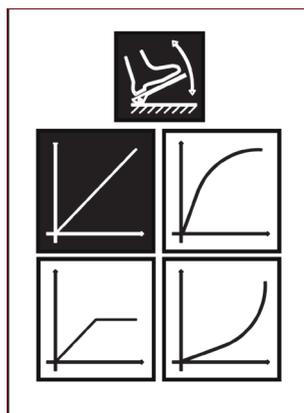
Pedal Sensitivity Menu

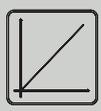
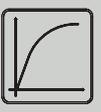
IMPORTANT In order to change the settings, the vehicle must be stationary.

- 1\ Press the button 
- 2\ Select the menu icon as in the figure using the buttons  and .
- 3\ Press button  to confirm.



- 4\ Set the curve using the buttons  and .
- 5\ Press button  to confirm.



Menu icon	Display icon	Name	Description	Notes
		Drive Mode 1 (default)	Linear drive Linear management of the engine speed 100% of the maximum speed available.	Ideal for most operations.
		Drive Mode 2	Gradual drive without jerking POWER (²) management of the engine speed 100% of the maximum speed available.	Ideal for travelling on the road with carried or towed implements.

Menu icon	Display icon	Name	Description	Notes
		Drive Mode 3	Linear drive Linear management of the engine speed The maximum engine speed available is that of the parameter M1 set in the RPM Memo Menu	Ideal for operations where a low noise impact is required and a reduced fuel consumption.
		Drive Mode 4	Precise and prompt drive ECO management ⁽¹⁾ of the engine speed 100% of the maximum speed available.	Ideal for very small movements (use of forklift or working in rows).

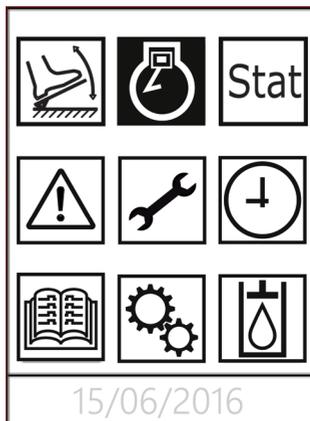
(¹) ECO: in the first 3/4 of the drive pedal stroke, few engine revolutions are supplied. The rest are supplied in the last quarter.

(²) POWER: in the first quarter of the drive pedal stroke it supplies most of the engine revolutions. The rest are supplied in the last 3/4.

Memo RPM Menu

IMPORTANT In order to change the settings, the Memo RPM function must not be active and the vehicle must be stationary.

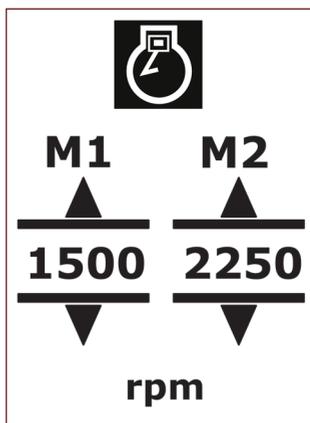
- 1\ Press the button .
- 2\ Select the menu icon as in the figure using the buttons  and .
- 3\ Press button  to confirm.



- 4\ Set the M1 value using the buttons  and .
- 5\ Press button  to confirm.
- 6\ Set the M2 value using the buttons  and .
- 7\ Press button  to confirm.

NOTE The variation is of 10 rpm.
 Minimum settable value: min engine rpm.
 Maximum settable value: max engine rpm

NOTE If the “DPF regeneration disabled” function has been activated, the M1 or M2 values will not be displayed.



NOTE It is possible to save the engine revolutions also by setting a value from the gas control and holding down the Memo RPM button for more than 3 seconds. In this way an instantaneous value is blocked which does not remain in the memory once the control is deactivated.

To recall the saved M1 and M2 values, see the respective paragraph. (→ p. 114)(→ p. 116)

Additional Information Menu

- 1\ Press the button .
- 2\ Select the menu icon as in the figure using the buttons  and .
- 3\ Press button  to confirm.

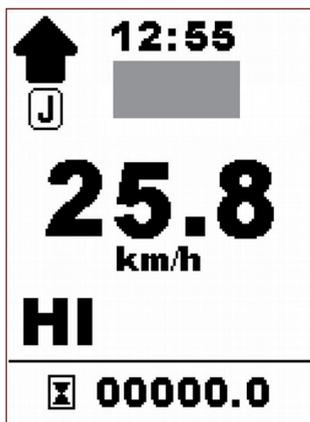


- 4\ Select the value that you want to display using the buttons  and .
 - › *Cons Spec*: displays the instantaneous fuel consumption (l/h)
 - › *Battery V*: displays the instantaneous battery voltage (V)
 - › *Eng Load*: Displays the engine load (%). The percentage refers to the absorbed power
 - › *Reg Value*: Displays the regeneration level
 - › *Cool Temp*: displays the temperature of the engine coolant (°C)
 - › *Rpm*: displays the engine speed (RPM).
 - › *No Value*: no value is displayed
- 5\ Press button  to confirm.

Stat		
Cons spec	10.5	l/h
Battery V	13.5	V
Eng load	100	%
Reg value	4	
Cool temp	85	°C
Rpm	2500	
No Value		

- 6\ The selected value will be shown in the display area.

NOTE If only one of the "DPF regeneration disabled" or "Memo RPM" functions has been activated, the value will not be displayed.



Warning Menu

The error codes are displayed in this menu. (→ p. 223)

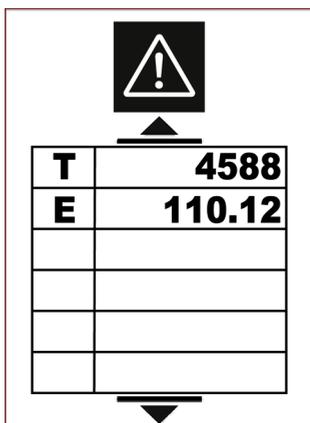
- 1\ Press the button .
- 2\ Select the menu icon as in the figure using the buttons  and .
- 3\ Press button  to confirm.



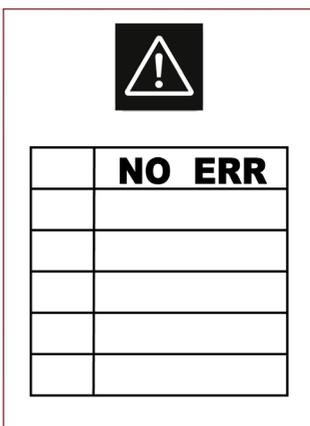
- 4\ Read any error codes and notify them to the authorised workshop.

The error codes are composed of a letter, indicating the type of error, and a series of numbers that identify it.

The error codes will be present until the fault is eliminated.



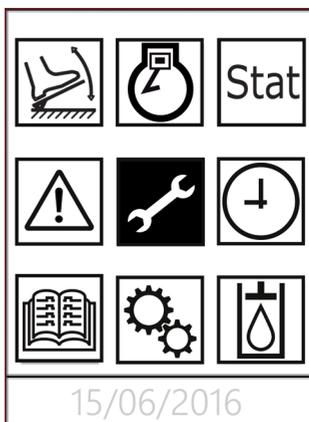
If there are no active errors, a screen appears with the message 'NO ERR'



Service Menu

The hours remaining until the next service are displayed in this menu. (→ p. 95)

- 1\ Press the button .
- 2\ Select the menu icon using the buttons  and .
- 3\ Press button  to confirm.



- 4\ The screen indicates the hours remaining until the next service.

After the service deadline, the minus sign appears before the indication of the hours.

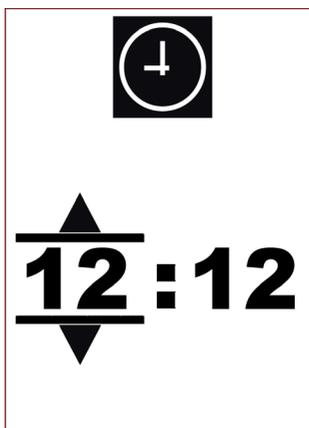


Time and date setting menu

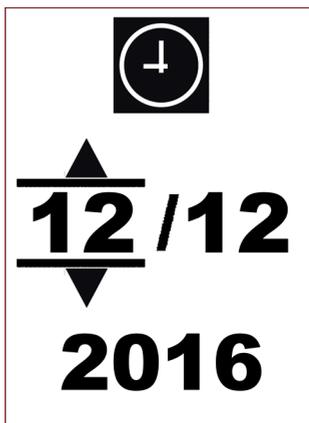
- 1\ Press the button .
- 2\ Select the icon as in the figure using the buttons  and .
- 3\ Press button  to confirm.



- 4\ Set the hour (0-24) using the buttons  and .
- 5\ Press button  to confirm.
- 6\ Set the minutes using the buttons  and .
- 7\ Press button  to confirm.

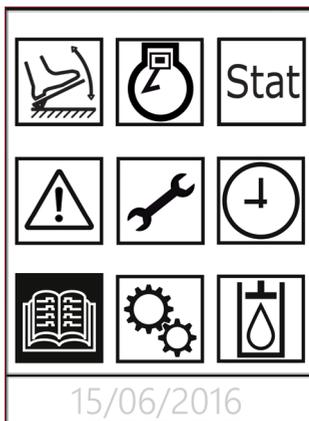


- 8\ Set the day using the buttons  and .
- 9\ Press button  to confirm.
- 10\ Set the month using the buttons  and .
- 11\ Press button  to confirm.
- 12\ Set the year using the buttons  and .
- 13\ Press button  to confirm.



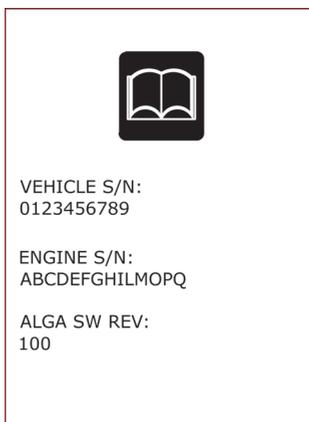
Info Menu

- 1\ Press the button .
- 2\ Select the icon as in the figure using the buttons  and .
- 3\ Press button  to confirm.
- 4\ Press the buttons  and  to change from the first to the second page and vice versa.



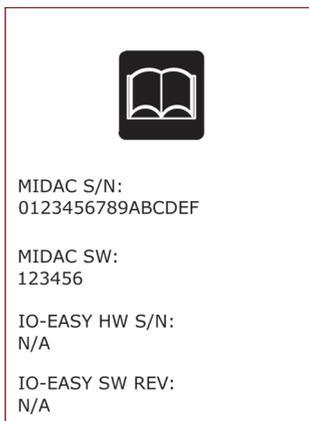
The INFO page shows:

- VEHICLE S/N: Serial number of the machine.
- ENGINE S/N: Serial number of the engine.
- ALGA SW REV: Software installed on the multifunction instrument.



The second INFO page shows:

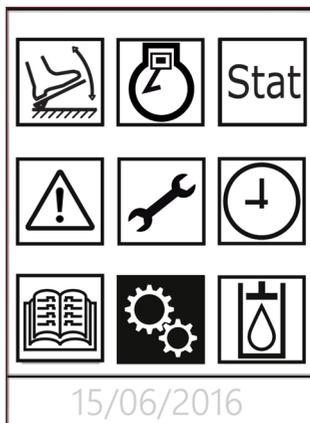
- MIDAC S/N: Serial number of the main electronic control unit.
- MIDAC SW: Software installed on the main electronic control unit.
- IO-EASY HW S/N: Serial number of the secondary electronic control unit. (Only machines with robotic controls)
- IO-EASY SW REV: Software installed on the secondary electronic control unit. (Only machines with robotic controls)



NOTE If the code N/A appears, it means that the value is not available.

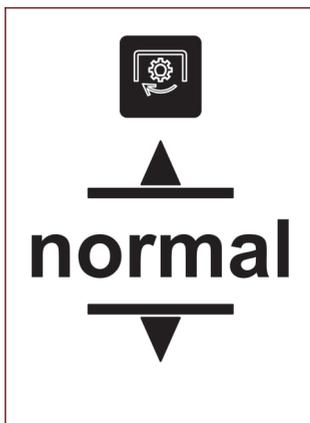
General Settings Menu

- 1\ Press the button .
- 2\ Select the icon as in the figure using the buttons  and .
- 3\ Press button  to confirm.



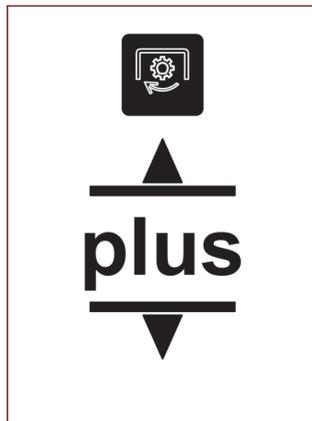
PTO engagement ramps

- Select “Normal” or “Plus” using the buttons.
- Press OK to confirm.
- The “Normal” or “Plus” functions allow you to choose the time with which the PTO is activated.
 - › *Normal: rapid PTO activation, recommended for tools with low inertia.*



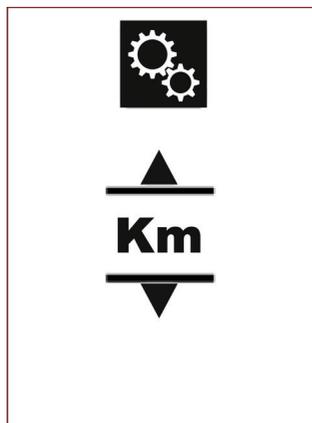
- *Plus: slow PTO activation, recommended for tools with high inertia.*

NOTE At each new start the PTO ramp set is "Normal".



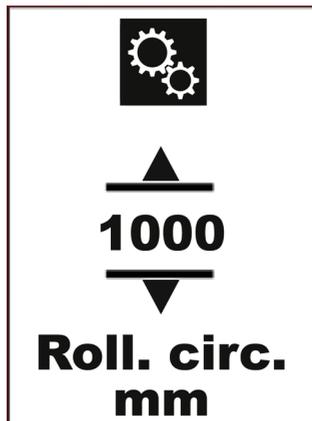
Speed unit of measure

- Select the speed unit of measure using the buttons  and .
- Press button  to confirm.



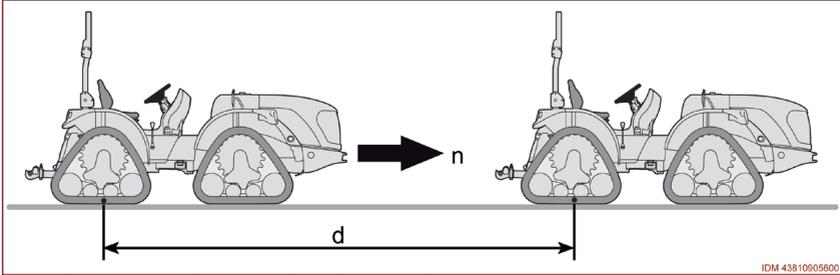
Track rolling circumference

- Set the rolling circumference of the tracks using the buttons  and .
- Press button  to confirm.



The rolling circumference can be measured in the field as indicated below:

- Deactivate front wheel drive.
- Mark the rear track on the side in the point corresponding to the centre of the impression.
- Mark the ground in the point corresponding to the reference made on the track.
- Move forward at least 2 turns of the rear tracks.
- Mark the reference at the end of the turns on the ground.
- Measure the distance travelled by the rear tracks.



Calculation of the rolling circumference: $Cdr = \frac{d}{n}$

Key

Cdr = rolling circumference

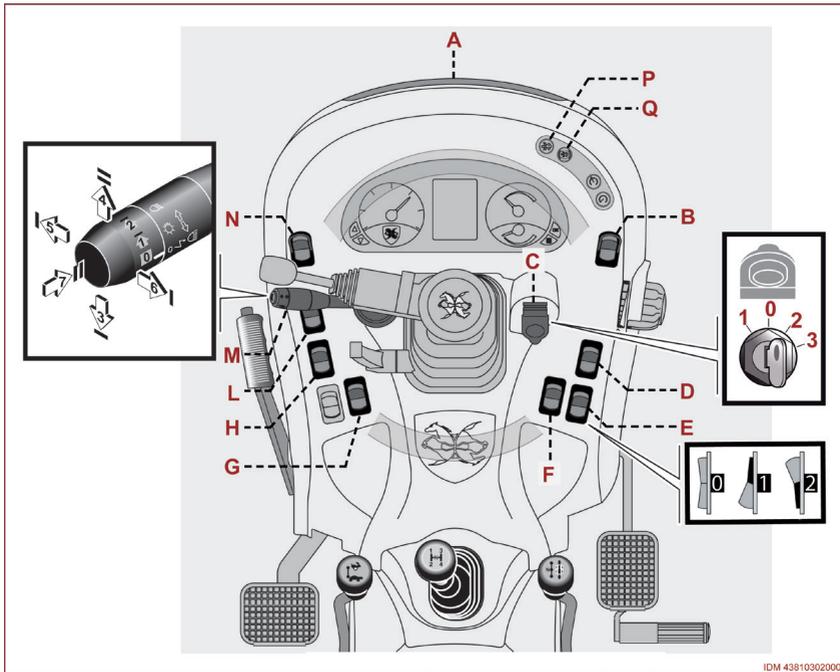
d = distance travelled by the rear tracks

n = number of turns made by the rear tracks

IMPORTANT It is recommended to check the actual rolling circumferences frequently on the field, to obtain more precise speed values.

06.5. DESCRIPTION OF DASHBOARD CONTROLS

The illustration represents the devices while the list gives the description and their function.



A. Fuses/relays compartment: it contains the fuses and relays that protect the electrical system.

B. PTO: used to activate the rear power take-off.

- The luminous LED indicates that the function is active. (→ p. 91)

IMPORTANT Whenever the power take-off is deactivated by the system (vehicle switched off, unmanned...), to reactivate it turn switch (B) to zero and turn it on again.

C. Ignition switch: used to switch on the engine.

- Keep the key pressed in slightly when turning the starter switch.
 - › **Control in position 0:** drive switched off and key can be removed.
 - › **Control in position 1:** the dashboard lights and the parking lights switch on. The key can be removed.
 - › **Control in position 2:** the phase of pre-heating the engine glow plugs starts and the machine is checked.

› **Control in position 3:** keep the key in position to start the engine.

- On release, the key goes back to position 2.

D. **4 track drive off:** used to activate and deactivate front wheel drive.

- If the warning light on the dashboard is lit, it indicates that front-wheel drive is off. (→ p. 91)



ATTENTION

When driving on flat ground, it is recommended to disconnect the front-wheel drive during road circulation to avoid unnecessary wear of the tracks and to improve manoeuvring of the machine.

In downhill routes, especially with hitched interchangeable tools, the front wheel drive **MUST** be engaged to achieve a greater braking action.

E. **Position not used.**

F. **Differential lock:** used to activate the differential lock device

- **Control in position 0:** the differentials of the front and rear axle unlock (light off). (→ p. 91)
- **Control in position 1:** the differentials of the front and rear axle lock (light on). (→ p. 91)
- **Control in position 2:** the differential of the rear axle locks (light on). (→ p. 91)

G. **Cleanfix (optional):** used to enable the function of the “Cleanfix” device.

When the light is on it means that the function is on.

- The device can be activated in two ways.
 - › *Press the button to activate the device and press it again to turn it off.*
 - › *Press the button and keep it pressed: the device's fan will work, cyclically, for approximately 25 seconds in blower mode and, for the next 15 minutes, in engine cooling mode.*
- To turn off the device, press the button again.

H. Hazard lights: used to activate the hazard lights.

- The light on (flashing) signals that the function is activated. (→ p. 91)

L. PTO for stationary use: used to activate the rear PTO when work of a stationary nature has to be performed without the operator sitting in the driver's seat.

Proceed as indicated to activate:

- 1\ Sit in the driver's seat.



ATTENTION

Start the engine ONLY when sitting in the driver's seat.

- Before starting the engine, make sure that the power take-off is deactivated (switch **(B)** with light off) and that the reverser lever is in 'neutral gear' position.
- 2\ Use the lever to engage the parking brake.
- Press the switch **(B)** to activate the power take-off. If the machine is equipped with a Joystick, the power take-off must be enabled with the appropriate button.
- Press the switch **(L)** until the icon  appears on the display.

Deactivation:

- Press the button **(L)**.
- Press the button **(B)** or reciprocal on the Joystick.
- Disengage the parking brake without sitting in the driver's seat.

M. Multi-function control: used to activate the functions listed.

- › **Control in position 0 (OFF):** drive off.
- › **Control in position 1:** the parking lights switch on. (→ p. 91)
- › **Control in position 2:** the low beam headlights switch on.
- › **Control in position 3:** the high beam headlights switch on. (→ p. 91)
- › **Control in position 4:** when this control is activated the high beam headlights flash repeatedly.
- › **Control in position 5:** the direction indicators (right) switch on. (→ p. 91)
- › **Control in position 6:** the direction indicators (left) switch on. (→ p. 91)
- › **Control in position 7:** when the control is pressed it activates the audible warning (horn).

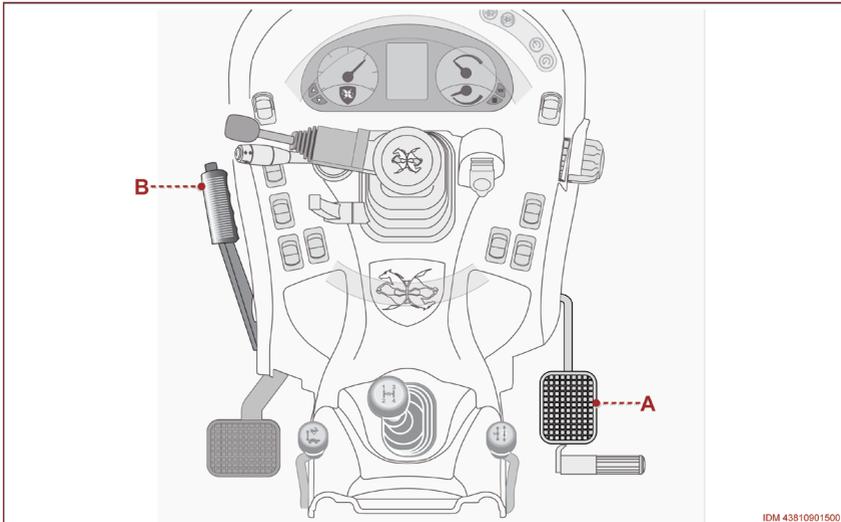
N. Rotating light: used to activate the rotating light.

P. DPF regeneration disabled: used to disable DPF regeneration. (→ p. 170)

Q. DPF regeneration: used to perform DPF regeneration. (→ p. 170)

06.6. USE OF THE “SUPERBRAKE” DEVICE (OPTIONAL)

The machine is equipped with an auxiliary electro-hydraulic device of the parking brake (Superbrake) that acts on all the tracks.



- The device increases the braking capacity and thus guarantees parking of the machine for a duration of about one hour.
- The device can be activated either with the machine off or with the machine on.



DANGER

Never leave the machine on sloping ground (engine on or off), even if the "Superbrake" device has been activated.

- Always stop the machine under safe conditions when parking on sloping ground.

- To activate the device, proceed as described.
 - 1\ Sit in the driver's seat.
 - 2\ Use the lever **(B)** to engage the parking brake.
 - 3\ Fully press the brake pedal **(A)**.
- Alternatively, press down the brake pedal **(A)** and, at the same time, activate the parking brake **(B)**.

**ATTENTION**

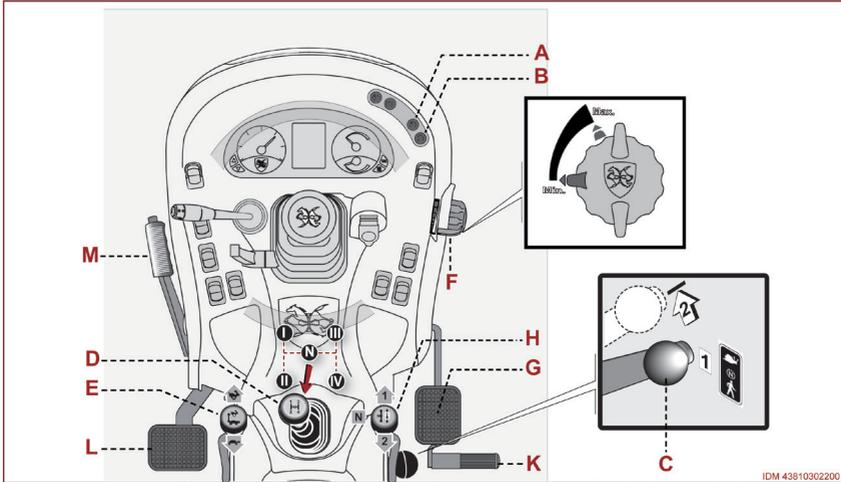
The device is activated even with the machine in motion.

- **Take great care in situations of danger which could occur due to sudden braking.**
- To deactivate the device, proceed as described.
 - 1\ Sit in the driver's seat.
 - 2\ Use the lever **(B)** to engage the parking brake.
 - 3\ Start the machine engine.
 - 4\ Use the lever **(B)** to disengage the parking brake.

IMPORTANT To deactivate the device with the machine off, see the respective paragraph. (→ p. 76)

06.7. DESCRIPTION OF DRIVE AND STOP CONTROLS (STANDARD CONTROLS)

The illustration represents the devices while the list gives the description and their function.



A. Memo RPM Button: used to save and recall the engine speed.

Recall:

- Press the button repeatedly to recall the saved engine speed **M1** or **M2**. (→ p. 100)
- To deactivate the control press the button **(B)**.

Saving:

- 1\ Set the engine speed with the gas control.
- 2\ Press and hold down the button for approximately 3 seconds to set the number of revolutions.

In this way an instantaneous value is blocked which does not remain in the memory once the control is deactivated.

- To deactivate the control press the button **(B)**.

B. Deactivating Memo RPM: used to deactivate the Memo RPM function.

C. Gear reduction lever: for selecting the transmission ratio of the gears (normal or reduced).

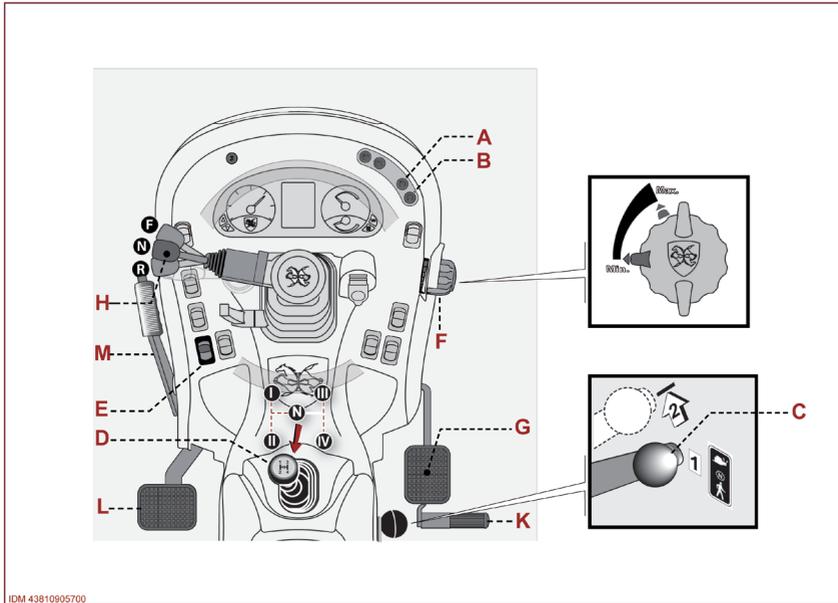
- › **Control in position 1:** normal transmission ratio.
- › **Control in position 2:** reduced transmission ratio.

D. Gear change lever: for selecting the gear.

- E. **Lever:** for selecting the speed range ("high" or "low").
 - › **Control in "hare" position:** range of "high" speeds.
 - › **Control in "tortoise" position:** range of "low" speeds.
- F. **Gas control:** sets a constant engine speed.
- G. **Brake pedal:** for slowing and/or stopping the machine.
- H. **Shuttle lever:** for selecting the direction of movement.
 - › **Control in position (N):** in neutral gear.
 - › **Control in "forward arrow" position:** the machine moves in the direction of the arrow.
 - › **Control in "backward arrow" position:** the machine moves in the direction of the arrow.
- K. **Accelerator pedal:** varies the drive speed of the machine. (→ p. 158)
- L. **Clutch pedal:** used to activate the clutch when engaging the gears.
- M. **Parking brake lever:** for blocking the machine in position when stopping or parking.

06.8. DESCRIPTION OF DRIVE AND STOP CONTROLS (ROBOTIC CONTROLS)

The illustration represents the devices while the list gives the description and their function.



IDM 43810905700

A. Memo RPM Button: used to save and recall the engine speed.

Recall:

- Press the button repeatedly to recall the saved engine speed **M1** or **M2**. (→ p. 100)
- To deactivate the control press the button **(B)**.

Saving:

- 1\ Set the engine speed with the gas control.
- 2\ Press and hold down the button for approximately 3 seconds to set the number of revolutions.

In this way an instantaneous value is blocked which does not remain in the memory once the control is deactivated.

- To deactivate the control press the button **(B)**.

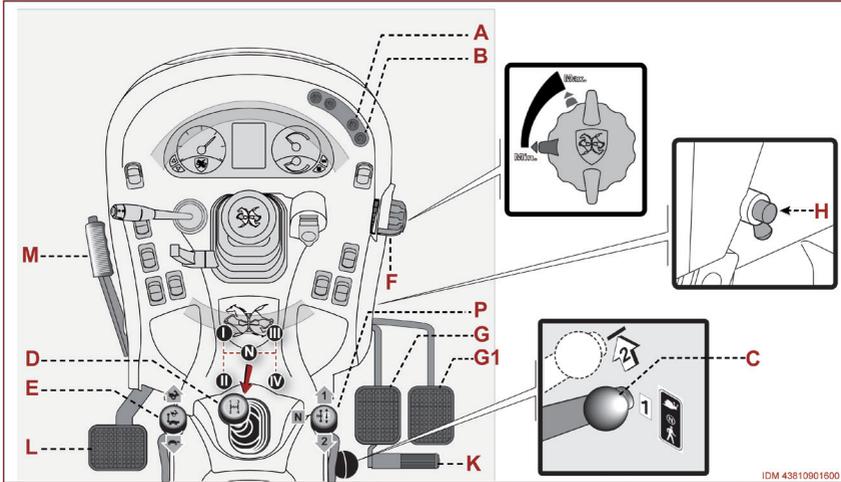
B. Deactivating Memo RPM: used to deactivate the Memo RPM function.

C. Gear reduction lever: for selecting the transmission ratio of the gears (normal or reduced).

- › **Control in position 1:** normal transmission ratio.
 - › **Control in position 2:** reduced transmission ratio.
- D. **Gear change lever:** for selecting the gear.
- E. **Range buttons:** for selecting the speed range (“high” or “low”).
- › **Control in “hare” position:** range of “high” speeds.
 - › **Control in “tortoise” position:** range of “low” speeds.
- F. **Gas control (machine without Joystick):** sets a constant engine speed.
- G. **Brake pedal:** for slowing and/or stopping the machine.
- H. **Shuttle lever:** for selecting the direction of movement.
- › **Control in position (N):** in neutral gear.
 - › **Control in position (F):** the machine moves in ‘forward’ direction.
 - › **Control in position (R):** the machine moves in ‘reverse’ direction.
- K. **Accelerator pedal:** varies the drive speed of the machine. (→ p. 160)
- L. **Clutch pedal:** used to activate the clutch when engaging the gears.
- M. **Parking brake lever:** for blocking the machine in position when stopping or parking.

06.9. DESCRIPTION OF DRIVE AND STOP CONTROLS (STANDARD CONTROLS AND STEERING BRAKES)

The illustration represents the devices while the list gives the description and their function.



A. Memo RPM Button: used to save and recall the engine speed.

Recall:

- Press the button repeatedly to recall the saved engine speed **M1** or **M2**. (→ p. 100)
- To deactivate the control press the button **(B)**.

Saving:

- 1\ Set the engine speed with the gas control.
- 2\ Press and hold down the button for approximately 3 seconds to set the number of revolutions.

In this way an instantaneous value is blocked which does not remain in the memory once the control is deactivated.

- To deactivate the control press the button **(B)**.

B. Deactivating Memo RPM: used to deactivate the Memo RPM function.

C. Gear reduction lever: for selecting the transmission ratio of the gears (normal or reduced).

- › **Control in position 1:** normal transmission ratio.
- › **Control in position 2:** reduced transmission ratio.

D. Gear change lever: for selecting the gear.

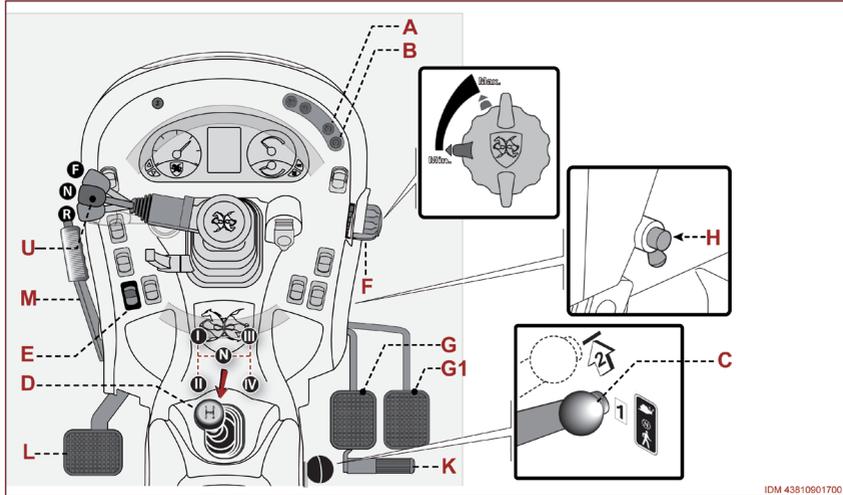
- E. **Lever:** for selecting the speed range ("high" or "low").
- › **Control in "hare" position:** range of "high" speeds.
 - › **Control in "tortoise" position:** range of "low" speeds.
- F. **Gas control:** sets a constant engine speed.
- G. **Brake pedal:** brakes the rear left track.
- G1. **Brake pedal:** brakes the rear right track.
- When one of the 'independent' brake pedals is pressed, the machine will pivot on the locked track (steering brake).
- H. **Pin:** latches the pedals so that the braking action is shared over all the tracks.
- When the 'latched' pedals are pressed, the machine brakes on all four tracks.
 - On machines with hydraulic braking for towed equipment, the brakes of the trailer are also activated.

IMPORTANT The two brake pedals must be utilized "independently" in special operating situations only, whereas when driving on roads, the pedals must always be "latched".

- K. **Accelerator pedal:** varies the drive speed of the machine. (→ p. 158)
- L. **Clutch pedal:** used to activate the clutch when engaging the gears.
- M. **Parking brake lever:** for blocking the machine in position when stopping or parking.
- P. **Shuttle lever:** for selecting the direction of movement.
- › **Control in position (N):** in neutral gear.
 - › **Control in "forward arrow" position:** the machine moves in the direction of the arrow.
 - › **Control in "backward arrow" position:** the machine moves in the direction of the arrow.

06.10. DESCRIPTION OF DRIVE AND STOP CONTROLS (ROBOTIC CONTROLS AND STEERING BRAKES)

The illustration represents the devices while the list gives the description and their function.



A. Memo RPM Button: used to save and recall the engine speed.

Recall:

- Press the button repeatedly to recall the saved engine speed **M1** or **M2**. (→ p. 100)
- To deactivate the control press the button **(B)**.

Saving:

- 1\ Set the engine speed with the gas control.
- 2\ Press and hold down the button for approximately 3 seconds to set the number of revolutions.

In this way an instantaneous value is blocked which does not remain in the memory once the control is deactivated.

- To deactivate the control press the button **(B)**.

B. Deactivating Memo RPM: used to deactivate the Memo RPM function.

C. Gear reduction lever: for selecting the transmission ratio of the gears (normal or reduced).

- › **Control in position 1:** normal transmission ratio.
- › **Control in position 2:** reduced transmission ratio.

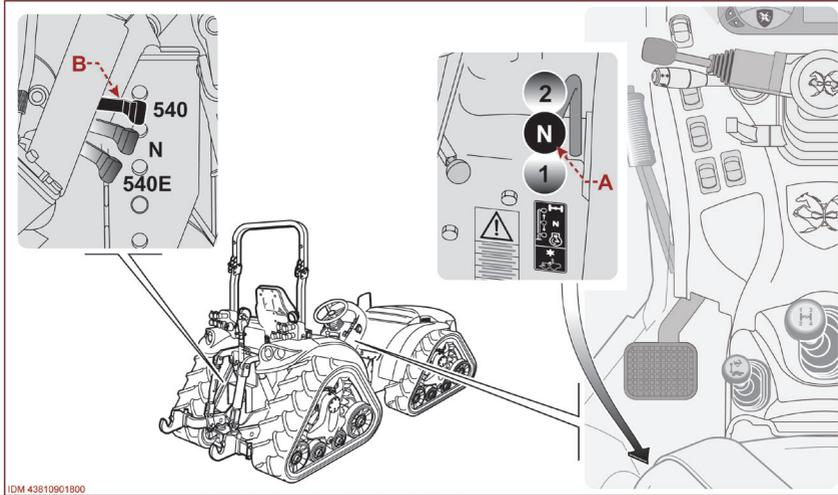
- D. **Gear change lever:** for selecting the gear.
- E. **Range buttons:** for selecting the speed range ("high" or "low").
 - › **Control in "hare" position:** range of "high" speeds.
 - › **Control in "tortoise" position:** range of "low" speeds.
- F. **Gas control (machine without Joystick):** sets a constant engine speed.
- G. **Brake pedal:** brakes the rear left track.
- G1. **Brake pedal:** brakes the rear right track.
 - When one of the 'independent' brake pedals is pressed, the machine will pivot on the locked track (steering brake).
- H. **Pin:** latches the pedals so that the braking action is shared over all the tracks.
 - When the 'latched' pedals are pressed, the machine brakes on all four tracks.
 - On machines with hydraulic braking for towed equipment, the brakes of the trailer are also activated.

IMPORTANT The two brake pedals must be utilized "independently" in special operating situations only, whereas when driving on roads, the pedals must always be "latched".

- K. **Accelerator pedal:** varies the drive speed of the machine. (→ p. 160)
- L. **Clutch pedal:** used to activate the clutch when engaging the gears.
- M. **Parking brake lever:** for blocking the machine in position when stopping or parking.
- U. **Shuttle lever:** for selecting the direction of movement.
 - › **Control in position (N):** in neutral gear.
 - › **Control in position (F):** the machine moves in 'forward' direction.
 - › **Control in position (R):** the machine moves in 'reverse' direction.

06.11. DESCRIPTION OF WORK CONTROLS

The illustration represents the devices while the list gives the description and their function.



A. Power take-off lever: for selecting the power take-off operating mode.

- › **Control in position (N):** drive OFF.
- › **Control in position 1:** the power take-off works in 'independent mode' (speed synchronised with the number of engine revolutions).
- › **Control in position 2:** the power take-off works in 'synchronised mode' (speed synchronised with the machine drive speed).

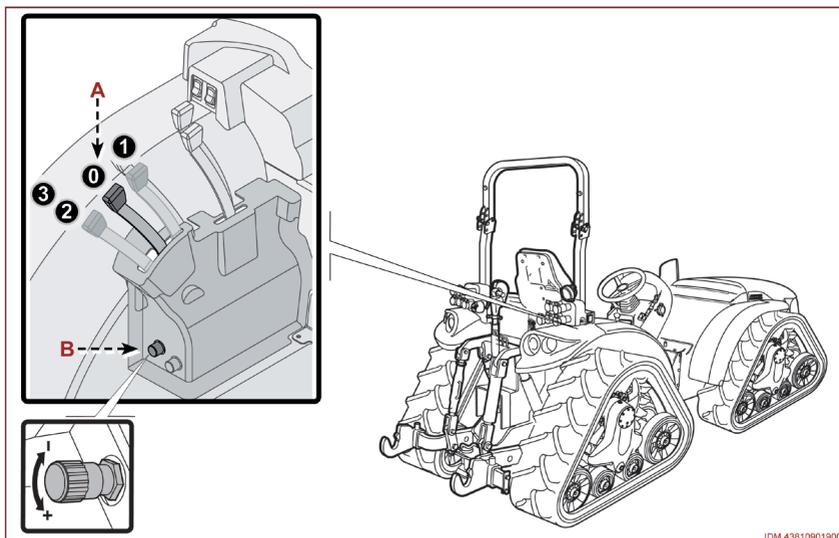
B. Lever: for selecting the power take-off operating mode (number of revolutions per minute).

- › **Control in position (N):** drive OFF.
- › **Control in position 540:** the power take-off works at 540 rpm.
- › **Control in position 540E:** the power take-off works at 540 rpm with the engine at a lower (reduced consumption).

IMPORTANT The machine is equipped with a PTO safety brake that automatically activates when the levers (A-B) are in neutral position.

- In the case of connection with towed drive equipment, put also the reduction gear of the equipment in neutral position or disconnect the cardan shaft to avoid damage to the PTO of the machine.

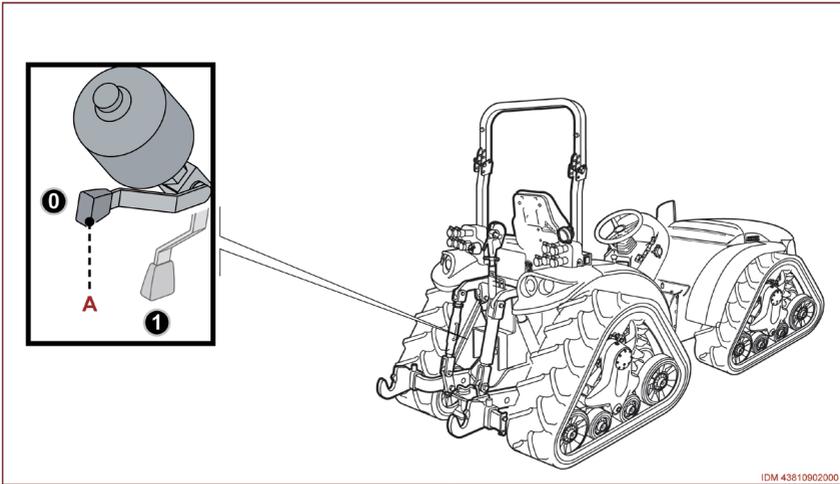
06.12. DESCRIPTION OF REAR LIFT CONTROLS (STANDARD)



- A. Lever (maintained action):** used to activate the arms of the rear power lift unit.
- › **Control in position 0:** the arms of the power lift unit remain in their position.
 - › **Control in position 1:** the arms of the power lift unit are raised. On release from position 1, the control goes back to position 0.
 - › **Control in position 2:** the arms of the power lift unit are lowered. On release from position 2, the control goes back to position 0.
 - › **Control in position 3:** the arms of the power lift unit are lowered and the lever remains engaged, obtaining the floating effect of the lift.
- To stop the action, shift the lever to position 2, the control returns to position 0.
- B. Flow regulating valve:** used to adjust the rate of descent of the rear implement or to lock it in a stable position.

06.13. DESCRIPTION OF "DAMPING" CONTROL

The 'Damping' function is particularly useful during road travel to mitigate the oscillations of the carried tool, improving driver comfort.

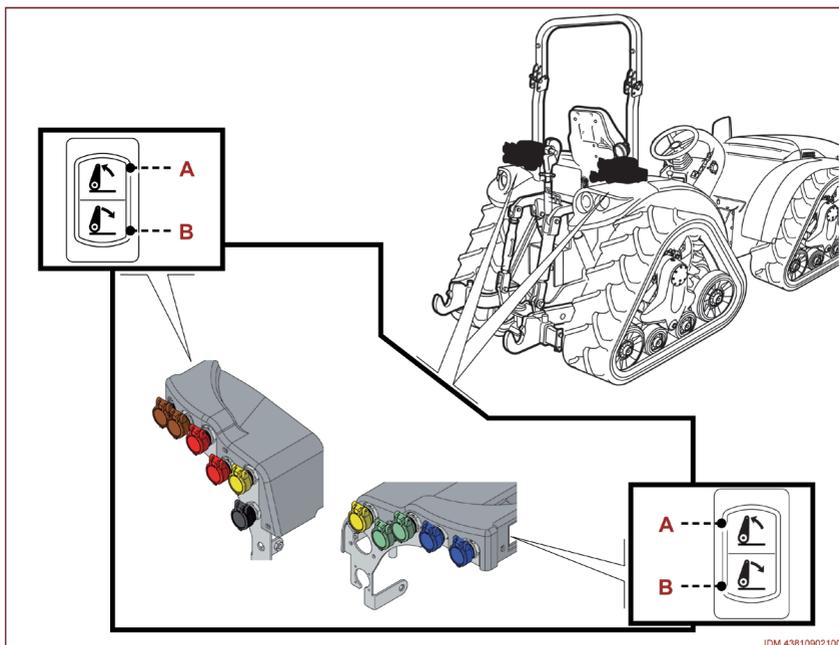


A. **Lever:** used to activate the 'Damping' function during road travel.

- › **Control in position 0:** function OFF.
 - › **Control in position 1:** function ON.
- At the end of road travel, return the lever to position 0.

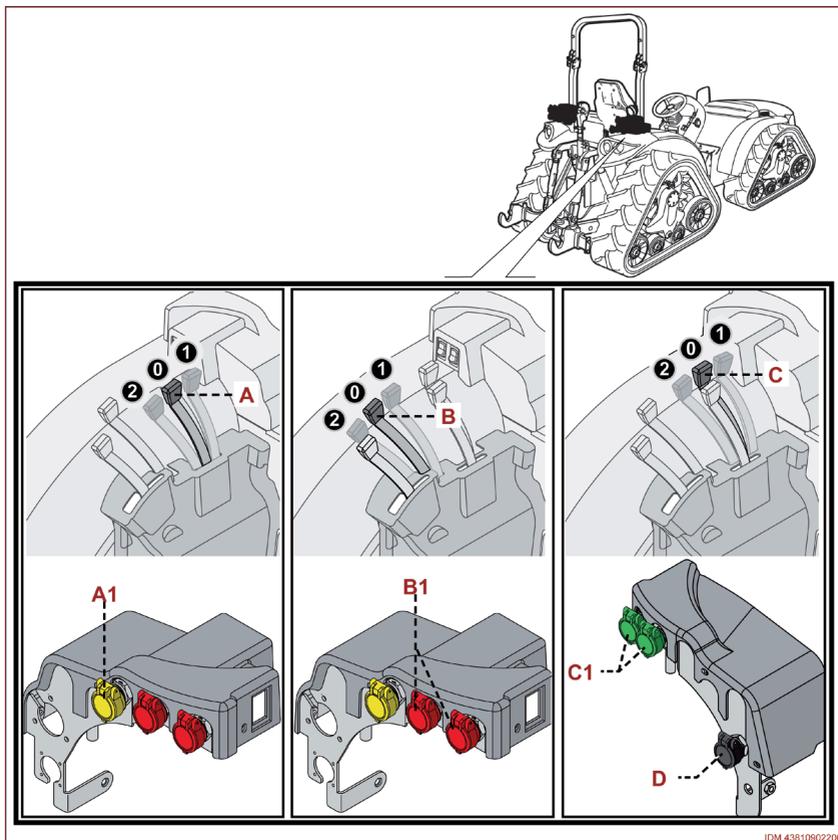
06.14. DESCRIPTION OF THE EXTERNAL CONTROLS OF THE LIFTING ASSEMBLY (IF PRESENT)

The illustration represents the devices, while the list gives their description and function.



- A. **Lifting switch (maintained action):** used to raise the rear power lift unit (with driver on the ground at the side of the machine) during hitching of the carried interchangeable tool. When released, the lift stops in the current position.
- B. **Lowering switch (maintained action):** used to lower the rear power lift unit (with driver on the ground at the side of the machine) during hitching of the carried interchangeable tool. When released, the lift stops in the current position.

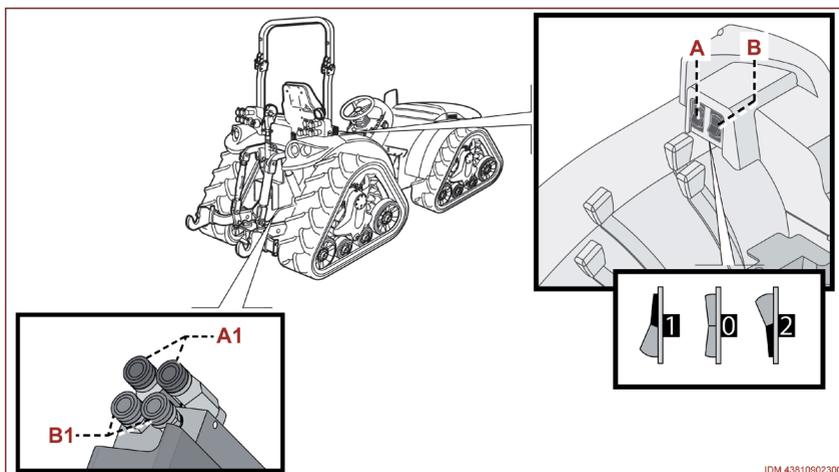
06.15. DESCRIPTION OF HYDRAULIC COUPLING CONTROLS (STANDARD)



- A. Lever (maintained action):** used to activate the single-acting hydraulic coupling (A1) (yellow).
- › **Control in position 0:** drive OFF.
 - › **Control in position 1:** activates the outlet of the hydraulic coupling (A1).
 - › **Control in position 2:** activates the discharge of the hydraulic coupling (A1) (yellow).
On release from position 1-2, the control goes back to position 0.
- B. Lever (maintained action):** used to activate the double-acting hydraulic couplings (B1) (red).
- › **Control in position 0:** drive OFF.
 - › **Control in position 1-2:** activates the hydraulic couplings.
On release from position 1-2, the control goes back to position 0.

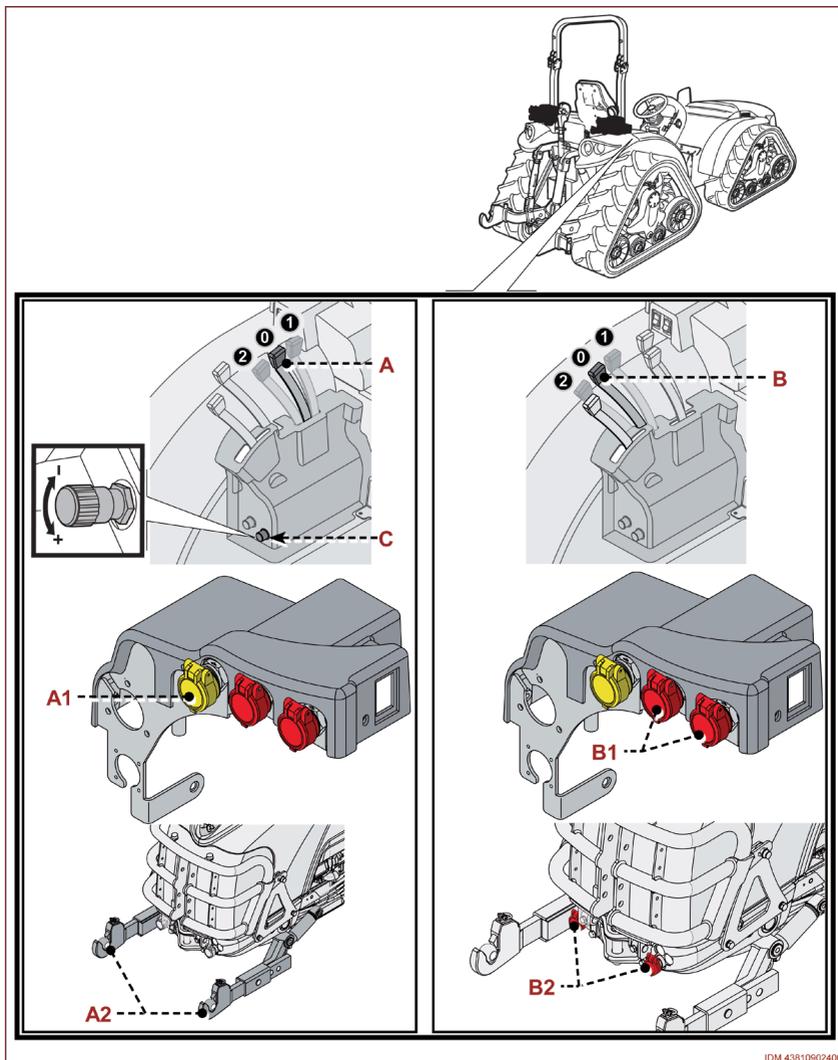
- C. Lever (maintained action):** used to activate the double-acting hydraulic couplings (**C1**) (green).
- › **Control in position 0:** drive OFF.
 - › **Control in position 1-2:** activates the hydraulic couplings.
On release from position 1-2, the control goes back to position 0.
 - › **Control in position 2:** activates the hydraulic couplings.
On release from position 2, the control goes back to position 0.
- D. Black hydraulic discharge coupler.**

06.16. DESCRIPTION OF HYDRAULIC MINI-COUPLING CONTROLS (STANDARD)



- A. Mini-coupling switch (maintained action):** used to activate the hydraulic mini-couplings (**A1**).
- › **Control in position 0:** drive OFF.
 - › **Control in position 1:** activates the hydraulic mini-couplings.
 - › **Control in position 2:** activates the hydraulic mini-couplings, with opposite function to the one obtained with the control in position 1.
On release from position '1-2', the control goes back to position '0'.
- B. Mini-coupling switch (maintained action):** used to activate the hydraulic mini-couplings (**B1**).
- › **Control in position 0:** drive OFF.
 - › **Control in position 1:** activates the hydraulic mini-couplings.
 - › **Control in position 2:** activates the hydraulic mini-couplings, with opposite function to the one obtained with the control in position 1.
On release from position '1-2', the control goes back to position '0'.

06.17. DESCRIPTION OF HYDRAULIC COUPLING AND FRONT LIFT CONTROLS (OPTIONAL)



DO NOT connect the quick couplings of the rear part and those of the front part (that have the same colour) to activate two interchangeable tools at the same time.

A. Lever (maintained action): used to activate the single-acting hydraulic coupling (A1) (yellow) and the front lift (A2).

- › **Control in position 0:** drive OFF.

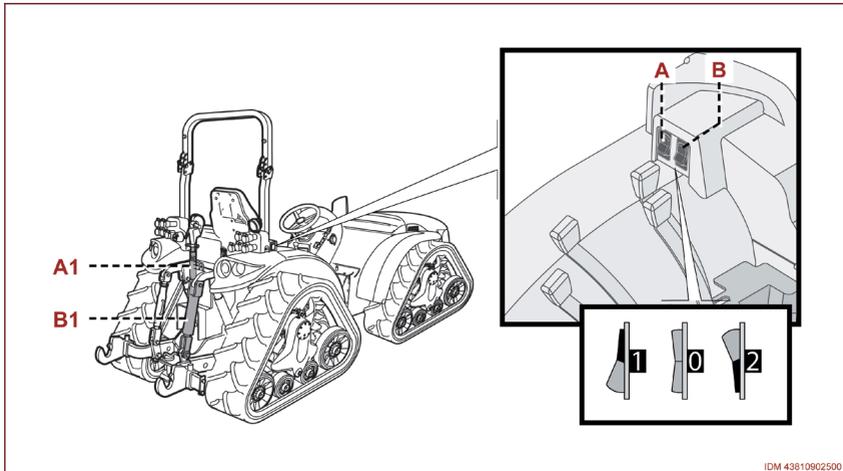
- › **Control in position 1:** activates the outlet of the hydraulic coupling (**A1**) and raises the front lift (**A2**).
- › **Control in position 2:** activates the discharge of the hydraulic coupling (**A1**) and lowers the front lift (**A2**).
On release from position 1-2, the control goes back to position 0.

**ATTENTION**

The lever (A) controls both the rear yellow hydraulic coupling and the front lift **AT THE SAME TIME**. If the front lift is used, make sure that there is no tool attached to the rear yellow coupling. If the rear yellow coupling is used, close the flow regulating valve (C) and make sure that there is no tool attached to the front lift.

- B. Lever (maintained action):** used to activate the double-acting hydraulic couplings at front (**B2**) and rear (**B1**) (red).
 - › **Control in position 0:** drive OFF.
 - › **Control in position 1:** activates the hydraulic couplings.
 - › **Control in position 2:** activates the hydraulic couplings, with opposite function to the one obtained with the control in position 1.
- C. Flow regulating valve:** used to adjust the rate of descent of the front implement or to lock it in a stable position.

06.18. DESCRIPTION OF THE VERTICAL TIE-ROD AND STRUT CONTROLS WITH LIFT UNIT (OPTIONAL)



IDM 43810902500

- A. **Hydraulic strut switch (maintained action):** used to adjust the hydraulic control third point strut (**A1**) (rear power lifting unit).
- › **Control in position 0:** drive OFF.
 - › **Control in position 1:** the strut is lengthened.
 - › **Control in position 2:** the strut is shortened.
On release from position 1-2, the control goes back to position 0.
- B. **Vertical tie-rod switch (maintained action):** used to activate the hydraulic tie-rod (**B1**) of the right arm of the rear power lifting unit.
- › **Control in position 0:** drive OFF.
 - › **Control in position 1:** the arm is lowered.
 - › **Control in position 2:** the arm is raised.
On release from position 1-2, the control goes back to position 0.

06.19. DESCRIPTION OF "JOYSTICK" TYPE CONTROLS

The Joystick of the ERGIT R Series has a capacitive contact surface that recognizes operator presence by the touch of his hand. It is therefore necessary to grip the joystick to enable its functions.

The operations associated with the movements of the Joystick (**J1**, **J2**, **J3**, **J4**), apart from the electric control (**U+J3**), are of a proportional type with electronic control: a greater shift of the control corresponds to a greater reaction speed of the respective function.

Settings

The controls can be configured in four different ways to ensure the greatest convenience of use in any situation. Three configurations are defined, one is customisable and can be requested from an authorised workshop.

To impose the desired setting, proceed as indicated.

- 1\ Hold down simultaneously for about two seconds the buttons (**S**) (red) and (**T**) (green). The led (**V1**) flashes.
- 2\ Select the desired configuration using the buttons (**S**) and (**T**).
- 3\ Corresponding to each configuration is a different led flashing sequence (Set 1 = 1 flash + pause; Set 2 = 2 flashes + pause, etc.).
- 4\ Press the yellow button (**U**) to confirm.

The selected configuration remains saved until a new setting.

IMPORTANT When selecting the setting, it is possible that the flashing of the LED does not update with the same speed as the button control: to be safe, wait for the second sequence.



ATTENTION

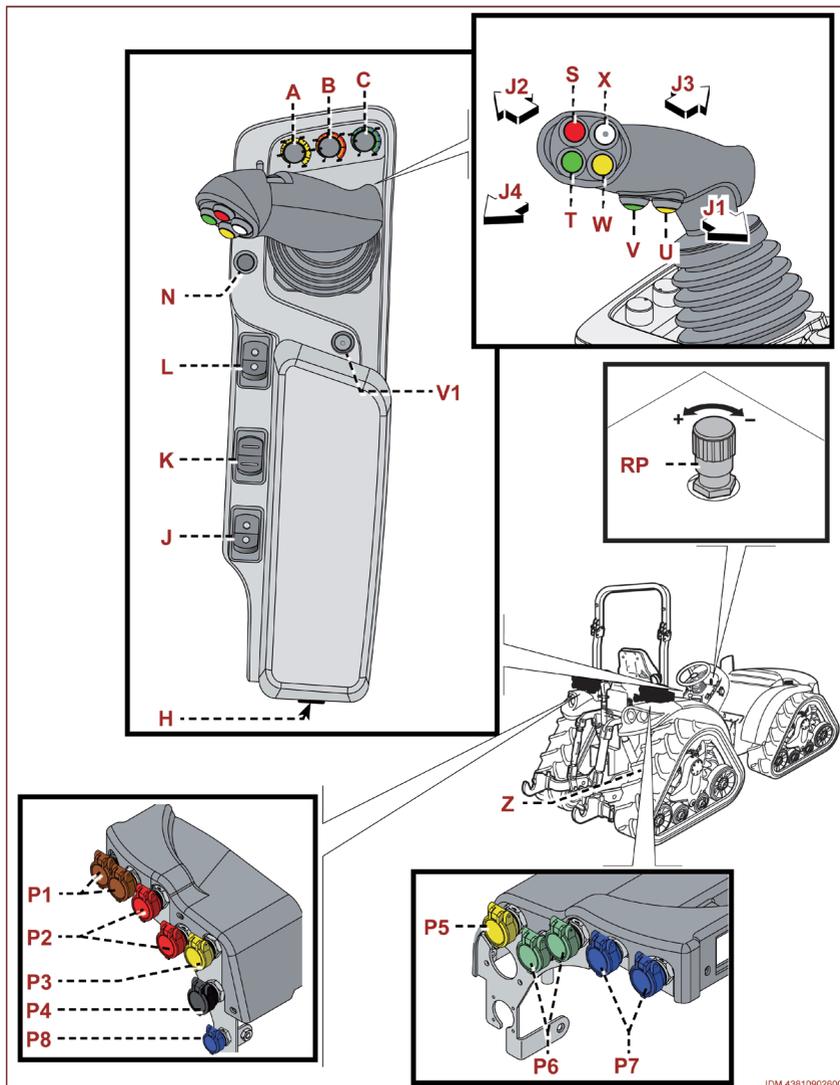
The "Joystick" controls activate the rear and front hydraulic couplers that have the same colour.

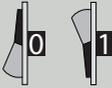
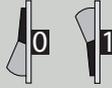
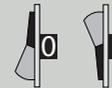
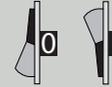
DO NOT connect the quick couplings of the rear part and those of the front part (that have the same colour) to activate two interchangeable tools at the same time.

IMPORTANT At the end of each working day cover the "joystick" with the special protection.

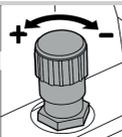
06.19.1. Set 1

The illustration represents the devices, while the list gives their description and function.



Operation	Control	Notes
Joystick Controls	(H) 	(0): OFF. (1): ON.
Rear power lift		(J1): raising. (J2): lowering.
(Z) Hydraulic vertical tie-rod		To adjust the oil flow, use the knob (C)
Front power lift enabling	(L) 	(0): OFF. (1): ON.
(P5) Yellow hydraulic coupling S.E.	 + 	(U+J1): charged. (U+J2): discharged.
Not active		
Rear power lift float		When activated, the led (V1) lights up. Deactivation: press the button again or pull the joystick lever (J1).
(P3) Activate yellow hydraulic coupling S.E. in continuous mode	(J) 	(0): deactivation. (1): activation.
(P6) Green hydraulic couplings D.E. (***)	 + 	(T+J1): outlet. (T+J2): discharge.
(P2) Red hydraulic couplings D.E.	 + 	To adjust the oil flow, use the knob (B).
Not used	(K) 	

Operation	Control	Notes
(P1) Brown/orange hydraulic couplings D.E.	+	To adjust the oil flow, use the knob (B).
(B) Couplings flow regulator D.E.		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P3) and (P4) Hydraulic motor (***)		Press the button (for about 2 seconds) to activate. The LED lights up. Press the button again to deactivate. To adjust the oil flow, use the knob (A).
(P8) Empty drainage		Used to empty the drainage of the hydraulic motor.
(A) Hydraulic motor flow regulator		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P7) Blue hydraulic couplings D.E. (***)	+	To adjust the oil flow, use the knob (C).
(C) Couplings flow regulator D.E.		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
Power take-off		Press the button (for about 2 seconds) to activate. Press the button again to deactivate. (*)

Operation	Control	Notes
Electric control.		
Front/rear power lift capacity regulator	(RP) 	Used to adjust the rate of descent of the front/rear implement or to lock it in a stable position.

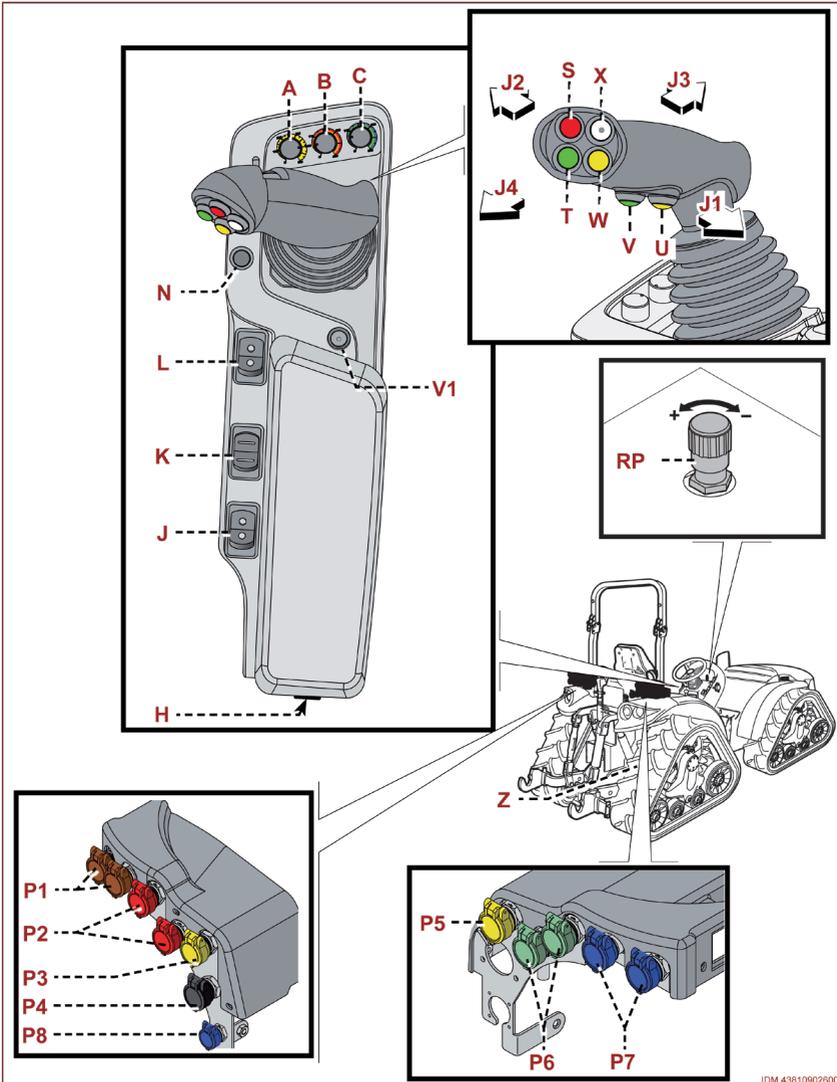
(*) The control is enabled only if the power take-off has been activated by means of the switch on the dashboard (→ p. 109).

(**) The control is enabled only if the "Joystick" function has been selected with the switch on the dashboard (→ p. 94).

(***) DO NOT connect the quick couplings of the rear part and those of the front part (that have the same colour) to activate two interchangeable tools at the same time.

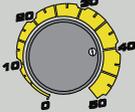
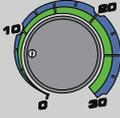
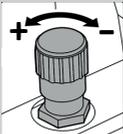
06.19.2. Set 2.

The illustration represents the devices, while the list gives their description and function.



Operation	Control	Notes
Joystick Controls	<p>(H)</p>	<p>(0): OFF. (1): ON.</p>

Operation	Control	Notes
Rear power lift	 +  	(T+J1): raising. (T+J2): lowering.
(Z) Hydraulic vertical tie-rod	 +  	To adjust the oil flow, use the knob (C)
Front power lift enabling	(L)  	(0): OFF. (1): ON.
(P5) Yellow hydraulic coupling S.E.	 +  	(U+J1): charged. (U+J2): discharged.
Not active		
Rear power lift float		When activated, the led (V1) lights up. Deactivation: press the button again or pull the joystick lever (J1)+(T).
(P3) Activate yellow hydraulic coupling S.E. in continuous mode	(J)  	(0): deactivation. (1): activation.
(P6) Green hydraulic couplings D.E. (***)	 	(T+J1): outlet. (T+J2): discharge.
(P2) Red hydraulic couplings D.E.	 +  	To adjust the oil flow, use the knob (B).
Not used	(K)  	
(P1) Brown/orange hydraulic couplings D.E.	 +  	To adjust the oil flow, use the knob (B).

Operation	Control	Notes
(B) Couplings flow regulator D.E.		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P3) and (P4) Hydraulic motor (***)		Press the button (for about 2 seconds) to activate. The LED lights up. Press the button again to deactivate. To adjust the oil flow, use the knob (A).
(P8) Empty drainage		Used to empty the drainage of the hydraulic motor.
(A) Hydraulic motor flow regulator		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P7) Blue hydraulic couplings D.E. (***)		To adjust the oil flow, use the knob (C).
(C) Couplings flow regulator D.E.		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
Power take-off		Press the button (for about 2 seconds) to activate. Press the button again to deactivate. (*)
Electric control.		
Front/rear power lift capacity regulator (RP)		Used to adjust the rate of descent of the front/rear implement or to lock it in a stable position.

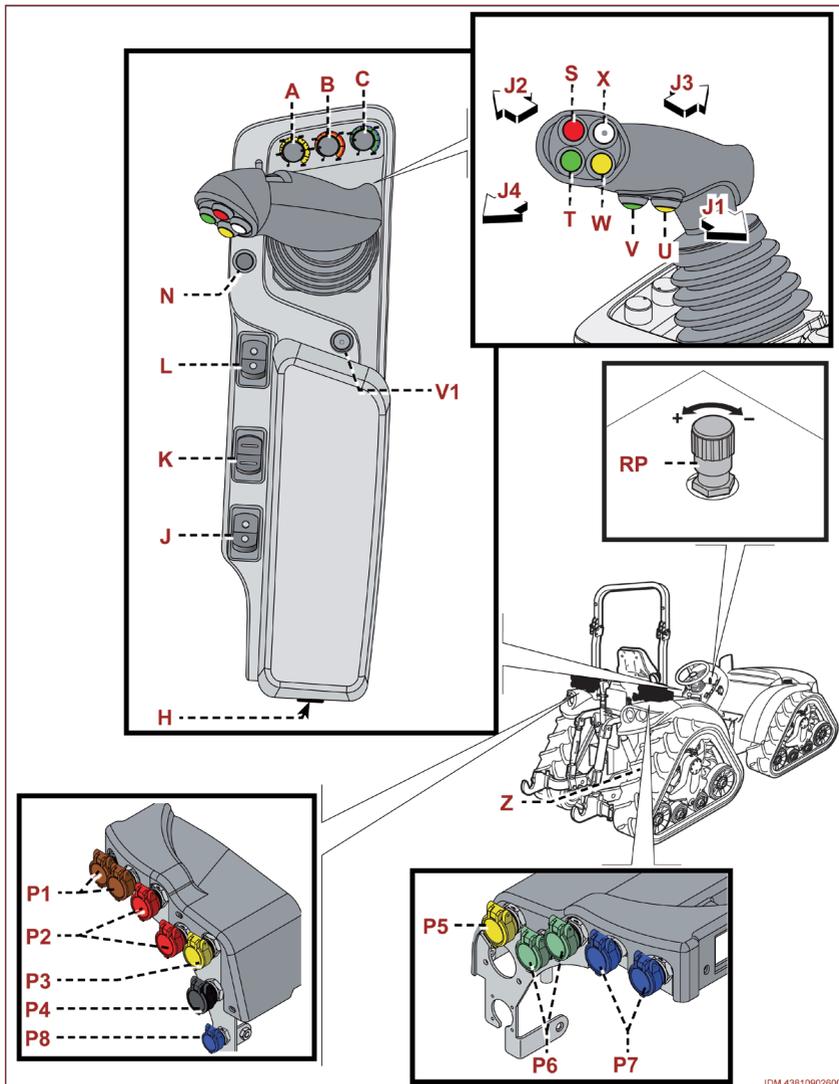
() The control is enabled only if the power take-off has been activated by means of the switch on the dashboard (→ p. 109).*

*(**) The control is enabled only if the "Joystick" function has been selected with the switch on the dashboard (→ p. 94).*

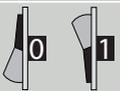
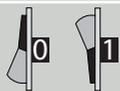
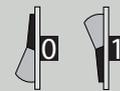
*(***) DO NOT connect the quick couplings of the rear part and those of the front part (that have the same colour) to activate two interchangeable tools at the same time.*

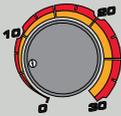
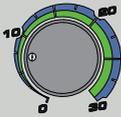
06.19.3. Set 3.

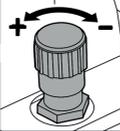
The illustration represents the devices, while the list gives their description and function.



IDM 43810902800

Operation	Control	Notes
Joystick Controls	(H) 	(0): OFF. (1): ON.
Rear power lift	 + 	(J1): raising. (J2): lowering.
(Z) Hydraulic vertical tie-rod	 + 	To adjust the oil flow, use the knob (C)
Front power lift enabling	(L) 	(0): OFF. (1): ON.
(P5) Yellow hydraulic coupling S.E.	 + 	(U+J1): charged. (U+J2): discharged.
Not active		
Rear power lift float		When activated, the led (V1) lights up. Deactivation: press the button again or pull the joystick lever (J1)+(S).
(P3) Activate yellow hydraulic coupling S.E. in continuous mode	(J) 	(0): deactivation. (1): activation.
(P6) Green hydraulic couplings D.E. (***)	 + 	(T+J1): outlet. (T+J2): discharge.
(P2) Red hydraulic couplings D.E.		To adjust the oil flow, use the knob (B).
Not used	(K) 	

Operation	Control	Notes
(P1) Brown/orange hydraulic couplings D.E.		To adjust the oil flow, use the knob (B).
(B) Couplings flow regulator D.E.		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P3) and (P4) Hydraulic motor (***)		Press the button (for about 2 seconds) to activate. The LED lights up. Press the button again to deactivate. To adjust the oil flow, use the knob (A).
(P8) Empty drainage		Used to empty the drainage of the hydraulic motor.
(A) Hydraulic motor flow regulator		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P7) Blue hydraulic couplings D.E. (***)		To adjust the oil flow, use the knob (C).
(C) Couplings flow regulator D.E.		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
Power take-off		Press the button (for about 2 seconds) to activate. Press the button again to deactivate. (*)
Electric control.		

Operation	Control	Notes
Front/rear power lift capacity regulator	<p>(RP)</p> 	Used to adjust the rate of descent of the front/rear implement or to lock it in a stable position.

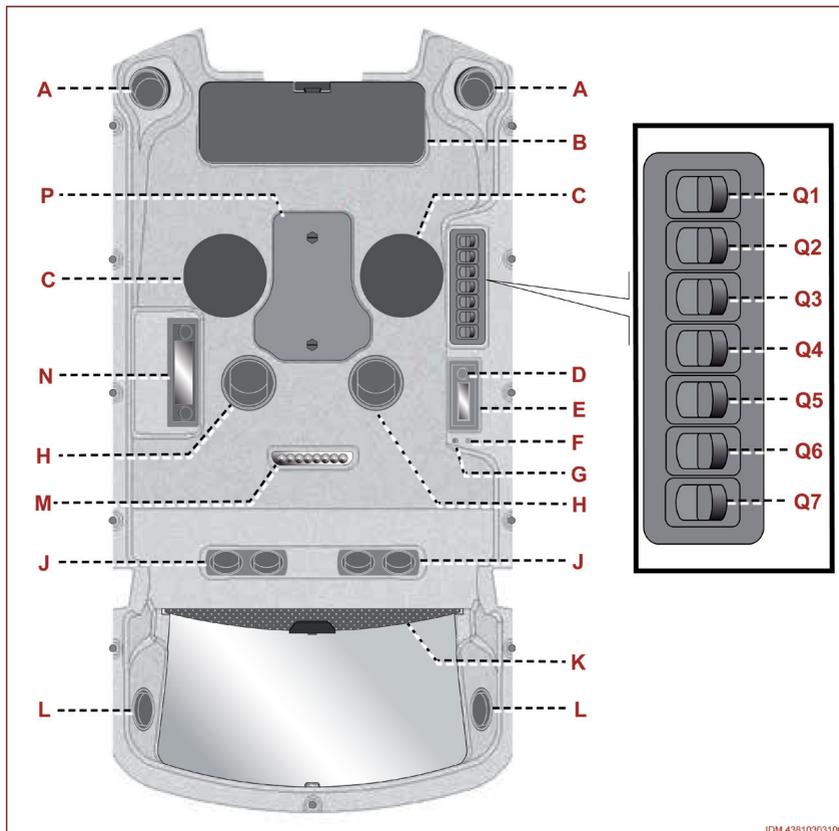
(*) The control is enabled only if the power take-off has been activated by means of the switch on the dashboard (→ p. 109).

(**) The control is enabled only if the "Joystick" function has been selected with the switch on the dashboard (→ p. 94).

(***) DO NOT connect the quick couplings of the rear part and those of the front part (that have the same colour) to activate two interchangeable tools at the same time.

06.20. DESCRIPTION OF CAB CONTROLS

The illustration represents the devices, while the list gives their description and function.



IMPORTANT For further details on the safety and correct use of the "Category 4" cab, consult the corresponding Use and Maintenance Manual.

- A. **Air vents (defogging):** used to direct the airflow onto the front windscreen and to adjust the airflow in the cab.
- B. **Sun visor:** used to protect the driver from the direct rays of the sun.
- C. **Stereo system speakers** (optional).
- D. **Knob:** used to start, switch-off and regulate the device (E).
- E. **Cab pressurisation and air-conditioning control device:** used to adjust the temperature and control the pressure in the cab. (→ p. 148)

- Cab pressurisation is necessary during the spraying of plant protection products, to protect against inhaling harmful substances. For further details on air conditioning, see (→ p. 148). For further details on pressurisation, see the 'Category 4' cab Use and Maintenance Manual.
- F. **Emergency warning LED (red light):** when on, it indicates that the difference between the pressure in the cab and the external pressure is below the safety threshold of 25 (Pa) (**Only for machines equipped with a filter for "Category 4" cab**).
- When the paper filter is installed, the LED is always off.
- G. **Category 4 filter LED (green light):** when on, it signals that a "Category 4" cab filter has been installed. (**Only for machines equipped with a filter for "Category 4" cab**)
- When the paper filter is installed, the LED is always off.
- H. **Air vents:** used to regulate the flow of air in the cab.
- J. **Air vents (recirculation):** used for internal air recirculation.
- K. **Sun blind:** used to protect the driver from the direct rays of the sun.
- L. **Air vents (defogging):** used to direct the airflow onto the rear windows and to adjust the airflow in the cab.
- M. **Courtesy light:** used to light the driver's position. It is activated by sensors on the doors or through the switch (Q3)
- N. **Radio** (optional)
- P. **Fuses/relays compartment:** it contains the fuses and relays that protect the electrical system.
- Q. **Front work lights switch:**
 - ›  used to activate the front work lights.
 - ›  used to activate the work lights and the additional front work lights (if installed)
- Q2. **Front windscreen wiper switch:**
 - ›  used to activate the front windscreen wiper.
- Q3. **Courtesy light switch:**
 - ›  used to turn on the light inside the cab

Q4. Rotating light switch:

- ›  used to activate the rotating light.

Q5. Windshield wiper washer switch:

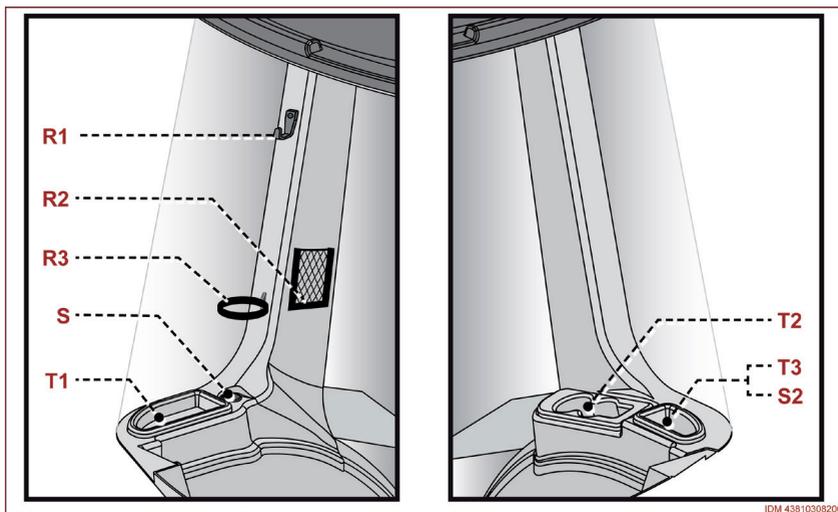
- ›  used to activate the front windscreen wiper washer device.
- ›  used to activate the rear windscreen wiper washer device.

Q6. Rear window wiper switch:

- ›  used to activate the rear window wiper.

Q7. Rear work lights switch:

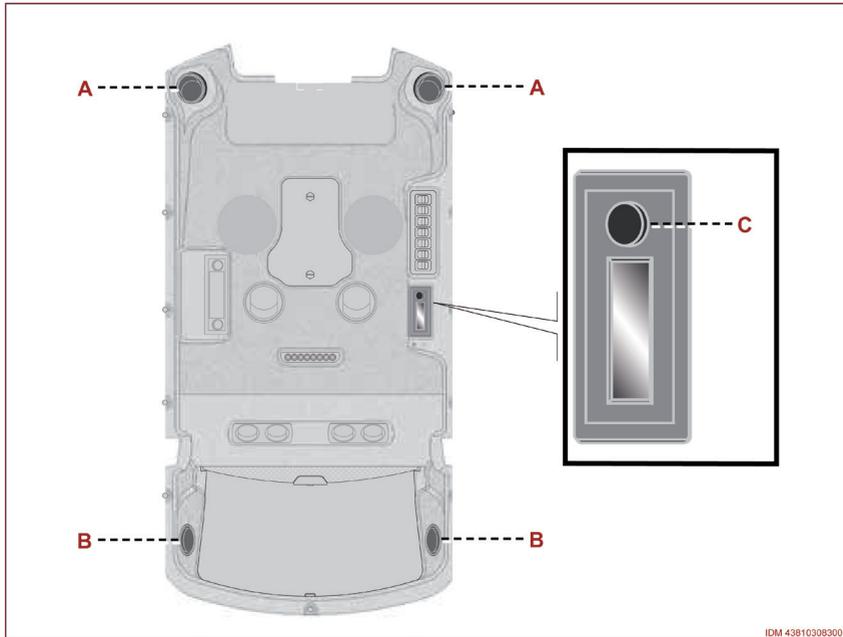
- ›  used to activate the rear work lights
- ›  used to activate the work lights and the additional rear work lights (if installed)

**R1. Clothes hook.****R2. Cell-phone holder****R3. Cup-holder****S1. 12V socket.****S2. 3-pole socket** (if present).**T1. Storage compartment.**

T2. Storage compartment (if present).

T3. Storage compartment.

Defogging of the cab windows



Proceed as follows.

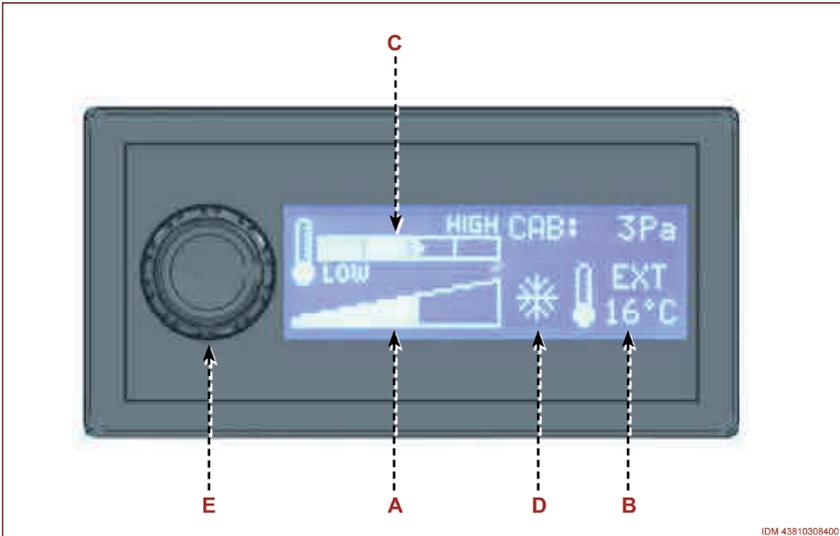
- 1\ Direct the air vents **(A-B)** towards the windows to be defogged.
- 2\ Activate the air conditioner using knob **(C)**. (→ p. 148)
- 3\ Adjust the cab temperature to three-quarters using the knob **(C)**. Activate the fan at maximum speed using knob **(C)**, in order to accelerate the operation.
- 4\ Gradually decrease the temperature if the windows continue being fogged.

IMPORTANT At the maximum temperature, air comes out warmer but the air conditioning compressor is deactivated.

IMPORTANT A few minutes before stopping the machine, deactivate the air-conditioning and leave the heating and fan active to prevent condensation from forming.

06.21. DESCRIPTION OF AIR-CONDITIONING CONTROLS

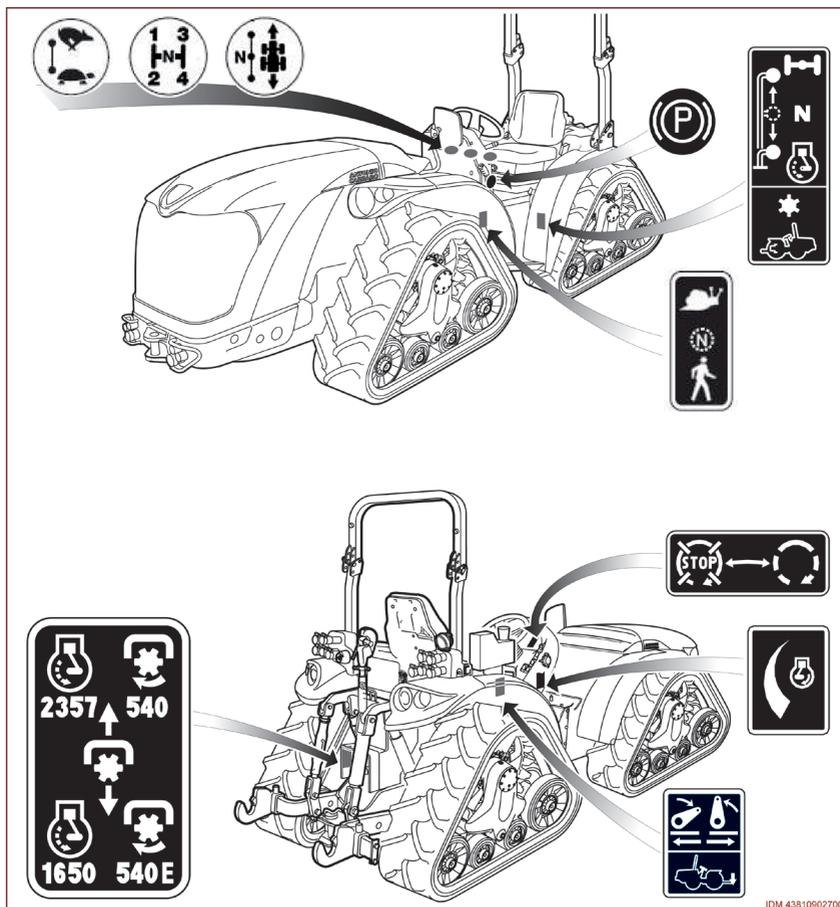
The illustration represents the devices, while the list gives their description and function.



- **Area (A):** displays the fan speed.
- **Area (B):** displays the outside air temperature.
- **Area (C):** displays the percentage of hot and cold air mix.
- **Area (D):** displays the operating status of the HVAC unit.
- **Knob (E):** used to start, switch-off and regulate the device.
- Keep the knob pressed for about 2 seconds to activate the device.
- Turn knob to regulate the operation speed of fan.
- Press knob once and turn it to regulate the hot and cold air mix percentage.
- Press knob twice and turn it clockwise to activate the HVAC unit.
- Turn the knob anti-clockwise to switch off the air conditioner.
- Keep knob pressed for approximately 3 seconds to switch off the device.

06.22. DESCRIPTION OF CONTROL PLATES

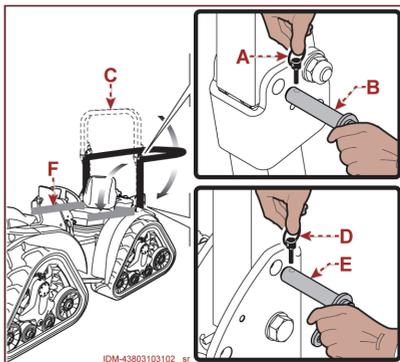
The illustration represents the control plates.



06.23. USE OF SAFETY ARCH (ROPS)

ALWAYS make sure that the safety arch is blocked correctly in the lifted position and fasten the safety belts properly.

- It is possible to lower the safety arch **ONLY** to move the machine temporarily in areas without **RISK** of overturning and for short distances.
 - When the safety arch is lowered, the driver **MUST NOT** fasten the safety belts and, as he is not protected in case of overturning, he must manoeuvre the machine with the utmost caution.
 - The safety arch must be lowered as indicated.
- 1\ Remove the safety cotters **(A)** and slide out the pins **(B)**.
 - 2\ Lower the top part of the safety arch **(C)**.
 - 3\ Insert the pins **(B)** and the cotters **(A)** to block the top part of the safety arch.
 - 4\ Remove the safety cotters **(D)** and slide out the pins **(E)**.
 - 5\ Lower the safety arch **(F)**.
 - 6\ Insert the pins **(E)** and the cotters **(A)** to block the safety arch.



IMPORTANT When the safety arch is lowered, the driver **MUST NOT** fasten the safety belts.

- On completion of work activities, take the safety arch immediately back to the lifted position as indicated.
- 1\ Remove the safety cotters **(D)** and slide out the pins **(E)**.
 - 2\ Raise the safety arch **(F)**.
 - 3\ Insert the pins **(E)** and the cotters **(A)** to block the safety arch.
 - 4\ Remove the safety cotters **(A)** and the pins **(B)**.
 - 5\ Raise the top part of the safety arch **(C)**.
 - 6\ Insert the pins **(B)** and the cotters **(A)** to block the top part of the safety arch.
 - 7\ Check that the pins and safety pins are correctly inserted and in good condition.



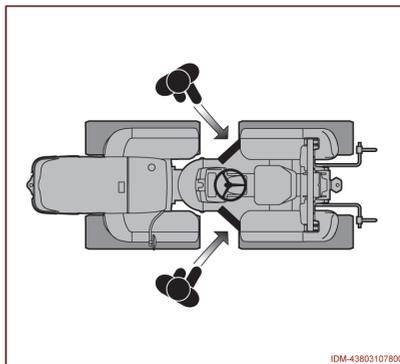
DANGER

Do not use the machine if the safety arch is not installed correctly and if it is damaged.

06.24. ACCESS TO DRIVER'S SEAT

The list gives some behaviour and measures that must be respected by the driver for safety reasons.

- Climb into and out of the driver's seat **ONLY** using the foreseen points and the appropriate platforms and handrail to avoid risk of falling.
- ALWAYS keep the ascent platforms and control pedals clean and free from mud and/or debris.
- Check that the driver's seat is clear from objects so as not to obstruct the activating of the controls.
- Check that the cab windows (inside and outside) are clean and not fogged to assure maximum visibility. For further details, refer to the paragraph (→ p. 144).
- Check the position of the seat, of the wheel and the rearview mirrors to assure correct ergonomics and visibility from the driver's seat.



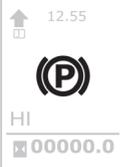
ATTENTION

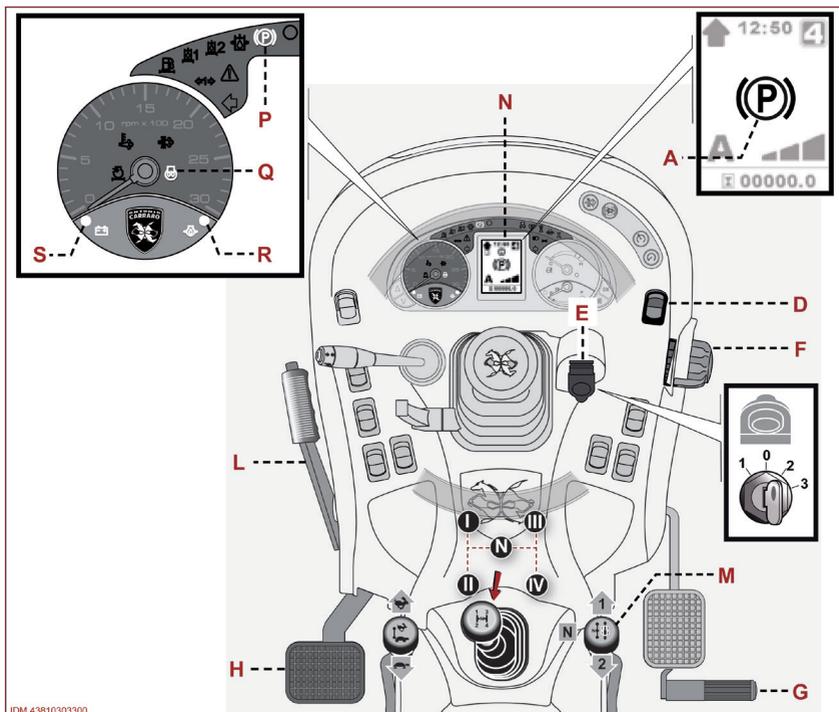
The driver's seat must **ONLY** be occupied by the driver.

- **ONLY** climb on, descend and/or leave the driver's seat with the machine stopped in safe conditions.

06.25. STARTING AND STOPPING THE ENGINE (STANDARD CONTROLS)

The machine is equipped with safety devices that prevent it starting. During starting, the multifunction display (N) provides information on the conditions that must be satisfied to start the engine.

Symbol	Description
	Sit in the driver's seat.
	The symbol indicates that the parking brake is not engaged. Apply the parking brake. ! DANGER The parking brake must always be engaged when the machine is stopped.
	Put the shuttle lever (M) in neutral position.
	Press and hold down the clutch pedal (H).



IDM 4381030300

Starting

Proceed as indicated to perform this operation.

- 1) Sit in the driver's seat.



ATTENTION

ONLY start the engine when sitting in the driver's seat and fasten the safety belts during working activity.

- 2) Ensure that the parking brake (**L**) is engaged.



DANGER

The parking brake must always be engaged when the machine is stopped.

- 3) Press the switch (**D**) to deactivate the power take-off.
- 4) Shift the lever (**M**) to put the reverser into neutral position.
- 5) Set the gas control (**F**) in minimum speed position.
- 6) Insert the ignition key (**E**) and turn it clockwise to position '2'. The LEDs (**P-Q-R-S**) and display (**N**) light up.
 - **If the LEDs (P-Q-R-S) and the display (N) do not light up, contact an authorised workshop.**
- 7) Press and hold down the clutch pedal (**H**).

- 8\ When the glow plug warning light **(Q)** has switched off and on the display **(N)** there appears the symbol **(P)**, turn the ignition key **(E)** clockwise (pos. '3') to start the engine, then release it.
- **To try to start again, it is necessary to return the key to position "0" and repeat all the starting operations, making sure that all the requirements are satisfied.**
 - **Do not make too many starting attempts in rapid succession, to avoid damaging the starting motor.**
 - **Wait at least one minute between one attempt and the next to let the starting motor cool down.**
- 9\ Release the clutch pedal **(H)**.
- 10\ Pre-heat the engine suitably (when ticking over) before starting work activities.
- **It is recommended to pre-heat the engine, in particular during running in and in the event of low temperatures.**



ATTENTION

Never leave the engine running in closed or inadequately ventilated environments. Exhaust fumes are potentially dangerous to health.

Stopping

Before stopping the engine, place the carried interchangeable tool on the ground.

- 1\ Set the gas control **(F)** in minimum speed position.
- 2\ Press the switch **(D)** to deactivate the power take-off.
- 3\ Apply the parking brake **(L)**. (→ p. 114)(→ p. 116)
- 4\ Shift the lever **(M)** to put the reverser into neutral position.
- 5\ Turn the ignition key **(E)** anti-clockwise to stop the engine, then remove it and fit the switch guard.

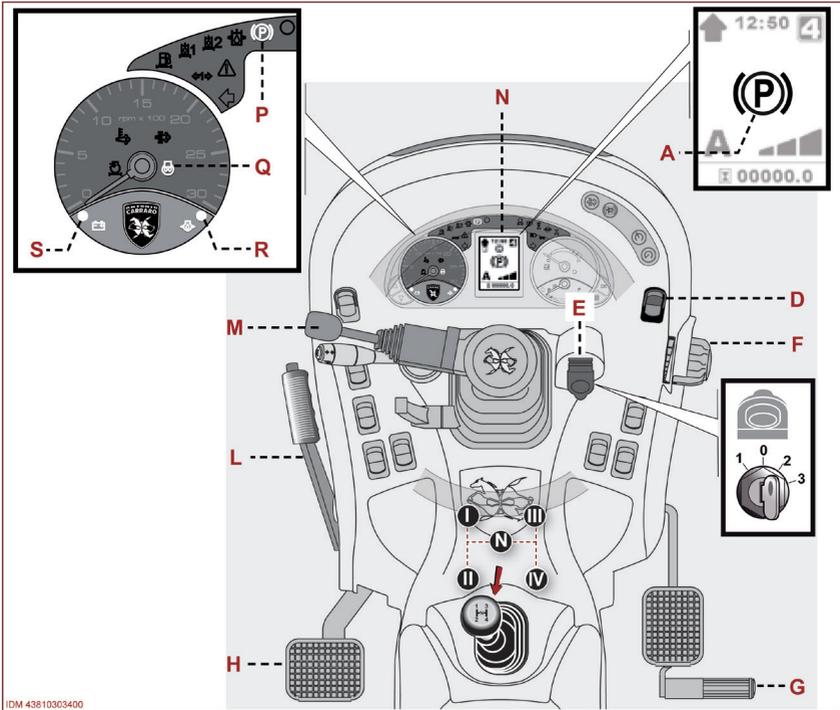
IMPORTANT Always use the guard to prevent water from entering and oxidising the components inside and causing the electrical system to shortcircuit, creating irreparable damage.

IMPORTANT The machine must be stopped in such a way that it cannot be activated from the driver's position by unauthorised persons and it must be parked in a suitable area so that it is not an obstruction and danger to circulation.

06.26. STARTING AND STOPPING THE ENGINE (ROBOTIC CONTROLS)

The machine is equipped with safety devices that prevent it starting. During starting, the multifunction display **(N)** provides information on the conditions that must be satisfied to start the engine.

Symbol	Description
	Sit in the driver's seat.
	The symbol indicates that the parking brake is not engaged. Apply the parking brake. ⚠ DANGER The parking brake must always be engaged when the machine is stopped.
	Put the shuttle lever (M) in neutral position.
	Press and hold down the clutch pedal (H).



IDM 43810303400

Starting

Proceed as indicated to perform this operation.

- 1) Sit in the driver's seat.



ATTENTION

ONLY start the engine when sitting in the driver's seat and fasten the safety belts during working activity.

- 2) Ensure that the parking brake is engaged.



DANGER

The parking brake must always be engaged when the machine is stopped.

- 3) Press the switch **(D)** to deactivate the power take-off.
- 4) Shift the lever **(M)** to put the reverser into neutral position.
- 5) Set the gas control **(F)** in minimum speed position.
- 6) Insert the ignition key **(E)** and turn it clockwise to position '2'. The LEDs **(P-Q-R-S)** and display **(N)** light up.
 - **If the LEDs (P-Q-R-S) and the display (N) do not light up, contact an authorised workshop.**
- 7) Press and hold down the clutch pedal **(H)**.

- 8\ When the glow plug warning light **(Q)** has switched off and on the display **(N)** there appears the symbol **(P)**, turn the ignition key **(E)** clockwise (pos. '3') to start the engine, then release it.
- **To try to start again, it is necessary to return the key to position "0" and repeat all the starting operations, making sure that all the requirements are satisfied.**
 - **Do not make too many starting attempts in rapid succession, to avoid damaging the starting motor.**
 - **Wait at least one minute between one attempt and the next to let the starting motor cool down.**
- 9\ Release the clutch pedal **(H)**.
- 10\ Pre-heat the engine suitably (when ticking over) before starting work activities.
- **It is recommended to pre-heat the engine, in particular during running in and in the event of low temperatures.**



ATTENTION

Never leave the engine running in closed or inadequately ventilated environments. Exhaust fumes are potentially dangerous to health.

Stopping

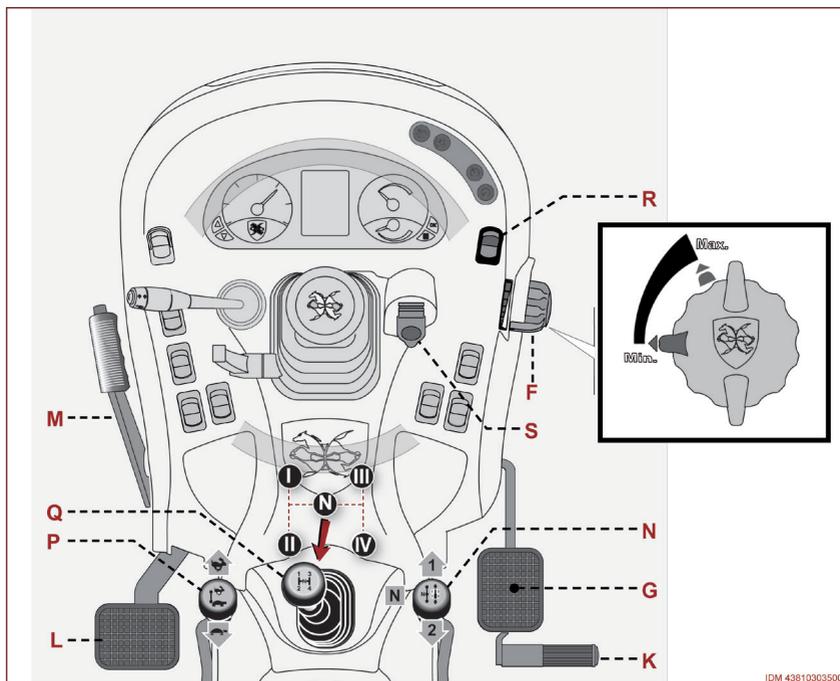
Before stopping the engine, place the carried interchangeable tool on the ground.

- 1\ Set the gas control **(F)** in minimum speed position.
- 2\ Press the switch **(D)** to deactivate the power take-off.
- 3\ Apply the parking brake **(L)**. (→ p. 114)(→ p. 116)
- 4\ Shift the lever **(M)** to put the reverser into neutral position.
- 5\ Turn the ignition key **(E)** anti-clockwise to stop the engine, then remove it and fit the switch guard.

IMPORTANT Always use the guard to prevent water from entering and oxidising the components inside and causing the electrical system to shortcircuit, creating irreparable damage.

IMPORTANT The machine must be stopped in such a way that it cannot be activated from the driver's position by unauthorised persons and it must be parked in a suitable area so that it is not an obstruction and danger to circulation.

06.27. MOVING AND STOPPING THE MACHINE (STANDARD CONTROLS)



IDM 43810303500

Movement

Proceed as indicated to perform this operation.

- 1\ Sit in the driver's seat.



ATTENTION

ONLY start the engine when sitting in the driver's seat and fasten the safety belts during working activity.

- 2\ Shift the lever **(N)** to put the reverser into neutral position.
- 3\ Press the switch **(R)** to deactivate the power take-off.
- 4\ Press and hold down the clutch pedal **(L)**.
- 5\ Start the machine engine.
- 6\ Use the lever **(P)** to select the speed range.
- 7\ Use the lever **(Q)** to engage the gear.
- 8\ Use the lever **(N)** to select the direction of movement.
- 9\ Use the lever **(M)** to disengage the parking brake.
- 10\ Release the clutch pedal **(L)** to move the machine.
- 11\ Use the accelerator pedal **(K)** and the brake pedal **(G)** to suitably adapt the machine speed.

Stopping

Proceed as indicated to perform this operation.

- 1\ Release the accelerator pedal **(K)**.
- 2\ Press the clutch and brake pedals **(L-G)** to stop the machine.
- 3\ Use the levers **(Q-N)** to put the gear selector and the reverser into neutral position.
- 4\ Press the switch **(R)** to deactivate the power take-off.
- 5\ Use the lever **(M)** to engage the parking brake.
- 6\ Turn the ignition key **(S)** anti-clockwise to turn off the engine, then remove it and fit the switch guard.

IMPORTANT Always use the guard to prevent water from entering and oxidising the components inside and causing the electrical system to shortcircuit, creating irreparable damage.

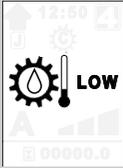
IMPORTANT The machine must be stopped in such a way that it cannot be activated from the driver's position by unauthorised persons and it must be parked in a suitable area so that it is not an obstruction and danger to circulation.

Conditions of use

When the engine is running, the machine behaves differently depending on the temperature of the transmission oil (Unit 1 and Unit 2).

In particular, outside the optimum temperature, some machine functions are limited to preserve operator safety and the integrity of the machine itself.

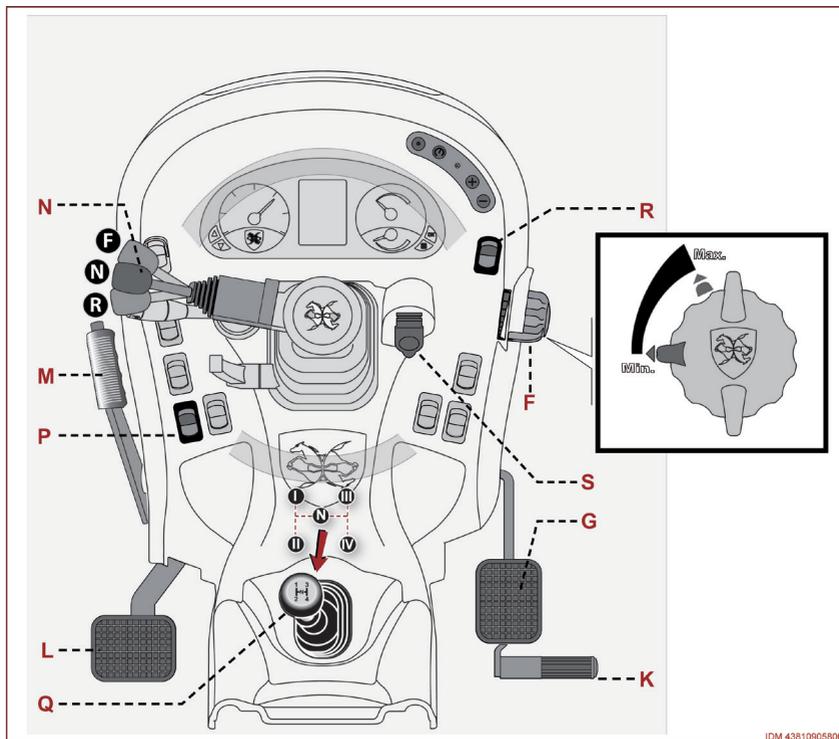
The table indicates the limits according to the warning message.

Symbol	Notes	Description
	Flashing icon (*)	Max RPM available = 1500 rpm
	Fixed icon in the centre (*)	RPM = 1500 rpm (constant)

(*) The number in the symbol indicates the hydraulic unit:

- 1: Unit 1 (disengagement of front wheel drive, differential lock, power take-off)
- 2: Unit 2 (power lift, hydraulic couplings, steering)

06.28. MOVING AND STOPPING THE MACHINE (ROBOTIC CONTROLS)



IDM 43810605800

Movement.

Proceed as indicated to perform this operation.

1\ Sit in the driver's seat.



ATTENTION

ONLY start the engine when sitting in the driver's seat and fasten the safety belts during working activity.

- 2\ Shift the lever **(N)** to put the reverser into neutral position.
- 3\ Press the switch **(R)** to deactivate the power take-off.
- 4\ Press and hold down the clutch pedal **(L)**.
- 5\ Start the machine engine.
- 6\ Use the lever **(P)** to select the speed range.

- The correct engagement of the speed range is indicated by the audible warning.

- 7\ Use the lever **(Q)** to engage the gear.
- 8\ Use the lever **(N)** to select the direction of movement.

- The audible warning is activated.

IMPORTANT To avoid damage to the transmission, wait for the audible warning to stop before releasing the clutch pedal.

- When the audible warning is deactivated, the gear is correctly engaged.

IMPORTANT Change the range and the direction of movement only when the machine is stopped.



ATTENTION

If the reverser is activated at a speed higher than 4 Km/h, or without pressing the clutch pedal, pre-selection of the reverser is activated; the audible warning starts to sound and the control is not activated.

- The audible warning stops when the speed falls below 4 km/h and the clutch pedal is pressed.
- 9\ Use the lever **(M)** to disengage the parking brake.
 - 10\ Release the clutch pedal **(L)** to move the machine.
 - 11\ Use the accelerator pedal **(K)** and the brake pedal **(G)** to suitably adapt the machine speed.

Stopping.

Proceed as indicated to perform this operation.

- 1\ Release the accelerator pedal **(K)**.
- 2\ Press the clutch and brake pedals **(L-G)** to stop the machine.
- 3\ Use the levers **(Q-N)** to put the gear selector and the reverser into neutral position.
- 4\ Press the switch **(R)** to deactivate the power take-off.
- 5\ Use the lever **(M)** to engage the parking brake.
- 6\ Turn the ignition key **(S)** anti-clockwise to turn off the engine, then remove it and fit the switch guard.

IMPORTANT Always use the guard to prevent water from entering and oxidising the components inside and causing the electrical system to shortcircuit, creating irreparable damage.

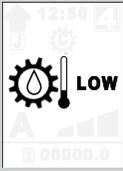
IMPORTANT The machine must be stopped in such a way that it cannot be activated from the driver's position by unauthorised persons and it must be parked in a suitable area so that it is not an obstruction and danger to circulation.

Conditions of use

When the engine is running, the machine behaves differently depending on the temperature of the transmission oil (Unit 1 and Unit 2).

In particular, outside the optimum temperature, some machine functions are limited to preserve operator safety and the integrity of the machine itself.

The table indicates the limits according to the warning message.

Symbol	Notes	Description
	Flashing icon (*)	Max RPM available = 1500 rpm
	Fixed icon in the centre (*)	RPM = 1500 rpm (constant)

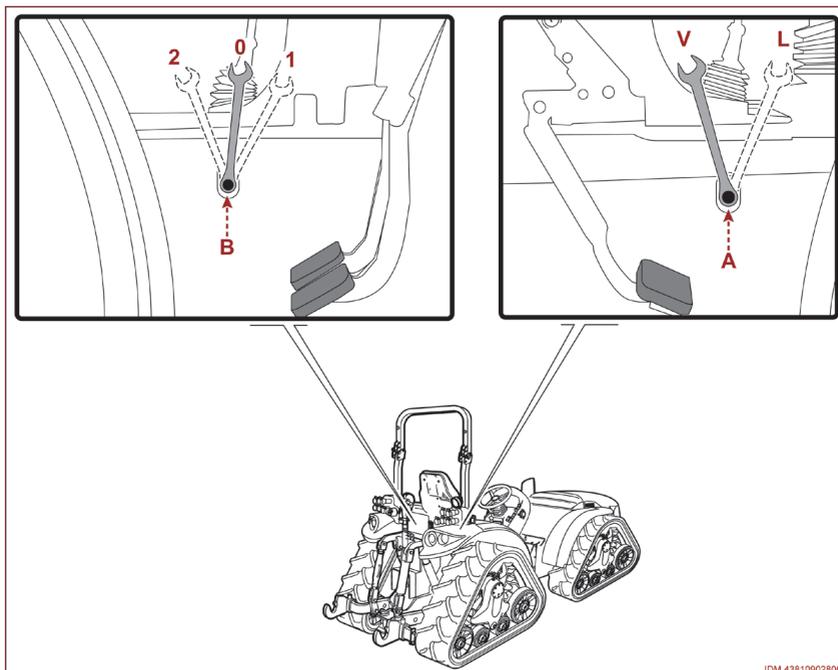
(*) The number in the symbol indicates the hydraulic unit:

1: Unit 1 (disengagement of front wheel drive, differential lock, power take-off)

2: Unit 2 (power lift, hydraulic couplings, steering)

Operation with mechanical control

- If a malfunction occurs in the operation of the controls of the reverser and of the speed range, it is possible to operate them mechanically.
- Proceed as indicated to perform this operation.



- 1\ Remove the protective caps.
- 2\ Apply a spanner (17") to the nut **(A)** to select the speed range.
 - › Position **"L"**: range of "low" speeds.
 - › Position **"V"**: range of "high" speeds.
- 3\ Apply a spanner (17") to the nut **(B)** to select the direction of movement.
 - › Position **"0"**: in neutral gear.
 - › Position **"1"**: the machine moves in 'forward' direction.
 - › Position **"2"**: the machine moves in 'reverse' direction.

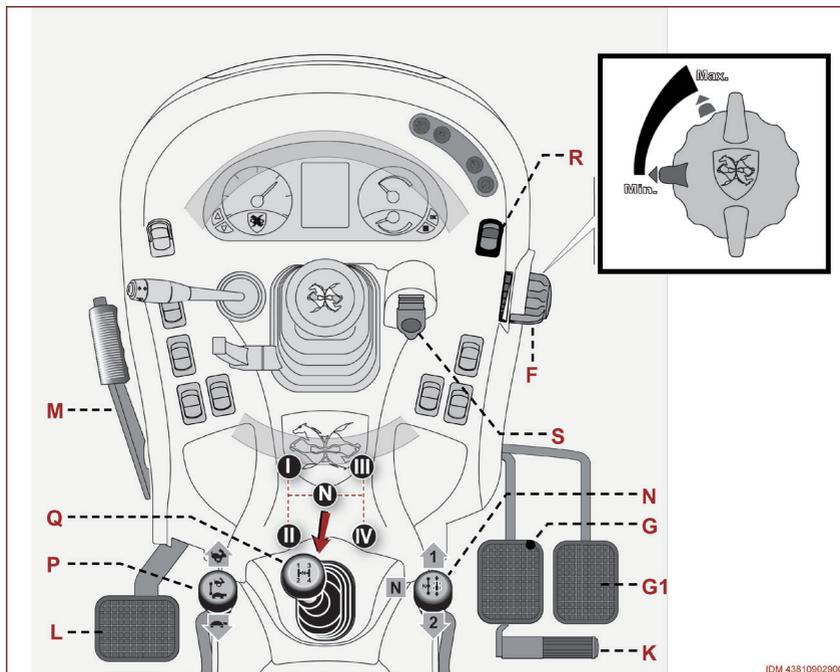


ATTENTION

The controls must **ONLY** be operated mechanically in order to move the machine into a safe area.

- **Contact an authorized service centre to remove the fault.**

06.29. MOVING AND STOPPING THE MACHINE (STANDARD CONTROLS AND STEERING BRAKES)



IDM 43810902900

Movement

Proceed as indicated to perform this operation.

1\ Sit in the driver's seat.



ATTENTION

ONLY start the engine when sitting in the driver's seat and fasten the safety belts during working activity.

- 2\ Shift the lever **(N)** to put the reverser into neutral position.
- 3\ Press the switch **(R)** to deactivate the power take-off.
- 4\ Press and hold down the clutch pedal **(L)**.
- 5\ Start the machine engine.
- 6\ Use the lever **(P)** to select the speed range.
- 7\ Use the lever **(Q)** to engage the gear.
- 8\ Use the lever **(N)** to select the direction of movement.
- 9\ Use the lever **(M)** to disengage the parking brake.
- 10\ Release the clutch pedal **(L)** to move the machine.
- 11\ Use the accelerator pedal **(K)** and the brake pedal **(G-G1)** to suitably adapt the machine speed.

Stopping

Proceed as indicated to perform this operation.

- 1\ Release the accelerator pedal **(K)**.
- 2\ Press the clutch and brake pedals **(L-G-G1)** to stop the machine.
- 3\ Use the levers **(Q-N)** to put the gear selector and the reverser into neutral position.
- 4\ Press the switch **(R)** to deactivate the power take-off.
- 5\ Use the lever **(M)** to engage the parking brake.
- 6\ Turn the ignition key **(S)** anti-clockwise to turn off the engine, then remove it and fit the switch guard.

IMPORTANT Always use the guard to prevent water from entering and oxidising the components inside and causing the electrical system to shortcircuit, creating irreparable damage.

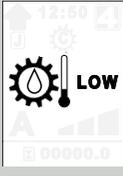
IMPORTANT The machine must be stopped in such a way that it cannot be activated from the driver's position by unauthorised persons and it must be parked in a suitable area so that it is not an obstruction and danger to circulation.

Conditions of use

When the engine is running, the machine behaves differently depending on the temperature of the transmission oil (Unit 1 and Unit 2).

In particular, outside the optimum temperature, some machine functions are limited to preserve operator safety and the integrity of the machine itself.

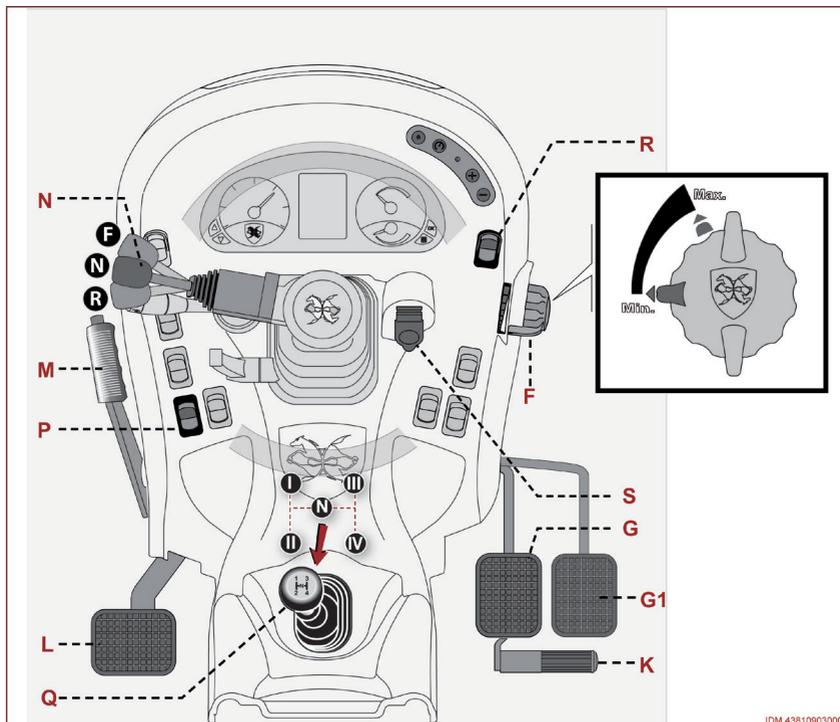
The table indicates the limits according to the warning message.

Symbol	Notes	Description
	Flashing icon (*)	Max RPM available = 1500 rpm
	Fixed icon in the centre (*)	RPM = 1500 rpm (constant)

(*) The number in the symbol indicates the hydraulic unit:

- 1: Unit 1 (disengagement of front wheel drive, differential lock, power take-off)
- 2: Unit 2 (power lift, hydraulic couplings, steering)

06.30. MOVING AND STOPPING THE MACHINE (ROBOTIC CONTROLS AND STEERING BRAKES)



IDM 43810603000

Movement.

Proceed as indicated to perform this operation.

1\ Sit in the driver's seat.



ATTENTION

ONLY start the engine when sitting in the driver's seat and fasten the safety belts during working activity.

- 2\ Shift the lever **(N)** to put the reverser into neutral position.
- 3\ Press the switch **(R)** to deactivate the power take-off.
- 4\ Press and hold down the clutch pedal **(L)**.
- 5\ Start the machine engine.
- 6\ Use the lever **(P)** to select the speed range.

- The correct engagement of the speed range is indicated by the audible warning.

- 7\ Use the lever **(Q)** to engage the gear.

8\ Use the lever **(N)** to select the direction of movement.

- The audible warning is activated.

IMPORTANT To avoid damage to the transmission, wait for the audible warning to stop before releasing the clutch pedal.

- When the audible warning is deactivated, the gear is correctly engaged.

IMPORTANT Change the range and the direction of movement only when the machine is stopped.



ATTENTION

If the reverser is activated at a speed higher than 4 Km/h, or without pressing the clutch pedal, pre-selection of the reverser is activated; the audible warning starts to sound and the control is not activated.

- The audible warning stops when the speed falls below 4 km/h and the clutch pedal is pressed.
- 9\ Use the lever **(M)** to disengage the parking brake.
 10\ Release the clutch pedal **(L)** to move the machine.
 11\ Use the accelerator pedal **(K)** and the brake pedal **(G-G1)** to suitably adapt the machine speed.

Stopping.

Proceed as indicated to perform this operation.

- 1\ Release the accelerator pedal **(K)**.
- 2\ Press the clutch and brake pedals **(L-G-G1)** to stop the machine.
- 3\ Use the levers **(Q-N)** to put the gear selector and the reverser into neutral position.
- 4\ Press the switch **(R)** to deactivate the power take-off.
- 5\ Use the lever **(M)** to engage the parking brake.
- 6\ Turn the ignition key **(S)** anti-clockwise to turn off the engine, then remove it and fit the switch guard.

IMPORTANT Always use the guard to prevent water from entering and oxidising the components inside and causing the electrical system to shortcircuit, creating irreparable damage.

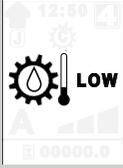
IMPORTANT The machine must be stopped in such a way that it cannot be activated from the driver's position by unauthorised persons and it must be parked in a suitable area so that it is not an obstruction and danger to circulation.

Conditions of use

When the engine is running, the machine behaves differently depending on the temperature of the transmission oil (Unit 1 and Unit 2).

In particular, outside the optimum temperature, some machine functions are limited to preserve operator safety and the integrity of the machine itself.

The table indicates the limits according to the warning message.

Symbol	Notes	Description
	Flashing icon (*)	Max RPM available = 1500 rpm
	Fixed icon in the centre (*)	RPM = 1500 rpm (constant)

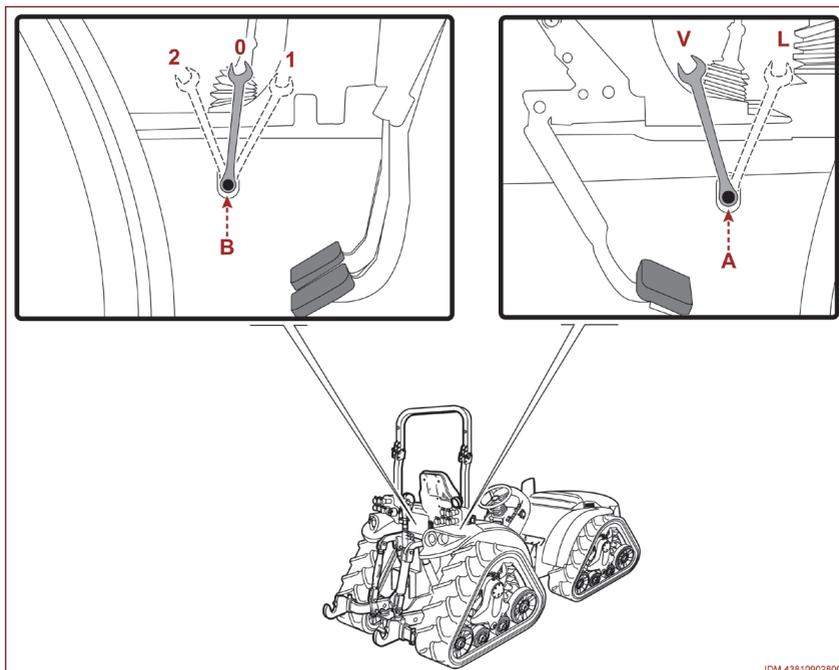
(*) The number in the symbol indicates the hydraulic unit:

1: Unit 1 (disengagement of front wheel drive, differential lock, power take-off)

2: Unit 2 (power lift, hydraulic couplings, steering)

Operation with mechanical control

- If a malfunction occurs in the operation of the controls of the reverser and of the speed range, it is possible to operate them mechanically.
- Proceed as indicated to perform this operation.



IDM 43810902800

- 1\ Remove the protective caps.
- 2\ Apply a spanner (17") to the nut **(A)** to select the speed range.
 - › Position **"L"**: range of "low" speeds.
 - › Position **"V"**: range of "high" speeds.
- 3\ Apply a spanner (17") to the nut **(B)** to select the direction of movement.
 - › Position **"0"**: in neutral gear.
 - › Position **"1"**: the machine moves in 'forward' direction.
 - › Position **"2"**: the machine moves in 'reverse' direction.



ATTENTION

The controls must **ONLY** be operated mechanically in order to move the machine into a safe area.

- **Contact an authorized service centre to remove the fault.**

06.31. DPF REGENERATION (DIESEL PARTICULATE FILTER)

The machine has a filter (DPF) that withholds the fine dust resulting from combustion, reducing polluting emissions.

In normal working conditions, continuous use with an engine speed higher than 1500 rpm, regeneration is managed automatically.

If the working conditions envisage use with an engine speed lower than 1500 rpm, regeneration might not take place automatically. In this case it is advisable to perform regeneration manually before the filter gets more clogged (→ p. 173).



ATTENTION

Regeneration causes a high increase in temperature of the exhaust gases. The dangerous situation is indicated by the lighting of the LED . Pay attention to potential risks of fire.

To facilitate management it is possible to monitor the level of clogging of the filter after selection from the Additional Information Menu (→ p. 101).

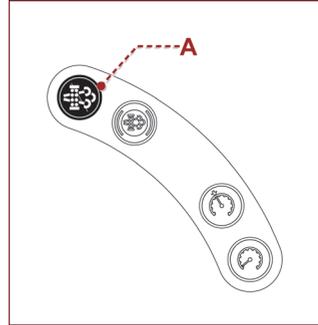
Level	LED	Description
0	-	<ul style="list-style-type: none"> - The filter is not clogged. - The machine is not regenerating.
1	 Fixed	<ul style="list-style-type: none"> - Regeneration is taking place automatically.
2	 Blinking	<ul style="list-style-type: none"> - The filter requires initial cleaning. - If the working conditions allow it, regeneration will be carried out automatically. The LED will appear with a fixed light. - If the working conditions do not allow automatic regeneration, it is advisable to carry out regeneration by hand (→ p. 173)
3	 Blinking	<ul style="list-style-type: none"> - The filter is clogged. - The buzzer sounds intermittently. - The engine torque is reduced by 50%. - The machine does not carry out regeneration automatically.
	 Fixed	
	 MTI	
		IMPORTANT Carry out manual regeneration as soon as possible! (→ p. 173)

Level	LED	Description
4	 Blinking	<ul style="list-style-type: none"> - The filter is clogged. - The buzzer sounds intermittently. - The engine torque is reduced by 50%. - At level 3, manual regeneration has not been carried out. <hr/> IMPORTANT Contact an authorised workshop immediately.
	 Fixed	
		
5	 Blinking	<ul style="list-style-type: none"> - The filter is clogged. - The buzzer sounds intermittently. - The engine torque is reduced by 50%. <hr/> IMPORTANT Contact an authorised workshop immediately to avoid damage to the engine.
	 Fixed	
		

Disabling regeneration

For the best management of working activity, it is possible to disable automatic regeneration. Proceed as indicated to perform this operation.

- 1\ Press the button **(A)**, for about two seconds, to deactivate regeneration.



The following icon will appear on the display.

NOTE The regeneration disabled symbol will have precedence over the Memo RPM and Additional Information values that can be shown in the same area of the display.

NOTE At each new start the deactivation control is reset.



! ATTENTION Disabling must be selected **ONLY** when regeneration can cause damage to persons or property.

Regeneration causes a high increase in temperature of the exhaust gases.

The dangerous situation is indicated by the lighting of the LED

Pay attention to potential risks of fire.  As soon as the working conditions allow it, manual regeneration **MUST** be carried out.

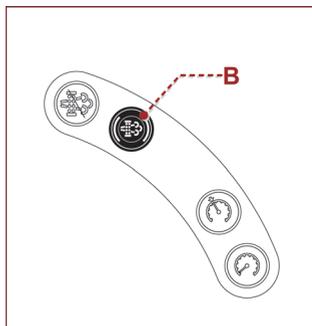
Manual regeneration

Manual regeneration must be performed when the blinking LED  is lit. Proceed as follows:

- 1\ The machine should be stopped and on in safe condition.

! ATTENTION
Manual regeneration must be carried out **ONLY** with the machine stopped and in open spaces, positioning the machine far from persons and property.

- 2\ Bring the reverser lever to the 'neutral gear' position.
- 3\ Engage the parking brake of the machine.
- 4\ Deactivate the PTO of the machine.
- 5\ Pre-heat the engine suitably (about 65°C) at a speed of 1200 rpm. The temperature can be viewed by selecting from the Additional Information Menu (→ p. 101).
- 6\ Press the button **(B)**, for about two seconds, to perform regeneration.
The LED  will appear with a fixed light.



NOTE *Regeneration lasts about 30 minutes.*

! ATTENTION
Regeneration causes a high increase in temperature of the exhaust gases. The dangerous situation is indicated by the lighting of the LED . Pay attention to potential risks of fire.

! ATTENTION
During the regeneration period, **DO NOT** leave the machine unattended.

06.32. STARTING THE ENGINE WITH A FLAT BATTERY

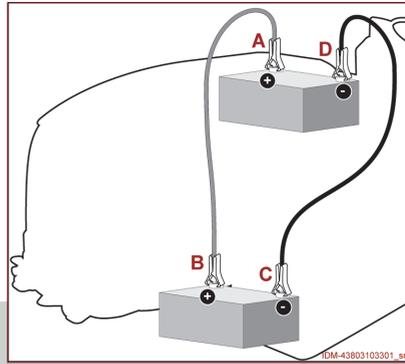
If the battery is flat, start the engine using another battery with identical nominal voltage and amperes the same or greater than that of the flat battery.

- To jump start the machine, DO NOT use as a rescue battery the one installed in another machine or other charging devices, to avoid damage due to overcurrent peaks.



ATTENTION

Before proceeding with a jump start, every precaution must be taken to ensure there is no risk either of harm to individuals or of damage to the electrical components of both machines.



- **Do not cause sparks or flames to ignite anywhere near the battery.**
- **Avoid contact with the battery electrolyte.**
- Proceed as indicated to perform this operation.
 - 1\ Procure jump leads of suitable cross section, with insulated clips.
 - 2\ Disable all electrical accessories not essential for the purpose of starting the machine.
 - 3\ Make certain the machine is properly at a standstill with the parking brake applied, the gear lever in neutral, the PTO disengaged and the ignition key in the '0' position.
 - 4\ Unscrew the knobs and remove the guard.
 - 5\ Connect the cables in sequence, according to the order **(A-B-C-D)**.
 - 6\ Start the engine of the rescue machine and throttle the engine to a speed of at least 1500 rpm.
 - 7\ Sit in the driving position of the inoperative machine.
 - 8\ Start the engine.
 - 9\ Disconnect the cables in sequence, according to the order **(D-C-B-A)**.
 - 10\ Reassemble the guard on completing this operation.

06.33. SET-UP FOR DRIVING ON PUBLIC ROADS

Machines can be driven on a public highway provided that they are type-approved and that the driver is in possession of the necessary licence.

IMPORTANT Before taking the machine on the road, check that the type of tracks and track width are in conformity with highway code regulations in the country of use.

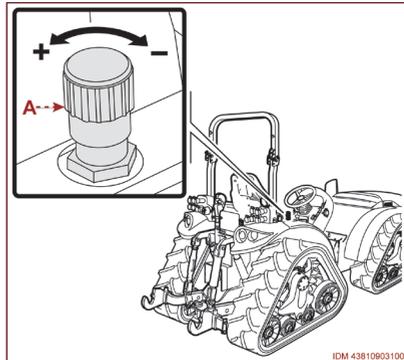
- Proceed as indicated to perform this operation.
 - 1\ Secure all parts that could cause sudden and unexpected movements.
 - 2\ Clean any caked soil from the machine so that it will not be scattered on the road surface.
 - 3\ Check that the overall length, width and height are within permissible limits. Fit the appropriate warning signs and/or lights, if necessary.
 - 4\ Check that all road lights and indicators are in full working order.
- **Remove the headlights protection grid so that the visible ray is not obstructed.**
- 5\ Raise any implement carried and lock it in place with the safety devices provided.



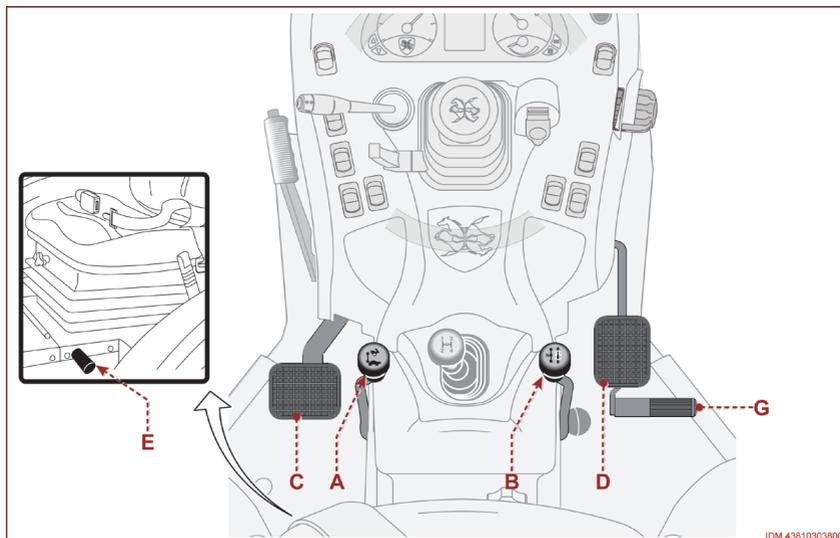
ATTENTION

Do not engage the differential lock when driving on a public road.

- 6\ Tighten the regulator (A) completely to lock the lifting unit in the raised position.

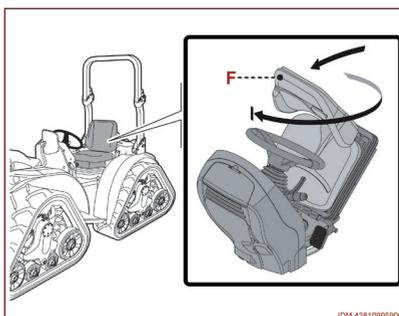


06.34. PROCEDURE FOR REVERSING THE DRIVING SEAT (STANDARD CONTROLS)



Proceed as indicated to perform this operation.

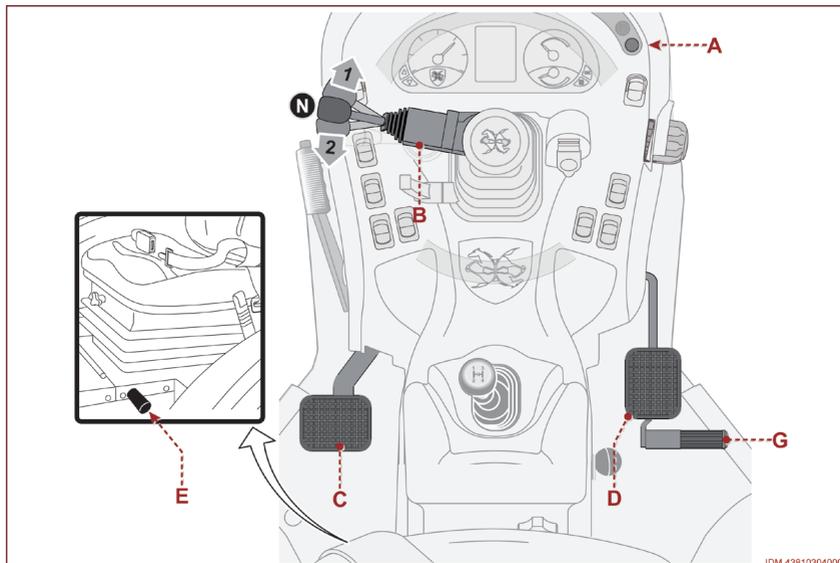
- 1\ Fully press the clutch pedal **(C)** and bring the lever **(B)** to neutral position.
- 2\ Stop the machine in safe conditions.
- 3\ Lower the levers **(A-B)** (towards the outside) until they are horizontal.
- 4\ Lift the pedals **(C-D)** and block them in the lifted position.
- 5\ Lift the pedal **(G)**.
- 6\ Release the driver's seat using the lever **(E)**.
- 7\ Lift the seat **(F)** and turn it clockwise by 180°.
- 8\ Lower the seat **(F)** and make sure that it is blocked in the new position.
- 9\ Return the levers **(A-B)** to their original position.
- 10\ Lower the pedals **(C-D)** and take them to the original position.
- 11\ Lower the pedal **(G)**.



DANGER

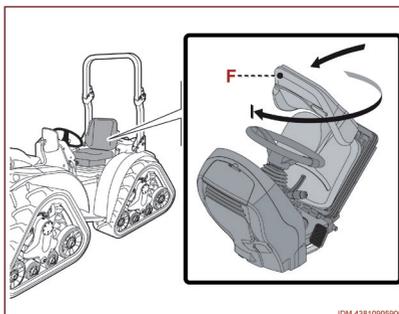
Every time the driver's seat is reversed, before starting the machine, check that all controls (steering, brakes, accelerator etc.) function correctly.

06.35. PROCEDURE FOR REVERSING THE DRIVING SEAT (ROBOTIC CONTROLS)



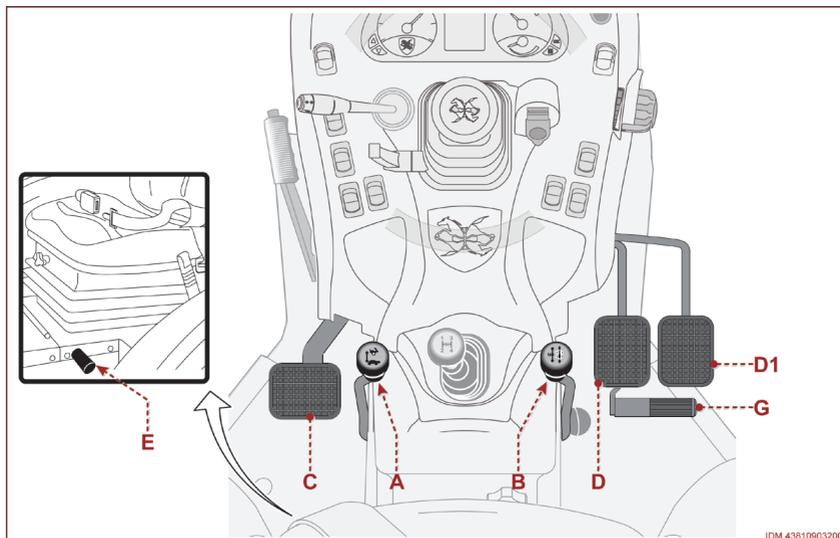
Proceed as indicated to perform this operation.

- 1\ Fully press the clutch pedal (**C**) and bring the lever (**B**) to neutral position.
 - The LED (**A**) lights up.
- 2\ Stop the machine in safe conditions.
- 3\ Lift the pedals (**C-D**) and block them in the lifted position.
- 4\ Lift the pedal (**G**).
- 5\ Release the driver's seat using the lever (**E**).
- 6\ Lift the seat (**F**) and turn it clockwise by 180°.
- 7\ Lower the seat (**F**) and make sure that it is blocked in the new position.
- 8\ Lower the pedals (**C-D**) and take them to the original position.
- 9\ Lower the pedal (**G**).



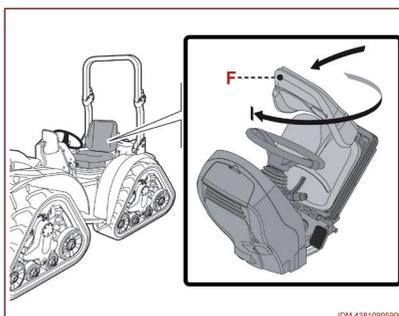
! DANGER
 Every time the driver's seat is reversed, before starting the machine, check that all controls (steering, brakes, accelerator etc.) function correctly.

06.36. PROCEDURE FOR REVERSING THE DRIVING SEAT (STANDARD CONTROLS AND STEERING BRAKES)



Proceed as indicated to perform this operation.

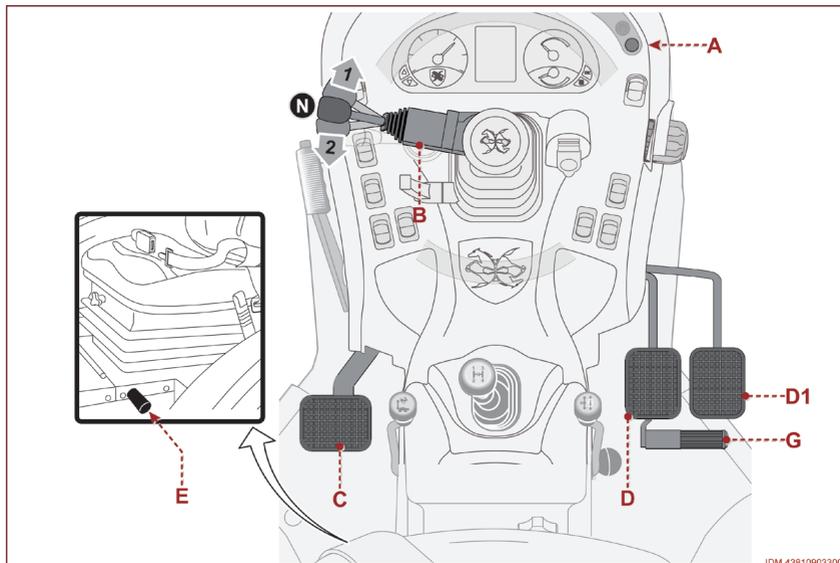
- 1\ Fully press the clutch pedal **(C)** and bring the lever **(B)** to neutral position.
- 2\ Stop the machine in safe conditions.
- 3\ Lower the levers **(A-B)** (towards the outside) until they are horizontal.
- 4\ Lift the pedals **(C-D-D1)** and block them in the lifted position.
- 5\ Lift the pedal **(G)**.
- 6\ Release the driver's seat using the lever **(E)**.
- 7\ Lift the seat **(F)** and turn it clockwise by 180°.
- 8\ Lower the seat **(F)** and make sure that it is blocked in the new position.
- 9\ Return the levers **(A-B)** to their original position.
- 10\ Lower the pedals **(C-D-D1)** and take them to the original position.
- 11\ Lower the pedal **(G)**.



DANGER

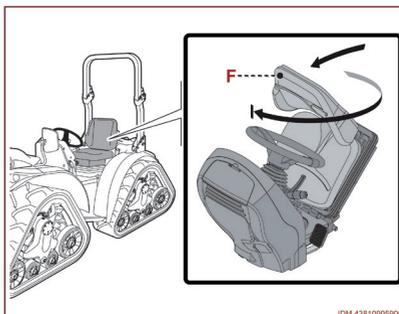
Every time the driver's seat is reversed, before starting the machine, check that all controls (steering, brakes, accelerator etc.) function correctly.

06.37. PROCEDURE FOR REVERSING THE DRIVING SEAT (ROBOTIC CONTROLS AND STEERING BRAKES)



Proceed as indicated to perform this operation.

- 1\ Fully press the clutch pedal **(C)** and bring the lever **(B)** to neutral position.
 - The LED **(A)** lights up.
- 2\ Stop the machine in safe conditions.
- 3\ Lift the pedals **(C-D-D1)** and block them in the lifted position.
- 4\ Lift the pedal **(G)**.
- 5\ Release the driver's seat using the lever **(E)**.
- 6\ Lift the seat **(F)** and turn it clockwise by 180°.
- 7\ Lower the seat **(F)** and make sure that it is blocked in the new position.
- 8\ Lower the pedals **(C-D-D1)** and take them to the original position.
- 9\ Lower the pedal **(G)**.



! DANGER
Every time the driver's seat is reversed, before starting the machine, check that all controls (steering, brakes, accelerator etc.) function correctly.

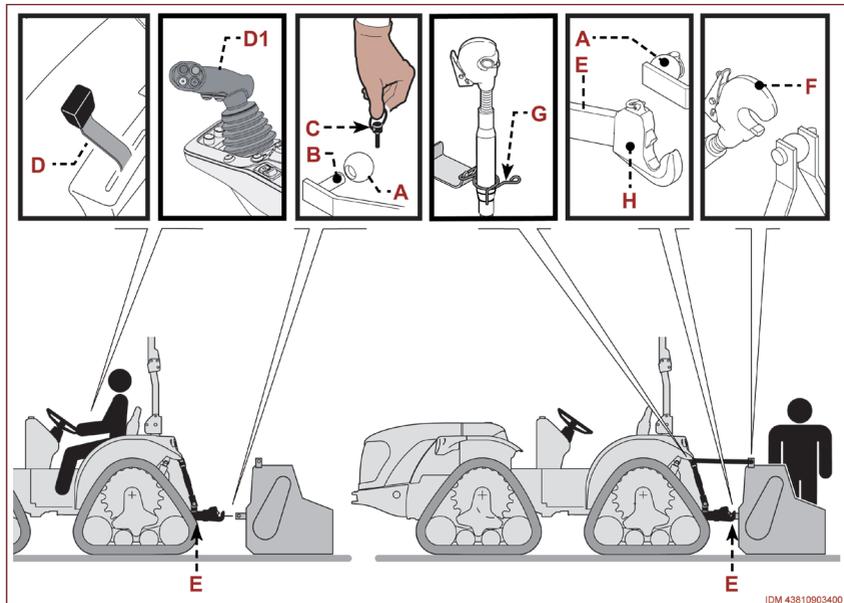
06.38. HITCHING AND DISCONNECTING TOOL - REAR POWER LIFT UNIT

The hitching and disconnection of the tool must be performed by a single person (the driver) on compact, level ground.

- A helper can be used (situated in an area without risks), who indicates correct machine approach to the tool hitch points to the driver.
- The method indicated to perform the operation starts from the assumption that the machine-interchangeable tool coupling has already been defined.

IMPORTANT Anyone who plans to combine equipment NOT MANUFACTURED by the machine manufacturer must identify the risks in the machine-equipment matching and take responsibility to eliminate them.

- **The machine manufacturer has evaluated and eliminated ONLY the risks of the machine with no equipment or combined with equipment manufactured by it (only for combinations specified by the manufacturer).**
- To make the adjustments necessary for a new matching of machine and interchangeable tool, see the respective paragraph. (→ p. 83)



- 1\ Insert the ball joints (A) in the pins (B) and block them using the safety pins (C).
- 2\ Approach the machine to the interchangeable tool and act on lever (D) until the lifting booms (E) are hitched correctly to the ball joints (A).
- 3\ Stop the machine in safe conditions.

- 4\ Connect the strut **(F)** of the third point to the interchangeable tool.
- 5\ Act on the lever **(D)** to lift the tool.
- 6\ Lift the support foot of the interchangeable tool.
 - If the interchangeable tool is not parallel to the ground, release the safety retainer of the strut **(F)**, regulate its length and block the retainer again.
- 7\ Make the electric, hydraulic connections etc. of the interchangeable tool with the machine sockets.
- 8\ Make the connection to the cardan shaft PTO (tool with mechanical power transmission). For further details, refer to the paragraph (→ p. 185).
 - **Connect the cardan shaft correctly and with the safety devices perfectly efficient. The incorrect installation and inefficiency of safety protections are the cause of most accidents (even fatal).**
 - To disconnect the interchangeable tool, identify a suitable area and stop the machine.
- 1\ Act on the lever **(D)** to rest the tool on the ground.
- 2\ Switch off the engine and remove the ignition key.
- 3\ Lower the support foot of the interchangeable tool.
- 4\ Disconnect the electric, hydraulic connections etc. from the machine sockets.
- 5\ Disconnect the cardan shaft from the machine PTO and rest it on the relative support so as not to damage it.
- 6\ Disconnect the strut **(F)** of the third point and block it with the relevant strap **(G)**.
- 7\ Disconnect the lifting booms **(E)**.
- 8\ Remove the ball joints **(A)** from the pins and put them back into the housing of the hooks **(H)**.

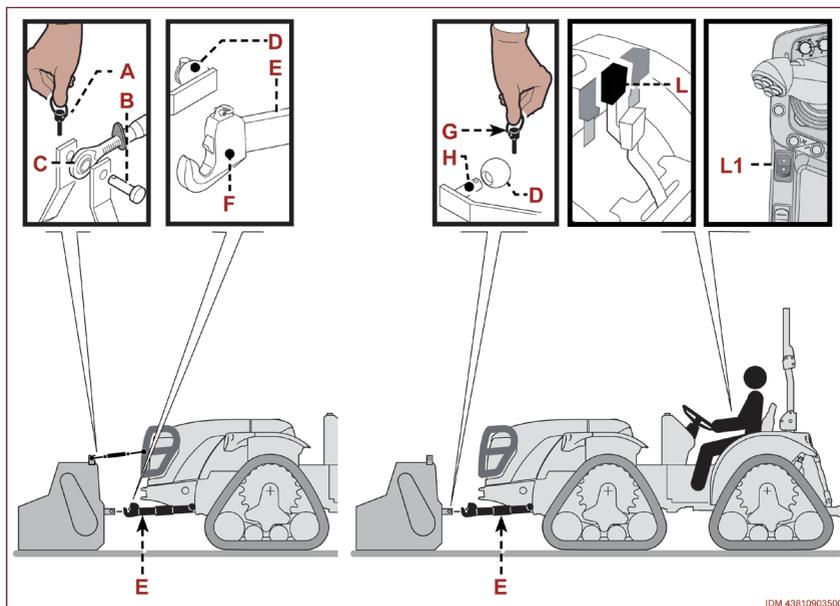
06.39. HITCHING AND DISCONNECTING TOOL - FRONT POWER LIFT UNIT

The hitching and disconnection of the tool must be performed by a single person (the driver) on compact, level ground.

- A helper can be used (situated in an area without risks), who indicates correct machine approach to the tool hitch points to the driver.
- The method indicated to perform the operation starts from the assumption that the machine-interchangeable tool coupling has already been defined.

IMPORTANT Anyone who plans to combine equipment NOT MANUFACTURED by the machine manufacturer must identify the risks in the machine-equipment matching and take responsibility to eliminate them.

- **The machine manufacturer has evaluated and eliminated ONLY the risks of the machine with no equipment or combined with equipment manufactured by it (only for combinations specified by the manufacturer).**
- To make the adjustments necessary for a new matching of machine and interchangeable tool, see the respective paragraph. (→ p. 84).



- 1\ Insert the ball joints (**D**) in the pins (**H**) and block them using the safety pins (**G**).
- 2\ Approach the machine to the interchangeable tool and act on lever (**L**) or on the button (**L1**) until the lifting booms (**E**) are hitched correctly to the ball joints (**D**).
- 3\ Stop the machine in safe conditions.

- 4\ Connect the strut **(C)** of the third point to the interchangeable tool with the pin **(B)**.
- 5\ Insert the safety cotter **(A)**.
- 6\ Act on the lever **(L)** or on the button **(L1)** to lift the interchangeable tool.
- 7\ Lift the support foot of the interchangeable tool.
If the interchangeable tool is not parallel to the ground, lower the tool and release the safety retainer of the strut **(C)**, regulate its length and block the retainer again.
- 8\ Make the electric, hydraulic connections etc. of the interchangeable tool with the machine sockets.

To disconnect the interchangeable tool, identify a suitable area and stop the machine.

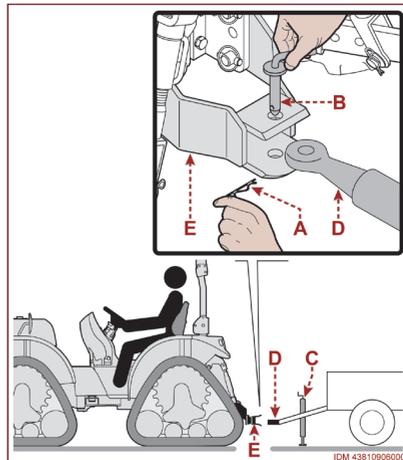
- 1\ Act on the lever **(L)** or on the button **(L1)** to rest the interchangeable tool on the ground.
- 2\ Switch off the engine and remove the ignition key.
- 3\ Lower the support foot of the interchangeable tool.
- 4\ Disconnect the electric, hydraulic connections etc. from the machine sockets.
- 5\ Remove the lynch pin **(A)** and draw out the pin **(B)**.
- 6\ Disconnect the strut **(C)** of the third point and secure it to the protection structure.
- 7\ Disconnect the lifting booms **(E)**.
- 8\ Remove the ball joints **(D)** from the pins and put them away in the toolbox.

06.40. HITCHING AND DISCONNECTING TOOL - TOWING HOOK

The hitching and disconnection of the tool must be performed by a single person (the driver) on compact, level ground.

- A helper can be used (situated in an area without risks), who indicates correct machine approach to the tool hitch points to the driver.
- The method indicated to perform the operation starts from the assumption that the machine-interchangeable tool coupling has already been defined.
- To make the adjustments necessary for a new matching of machine and interchangeable tool, see the respective paragraph. (→ p. 84)

- 1\ Remove the lynch pin (A) and draw out the pin (B).
- 2\ Approach the machine to the interchangeable tool.
- 3\ Act on the support foot (C) of the interchangeable tool until the towing eye (D) of the drawbar is aligned with the towing hook (E).
- 4\ Back the machine up to bring the towing bracket into alignment with the towing eye.
- 5\ Stop the machine in safe conditions.
- 6\ Insert the coupling pin (B) and the lynch pin (A).
- 7\ Lift the support foot (C) of the interchangeable tool.
- 8\ Make the electric, hydraulic connections etc. of the interchangeable tool with the machine sockets.
- 9\ Make the connection to the cardan shaft PTO (tool with mechanical power transmission). For further details, refer to the paragraph (→ p. 185).



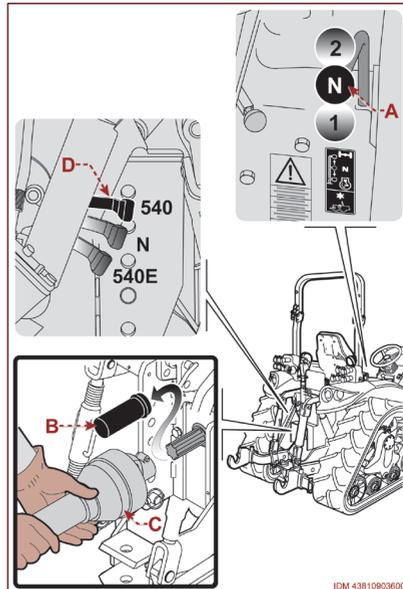
- **Connect the cardan shaft correctly and with the safety devices perfectly efficient. The incorrect installation and inefficiency of safety protections are the cause of most accidents (even fatal).**
- To disconnect the interchangeable tool, identify a suitable area and stop the machine.
 - 1\ Switch off the engine and remove the ignition key.
 - 2\ Lower the support foot (C) of the interchangeable tool.
 - 3\ Disconnect the electric, hydraulic connections etc. from the machine sockets.
 - 4\ Disconnect the cardan shaft from the machine PTO and rest it on the relative support so as not to damage it.
 - 5\ Remove the lynch pin (A) and draw out the pin (B).

06.41. CONNECTION AND DISCONNECTION OF THE REAR CARDAN SHAFT

The connection and disconnection of the cardan shaft from the power take-off is part of the procedure for hitching and disconnecting the interchangeable tool (carried or towed) from the machine.

- To connect the cardan shaft to the interchangeable tool (carried or towed), proceed as indicated.
- 1\ Shift the lever **(A)** to neutral position (pos. **N**).
 - 2\ Shift the lever **(D)** to neutral position (pos. **N**).
 - 3\ Remove the protection **(B)** of the PTO.
 - 4\ Clean and check the integrity of the machine PTO shaft and the coupling of the cardan shaft.
 - 5\ Couple the cardan shaft **(C)** to the power take-off.

! DANGER The cardan shaft must be connected first to the PTO of the implement and then to the PTO of the machine. If the shaft is connected first to the machine and the PTO accidentally activated, the resulting whiplash could cause fatal injury.



- 6\ Connect the safety chains correctly to prevent the rotation of the cardan shaft protections.
 - 7\ Make the electric, hydraulic connections etc. of the interchangeable tool with the machine sockets.
 - 8\ Test the setup to make certain that there are no problems when the shaft is at minimum and maximum length, and that there is enough space for the shaft to operate normally without being damaged.
- To disconnect the cardan shaft from the interchangeable tool (carried or towed), proceed as indicated.
- 1\ Shift the lever **(A)** to neutral position (pos. **N**).
 - 2\ Shift the lever **(D)** to neutral position (pos. **N**).
 - 3\ Disconnect the electrical and hydraulic systems of the implement.
 - 4\ Release the safety chains of the cardan shaft.
 - 5\ Disconnect the cardan shaft **(C)** from the machine PTO and rest it on the relative support so as not to damage it.

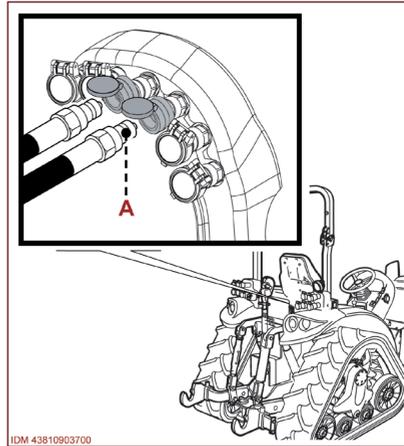
6\ Re-mount the protection **(B)** of the PTO.

IMPORTANT Further information on the cardan drive shaft can be found in the relative manual provided by the manufacturer.

06.42. HYDRAULIC COUPLINGS CONNECTION

The connection and disconnection of the hydraulic pipes to the couplings is part of the procedure for hitching and disconnecting the interchangeable tool (carried or towed) from the machine.

- 1\ Clean and check integrity of the quick couplings **(B)** and the hydraulic couplings.
 - 2\ Engage the quick couplings to the hydraulic couplings.
 - 3\ Check that the connections have been made correctly and the movements of the controls correspond to the movements of the implement.
 - 4\ In the disconnection phase, protect the hydraulic couplings with the respective lids **(A)** and lay down the hydraulic pipes in such a way that the quick couplings are not damaged.
- **The tools connected to the hydraulic couplings must use the same oil contained in the rear gearbox or an oil with the same characteristics, to avoid causing serious damage to the machine.** For further details, refer to the paragraph (→ p. 210).



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06.43. ELECTRIC COUPLINGS HITCHING

The connection and disconnection of the electric connections to the couplings is part of the procedure for hitching and disconnecting the interchangeable tool (carried or towed) from the machine.

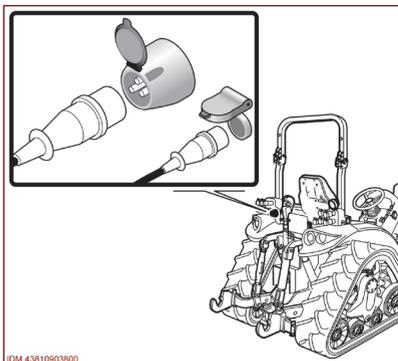
- Make the electrical connection as shown in the illustration.



ATTENTION

Make the electric connections **ONLY** when the ignition key is removed.

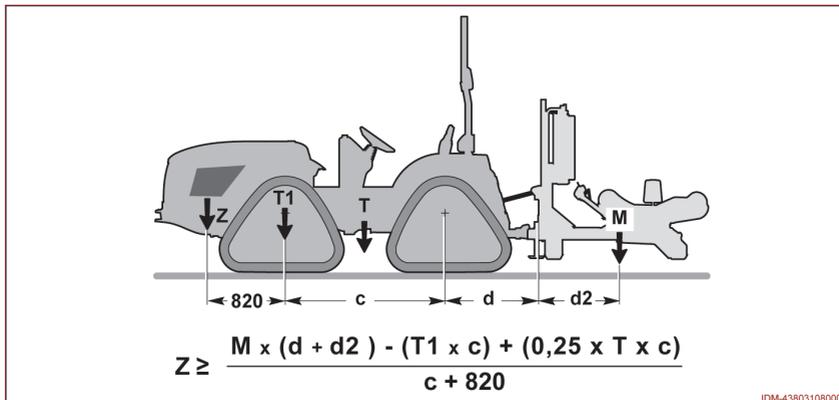
- Check that all electrical power and signalling devices on the implement operate as they should.



06.44. FORMULA FOR CALCULATING BALLASTS WITH CARRIED TOOL

When hitching a carried tool, calculate the quantity of ballasts to be installed to compensate the load on the front axle.

- The illustration shows the diagram with the necessary quota to calculate the total weight of the ballasts to be installed.



- Key

Z = Total weight of ballasts to be installed

M = Weight of carried tool to be hitched (Refer to the tool's user manual).

d = Distance between rear axle centre and the caps (→ p. 261).

d2 = Distance between barycentre of the hitched carried tool and the caps (Refer to the tool's user manual).

T = Kerb weight (→ p. 258).

T1 = Front axle empty weight (in running order) (→ p. 258).

c = Axle wheelbase (→ p. 261).

- The value obtained corresponds to the weight of the ballasts to be installed to maintain a sufficient load on the front axle.
- Value with '-' (minus) sign: it is not necessary to install ballast.
- **Value between "0" (zero) and the maximum weight of the installable ballasts:** it is necessary to install the necessary amount of ballasts to reach the obtained value.
- **Value above maximum weight of the installable ballasts:** hitching of the chosen tools is not possible.

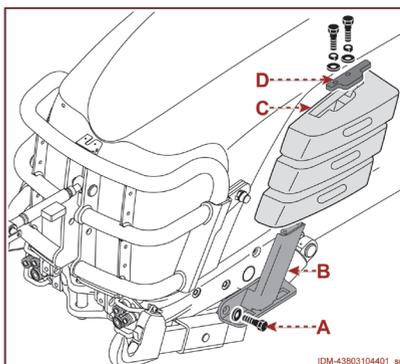
06.45. INSTALLATION OF LATERAL BALLASTS

ONLY install the ballasts when a tool (carried and/or towed) is hitched, to make the machine more stable and improve traction capacity.

- All installation and removal operations of the ballasts should be performed with the machine positioned in a suitably equipped area (e.g. workshop) in order to perform the interventions in safe conditions.
- **Before installing the ballasts, consult the chapter "Technical data" to identify the type and quantity of ballasts to be installed.**

- Proceed as indicated to perform this operation.

- 1\ Remove the screws **(A)** (right and left side) from the machine frame.
- 2\ Install the support **(B)** and fix it with the screws **(A)**.
- 3\ Repeat the operation on the other side.
- 4\ Define the quantity of ballasts **(C)** necessary to be inserted in the supports **(B)**.
- 5\ Mount the retainer **(D)** and fix it using the relative screws and the washers.
- 6\ On completion, check that the ballasts are fixed correctly.



ATTENTION

During mounting and/or removal of the ballasts, staff **MUST** pay attention to preventing the risk of crushing parts of the body.

- To keep the machine balanced, install the same amount of ballasts on both sides.
- The machine with ballasts installed, but without interchangeable tools, becomes unstable (braking and steering), with premature wear of the tracks and consumption of more fuel.
- **ALWAYS** remove the ballasts when disconnecting the interchangeable tools in order to maintain machine stability unaltered.
- **DO NOT** use the machine equipped with the ballasts, if they are not necessary, so as not to jeopardise its performance and functionality.
- **DO NOT** overload the machine with ballasts over the maximum weight allowed.

06.46. INSTALLATION OF REAR BALLAST

ONLY install the ballasts when a tool (carried and/or towed) is hitched, to improve the weight distribution and make the machine more stable.

- The rear ballast, requested in the contract phase, is installed directly by the manufacturer. If requested after purchase of the machine, it must be installed at an authorised workshop.



ATTENTION

During mounting and/or removal of the ballasts, staff **MUST** pay attention to preventing the risk of crushing parts of the body.

06.47. OPERATING REMINDERS

The following are a number of indications to be observed when using the machine.

- Even after having carefully read the documentation, when using the machine for the first time, simulate a number of test operations to identify the controls and the main functions.
- Let the engine warm up thoroughly before operating in cold weather.
- Check all levels (oil, water, fuel).
- Check the wear and pressure of the tracks.
- Check that the nuts and screws securing all main parts are tight.
- Change the range and the direction of movement only when the machine is stopped.
- Use the vehicle with the safety arch (ROPS) in its raised position and wear correctly adjusted seatbelts.
- It is possible to lower the safety arch **ONLY** to move the machine temporarily in areas without RISK of overturning and for short distances. When the safety arch is lowered, the driver **MUST NOT** fasten the safety belts and, as he is not protected in case of overturning, he must manoeuvre the machine with the utmost caution.
- **Keeping the safety arch (ROPS) in its raised position and wearing correctly adjusted safety belts can reduce the risk of injury in the event of the vehicle tipping or overturning.**
- Fully press the clutch pedal when changing speed.
- Do not keep the clutch pressed down with the machine in motion.
- Verify the gradient of the soil so as to identify the conditions that will best ensure safe operation.

- Always suitable gears for the gradient and the type of soil.
- Select the ground speeds appropriate for the type of implement hitched to the machine.
- Do not use the machine on steep ground or in descent with the gear in neutral.
- Stop the machine and take the engine to minimum speed, before starting the PTO.
- When in transit, deactivate the PTO so as to immobilize the functions of the implement.
- Deactivate the PTO and raise the implement when reversing the machine.
- If a trailed implement with cardan drive shaft is hitched to the machine, disengage the PTO when steering so as to avoid damaging the universal joint of the shaft.
- The mechanical components of the implement do not stop moving instantaneously when the PTO is disengaged: make certain all movement has ceased before approaching the implement.
- When moving the machine, also with engine off and the gear in neutral, pay attention to the synchronised PTO because its activation depends on the rotation of the tracks.
- The synchronised power take-off is driven by the machine transmission.
- The direction of rotation of the synchronised PTO inverts with the selection of forward and reverse drive from the shuttle.
- Before applying the differential lock, take the engine to minimum speed.
- Use the differential lock to counteract slipping or lack of grip of the tracks.
- Use the differential lock only when strictly necessary, and then only for short periods.
- Do not apply the differential lock when entering or negotiating bends.
- Do not steer the machine with the differential lock applied.
- Before leaving the machine unattended or carrying out any repair or servicing operation, ensure the following conditions are in place:
 - › *Disengage the PTO so that all implement functions are immobilized.*
 - › *Apply the parking brake.*
 - › *Lower the hydraulic lift so that a mounted or semi-mounted implement will rest directly on the ground.*
 - › *Turn off the engine.*
 - › *Remove the ignition key from the starter switch and protect the switch with the special cover to prevent oxidation of the contacts or a short-circuit in the electrical system.*

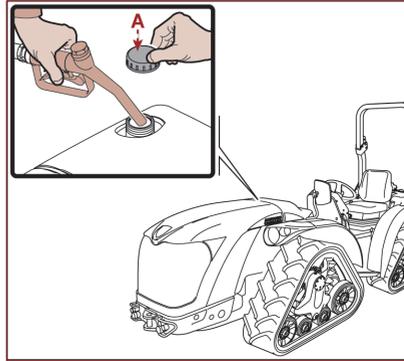
06.48. REFUELLING

Proceed as indicated to perform this operation.

- 1\ Remove the filler cap **(A)** and top up the fuel tank. Do not overfill.

IMPORTANT The fuel must be for traction and conform with the rules specified by the engine manufacturer.

- Refer to the manual accompanying the engine.
- 2\ Close the filler cap **(A)** on completing this operation.



ATTENTION

All types of fuel are highly flammable. Fuel leaks or spillage on hot surfaces and on electrical components can cause fires. Never smoke while refuelling or while in a refuelling area.

IMPORTANT During top-up do not disperse fuel into the environment. If necessary, prepare a container that corresponds to the fuel draining point.

06.49. PROLONGED MACHINE INACTIVITY

If the machine is to stand idle for any length of time, proceed as follows:

- Perform general cleaning.
- Clean the radiator
- Clean the air filter.
- Grease all the parts with grease nipples.
- Disconnect the battery.
- Apply an anti-corrosion treatment to all unpainted parts.
- Check all the parts of the machine and, if necessary, replace them.
- Check that the nuts and screws securing all main parts are tight.
- Let the engine cool and drain the fuel tank before laying the machine up.



ATTENTION

Empty the fuel tank in a suitably well ventilated place to avoid any possible risk of explosion or fire.

- Store the machine in a secure place where only authorised personnel have access to it.
- To prevent rust from forming on the surfaces of the machine, locate any areas where the paint has removed or where there are signs of wear, and touch up.
- To ensure the engine stays in efficient working order, start it up periodically and allow the crankshaft to turn over at idling speed for about (10-15) minutes.

06.50. PUTTING THE MACHINE BACK INTO SERVICE

Before returning the machine to service following a prolonged idle period, inspect the main components to ensure they are in efficient working order.

In particular, complete the following procedure:

- Check the condition of the battery.
- Check all levels (oil, water, fuel).
- Check the tightness of the main fastening screws and bolts.
- Check the general condition of hydraulic pipelines.
- Lubricate at all grease points.
- Carry out any routine servicing that may be needed.
- Start the engine and run on idle until warm.
- Check the efficiency of all safety devices.
- Give the machine a general clean, taking particular care over the driving position and controls.
- Check the wear of the tracks.



07

INFORMATION ON MAINTENANCE

07.1. MAINTENANCE RECOMMENDATIONS

- Before carrying out any maintenance operation or adjustment, activate all safety devices on the machine and establish whether there is any need to inform persons close by, working or otherwise. In particular, post suitable warnings around the work area and disallow access to any devices that could, if activated, generate unexpected hazard conditions and constitute a risk to the health and safety of individuals.
- Keep the machine in perfect running conditions and carry out scheduled maintenance operations.
- ALWAYS perform the overhauls envisioned (indicated in the table) at the manufacturer's authorised workshop, according to the frequencies indicated or at least once a year.
- Good maintenance will maintain the best performance, a longer working duration and a constant preservation of the safety requirements through time.
- Check the tightness of hydraulic fittings, of the main fastening bolts and of the track tightening screws.
- Only replace worn parts with original spare parts.
- Use oils and grease recommended by the manufacturer. Do not mix oils with different brand names or features.

IMPORTANT The manufacturer disclaims any liability arising from the use of "Long Life" lubricants.

- Do not disperse pollutant liquids, worn parts and maintenance residues in the environment. Observe the legislation in force on waste disposal.
- Unless explicitly instructed otherwise, perform all maintenance with the engine switched off, and with the ignition key removed and kept safe by the operator.
- Before carrying out any work on the engine or adjacent parts, make certain it has cooled down completely.
- Personnel authorised to perform maintenance must implement all measures necessary to ensure the safety of all persons involved, and must comply with all applicable legislation on safety at work.
- When performing interventions on the engine, ALWAYS make sure that the bonnet is completely raised correctly in order to prevent it being able to close unexpectedly with the risk of crushing the body.

IMPORTANT The warranty expires if the periodical service and the inspection and maintenance intervals indicated in the user manual are not respected. Services must be carried out at enabled and authorised workshops according to the manufacturer procedures.

07.2. MAINTENANCE DURING THE RUNNING-IN PERIOD

The machine is delivered from the factory in running order and with a short initial running-in. In the first period of use it is fundamental to respect the maintenance intervals indicated.

Frequency	Operation	Reference
After the first 16 hours	Adjust the track tension	(→ p. 87)
After the first 50 hours	Change the engine oil.	For further details refer to the engine user manual.
	Replace the engine oil filter	
	Replace the hydraulic oil filters	(→ p. 219)
	Adjust the track tension	(→ p. 87)
	Check the tightness of the track screws.	(→ p. 216)
After the first 150 hours	Adjust the track tension	(→ p. 87)

07.3. MAINTENANCE INTERVAL TABLE

Table 7.1: Periodic maintenance table

Frequency	Component	Type of operation	Type of activity
When necessary or yearly	Cab air filter, replacement	Clean	(→ p. 206)
	Engine air filter	Clean	(→ p. 204) (→ p. 205)
		Replace	(→ p. 239) (→ p. 240)
	Gas springs	Replace	(→ p. 238)
	Radiator	Clean	(→ p. 203)
	Machine	Clean	(→ p. 201)
	Bleed brakes and clutch system	Bleed the circuit	Consult an authorised workshop
	Hydraulic system pipes	Inspect and verify wear and corrosion	Consult an authorised workshop
	Tracks	Replace	(→ p. 242)
Each workday	Engine oil	Check level	(→ p. 211)
	tracks	Clean	(→ p. 201)
		Check voltage	Visual check (4)

Frequency	Component	Type of operation	Type of activity
Every 50 h	Engine air filter (2)	Clean	(→ p. 204) (→ p. 205)
	Windscreen washing liquid	Check level	Top-up to suitable level
	Coolant	Check level	(→ p. 212)
	Front and rear transmission oil	Check level	(→ p. 213)
	Track oil	Check level	(→ p. 214)
	Clutch oil	Check level	(→ p. 215)
	Brake oil	Check level	(→ p. 215)
	Machine components	Lubricate	(→ p. 207)
Every 200 h	Tracks	Adjust tension	(→ p. 87)
	Track screws	Check tightness	(→ p. 216)
Every 250 h	Alternator fan belt	Check voltage	For further details refer to the engine user manual.

Frequency	Component	Type of operation	Type of activity
Every 500 h	Fan belt for cooling engine	Replace	For further details refer to the engine user manual.
	Engine oil (1)	Replace (3)	For further details refer to the engine user manual.
	Engine oil filter (1)	Replace (3)	For further details refer to the engine user manual. (*)
	Fuel filter	Replace (3)	For further details refer to the engine user manual. (*)
	Water separator filter	Replace (3)	For further details refer to the engine user manual. (*)
	Front and rear transmission oil	Replace	(→ p. 217)
	Hydraulic oil filters (1)	Replace	(→ p. 219)
	Battery	Check the charge level.	Maintenance-free battery
Every 1000 hours or at the end of every year	Engine air filter	Replace	(→ p. 239) (→ p. 240)
	Track oil	Replace	(→ p. 220)
Every 1500 h	Oil separator filter	Replace (3)	For further details refer to the engine user manual.
Every 2000 hours or at the end of every two years	Coolant	Replace	For further details refer to the engine user manual.
	Clutch oil	Replace	Consult an authorised workshop
	Brake oil	Replace	Consult an authorised workshop
Every 3000 hours or at the end of every two years	DPF filter	Clean	For further details refer to the engine user manual.

Frequency	Component	Type of operation	Type of activity
Every 5 years	Hydraulic system pipes Brakes hydraulic system pipes Clutch hydraulic system pipes	Replace	Consult an authorised workshop

- (1) The first replacement must be performed after the first 50 hours
- (2) Replace the element after 6 cleaning operations or every 12 months.
 - In machines with filter unit equipped with internal cartridge, replace it every 2 replacements of the external one.
- (3) Replace annually when the hours of operation have not reached the scheduled maintenance interval.
- (4) Make a visual check of the tension; if the rubber is slack, tighten it (→ p. 87)
- (*) For the component position, see 'Engine components'

07.4. CLEANING THE MACHINE

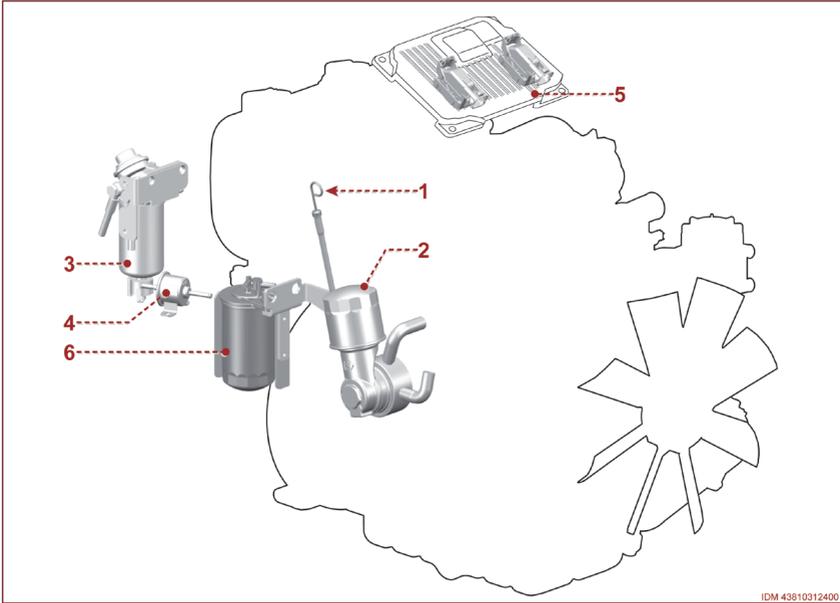
Proceed as indicated to perform this operation.

- 1\ Remove the ignition key from the starter switch and protect the switch with the special cover to prevent oxidation of the contacts or a short-circuit in the electrical system.
- 2\ Remove all residues of grass and leaves.
- 3\ Wash the machine with a jet of water, taking care to avoid spraying directly onto electrical parts.
 - **Clean with biodegradable detergents for industrial use.**
 - DO NOT use aggressive chemical products and/or hydrocarbon or alcohol based solvents, especially for plastic components.
 - **Do not direct the jet of water onto the motor, the exhaust pipe or near components that could get damaged due to the water pressure.**
- 4\ Blow the implement dry with compressed air, then grease all greasing points and sliding surfaces with water-repellent grease.

07.5. ENGINE COMPONENTS

The illustration represents the engine components and their position.

For all the components not listed, refer to the engine's user manual.

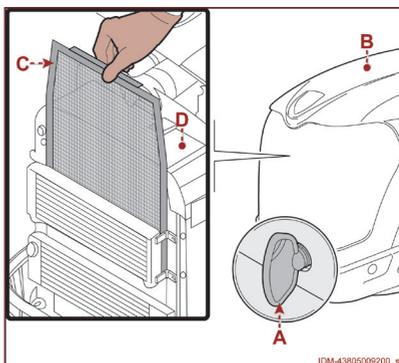


1. Dipstick
2. Engine oil filter
3. Fuel pre-filter
4. Electric pump
5. Engine ECU
6. Fuel filter

07.6. CLEANING THE RADIATOR

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
 - 2\ Allow the engine to cool down, so that there will be no risk of scalding.
 - 3\ Open the bonnet (B) with the key (A).
 - 4\ Remove the protection grid (C). (if present)
 - 5\ Clean the grid (C) and the radiator (D) with a jet of compressed air.
- **Do not aim the jet of air too near to the radiator fins in order to prevent damage.**
- 6\ Reassemble the protection grid (C). (if present)
 - 7\ Shut the bonnet when the operation is concluded.

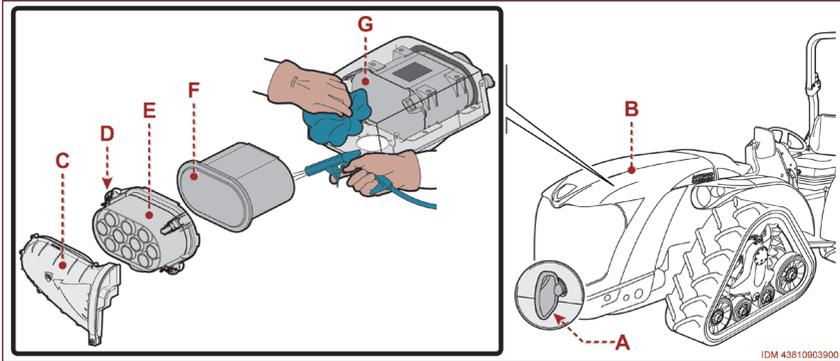


ATTENTION

Wear the eye protections and the mask to prevent the danger generated by dusts that can come into contact with the eyes and respiratory tract.

07.7. CLEANING THE ENGINE AIR FILTER (TYPE A)

Proceed as indicated to perform this operation.



- 1\ Stop the machine in safe conditions.
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 3\ Open the bonnet **(B)** with the key **(A)**.
- 4\ Take out the duct **(C)**
- 5\ Open the hooks **(D)** and remove the cover **(E)**.
- 6\ Take out the cartridge **(F)**.
- 7\ Clean the cartridge **(F)** with a jet of air (max 3 bar) directed towards the outside.
- 8\ Clean the internal part of the filter container (G) with a damp cloth to remove dust residue.
- 9\ Reassemble the cartridge **(F)**.
- 10\ Fit the cover **(E)** and secure it with the hooks **(D)**.
- 11\ Reassemble the duct **(C)**
- 12\ Shut the bonnet when the operation is concluded.

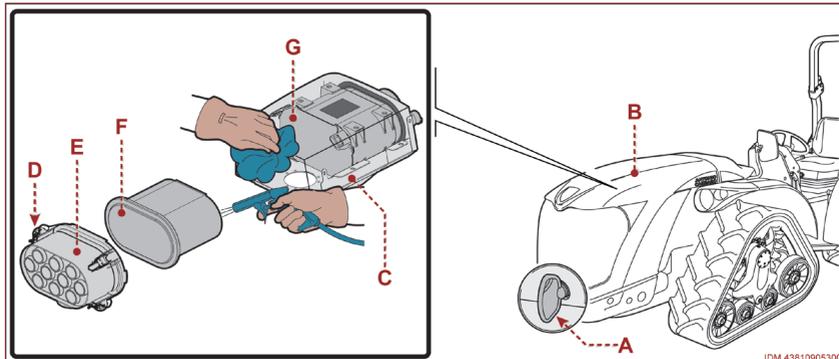


ATTENTION

Wear the eye protections and the mask to prevent the danger generated by dusts that can come into contact with the eyes and respiratory tract.

07.8. CLEANING THE ENGINE AIR FILTER (TYPE B)

Proceed as indicated to perform this operation.



- 1\ Stop the machine in safe conditions.
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 3\ Open the bonnet **(B)** with the key **(A)**.
- 4\ Open the door **(C)**.
- 5\ Open the hooks **(D)** and remove the cover **(E)**.
 - Slightly raise the filter unit, for easier opening of the hooks at the bottom.
- 6\ Take out the cartridge **(F)**.
- 7\ Clean the cartridge **(F)** with a jet of air (max 3 bar) directed towards the outside.
- 8\ Clean the internal part of the filter container **(G)** with a damp cloth to remove dust residue.
- 9\ Reassemble the cartridge **(F)**.
- 10\ Fit the cover **(E)** and secure it with the hooks **(D)**.
 - Slightly raise the filter unit, for easier closing of the hooks at the bottom.
- 11\ Insert the filter unit in place.
- 12\ Close the door **(C)**.
- 13\ Shut the bonnet when the operation is concluded.

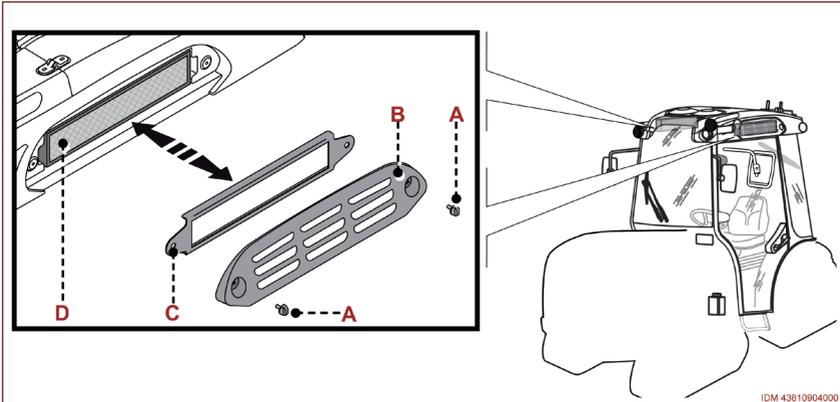


ATTENTION

Wear the eye protections and the mask to prevent the danger generated by dusts that can come into contact with the eyes and respiratory tract.

07.9. CLEANING THE CAB AIR FILTER (PAPER)

IMPORTANT For further details on the safety and correct use of the "Category 4" cab, consult the corresponding Use and Maintenance Manual.



Proceed as indicated to perform this operation.

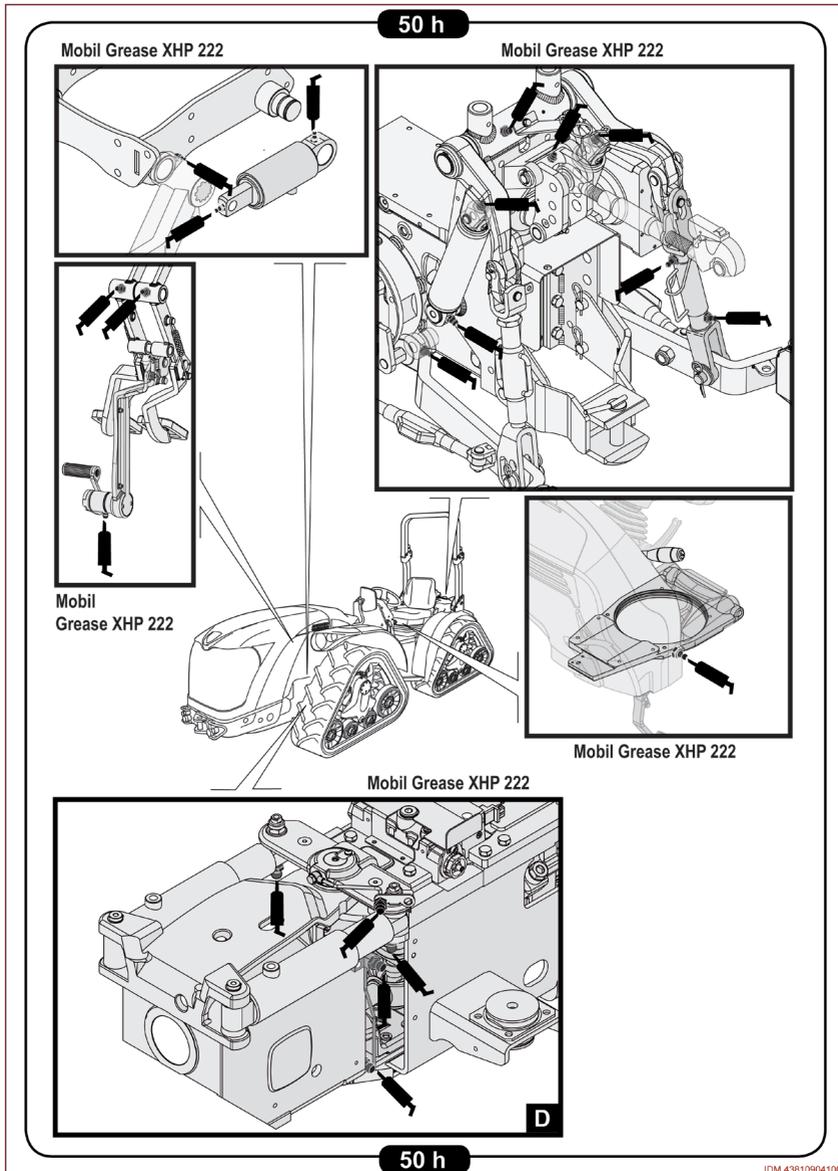
- 1\ Stop the machine in safe conditions. (→ p. 10)
 - 2\ Unscrew the knobs **(A)**.
 - 3\ Remove the guard **(B)** and the bracket **(C)**.
 - 4\ Extract the filter **(D)** and clean it with a jet of compressed air. Blow air from the inside towards the outside, until all the dust is completely removed.
- **Do not aim the jet of air too near to the filter in order to prevent damage.**
- 5\ Replace any worn or damaged gaskets.
 - 6\ Reassemble the filter **(D)**.

IMPORTANT Check that the arrow on the filter faces towards the inside of the cab.

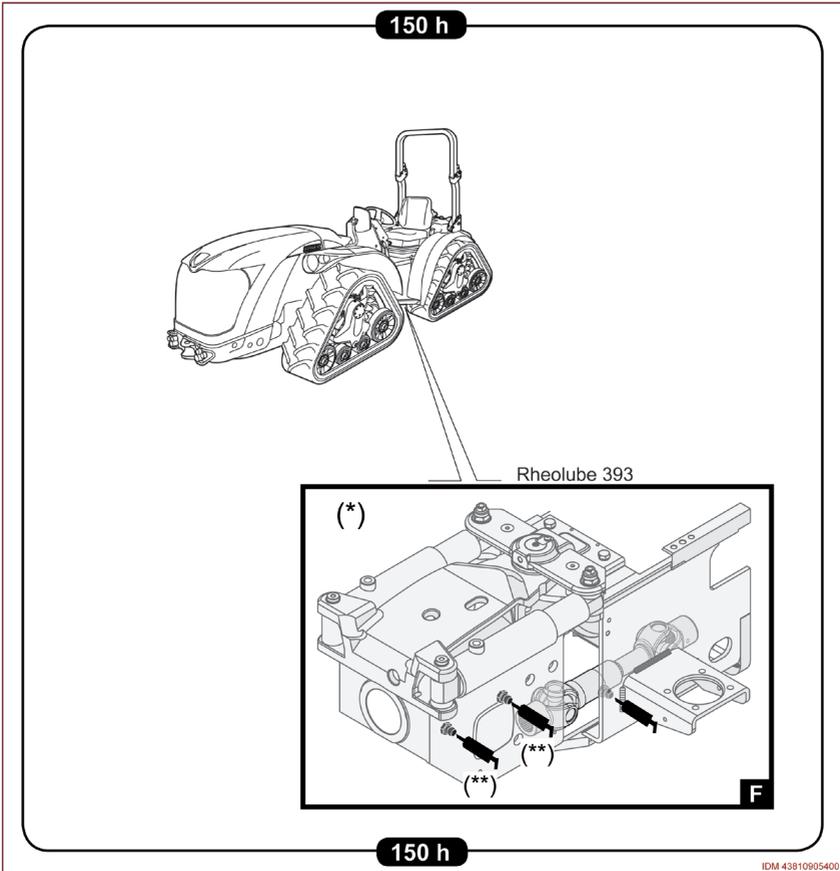
- 7\ Reassemble the bracket **(C)** and the guard **(B)**.
- 8\ Screw on the knobs **(A)**.
- 9\ Repeat the operation on the other side.

07.10. LOCATION OF LUBRICATION POINTS

- Lubricate all the parts shown at the intervals specified.



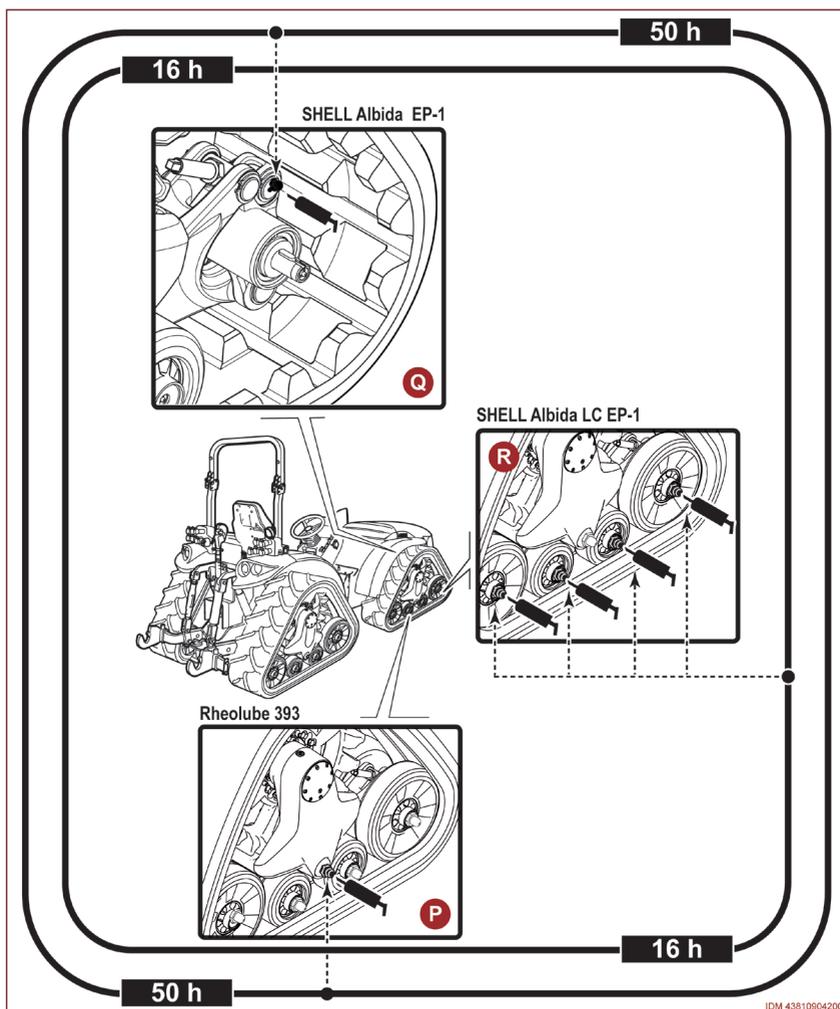
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(*) Use RHEOLUBE 393 grease.

(**) Stop applying when grease comes out of the vent valve on the grease nipple.

IMPORTANT Clean the areas around grease nipples before injecting grease, to avoid injecting dirt together with the grease



IMPORTANT The intervals indicated refer to normal working conditions of the machine.

- In extreme conditions (soft, muddy or sandy ground, aggressive atmospheric agents such as seaside air, etc.), clean every day and halve the intervals indicated.

07.11. LUBRICANT TABLE

Antonio Carraro machines need lubricants that can ensure high performance in compliance with the technical specifications.

- With this goal, Antonio Carraro has selected special formulations of lubricants that will also be made available for 'maintenance' after the initial filling in the factory.
- 'Tony Gold Premium' is the only line of lubricants guaranteed by Antonio Carraro, which helps to reduce fuel consumption and, while being environmentally friendly, maintains high performance and maximum reliability.
- Ask your dealer for lubricants in the 'Tony Gold Premium' line, available in handy, convenient packs.

Table 7.3· Lubricant features

Lubricant type	Parts to be lubricated	Quantity (litres) (*)
Tony Gold SYNTHETIC ENGINE OIL 10W40 or Mobil Delvac XHP ESP 10W40	Engine	see the manual accompanying the engine
Tony Gold POWERFLUID XP oil or Mobilfluid 424	Front transmission + Front reduction gears (right + left)	14.5
	Rear transmission + Rear reduction gears (right + left)	24.5
Tony Gold POWERFLUID XP oil or Shell Spirax S6 TXME	Brake and clutch control	-
Tony Gold Synthetic Transmission Oil 75w90 or Mobil Lube HD 80W-90	Track oil	0.2 (amount for each track). 0.8 (total amount).
Grease MOBIL Grease XHP 222	Grease nipples (A-B-C-D-E)	-
Grease RHEOLUBE 393	Central joint (F) Track rollers rocker arm pivot pin (P)	-
Grease SHELL Albida LC EP-1	Track grease nipples (Q-R)	-

(*) Approximate values that do not consider possible topping up after starting the machine.

07.12. COOLING LIQUID TABLE

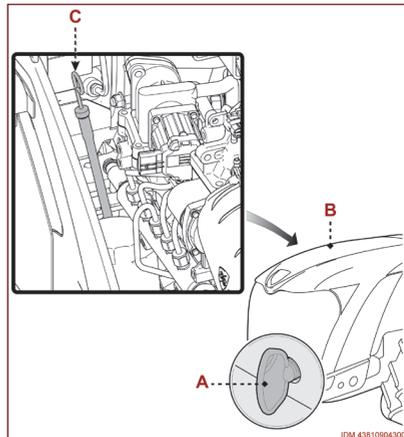
Table 7.5· Cooling liquid concentration percentage

Concentration percentage (Gisteda-Flù antifreeze)	Operating temperature
18%	down to -8°C
28%	down to -13°C
36%	down to -20°C
40%	down to -24°C
50%	down to -38°C

07.13. CHECKING THE ENGINE OIL LEVEL

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
 - 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- **Perform this check with the machine on a perfectly level surface and with the engine cold.**
- 3\ Open the bonnet (B) with the key (A).
 - 4\ Take out the dipstick (C) and check the oil level. Add oil as necessary, up to but not beyond the maximum level mark (Consult the manual accompanying the engine).
 - 5\ Shut the bonnet when the operation is concluded.

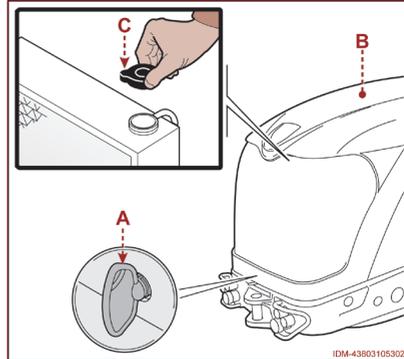


07.14. CHECKING THE ENGINE COOLANT LEVEL

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 3\ Open the bonnet (B) with the key (A).

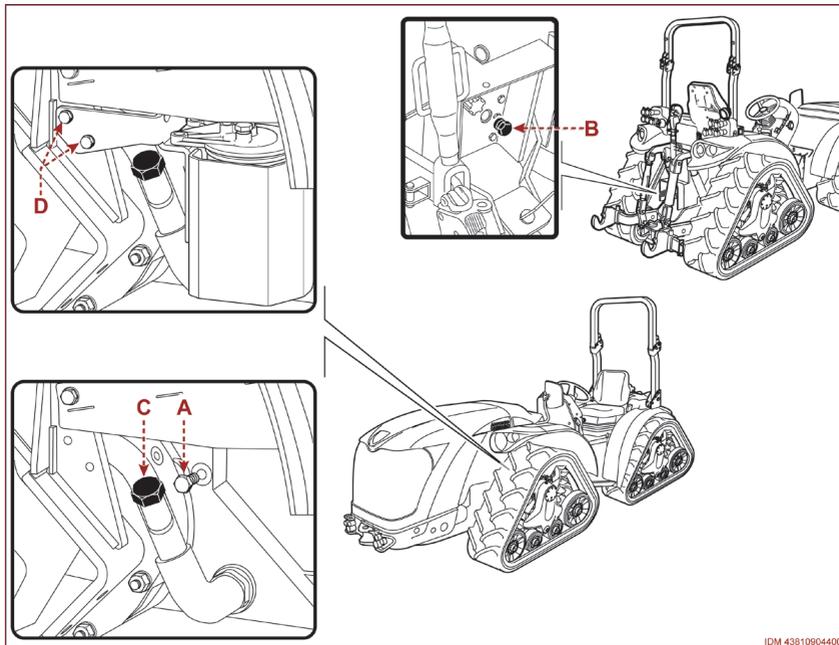
! ATTENTION
DO NOT open the radiator cap before the cooling liquid has reached environment temperature (cold engine).



- Unscrew the cap (C) to check the level of the liquid in the radiator and top up if necessary.
- 4\ Screw the cap on again.
- 5\ Shut the bonnet when the operation is concluded.

IMPORTANT The radiator must be maintained at the correct level with a mixture of distilled water and antifreeze liquid for its protection. Check the concentration of the mixture with the appropriate tool at least once a year.

07.15. CHECKING THE FRONT AND REAR TRANSMISSION OIL



IDM 4381090400

Proceed as indicated to perform this operation.

- 1\ Lower the power lift unit completely.
- 2\ Stop the machine in safe conditions.
- 3\ Allow the engine to cool down, so that there will be no risk of scalding.

Front transmission

- 4\ Undo the screws **(D)**; move the support together with the diesel filter. Take care not to damage the diesel pipes.
- 5\ Unscrew the filler cap **(C)**.
- 6\ Unscrew the cap **(A)** and check that the oil level comes close to the lower edge of the hole.
- 7\ Pour new oil in through the hole in the cap **(C)** until it reaches the lower edge of the hole of the cap **(A)**.
- 8\ Screw the caps **(A-C)** on again.
- 9\ Reassemble the support together with the diesel filter.

Rear transmission

- 10\ Unscrew the cap **(B)** and check that the oil level comes close to the lower edge of the hole.
- 11\ Top up (if necessary) through the hole and screw the cap **(B)** on again.
- 12\ On completion of all operations, check that there are no leaks in proximity of the caps.

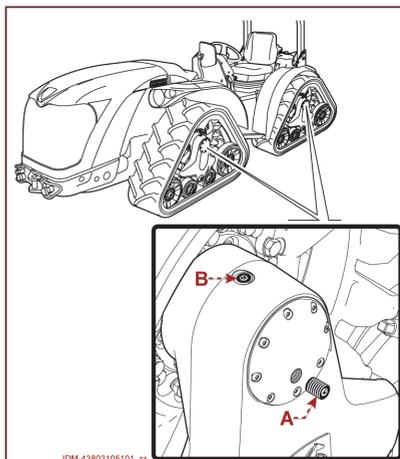
IMPORTANT Use oil with specifications identical to those indicated in the “Lubricant table”.

07.16. CHECKING THE TRACK OIL LEVEL

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Unscrew the cap **(A)** and check that the oil level comes close to the lower edge of the hole.
- 3\ Top up (if necessary) through the hole **(B)** and screw the cap **(A)** on again.

IMPORTANT Use oil with specifications identical to those indicated in the “Lubricant table”.

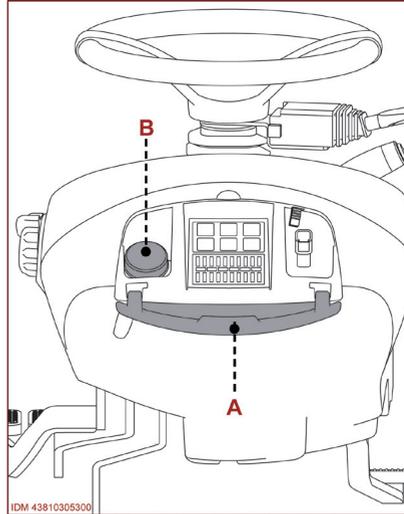


07.17. CHECKING BRAKES AND CLUTCH SYSTEM OIL LEVEL

Proceed as indicated to perform this operation.

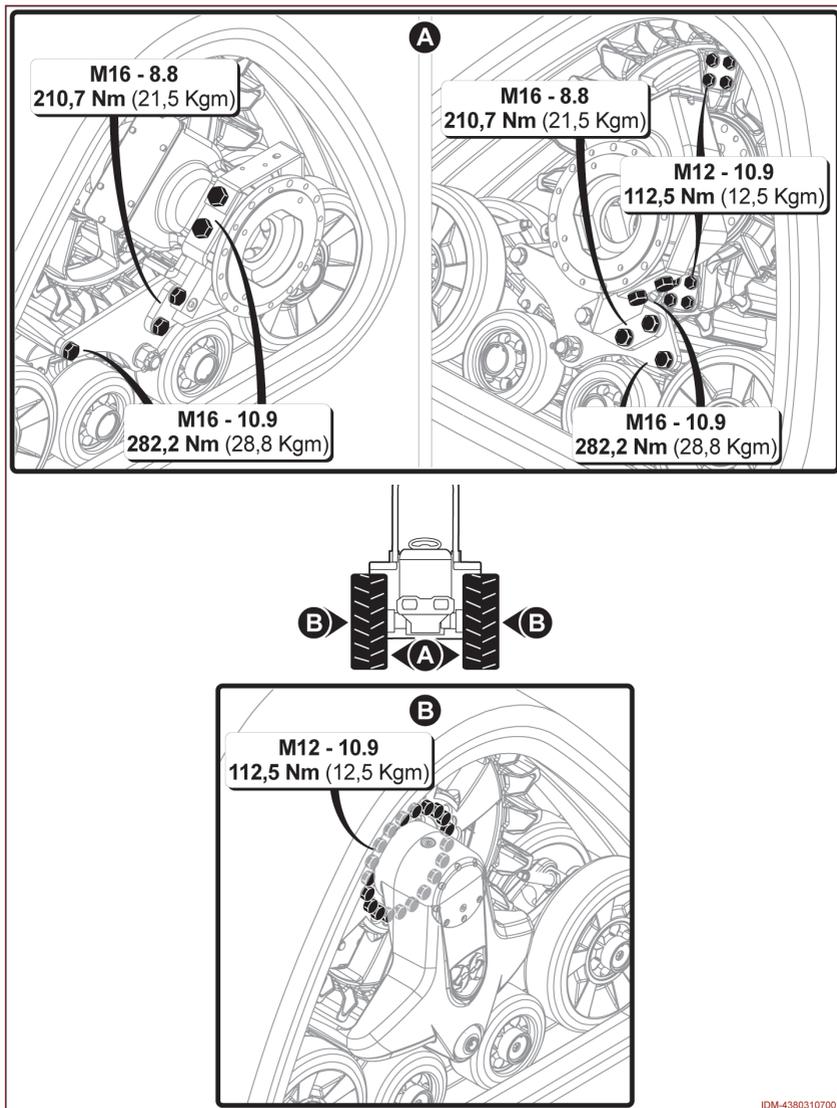
- 1\ Stop the machine in safe conditions. (→ p. 10)
- 2\ Open the cover (A).
- 3\ Check the correct level of the oil in the tank (B) and top up if necessary.

IMPORTANT Check that the oil level never drops underneath the minimum level marked. Use oil with specifications identical to those indicated in the "Lubricant Table" Do not mix oils with different brand names or features (→ p. 210).



07.18. CHECKING TIGHTNESS OF TRACK SCREWS

The illustration shows the screws of which the tightening torque should be checked periodically. (→ p. 197)

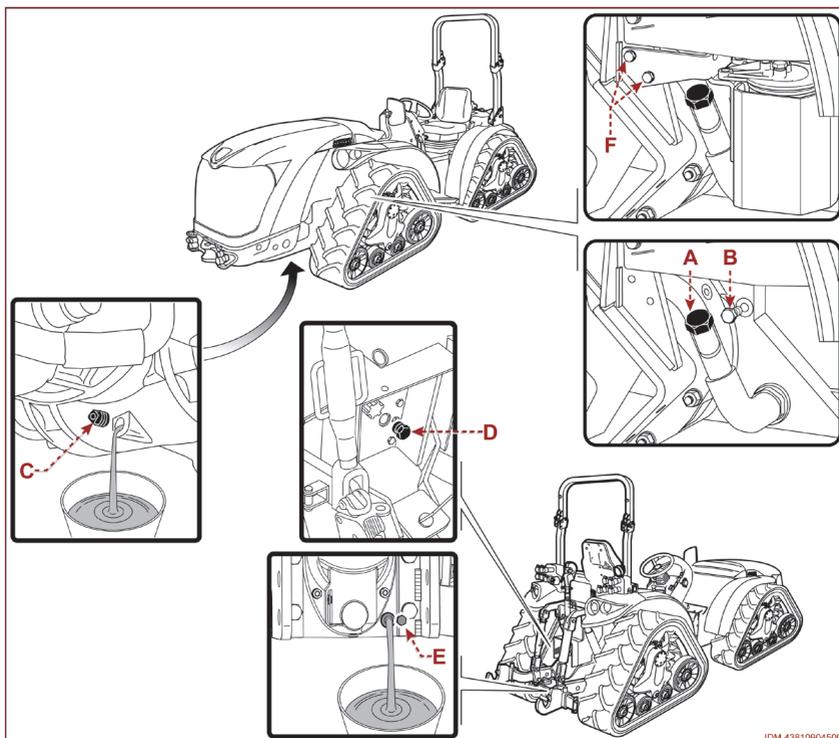


- Use a torque wrench to tighten the screws to the indicated torque setting.

IMPORTANT If the screws are slack, before tightening them apply "Loctite 242" on the thread.

07.19. CHANGING THE FRONT AND REAR TRANSMISSION OIL

Proceed as indicated to perform this operation.



IDM 43810904500

- 1\ Lower the power lift unit completely.
- 2\ Stop the machine in safe conditions.
- 3\ Allow the engine to cool down, so that there will be no risk of scalding.
- 4\ Prepare a container with suitable capacity, which corresponds with the drain caps.

Front transmission (UNIT 2)

- 5\ Undo the screws (F) and move the support together with the diesel filter. Take care not to damage the diesel pipes.
- 6\ Unscrew the filler cap (A).
- 7\ Unscrew the level cap (B).
- 8\ Unscrew the drain cap (C) and let all the oil drain into the container.
- 9\ Screw the drain cap (C) on again.
- 10\ Pour new oil in through the hole in the filler cap (A) until it reaches the lower edge of the hole of the cap (B).

- 11\ Screw the caps **(A-B)** on again.
- 12\ Reassemble the support together with the diesel filter.

Rear transmission (UNIT 1)

- 13\ Unscrew the plug **(D)**.
- 14\ Unscrew the drain cap **(E)** and let all the oil drain into the container.
- 15\ Screw the drain cap **(E)** on again.
- 16\ Pour new oil in through the hole in the cap **(D)** until it reaches the lower edge of the hole of the cap.
- 17\ Screw the cap **(D)** on again.
- 18\ On completion of all operations, check that there are no leaks in proximity of the caps.

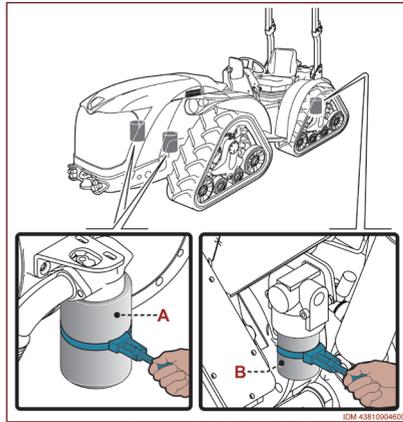
IMPORTANT_Use oil with specifications identical to those indicated in the “Lubricant table”.

- **Do not dispose of polluting materials in the environment. Dispose of all such materials in compliance with applicable legislation.**

07.20. CHANGING THE HYDRAULIC OIL FILTERS

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
 - 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- **Perform this check with the machine on a perfectly level surface and with the engine cold.**



Front and rear transmission hydraulic oil filters

- 3\ Position a container with suitable capacity in the oil draining area.

IMPORTANT Do not dispose of polluting materials in the environment. Dispose of all such materials in compliance with applicable legislation.

- 4\ Unscrew the hydraulic oil suction filter **(A)**.
- 5\ Lubricate the new filter gasket with hydraulic oil.
- 6\ Mount the new filter and screw it only by hand.
- 7\ Tighten the filter fully home using an appropriate band wrench.
- 8\ Repeat the operation with the filter on the other side.
- 9\ Check the hydraulic oil level. (→ p. 213)

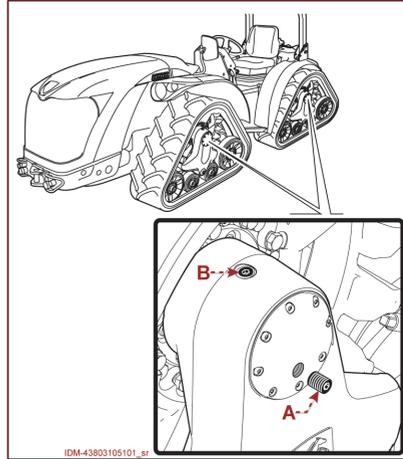
Rear transmission hydraulic oil pressure filter

- 10\ Unscrew the hydraulic oil pressure filter **(B)**.
- 11\ Remove the filtering cartridge and clean the container.
- 12\ Insert a new filtering cartridge in the container.
- 13\ Put the filter back in position.
- 14\ Check the hydraulic oil level. (→ p. 213)

07.21. CHANGING THE TRACK OIL

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Position a container with suitable capacity in the oil draining area.
- 3\ Unscrew the filler cap **(B)**.
- 4\ Unscrew the level cap **(A)**.
- 5\ Suck up all the oil from the gearbox with an appropriate pump.
- 6\ Pour new oil in through the filler cap until it reaches the lower edge of the level hole **(A)**.
- 7\ Screw the caps **(A-B)** on again.
- 8\ Repeat the same operation on all other reduction gears.
- 9\ On completion of all operations, check that there are no leaks in proximity of the caps.



IMPORTANT Use oil with specifications identical to those indicated in the “Lubricant table”.

- Do not dispose of polluting materials in the environment. Dispose of all such materials in compliance with applicable legislation.

07.22. BLEEDING THE BRAKES AND CLUTCH SYSTEM

This operation must be performed in a workshop equipped with suitable tools and by staff with precise technical skills.

07.23. EXTRAORDINARY MAINTENANCE

Although the machine has been designed and made to work in difficult environmental conditions, after a few years it is necessary to carry out extraordinary maintenance to keep it in perfect working order and to safeguard its general safety.

- Servicing operations must be carried out by technicians with the proper skills, in suitably equipped workshops authorised by the manufacturer.



08

INFORMATION REGARDING FAULTS

08.1. PROBLEMS, CAUSES AND CORRECTIVE ACTIONS

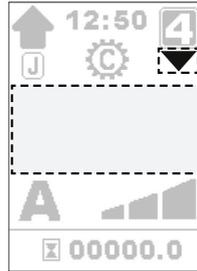
The following instructions are designed to help you identify the cause of faults and anomalies that may occur during the course of normal operation and the corrective actions to undertake.

IMPORTANT To ensure maximum fault finding efficiency, have the machine checked by an authorized service centre that can also perform a general service.

Table 8.1: Warning Messages on the multifunction display

One or more of the following warning messages may appear on the multifunction display:

IMPORTANT_If the fault persists, contact an authorised workshop.



Problem	Causes	Solution
	The reverser is not in neutral.	Shift the shuttle lever to neutral position.
	The reverser control is not working properly.	Consult an authorised workshop.
	When combined with the  LED and the buzzer, it may indicate that the operator is not sitting correctly in the driver's seat.	Sit correctly in the driver's seat.
	When combined with the  LED and the buzzer, it may indicate that the operator present sensor is not working properly.	Consult an authorised workshop.
	When combined with the  LED and the buzzer, it may indicate that the operator has left the driver's seat without applying the parking brake.	Apply the parking brake.
	The clutch pedal is not pressed.	Press the clutch pedal.

Problem	Causes	Solution
	Service overdue.	Consult an authorised workshop.
	Service overdue for more than 50h.	
 BLINKING	Transmission oil not at temperature. (****)	Wait for the temperature to rise. (→ p. 158)(→ p. 160)
	Oil cooling radiator clogged.(****)	Clean the radiator.
	Damaged fan.(****)	Refer to the manual accompanying the engine.
	Belt too slack.(****)	Refer to the manual accompanying the engine.
	Gearbox oil level low.(****)	Restore the oil level in the gearbox.
	Fault in the CAN-BUS line	Consult an authorised workshop
 MIL	When combined with the blinking  LED, it indicates that the DPF filter is clogged.	(→ p. 170)
	Engine fault.	Reduce the speed or the work load. Take the vehicle to an authorised service centre.
	Engine fault.	Stop and turn off the engine! Consult an authorised workshop.

Problem	Causes	Solution
	Vehicle fault.	Stop and turn off the engine! Consult an authorised workshop.

(****) The number in the symbol indicates the hydraulic unit;

1: Unit 1 (disengagement of front wheel drive, differential lock, power take-off)

2: Unit 2 (power lift, hydraulic couplings, steering)

Table 8.2: Warning lights

IMPORTANT If the fault persists, contact an authorised workshop.

Problem	Causes	Solution
 <p>RED LED</p>	<p>Lit at the same time as one or more of the following LEDs or icons on the display</p> 	<p>Follow the indications given for the individual LEDs or icons on the display.</p>
	<p>Lit at the same time as a fault in the engine  or in the transmission </p>	 Stop and turn off the engine! Consult an authorised workshop.
 <p>RED LED + AUDIBLE WARNING</p>	<p>Unit 1 hydraulic circuit filter clogged.</p>	<p>Replace filter.</p>
 <p>RED LED + AUDIBLE WARNING</p>	<p>Unit 2 hydraulic circuit filter clogged.</p>	<p>Replace filter.</p>
 <p>RED LED + AUDIBLE WARNING</p>	<p>Air filter clogged.</p>	<p>Clean and/or replace filter.</p>

Problem	Causes	Solution
 RED LED + AUDIBLE WARNING	Unit 1 hydraulic system damaged (pump, valve, sensor)	Consult an authorised workshop
	Unit 1 hydraulic oil level low.	STOP Stop and turn off the engine! Check the oil level and top up if necessary If the problem persists, contact an authorised workshop.
	Unit 1 hydraulic oil filters clogged	STOP Stop and turn off the engine! Replace the hydraulic oil filters. If the problem persists, contact an authorised workshop.
 BLINKING + AUDIBLE WARNING	DPF clogged	(→ p. 170)
 RED LED + AUDIBLE WARNING	Clogged fuel pre-filter	Clean the pre-filter (Refer to the manual accompanying the engine).
 RED LED + AUDIBLE WARNING	Alternator damaged.	Consult an authorised workshop.
	Alternator belt slack.	Refer to the manual accompanying the engine.
	Alternator belt damaged.	Consult an authorised workshop.
 RED LED + AUDIBLE WARNING	Engine oil level low.	STOP Stop and turn off the engine! Check the oil level and top up if necessary If the problem persists, contact an authorised workshop.
	Engine oil filter clogged.	STOP Stop and turn off the engine! Replace the hydraulic oil filters. If the problem persists, contact an authorised workshop.

Problem	Causes	Solution
 <p>RED LED + AUDIBLE WARNING</p>	Radiator dirty.	 Stop and turn off the engine! Clean the radiator.
	Level of coolant in radiator too low.	 Stop and turn off the engine! Restore the correct level of coolant in the radiator.
	Engine cooling liquid pump breakdown	 Stop and turn off the engine! Replace the pump. (Refer to the manual accompanying the engine.)
	Engine fan belt broken	 Stop and turn off the engine! Replace the belt. (Refer to the manual accompanying the engine.)

Table 8.3: Problems at engine start-up phase

Problem	Causes	Solution
Starter motor does not turn	Battery flat	Recharge or replace the battery (→ p. 241)
	Battery terminals oxidised	Clean the terminals and smear with grease to prevent oxidation
	Battery cut-off switch faulty	Check the battery cut-off switch and replace it if necessary.
	Main fuse damaged	Replace the fuse (→ p. 247)
	Starter motor damaged	Consult an authorised workshop.
	Starter switch damaged	Consult an authorised workshop.
	Shuttle lever not in neutral position.	Put the lever into neutral
	PTO switch activated	Deactivate the PTO with the switch
	Safety sensors damaged	Consult an authorised workshop.
	Clutch pedal not pressed	Press the clutch pedal
	Operator is not sitting correctly in the driver's seat	Sit correctly in the driver's seat
	Drive pedal is not in position 0	
		Make sure that the drive pedal is in position 0

Table 8.4: Problems at engine start-up phase

Problem	Causes	Solution
Engine does not start	Clogged fuel filter	Clean or replace the filter (Consult the manual accompanying the engine).
	Air in the fuel feed circuit	Bleed the circuit (Consult the manual accompanying the engine).
	Engine control unit fuse damaged	Replace the fuse (→ p. 247)
	Clogged fuel circuit	Refer to the manual accompanying the engine.
	Engine control unit detects a fault	Consult an authorised workshop.
	Engine control unit breakdown	Consult an authorised workshop.
	No fuel in the tank	Refuel (→ p. 192)
	Injection pump rack actuator blocked (FIP)	Consult an authorised workshop.
	Safety sensors damaged	Consult an authorised workshop.
Black smoke coming from exhaust	Injectors fouled or defective	Consult an authorised workshop.
	Engine overloaded	Select a lower range or reduce the load
	Enging oil fumes recovery air filter clogged	Consult an authorised workshop
	Air filter clogged	Clean or replace filter (→ p. 204) (→ p. 205)
Coolant temperature warning indicator alight with engine running	Radiator dirty	Clean the radiator
	Level of coolant in radiator too low or too high.	Restore the correct level of coolant in the radiator
Excessive fuel consumption	Air filter clogged	Clean or replace filter (→ p. 204) (→ p. 205)
	Engine overloaded	Select a lower range or reduce the load
	Injectors fouled or defective	Consult an authorised workshop.

Table 8.5: Problems in the PTO and differential units

Problem	Causes	Solution
Power take-off does not turn	PTO selector levers in neutral position	Shift the lever to select power take-off
	Fuse damaged	Replace the fuse (→ p. 247)
	PTO electrovalve breakdown	Consult an authorised workshop.
	Services electrovalve block maximum pressure valve breakdown	Consult an authorised workshop.
	The PTO has been deactivated by the system	Disengage the PTO and engage it again
	Joystick breakdown	Consult an authorised workshop
PTO clutch slipping	PTO electrovalves breakdown	Consult an authorised workshop
	Damaged hydraulic seals on clutch	Consult an authorised workshop
Four-wheel drive does not disengage	Fuse damaged	Replace the fuse (→ p. 247)
	Traction disconnection electrovalve breakdown	Consult an authorised workshop.
	Services electrovalve block maximum pressure valve breakdown	Consult an authorised workshop.
Differential lock does not engage	Fuse damaged	Replace the fuse (→ p. 247)
	Differential locking electrovalve breakdown	Consult an authorised workshop.
	Services electrovalve block maximum pressure valve breakdown	Consult an authorised workshop.

Table 8.6: Power lift unit problems

Problem	Causes	Solution
The implement fails to lift	The implement weighs more than the maximum load capacity of the lifting device.	Disconnect the implement. Before connecting an implement assess whether its characteristics are in line with those of the machine
	Oil level low in transmission	Restore the oil level (→ p. 213)
	Oil pressure too low	Consult an authorised workshop.
	Hydraulic pump damaged	Consult an authorised workshop.
	Priority valve damaged	Consult an authorised workshop.
	Relief valve damaged on auxiliary spool valve controlling external ports	Consult an authorised workshop.
Spool valve safety valve trips with arms fully raised (1)	Position sensor not adjusted properly	Consult an authorised workshop.
The implement fails to maintain the set depth in draft control mode (1)	Electronic draft control sensitivity not adjusted properly	Consult an authorised workshop.
The 'draft control' mode is not working (1)	Draft sensor not adjusted properly	Consult an authorised workshop.
The 'position control' mode is not working (1)	Position sensor not adjusted properly	Consult an authorised workshop.
	Position control potentiometer not adjusted properly	Consult an authorised workshop.

(1) For machines with draft control hydraulic lift system only.

Table 8.7: Clutch, brake and steering units problems

Problem	Causes	Solution
Insufficient braking action and excessive brake pedal travel	Air in the hydraulic circuit.	Consult an authorised workshop
	Brake pump(s) damaged or worn	Consult an authorised workshop.
	Oil level low	Restore the oil level (→ p. 215)

Problem	Causes	Solution
The steering wheel is hard to turn	Oil pressure too low	Consult an authorised workshop.
	Hydraulic pump damaged	Consult an authorised workshop.
	Power steering defective	Consult an authorised workshop.
	Seat not in correct position	Secure the seat. Clean any debris off the rotation plate
The steering wheel does not steer the machine accurately	The reversal mini-switch is not completely activated	Consult an authorised workshop.
	Air in the hydraulic circuit.	Consult an authorised workshop.
	The steering cylinder seals are worn	Consult an authorised workshop.
	Hoses not securely connected	Consult an authorised workshop.
The machine does not steer at all	Clearances in the steering components (steering bar, pins, steering joints)	Consult an authorised workshop.
	Oil pressure too low	Consult an authorised workshop.
	Hydraulic pump damaged	Consult an authorised workshop.
	Power steering defective	Consult an authorised workshop.
	Oil level low in front transmission	Restore the oil level (→ p. 213)
Difficulty applying the parking brake	The reversal mini-switch is blocked in intermediate position.	Consult an authorised workshop.
	Presence of rust or dirt in the control mechanisms.	Remove the dirt and grease the mechanisms
When the machine is off, it cannot be moved with the parking brake disengaged	The control cable is not sliding correctly in the sheath.	Lubricate the cable
	“Superbrake” device is active	- Deactivate the device (→ p. 112)

Table 8.8: Electrical system problems

Problem	Causes	Solution
No power in electrical circuit.	Main fuse damaged	Replace the fuse (→ p. 247)
	Battery flat	Recharge or replace the battery
	Battery terminals oxidised/ disconnected	Clean the terminals and smear with grease to prevent oxidation
	Battery cut-off switch in OFF position	Battery cut-off switch in ON position
	Electrical circuit breakdown	Consult an authorised workshop.

Table 8.9: Cab unit problems

Problem	Causes	Solution
The cab heating system does not work	Engine coolant level too low.	Restore the correct level of engine coolant (→ p. 212)
	Air-conditioning control device damaged	Consult an authorised workshop.
	Electric fan breakdown	Replace the fuse
Consult an authorised workshop.		
The air conditioning system is not working	Cab protection circuit fuses blown	Replace the fuse (→ p. 247)
	Air-conditioning system condenser dirty	Clean the condenser (→ p. 206)
	Air-conditioning system compressor breakdown	Consult an authorised workshop.
	Electric fans breakdown or blocked.	Consult an authorised workshop.
	Air-conditioning system coolant gas too low	Consult an authorised workshop.



09

INFORMATION REGARDING REPLACEMENTS

09.1. PART REPLACEMENT INSTRUCTIONS

- Before performing any maintenance on the machine, engage all the safety devices provided and assess whether you need to inform other personnel working with you or nearby.

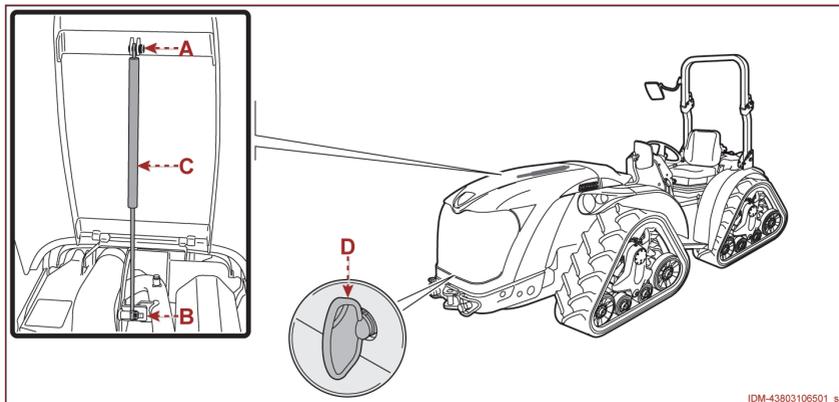


ATTENTION

Unless explicitly instructed otherwise, perform all maintenance with the engine switched off, parking brake engaged, and with the ignition key removed and kept safe by the operator. Personnel authorized to perform these interventions must implement all measures necessary to ensure the safety of all persons involved, and must comply with all applicable legislation on safety at work.

- Replace worn parts only with original spare parts. The manufacturer accepts no responsibility for injury or damage caused by the use of non-original spare parts or unauthorized repairs that may affect safety requirements. Follow the instructions given in the spare parts catalogue when ordering spare parts.

09.2. GAS SPRING REPLACEMENT

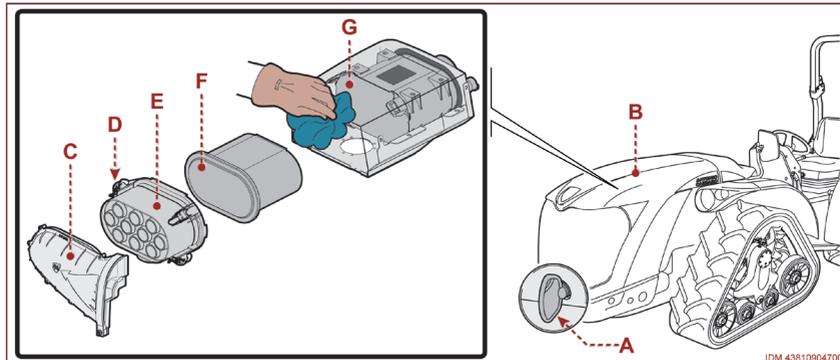


Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 3\ Open the bonnet with the key **(D)**.
- 4\ Lock the bonnet in the open position with a safety rod.
- 5\ Take out the stop ring and remove the pin **(A)**.
- 6\ Unscrew the nut **(B)**.
- 7\ Replace the gas spring **(C)** with a new one.
- 8\ Tighten the nut **(B)**.
- 9\ Insert the pin **(A)** and block it with the stop ring.
- 10\ Remove the safety rod and check that the bonnet remains in the open position.
- 11\ Shut the bonnet when the operation is concluded.

09.3. REPLACING THE ENGINE AIR FILTER (TYPE A)

Proceed as indicated to perform this operation.



- 1\ Stop the machine in safe conditions.
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 3\ Open the bonnet (B) with the key (A).
- 4\ Take out the duct (C)
- 5\ Open the hooks (D) and remove the cover (E).
- 6\ Take out the cartridge (F).
- 7\ Clean the internal part of the filter container (G) with a damp cloth to remove dust residue.
- 8\ Change the cartridge (F).
- 9\ Fit the cover (E) and secure it with the hooks (D).
- 10\ Reassemble the duct (C)
- 11\ Shut the bonnet when the operation is concluded.

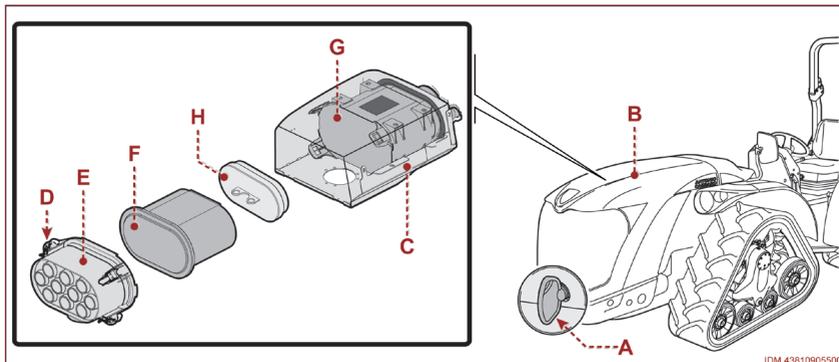


ATTENTION

Wear the eye protections and the mask to prevent the danger generated by dusts that can come into contact with the eyes and respiratory tract.

09.4. REPLACING THE ENGINE AIR FILTER (TYPE B)

Proceed as indicated to perform this operation.



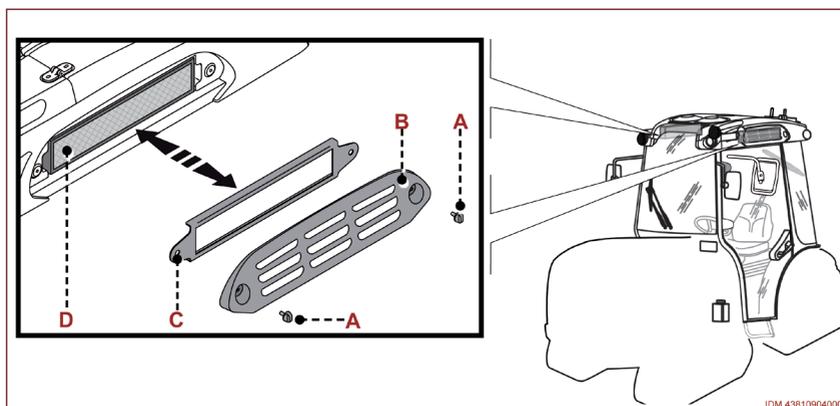
- 1\ Stop the machine in safe conditions.
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 3\ Open the bonnet **(B)** with the key **(A)**.
- 4\ Open the door **(C)**
- 5\ Open the hooks **(D)** and remove the cover **(E)**.
 - Slightly raise the filter unit, for easier opening of the hooks at the bottom.
- 6\ Take out the cartridge **(F)**.
- 7\ Take out the safety cartridge **(H)**.
 - **To facilitate removal of the cartridge (H), pull it and at the same time rotate it slightly upward.**
- 8\ Fit the new filter cartridge **(H)**.
- 9\ Fit the new filter cartridge **(F)**.
- 10\ Fit the cover **(E)** and secure it with the hooks **(D)**.
 - Slightly raise the filter unit, for easier closing of the hooks at the bottom.
- 11\ Insert the filter unit in place.
- 12\ Close the door **(C)**.
- 13\ Shut the bonnet when the operation is concluded.



ATTENTION

Wear the eye protections and the mask to prevent the danger generated by dusts that can come into contact with the eyes and respiratory tract.

09.5. REPLACING THE CAB AIR FILTER



Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 10).
- 2\ Unscrew the knobs **(A)**.
- 3\ Remove the guard **(B)** and the bracket **(C)**.
- 4\ Take out the filter **(D)** and replace it.

IMPORTANT Check that the arrow on the filter faces towards the inside of the cab.

- 5\ Reassemble the bracket **(C)** and the guard **(B)**.
- 6\ Screw on the knobs **(A)**.
- 7\ Repeat the operation on the other side.

IMPORTANT Do not dispose of polluting materials in the environment. Dispose of all such materials in compliance with applicable legislation.

09.6. CHANGING THE BATTERY

The battery used for the machine has been expressly designed for the type of housing provided and it is equipped with special safety devices.

If the battery has to be replaced, before buying it, apply to an authorised workshop for information on the size and performance of the new battery.

It is therefore recommended to have the job done at an authorised workshop.

09.7. REPLACING THE TRACKS



ATTENTION

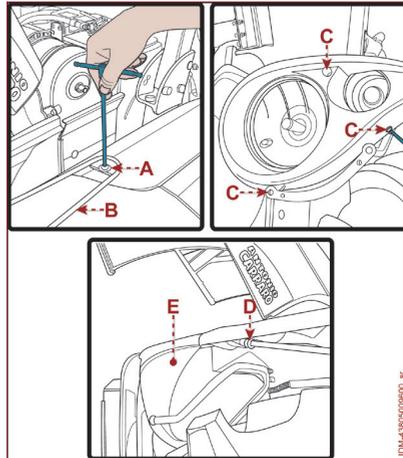
Track replacement is an operation that can lead to risks, also considering the total weight of the machine.

- To avoid risks (even serious ones), it is recommended to have the operation carried out by expert personnel, able to do the job correctly and safely.

09.8. REPLACING LIGHT BULBS (FRONT)

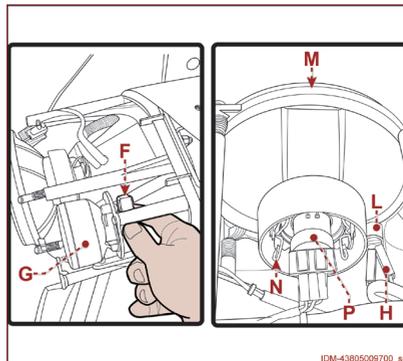
Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Undo the screws **(A)** and remove the protection grid **(B)** (if present).
- 3\ Undo the screws **(C)**.
- 4\ Undo the screw **(D)** and remove the support **(E)**.



09.8.1. Direction indicator lights

- 5\ Disconnect the connector **(F)**.
- 6\ Turn the bulb holder **(G)** and extract it.
- 7\ Remove the bulb and replace with a new one of identical rating.
- 8\ Insert the bulb holder **(G)** and turn it to block it.
- 9\ Connect the connector **(F)**.



09.8.2. Side lights

- 10\ Disconnect the connector **(H)**.
- 11\ Take out the bulb holder **(L)** and replace the bulb with a new one of identical rating.
- 12\ Reinsert the bulb holder **(L)**.
- 13\ Connect the connector **(H)**.

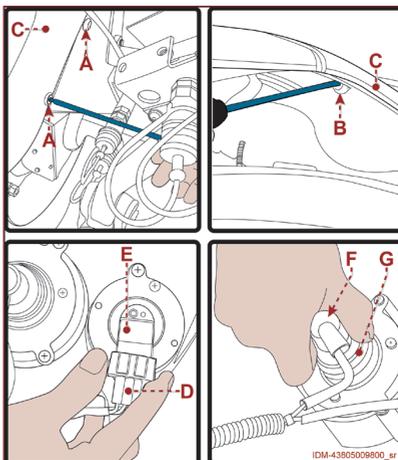
09.8.3. Low and full beam lights

- 14\ Disconnect the connector.
- 15\ Remove the protection **(M)**.
- 16\ Release the spring **(N)**.
- 17\ Take out the bulb holder **(P)** and replace the bulb with a new one of identical rating.

09.9. REPLACING INDICATOR LIGHT BULBS (REAR)

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Unscrew the screws **(A-B)** to remove the light cluster **(C)**.



09.9.1. Direction indicator lights

- 3\ Disconnect the connector **(D)**.
- 4\ Turn the bulb holder **(E)** and extract it.
- 5\ Remove the bulb and replace with a new one of identical rating.
- 6\ Insert the bulb holder **(E)** and turn it to block it.
- 7\ Connect the connector **(D)**.

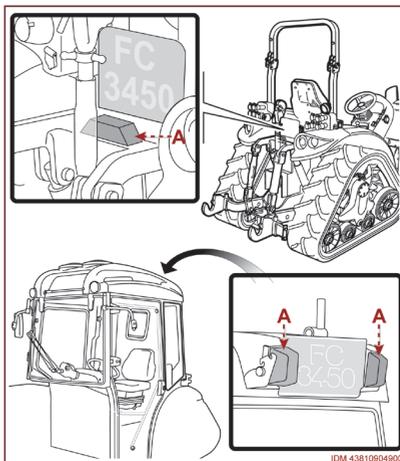
09.9.2. Position lights and stop lights

- 8\ Disconnect the connector **(F)**.

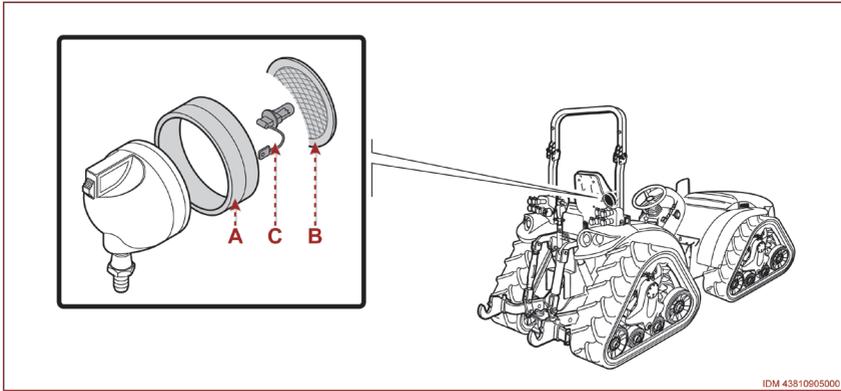
- 9\ Turn the bulb holder **(G)** and extract it.
- 10\ Remove the bulb and replace with a new one of identical rating.
- 11\ Insert the bulb holder **(G)** and turn it to block it.
- 12\ Connect the connector **(F)**.

09.9.3. Licence plate light

- 13\ Stop the machine in safe conditions.
- 14\ Undo the screws and remove the protection **(H)**.
- 15\ Remove the bulb and replace with a new one of identical rating.
- 16\ Reassemble the protection **(H)** and tighten the screws.



09.10. REPLACING THE WORK LIGHT LAMP



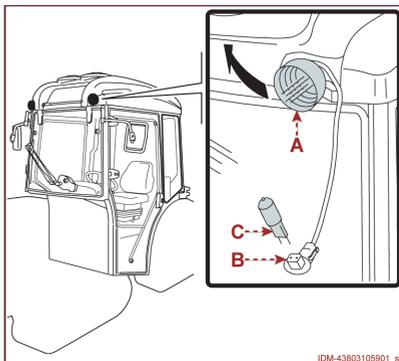
Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Take off the gasket **(A)** and remove the protection **(B)**.
- 3\ Remove the bulb **(C)** and replace with a new one of identical rating.
- 4\ Refit the protection **(B)** and secure it with the gasket **(A)**.

09.11. REPLACING THE CAB WORK LIGHT LAMP (WITH BULB)

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Turn the lamp **(A)**, turn the bulb-holder **(B)** and extract it.
- 3\ Remove the bulb **(C)** and replace with a new one of identical rating.
- 4\ Insert the bulb holder **(B)** and turn it to block it.



09.12. REPLACING THE CAB WORK LIGHT LAMP (WITH LED)

Lamp replacement is not contemplated.
If it has to be replaced, contact an authorised workshop.

09.13. REPLACING THE CAB COURTESY LIGHT (WITH LED)

Lamp replacement is not contemplated.
If it has to be replaced, contact an authorised workshop.

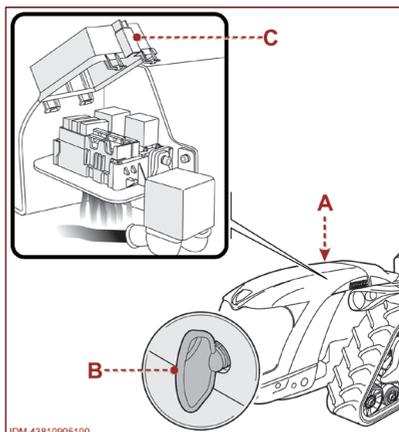
09.14. REPLACEMENT OF FUSES AND RELAYS

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 10).
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.

Engine compartment

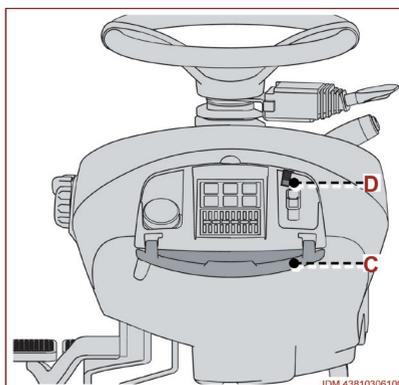
- 3\ Open the bonnet (A) with the key (B).
- 4\ Take out the protection (C) and replace the fuse with one of identical rating.
- 5\ Reassemble the protection (C).
- 6\ Shut the bonnet when finished.



Dashboard

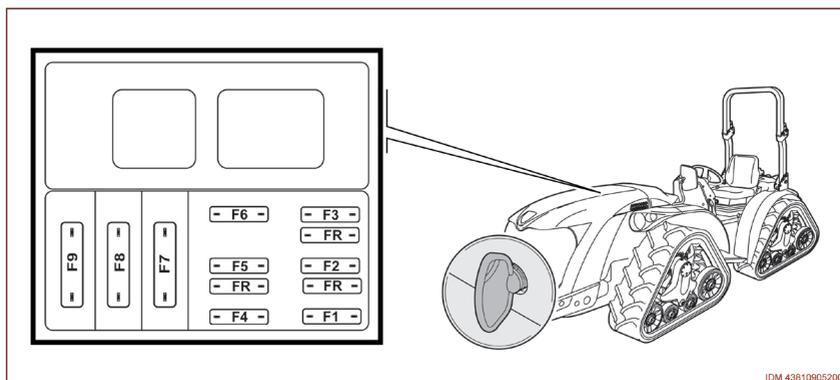
- 7\ Open the cover (C).
- 8\ Replace the fuse with one of identical rating using the appropriate extractor (D).
- 9\ Close the cover (C) on completing this operation.

IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.



09.14.1. Engine compartment fuses

The illustration represents the position of the fuses and the list gives their functionality.



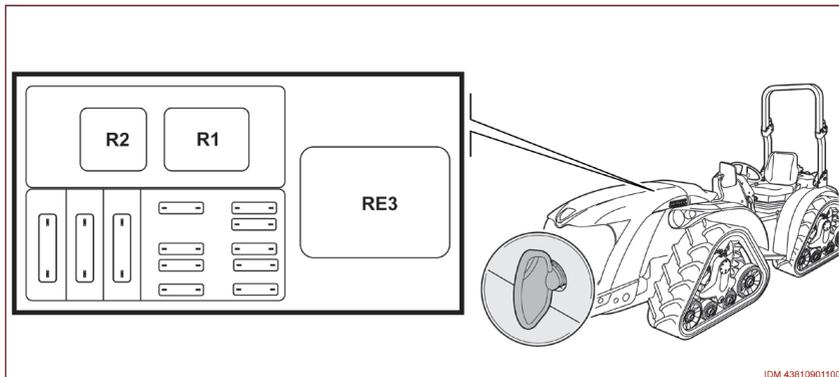
IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

Table 9.2: description of fuses in engine compartment

Fuse	Function	Value [A]
F1	Start motor	25
F2	starting ECU1	5
F3	main relay	20
F4	alternator	5
F5	Vcc key ECU1	5
	CAN tool	
F6	Start relay	5
F7	intake heater	80
F8	cab supply	50
	supply start motor	
F9	machine supply	50
FR	spare fuses	

09.14.2. Engine compartment relays

The illustration represents the position of the relays and the list gives their functionality.



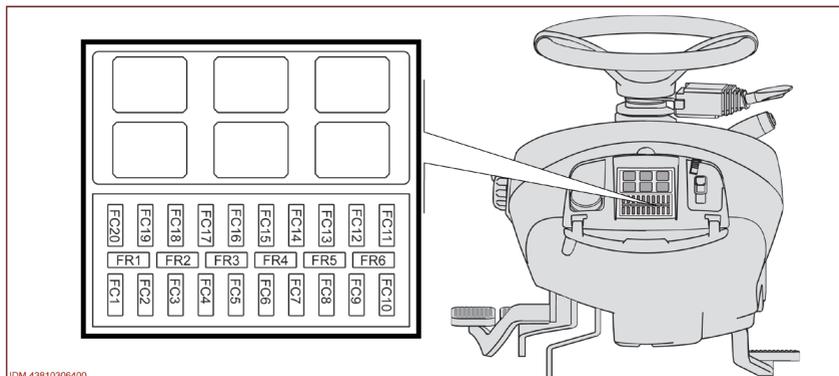
IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

Table 9.3: description of relays in engine compartment

Relay	Function	Value [A]
R1	Start relay	70
R2	main relay	30/40
RE3	Intake heater relay	100

09.14.3. Dashboard fuses

The illustration represents the position of the fuses and the list gives their functionality.



IDM 43810306400

IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

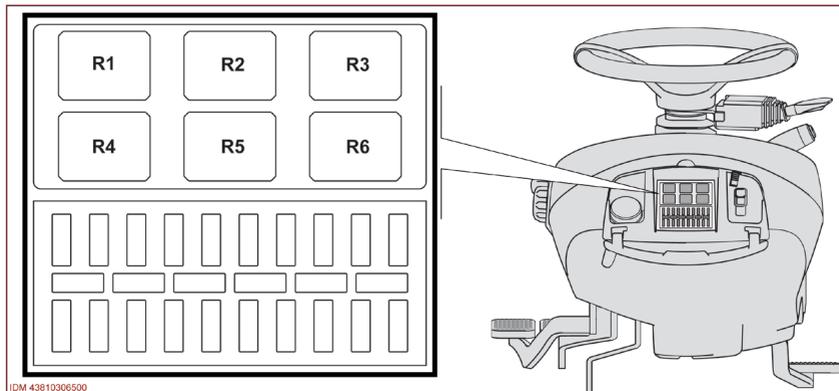
Table 9.4: description of fuses in dashboard

Position	Description	Value [A]
FC1	Acoustic warning	10
FC2	Rear kit	15
	Joystick	
FC3	Cab electric supply circuit	5
	3-pole socket (signal line)	
	CAN service tool connection	
FC4	Work light	10
	Rotating light	
	Pneumatic seat	
FC5	Engine users (engine ECU)	10
FC6	Engine accessories (ac pump, engine sensors)	10
	Superbrake, Trailer brakes (supplied by key)	
	Optional HI-LO	

Position	Description	Value [A]
FC7	Multifunction instrument (supplied by key)	5
	Speed sensor on transmission	
FC8	Robotic controls options	10
	Main ECU supply on dashboard (supplied by key)	
FC9	Optional Cleanfix	15
	Emergency lights	
FC10	Front lock solenoid valves	15
	Rear lock solenoid valves	
FC11	Main ECU supply on dashboard (supplied by battery)	10
	Sensor on gas lever	
FC12	Front right, rear left position lights	5
FC13	Front left, rear right position lights	5
FC14	Right low beam light	7.5
FC15	Left high beam light	7.5
FC16	Right low beam light	7.5
FC17	Left low beam light	7.5
FC18	Brake lights	10
FC19	Direction indicators	15
	Front kit	
	Superbrake, Trailer brakes (supplied by battery)	
	Multifunction instrument (supplied by battery)	
FC20	3-pole socket (power line)	25
FR	Spare fuses	-

09.14.4. Dashboard relays

The illustration represents the position of the relays and the list gives their functionality.



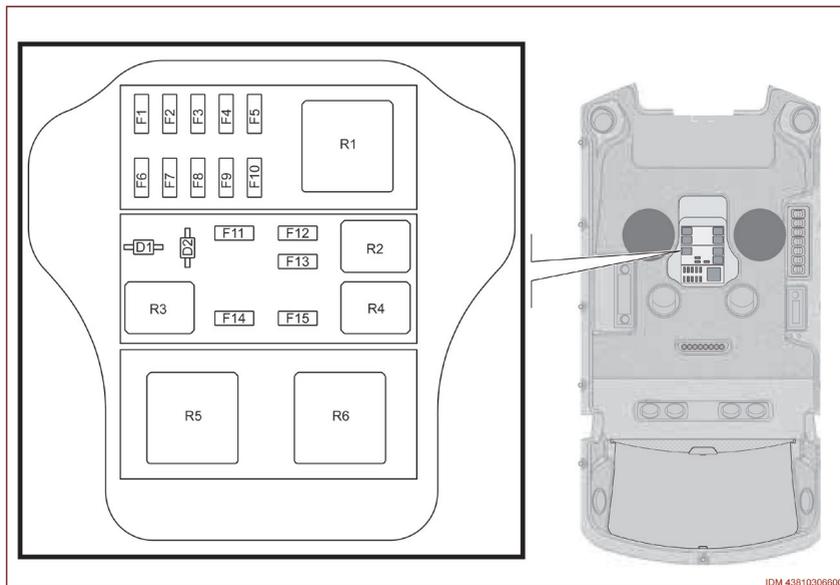
IMPORTANT If they have to be replaced, contact an authorised workshop.

Table 9.5: description of relays in dashboard

Position	Description	Value [A]
R1	Full beam	20
R2	Start	20
R3	Main ECU on dashboard	20
R4	Low beam	20
R5	Brake lights	20
R6	3-pole socket	20

09.14.5. Cab fuses

The illustration represents the position of the fuses and the list gives their functionality.



IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

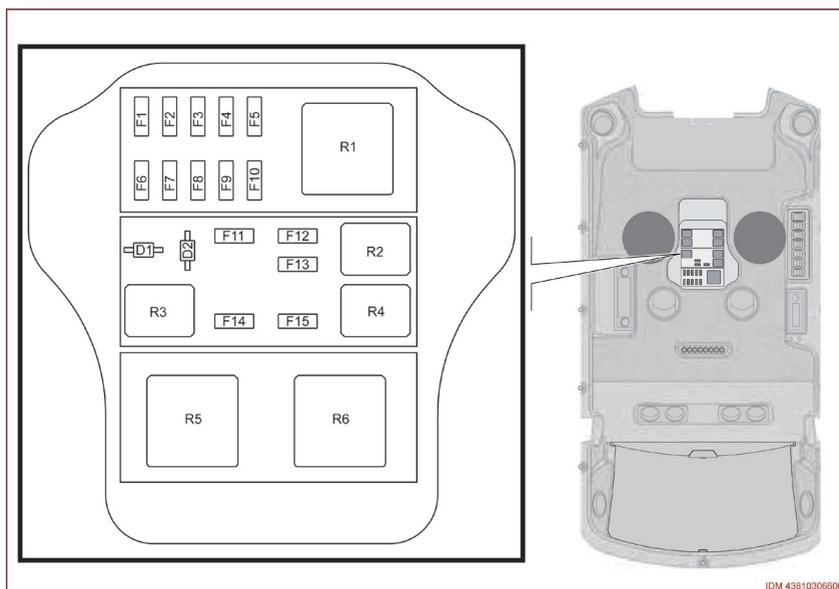
Table 9.6: description of cab fuses

Position	Description	Value [A]
F1	Single-pole socket	10
F2	Rotating lamp	10
F3	Rear work lights (optional)	10
F4	Rear work lights	10
F5	Ventilation fan	30
F6	Front and rear windscreen	15
F7	3-pole socket (supplied by key)	10
F8	Front work lights (optional)	10

Position	Description	Value [A]
F9	Front work lights	10
F10	Condenser fans	30
F11	Conditioner compressor	5
F12	Conditioner control unit	5
F13	Radio (supplied by key)	5
F14	3-pole socket (direct)	10
F15	Radio + Ceiling light (direct)	5

09.14.6. Cab relays

The illustration represents the position of the relays and the list gives their functionality.



IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

Table 9.7: description of cab relays

Position	Description	Value [A]
R1	Power supply	70
R2	Pressurisation low pressure warning light	30
R3	Condenser fan	30
R4	Conditioned air compressor	30
R5	Rear windscreen wiper	-
R6	Front windscreen wiper	-
D1	Front diode	-
D2	Rear diode	-

09.15. DISPOSAL AND SCRAPPING OF THE MACHINE

This operation must be performed by expert operators, in compliance with the legislation in force on safety in the workplace. Do not disperse non-biodegradable material, lubricant oils and non-ferrous parts (rubber, PVC, plastic, etc.) into the environment. Observe the legislation in force on waste disposal.



10

TECHNICAL DATA TABLES

10.1. TECHNICAL DATA TABLES INTRODUCTION

IMPORTANT For ease of research and consultation, the technical data have been divided into several tables.

- The tables show all the generic and specific technical data (in particular pertaining to the vehicle approval).

10.2. KERB WEIGHT

The tables show the vehicle kerb weight values (without equipment and ballasts) with the tank full of fuel and a driver of 75 kg.

Table 10.1: Kerb weight

Description	Unit of measurement	Value	
		With safety arch	With cab
Total empty weight	Kg	3200	3380
Front axle empty weight	Kg	1870	1330
Rear axle empty weight	Kg	2000	1380

10.3. MACHINE MAXIMUM PERMISSIBLE WEIGHT

The tables show the maximum weight values (including kerb weight) of the vehicle.

Table 10.2: Maximum permissible weight (with gearbox for speeds up to 30 km/h).

Weight on front axle (kg)	Weight on rear axle (kg)	Total weight (kg)
2450	2800	4800

Table 10.3: Maximum permissible weight (with gearbox for speeds up to 40 km/h).

Weight on front axle (kg)	Weight on rear axle (kg)	Total weight (kg)
2450	2800	4050

10.6. BALLASTS

The table indicates the type and quantity of ballasts that can be installed to make the machine more stable and improve its traction capacity if a very heavy implement is being used.

- For the installation procedure, see the respective paragraph. (→ p. 189)

Table 10.4: Ballasts weight

Type	Unit weight	Number of ballasts (for each side)	Ballast quantity (maximum total weight on the machine)
Side ballasts	22 kg	3	6 (132 kg)

- **ALWAYS** remove the ballasts when disconnecting the interchangeable tools in order to maintain machine stability unaltered. The machine with ballasts installed, but without interchangeable tools, becomes unstable (braking and steering), with premature wear of the tracks and consumption of more fuel.

IMPORTANT To keep the machine balanced, install the same amount of ballasts on both sides.

Table 10.5: Ballasts weight (optional)

Type	Unit weight	Ballast quantity (maximum total weight on the machine)
Rear ballast (under gearbox)	160 kg	1 (160 kg)

10.7. DIMENSIONS

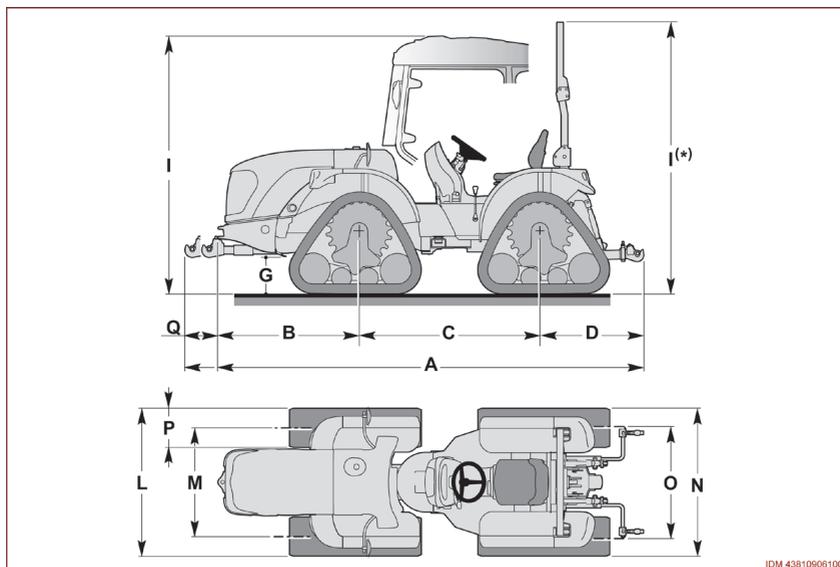


Table 10.6: Machine dimensions

Size	Unit of measurement	Value
A	mm	3635 to 4080
B	mm	1255
C	mm	1605
D	mm	775 to 925
G	mm	325
I	mm	2280
I (*)	mm	2400
L	mm	1300
L (**)	mm	1400
M	mm	950
M (**)	mm	1050
N	mm	1300

Size	Unit of measurement	Value
N (**)	mm	1400
O	mm	950
O (**)	mm	1050
P	mm	350
Q	mm	295

(*) With safety arch

(**) With track external width 1400 mm

10.8. ENGINE, TRANSMISSION AND SYSTEMS FEATURES

Table 10.7: Technical data

Description and features	Unit of measurement	Value
Motorisation		
Internal combustion engine KUBOTA - model V3800-CR-T-EU3		
Exhaust gas emission class Phase 3B.		
4 stroke diesel supply		
Common Rail direct injection with turbocharging		
Electronic injection control		
Forced cooling by balancer counterweights		
Number of cylinders		4
Displacement	cm ³	3769
Power	kW (CV)	72.1 (98)
Rotation speed (max)	rpm	2400
Maximum torque (at 1500 rpm)	Nm	330
Specific consumption	g/kWh (g/hph)	225 (165)
Ratio between engine speed and engine PTO speed		0.974
Fuel tank capacity (with safety arch)	l	41
Fuel tank capacity (with cab)	l	47
Cooling circuit capacity	l	10
Transmission parts		
Four-track drive transmission and axles with final drives		
Synchronized mechanical transmission with 32 speeds (16 forward - 16 reverse)		
Electro-hydraulically engaged differential lock		
Electro-hydraulically controlled front-wheel drive disengagement system		
Single plate dry clutch, hydraulically operated via pedal		

Description and features	Unit of measurement	Value
- Front transmission housing oil capacity + Front reduction gear oil capacity (right + left)	l	14.5
- Gearbox oil capacity + Rear reduction gear oil capacity (right + left)	l	24.5
Steering unit		
Hydraulic, with two single-acting cylinders, on central joint		
Minimum turning radius (inside) (with 2 drive tracks)	mm	2130
Minimum turning radius (outside) (with 2 drive tracks)	mm	3510
Braking system		
Hydraulic service brake, with discs in oil bath and control pedal, acting on all tracks		
Mechanical parking brake, with lever control, acting on the central transmission		
Mechanical parking brake, with lever control, acting on the central transmission and with auxiliary control acting on all the tracks (Only for machines equipped with the "Superbrake" device).		
Hydraulic system		
Cartridge oil filter with filtering rating	μ	25
Hydraulic gear pump (unit 1)		
Displacement	cm ³	11
Flow rate (at 2400 rpm)	l/min	25.7
Hydraulic gear pump (unit 2) (standard)		
Displacement	cm ³	19
Flow rate (at 2400 rpm)	l/min	44.4
Hydraulic gear pump (unit 2) (optional)		
Displacement	cm ³	22.5
Flow rate (at 2400 rpm)	l/min	52.6
Hydraulic couplers with quick coupling for single-acting, double-acting and double acting with float system services		
Maximum working pressure	bar	160
Electrical system		
Power supply voltage.	V	12

Description and features	Unit of measurement	Value
Alternator	V - A	12 - 90
Starter motor	kW	3.2
"Maintenance free" battery		
Capacity	Ah	75
Hill-starting ability when cold (EN) CCA (-18°C)	A	975
Warning signals and road lights		
Low beam light bulb (asymmetrical headlights) (B)	W	55
High beam light bulb (asymmetrical headlights) (B)	W	60
Sidelights bulb (front) (D)	W	4
Lamp, direction indicators (F)	W	21
Side lights lamp (rear) (G)	W	5
Rear brake lights lamp (G)	W	21
Number plate light lamp (E)	W	5
Work light lamp, with bulb (with cab) (C)	W	50
Work light lamp, with LED (with cab)		
Lamp, work light (with safety arch) (A)	W	55
Courtesy light lamp, with LED (with cab).		
Lift unit		
Hydraulic power lifting unit with three-point hitch (category 1-2). (→ p. 259)		

- (A)** Halogen bulbs H3
(B) Halogen bulbs H4
(C) Halogen bulbs 886
(D) Bulbs with wedge base (transparent)
(E) Double-ended bulbs
(F) Single-ended bulbs (amber)
(G) Single-ended bulbs (transparent)

10.9. CARDAN SHAFT

During work it is opportune to keep the rotation axes of the power take-off and of the driven shaft of the implement as aligned as possible.

- The table shows the values of the admitted joint angles of the cardan shaft connected with the machine.

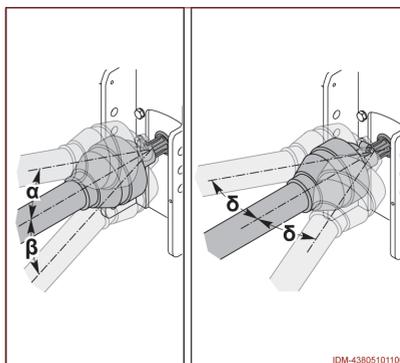


Table 10.8: Cardan shaft joint angles

Description	Maximum value
Vertical deviation (top) (α)	45°
Vertical deviation (bottom) (β)	35°
Side deviation (with power lift unit installed) (δ)	30°
Side deviation (without power lift unit installed) (δ)	50°

IMPORTANT The maximum admitted joint angles of the Cardan shaft are given in the manual issued by its manufacturer.

10.10. PTO FEATURES

PTO features for mechanical transmission

- PTO with independent electrohydraulic control Clockwise rotation (Looking at the splined shaft from the rear of the vehicle).
- PTO synchronized with the gearbox Clockwise rotation with forward drive, anticlockwise with reverse drive (Looking at the splined shaft from the rear of the vehicle).
- splined shaft ASAE 1' 3/8

The tables show the values of the number of revolutions of the PTO (independent or synchronized with the gearbox).

IMPORTANT Before connecting an interchangeable implement, refer to the manual to verify the required speed and select it for the vehicle.

Table 10.9: Rear PTO rpm

Version	PTO independent from gearbox		PTO synchronized with the gearbox	
	PTO rpm	Engine rpm	PTO rpm for each turn of the tracks hub	PTD rpm for each metre driven
540 power take-off	540	2250	3.24	1.662
540 E PTO	540	1650	4.418	2.266
1000 Power take-off (if applicable)	1000	2366	5.707	2.927

10.11. NOISE LEVEL

The tables show the noise levels detected with the machine in determined operating conditions and in the configurations indicated.

- The values have been detected in compliance with the Directives and the Laws in force regarding this subject.

Table 10.10: Noise level

Description		Measured value	
		With safety arch	With cab
Noise level emission in the environment ⁽¹⁾	Sound level with machine at standstill	81.5 dB(A)	81 dB(A)
	Noise level with machine in motion	78 dB(A)	78 dB(A)
Noise level at driver's seat ⁽²⁾	Sound level at driver's ear	84 dB(A)	78 dB(A)

⁽¹⁾ The values have been detected in compliance with Directive EU 1322/2014.

⁽²⁾ The values have been detected in compliance with Directive EU 1322/2014.



ATTENTION

If the machine is to be operated for lengthy and unbroken periods, wear personal protective devices (ear defenders) to limit the level of noise audible when seated in the driving position.

10.12. VIBRATIONS TRANSMITTED TO THE DRIVER

The vibration level, detected at the driver's seat, is always 1.25 m/s² or less.

- The value was detected in compliance with Directive EU 1322/2014, and subsequent amendments, and can vary depending on the driver's weight.

10.13. MACHINE SPEED

Table 10.11: Machine speed (with engine at 2400 rpm) (with gearbox for speeds up to 30 km/h).

Drive	Speed (km/h)							
	Forward drive				Reverse drive			
	"Reduced" transmission ratio		"Normal" transmission ratio		"Reduced" transmission ratio		"Normal" transmission ratio	
	Low speed	High speed	Low speed	High speed	Low speed	High speed	Low speed	High speed
1°	0.5	1.6	3.2	10.1	0.5	1.5	3.0	9.3
2°	0.8	2.7	5.2	16.3	0.8	2.5	4.8	15.1
3°	1.1	3.5	6.8	21.4	1.0	3.2	6.3	19.8
4°	1.5	4.8	9.4	29.3	1.4	4.4	8.7	27.1

Table 10.12: Machine speed (with engine at 2500 rpm) (with gearbox for speeds up to 40 km/h).

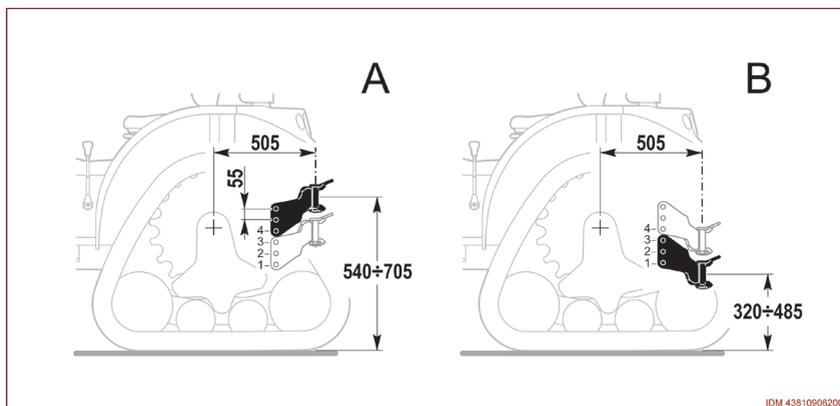
Drive	Speed (km/h)							
	Forward drive				Reverse drive			
	"Reduced" transmission ratio		"Normal" transmission ratio		"Reduced" transmission ratio		"Normal" transmission ratio	
	Low speed	High speed	Low speed	High speed	Low speed	High speed	Low speed	High speed
1°	0.6	2.0	3.9	12.4	0.6	1.9	3.6	11.4
2°	1.0	3.3	6.4	20.0	1.0	3.0	5.9	18.5
3°	1.4	4.3	8.4	26.2	1.3	3.9	7.7	24.2
4°	1.9	5.9	11.5	36.0	1.7	5.4	10.6	33.3

10.14. REAR TOWING HOOK

10.14.1. Fixed Hook

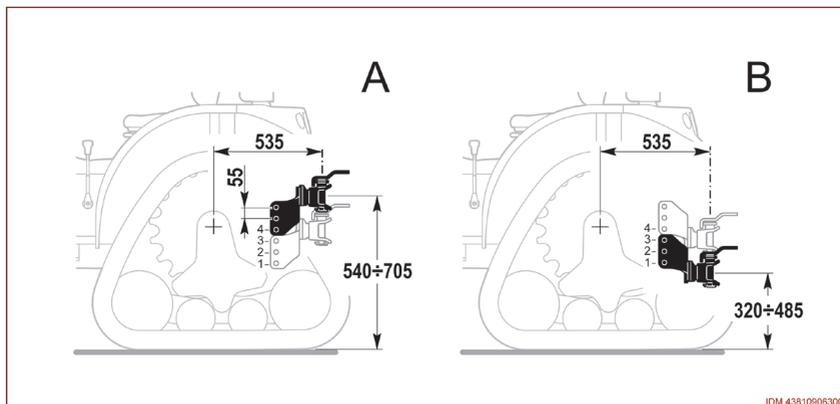
EU approval: e3*2015/208*2015 /208NS*6001*00

ITALY approval: DGM*6*0041GA



10.14.2. Rotating Hook

EU approval: e13*2015/208*2015/208ND*00006*00



10.15. MAXIMUM VERTICAL LOAD PROVIDED FOR ON THE COUPLING HOOK

Before hitching a towed interchangeable tool, it is necessary to consult the table of maximum vertical loads and maximum drawbar pull provided for on the coupling hook of the machine.

- DO NOT hitch interchangeable tools to the machine (carried or towed) with technical and operational features that are not compatible with those supplied by the machine (power, mass, effort at the towing hook, category, number of PTO revs, etc.).

Fixed Hook

EU approval: e3*2015/208*2015 /208NS*6001*00

ITALY approval: DGM*6*0041GA

Rotating Hook

EU approval: e13*2015/208*2015/208ND*00006*00

Table 10.13: Maximum vertical load (with gearbox for speeds up to 30 km/h).

Version	Value N (kg)	
	Without ballasts	With ballasts
With safety arch	9123 to 10791 (930 to 1100)	8437 to 9614 (860 to 980)
With cab	10260 to 10448 (1025 to 1065)	9270 (945)

Table 10.14: Maximum vertical load (with gearbox for speeds up to 40 km/h).

Version	Value N (kg)	
	Without ballasts	With ballasts
With safety arch	8339 (850)	6769 (690)
With cab	6573 (670)	5003 (510)

10.16. MAXIMUM DRAWBAR PULL PROVIDED FOR AT THE COUPLING HOOK

Fixed Hook (Italy approval)

Type of approval: DGM*6*0041 GA

Type of coupling eyes: ISO 5692-3:2011

Table 10.17: Maximum drawbar pull

	Type of braking	Type of approval- ITALY
		Value N (kg)
With Arch / With Cab	towed tool not braked	19620 (2000)
	towed tool with independent braking (mechanical)	49050 (5000)
	towed tool with inertia braking	58860 (6000)
	Towed tool with single line hydraulic braking (CUNA)	58860 (6000)
	Towed tool with single line hydraulic braking (EU)	-
	Towed tool with double line hydraulic braking	-

Fixed Hook (EU approval)

Type of approval: e3*2015/208*2015 /208NS*6001*00

Type of coupling eyes: ISO 5692-3:2011

Table 10.18: Maximum drawbar pull

	Type of braking	Type of approval· EU
		Value N (kg)
With Arch / With Cab	towed tool not braked	19620 (2000)
	towed tool with independent braking (mechanical)	-
	towed tool with inertia braking	58860 (6000)
	Towed tool with single line hydraulic braking (CUNA)	-
	Towed tool with single line hydraulic braking (EU)	58860 (6000)
	Towed tool with double line hydraulic braking	-

Rotating Hook (EU approval)

Type of approval: e13*2015/208*2015/208ND*00006*00

Type of coupling eyes: IISO 5692-2:2002; ISO 8755:2001; (ISO 1102:2001 combined only with ISO 6489-2:2002 form A not automatic)

Table 10.18: Maximum drawbar pull

	Type of braking	Type of approval- EU
		Value N (kg)
With Arch / With Cab	towed tool not braked	19620 (2000)
	towed tool with independent braking (mechanical)	-
	towed tool with inertia braking	58860 (6000)
	Towed tool with single line hydraulic braking (CUNA)	-
	Towed tool with single line hydraulic braking (EU)	78480 (8000)
	Towed tool with double line hydraulic braking	-



11

ATTACHMENTS

11.1. FRONT HARNESS WIRING DIAGRAM

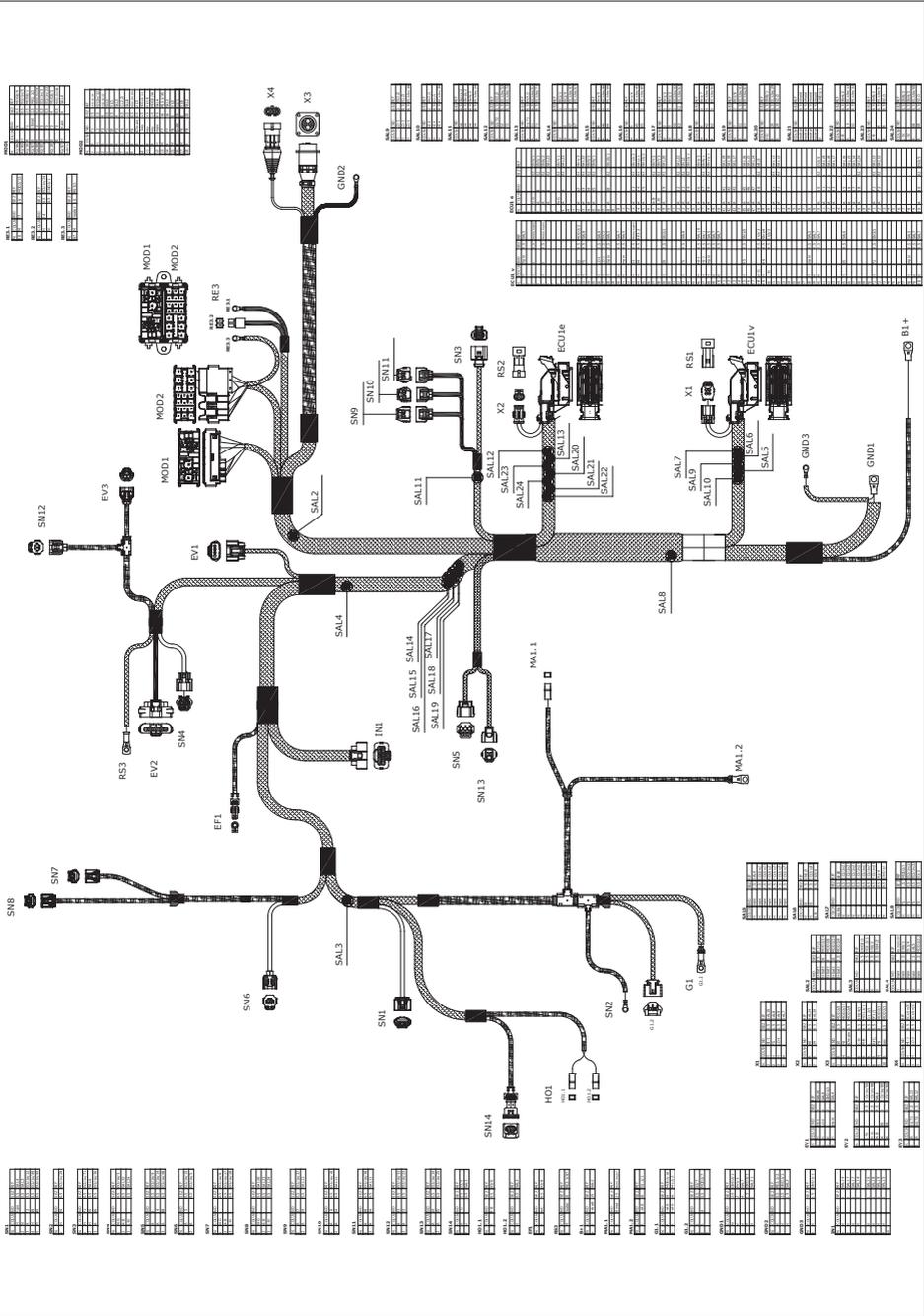


Table: electrical system components

Ref.	Description
B+1	Battery
ECU1 e	Engine electronic control unit
ECU1 v	Engine electronic control unit
EF1	Conditioned air compressor electroclutch
EV1	EGR solenoid valve
EV2	Air intake butterfly valve
EV3	Fuel supply pump
G1.1	Alternator
G1.2	Alternator
GND1	Ground
GND2	Ground
GND3	Ground
HO1.1	Horn
HO1.2	Horn
IN1	Injectors
MA1.1	Starter motor
MA1.2	Starter motor
MOD1	Relay holder
MOD2	Fuse holder
RE3.1	Pre-heat resistance relay
RE3.2	Pre-heat resistance relay
RE3.3	Pre-heat resistance relay

Ref.	Description
RE3	Pre-heat resistance relay
SAL	Welding
SN1	Air flow sensor
SN10	Temperature sensor DPF (T1)
SN11	Temperature sensor DPF (T2)
SN12	Fuel temperature sensor
SN13	Air temperature sensor
SN14	Clogged air filter sensor
SN2	Engine oil pressure sensor
SN3	Differential pressure sensor DPF
SN4	Common-Rail pressure sensor
SN5	Air pressure sensor
SN6	Coolant temperature indicator sensor
SN7	Cam shaft sensor
SN8	Crankshaft sensor
SN9	Temperature sensor DPF (T0)
X1	CAN service tool connection
X2	Resistance 1000k
X3	Engine/machine line
X4	CAN bus line

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
N	Black
R	Red
S	Pink
V	Green
Z	Purple

11.2. INSTRUMENT PANEL WIRING DIAGRAM

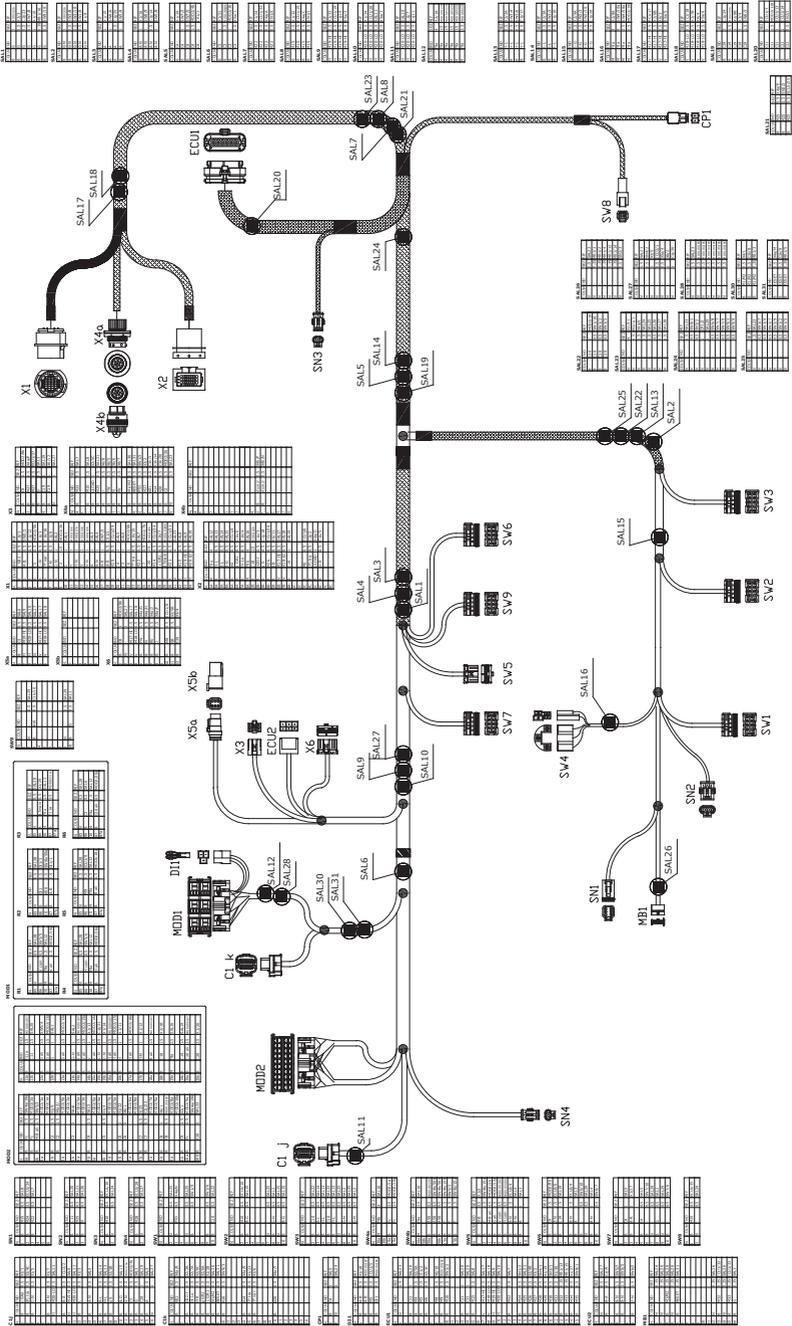


Table: electrical system components

Ref.	Description
C1j	Multi-function instrument
C1k	Multi-function instrument
CP1	Pneumatic seat connection
DI1	Anti cutoff diodes
ECU1	Main ECU (instrument panel)
ECU2	Flasher unit
MB1	RH pushbutton panel
MOD1	Relay box
MOD2	Fuse box
SN1	Accelerator pedal sensor
SN2	Accelerator potentiometer sensor
SN3	Clutch sensor
SN4	Park brake sensor
SW1	Rear PTO engagement switch
SW2	Traction disengagement switch
SW3	Block engagement switch (front / rear)
SW4a	Starter board
SW4b	Starter board

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Ref.	Description
SW5	Lights switch
SW6	Hazard lights switch.
SW7	Rotating light switch:
SW8	Dead man sensor connection (OPC)
SW9	Stationary PTO switch
X1	Connection with central/rear line
X2	Connection with central/rear line
X3	Front kit connection
X4a	Joystick line connector
X4b	Joystick line connector
X5a	CAN service tool connection
X5b	CAN service tool connection
X6	Control with robotic controls line

11.3. REAR HARNESS WIRING DIAGRAM

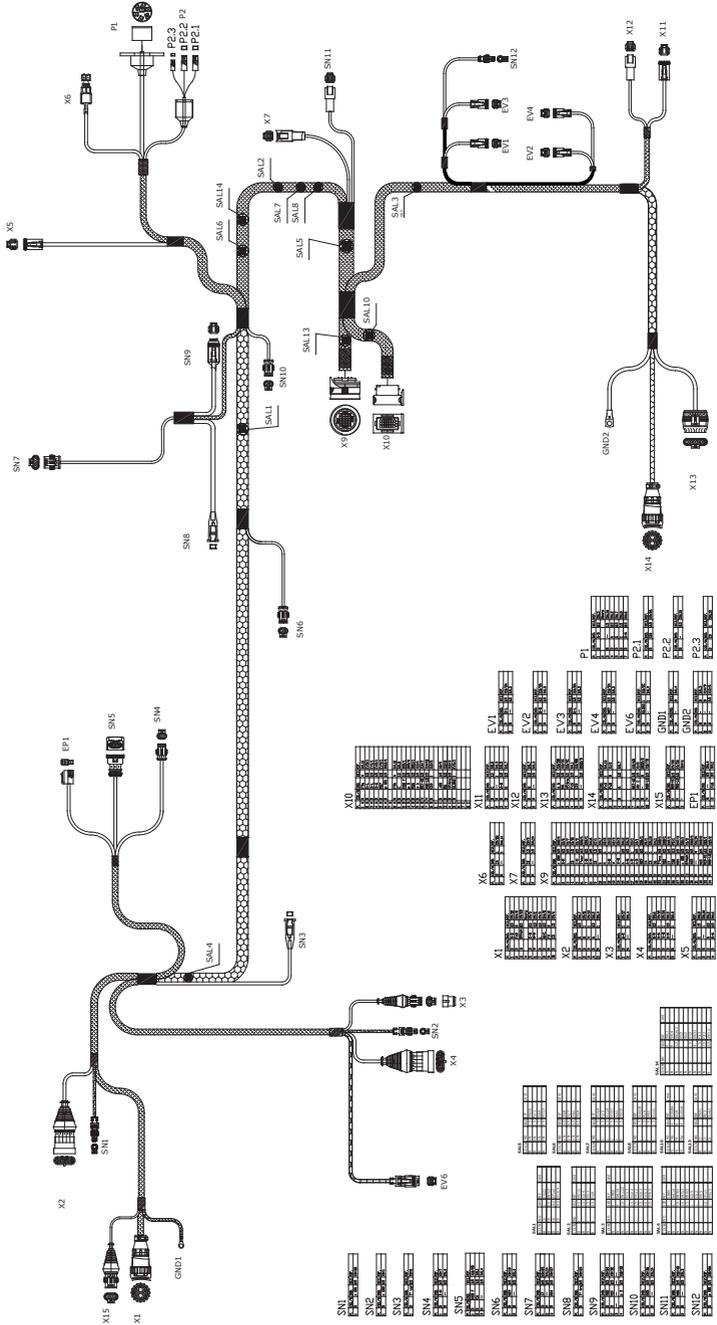


Table: electrical system components

Ref.	Description
EP1	Fuel supply pump
EV4	Rear PTO solenoid valve
EV3	Rear lock solenoid valve
EV1	Front lock solenoid valve
EV2	Traction disengagement solenoid valve
EV6	Unloading solenoid valve
GND1	Ground
GND2	Ground
P1	Trailer socket
P2.1	3-pole socket
P2.2	3-pole socket
P2.3	3-pole socket
SN7	Speed sensor
SN11	PTO 540 / 540 E sensor
SN10	Brakes sensor
SN12	Oil pressure sensor (unit 1)
SN9	Suspension pressure sensor
SN5	Water separator filter sensor
SN4	Fuel level sensor
SN1	Oil filter clogging sensor (unit 1)
SN2	Oil filter clogging sensor (unit 2)
SN3	Variator oil temperature sensor
SN8	Transmission oil temperature sensor
SN6	Shuttle lever
X5	RH rear light connector

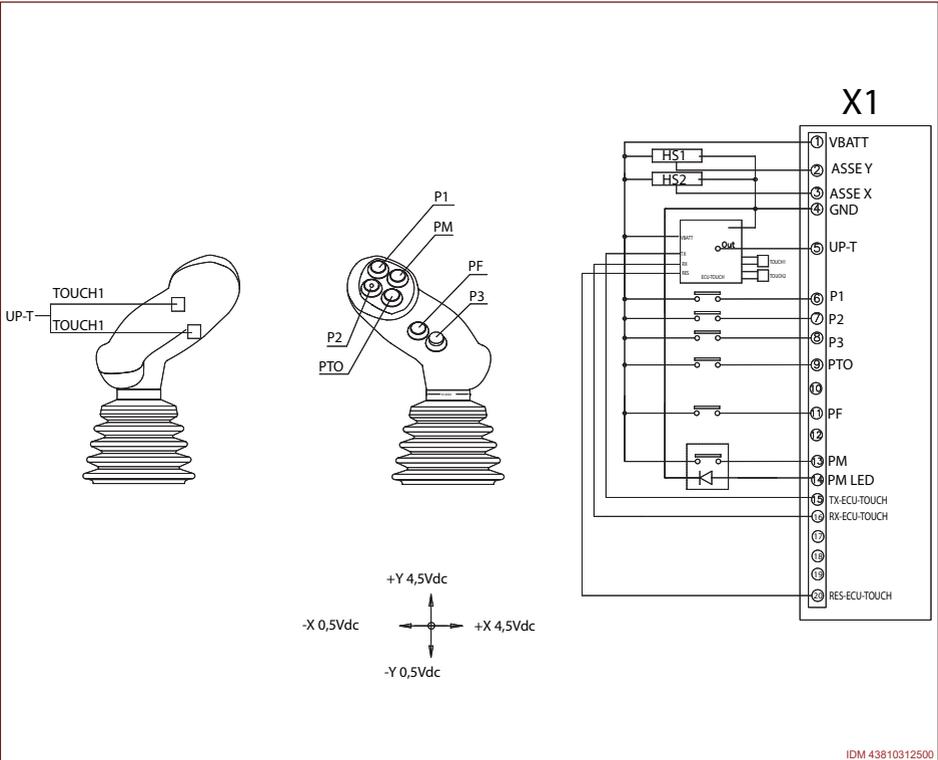
Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Ref.	Description
X6	Work light connector
X9	Dashboard line connector
X10	Dashboard line connector
X1	Engine line connector
X2	Connector for connection to RH front light
X4	Connector for connection to LH front light
X3	Rotating light connector
X14	Cab power line connector
X7	Rear kit connector
X12	Licence plate light connector
X11	LH rear light connector
X13	Superbrake line connector
X15	CAN bus line

11.4. "JOYSTICK" WIRING DIAGRAMS

11.4.1. Joystick Line



IDM 43810312500

Table: electrical system components

Ref.	Description
X1	Armrest line connector
PM	Hydraulic motor
PTO	Power take-off
P1	Red double-acting hydraulic couplings
	Orange double-acting hydraulic couplings
P2	Third hydraulic point (if present)
	Yellow single-acting hydraulic coupling
	Mini-couplings

Ref.	Description
P3	Hydraulic suspension accumulator
	Electric control.
PF	Rear power lift float
UP-T	Dead man sensitive areas
GND	Ground
VBATT	Power supply
Y AXIS	Joystick forward/reverse movement
X AXIS	Joystick left/right movement
TX	Service connectors
RX	
RES	

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
N	Black
R	Red
S	Pink
V	Green
Z	Purple

Table: electrical system components

Ref.	Description
A102	Unit EC-AUXO
A103	ECU
A109	J1 connector
A110	Button interface connector
B116	Gas lever
S101	ON/OFF button
S105	Continuous flow button

Ref.	Description
S106	Front power lift enabling button
S111	Joystick
X100.p	Connectors interface
X104	Diagnostick
P120	Green LED
X117.s	Potentiometers panel
X118.s	5v Relay

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
N	Black
R	Red
S	Pink
V	Green
Z	Purple

11.4.3. Machine Line

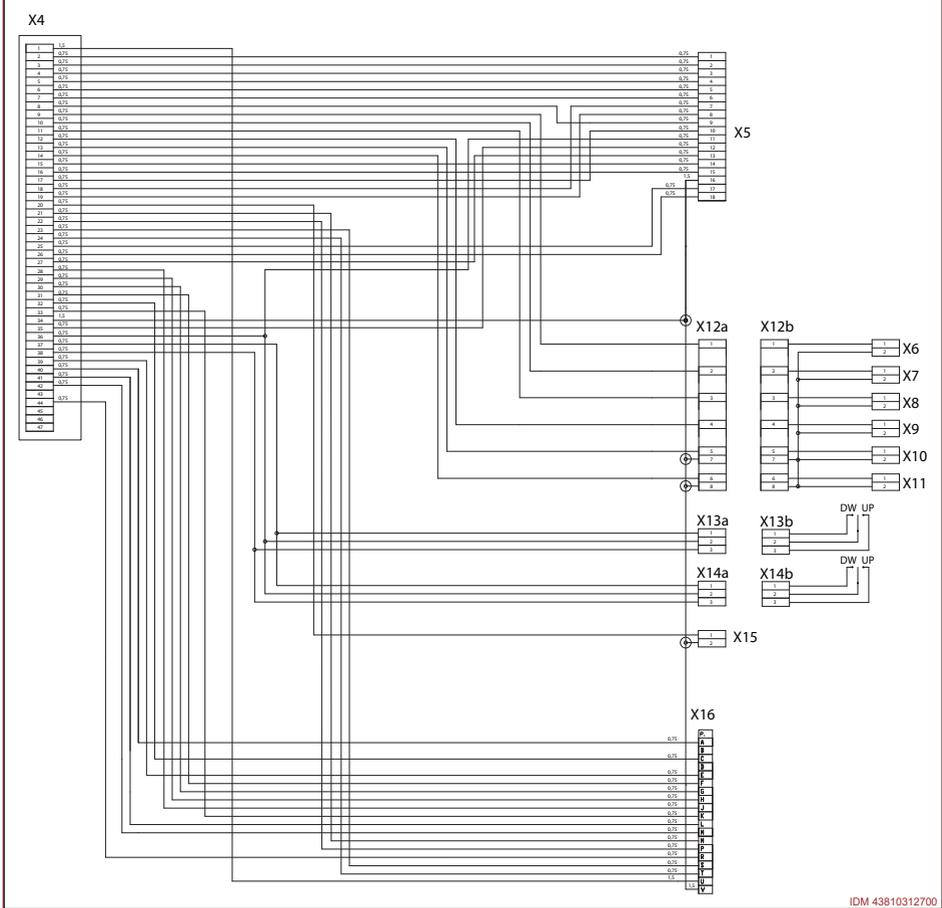


Table: electrical system components

Ref.	Description
X4	Armrest line connector
X5	Valve box line connector
X6	Mini-couplings
X7	Mini-couplings
X8	Mini-couplings
X9	Mini-couplings
X10	Suspension delivery
X11	Suspension unload
X12a	Vertical tie-rod block line connector

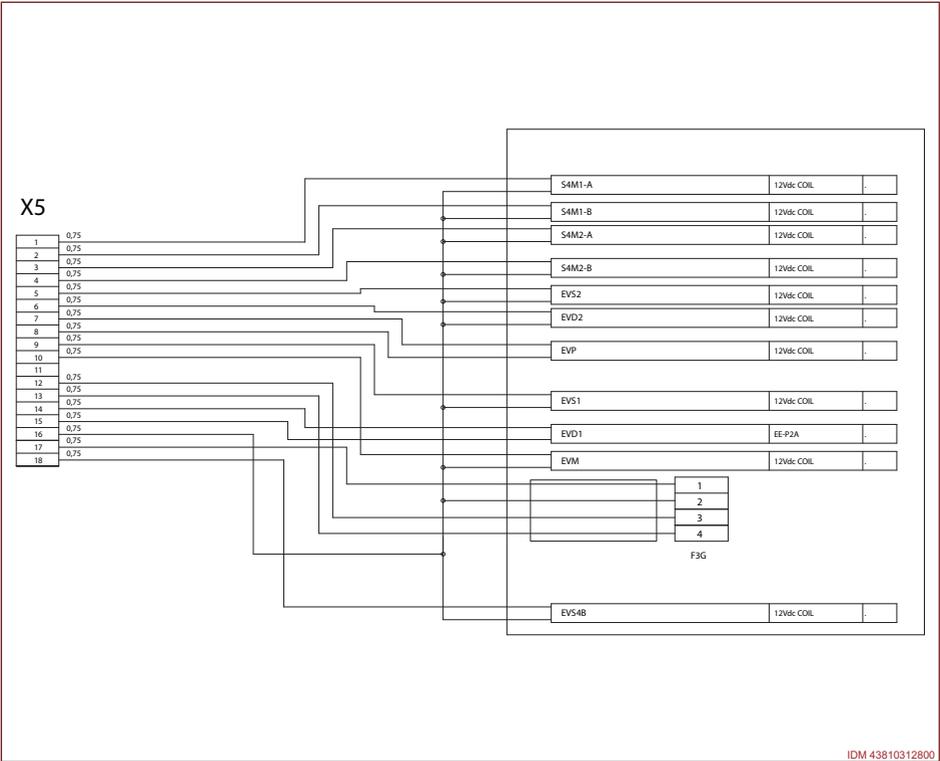
Ref.	Description
X12b	Machine line connector
X13a	Rear power lift external button connector (left side)
X13b	Machine line connector
X14a	Rear power lift external button connector (right side)
X14b	Machine line connector
X15	Electric socket connector
X16	Machine line connector

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
N	Black
R	Red
S	Pink
V	Green
Z	Purple

11.4.4. Valve Box Line



IDM 43810312800

Table: electrical system components

Ref.	Description
X5	Machine line connector
EVD1	Rear power lift solenoid valve (lowering)
S4M1-A	Orange double-acting coupling solenoid valve
S4M1-B	Orange double-acting coupling solenoid valve
EVS1	Rear power lift solenoid valve (raising)
EVD2	Single-acting coupling solenoid valve

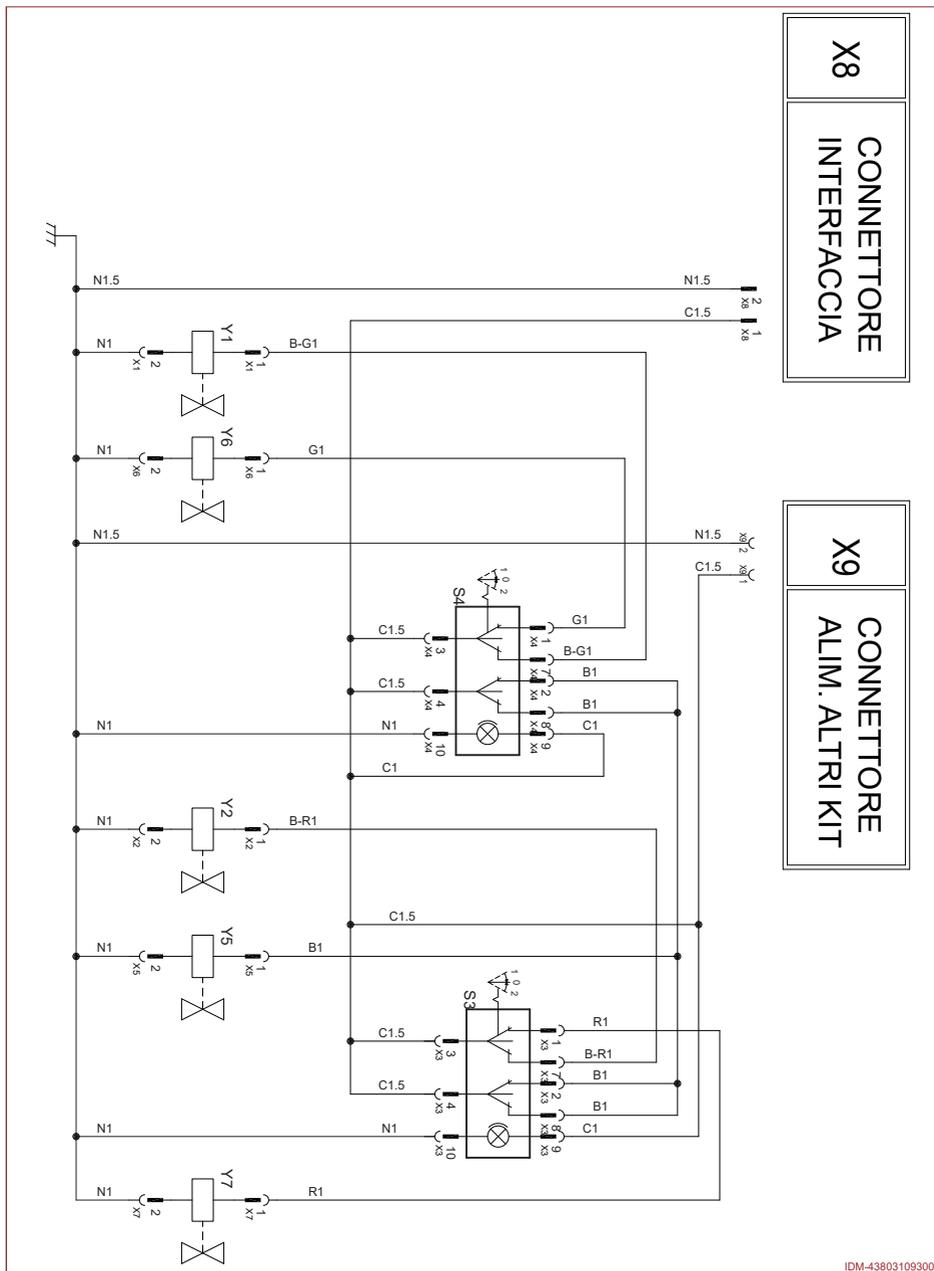
Ref.	Description
EVS2	Single-acting coupling solenoid valve
S4M2-1	Red float double-acting coupling solenoid valve
S4M2-2	Red float double-acting coupling solenoid valve
S4B	Double-acting coupling float solenoid valve
EVP	Proportional solenoid valve
EVM	On/off solenoid valve
F3G	Engine proportional solenoid valve

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
N	Black
R	Red
S	Pink
V	Green
Z	Purple

11.5. LIFTING ASSEMBLY WIRING DIAGRAM (WITH HYDRAULIC TIE-RODS)



IDM-43803109300

Table: electrical system components

Ref.	Description
S3	Vertical tie-rod switch
S4	Hydraulic top link switch
Y1	Hydraulic top link solenoid valve
Y2	Vertical arm solenoid valve
Y5	On/off solenoid valve

Ref.	Description
Y6	Hydraulic top link solenoid valve
Y7	Vertical arm solenoid valve
X8	Interface connector
X9	Connector supplying other kits

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
N	Black
R	Red
S	Pink
V	Green
Z	Purple

Table: electrical system components

Ref.	Description
R6	Mini relay enabling starting
S4.1	Pressure switch 3/5bar
S4.2	Pressure switch 3/5bar
S7	Handbrake warning light microswitch
X1	Connection to instrument panel line
X2	Connection for ESC line

Ref.	Description
X3a	Valve extension connection
X3b	Control line connection
X5	SV cut-in
X8	Handbrake warning light line connection
X9	Ignition panel (connect on position 50)
X10	Connection with wire on 50

Table: Electric cables colour key

Code	Colour
A	Light blue
B	White
C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
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R	Red
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When ordering any spare part from
local ANTONIO CARRARO dealers,
always indicate:

The type and serial number of the machine.

These details are stamped
on the identification data plate (→ p. 50)

ONLY WHEN GENUINE SPARE PARTS ARE USED,
ANTONIO CARRARO S.P.A.
WILL RECOGNISE THE RIGHT TO THE GUARANTEE AND IT WILL BE
POSSIBLE
TO OBTAIN MAXIMUM MACHINE PERFORMANCE AND DURABILITY.

The factory works constantly to improve all its models.
We therefore ask you to understand if we reserve the right to introduce
modifications to the supply at any time regarding shape, equipment, and
technical features. It will therefore not be possible to claim rights on the
basis of the data, instructions and descriptions contained in this «Use and
Maintenance» manual.

Our AREA DEALER is always at your complete disposal
for any information or advice.



