



USE AND MAINTENANCE MANUAL

Translation of the "original instructions"

series
Tony

TR 10900

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.

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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 special tractor with a hybrid mechanical/hydrostatic transmission of the „**Tony**“ series

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.

The machines in the „Tony“ series introduce a new concept of transmission with Continuous Variation by Antonio Carraro, a real „change“ in mentality.

The essential features that make the „**Tony**“ an innovation in the sector of isodiametric hydrostatic tractors are:

- Hybrid mechanical/hydrostatic transmission
- Ease of use
- Electric reverser for any speed
- Programmable work parameters
- PTO directly from the engine
- Electronic management of the whole machine
- High comfort
- Greater operator safety

Preview recommendations

Operate the range shift with the machine in motion only to correct and adapt the range to changes in the working conditions.

Apply the **parking brake** ONLY in emergency conditions, NEVER while the vehicle is moving.

Let the machine warm up adequately before setting off!

If the machine is too cold, the electronic management system limits certain functions.

Always carry out scheduled **maintenance** to ensure high performance and maximum reliability.

Always consult the vehicle registration document before **changing tyres**; the maximum speed is electronically managed by dedicated control units.

If you have a cab with "**CATEGORY 4**" certification, before each use, carefully read the respective attachment to this use and maintenance manual.

If you have a cab with "**FOPS**" certification, before each use, carefully read the paragraph "Safety warnings regarding use in forestry".

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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. 11)**
- **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.

NOTE 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 wheels 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 wheels 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'.

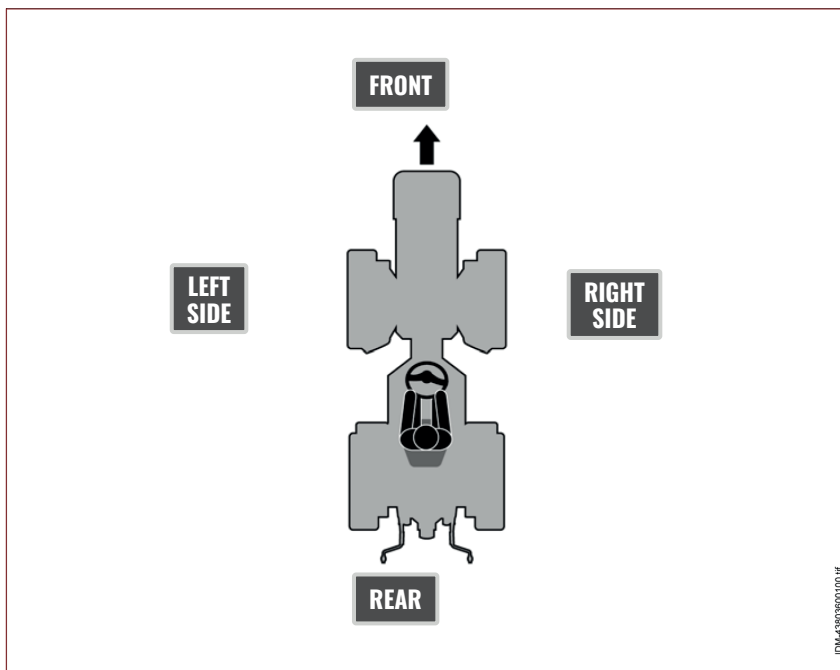
Danger area

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 instructions for proper tyre maintenance
- 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.

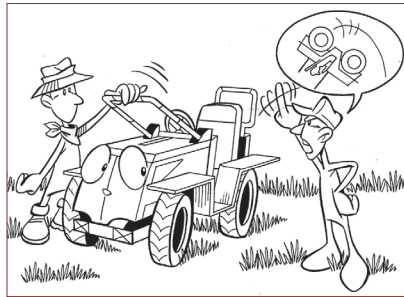
One factor that may affect safety is often the environmental condition when working, where it is not always possible to foresee all risks.

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.

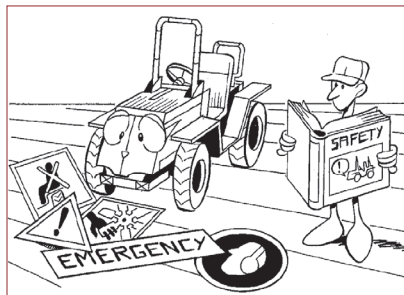


- It has arisen from the Evaluation of Risks that the machine has been equipped with all devices that make safety intrinsic.
- The incorrect or 'negligent' use of the machine by the driver can cause accidents (even fatal) despite the adopted safety solutions.
- Use the machine ONLY with original safety 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.**

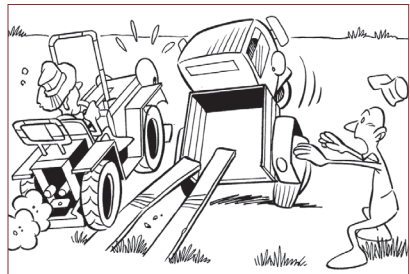
02.3. SAFETY WARNINGS FOR THE EMPLOYER

- 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.**

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

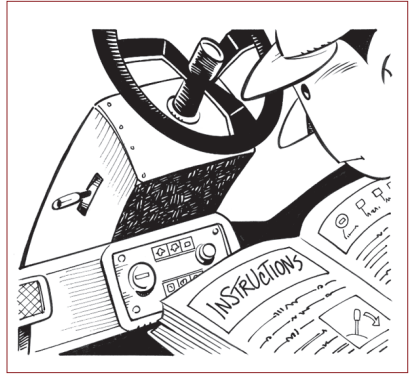
The safety warnings highlight the attention and behaviour that the driver of the machine should adopt, in order to interact in safe conditions.

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

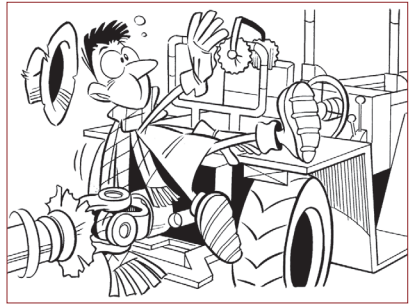
One factor that may affect safety is often the environmental condition when working, where it is not always possible to foresee all risks.

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.
- 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.

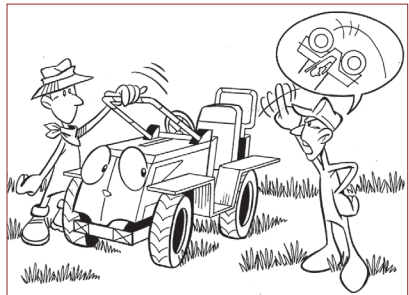


- Use the PPE indicated in the 'User instructions' and those envisaged by the laws in force at work.
- Always keep the first-aid kit at hand in the driver's seat (without being an obstruction) and keep it filled.
- **Failure to observe the information provided can result in risks to the safety and health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

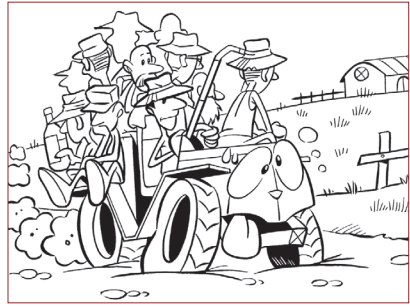


02.5.1. Incorrect uses

- **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, the pressure and wear of tyres.
- 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 tyres 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.
- Consult your vehicle registration document, when changing tyres, so as to identify which tyres can be fitted according to the type approval.
- **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 equipped with tyres ballasted with liquids during road circulation.
- **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 tyres (intact chassis, without damage, etc.) and that the track 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 protective structure 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. 52), 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 tyres 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. 52), 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.

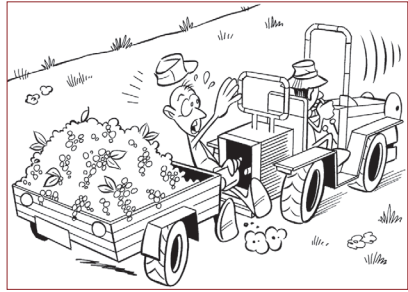


02.8. SAFETY WARNINGS FOR HITCHING AND DISCONNECTION OF TOOLS (CARRIED OR TOWED)

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. 57)
- 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. 298)
- 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.**

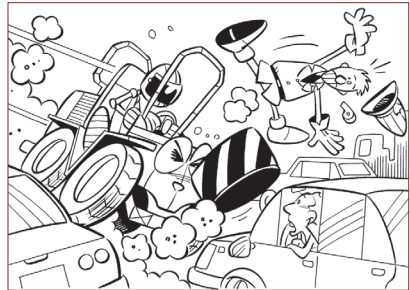
02.8.1. Incorrect uses

- **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

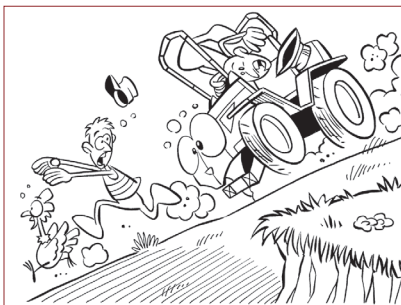
- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- DO NOT access the driver's seat from points different to those envisioned and indicated by the manufacturer in the 'User instructions'.
- DO NOT use the machine without 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.**

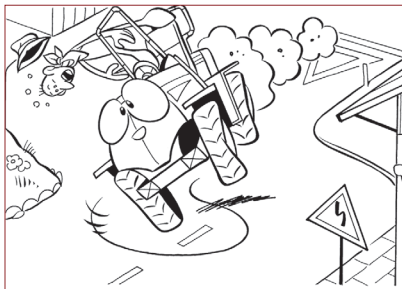
02.10.1. Incorrect uses

- **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. 52), 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.
- Have the machine ballasting carried out with the insertion of liquid in the tyres, ONLY by expert staff.
- During cold periods, to prevent the liquid inserted in the tyres freezing, insert specific antifreeze liquid.
- 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 tyres 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 INSTRUCTIONS FOR PROPER TYRE MAINTENANCE

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

- Changing and repairing tyres may entail risks, also in consideration of the overall weight of the machine.
- These jobs must be carried out by staff with recognized skills and knowledge, to operate properly and without risk.
- The staff must strictly comply with the instructions and the technical data of the manufacturer of the tyres and rims.
- The equipment needed to carry out this work must be compliant and be used by skilled personnel.
- Strictly observe the instructions for use provided by the manufacturer of the equipment.
- Have the work performed by tyre change and repair centres if you do not have the skills and equipment compliant with applicable laws.
- When changing tyres, make sure they are all properly seated on the rim.
- Incorrect tyre-rim pairing may involve risks (even serious ones) for people, due to a sudden, dangerous explosion.
- When the tyre is not properly seated, deflate it completely, lubricate the seat of the rim and inflate it to the correct pressure value.
- Observe the pressure values indicated in the instructions given by the tyre and rim manufacturer.
- Seating a tyre onto a rim at a higher pressure than is permissible can cause risks and jeopardize the job.
- Tyre pressure must be checked when the machine has NO additional weights and NO interchangeable equipment installed.
- Remove the tyres before doing any welding on the rims or flanges.
- The heat emitted by the welding system increases the pressure of the tyre with the risk of it suddenly and dangerously exploding.
- **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 install any flanges, tyres or rims that are damaged and not efficient.
- Do NOT do any work without observing the instructions given by the tyre and rim manufacturer.
- Do NOT use equipment for carrying out work on the wheels if you do not have the necessary skills for operating safely.
- Do NOT use any flammable products when working on the wheels (tyres and rims).
- Do NOT do any welding on the rims or flanges without having removed the tyres.
- Do NOT inflate tyres to values higher than those allowed.
- Do NOT do any work on the wheels (tyres and rims) if you do not have the skills and equipment compliant with applicable laws.
- Do NOT perform any work with non-compliant equipment and without the instructions for use.
- Do NOT strike the tyre to seat it onto the rim without having deflated it completely.
- Do NOT check the tyre pressure when the machine is equipped with additional weights or has interchangeable equipment installed.

02.17. 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.**

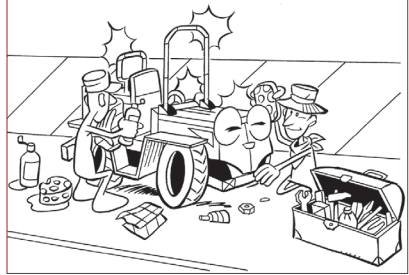
02.17.1. Incorrect uses

- **The listed prohibitions represent the most common incorrect uses. Non compliance can entail risks for personal health and safety.**
- Do not 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.

02.18. 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.



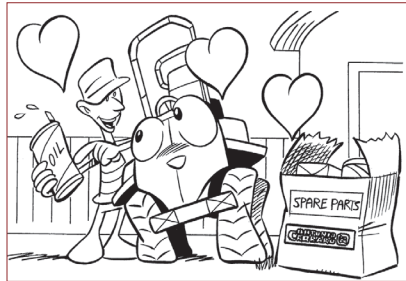
- Wear the PPE indicated in the 'User instructions' and/or on the machine and those envisioned by the laws in force at work.
- In searching for pressurised oil leaks, use suitable individual protection devices to avoid perforations of body parts.
- Before carrying out maintenance and adjustment interventions, 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.**

02.18.1. 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.

02.19. 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.*

02.20. WARNINGS ON RESIDUAL RISKS

Residual risk

The definition specifies “all risks that remain even though all safety and design solutions were adopted and incorporated during the design stage”.

- 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 tyres when the machine is in motion.

02.21. 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.

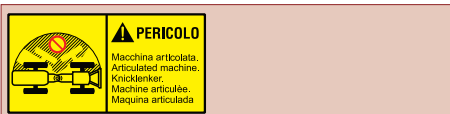


- D. Danger of falling and being run over:** never transport persons if suitable seats are not provided, in addition to the driver's seat, to protect their safety.

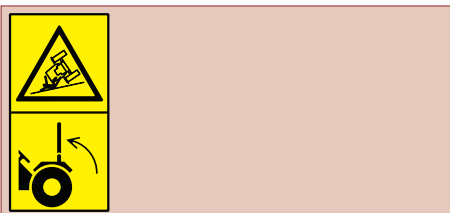


- **DO NOT climb on or off the machine if it is not stopped in safe conditions.**

- 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.



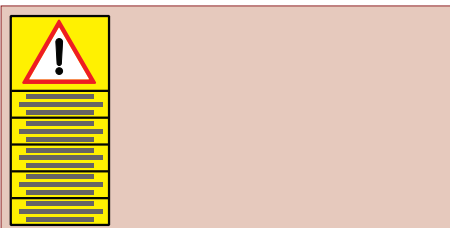
- G. Danger of crushing the body:** do not access the area with moving parts.



- 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.

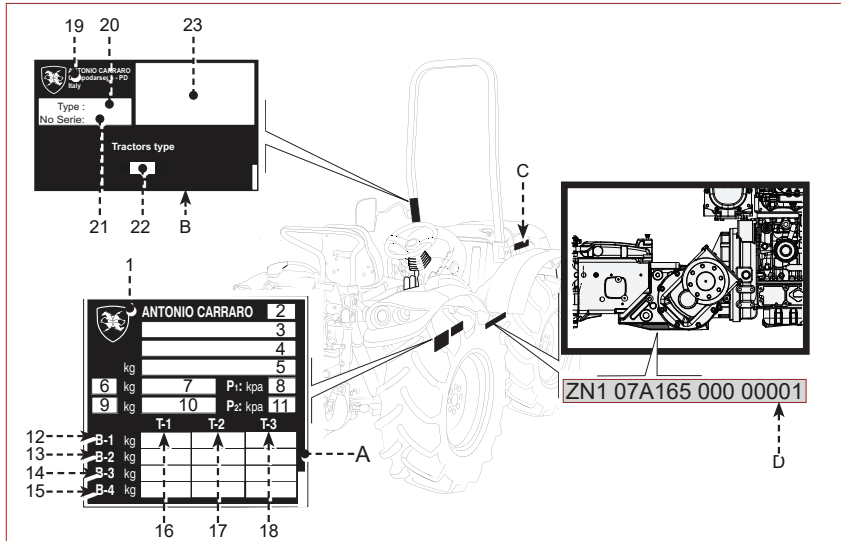


03

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.

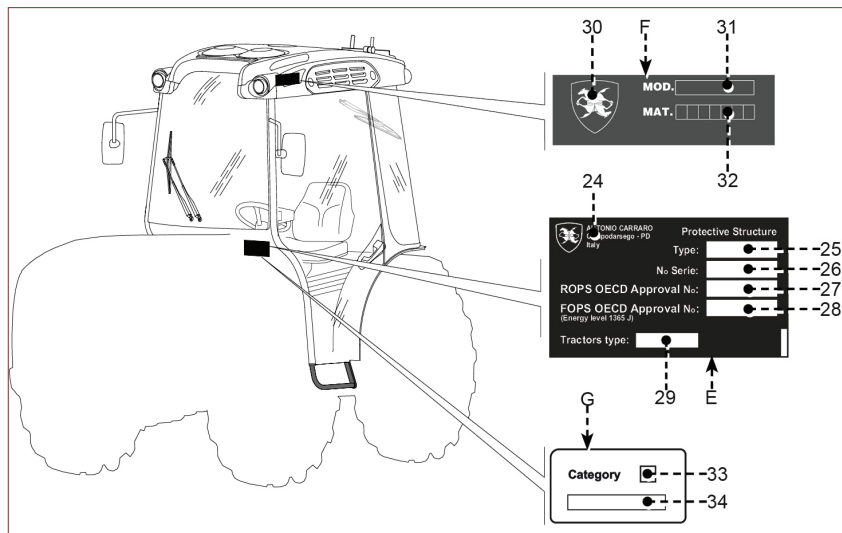
- N. Manufacturer and machine identification data plate
 1. Manufacturer identification.
 2. Machine category.
 3. EU type-approval number.
 4. Machine serial number (V.I.N.).
 5. Permissible mass: total.
 6. Front axle category.
 7. Permissible mass: front axle.
 8. Average front axle ground contact 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
 16. Draw-bar type.
 17. Draw-bar type.
 18. Draw-bar type.
0. Protective structure approval data plate (ROPS).

19. Manufacturer identification.
20. Type of structure.
21. Sticker progressive number.
22. Model of machine.
23. CE type-approval number.

P. Engine identification data plate.

IMPORTANT See engine user manual for engine identification data.

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



The list indicates the descriptions given in each individual plate.

R. Approval plate of cab with protective structure (ROPS).

24. Manufacturer identification.
25. Type of structure.
26. Sticker progressive number.
27. CE type-approval number.
28. Approval number (FOPS).
29. Model of machine.

S. Cab identification data plate.

30. Manufacturer identification.
31. Cab model.
32. Cab serial number.

T. **Cab identification data plate.**

33. Cab category.
34. Reference directive.

03.2. GENERAL DESCRIPTION OF THE MACHINE

- The "Tony TR" range of machines were designed and manufactured to satisfy the different needs of the market.
- The short width and small size, low centre of gravity and the minimum turning radius make the machine particularly suited for working with specialized crops, gardening work for public authorities, etc.
- 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 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.

Electronics

The machine is equipped with an operative system named **ITAC** that manages all the electronics. **TMC** controls the following machine sectors:

- **Safety control:** this is the software that monitors voluntary and involuntary operations, electronic faults, possible hazard conditions, in order to ensure that safety of the driver and of other persons.
- **Functions Control:** this is the software that checks the correct procedure of the machine functions, taking action to correct any anomalies.
- **Functions Setting:** this is the software that manages all the parameters that can be set.
- **TMC System:** this is the operating system that automatically manages many working activities of the machine. **TMC** controls the following machine activities:
 - › **Cruise Control:** *intervenes in speed control and in the control of the engine revolutions. Its purpose is to keep the set values constant in any condition. (→ p. 167)*
 - › **Intellifix:** *allows the maximum engine torque to be obtained at the set speed when there is power absorption through the power take-off. (→ p. 104) (→ p. 173)*
 - › **SIM (Shift In Motion):** *the code identifies the technology that manages range shift with the machine in motion. (→ p. 171)*
 - › **SIS (Shift In Standstill):** *the code identifies the technology that manages range shift with the machine at a standstill. (→ p. 171)*

- › **Drive Mode:** *is the system that allows the management of 3 different drive modes for each mechanical range, in both Manual and Automotive mode. (→ p. 169)*
- › **Torque Control:** *this is the system which, while working, avoids subjecting the engine to the optimum torque speed, automatically modulating the pressure in the hydrostatic unit.*
- › **Pressure Cut-Off:** *this is the system that limits the maximum working pressure of the hydrostatic unit to reduce its heat and noise and to increase efficiency.*
- › **Stand Still system:** *this is an electronic system that monitors the immobility of the vehicle. Its purpose is to keep the machine still when it does not receive any movement command from the operator and it is activated with any range engaged. (→ p. 170)*
- › **Eco Mode speed:** *this is the system that controls the maximum engine speed when it reaches a speed of 40 km/h, and its purpose is to cut down fuel consumption and reduce noise.*
- › **Automotive mode:** *this is the system that enables increasing the engine's rpm in proportion to the ground speed. (→ p. 173)*

Transmission and Chassis

- The machine is characterised by an integral oscillating **ACTIO™** 'steer wheels' type chassis, to allow rapid manoeuvres even in tight spaces.
- The engine compartment is protected by a large honeycomb grille, which guarantees efficient heat exchange.
- The machine is equipped with a four-wheel drive system to ensure a good grip even on difficult ground.
- The machine is equipped with a hybrid mechanical/hydrostatic continuously variable transmission with 4 robotic ranges with electronic control of speed and engine.
- The power take-off is driven directly by the crankshaft, with an electro-hydraulic clutch under load and speed not constrained by the hydrostatic transmission.

Driver's seat

- The machine is equipped with an **RGS™** reversible driver's seat and is extremely versatile for operations on flat or hilly ground, even with accentuated gradients.
- The 'sharknose' line improves visibility from the driver's seat and its conformation facilitates maintenance operations.
- 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 'frame' or 'cab' version. (→ p. 60)

- 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 in the driver's seat, with 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.

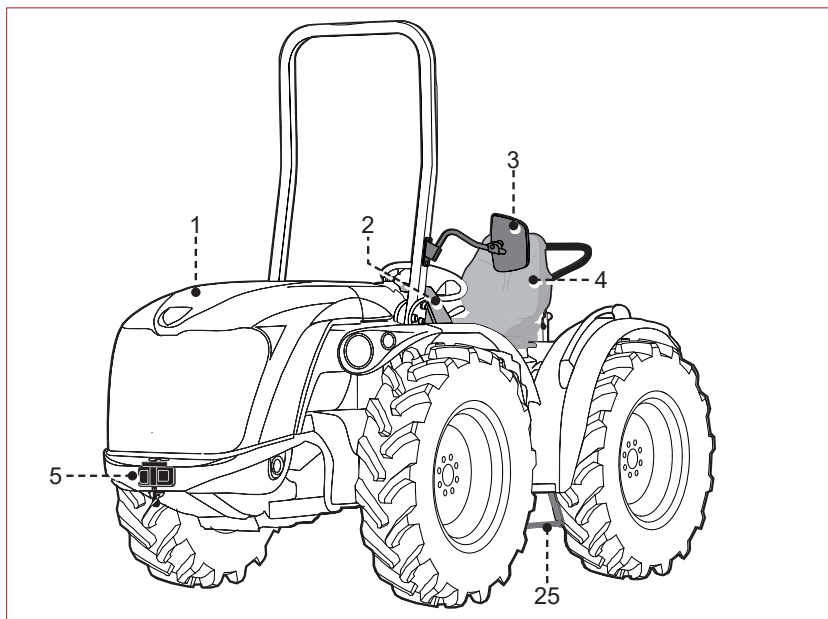
IMPORTANT IT IS ESSENTIAL FOR THE DRIVER TO BE RESPONSIBLE AND AWARE OF THE LIMITS OF USE and to behave suitably, to safeguard his own safety and that of other persons that could be involved.

Equipment

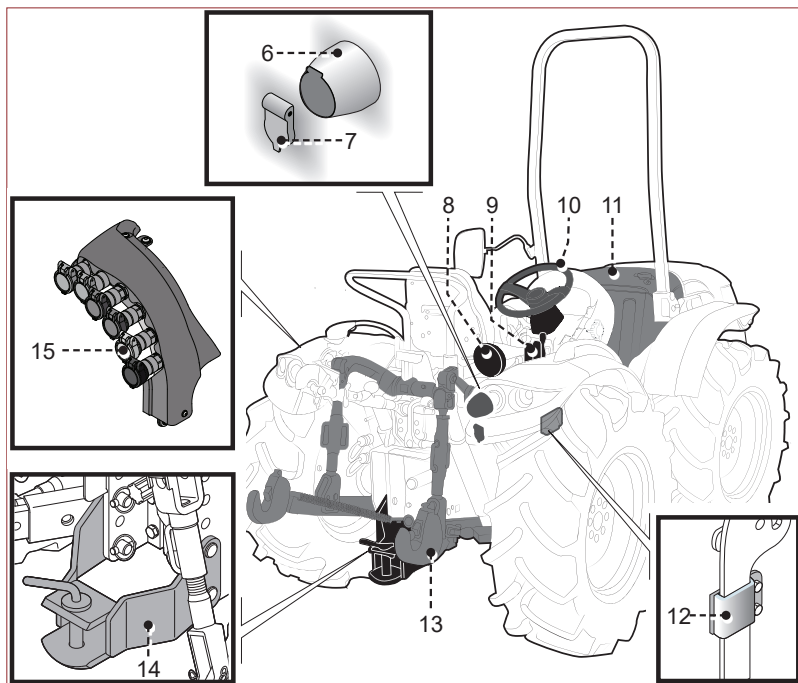
- The machine is available as per standard with three-point rear hydraulic power lift, towing hook, PTO and rear hydraulic couplers to control and drive the different interchangeable tools, installed to satisfy all operational requirements.
- To increase the performance, on request the machine can be equipped in the front part with 3 point hydraulic power lift and hydraulic hitches.

03.3. DESCRIPTION OF THE MAIN PARTS (MACHINE)

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



1. **Bonnet:** it is equipped with a key lock and can be opened for the necessary inspections. The key must be kept by the person responsible for the machine so that it is not accessible to unauthorised personnel.
2. **Dashboard:** it is equipped with control devices (speedometer, indicators, etc.) and with controls for operating services and utilities. (→ p. 114)
3. **Rear-view mirror:** it is mandatory for road circulation of the machine.
4. **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.



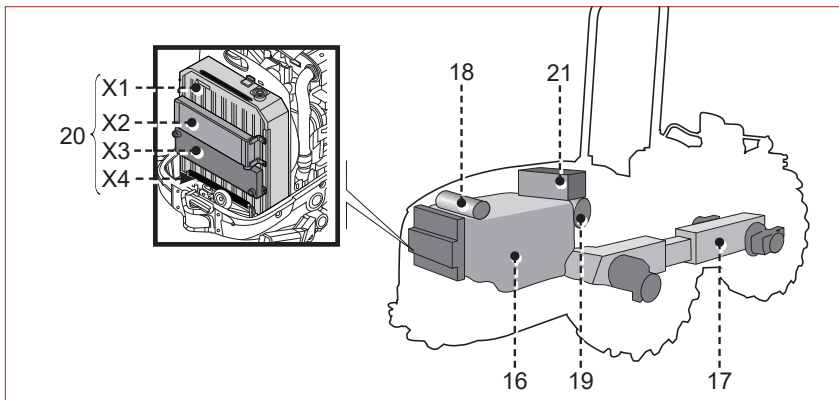
5. **Front towing bracket:** for towing the machine in case of breakdown.
6. **Electric socket:** used to connect the electrical system of a hitched trailer or tool.
7. **3-pole electric socket:** used to connect the tool's electrical system.
8. **Rear work light (adjustable):** to light the work areas in conditions with poor visibility.
9. **Hydraulic service operating levers:** they are used to control the power lift unit and the interchangeable tools (carried or towed).

The hydraulic plant is an integral part of the machine construction. (→ p. 62)

10. **Steering unit:** via the steering wheel equipped with power steering, it enables steering the front wheels in a proportional manner.
 11. **Tank:** contains the engine fuel. There is a draining point in the cap area, to allow fuel to flow out.
 12. **Support:** used to support the lever device of the towed interchangeable tool braking system.
 13. **Power lift unit:** with three-point linkage for hitching and lifting tools.
- On request, the power lift unit, can be supplied in the most suitable version for the different operating requirements. (→ p. 65)
14. **Towing hook:** used to hitch the towed interchangeable tools.

The component can be supplied in various configurations depending on the required type-approval.

15. **Rear hydraulic couplings:** they are equipped with quick coupling fittings and are used to connect the hydraulic services of the interchangeable tools.



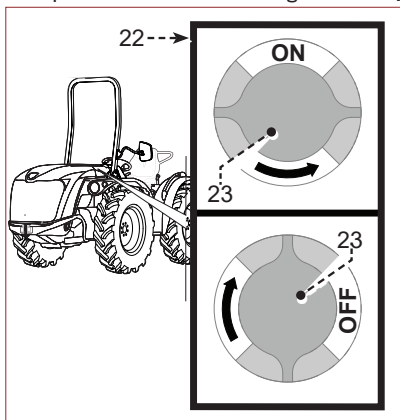
- 16. Engine:** develops the power to drive all the main power users on the machine (→ p. 277)
- 17. Transmission unit:** hybrid mechanical/hydrostatic continuously variable type, four-wheel drive, inclusive of the elements listed.
- › **Front axle:** equipped with independent gearboxes (one on each wheel), differential lock and electro-hydraulic front-wheel drive disengagement.
 - › **Gearbox:** with 8 robotic speed ratios (4 forward and 4 reverse) and equipped with the shuttle lever positioned on the steering wheel.
 - › **Power take-off (PTO):** is used to transmit the power from the machine to the interchangeable implements (mounted or trailed).
- The power take-off is driven directly by the crankshaft, with an electro-hydraulic clutch under load and speed not constrained by the hydrostatic transmission. It can operate at independent speed or synchronized with the ground speed of the machine.
- › **Rear axle:** equipped with independent gearboxes (one on each wheel) and electro-hydraulic differential lock.
- 18. Air filter:** cleans the air entering the engine intake. On request the filter can be equipped with safety filtering cartridge.
- 19. DPF:** the code identifies the filter for reducing the polluting emissions caused by fine dust.
- 20. Heat exchanger:** it reduces the working temperature (engine cooling liquid, hydraulic oil etc.) and includes the elements listed.
- › **Radiator (X1):** cools the liquid of the engine cooling circuit.
 - › **Radiator (X2):** cools the oil of the hydraulic circuit of the 'hydrostatic unit'.
 - › **Radiator (X3) (optional):** cools the oil of the hydraulic circuit of the 'Joystick unit'.
 - › **Finned pipe/coil (X4):** cools the engine fuel.

21. Battery: it is securely fastened to the machine and is used to power the electric plant. The connection between the battery and the electric plant can be isolated using the battery cut-off switch **(22)**.

- › - **Control in the "ON" position:** the battery is connected (the key **(23)** remains inserted).
- › - **Control in "OFF" position:** the battery is disconnected (remove the key **(23)**).

The battery cut-off switch is used to perform interventions on the electric plant, 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 (23) and keep it so that it cannot be accessed by unauthorised staff.

25. Step: facilitates access to the driver's seat. (Only with tyres 360/70 R20)

03.4. 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.



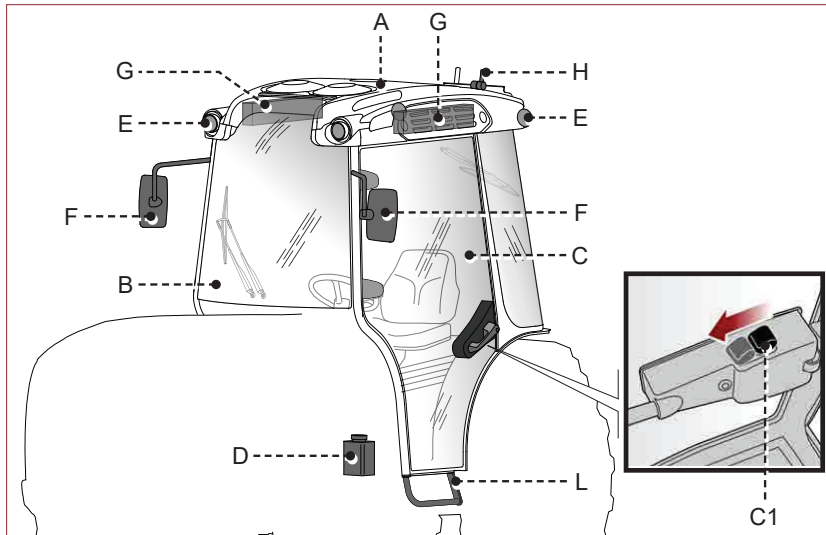
ATTENTION

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

IMPORTANT_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. 146)

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.

IMPORTANT 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.

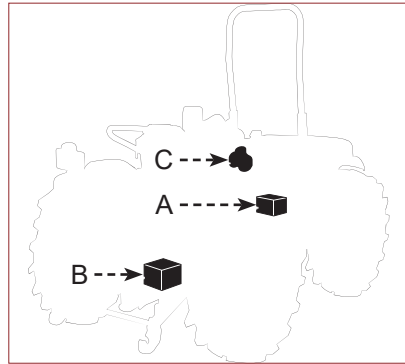
- E. Lighting:** they can be moved manually to aim the light beam at the area of interest.

- 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. 65)
- 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. (Only with tyres 360/70 R20)

03.5. DESCRIPTION OF HYDRAULIC CIRCUITS

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

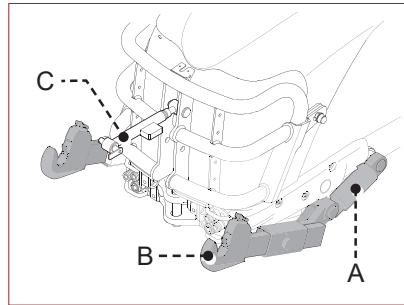
- A. **Tank:** supplies the oil to the pump of UNIT 2, which feeds the hydraulic circuits listed.
 - › *Rear power lifting unit supply circuit*
 - › *Rear hydraulic couplings supply circuit*
 - › *Steering system supply circuit*
- B. **Tank:** supplies the oil to the pump of UNIT 1, which feeds the hydraulic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



03.6. DESCRIPTION OF THE FRONT POWER LIFTING UNIT

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

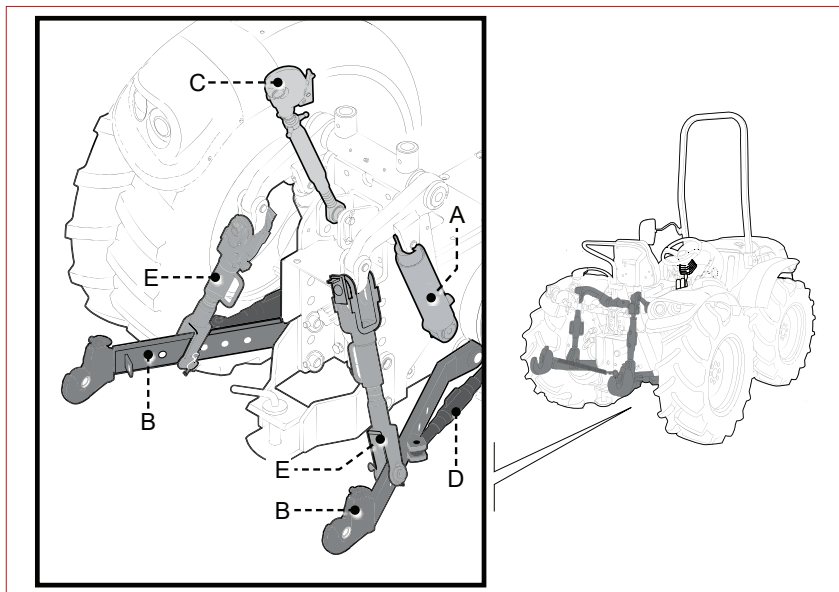
- A. **Hydraulic cylinders:** activate the movement of the lifting unit.
- B. **Arms:** used to lift the interchangeable tools with compatible dimensions.
- C. **Strut:** used to hitch the third point of the interchangeable tool.



For further information (→ p. 277).

03.7. DESCRIPTION OF THE REAR POWER LIFTING UNIT

In the standard configuration of the three point power lift unit (rear), it is equipped with a 'quick coupling' interchangeable tool hitching and disconnection system. The illustration represents the main components and the list gives the description and their function.

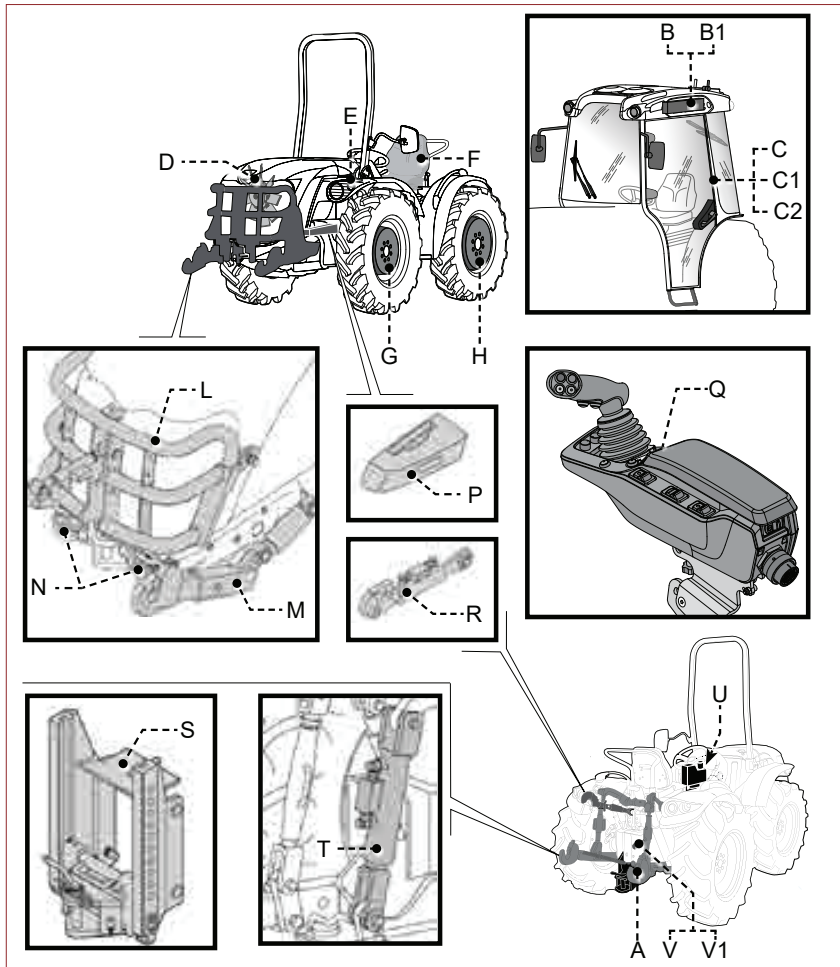


- A. **Hydraulic cylinders:** activate the movement of the lifting unit.
- B. **Arms:** they are equipped with tie-rods **(E)** to adjust the height and with tie-rods **(D)** to facilitate connecting the interchangeable tools and stabilizing them.
- C. **Strut:** used to hitch the third point of the interchangeable tool.

For further information (→ p. 277)

03.8. DESCRIPTION OF THE OPTIONAL EQUIPMENT

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



- A. **Rear lifting unit (with adjustable quick-coupling):** the 'three-point' type with the implement quick-coupling system, arms with adjustable length.
- B. **Active carbon air filter:** for decreasing the exposure of the driver to harmful substances when spraying plant protection products.
- B.1 **Air filter (cab "Category 4"):** 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. 60)
- C.1 Cab:** type-approved as a ROPS safety system and for on-road use and it is the soundproof version to improve driver comfort. (→ p. 60)

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.

- C.2 Transformation kit:** for converting the cab into a 'Category 4' version for protection against inhaling harmful substances (dusts, vapours, etc.).
- D. "Clean fix" device:** used for automatically cleaning dust from the front grille.
- E. Protection grilles.**
- F. Seat with pneumatic suspension:** for improving driver comfort.
- G. Wheel ballasts:** used to increase machine traction and can be installed on front or rear wheels. (→ p. 193), (→ p. 196), (→ p. 197), (→ p. 274)
- H. Ballast flange (rear wheels):** used to improve machine traction and must be fitted with wheels of a certain size. (→ p. 198), (→ p. 274)

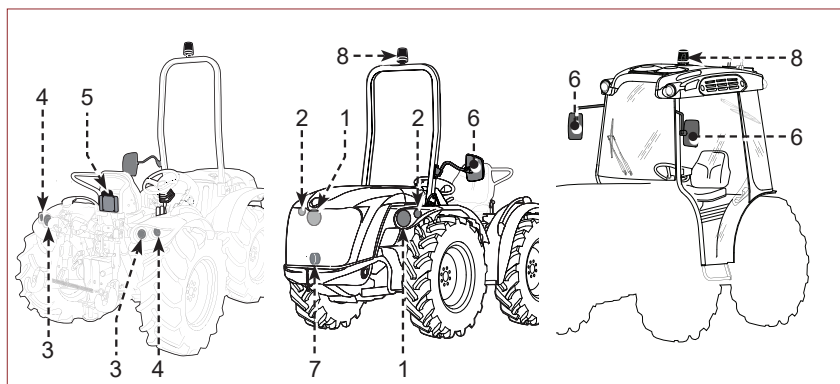
NOTE *This type of equipment can only be installed by the manufacturer or authorized service centre*

- L. Protection structure (Bullbar):** protects the radiator and the engine and serves as a connection for the strut of the front lifting unit.
- M. Front power lift unit:** 'three point' type. The unit is always supplied in combination with the protection structure (bullbar) **(L)**.
- N. Front hydraulic couplings:** they have quick coupling to connect the auxiliary services of the interchangeable tools that are hitched to the machine.
- P. Side ballasts:** used to increase the stability of the machine with capacity equipment attached to the rear lifting unit. (→ p. 193), (→ p. 195), (→ p. 274)
- Q. "Joystick" control:** used to activate, when combined with one of the selection buttons, the auxiliary services of the interchangeable tools that are hitched to the machine.
- R. Strut with hydraulic control:** installed on the rear side, to adjust the height of the interchangeable tool directly with the driving seat control.

- S. **"Slider" tow hook:** allows you to adjust the height of the point of attachment of the towed interchangeable tools easily and fast.
 - T. **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.
 - U. **"Electronic draft control" device:** enables keeping a constant effort of the carried tool on the ground.
- V. **Power take-off (540 S version).**
- V.1 **Power take-off (1000 version)**

03.9. DESCRIPTION OF DEVICES FOR DRIVING ON PUBLIC ROADS

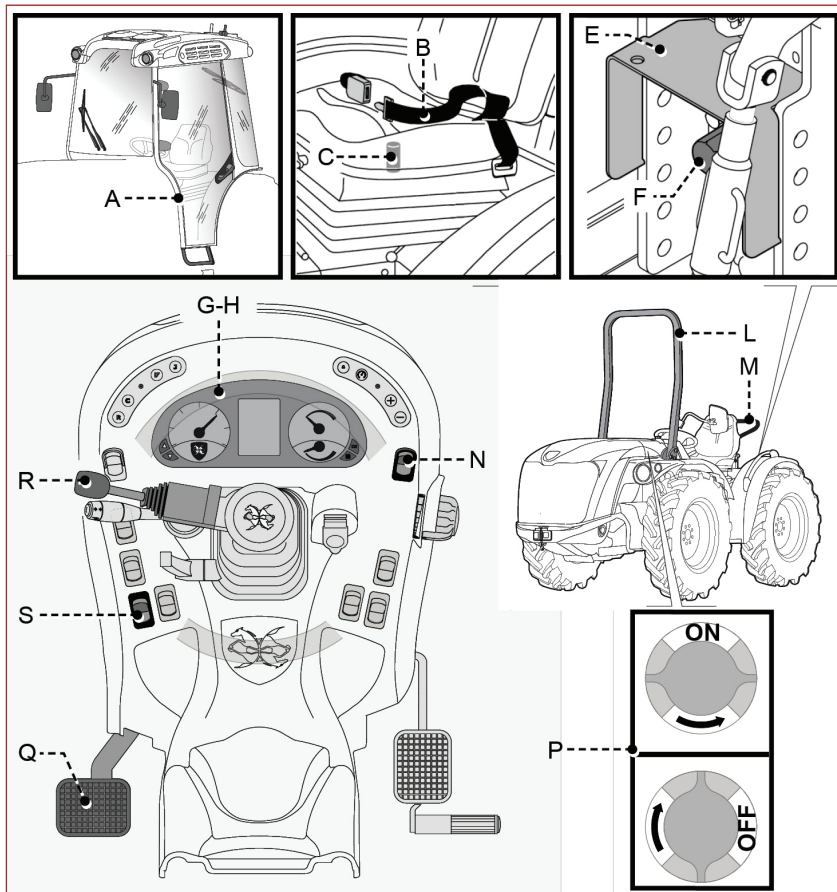
The illustration indicates the position of the devices on the machine.



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

03.10. 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. 60)

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:** performs the functions listed of the OPERATOR IS NOT SITTING CORRECTLY IN THE DRIVER'S SEAT.

Machine stopped with engine running: the sensor prevents the machine movement control. The engine remains running.

Machine in motion: the sensor prevents machine advancement if the operator gets up off the seat for more than 3 seconds. The machine stops with the engine running.

- 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 shaft 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. 92)
- H. **Acoustic warning:** 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:** detects the operating status of the power take-off control. Whenever the power take-off is deactivated by the system (vehicle 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.

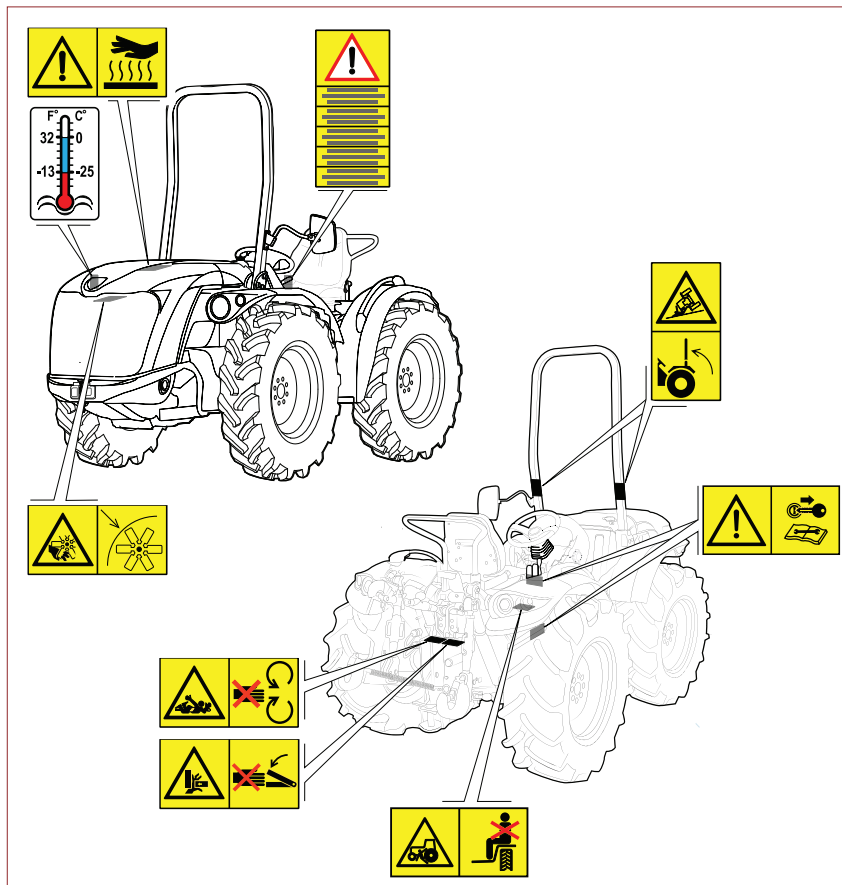
Machine moving: when the pedal is pressed, the sensor inhibits machine advancement and stops it with the engine on.

- R. **Sensor:** detects the operating status of the reverser. When the reverser is activated, the sensor prevents the start-up of the engine.
- S. **Parking brake:** activated automatically when the machine is turned off, when the range is changed while at a standstill, or when the operator gets up off the seat for more than 3 seconds. It remains active until it is deactivated again (→ p. 155)

03.11. POSITION OF SAFETY SIGNALS AND INFORMATION

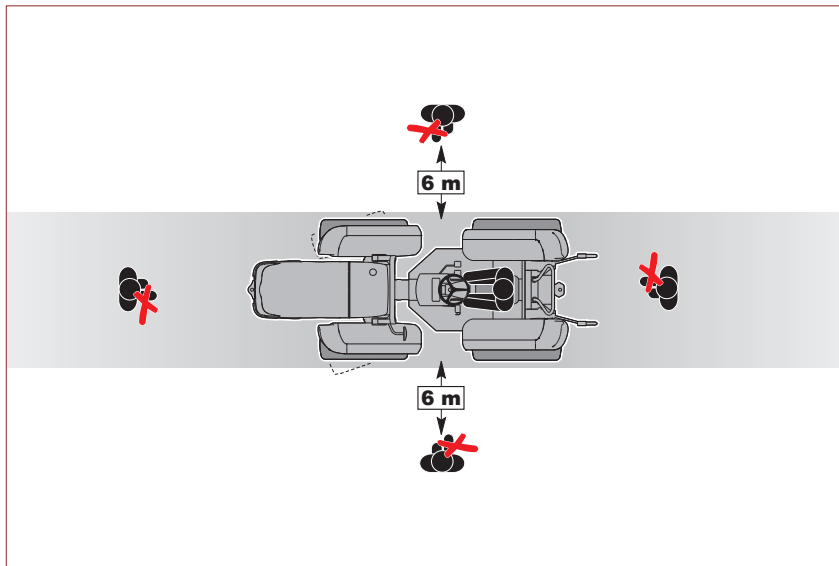
The illustration indicates the positions of the safety plates. (→ p. 48)

IMPORTANT Make certain that all plates and stickers are clearly legible; if not, wipe clean, or if necessary renew, positioning the replacement at the same point on the machine.



03.12. DANGEROUS AREAS AND ZONES

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





04

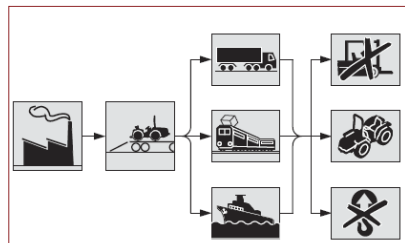
INFORMATION ON HANDLING AND TRANSPORT

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

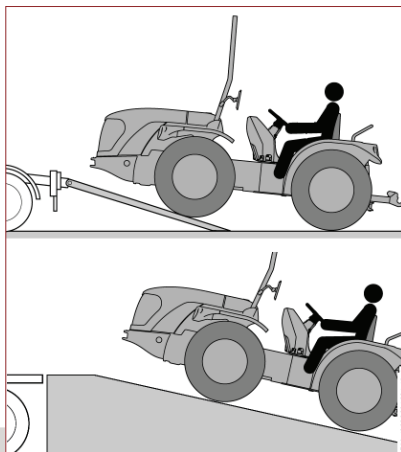
Proceed as indicated to perform this operation.

- 1\ Start the engine.
 - 2\ Raise the power lift by operating the respective controls and block it in raised position. (→ p. 121) (→ p. 129) (→ p. 133)
- 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\ Remain properly seated in the driving position, and drive the machine onto the transporting vehicle.

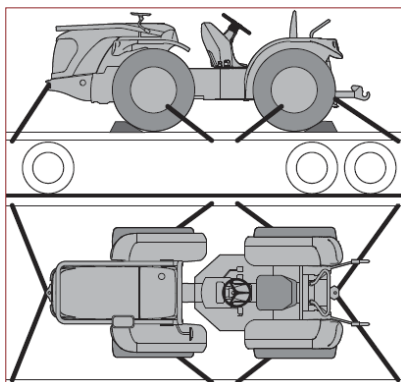


ATTENTION

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

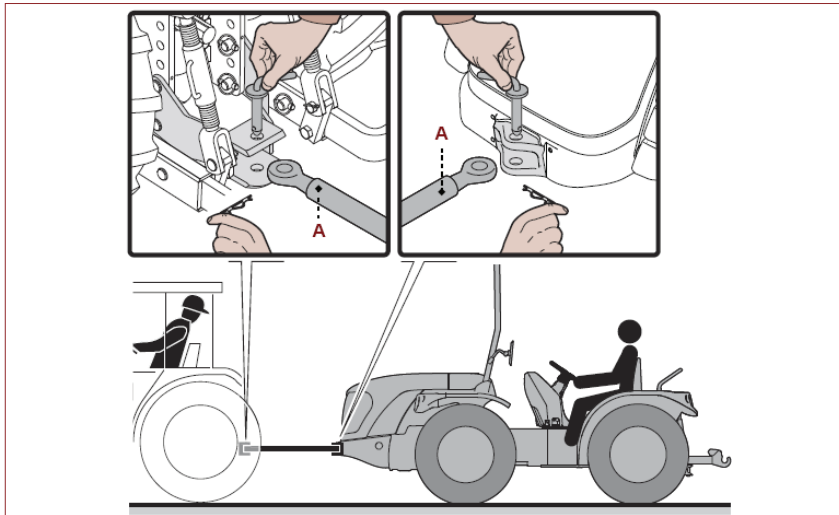


- 4\ Engage a low range, switch off the engine and remove the ignition key.
- 5\ Anchor the machine to the vehicle with ropes and wheel chocks, as in the illustration.
- 6\ Check that the shape of the machine does not exceed the maximum clearance of the means of transport and, if necessary, lower the safety arch.



04.4. MACHINE EMERGENCY TOWING METHOD

Proceed as follows.



- 1\ Hitch the bar **(A)** to the front emergency hook of the machine and to that of the vehicle used to tow it.

IMPORTANT Check that the hitching pins are correctly inserted and blocked using the relative safety cotters in order to prevent accidental disconnection.

- 2\ Shift the reverser to neutral position. (→ p. 117)
- 3\ Set the ranges in neutral position. (→ p. 171)
- 4\ Disengage the parking brake. (→ p. 155), (→ p. 78)
- 5\ Tow the machine with an operator seated in the driving position.
If possible, tow the machine with its engine running to permit the hydrostatic steering system to operate.
The steering will feel heavier if the machine is towed with the engine off.

IMPORTANT Only use vehicles of adequate size and power to tow the machine. The machine can be towed only for short distances at a speed not exceeding 10 km/h.

- 6\ On completion of towing, return the machine immediately to normal operating conditions.

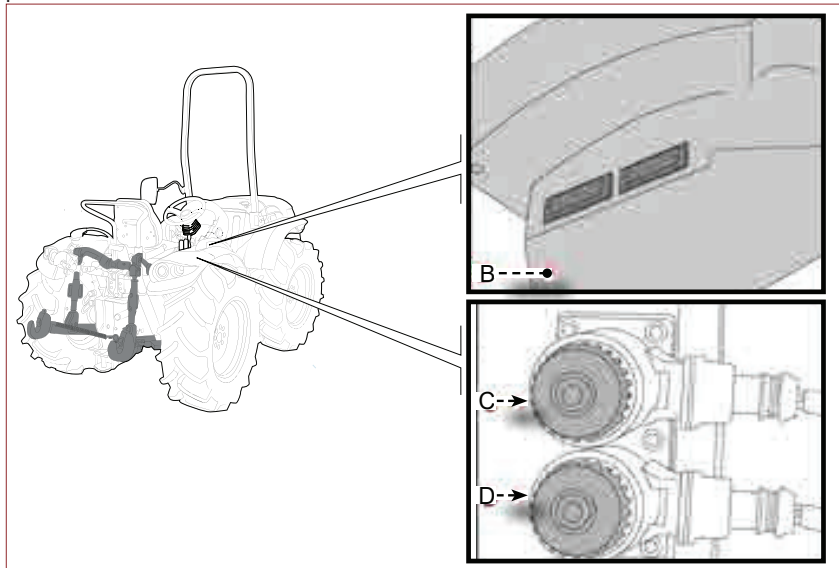
04.4.1. Lifting unit release (electronic)



ATTENTION

Use only in an emergency.

When towing the machine with an implement connected and trouble with the lifting unit, proceed as indicated.



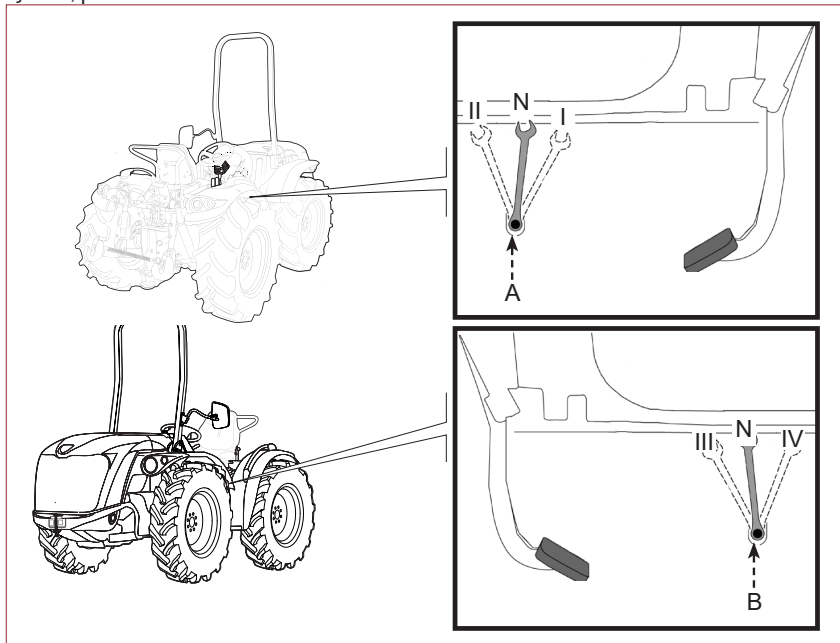
- 1\ Remove the cover (B).
 - 2\ Start the engine.
 - 3\ Press button (C) (inner side of the machine) to raise the implement.
 - 4\ Tow the machine with an operator seated in the driving position.
- After towing ALWAYS restore the machine to its original conditions as indicated.
- 5\ Press button (D) (outer side of the machine) until the implement is laid on the ground.
 - 6\ Turn off the engine.
 - 7\ Fit the cover (B).

NOTE The buttons (C-D) move the implement in proportion to the pressure the operator applies on them.

04.4.2. Range shift with mechanical control

! ATTENTION
Use only in an emergency.

When towing the machine with a malfunction in the parking brake unit, or in the electrical system, proceed as indicated.



- 1\ Remove the protective caps.
- 2\ Apply a spanner (24") to the nut (A)
- 3\ Position the gear in neutral (N).
- 4\ Apply a spanner (24") to the nut (B)
- 5\ Position the gear in neutral (N).

IMPORTANT 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.

- 6\ On completion of towing, **ALWAYS** return the machine immediately to normal operating conditions.

04.4.3. Disengaging the parking brake with the engine off

**ATTENTION**

Use only in an emergency.

NOTE *When the machine is off, the parking brake is always normally activated.*

If towing the machine, proceed as indicated.

- 1\ Sit in the driver's seat.
- 2\ Shift the reverser to neutral position. (→ p. 117)
- 3\ Insert the ignition key and turn it clockwise to position '2'. (→ p. 114)
- 4\ Set the ranges in neutral position. (→ p. 171)
- 5\ Press twice consecutively on the switch of the parking brake. (→ p. 117)
When the parking warning light goes out, it means that the parking brake is disengaged.
(→ p. 92)

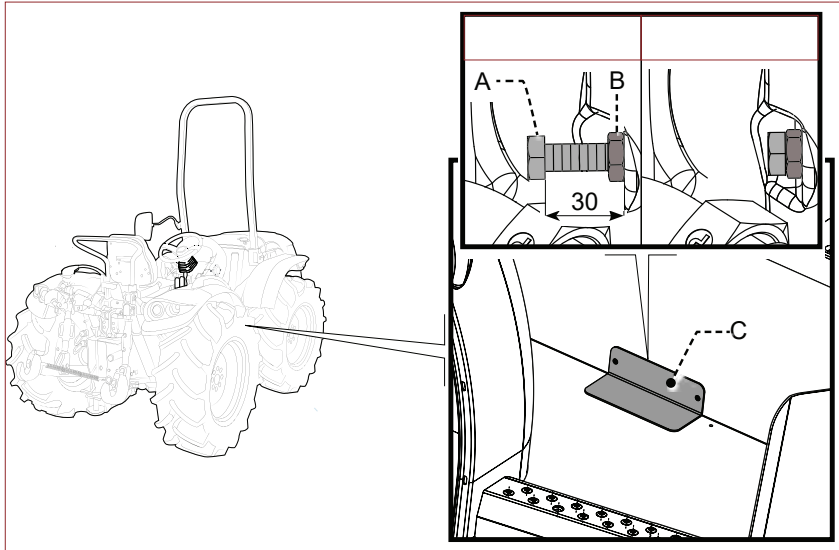
04.4.4. Mechanical disengaging of the parking brake

**ATTENTION**

Use only in an emergency.

NOTE *When the machine is off, the parking brake is always normally activated.*

When towing the machine with a malfunction in the parking brake unit, or in the electrical system, proceed as indicated.



- 1\ Lift the mat of the right footboard.
- 2\ Remove the cover **(C)**.
- 3\ Undo the nut **(B)** and fully tighten the screw **(A)**.
In this way the parking brake is disengaged.



ATTENTION

In "EMERGENCY" mode the parking brake is ALWAYS disengaged.

IMPORTANT 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

After towing **ALWAYS** restore the machine to its original conditions as indicated.

- 4\ Undo the screw (A) until you feel that it is no longer preloaded, then undo it two more turns (~ 30mm in all).
- 5\ Secure the nut **(B)**.
- 6\ Fit the cover **(C)**.
- 7\ Reposition the mat.

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 wheels to improve stopping conditions.

05.2. ADJUSTING THE DRIVING POSITION

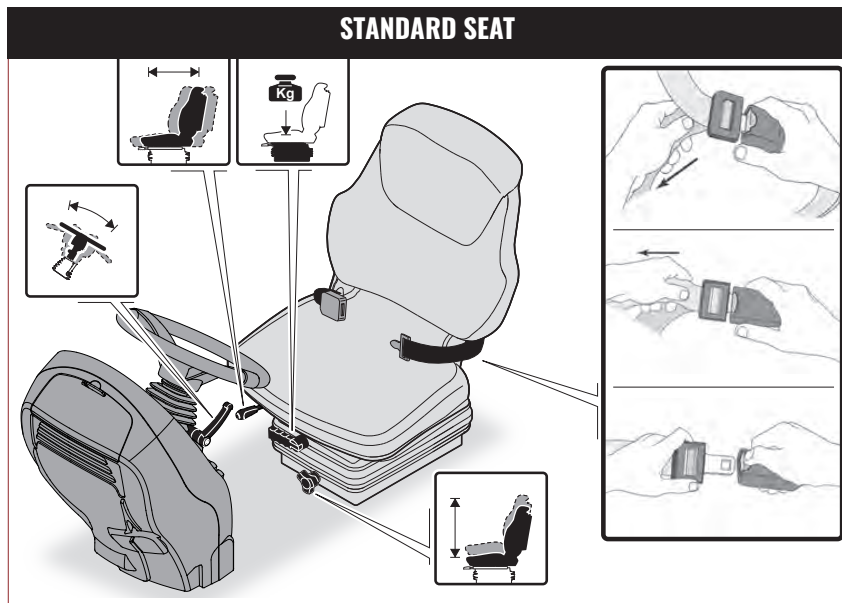
To obtain suitable ergonomic conditions, the steering wheel and the driver's seat can be adjusted by the driver.

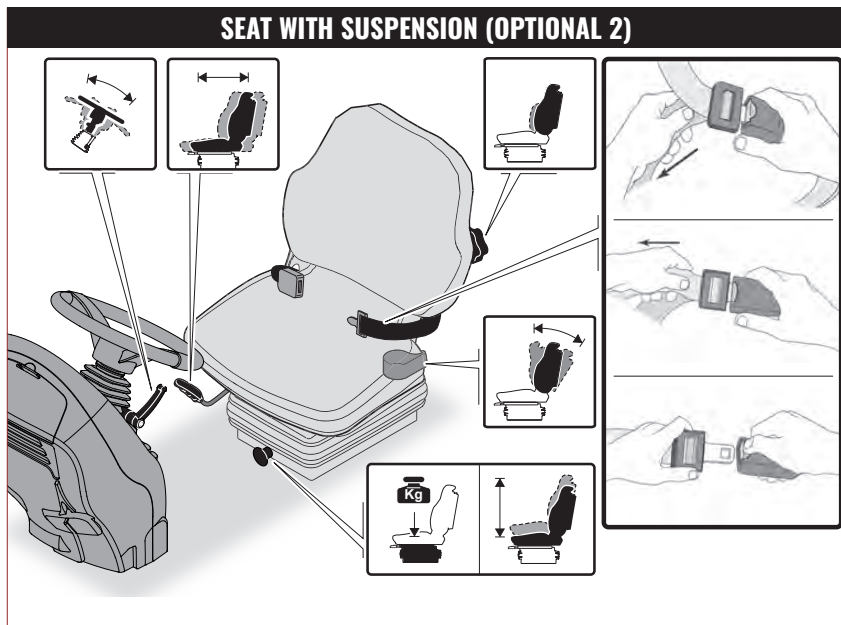
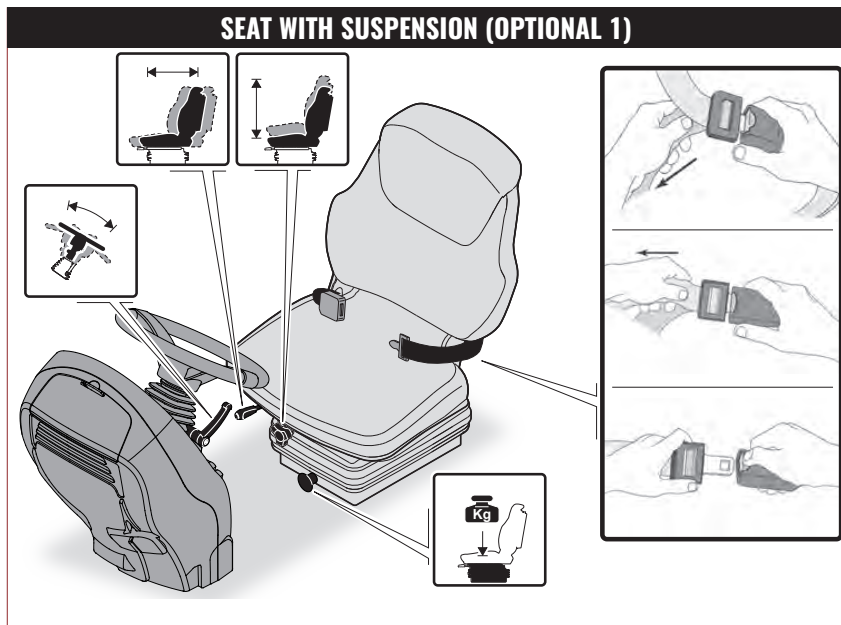
- The illustrations represent how to perform the necessary adjustments.



ATTENTION

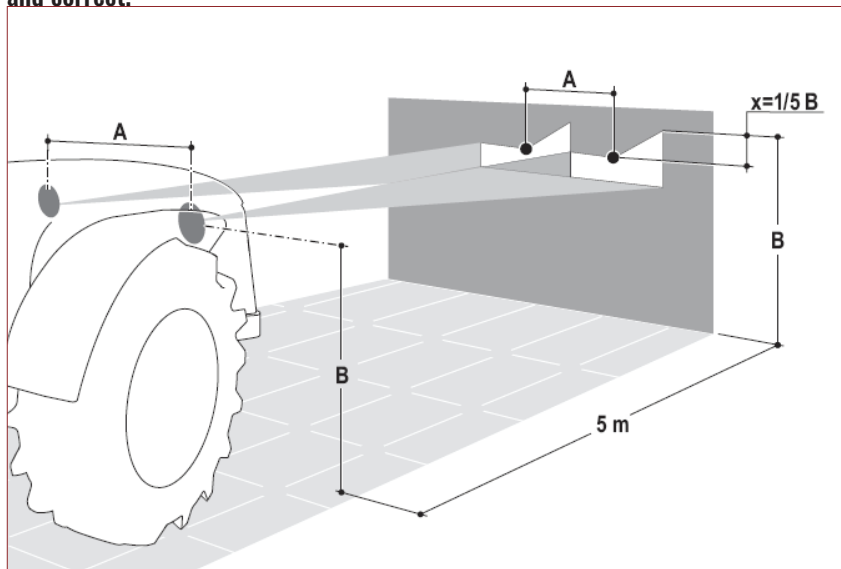
Only make adjustments with the machine stationary.
After the adjustment has been made, check that the steering wheel is blocked in position.





05.3. ADJUSTMENT OF HEADLIGHTS

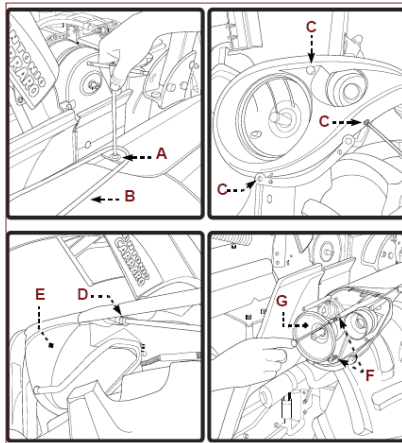
Position the machine on level ground at a distance of 5 metres from a wall. Check that there is no load on the machine and that the pressure of the tyres is normal and correct.



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

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.

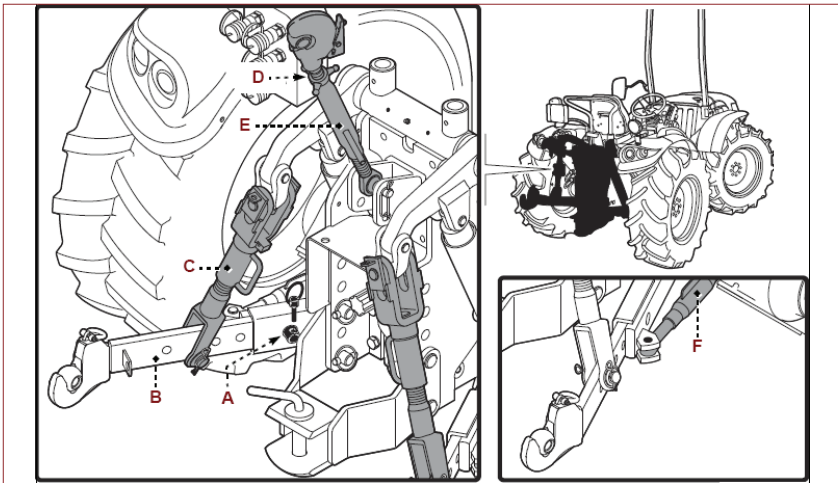


- 5\ Refit the support **(E)** and the protection grid **(B)** when you have finished.

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.

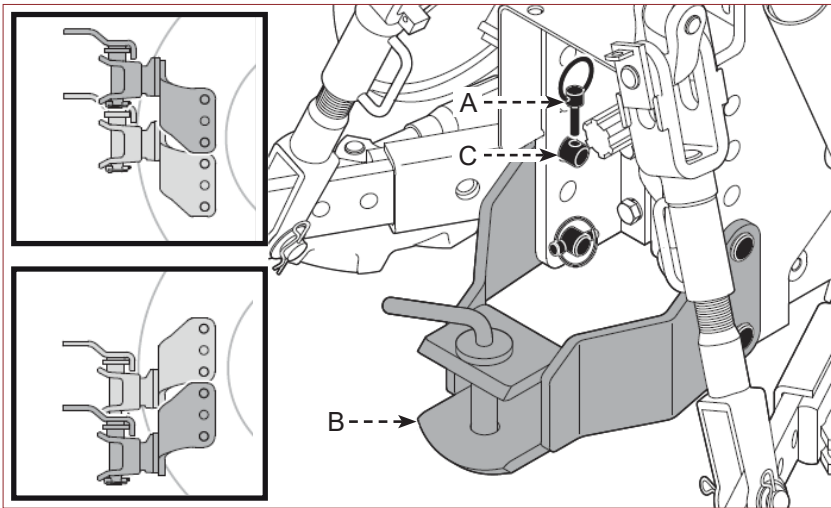


- 1\ Approach the machine to the interchangeable tool to be hitched.
- 2\ Lower the booms of the power lift unit to the height of the hitching points of the interchangeable tool.
- 3\ Stop the machine in safe conditions (→ p. 11).
- 4\ Remove the safety cotters and slide out the pins (A).
- 5\ Adjust 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 retainers of the tie-rods (C) and adjust them to define the height of the arms (B).
- 9\ Release the safety retainer (D) of the strut (E), adjust its length and re-lock the retainer.
- 10\ The tie-rods (F) stabilise the lifting arms (B) after having hitched the interchangeable implement.

05.5. 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\ Stop the machine in safe conditions (→ p. 11).
- 3\ Remove the safety cotters of the pins **(A)**.
- 4\ Support the rear hook **(B)** and slip out the pins **(C)**.
If necessary, carry out the operation with the aid of an assistant.
- 5\ Adjust the height and position (normal or inverted) of the tow hook **(B)** and insert the pins **(C)**.
- 6\ Lock the pins **(C)** with the safety cotters **(A)**.



ATTENTION

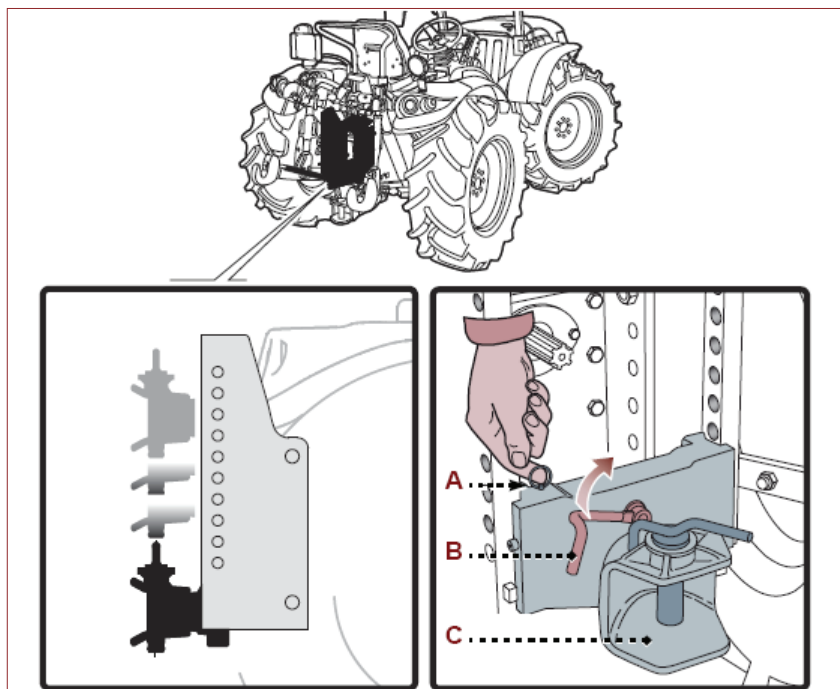
Do not hitch any towed interchangeable tool if the towing hook is damaged.

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

05.6. "SLIDER" TOW HOOK HEIGHT ADJUSTMENT

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\ Stop the machine in safe conditions (→ p. 11).



ATTENTION

To prevent the hook unit lowering suddenly with the risk of crushing, provide a support device or make use of an assistant.

- 3\ Identify the holes on the guide that correspond to the point where the hook unit is to be positioned.
- 4\ Extract the safety pin **(A)** and completely lift the handle **(B)** to release the hook unit **(C)**.
- 5\ Move the hook unit **(C)** (with the handle) until it is aligned with the holes selected.

- 6\ Release the handle **(B)** and ensure that the hook unit is correctly blocked.
The complete insertion of the safety pin **(A)** in its seat indicates that the blocking pins of the hook unit are correctly inserted.

**ATTENTION**

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

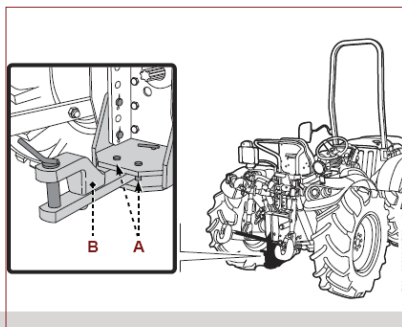
05.7. POSITION ADJUSTMENT OF THE OSCILLATING TOW BAR

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.

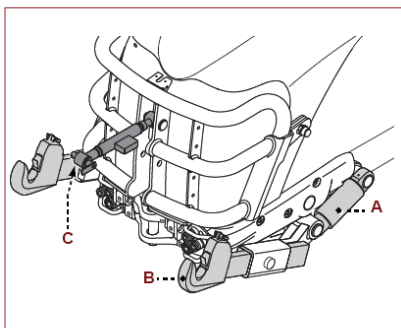


! ATTENTION Do not hitch any towed interchangeable equipment if the drawbar is damaged or if the engagement devices do not function correctly.

05.8. ADJUSTMENT OF 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.



05.9. TRACK CHANGE-OVER

Before changing track, see the paragraph "Machine tracks" to assess and identify the one best suited to the actual operating requirements.

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

After every track change operation it must be checked that the wheels do not interfere with the bodywork or other parts of the machine.

06

OPERATING INSTRUCTIONS

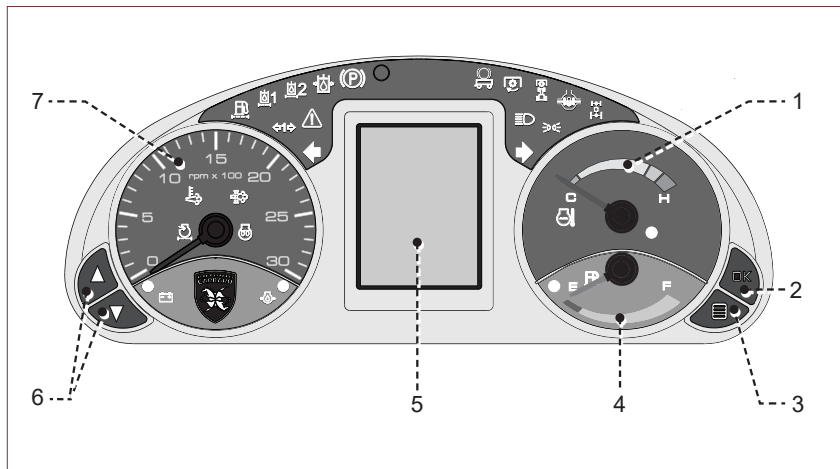
06.1. RECOMMENDATIONS FOR USE AND FUNCTIONING

- The incidence of accidents related to the use of tractors 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.
- Awareness 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 INSTRUMENTS AND LEDS

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



- 9\ **Temperature gauge:** indicates the temperature of the engine coolant.
- 10\ **"OK" button:** to confirm the choices made on the multifunction display.
- 11\ **"Menu" button:** to access the menu of the multifunction display, or return to the previous screen without saving the settings.
- 12\ **Fuel level indicator:** indicates the fuel level in the tank.
- 13\ **Multifunction display.** (→ p. 96)
- 14\ **"Up"/"Down" buttons:** for selecting the menu items.
- 15\ **Engine tachometer:** indicates the engine revolutions (RPM).

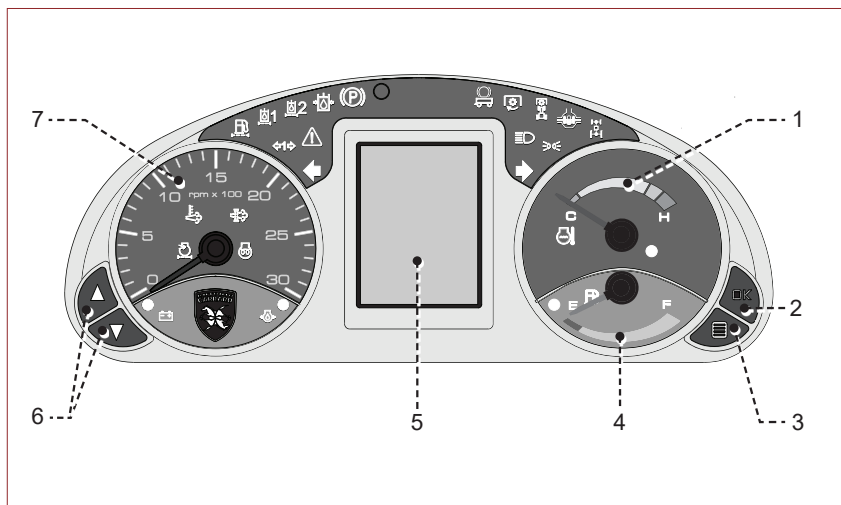
Symbol	Description	Type of signal	See
	General alarm: anomalies in operation of the engine or of the transmission.	Red LED	(→ p. 233)
	Differential lock: differential locking device activated.	Red LED	(→ p. 114)
	4 wheel drive off: front wheel drive deactivated.	Red LED	(→ p. 114)
	Front PTO: front power take-off activated.	Red LED	(→ p. 114)
	Rear PTO: rear power take-off activated.	Red LED	(→ p. 114)
	Hydraulic oil filter 1: unit 1 hydraulic circuit filter clogged.	Red LED	(→ p. 233)
	Hydraulic oil filter 2: unit 2 hydraulic circuit filter clogged.	Red LED	(→ p. 233)
	Air filter clogged.	Red LED + audible warning	(**) (→ p. 233)
	Hydraulic oil pressure: hydraulic oil pressure insufficient (unit 1).	Red LED + audible warning	(**) (→ p. 233)
	Parking: parking brake activated.	Red LED	(**) (→ p. 117)
	Clogged fuel pre-filter.	Red LED + audible warning	(**) (→ p. 233)
	DPF temperature	Red LED + audible warning	(**) (→ p. 233)

Symbol	Description	Type of signal	See
	DPF filter regeneration (fixed)	Amber LED	(**)
	DPF filter clogged (intermittent)	Amber LED + audible warning	(→ p. 233)
	Battery charger: alternator not charging the battery.	Red LED + audible warning	(**) (→ p. 233)
	Oil pressure: insufficient engine oil pressure.	Red LED + audible warning	(**) (→ p. 233)
	Engine temperature: temperature of the coolant is too high.	Red LED + audible warning	(**) (→ p. 233)
	Glowplugs: glowplugs preheating.	Amber LED	(→ p. 157)
	Low fuel: low fuel level.	Amber LED	
	Full beam lights: full beam headlights.	Blue LED	(→ p. 114)
	Sidelights: sidelights or low beam headlights.	Green LED	(→ p. 114)
	Trailer indicators: interchangeable implement turn indicators on.	Green LED blinking	(→ p. 114)
	Left indicator: direction indicators on left side activated.	Green LED blinking	(→ p. 114)
	Right indicator: direction indicators on right side activated.	Green LED	(→ p. 114)

(**) 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

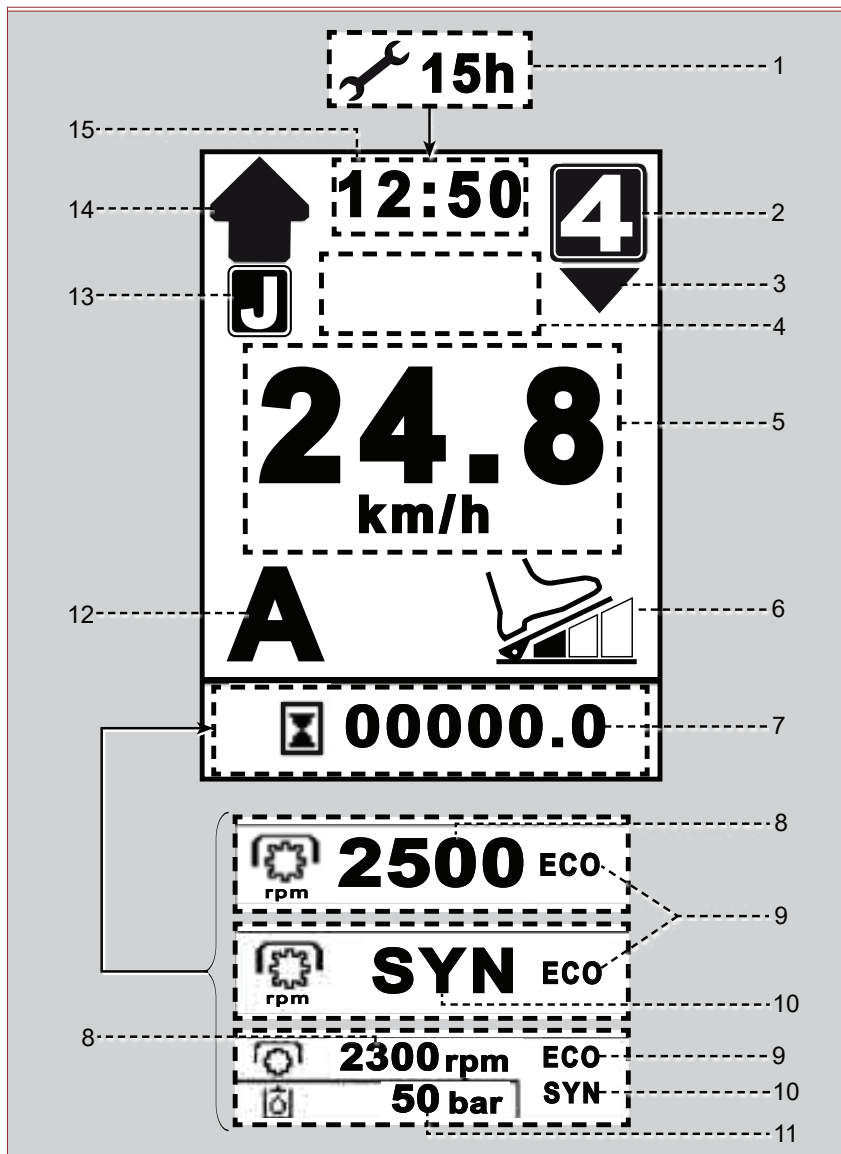
the engine off, provided the machine has been stopped with the ignition key in position 2 (stand-by).



06.3. DESCRIPTION OF THE MULTIFUNCTION DISPLAY

06.3.1. HOME Screen

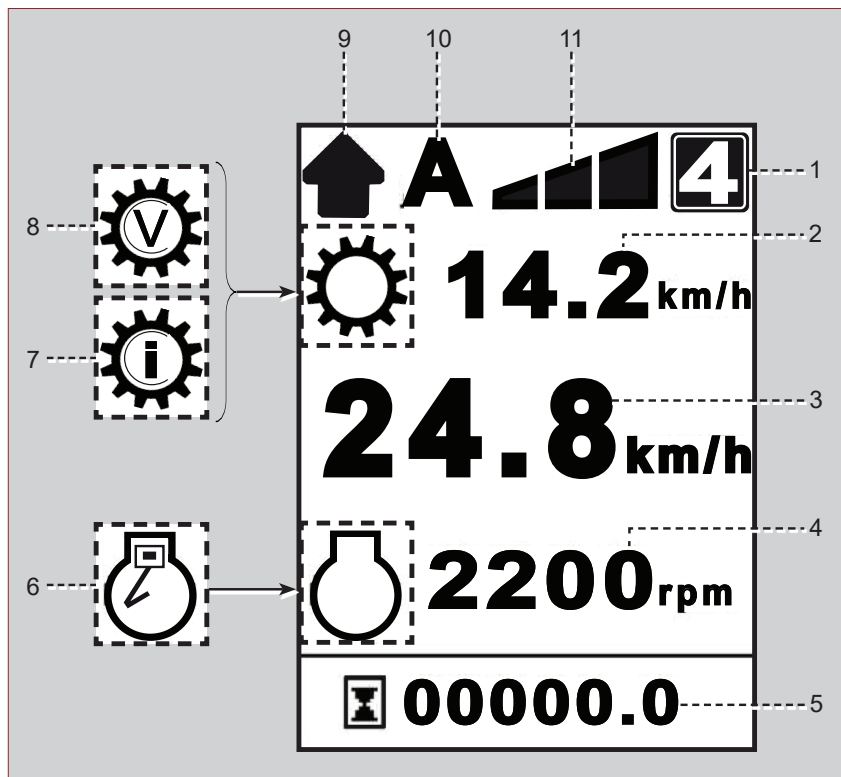
This is the normal working screen.



1. **Service indicator:** indicates the servicing deadlines. (→ p. 99)
2. **Range engaged:** shows the number of the range currently engaged. (→ p. 171)
3. **Range change suggestion:** prompts operator to shift down the range. (→ p. 171)
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. 165)
 - › **Instant Cruise Control:** indicates that the instant Cruise Control function is active. (→ p. 173)
 - › **Memo RPM:** displays the saved engine speed (→ p. 103) (→ p. 173)
 - › **Additional information:** allows you to view various data after selecting from the appropriate menu (→ p. 107)
5. The following information may be shown in the next area of the display:
 - › **Speed:** shows the current machine speed.
 - › **Neutral Check Needed:** indicates that certain safety conditions are not met. (→ p. 160)
6. **Drive Mode:** indicates the drive mode selected. (→ p. 117)
7. **Hour counter:** shows the total or partial number of hours worked. (→ p. 100)
8. **PTO revolutions:** indicates that the independent power take-off is active and shows the number of revolutions. (→ p. 120)
9. **ECO:** indicates that the ECO function of the PTO is active. (→ p. 120)
10. **Syncro:** indicates that the synchronised PTO function is active. (→ p. 120) (Only with the first range)
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. 133).
12. **Automotive/Manual Mode:** indicates whether the selected mode of use is Automotive or Manual. (→ p. 173)
13. **Joystick reverser:** indicates the reversing function controlled by the joystick is active. (→ p. 117)
14. **This function excludes the reverse control on the steering wheel.**
15. **Direction of movement:** Indicates the direction of movement selected or the neutral position of the reverser. (→ p. 117)
16. **Clock:** indicates the present time. (→ p. 112)

06.3.2. CRUISE Screen

The system independently recognises the operating mode chosen by the operator and presents the parameters on the display in the most opportune way to monitor the vehicle. When Cruise Control is activated, the display configuration appears as in the figure.



1. **Range engaged:** shows the number of the range currently engaged. (→ p. 171)
2. **Saved speed:** shows the saved speed value that can be recalled with the Memo Cruise Control function. (→ p. 174) (→ p. 178)
3. **Speed:** shows the current machine speed.
4. **Saved RPM:** indicates the set number of engine revolutions that can be recalled with the Memo RPM function. (→ p. 103) (→ p. 173)
5. **Hour counter:** shows the total or partial number of hours worked. (→ p. 100)
6. **Memo RPM:** indicates that the Memo RPM function is active. (→ p. 173)
7. **Intellifix:** indicates that the Intellifix function is active.
8. **Memo Cruise Control:** indicates that the Memo Cruise Control function is active. (→ p. 173)

9. **Direction of movement:** Indicates the direction of movement selected or the neutral position of the reverser.
10. **Automotive/Manual:** indicates whether the selected mode of use is Automotive or Manual. (→ p. 173)
11. **Drive Mode:** indicates the drive mode selected. (→ p. 117)

06.3.3. 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. 207).

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.

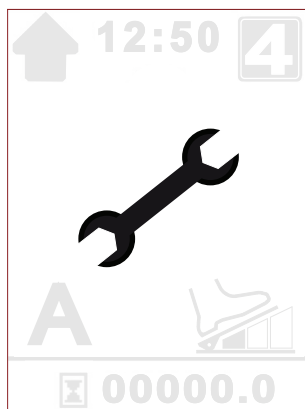
Service overdue

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. 106)

06.3.4. Hour counter

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

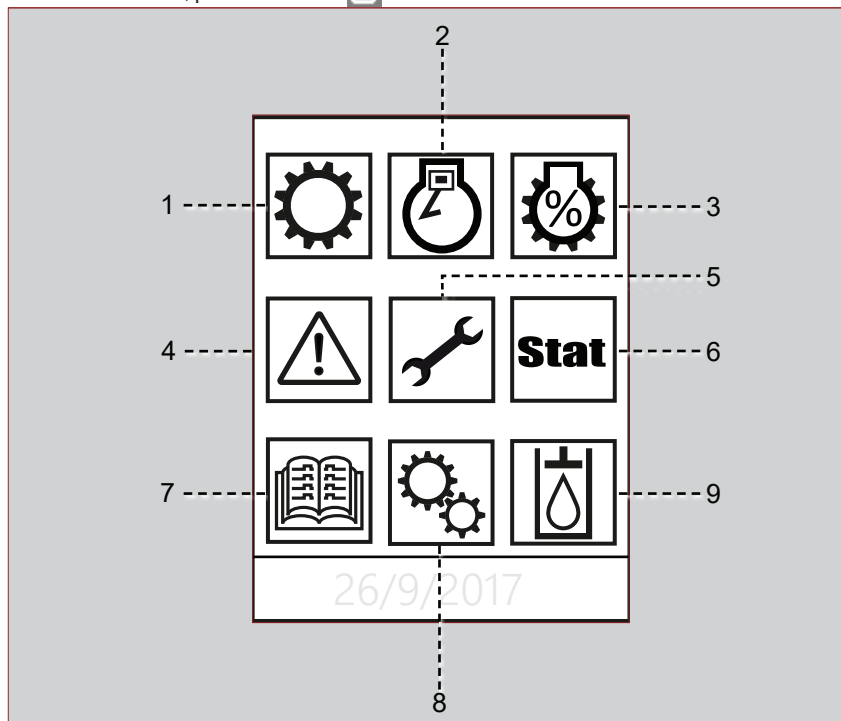
Resetting the partial hour counter

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




06.3.5. 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. **Memo Cruise Control** Menu
2. **Memo RPM** Menu
3. **Intellifix** menu.
4. **Warning** Menu
5. **Service** Menu
6. **Additional Information** menu.
7. **Info** Menu
8. **General Settings** Menu
9. **Hydraulic System** Menu

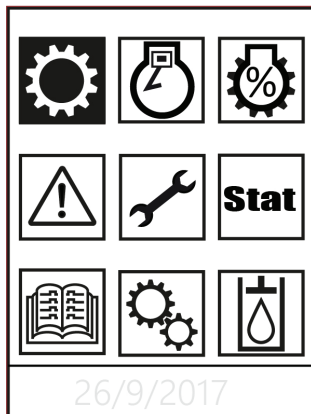
- To leave the menus or the various sub-menus without saving the settings, press the button , again or wait 30 seconds.

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.

Memo Cruise Control Menu (→ p. 173)

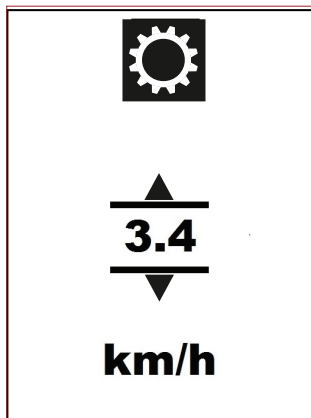
IMPORTANT In order to change the settings, the Cruise function (→ p. 173) must not be active and the vehicle must be stationary.

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 value using the buttons  and .
5. Press button  to confirm.

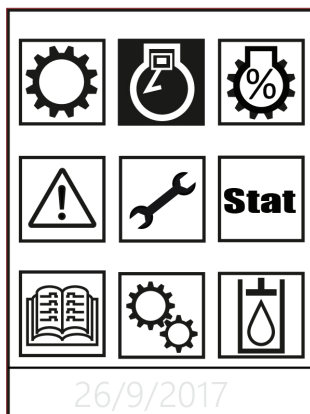
NOTE The variation is of 0.1 Km/h or mph.
 Minimum settable value: 0.1 Km/h or mph
 Maximum settable value: 40 Km/h or mph



Memo RPM Menu

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

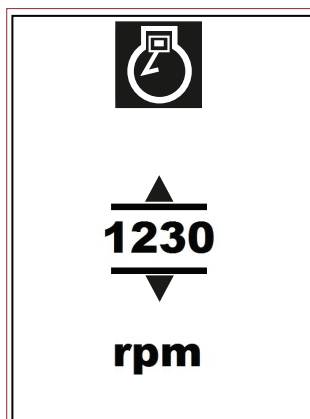
1. Press the button .
2. Select the menu icon as in the figure using the buttons  and .
3. Press button  to confirm.



4. Set the value using the buttons  and .
5. Press button  to confirm.

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

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 5 seconds. (→ p. 117).







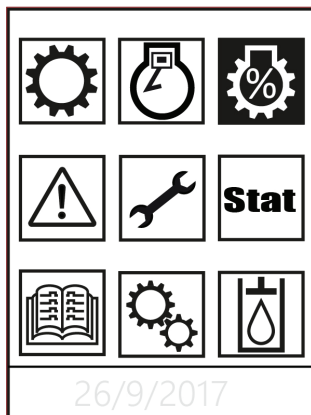
Intellifix Menu







Allows the maximum engine torque to be obtained at the set speed when there is power absorption through the power take-off. It can be activated at the same time as Cruise Control. (→ p. 173)

The sensitivity of intervention of the Intellifix is programmable according to the operator's requirements and the type of work.

Proceed as follows.

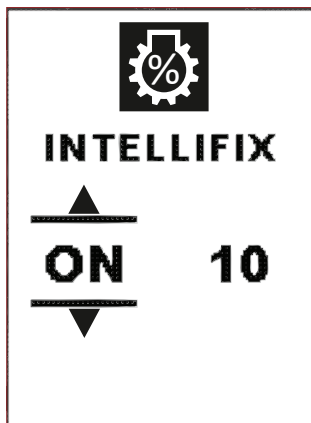
1. Press the button .
2. Select the menu icon as in the figure using the buttons  and .
3. Press button  to confirm.



4. Select ON/OFF using the buttons  and  to activate/deactivate the 'Intellifix' function. (→ p. 173)
5. Press button  to confirm.
6. Set the sensitivity of intervention of the Intellifix using the buttons  and .
7. Press button  to confirm.





The sensitivity of intervention can be modified during work.

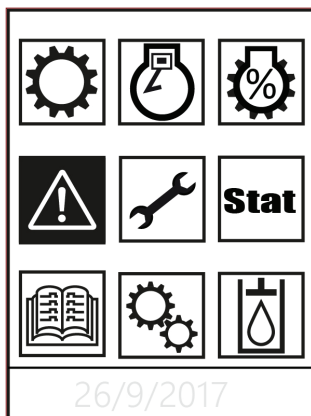
NOTE The variation is of 1 unit.
Minimum settable value: 5.
Maximum settable value: 30.



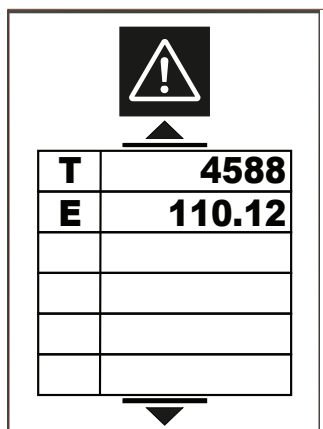
Warning Menu

The error codes are displayed in this menu. (→ p. 233)

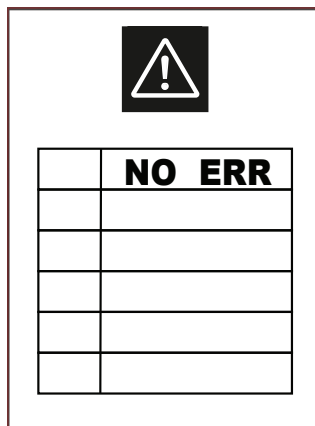
1. Press the button .
2. Select the menu icon as in the figure using the buttons  and .
3. Press button  to confirm.



4. Read any error codes and notify them to the authorised workshop.
5. The error codes are composed of a letter, indicating the type of error, and a series of numbers that identify it.
6. The error codes will be present until the fault is eliminated.



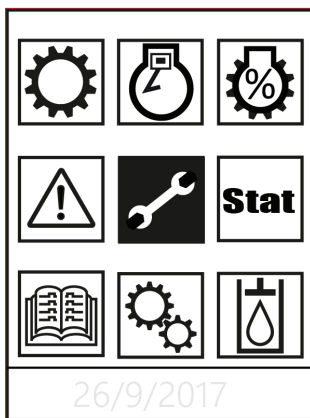
If there are no active errors, a screen appears with the message 'NO ERR'



Service Menu

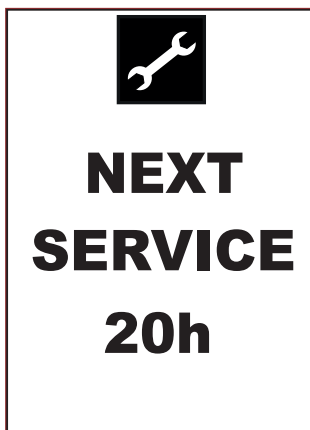
The hours remaining until the next service are displayed in this menu. (→ p. 99)

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







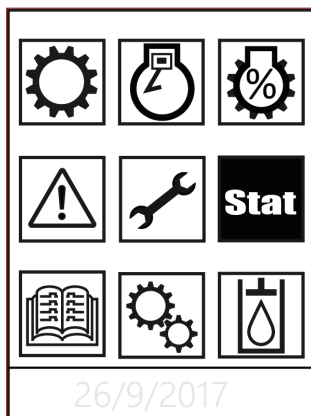
4. The screen indicates the hours remaining until the next service.



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




Additional Information menu.

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

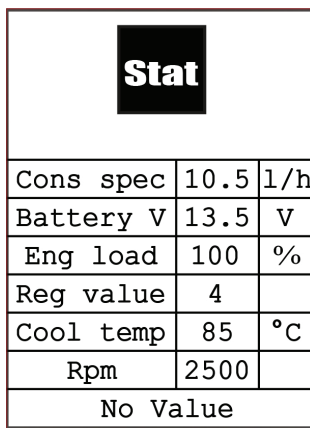


4. Select the value you wish to display using the buttons  and .

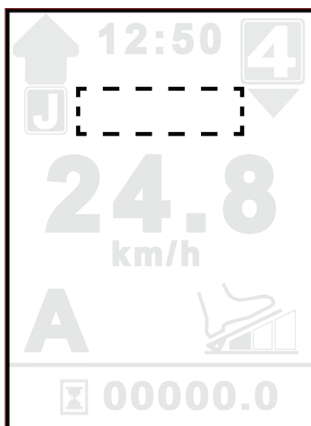
- › *Cons Spec: displays instantaneous fuel consumption (l/h).*
- › *Battery V: displays instantaneous battery voltage (V).*
- › *Eng Load: displays engine load (%). The percentage refers to the absorbed power.*
- › *Reg Value: displays the regeneration level.*
- › *Cool Temp: displays the temperature of the engine coolant (°C).*
- › *Rpm: displays the engine speed (RPM).*
- › *No Value: no value is displayed.*

5. Press button  to confirm.
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.

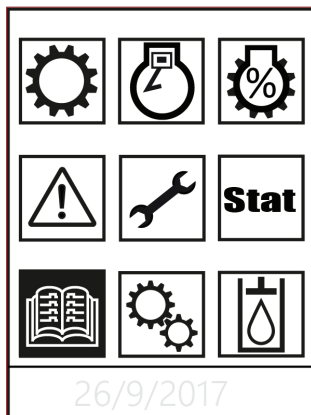


Stat		
Cons spec	10.5	l/h
Battery V	13.5	V
Eng load	100	%
Reg value	4	
Cool temp	85	°C
Rpm	2500	
No Value		



Info Menu

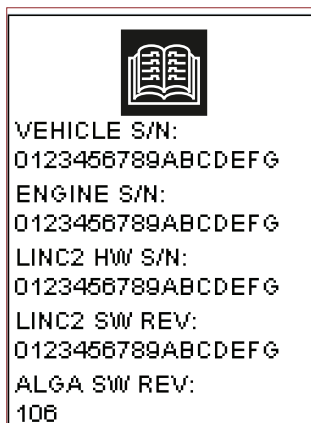
1. Press the button .
2. Select the icon as in the figure using the buttons  and .
3. Press button  to confirm.







The INFO page shows:

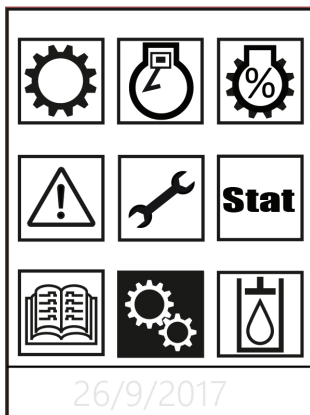
- › *VEHICLE S/N: Serial number of the machine.*
- › *ENGINE S/N: Serial number of the engine.*
- › *LINC2 HW S/N: Serial number of the TCU (Transmission Control Unit).*
- › *LINC2 HW REV: Software revision of the TCU (Transmission Control Unit).*
- › *ALGA SW REV: Software revision of the multifunctional tool.*

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






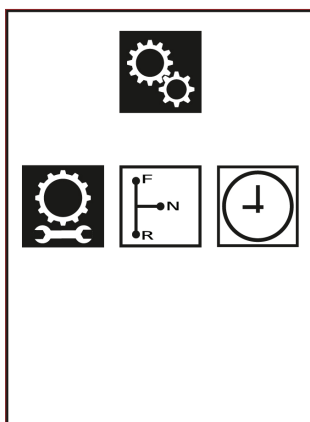
General Settings Menu

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






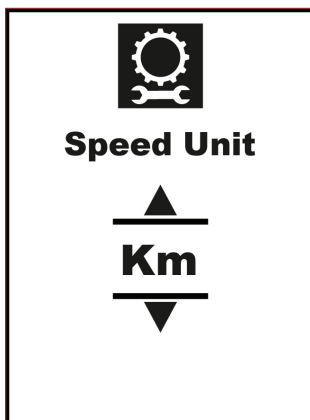
Transmission parameters

4. Select the icon as shown in the figure using the buttons  and .
5. Press button  to confirm.






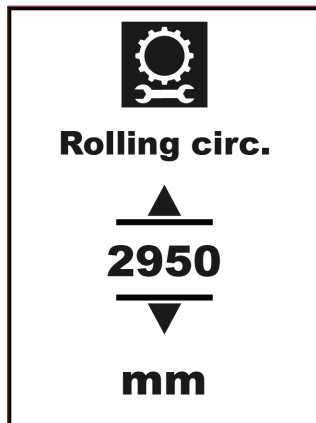
Speed unit of measure

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



Rolling circumference of the tyres

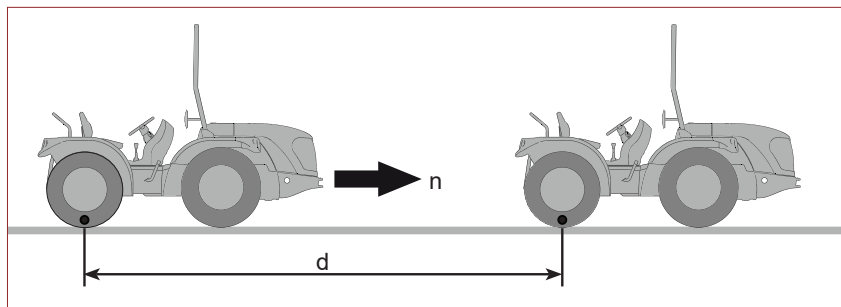
1. Set the rolling circumference of the tyres using the buttons  and .
2. Press button  to confirm.



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

- Deactivate front wheel drive.
- Mark the rear tyre 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 tyre.
- Move forward at least 2 turns of the rear wheels.
- Mark the reference at the end of the turns on the ground.

Measure the distances travelled by the rear wheels.



Calculation of the rolling circumference:

$$\text{Cdr} = \frac{d}{n}$$

Key




Cdr = rolling circumference

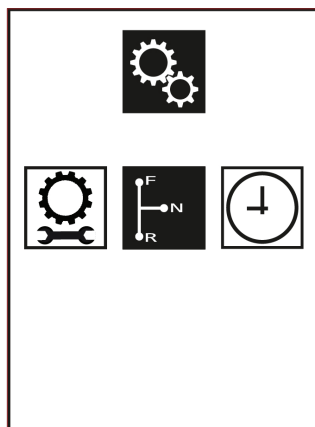
d = distance travelled by the rear wheels

n = number of turns made by the rear wheels




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

Shuttle parameters

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

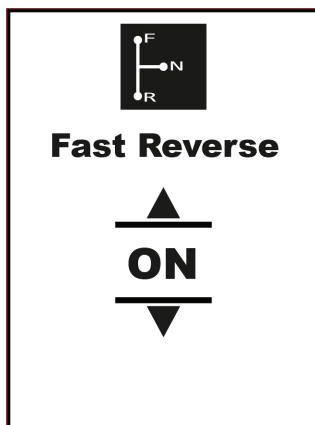


Fast Reverse

1. Select ON/OFF using the buttons  and  to activate/deactivate the 'Fast Reverse' function.
2. Press button  to confirm.

The 'Fast Reverse' function allows you to choose the way in which the reverser changes the direction of movement when working with speed memories activated.

- › **Fast Reverse OFF:** all the speed memories are deactivated at each movement of the shuttle lever.
- › **Fast Reverse ON:** all the speed memories remain active even when reversing, as long as the shuttle lever does not remain in neutral position for more than one second.



ATTENTION

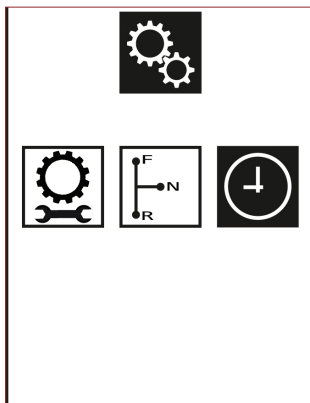
The "Fast Reverse" function must be used ONLY during work activities and not during transfer on the road, to avoid situations of danger.

Time and date setting menu

1. Select the icon as in the figure using the buttons



2. Press button **OK** to confirm.

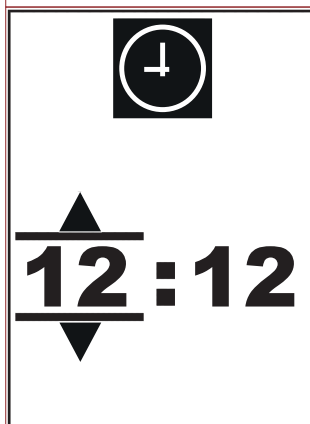


3. Set the hour (0-24) using the buttons and .

4. Press button **OK** to confirm.

5. Set the minutes using the buttons and .

6. Press button **OK** to confirm.



7. Set the day using the buttons and .

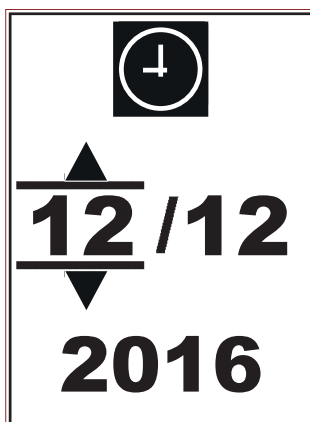
8. Press button **OK** to confirm.

9. Set the month using the buttons and .





10. Press button **OK** to confirm.

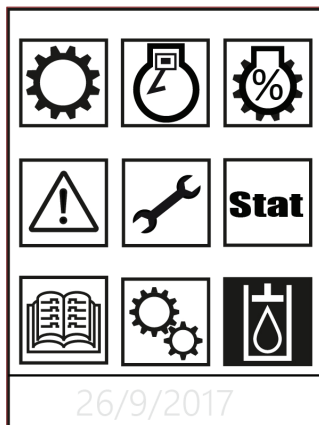
11. Set the year using the buttons and .




12. Press button **OK** to confirm.



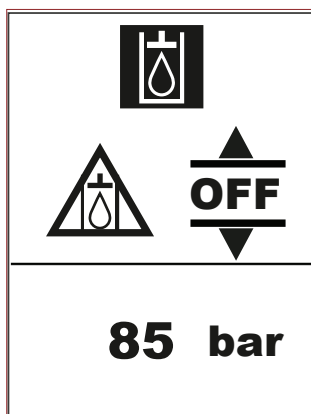
Hydraulic System Menu




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

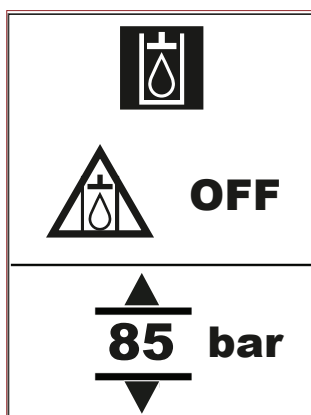


4. Select ON/OFF using the buttons  and  to enable the hydraulic suspension control (if present).
5. Press button  to confirm.

For machines with a Joystick see (→ p. 133)

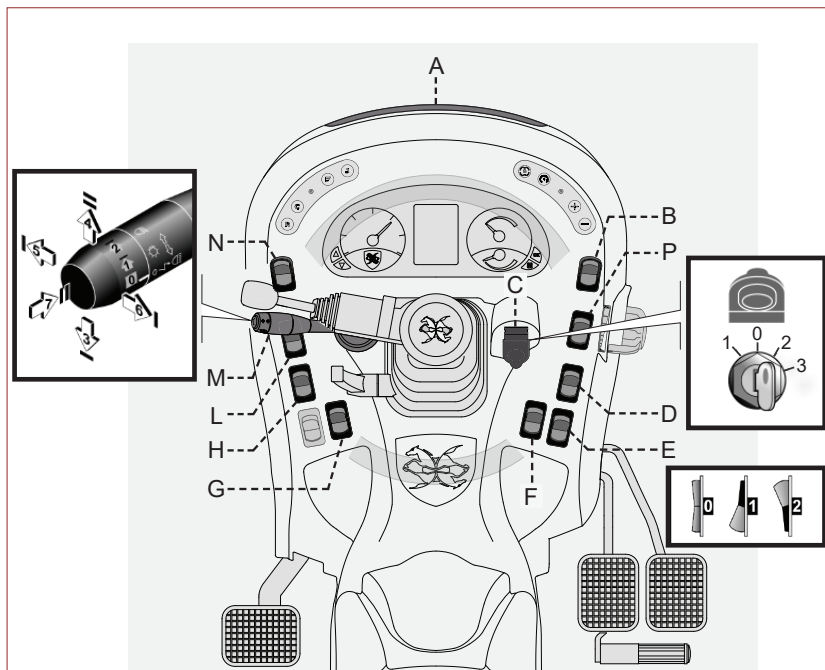


6. Set the preloading pressure value using the buttons  and .
7. Press button  to confirm.



06.4. DESCRIPTION OF DASHBOARD CONTROLS

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



- A. **Fuses/relays compartment:** contains the fuses and relays that protect the electrical system.
- B. **PTO:** to activate the rear power take-off.
The LED lights to show that the function is active.(→ p. 92) (→ p. 96)

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:** to switch on the engine.

Keep the key pressed in slightly when turning the starter switch.

- > **Switch in position "0":** ignition off – key can be removed.
- > **Switch in position "1":** dashboard lights and parking lights switch on. The key can be removed.
- > **Switch in position "2":** engine glowplugs preheating starts and machine is checked.
- > **Switch in position "3":** hold the key in this position to start the engine. On release, the key goes back to position '2'.

- D. **4 wheel drive on/off:** to enable/disable front wheel drive.

The warning light illuminates on the dashboard when front-wheel drive is off. (→ p. 92)

IMPORTANT When driving on flat ground, it is recommended to disconnect the front-wheel drive during road circulation to avoid unnecessary wear of tyres 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. 92)
 - › **Control in position 1:** the differentials of the front and rear axle lock (light on). (→ p. 92)
 - › **Control in position 2:** the differential of the rear axle locks (light on). (→ p. 92)
- G. Position not used.
- H. **Hazard lights:** switches on the hazard lights.
When the indicator light is lit (flashing) 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

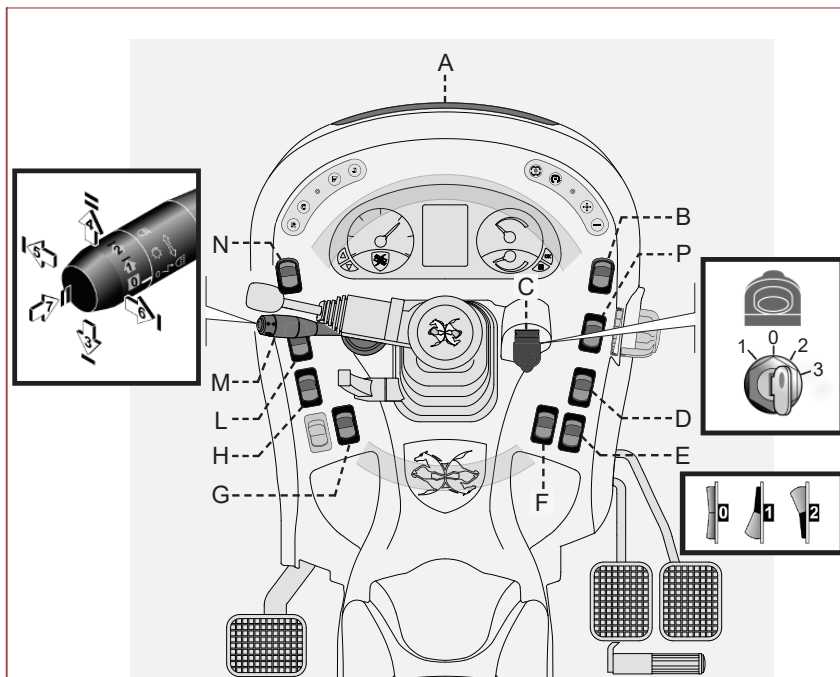
Start the engine **ONLY** when sitting in the driver's seat.

2. Before starting the engine, make sure that the power take-off is deactivated (switch **(B)** with light off) and that the shuttle lever is in the neutral position.
3. Ensure the parking brake is engaged.
4. 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.
5. Press the switch **(L)** until the  icon appears on the display.

Disabling:

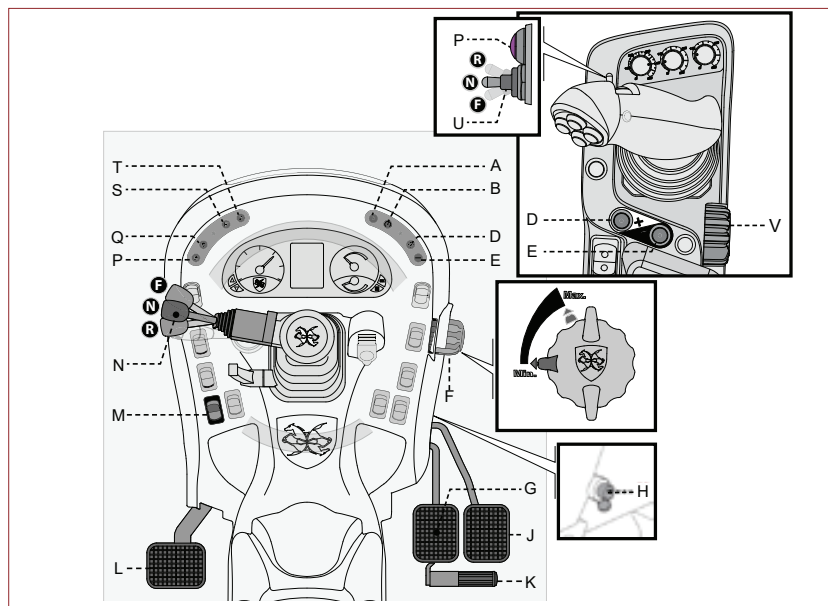
- › press button **(L)**.
- › press the button **(B)** or reciprocal on the Joystick.
- › disengage the parking brake without sitting in the driver's seat.

- M. Multi-function control:** used to activate the functions listed.
- › Control in position 0 (OFF): disabled.
 - › Control in position 1: sidelights on. (→ p. 92)
 - › Control in position 2: the low beam headlights switch on.
 - › Control in position 3: high beam headlights on. (→ p. 92)
 - › Control in position 4: when this control is activated the high beam headlights flash repeatedly.
 - › Control in position 5: direction indicators (right). (→ p. 92)
 - › Control in position 6: direction indicators (left). (→ p. 92)
 - › Control in position 7: horn sounds when pressed.
- N. Rotating light:** switches on the rotating light.
- P. Regeneration switch:** for manual control of regeneration of the DPF filter. (→ p. 163)



06.5. DESCRIPTION OF DRIVE AND STOP CONTROLS

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



- A. **Dual Memo Cruise Control Button:** used to preselect the machine advancement mode combining Cruise Control and Memo RPM. (→ p. 173)
- B. **Memo RPM Button:** used to save and recall the number of engine revolutions. (→ p. 173)
- D. **Button (+):** can perform the following functions.
 - Gear up:** for changing up the range. (→ p. 171).
 - Memo Speed Up:** With the Cruise Control function active, used to increase the speed value.
- E. **Button (-):** can perform the following functions.
 - Gear Down:** for changing down the range. (→ p. 171)
 - Memo Speed Down:** With the Cruise Control function active, used to decrease the speed value.
- F. **Gas control (machine without Joystick):** sets a constant engine speed. With the lever in minimum engine speed position, the 'Automotive' device is activated. (→ p. 173)



ATTENTION

This control is used only when a constant engine speed is required.

- G. **Brake pedal:** brakes the rear left wheel.
- H. **Pin:** integrates the pedals so that the braking action is shared over all the wheels.
- J. **Brake pedal:** brakes the rear right wheel.

The brake pedals can be 'independent' or 'latched'.

- When one of the 'independent' brake pedals is pressed, the machine will pivot on the locked wheel (steering brake).
- When the 'latched' pedals are pressed, the machine brakes on all four wheels.



ATTENTION

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. **Drive pedal:** varies the drive speed of the machine. (→ p. 160)

L. **Clutch pedal:** performs the functions listed.

When starting: gives consent to start the engine.

Machine moving: inhibits machine advancement and stops it with the engine on.

M. **Parking brake switch:** activates the parking brake of the machine.(→ p. 155)

N. **Shuttle lever:** for selecting the direction of movement.

- **Control in position "N":** neutral gear.
- **Control in position "F":** machine moves in 'forward' direction.
- **Control in position "R":** machine moves in 'reverse' direction.

In machines equipped with a 'Joystick' control, the lever is enabled only if the 'Joystick' function has NOT been selected with the switch on the dashboard (→ p. 96).

Whenever it is switched on again, the control is enabled on the lever (N) on the dashboard.

P. **Cruise Control Button:** recalls the speed saved previously. (→ p. 173) (→ p. 102)

Q. **Instant Cruise Control Button:** maintains the instantaneous working conditions (drive speed, number of revolutions of the engine and of the PTO) by removing the foot from the drive pedal. (→ p. 173)

S. **Drive Mode Button:** allows you to select the drive mode. (→ p. 169)

T. **Enable reverser on joystick button:** for selecting which reverser control to use (dashboard or joystick). If the 'Joystick' function is selected, the respective icon appears on the multifunction display.(→ p. 96)

Whenever it is switched on again, the control is enabled on the lever (N).

U. **Shuttle lever (machine with Joystick):** for selecting the direction of movement.

- **Control in position "N":** neutral gear.
- **Control in position "F":** machine moves in 'forward' direction.
- **Control in position "R":** machine moves in 'reverse' direction.

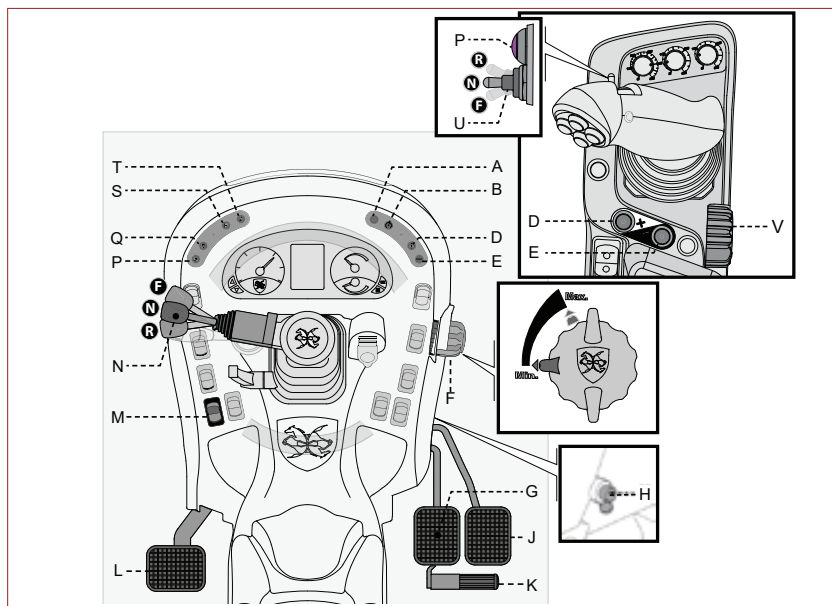
In machines equipped with a 'Joystick' control, the lever is enabled only if the 'Joystick' function has been selected with the switch on the dashboard (→ p. 96). Whenever it is switched on again, the control is enabled on the lever (**N**).

V. Gas control (machine with Joystick): sets a constant engine speed. With the lever in minimum engine speed position, the 'Automotive Mode' is activated. (→ p. 173).



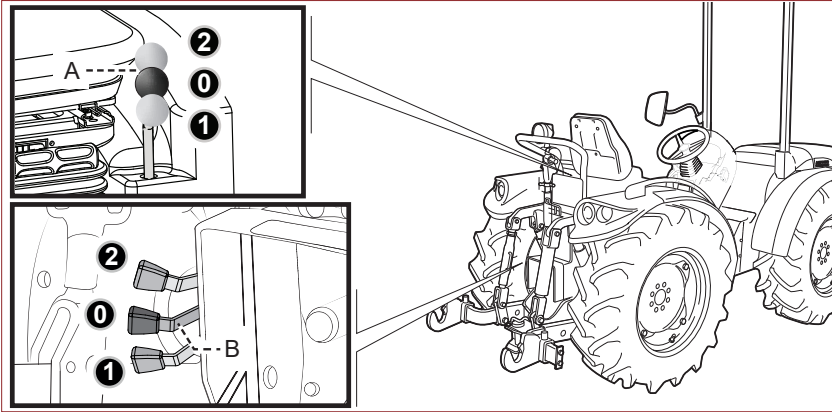
ATTENTION

This control is used only when a constant engine speed is required.



06.6. DESCRIPTION OF POWER TAKE-OFF CONTROLS

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



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

- › **Control in position 0:** OFF.
- › **Control in position 1:** the power take-off works in 'independent mode' (speed synchronised with engine revs).
- › **Control in position 2:** the power take-off works in 'groundspeed mode' (speed synchronised with the machine travel speed). The function is activated only with the first range engaged.

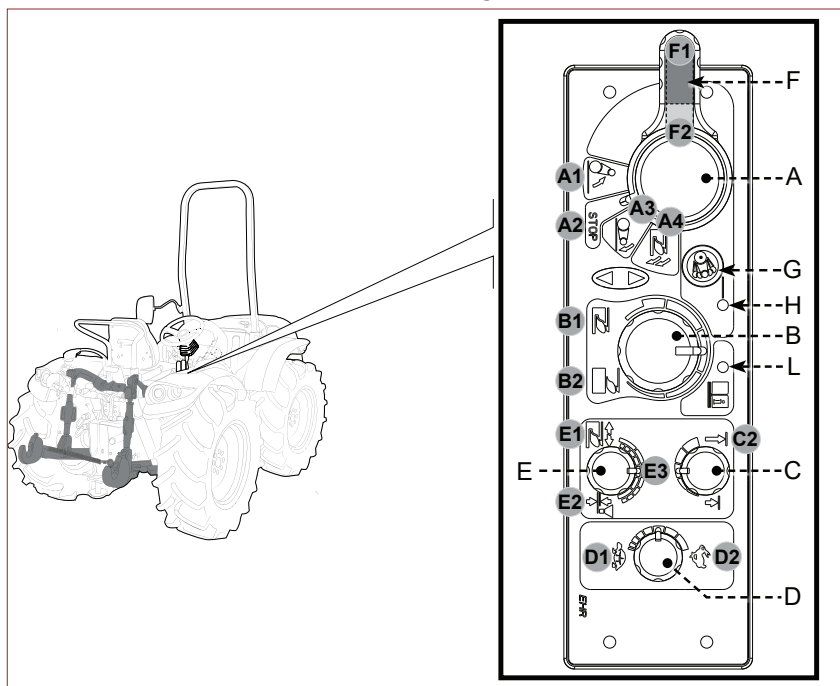
B. Lever: for selecting the power take-off operating mode (number of revolutions per minute).

- › **Control in position 0:** OFF.
- › **Control in position 1:** power take-off runs at 540 rpm with the engine at a lower speed for implements of modest power absorption. Depending on the equipment chosen, there may be one of the following options: version **540 E**, version **540 S**, version **1000**. (→ p. 298)
- › **Control in position 2:** power take-off runs at 540 rpm.

IMPORTANT The machine is equipped with a PTO safety brake that is engaged automatically when the PTO is switched off with the button or when the lever (B) is in the neutral position. In the case of connection with towed drive equipment, if the PTO is deactivated, 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.

06.7. DESCRIPTION OF THE CONTROLS OF THE "DRAFT CONTROL" POWER LIFT UNIT (ELECTRONIC)

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



A. **Knob:** used to activate the arms of the rear power lift unit.

- › **Control in position "A1" (transport):** the arms of the power lift unit are raised within the maximum limit set with the potentiometer (C). In this position, to be used when driving on roads, it is possible to insert the safety catch (F).
- › **Control in position "A2" (stop):** the arms of the power lift unit remain blocked in their position.
- › **Control in position "A3" (control):** the arms of the power lift unit are lowered within the set limits.
- › **Control in position "A4" (fast ground penetration):** the arms of the power lift unit are lowered beyond the selected limit to cause the implement to penetrate the soil to the working depth immediately. On release from position "A4", the control goes back to position "A3".

- B. Potentiometer:** depending on the position of the control **(E)**, this is used to adjust the position of the implement, or the force applied on it, during use.
- › **With control (E) in position "E2":** to adjust the height of the implement.
 - › **With control (E) in position "E1" - "E3":** used to adjust the force applied on the implement.
 - › **Control in position "B1" and control (A) in position "A3":** activates float mode.
- C. Potentiometer:** used to adjust the maximum permissible height for the lifting assembly.

The height limitation does not concern operation via the external controls (rear).

- › **Control in position "C1":** minimum implement height from ground.
- › **Control in position "C2":** maximum implement height from ground.

Proceed as directed to make the appropriate height adjustments for the lifting assembly.

- 1\ Attach the implement to the tractor (→ p. 184) (→ p. 185) (→ p. 187) (→ p. 189) (→ p. 190) (→ p. 192).
- 2\ Turn the knob **(A)** to position **"A3"** to lower the implement down to the ground.
- 3\ Turn the potentiometer **(C)** to position **"C1"** to set the minimum implement height.
- 4\ Turn the knob **(A)** to position **"A1"** to raise the implement.
- 5\ Turn the potentiometer **(C)** up to the maximum allowed by the overall dimensions.

- D. Potentiometer:** used to adjust the rate of descent of the implement or lock it in a stable position.

The height limitation does not apply to operation via the external controls (rear) and with the "Damping" function on (button (G)).

- › **Control in position "D1":** lift unit locks at predetermined position.
- › **Control in position "D2":** lift unit moves at full speed.

- E. Knob:** used to select the operating mode of the lifting assembly.

- › **Control in position "E1":** lift unit operates in 'draft control' mode.
- › **Control in position "E2":** lift unit operates in 'position control' mode.
- › **Control in position "E3":** lift unit operates in 'mixed control' mode.

- F. Safety catch lever:** used to lock the control **(A)** in position **"A1"** during road travel.

- › **Control in position "F1":** position unlocked.
- › **Control in position "F2":** position locked.

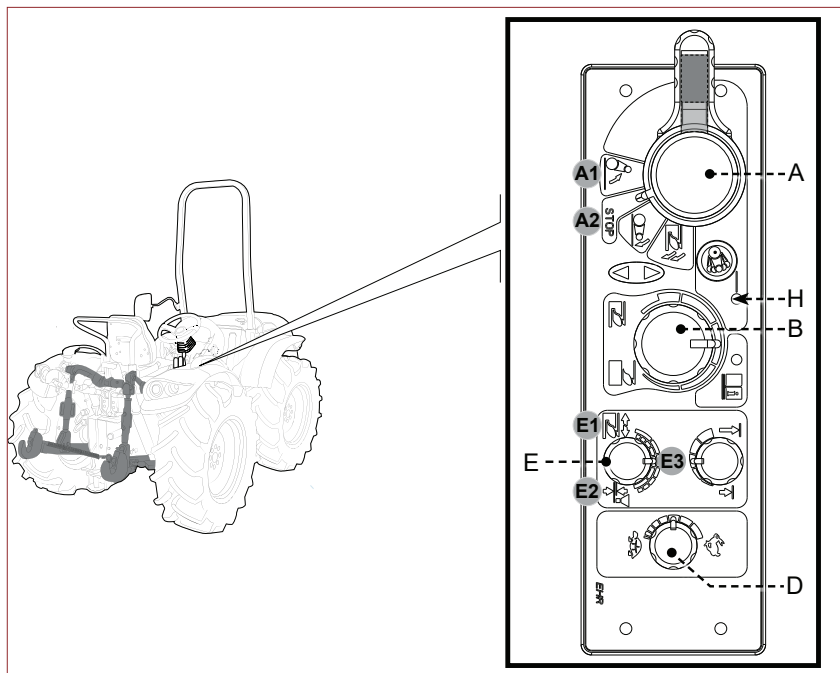
- G. Button:** used to activate the 'Damping' function. The function is only activated with the control **(A)** in position **"A1"** and the safety lever in position **"F1"**

H. **Warning light (amber):** ON indicates that the 'Damping' function is activated.

L. **Warning light (red):** indicates one of the following conditions.

NOTE Warning light ON with a blinking light indicates an operating fault.
Warning light on steady indicates that the lifting assembly is in the "stop" position "A2"

06.8. "DRAFT CONTROL" (ELECTRONIC) POWER LIFT UNIT USE MODE



Different operating modes can be selected, according to the type of implement and the soil conditions.

NOTE On starting the machine the device is always locked and the warning light (H) is on. To unlock the device, turn the knob (A) from position (A2) to position (A1).

Position control

This type of control keeps the implement at a constant soil-engaging depth.

- 1\ Turn the knob (E) to position "E2".
- 2\ Use the potentiometer (B) to lower the implement until work position is reached.
- 3\ Use the knob (A) to raise and lower the implement during use.

Draft control

This type of control maintains a constant soil-engaging force at the implement.

- 1\ Turn the knob (E) to position "E1".
- 2\ Use the potentiometer (B) to lower the implement until work position is reached.
- 3\ Use the knob (A) to raise and lower the implement during use.

Intermix

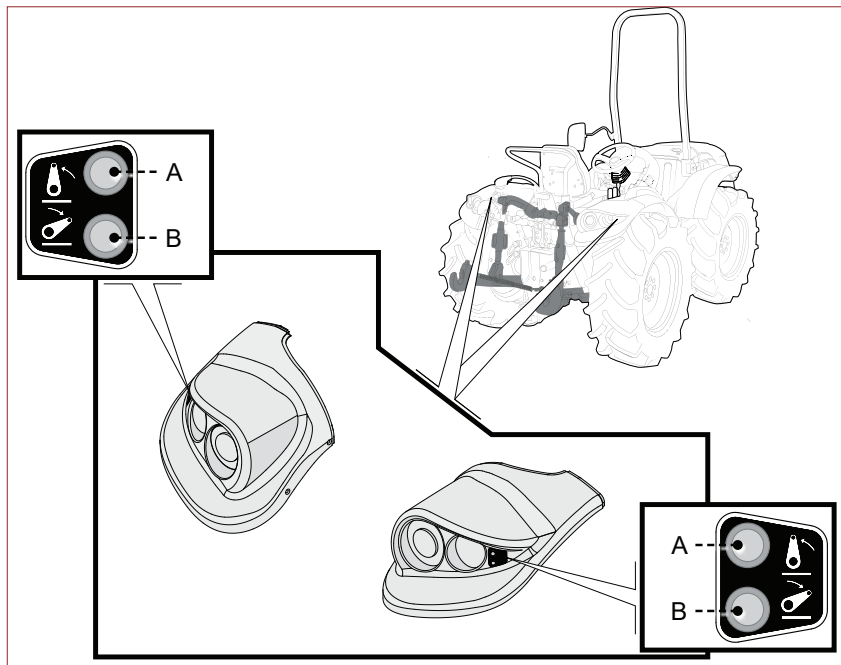
This type of control maintains a constant soil-engaging force at the implement and keeps it at a constant working depth.

- 1\ Turn the knob **(E)** to position "**E3**".
- 2\ Use the potentiometer **(B)** to lower the implement until the desired position is reached.
- 3\ Use the knob **(A)** to raise and lower the implement during use.

NOTE *During operation, use the potentiometer (D) to adjust the speed of the lift unit.*

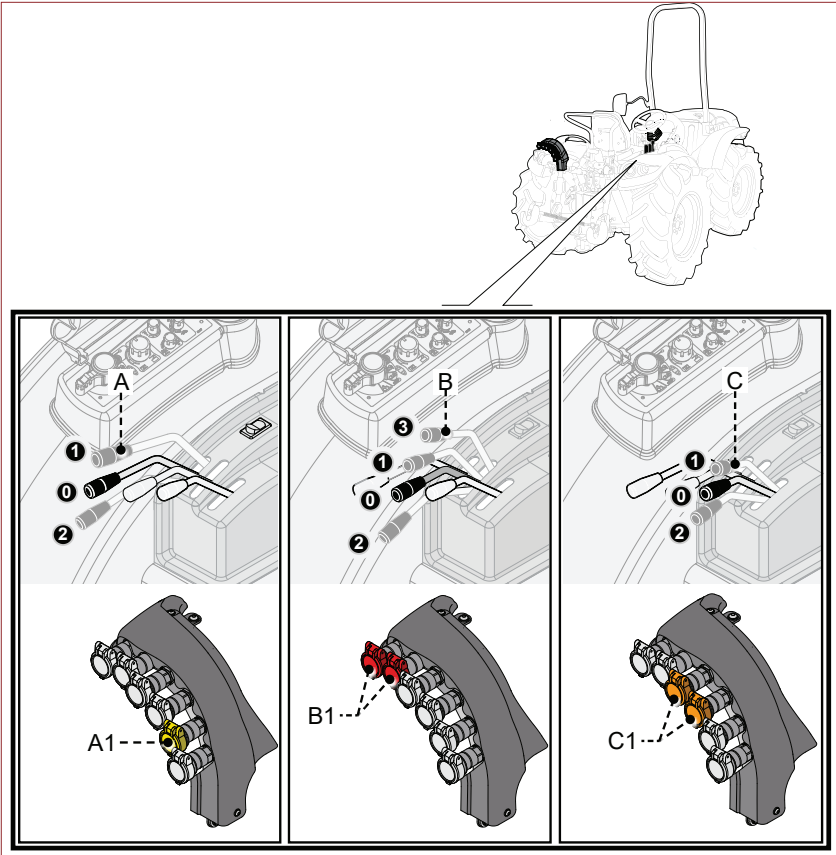
06.9. DESCRIPTION OF THE EXTERNAL CONTROLS OF THE LIFTING ASSEMBLY (IF PRESENT)

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.

06.10. DESCRIPTION OF THE HYDRAULIC COUPLING CONTROLS WITH ELECTRONIC DRAFT CONTROL POWER LIFT UNIT



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

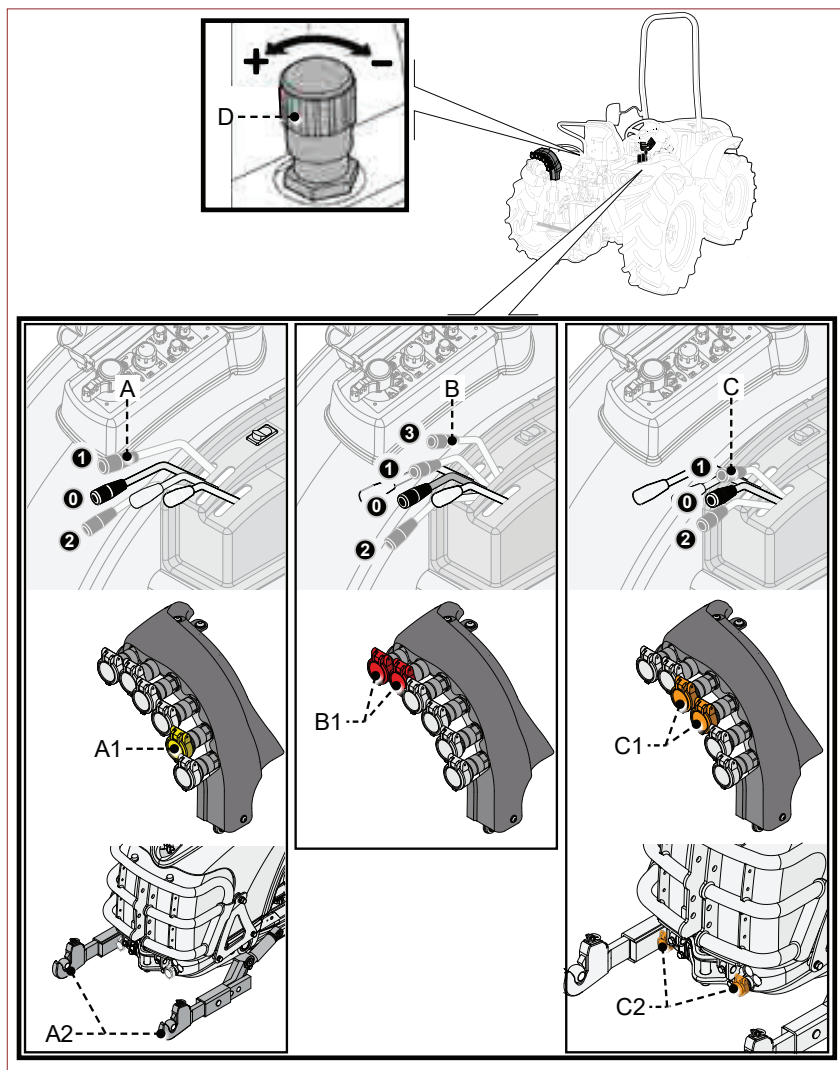
- › **Control in position 0:** OFF.
- › **Control in position 1:** activates the outlet at the hydraulic coupler (A1).
- › **Control in position 2:** activates the discharge of the hydraulic coupling (A1) (yellow).
On release from position 1-2, the control goes back to position 0.

B. Lever (maintained action + stable position): used to activate the double-acting hydraulic couplings (B1) (red).

- › **Control in position 0:** OFF.
- › **Control in position 1:** activates the hydraulic couplers.
On release from position 1, the control goes back to position 0.

- › **Control in position 2:** activates the hydraulic couplers, 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.
 - › **Control in position 3 (stable position):** activates float control of the hydraulic couplers. To deactivate the command, shift the lever to position 0.
- C. Lever (maintained action):** used to activate the double-acting hydraulic couplers **(C1)** (orange).
- › **Control in position 0:** OFF.
 - › **Control in position 1-2:** activates the interchangeable implement. On release from position 1-2, the control goes back to position 0.

06.11. DESCRIPTION OF THE HYDRAULIC COUPLING CONTROLS AND FRONT LIFT WITH ELECTRONIC DRAFT CONTROL POWER LIFT UNIT (OPTIONAL)



IMPORTANT_DO NOT connect the quick couplers of the rear part and those of the front part (that have the same colour) to activate two interchangeable implements at the same time.

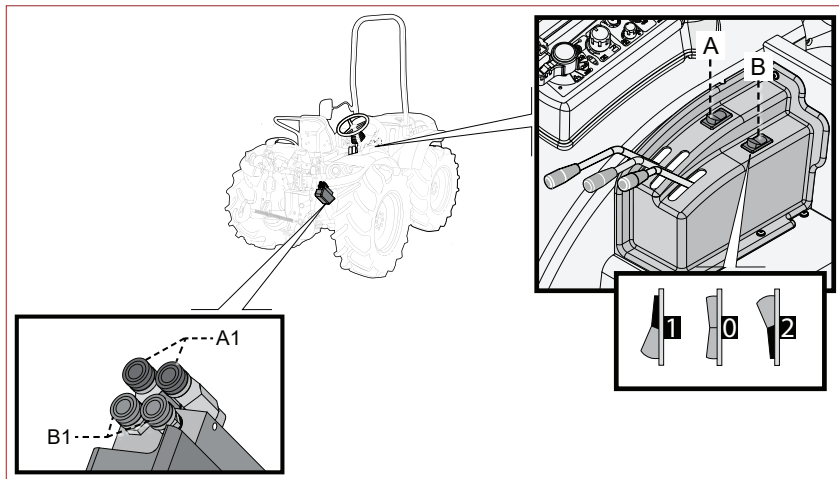
A. Lever (maintained action): used to activate the single-acting hydraulic coupling (A1) (yellow) and the front lift (A2).

- › **Control in position 0:** OFF.
- › **Control in position 1:** activates the outlet of the hydraulic coupler **(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.

IMPORTANT The lever (A) controls both the rear yellow hydraulic coupler and the front lift SIMULTANEOUSLY. If the front lift is used, make sure that there is no tool attached to the rear yellow coupling. If the rear yellow coupler is used, close the flow regulating valve (D) and make sure that there is no implement attached to the front lift.

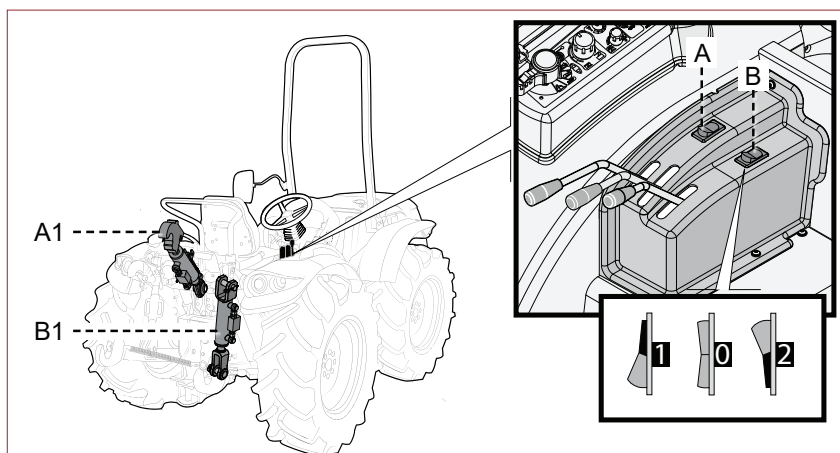
- B. Lever (maintained action + stable position):** used to activate the double-acting hydraulic couplings **(B1)** (red).
- › **Control in position 0:** OFF.
 - › **Control in position 1:** activates the hydraulic couplers.
 - › **Control in position 2:** activates the hydraulic couplers, with opposite function to the one obtained with the control in position 1.
On release from position 1-2, the control goes back to position 0.
 - › **Control in position 3 (stable position):** activates float control of the hydraulic couplers.
To deactivate the command, shift the lever to position 0.
- C. Lever (maintained action):** used to activate the double-acting hydraulic couplings at front **(C2)** and rear **(C1)** (orange).
- › **Control in position 0:** OFF.
 - › **Control in position 1:** activates the hydraulic couplers.
 - › **Control in position 2:** activates the hydraulic couplers, with opposite function to the one obtained with the control in position 1.
- D. Flow regulating valve:** used to adjust the rate of descent of the front implement or to lock it in a stable position.

06.12. DESCRIPTION OF THE HYDRAULIC MINI-COUPLING CONTROLS WITH ELECTRONIC DRAFT CONTROL POWER LIFT UNIT (ELECTRONIC)



- A. Mini-coupling switch (maintained action):** used to activate the hydraulic mini-couplings (A1).
- › **Control in position 0:** OFF.
 - › **Control in position 1:** activates the hydraulic mini-couplers.
 - › **Control in position 2:** activates the hydraulic mini-couplers, 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:** OFF.
 - › **Control in position 1:** activates the hydraulic mini-couplers.
 - › **Control in position 2:** activates the hydraulic mini-couplers, 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.

06.13. DESCRIPTION OF THE VERTICAL TIE-ROD AND STRUT CONTROLS WITH DRAFT CONTROL POWER LIFT UNIT (ELECTRONIC) (OPTIONAL)



- A. **Hydraulic strut switch (maintained action):** used to adjust the hydraulic control third point strut (**A1**) (rear power lifting unit).
- › **Control in position 0:** OFF.
 - › **Control in position 1:** strut is lengthened.
 - › **Control in position 2:** 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:** OFF.
 - › **Control in position 1:** arm is lowered.
 - › **Control in position "2":** arm is raised.
On release from position '1-2', the control goes back to position '0'.

06.14. DESCRIPTION OF "JOYSTICK" TYPE CONTROLS

The Joystick of the Tony 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.

IMPORTANT_ Place your hand on the joystick only after having switched it on.

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.

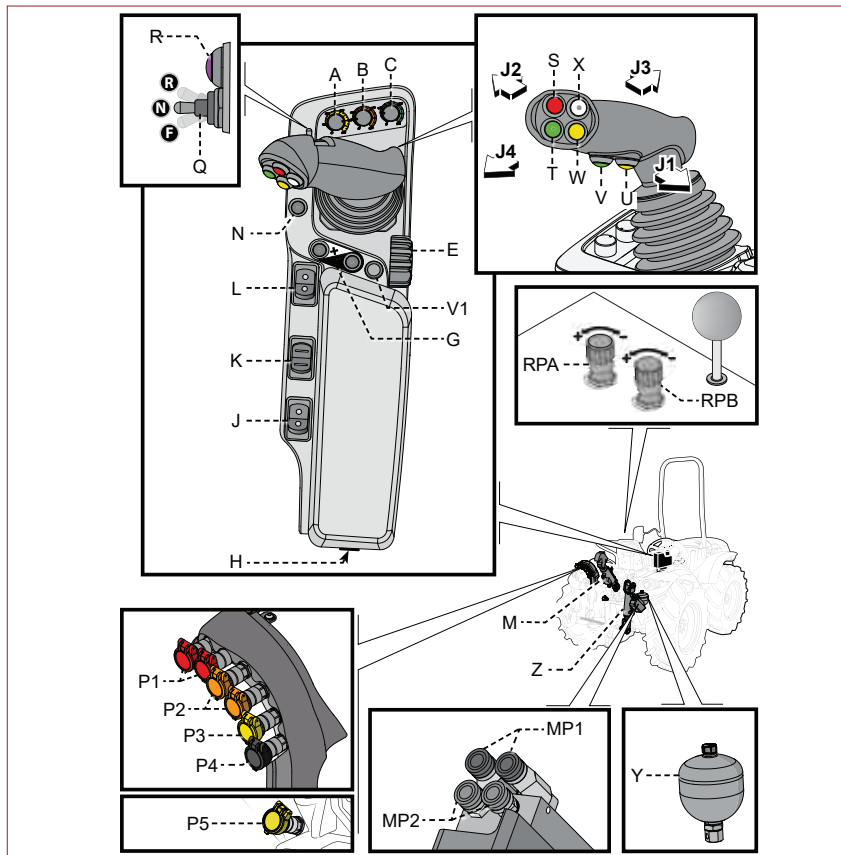
- 1\ Hold down simultaneously for about two seconds the buttons (**S**) (red) and (**T**) (green). The led (**V1**) flashes.
- 2\ Select the desired configuration using the buttons (**S**) and (**T**). Corresponding to each configuration is a different led flashing sequence (Set 1 = 1 flash + pause;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

The selected configuration remains saved until a new setting.

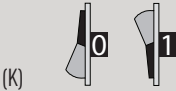



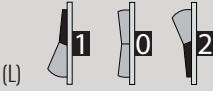




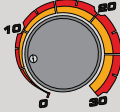

IMPORTANT_ When selecting the setting, it is possible that the flashing of the LED does not update with the same speed as the button control: to be safe, wait for the second sequence. The "Joystick" controls activate the rear and front hydraulic couplers that have the same colour. **DO NOT** connect 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. At the end of each working day cover the "joystick" with the special protection.

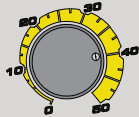
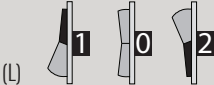


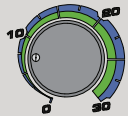


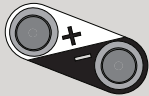
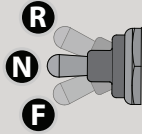
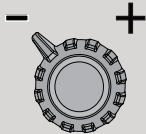

The illustrations represent the devices, while the lists give their description and function.

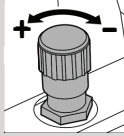
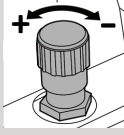
06.14.1. Set 1.



Operation	Control	Notes
Joystick On/Off	(H)	(0): off. (1): on.
Rear power lift		(J1): lift. (J2): lower.
(Z) Hydraulic vertical tie-rod		(If present) To adjust the oil flow rate, turn the knob (C)
(M) Hydraulic top link		(If present)

Operation	Control	Notes
Hydraulic suspension	(K) 	(0): off. (1): ON.
(Y) Hydraulic suspension accumulator		(U+J1): charged. (U+J2): discharged.
Suspension memo		(→ p. 113)
Rear power lift float		When activated, the LED (V1) lights up. Deactivation: press the button again, pull the joystick lever (J1), or press the button (D)
Front power lift	(L) 	(If present) (2): lift (unstable position). (1): lower (stable position).
(P5) Yellow hydraulic coupling S.E.		(T+J1): outlet. (T+J2): return.
(P1) Red hydraulic couplings D.E. (***)		To adjust the oil flow rate, turn the knob (B).
Red couplings float D.E.	(J) 	(0): off. (1): ON.
(P2) Orange hydraulic couplings D.E. (***)		To adjust the oil flow rate, turn 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 rate, turn the knob (A).

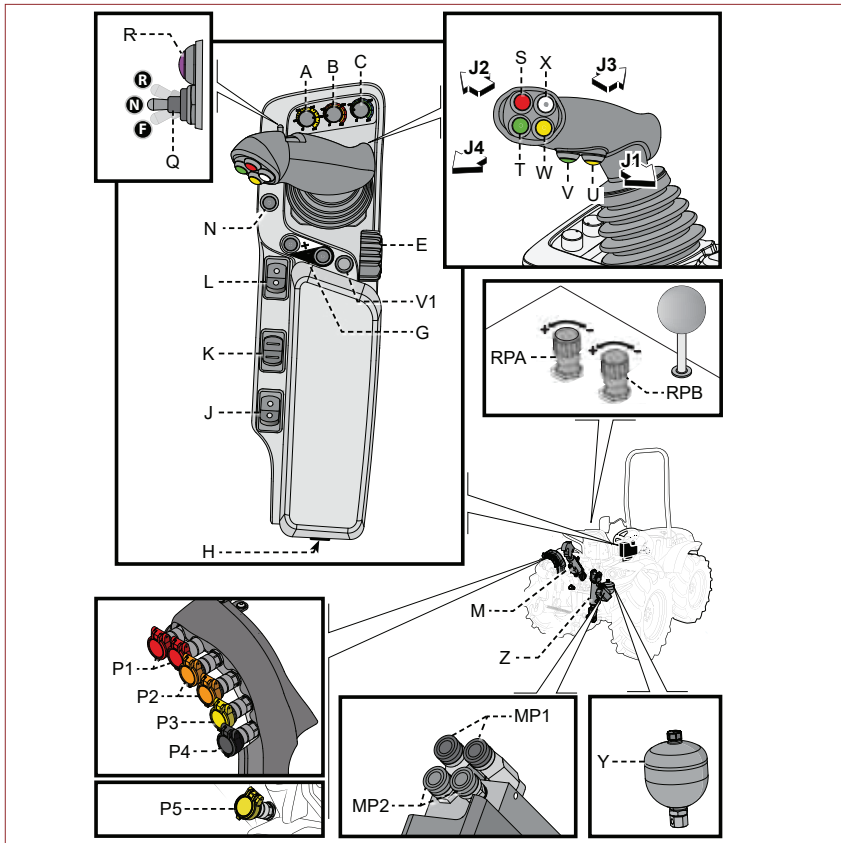
Operation	Control	Notes
(A) Hydraulic motor flow regulator		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P5) Yellow hydraulic coupling S.E.	(L) 	(1): outlet (stable position). (2): return (unstable position).
(MP1) Mini-couplings		To adjust the oil flow rate, turn the knob (C).
(MP2) Mini-couplings		To adjust the oil flow rate, turn the knob (C).
(C) Mini-coupling 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.
Power take-off		Press the button (for about 2 seconds) to activate. Press the button again to deactivate. (*)
Electric control.		
Range gearbox	(G) 	(→ p. 171) (+): changing up the range. (-): changing down the range.
Reverser control	(Q) 	(**) (F): forward gear. (N): neutral gear. (R): reverse gear.
(E) Gas control		(**) Forward rotation: increase engine speed. Backward rotation: decrease engine speed.
Cruise Control		Retrieves the previously saved speed. (→ p. 167) (→ p. 102)

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

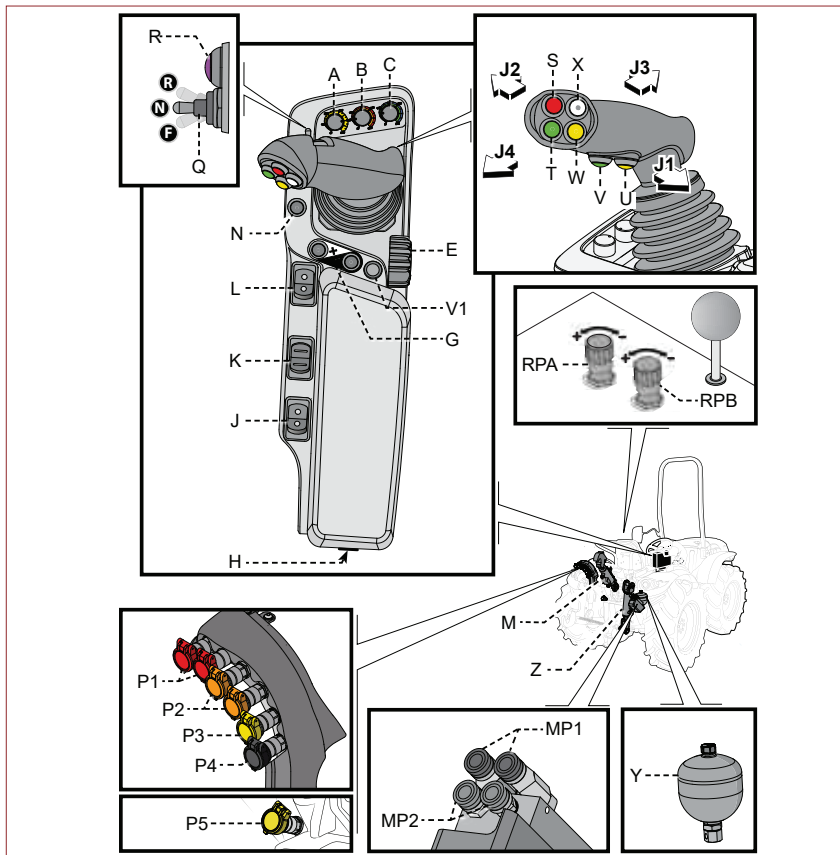
(*) The control is enabled only if the power take-off has been activated by means of the switch on the dashboard (→ p. 114).

(**) The control is enabled only if the 'Joystick' function has been selected with the switch on the dashboard (→ p. 96).

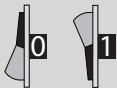



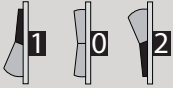
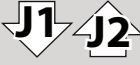

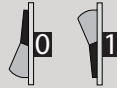

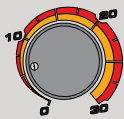

(***) DO NOT connect the quick couplers of the rear part and those of the front part (that have the same colour) to operate two interchangeable implements at the same time.

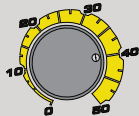
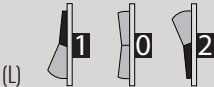


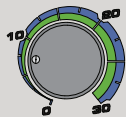


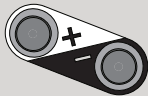
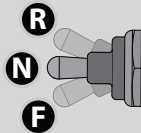
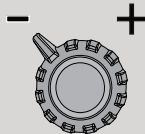



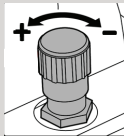
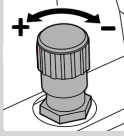
06.14.2. Set 2.



Operation	Control	Notes
Joystick On/Off	(H)	(0): off. (1): on.
Rear power lift	+	(T+J1): lift. (T+J2): lower.
(Z) Hydraulic vertical tie-rod	+	(If present) To adjust the oil flow rate, turn the knob (C)
(M) Hydraulic top link		(If present)

Operation	Control	Notes
Hydraulic suspension	(K) 	(0): off. (1): ON.
(Y) Hydraulic suspension accumulator		(U+J1): charged. (U+J2): discharged.
Suspension memo		(→ p. 113)
Rear power lift float		When activated, the LED (V1) lights up. Deactivation: press the button again, pull the joystick lever (J1), or press the button (D)
Front power lift	(L) 	(If present) (2): lift (unstable position). (1): lower (stable position).
(P5) Yellow hydraulic coupling S.E.		(J1): outlet. (J2): return.
(P1) Red hydraulic couplings D.E. (***)		To adjust the oil flow rate, turn the knob (B).
Red couplings float D.E.	(J) 	(0): off. (1): ON.
(P2) Orange hydraulic couplings D.E. (***)		To adjust the oil flow rate, turn 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 rate, turn the knob (A).

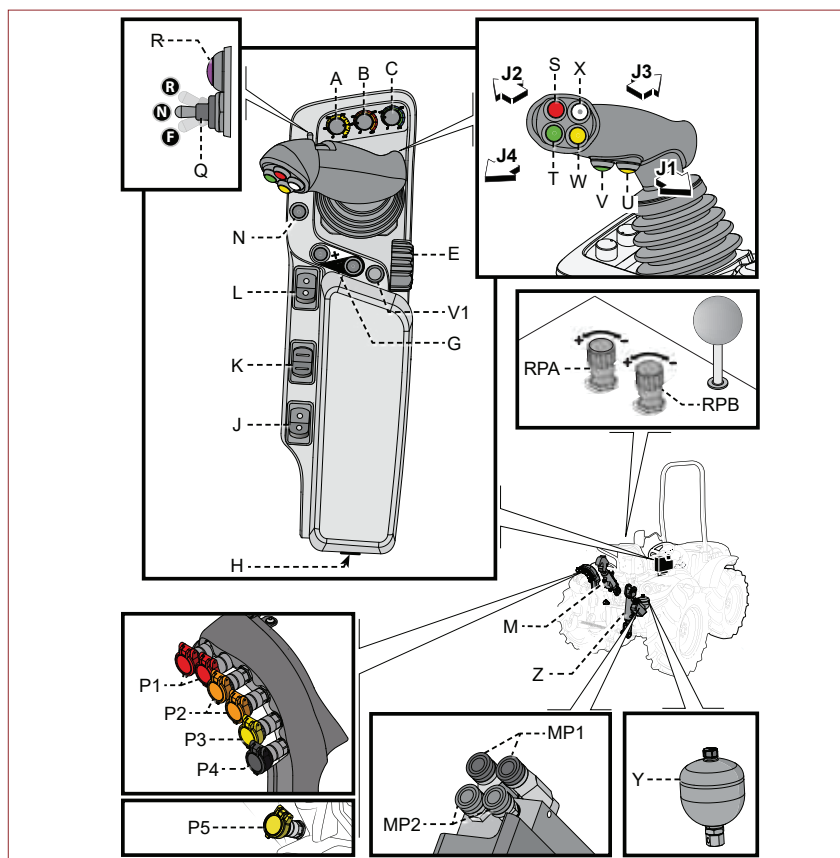
Operation	Control	Notes
(A) Hydraulic motor flow regulator		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P5) Yellow hydraulic coupling S.E.	(L) 	(1): outlet (stable position). (2): return (unstable position).
(MP1) Mini-couplings		To adjust the oil flow rate, turn the knob (C).
(MP2) Mini-couplings		To adjust the oil flow rate, turn the knob (C).
(C) Mini-coupling 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.
Power take-off		Press the button (for about 2 seconds) to activate. Press the button again to deactivate. (*)
Electric control.		
Range gearbox	(G) 	(→ p. 171) (+): changing up the range. (-): changing down the range.
Reverser control	(Q) 	(**) (F): forward gear. (N): neutral gear. (R): reverse gear.
(E) Gas control		(**) Forward rotation: increase engine speed. Backward rotation: decrease engine speed.
Cruise Control		Retrieves the previously saved speed. (→ p. 167) (→ p. 102)

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

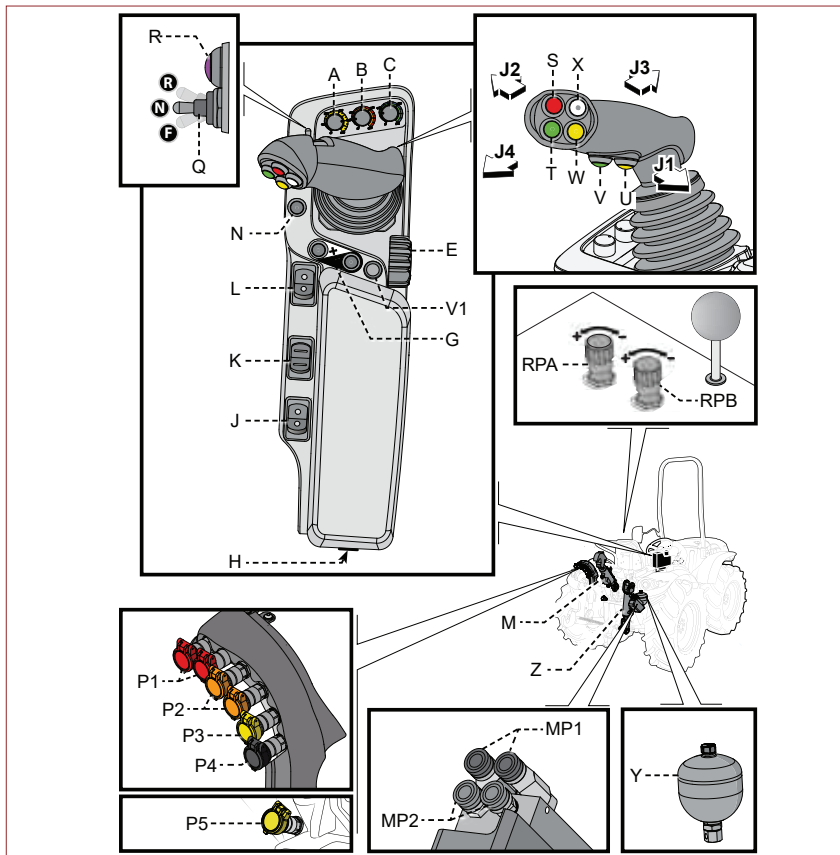
(*) The control is enabled only if the power take-off has been activated by means of the switch on the dashboard (→ p. 114).

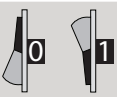



(**) The control is enabled only if the 'Joystick' function has been selected with the switch on the dashboard (→ p. 96).

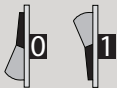



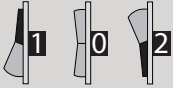


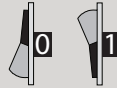
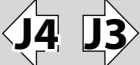
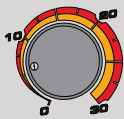

(***) DO NOT connect the quick couplers of the rear part and those of the front part (that have the same colour) to operate two interchangeable implements at the same time.

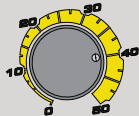
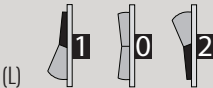


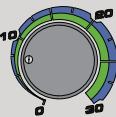


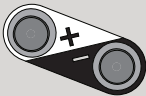
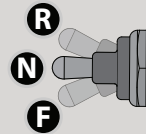
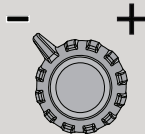



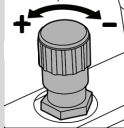
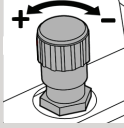
06.14.3. Set 3.



Operation	Control	Notes
Joystick On/Off	(H) 	(0): off. (1): on.
Rear power lift		(S+J1): lift. (S+J2): lower.
(Z) Hydraulic vertical tie-rod		(If present) To adjust the oil flow rate, turn the knob (C)
(M) Hydraulic top link		(If present)

Operation	Control	Notes
Hydraulic suspension	(K) 	(0): off. (1): ON.
(Y) Hydraulic suspension accumulator		(U+J1): charged. (U+J2): discharged.
Suspension memo		(→ p. 113)
Rear power lift float		When activated, the LED (V1) lights up. Deactivation: press the button again, pull the joystick lever (J1), or press the button (D)
Front power lift	(L) 	(If present) (2): lift (unstable position). (1): lower (stable position).
(P5) Yellow hydraulic coupling S.E.		(T+J1): outlet. (T+J2): return.
(P1) Red hydraulic couplings D.E. (***)		To adjust the oil flow rate, turn the knob (B).
Red couplings float D.E.	(J) 	(0): off. (1): ON.
(P2) Orange hydraulic couplings D.E. (***)		To adjust the oil flow rate, turn 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 rate, turn the knob (A).

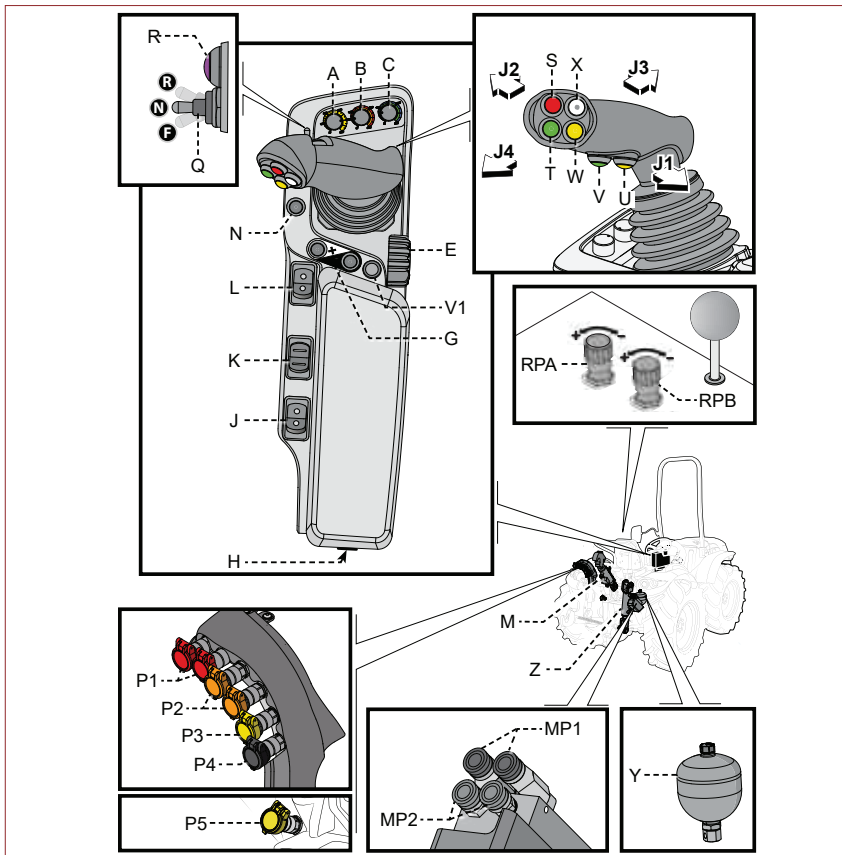
Operation	Control	Notes
(A) Hydraulic motor flow regulator		Turn the knob to set the desired oil flow (in litres). The chosen quantity is reached only if the oil made available by the number of engine revolutions is sufficient.
(P5) Yellow hydraulic coupling S.E.	(L) 	(1): outlet (stable position). (2): return (unstable position).
(MP1) Mini-couplings		To adjust the oil flow rate, turn the knob (C).
(MP2) Mini-couplings		To adjust the oil flow rate, turn the knob (C).
(C) Mini-coupling 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.
Power take-off		Press the button (for about 2 seconds) to activate. Press the button again to deactivate. (*)
Electric control.		
Range gearbox	(G) 	(→ p. 171) (+): changing up the range. (-): changing down the range.
Reverser control	(Q) 	(**) (F): forward gear. (N): neutral gear. (R): reverse gear.
(E) Gas control		(**) Forward rotation: increase engine speed. Backward rotation: decrease engine speed.
Cruise Control		Retrieves the previously saved speed. (→ p. 167) (→ p. 102)

Operation	Control	Notes
Rear power lift capacity regulator	 <p>(RPB)</p>	Used to adjust the rate of descent of the rear implement or to lock it in a stable position.
Front power lift capacity regulator	 <p>(RPA)</p>	Used to adjust the rate of descent of the front 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. 114).

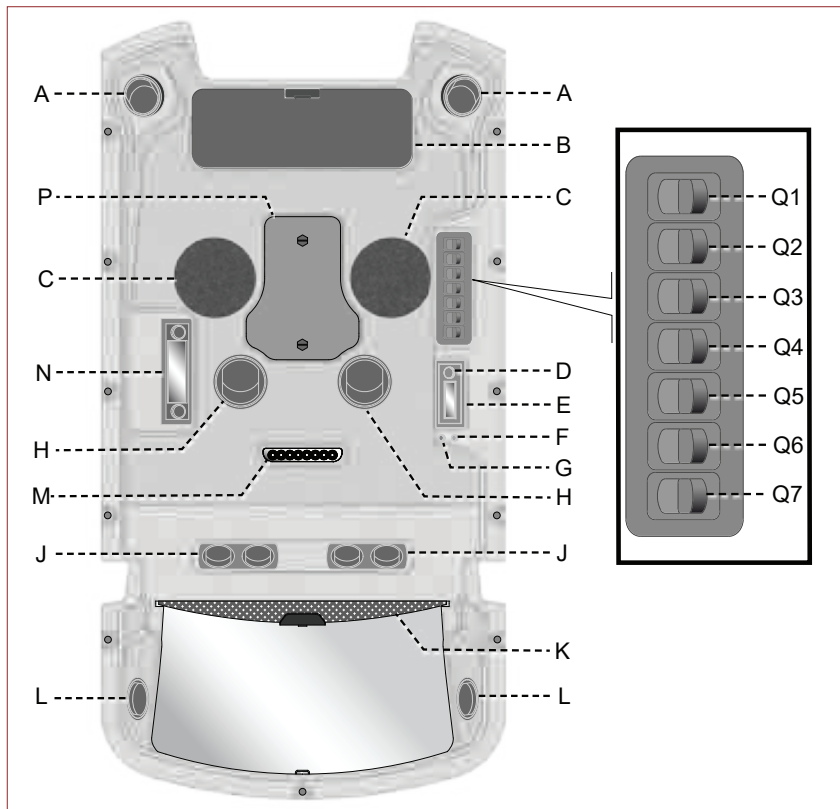
(**) The control is enabled only if the 'Joystick' function has been selected with the switch on the dashboard (→ p. 96).

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



06.15. 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. 150). Cab pressurisation is necessary during the spraying of crop treatment products, to protect against inhaling harmful substances.

For further details on air conditioning, see (→ p. 150).
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 adjust the airflow 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:** operator position lighting. Activated by sensors on the doors or using the specific switch (Q3)
- N. **Radio** (optional)
- P. **Fuses/relays compartment:** it contains the fuses and relays that protect the electrical system.

Q1. Front work lights switch:

-  switches on 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:

-  switches on the cab courtesy light

Q4. Rotating light switch:

-  used to activate the rotating light.



Q5. Windshield wiper washer switch:

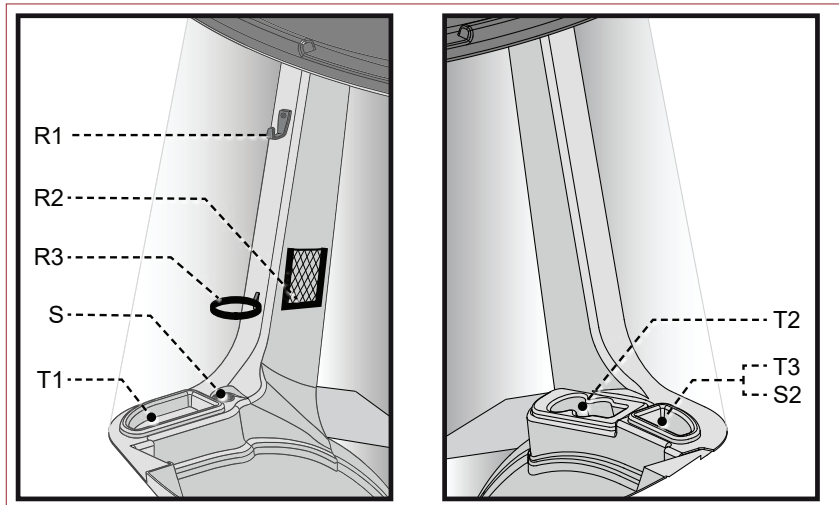
-  used to activate the front windscreen wiper washer device.
-  used to activate the rear windscreen wiper washer device.

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.

S2. Cell-phone holder

T3. Cup-holder

U1. 12V socket.

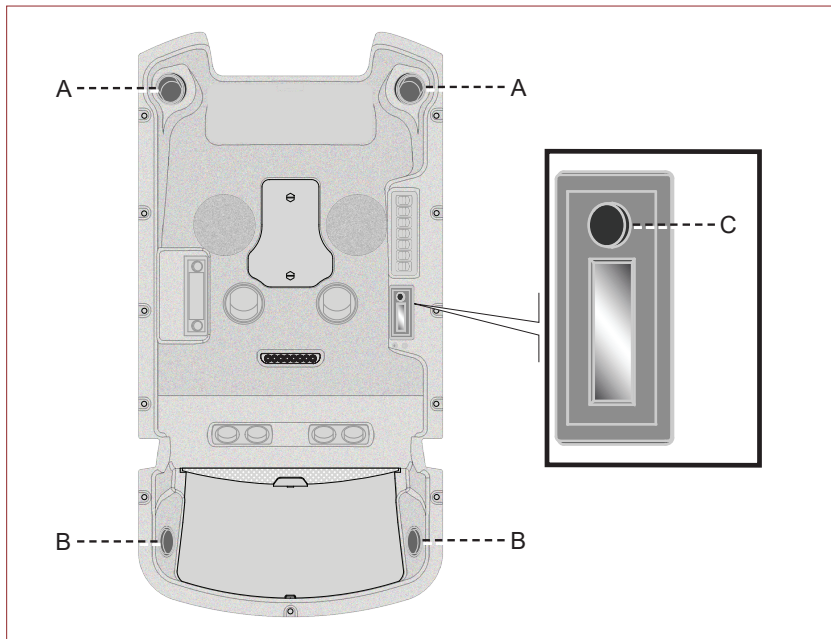
V2. 3-pin socket (if present).

W1. Storage compartment.

X2. Storage compartment (if present).

Y3. Storage compartment.

Defogging of the cab windows



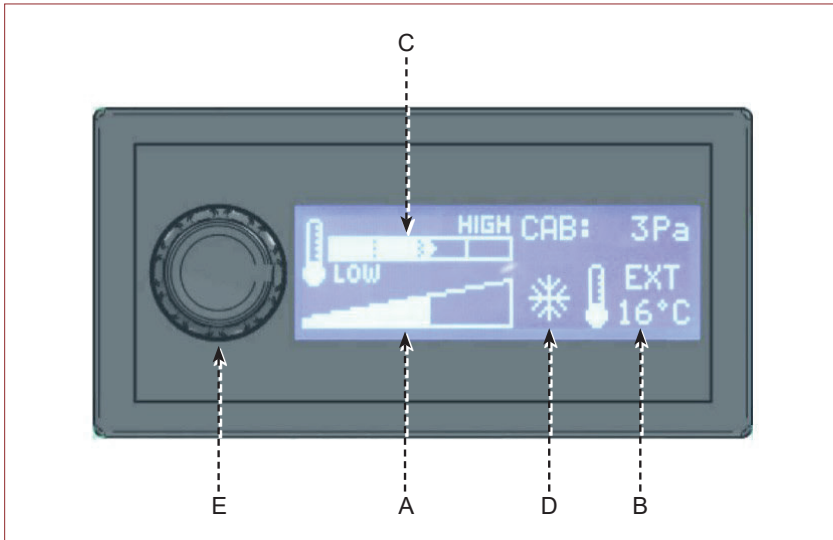
Proceed as follows.

1. Direct the air vents **(A-B)** towards the windows to be defogged.
2. Activate the air conditioner using knob **(C)**. (→ p. 150)
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. A few minutes before stopping the machine, deactivate the air-conditioning and leave the heating and fan active to prevent condensation from forming.

06.16. DESCRIPTION OF AIR-CONDITIONING CONTROLS

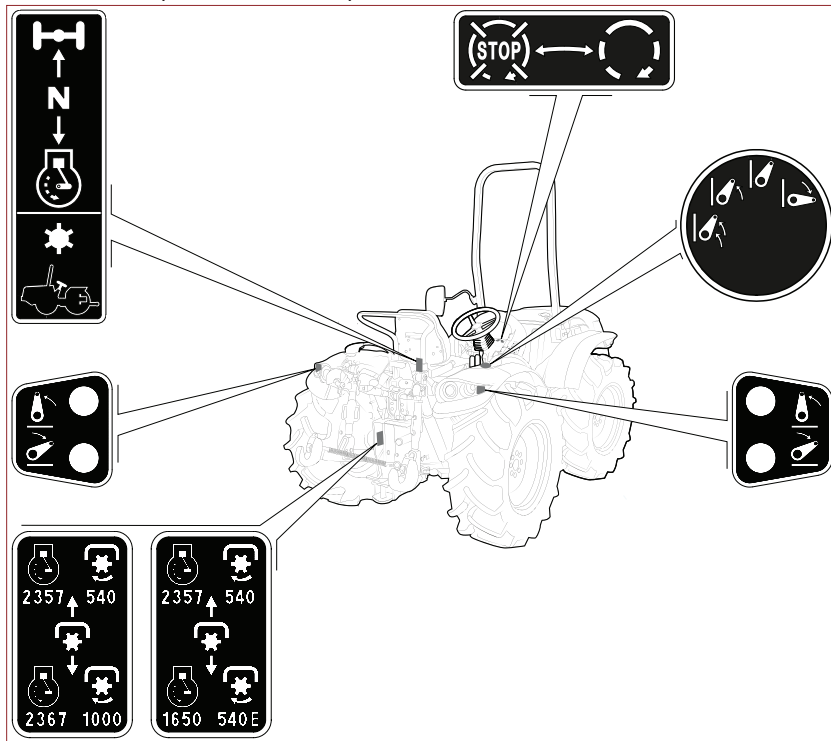
The illustration represents the devices, while the list gives their description and function.



- Area (A): shows the fan speed.
- Area (B): shows the outside air temperature.
- Area (C): shows the percentage of hot and cold air mix.
- Area (D): shows the operating status of the HVAC unit.
- Knob (E): device on and off and adjustment control.
- 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.

06.17. DESCRIPTION OF CONTROL PLATES

The illustration represents the control plates.



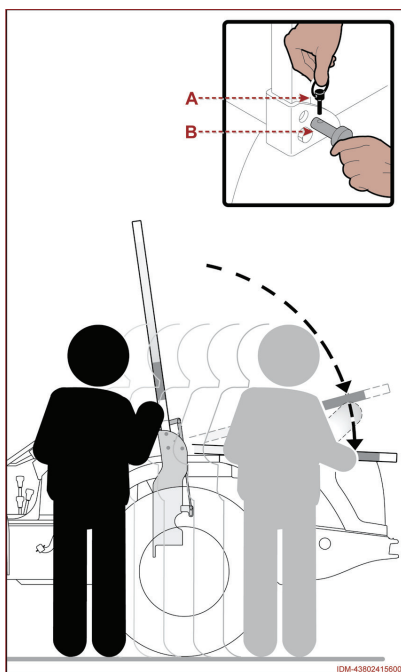
06.18. USING ROLL OVER PROTECTIVE STRUCTURE (ROPS) (WITH EASY OPENING AND CLOSING)

! DANGER 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 protective structure 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 illustration shows the action points and the description indicates the procedures to be followed.

1. Check that the action area is in a suitable condition to avoid the risks of tripping and entanglement.
 2. Remove the safety cotters **(A)** and slide out the pins **(B)**.
 3. Take hold of the ROPS (see figure) and slowly lower it to the closed position.
- Perform this procedure in compliance with ergonomic principles, even if the protective structure features easy opening and closing.
 - The ergonomic principles to be employed depend on the capability and the physical characteristics of the person performing the procedure.
 - During the procedure, adjust the position of the hands on the component and move the body to keep an upright ergonomic position.



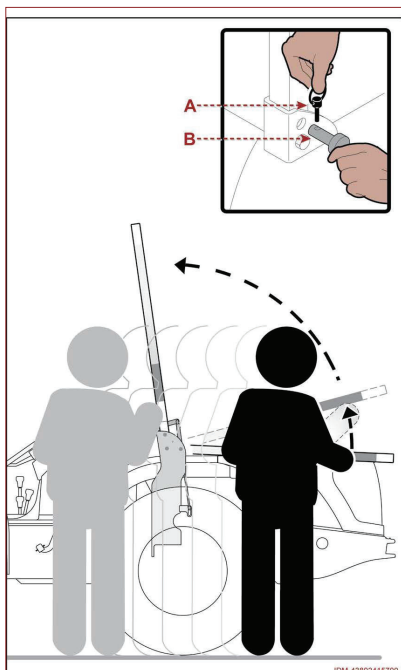
! ATTENTION Do NOT attempt to open and close the protective structure from an unfavorable ergonomic position, to avoid the risk of biomechanical overload.

4. After performing the procedure, make sure the protective structure is in the correct position to avoid sudden movements.
5. Insert the pins **(B)** and the pins **(A)** to block the protective structure.

**DANGER**

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. Check that the action area is in a suitable condition to avoid the risks of tripping and entanglement.
- 2. Remove the safety cotters (**A**) and slide out the pins (**B**).
- 3. Grasp the protective structure (see figure) and slowly raise it to the open position.
- Perform this procedure in compliance with ergonomic principles, even if the protective structure features easy opening and closing.
- The ergonomic principles to be employed depend on the capability and the physical characteristics of the person performing the procedure.
- During the procedure, adjust the position of the hands on the component and move the body to keep an upright ergonomic position.

**ATTENTION**

Do **NOT** attempt to open and close the protective structure from an unfavorable ergonomic position, to avoid the risk of biomechanical overload.

4. After performing the procedure, make sure the protective structure is in the correct position to avoid sudden movements.
5. Insert the pins (**B**) and the pins (**A**) to block the protective structure.

**DANGER**

Replace the opening and closing facilitators if you meet with any excessive difficulty when handling the ROPS.

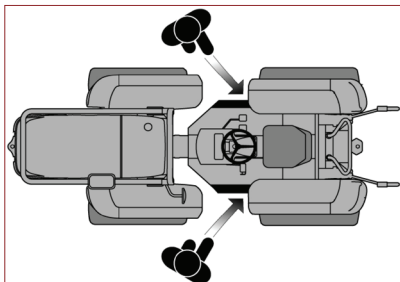
**DANGER**

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

06.19. 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.
- ALWAYS keep the seat connection plate clean and free from mud and/or debris. (Only in reversible models).
- Check that the driver's seat is clear from objects so as not to obstruct the activating of the controls.
- Check the cab windows (inside and outside) are clean and not fogged to assure maximum visibility. **For further information** (→ p. 150).
- 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.

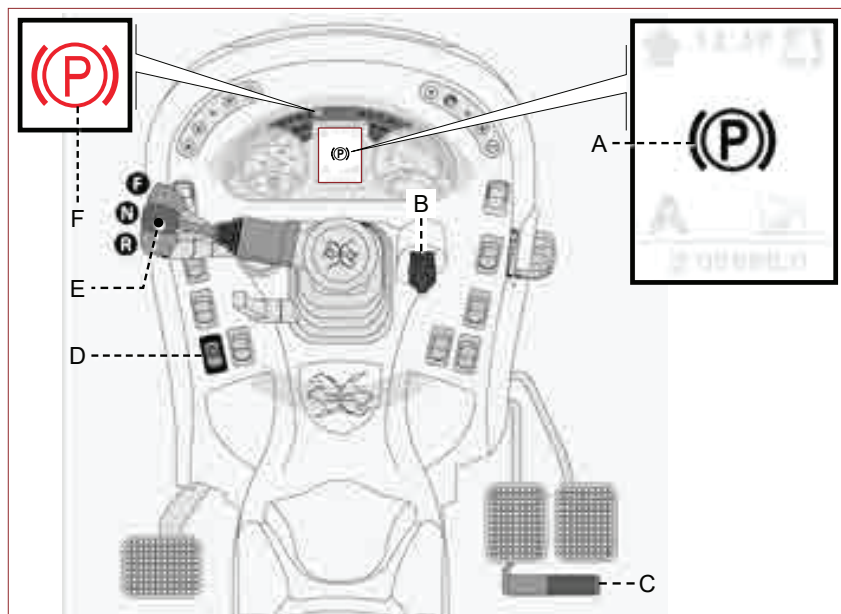
06.20. PARKING BRAKE

The machine is equipped with an automatic parking brake with electrohydraulic control.

A device automatically activates the parking brake and keeps it engaged whenever:

- the machine switches off;
- the operator abandons the seat for more than 3 seconds;
- the range is changed while the machine is stationary.

! ATTENTION The parking brake must NEVER be activated while the vehicle is moving, to avoid serious harm to people and damage to the machine.



To activate the parking brake with the engine running, press the switch **(D)**. The LED **(F)** on and the icon **(A)** on the multifunction display indicate that the parking brake has been engaged.

To disengage it, proceed as follows.

1. Start the engine. (→ p. 157)
2. Press the switch **(D)** of the parking brake. The LED **(F)** flashes.
3. Select the direction of movement with the drive lever **(E)**.
4. Press the drive pedal **(C)** within ten seconds of pressing the switch **(D)**. The parking brake is disengaged.




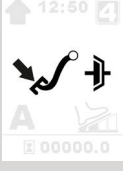
If the interval between pressing the switch **(D)** and pressing the pedal **(C)** is more than ten seconds, repeat the operation.

Whenever the LED **(F)** is flashing, to disengage the parking brake it is to press the drive pedal, with the shuttle lever **(E)** in non neutral position.

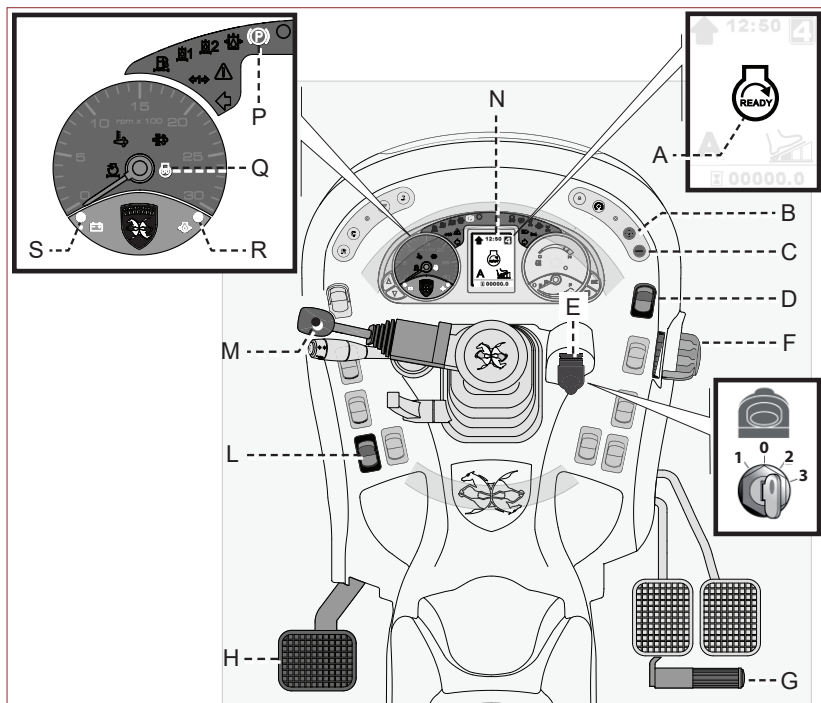
IMPORTANT In the case of emergency towing of the machine, refer to (→ p. 75)
In the case of an electro-hydraulic control fault, refer to (→ p. 78)

06.21. STARTING AND STOPPING THE ENGINE

The machine is equipped with safety device 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.
	Set the shuttle lever (M) to the neutral position.
	Make sure the drive pedal (G) is in the not-pressed position.
	Press and hold down the clutch pedal (H)

IMPORTANT If ITAC detects any anomaly that could compromise operator safety or the correct operation of the machine, it prevents it from starting and inhibits its operation.



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\ Press the switch **(D)** to deactivate the power take-off.
- 3\ Shift the lever **(M)** to put the reverser into neutral position.
- 4\ Set the gas control **(F)** in minimum speed position.
- 5\ Make sure the drive pedal **(G)** is in the not-pressed 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 , 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. 155)
- 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.

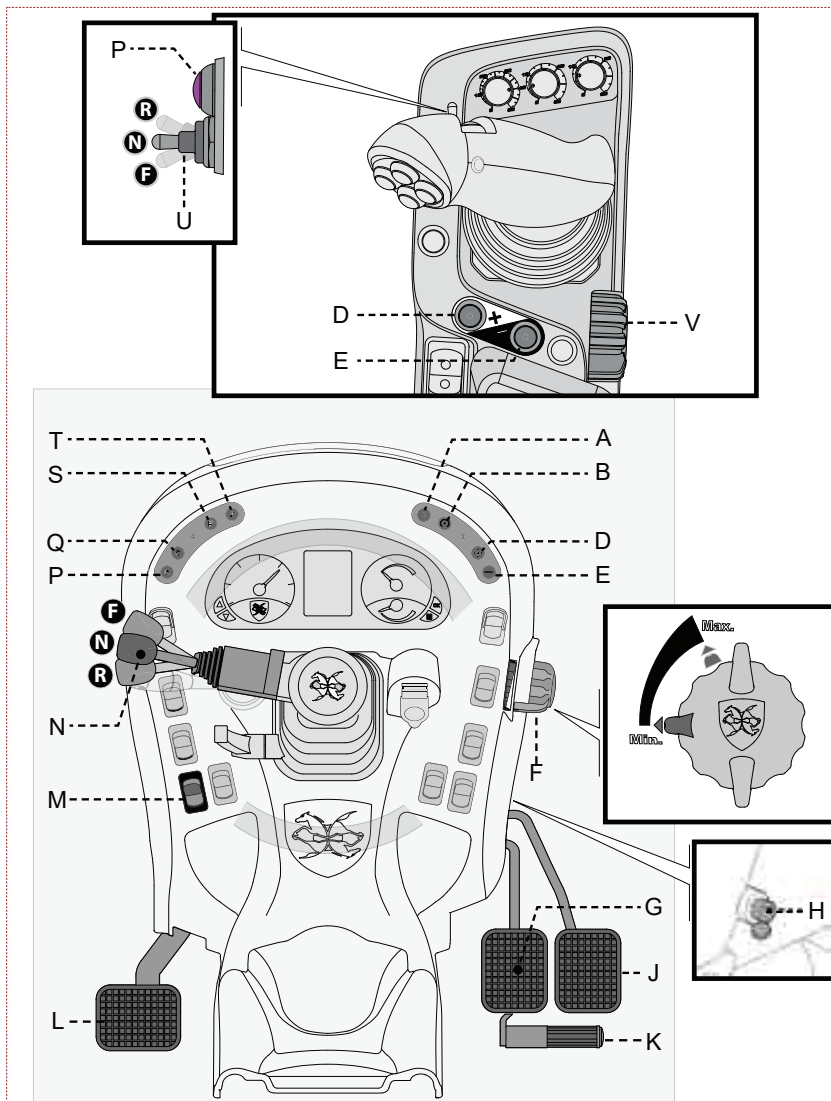
**ATTENTION**

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.

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.

NOTE Any settings saved by Cruise Control, Memo RPM or Intellifix remain saved.

06.22. MOVING AND STOPPING THE MACHINE



IMPORTANT Before moving the machine, it is recommended to select the range, the Drive Mode and any Cruise Control and Intellifix settings suitable for the activity to be performed. (→ p. 167)

Movement

Proceed as indicated to perform this operation.

- 1\ Sit in the driver's seat.
- 2\ Press and hold down the clutch pedal **(L)**.
- 3\ Start the machine engine. (→ p. 157)
- 4\ Release the clutch pedal **(L)**.
- 5\ Use the controls **(D)** and **(E)** to select the speed range.(→ p. 171)
- 6\ Use the control **(S)** to select the Drive Mode. (→ p. 169)
- 7\ Use the gas control **(F)** or **(V)** to select Automotive Mode (→ p. 173) or the number of engine revolutions of Manual Mode. (→ p. 176)
- 8\ Select any Cruise Control and Intellifix settings. (→ p. 167)
- 9\ Select the direction of movement with the shuttle lever **(N)** or **(U)**.
- 10\ Press the button **(M)** to disengage the parking brake. (→ p. 155).
- 11\ Press the drive pedal **(K)**. The machine moves forward.
- 12\ Release the drive pedal **(K)** to decrease the speed.

Stopping

Proceed as indicated to perform this operation.

- 1\ Release the drive pedal **(K)**.
- 2\ Press the latched brake pedals **(G+J)** to stop the machine.
- 3\ Shift the lever **(N)** or **(U)** to put the reverser into neutral position.
- 4\ Set the gas control **(F)** or **(V)** in minimum speed position.
- 5\ Press the button **(M)** to engage the parking brake. (→ p. 155)



ATTENTION

The parking brake must NEVER be activated while the vehicle is moving, to avoid serious harm to people and damage to the machine.




- 6\ Stop the engine. (→ p. 157)



ATTENTION

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.

IMPORTANT If one or more of the safety procedures is not complied with while using the machine, the display will show the Neutral Check Needed icon and it can no longer be moved. To overcome the problem the conditions shown in the table must be fulfilled.

Symbol	Neutral Check Needed	Description
	Operator	Sit correctly in the driver's seat.
	Shuttle	Shift the shuttle lever (N) to the neutral position.
	Drive Pedal	Set the drive pedal (K) to position O (foot raised)

06.23. DPF (DIESEL PARTICULATE FILTER) REGENERATION


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. 166).









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. 107).

Level	LED	Description
0	-	<ul style="list-style-type: none"> - The filter is not clogged. - The machine is not regenerating.
1	 STEADY	<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. 166)
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.
	 STEADY	
	 CHECK	<p>IMPORTANT Carry out manual regeneration as soon as possible! (→ p. 166)</p>

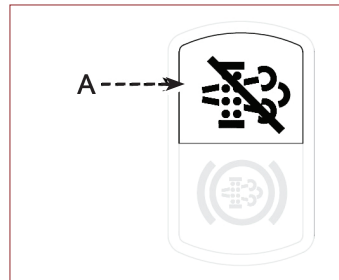
Level	LED	Description
4	 BLINKING	<ul style="list-style-type: none"> - The filter is clogged. - The buzzer sounds intermittently. - The engine torque is reduced by 50%. - At level 3, manual regeneration has not been carried out. <hr/> <p>IMPORTANT_Contact an authorised workshop immediately.</p> <hr/>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

06.23.1. Disabling regeneration

For the best management of working activity, it is possible to disable automatic regeneration.

Proceed as indicated to perform this operation.

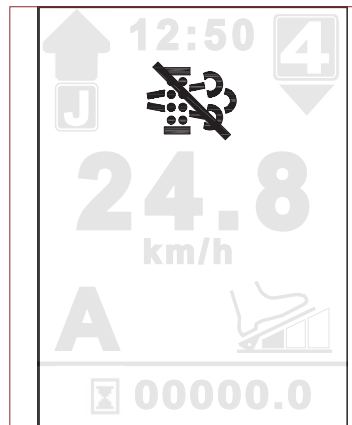
- 1\ Press the button (A), for about two seconds, to disable regeneration.



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 hazard is highlighted by illumination of the warning light 

Beware of the potential risk of fire.

As soon as the working conditions allow it, manual regeneration **MUST** be carried out


06.23.2. Manual regeneration

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

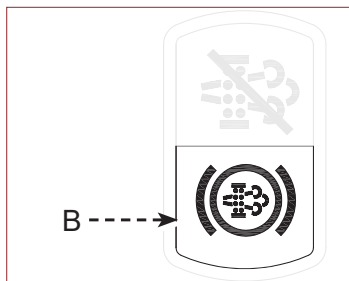
1\ The machine should be stopped and on in safe condition.

! 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. 107).
- 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 hazard is highlighted by illumination of the warning light 

Beware of the potential risk of fire.

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

06.24. TMC SYSTEM (TRACTOR MANAGEMENT CONTROL)

TMC System: this is the operating system that automatically manages many working activities of the machine. **TMC** controls the following machine activities:

Drive Mode: (→ p. 169)

Stand Still system: (→ p. 170)

SIS: (→ p. 171)

SIM: (→ p. 171)

Automotive mode: (→ p. 173)

Manual Mode: (→ p. 176)

Cruise Control: (→ p. 117). It intervenes in speed control and in the control of the engine revolutions. Its purpose is to keep the set values constant in any condition and it allows the driver to take his foot off the drive pedal while keeping the parameters constant. This function can be activated in both Automotive Mode and Manual Mode, obtaining respectively:

- › **Instant Cruise Control** (→ p. 173) (→ p. 176)
- › **Memo Cruise Control** (→ p. 174) (→ p. 178)
- › **Dual Memo Cruise Control** (→ p. 179)

Intellifix: (→ p. 104) (→ p. 173)

Torque Control: this is the system which, while working, avoids subjecting the engine to the optimum torque speed, automatically modulating the pressure in the hydrostatic unit.

Pressure Cut-Off: this is the system that limits the maximum working pressure of the hydrostatic unit to reduce its heat and noise and to increase efficiency.

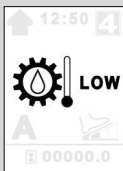




Eco Mode speed: this is the system that controls the maximum engine speed when it reaches a speed of 40 km/h, and its purpose is to cut down fuel consumption and reduce noise.

06.24.1. Conditions of use

When the engine is running, the machine behaves differently depending on the temperature of the transmission oil.

In particular, outside the optimum temperature, the **TMC System** limits some machine functions to preserve operator safety and the integrity of the machine itself.




The table indicates the limits according to the warning message.

Symbol	Notes	Description
	Fixed icon in the centre	<ul style="list-style-type: none"> - Max RPM available = 1250 rpm - Drive pedal limitation. - Range change only when stationary - Cruise Control cannot be activated - PTO cannot be activated
	Flashing icon	<ul style="list-style-type: none"> - Max RPM available = 1500 rpm - Drive pedal limitation. - Range change only when stationary - Cruise Control cannot be activated - PTO cannot be activated
	Flashing icon	<ul style="list-style-type: none"> - Max RPM available = 2000 rpm - Cruise Control cannot be activated
	Flashing icon	<ul style="list-style-type: none"> - Limited hydrostatic transmission power
	Fixed icon in the centre	<ul style="list-style-type: none"> - RPM = 1500 rpm (constant) - Limited hydrostatic transmission power - Cruise Control cannot be activated

06.24.2. Drive Mode

Allows a choice of 3 different drive modes for each range, in both Manual and Automotive mode. (→ p. 117)

Depending on the Drive Mode selected, shown on the multifunction display (→ p. 96), the machine responds differently to actions on the drive pedal and the reverser.

Display	Name	Description	Notes
	Drive Mode 1	<ul style="list-style-type: none"> - Precise and prompt drive - ECO management ⁽¹⁾ of the engine speed (in Automotive) - 75% of the maximum speed available. 	Ideal for very small movements (use of forklift or working in rows).
	Drive Mode 2 (default)	<ul style="list-style-type: none"> - Linear drive - Linear ECO management of the engine speed (in Automotive) - 100% of the maximum speed available. 	Ideal for most operations.
	Drive Mode 3	<ul style="list-style-type: none"> - Gradual drive without jerking - POWER ⁽²⁾ management of the engine speed (in Automotive) - 100% of the maximum speed available. 	Ideal for travelling on the road with carried or towed implements.

⁽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.

NOTE At each new start the machine is in Drive Mode 2.

06.24.3. Ranges recommended with Cruise Control

The table indicates the ranges recommended according to the minimum or maximum speeds that you want to save with Cruise Control.

Range	Minimum recommended speed km/h	Maximum recommended speed km/h
1	0.1	6
2	3	12
3	6 (*)	22
4	15 (*)	maximum speed

(*): Minimum speed set by the TMC System for this range.

06.24.4. Stand Still System

This is an electronic system that monitors the immobility of the vehicle.

Its purpose is to keep the machine still when it does not receive any movement command from the operator and is activated with any range engaged.

In particular, it is useful when stopping the machine on a slope.

- For the system to be activated, the operator must be sitting in the driver's seat, there must be a range engaged and the reverser must be in neutral position.



ATTENTION

The Stand Still System does NOT replace the parking brake and must be used as an auxiliary system during machine operations. Improper use can entail risks for personal health and safety.

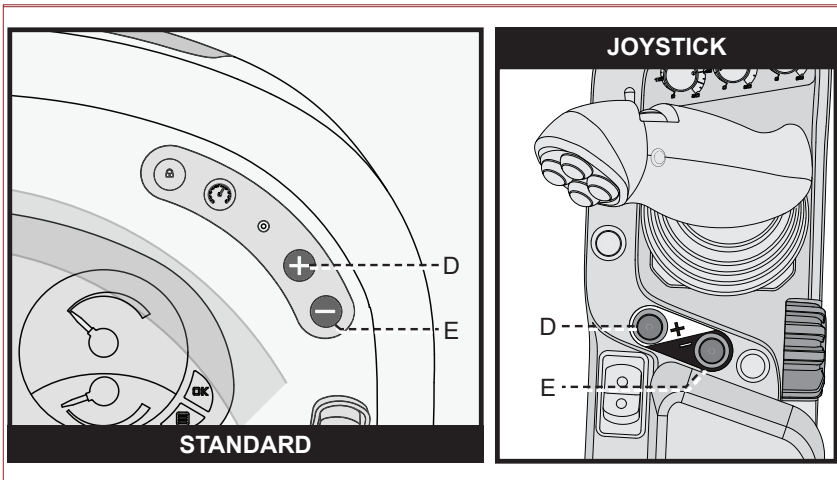
06.24.5. SIS (Shift In Standstill) - SIM (Shift In Motion)

The machine is equipped with a hybrid mechanical/hydrostatic transmission with continuous variation with 4 robotic ranges.

By means of the appropriate buttons **(D)** and **(E)**, the ranges can be selected while at a standstill **(SIS)** or in motion **(SIM)**.

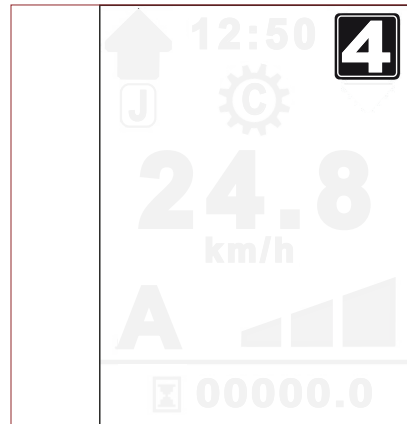
The actual engagement of the range will be decided only by the **TMC System** based on certain conditions to safeguard the machine and the operator.

- **Correct use of the hydrostatic machine requires selection of the suitable range before starting work or travelling on the road. SIM must be used only to correct and adapt the range to changes in the working conditions (for example: towing or uphill start).**



- 1\ Use the buttons **(D)** and **(E)** to select the range.
- 2\ The value of the range chosen flashes on the multifunction display.
- 3\ In this phase the **TMC System** checks all the parameters. If the requirements are satisfied, the range is changed even in motion and the value becomes fixed.

If the range is not changed, it means that one or more parameters do not satisfy the using conditions, see (→ p. 168) (→ p. 233).



NOTE *The neutral position is indicated with "0".*

NOTE *When the Cruise Control function is active, it is not possible to change the range.*

- Whenever the range is changed while at a standstill, the TMC System activates the parking brake. To disengage the brake it is sufficient to press the drive pedal within 10 seconds. If more than 10 seconds have passed, see (→ p. 155)
-

IMPORTANT In the case of a breakdown of the electro-hydraulic range control, see (→ p. 77)

Working

When starting a working activity, select the lowest range that allows it to be carried out in the best way.

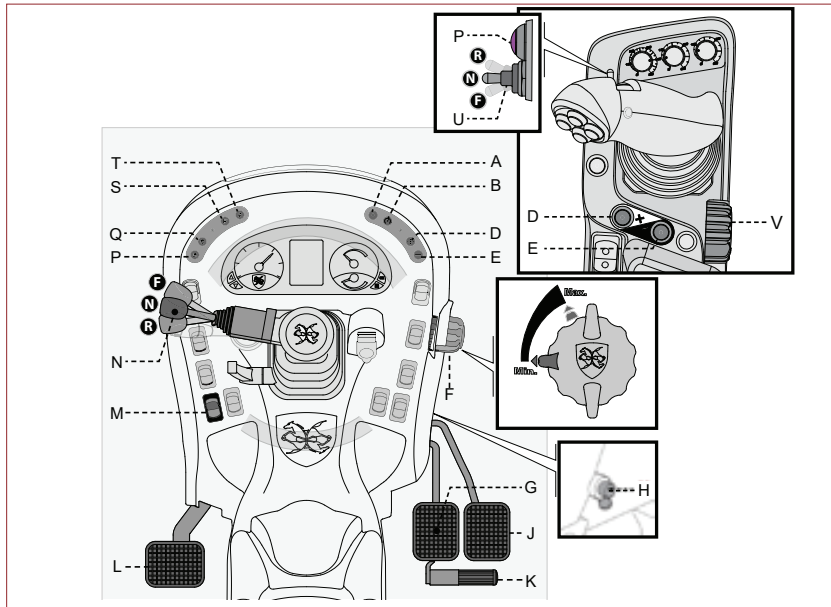
Travelling on the road

When travelling, always start with the range suitable for the speed that you want to reach. Only if the force required is excessive, pre-select to change down the range.

IMPORTANT Changing down the range is allowed down to second gear. To engage first gear, stop the machine.

06.24.6. Automotive Mode

Makes the drive pedal proportional to the engine revolutions and simulates the traditional use of the accelerator. It is particularly suitable for travelling on the road and when using the forklift.



Proceed as indicated to perform this operation.

- 1\ Set the gas control **(F)** or **(V)** in minimum position. The display shows the letter 'A'. (→ p. 96)
- 2\ Select the direction of movement with the shuttle lever **(N)** or **(U)**.
- 3\ Press the drive pedal **(K)**.

The machine advances or slows down, also varying the engine revolutions automatically.

NOTE When button **(B)** is pressed, the machine advances without exceeding the saved number of engine revolutions (**Limit RPM**) (ideal for using the forklift). (→ p. 103)

Instant Cruise Control

In Automotive Mode, it is possible to fix the speed and the number of instantaneous engine revolutions.

To activate this function, proceed as described.

- 4\ On reaching the desired speed, press the button **(Q)**.

- 5\ Take your foot off the drive pedal **(K)**. The display shows the icon



The machine advances, maintaining the speed and the number of instantaneous engine revolutions.

IMPORTANT If the power absorption exceeds the power available, the set parameters are not reached and/or maintained. When the Cruise Control function is active, it is not possible to change the range.

Deactivating Instant Cruise Control

To return the machine to normal operating conditions, carry out one of the listed operations.

- Press the Cruise Control button **(Q)** again.
- Press the drive pedal **(K)**.
- Press the clutch pedal **(L)**.
- Press the latched brake pedals **(G+J)**.
- Leave the driver's seat (for more than 3 seconds).
- Shift the shuttle lever **(N)** or **(U)**. If the 'Fast Reverse' function is active, it is sufficient to leave the shuttle lever in neutral position for more than one second.

In this mode it is not possible to activate the **Intellifix**

Memo Cruise Control

In **Automotive Mode**, it is possible to recall a pre-set speed value, allowing you to take your foot off the drive pedal. The number of revolutions will be proportional to the drive.

Proceed as indicated to perform this operation.

- 1\ Set and save the desired speed value. (→ p. 102)
- 2\ Set the gas control **(F)** or **(V)** in Automotive Mode position. The display shows the letter '**A**'. (→ p. 96)
- 3\ Select the direction of movement with the shuttle lever **(N)** or **(U)**.
- 4\ Press the button **(P)**.
- 5\ Press the drive pedal **(K)**.

The machine begins to advance until it reaches the saved speed.

IMPORTANT If the power absorption exceeds the power available, the set parameters are not reached and/or maintained. When the Cruise Control function is active, it is not possible to change the range. If the range engaged is not compatible with the set speed, the Memo Cruise Control command does not engage.

***NOTE** Activation is also possible with the machine in motion. By pressing buttons (D) and (E) it is possible to increase or decrease the speed.*

Deactivating Memo Cruise Control

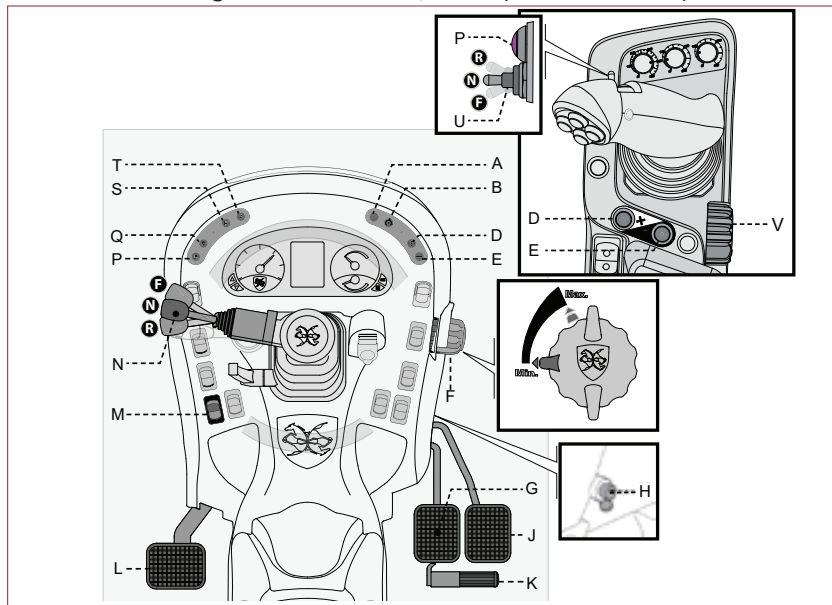
To return the machine to normal operating conditions, carry out one of the listed operations.

- Press the Cruise Control button **(P)** again.
- Press the drive pedal **(K)**.
- Press the clutch pedal **(L)**.
- Press the latched brake pedals **(G+J)**.
- Leave the driver's seat (for more than 3 seconds).
- Shift the shuttle lever **(N)** or **(U)**. If the 'Fast Reverse' function is active, it is sufficient to leave the shuttle lever in neutral position for more than one second.

In this mode it is not possible to activate the **Intellifix**

06.24.7. Manual Mode

Allows you to fix the engine revolutions and adjust the speed with the drive pedal.



Proceed as indicated to perform this operation.

- 1\ Set the gas control (**F**) or (**V**) in the position corresponding to the desired number of revolutions (**Fix RPM**). The display shows the letter '**M**'. (→ p. 96)
- 2\ Select the direction of movement with the shuttle lever (**N**) or (**U**).
- 3\ Press the drive pedal (**K**).

The machine advances or slows down, keeping the set engine speed.

NOTE When the button (**B**) is pressed, the machine advances, keeping the saved engine speed (**Memo RPM**). (→ p. 103)

Instant Cruise Control

In **Manual Mode**, it is possible to fix the speed and the number of instantaneous engine revolutions, allowing you to take your foot off the drive pedal.

To activate this function, proceed as described.

- 1\ On reaching the desired speed, press the button (**Q**).
- 2\ Take your foot off the drive pedal (**K**).

The machine advances, maintaining the speed and the number of instantaneous engine and PTO revolutions.

IMPORTANT If the power absorption exceeds the power available, the set parameters are not reached and/or maintained.

IMPORTANT When the Cruise Control function is active, it is not possible to change the range.

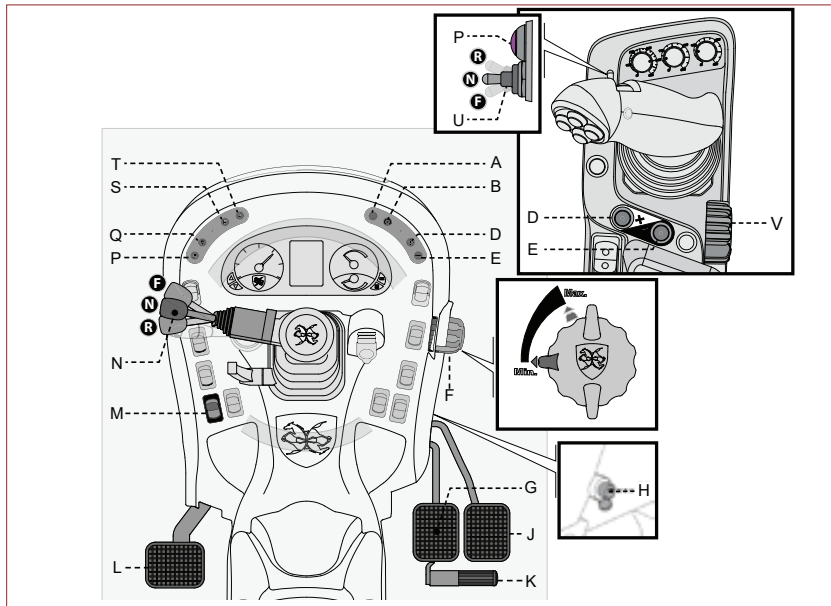
Deactivating Instant Cruise Control

To return the machine to normal operating conditions, carry out one of the listed operations.

- Press the Cruise Control button **(Q)** again.
- Press the drive pedal **(K)**.
- Press the clutch pedal **(L)**.
- Press the latched brake pedals **(G+J)**.
- Leave the driver's seat (for more than 3 seconds).
- Shift the shuttle lever **(N)** or **(U)**. If the 'Fast Reverse' function is active, it is sufficient to leave the shuttle lever in neutral position for more than one second.

IMPORTANT For operations that require a constant delivery of power to the power take-off, activate the Intellifix function. (→ p. 104). The machine could vary the speed to guarantee the power delivered.

Memo Cruise Control



In **Manual Mode**, it is possible to fix the number of instantaneous engine revolutions and recall a pre-set speed value, allowing you to take your foot off the drive pedal.

Proceed as indicated to perform this operation.

- 1\ Set and save the desired speed value. (→ p. 102)
- 2\ Set the gas control (**F**) or (**V**) in Manual Mode position. The display shows the letter '**M**'. (→ p. 96)
- 3\ Select the direction of movement with the shuttle lever (**N**) or (**U**).
- 4\ Press the button (**P**).
- 5\ Press the drive pedal (**K**).

The machine begins to advance until it reaches the saved speed.

***NOTE** Activation is also possible with the machine in motion. By pressing buttons (D) and (E) it is possible to increase or decrease the speed.*

IMPORTANT If the power absorption exceeds the power available, the set parameters are not reached and/or maintained.

IMPORTANT When the Cruise Control function is active, it is not possible to change the range.

IMPORTANT If the range engaged is not compatible with the set speed, the Memo Cruise Control command does not engage.

Deactivating Memo Cruise Control

To return the machine to normal operating conditions, carry out one of the listed operations.

- Press the Cruise Control button **(P)** again.
- Press the drive pedal **(K)**.
- Press the clutch pedal **(L)**.
- Press the latched brake pedals **(G+J)**.
- Leave the driver's seat (for more than 3 seconds).
- Shift the shuttle lever **(N)** or **(U)**. If the 'Fast Reverse' function is active, it is sufficient to leave the shuttle lever in neutral position for more than one second.

IMPORTANT For operations that require a constant delivery of power to the power take-off, activate the Intellifix function. (→ p. 104). The machine could vary the speed to guarantee the power delivered.

Dual Memo Cruise Control

In **Manual Mode**, it is possible to recall pre-set speed values and engine revolutions at the same time, allowing you to take your foot off the drive pedal.

Proceed as indicated to perform this operation.

- 1\ Set and save the desired speed value. (→ p. 102)
- 2\ Set and save the desired engine revolutions. (→ p. 102)
- 3\ Set the gas control **(F)** or **(V)** in Manual Mode position. The display shows the letter '**M**'. (→ p. 96)
- 4\ Select the direction of movement with the shuttle lever **(N)** or **(U)**.
- 5\ Press the button **(A)** to pre-select the Dual Memo Cruise Control function.
- 6\ Press the button **(P)** to pre-select the Memo Cruise Control function. The engine goes to the saved number of revolutions.
- 7\ Press the drive pedal **(K)**.

The machine begins to advance until it reaches the saved speed.

IMPORTANT If the power absorption exceeds the power available, the set parameters are not reached and/or maintained.

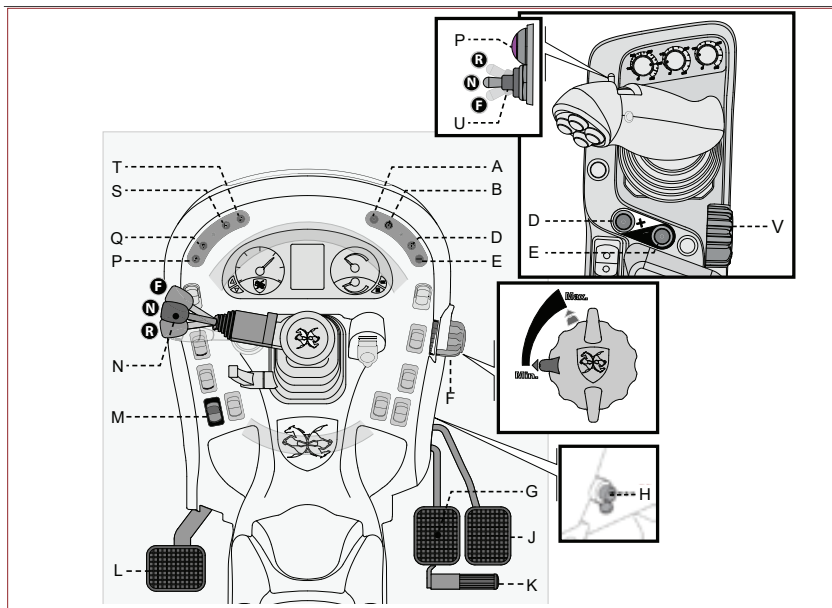
IMPORTANT When the Cruise Control function is active, it is not possible to change the range.

IMPORTANT If the range engaged is not compatible with the set speed, the Dual Memo Cruise Control command does not engage.

Deactivating Dual Memo Cruise Control

- Press the Dual Memo Cruise Control **(A)** button again: the machine switches to Memo Cruise Control mode.
- Press the Cruise Control Button **(P)** again: the machine returns to normal working conditions mode.
- Press the drive pedal **(K)**: the machine switches to RPM Memo mode.
- Press the clutch pedal **(L)**: the machine returns to normal working conditions.
- Press the brake pedal **(G)**: the machine returns to normal working conditions.
- Abandon the operator seat (for more than 3 seconds): the machine returns to normal working conditions. The automatic parking brake is engaged.
- Activate the shuttle lever **(N)** or **(U)**: the machine returns to normal working conditions. If the 'Fast Reverse' function is active, simply leave the shuttle lever in neutral position for more than one second.

IMPORTANT For operations that require a constant delivery of power to the power take-off, activate the Intellifix function. (→ p. 104). The machine could vary the speed to guarantee the power delivered.



06.25. 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 with respect to that of the flat battery.



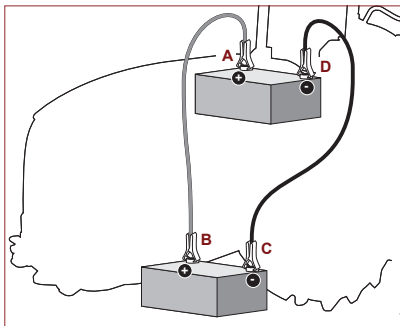
ATTENTION

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 at a standstill with the parking brake applied, the shuttle lever in neutral, the PTO disengaged and the ignition key in the '0' position.
- 4\ Unscrew the knobs and remove the grille.
- 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 rev/min.
- 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\ Shut the bonnet when the operation is concluded.



06.26. 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 tyres and track width are in conformity with highway code regulations in the country of use.

- **ONLY drive the machine on roads with the driver's seat in the normal position and NOT turned into the reverse position.**

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 and from any carried or towed implements 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.**

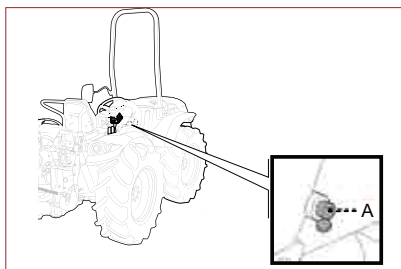
- 5\ Raise any implement carried and lock it in place with the safety devices provided.

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

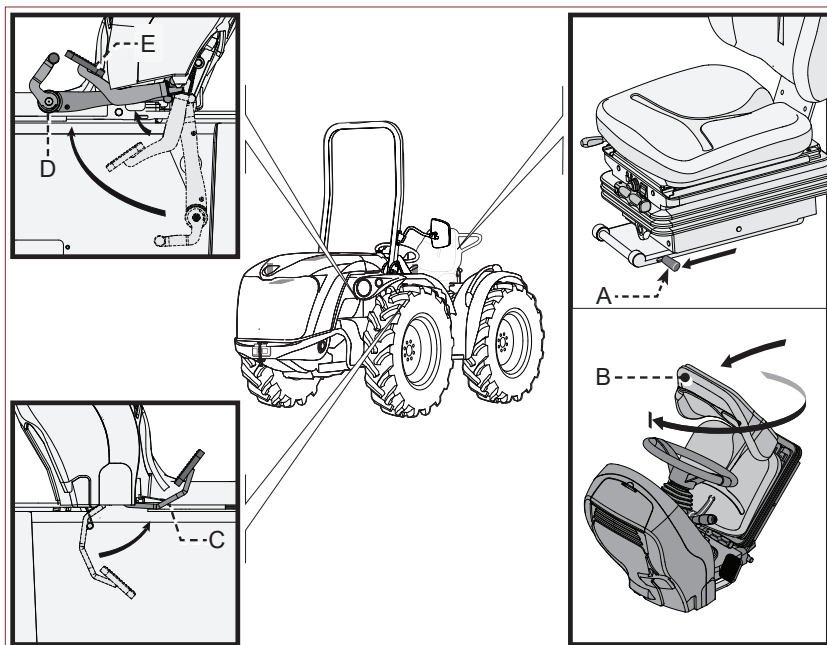
- 6\ Latch the brake pedals by inserting the pin (A) in order to distribute the braking action onto all wheels.

IT IS MANDATORY to latch the brake pedals for circulation on roads.

- 7\ Raise the power lift by operating the respective controls and block it in raised position. (→ p. 121) (→ p. 129) (→ p. 133).



06.27. PROCEDURE FOR REVERSING THE DRIVING SEAT



Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Lift the pedals **(C)**, **(D)**, **(E)** and block them in the lifted position.
- 3\ Release the driver's seat using the lever **(A)**.
- 4\ Lift the seat **(B)** and turn it clockwise by 180°.
- 5\ Lower the seat **(B)** and make sure that it is blocked in the new position.
- 6\ Lower the pedals **(C)**, **(D)**, **(E)** and take them to the original position.



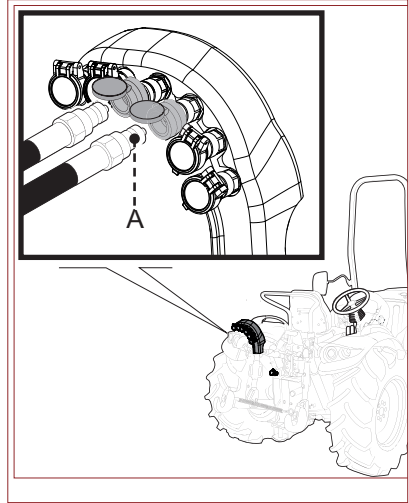
ATTENTION

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

06.28. HYDRAULIC COUPLERS CONNECTION

The engagement 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 **(A)** 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 and lay down the hydraulic pipes in such a way that the quick couplings are not damaged.



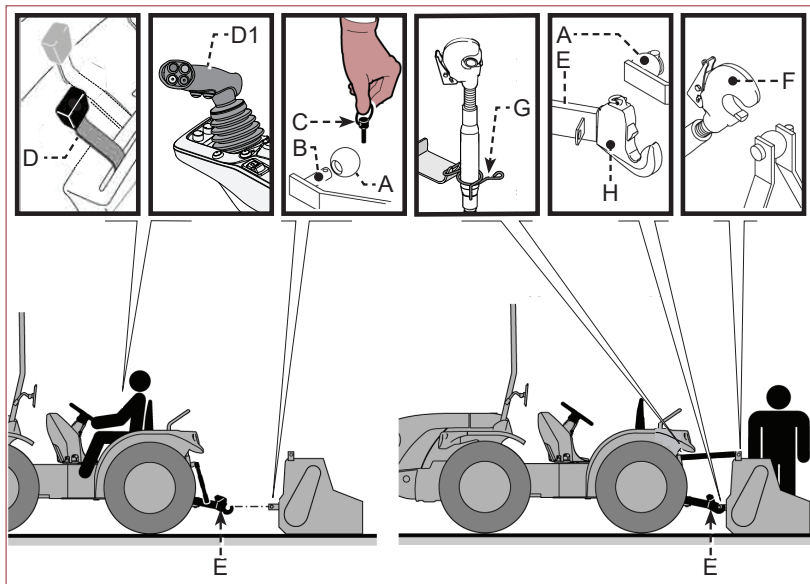
IMPORTANT Do not release polluting materials into the environment. Dispose of all such materials in compliance with applicable legislation.

06.29. HITCHING AND DISCONNECTING TOOL - REAR POWER LIFT UNIT ("QUICK COUPLING" VERSION)

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. (→ p. 85)

! ATTENTION 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).



- 1\ Insert the ball joints (A) in the pins (B) and block them using the safety cotters (C).
- 2\ Approach the machine to the interchangeable implement and act on lever (D) or on the joystick (D1) 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) or on the joystick (D1) to lift the equipment.

- 6\ Lift the support foot of the interchangeable tool.
 - 7\ If the interchangeable tool is not parallel to the ground, release the safety retainers of the strut **(F)**, regulate its length and block the retainer again.
 - 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). (→ p. 190)
- **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.

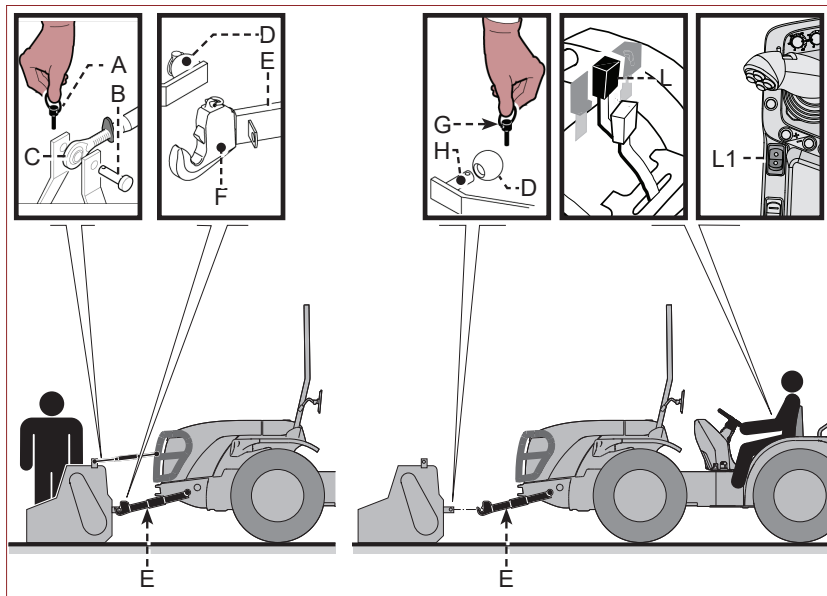
- 1\ Act on the lever **(D)** or on the joystick **(D1)** to rest the equipment on the ground.
- 2\ Switch off the engine and remove the ignition key.
- 3\ Lower the support foot of the interchangeable tool.
- 4\ Disconnect the electric, hydraulic connections etc. from the machine sockets.
- 5\ Disconnect 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 fastening **(G)**.
- 7\ Disconnect the lifting booms **(E)**.
- 8\ Remove the ball joints **(A)** from the pins and put them away in the toolbox.

06.30. 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.

You can use a helper (positioned in a safe zone), to inform the driver of the correct approach of the machine to the implement hitching points. The methods indicated to perform the operation starts from the assumption that the machine-interchangeable implement coupling has already been defined. (→ p. 90)

! ATTENTION 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).



- 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 pin **(A)**.

- 6\ Act on the lever **(L)** or on the button **(L1)** to lift the interchangeable implement.
- 7\ Lift the support foot of the interchangeable tool.
- 8\ If the interchangeable tool is not parallel to the ground, release the safety retainers of the strut **(C)**, regulate its length and block the retainer again.
- 9\ 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.

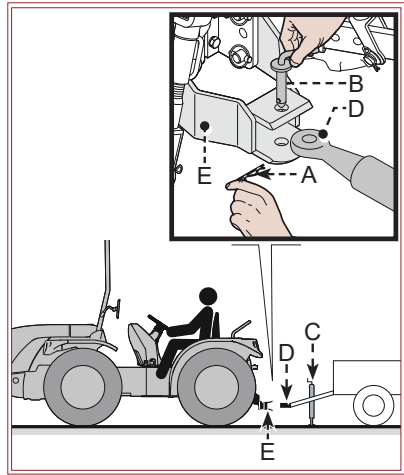
- 1\ Act on the lever **(L)** or on the button **(L1)** to rest the interchangeable tool on the ground.
- 2\ Switch off the engine and remove the ignition key.
- 3\ Lower the support foot of the interchangeable tool.
- 4\ Disconnect the electric, hydraulic connections etc. from the machine sockets.
- 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.

06.31. 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.

You can use a helper (positioned in a safe zone), to inform the driver of the correct approach of the machine to the implement hitching points. The methods indicated to perform the operation starts from the assumption that the machine-interchangeable implement coupling has already been defined. (→ p. 86) (→ p. 87).

- 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 O-hitch **(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) (→ p. 190).



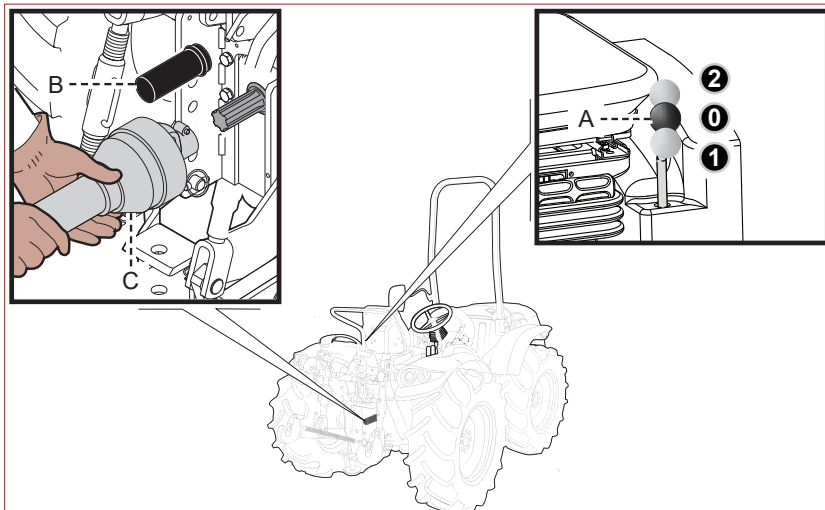
! DANGER
Connect the Cardan shaft correctly and with the safety devices perfectly efficient. The incorrect installation and inefficiency of safety protections are the cause of most accidents (even fatal).

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)**.

06.32. CONNECTION AND DISCONNECTION OF THE REAR CARDAN SHAFT

Connection and disconnection of the cardan shaft from the power take-off is part of the procedure for hitching and disconnecting the interchangeable implement (mounted or trailed) from the machine.



DANGER

The drive shaft must be connected first to the power take-off of the implement and then to the PTO shaft of the machine. If the shaft is connected first to the machine and the PTO accidentally activated, the resulting whiplash could cause fatal injury.



DANGER

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 connect the Cardan shaft to the interchangeable tool (carried or towed), proceed as indicated.

- 1\ Shift the lever **(A)** to neutral position (pos. '0').
- 2\ Remove the protection **(B)** of the PTO.
- 3\ Clean and check the integrity of the machine PTO shaft and the coupling of the Cardan shaft. Lubricate the couplings with grease.
- 4\ Couple the drive shaft **(C)** to the power take-off.
- 5\ Connect the safety chains correctly to prevent the rotation of the Cardan shaft protections.

- 6\ Make the electric, hydraulic connections etc. of the interchangeable tool with the machine sockets.
- 7\ 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. '0').
- 2\ Disconnect the electrical and hydraulic systems of the implement.
- 3\ Release the safety chain of the Cardan shaft.
- 4\ Disconnect the Cardan shaft (C) from the machine PTO and rest it on the relative support so as not to damage it.
- 5\ Re-mount the protection (B) of the PTO.

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

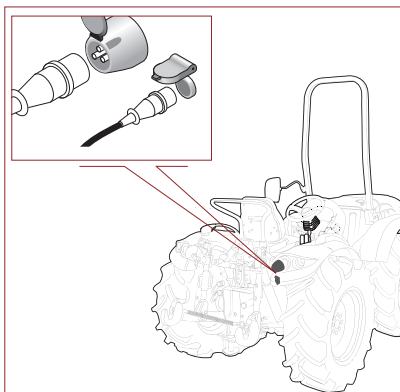
06.33. ENGAGEMENT OF ELECTRICAL CONNECTIONS

The engagement and disengagement 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.
- 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.

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

NOTE 7-pin socket: to be used exclusively for duplicating the lighting devices for travelling on public roads.
3-pole socket: maximum power line 300W, maximum signal line 30W



06.34. FORMULA FOR CALCULATING BALLASTS WITH TRACTOR MOUNTED IMPLEMENT

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

IMPORTANT When hitching a tractor mounted implement (front mounted), the stability of the machine may be compromised during steering. Install the appropriate ballasts to balance the machine.

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

Attrezzatura portata (posteriore)

$$Z \geq \frac{M \times (d + d2) - (T1 \times c) + (0,25 \times T \times c)}{c + 820}$$

Attrezzatura portata (anteriore)

$$Z \geq \frac{M \times (d1 + d2) - (T2 \times c) + (0,25 \times T \times c)}{c}$$

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. 275).

d1 = Distance between front axle centre and the caps (→ p. 275).

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

T = Kerb weight (→ p. 270).

T1 = Front axle empty weight (in running order) (→ p. 270).

T2 = Rear axle empty weight (in running order) (→ p. 270).

c = Wheels axle (→ p. 275).

The value obtained corresponds to the weight of the ballasts to be installed to maintain a sufficient load on the front axle.

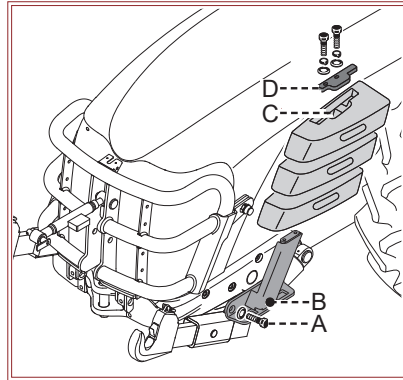
- **Value with "-" (minus) mark:**
- no need to install the ballasts.
- **Value between "0" (zero) and the maximum weight of the installable ballasts:**
- it is necessary to install the necessary amount of ballasts to reach the obtained value.
- **Value above maximum weight of the installable ballasts:**
- hitching of the chosen tools is not possible.

06.35. INSTALLATION OF LATERAL BALLASTS

- ONLY install the ballasts when 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.

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), premature wear of the tyres 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.

06.36. INSTALLATION OF FRONT WHEEL BALLASTS

- ONLY install the ballasts when 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.

Installation of 35 kg ballasts

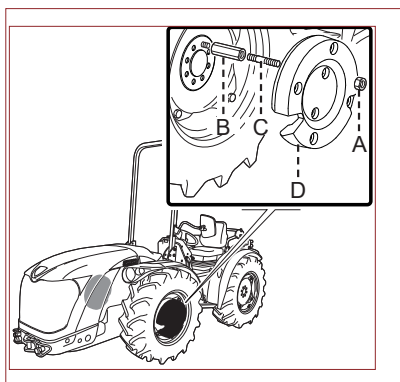


ATTENTION

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

Proceed as indicated to perform this operation.

- 1\ Remove two fixing nuts **(A)** from the wheel (in diametrically opposite positions).
- 2\ Mount the two extensions **(B)** and the studs **(C)**.
- 3\ Mount the ballast **(D)** and fix it using the nuts **(A)**.
- 4\ Repeat the operation on the other side.
- 5\ On completion, check that the ballasts are fixed correctly.



NOTE It is **NOT** possible to install the ballasts when the machine is equipped with 15" wheels.

NOTE When choosing the nuts to be removed, consider that in the mounting phase, the recess of the ballast must correspond with the inflation valve.

- 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), premature wear of the tyres 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.

06.37. REAR WHEEL BALLASTS INSTALLATION

- **ONLY install the ballasts when 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.



ATTENTION

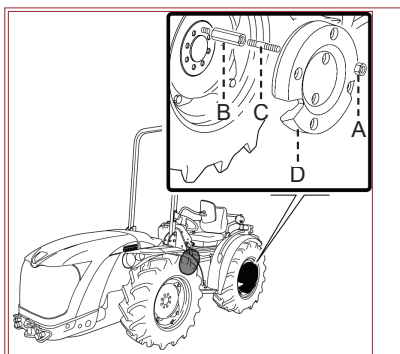
During mounting and/or removal of the ballasts, staff **MUST** pay attention to preventing the risk of crushing parts of the body.

IMPORTANT The side ballasts must **NOT** be installed when a carried implement is attached to the front lifting unit.

Installation of 35 kg ballasts

Proceed as indicated to perform this operation.

- 1\ Remove two fixing nuts (**A**) from the wheel (in diametrically opposite positions).
- 2\ Mount the two extensions (B) and the studs (C).
- 3\ Mount the ballast (D) and fix it using the nuts (A).
- 4\ Repeat the operation on the other side.
- 5\ On completion, check that the ballasts are fixed correctly.



NOTE When choosing the nuts to be removed, consider that in the mounting phase, the recess of the ballast must correspond with the inflation valve.

- 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), premature wear of the tyres 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.

06.38. INSTALLATION OF BALLASTS WITH FLANGE (REAR WHEELS)

- ONLY install the ballasts when tool (carried and/or towed) is hitched, to make the machine more stable and improve traction capacity.
- The ballasts with flange, requested in the contract phase, are installed directly by the manufacturer. If requested after purchase of the machine, they 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.

06.39. OPERATING REMINDERS

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

- 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).
- Inspect the tyres for wear and check the pressure.
- Check that the nuts and screws securing all main parts are tight.
- Operate the range shift with the machine in motion only to correct and adapt the range to changes in the working conditions.
- 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 cautiously manoeuvre the machine.

IMPORTANT Keeping the protective structure (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.

- Do not keep the clutch pressed down with the machine on the move or when selecting the range.
- Verify the gradient of the soil so as to identify the conditions that will best ensure safe operation.
- Always select the right gear ratios for the working requirements.
- Select the ground speeds appropriate for the type of implement hitched to the machine.
- 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.
- Disengage 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 shuttle lever in neutral, pay attention to the synchronised PTO because its activation depends on the rotation of the wheels.
- The live power take-off is driven by the transmission of the machine. The direction of rotation of the live PTO inverts with the selection of forward and reverse drive from the shuttle.
- Use the differential lock to counteract wheelslip or when there is a lack of grip at the wheels.
- 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 inserted.
- Do not turn off the engine with a high number of revolutions of the turbocharger or immediately after sudden accelerations to avoid damage to the engine.

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.

06.40. REFUELLING



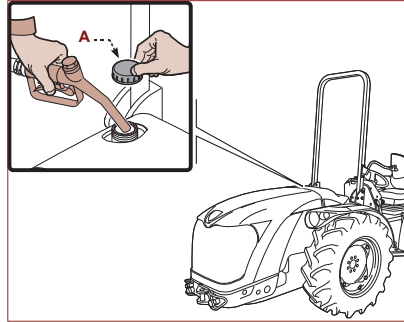
ATTENTION

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.

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

IMPORTANT Use automotive fuel in compliance 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.



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

06.41. PROLONGED MACHINE INACTIVITY

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

- Perform a 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 using new fuel and allow the crankshaft to turn over at idling speed for about (10-15) minutes.

06.42. RETURNING THE MACHINE TO 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 pressure of the tyres.



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 (→ p. 207) 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 wheel bolts.
- 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.

IMPORTANT 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.



ATTENTION

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.

After the first 50 hours

- Change the engine oil
For further details refer to the engine's user manual.
- Replace the engine oil filter
For further details refer to the engine's user manual.
- Replace the hydraulic oil filters (→ p. 228)

07.3. MAINTENANCE INTERVAL TABLE

Tab. 7.1: Periodic maintenance table

Frequency	Component	Type of operation	Type of activity
When necessary or yearly	Cab air filter (paper)	Clean	(→ p. 214)
		Replace	(→ p. 253)
	Engine air filter	Clean	(→ p. 212) (→ p. 213)
		Replace	(→ p. 251) (→ p. 252)
	Gas springs	Replace	(→ p. 250) (→ p. 262)
	Radiator	Clean	(→ p. 211)
	Machine	Clean	(→ p. 209)
	Bleed brakes system	Bleed the circuit	Consult an authorised workshop
Hydraulic system pipes	Inspect and verify wear and corrosion		
Each workday	Engine oil	Check level	(→ p. 221)
Every 50 h	Engine air filter (2)	Clean	(→ p. 212) (→ p. 213)
	Windscreen washing liquid	Check level	Top-up to suitable level
	Coolant	Check level	(→ p. 222)
	Oil UNIT 1-2	Check level	(→ p. 223)
	Brake oil	Check level	(→ p. 225)
	Machine components	Lubricate	(→ p. 218)
Every 150 h	Reduction gears oil	Check level	(→ p. 224)
	Machine components	Lubricate	(→ p. 218)
	Tyres	Check pressure	(→ p. 215)
	Wheel bolts	Check tightness	(→ p. 254)

Frequency	Component	Type of operation	Type of activity
Every 250 h	Alternator fan belt	Check voltage	For further details refer to the engine user manual.
Every 500 h	Engine oil (1)	Replace (3)	For further details refer to the engine user manual (4)
	Engine oil filter (1)	Replace (3)	
	Fuel filter	Replace (3)	
	Water separator filter	Replace (3)	
	Alternator fan belt	Replace	
	front transmission oil	Replace	(→ p. 226)
	rear transmission oil	Replace	(→ p. 226)
	Hydraulic oil filters (1)	Replace	(→ p. 228)
	Battery	Check the charge level.	Maintenance-free battery
	Reduction gears oil	Replace	(→ p. 224)
Every 1000 hours or at the end of every year	Engine air filter	Replace	(→ p. 251) (→ p. 252)
Every 1500 h	Oil separator filter	Replace (3)	For further details refer to the engine user manual (4)
Every 2000 hours or at the end of every two years	Coolant	Replace	For further details refer to the engine user manual (4)
	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 (4)

Frequency	Component	Type of operation	Type of activity
Every 5 years	Hydraulic system pipes Brakes 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 or 1,000 hours.

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) For the component position, see (→ p. 210)

07.4. CLEANING THE MACHINE

Proceed as indicated to perform this operation.

- 3\ 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.
- 4\ Remove all residues of grass and leaves.
- 5\ Wash the machine with a jet of water, taking care to avoid spraying directly onto electrical parts.

IMPORTANT Clean with biodegradable detergents for industrial use.

IMPORTANT DO NOT use aggressive chemical products and/or hydrocarbon or alcohol based solvents, especially for plastic components.

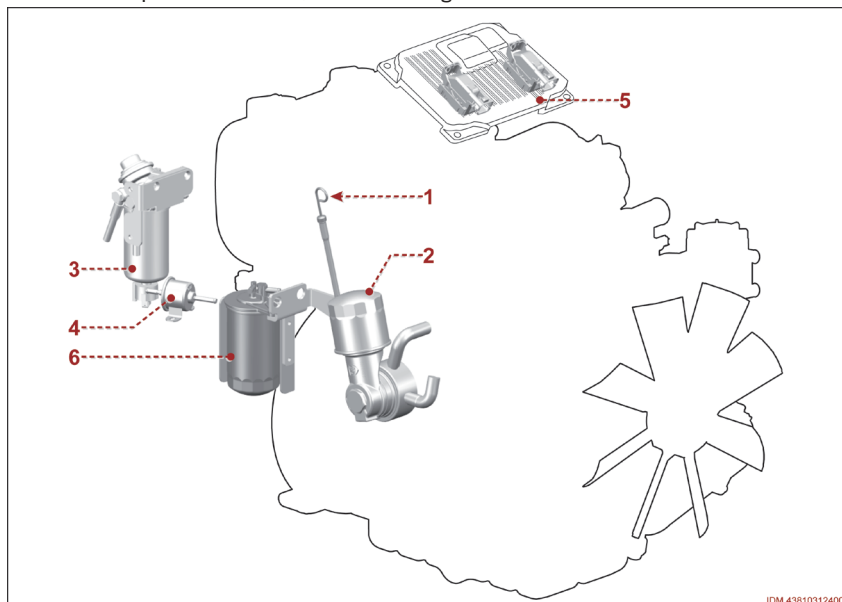
IMPORTANT Do not direct the jet of water onto the motor, the exhaust pipe or near components that could get damaged due to the water pressure.

- 6\ Blow the implement dry with compressed air, then grease all greasing points and sliding surfaces with water-repellent grease (→ p. 218) (→ p. 220).

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.

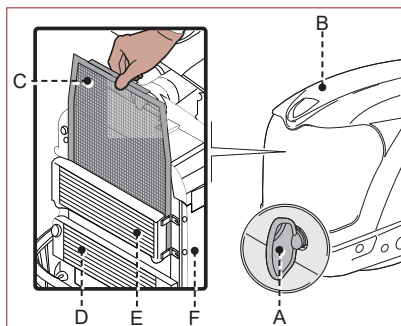


1. Dipstick
2. Engine oil filter
3. Fuel pre-filter
4. Electric pump
5. Engine ECU
6. Fuel filter

07.6. CLEANING THE RADIATOR

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 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 radiators **(D)** **(E)** **(F)** with a jet of compressed air. (depending on the version, the components **(C)** **(D)** **(E)** may not be present).



IMPORTANT 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.

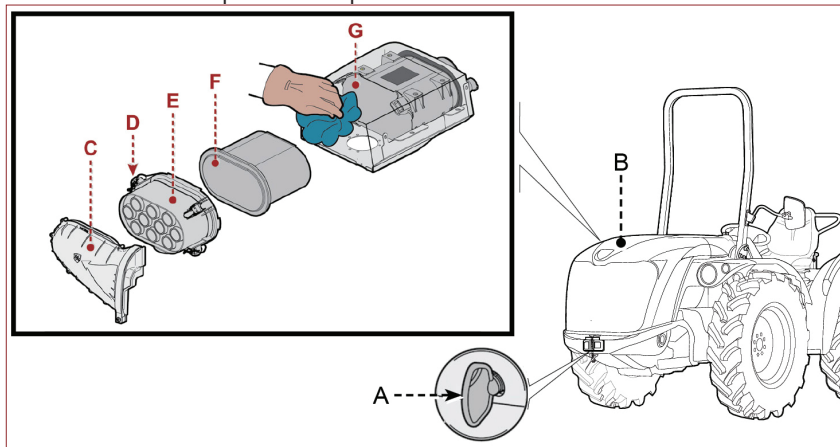


ATTENTION

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\ Refit the duct **(C)**.
- 12\ Shut the bonnet when the operation is concluded.

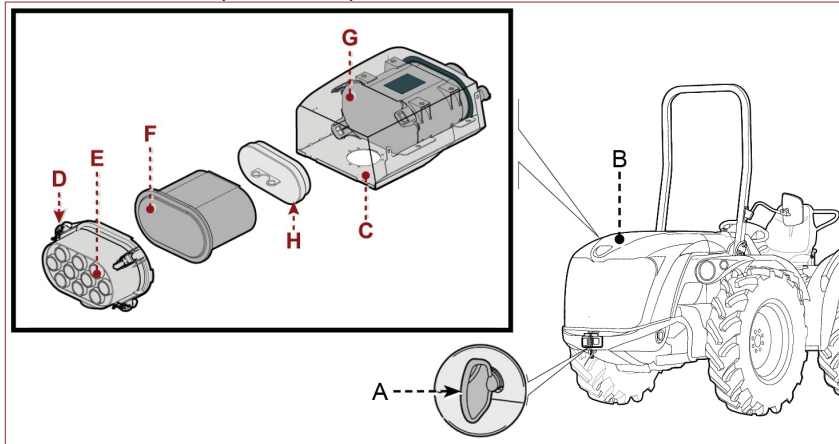


ATTENTION

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.

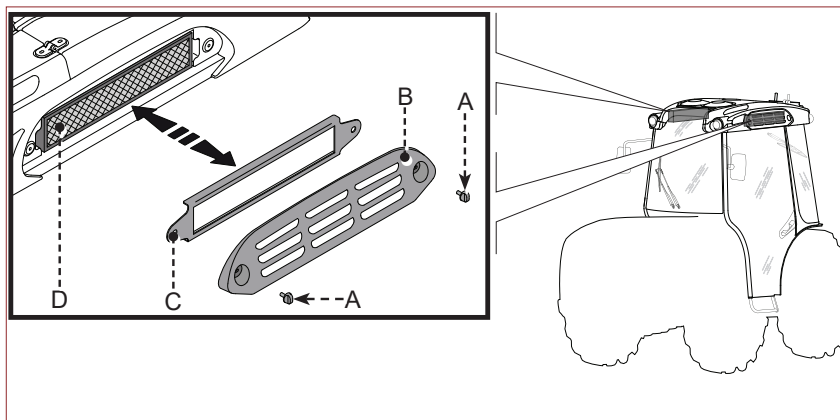


ATTENTION

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. 11).
- 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.

IMPORTANT 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. CHECKING THE PRESSURE OF THE TYRES

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Inspect the tyres for wear and check the pressure.

IMPORTANT Check the pressure without additional weights on the machine and without any interchangeable implement hitched.

To ensure tyres are inflated to the correct pressure, be certain of:

- the make and type of tyre;
- the tyre size;
- the equipment installed on the machine;
- the nature of the work to be carried out.

IMPORTANT For maximum confidence when setting tyre pressures, it will always be advisable to follow the indications given by the tyre manufacturer.

Tyre pressures for use on loose soils

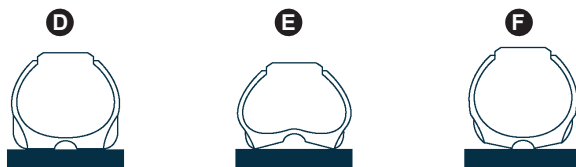
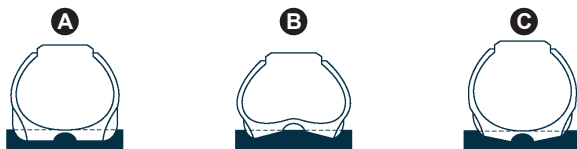
- A. **Inflation pressure correct:** Tyres inflated to the minimum pressure indicated for the load on the machine will give satisfactory results: the soil is penetrated correctly by the tyre lugs, good grip is obtained, and the tread stays clean.
- B. **Inflation pressure too low:** Tyres inflated to a pressure insufficient for the load on the machine will give unsatisfactory results: the soil is not penetrated correctly by the tyre lugs, grip is poor, and the carcass of the tyre suffers damage, especially when subjected to traction forces.
- C. **Inflation pressure too high:** Tyres inflated to a pressure higher than necessary for the load on the machine will give unsatisfactory results: less grip between tread and soil, a greater likelihood of the carcass being cut and damaged in the event of impact, and a conspicuous degrading effect on the soil.

Tyre pressures for use on firm soils or road surfaces

- D. **Inflation pressure correct:** Tyres inflated to the maximum pressure indicated for the load on the machine will give satisfactory results: less wear on the lugs of the tread, and better preservation of the carcass.
- E. **Inflation pressure too low:** Tyres inflated to a pressure insufficient for the load on the machine will give unsatisfactory results: rapid and irregular wear on the tread, damage to the carcass, and unstable rotation of the tyre.
- F. **Inflation pressure too high:** Tyres inflated to a pressure higher than necessary for the load on the machine will give unsatisfactory results: a less than comfortable ride for

the driver, rapid and irregular wear on the tread, and a greater likelihood of the carcass being cut and damaged in the event of impact.

TYRES PRESSURE ON EARTH



TYRES PRESSURE ON ROAD

Tab. 7.2: Tyre pressure

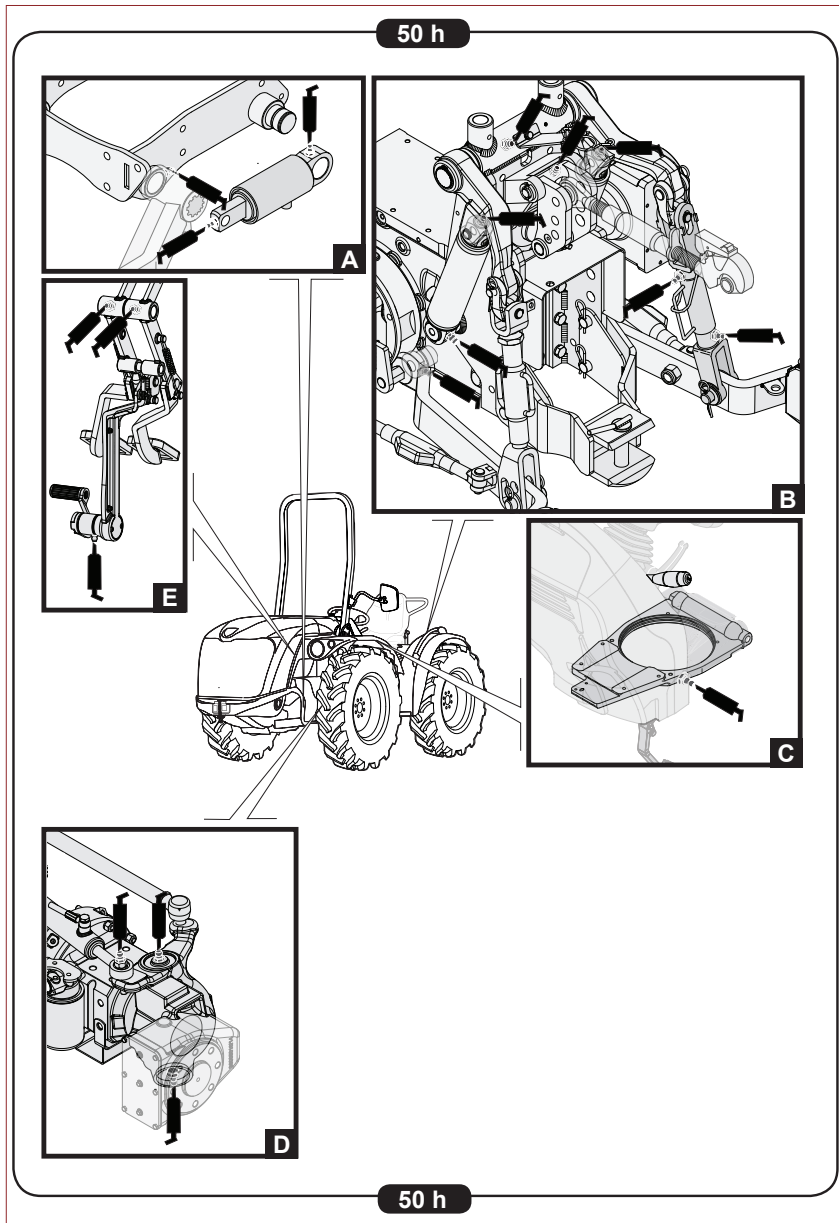
Tyre type	Inflation pressure (front) bar	Inflation pressure (rear) bar	Maximum pressure bar
31x15.50-15 4PR	0.8	0.8	1.4
31x15.50-15 8PR	0.8	0.8	3.1
33x12.50-15 6PR	1.4	1.4	1.9
36x13.50-15 4PR	0.8	0.8	1.4
300/80-15.3 123/111A8	1.4	1.4	2
11LR16 122 A8	1.4	1.4	2.4
400/55-17.5 8PR	0.8	0.8	2
250/80-18 8PR (*)	1.4	1.4	3.1
275/80 R18 142 A2/130 B	1.4	1.4	3.8
280/70 R18 114 A8	1.4	1.4	2.4
320/65 R18 109 A8	1.4	1.4	1.6

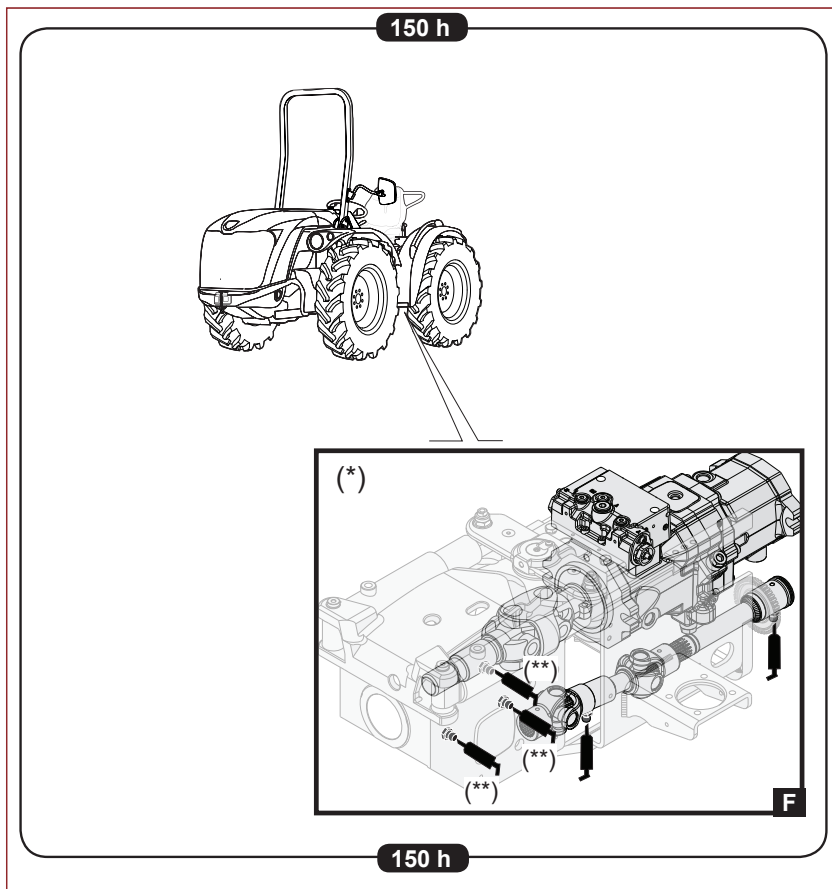
Tyre type	Inflation pressure (front) bar	Inflation pressure (rear) bar	Maximum pressure bar
340/65 R18 113 A8/110B	1.4	1.4	1.6
9.5 R20 108 A8	1.4	1.4	3.2
280/85 R20 112 A8	1.4	1.4	1.6
300/70 R20 110 A8	1.4	1.4	1.6
320/70 R20 113 A8	1.4	1.4	1.6
360/70 R20 120 A8	1.4	1.4	1.6
400/55-22,5 112 A5	0.8	0.8	1

(*) Standard tyres

07.11. LOCATION OF LUBRICATION POINTS

Lubricate all the parts shown at the intervals specified.





(*) Use RHEOLUBE 393 grease.

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

(*) 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.

07.12. 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.

Tab. 7.3: Lubricant features

Type of lubrication	Parts to be lubricated	Quantity (1)
Tony Gold SYNTHETIC ENGINE OIL 10W40 or Mobil Delvac XHP ESP 10W40	Engine	refer to the engine instruction manual.
Tony Gold POWERFLUID XP oil or Mobilfluid 424	rear transmission and hydrostatic system	25 l (2)
Tony Gold POWERFLUID XP oil or Mobilfluid 424	front transmission	16 l
Mobil LubeHD 85 W 140 oil	Front reduction gear (RH + LH)	1.8 l
	Rear reduction gear (RH + LH)	2.6 l
Tony Gold POWERFLUID XP oil or Shell Spirax S6 TXME	Brake and clutch control linkages	-
Grease MOBIL Grease XHP 222	Grease nipples (A-B-C-D-E)	-
RHEOLUBE 393 grease	central joint (F)	-
	top central joint (F)	40 to 45 grams (no load)
	secondary shaft (F)	-
	secondary extension (E)	-

(1) Approximate values.

(2) For temperatures below 0°C, use oil type "Mobiltrans HD 10W"

07.13. COOLANT

Tab. 7.4: 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

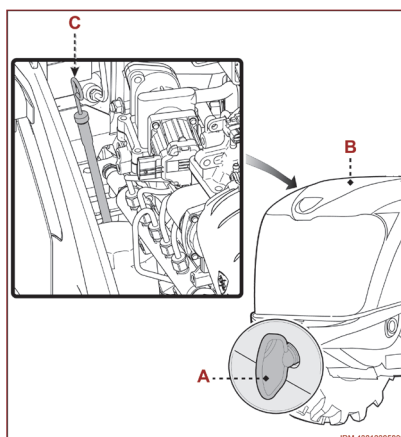
07.14. CHECKING THE ENGINE OIL LEVEL

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.

! ATTENTION 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.



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

07.15. CHECKING THE ENGINE COOLANT LEVEL

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.



ATTENTION

Perform this check with the machine on a perfectly level surface and with the engine cold.

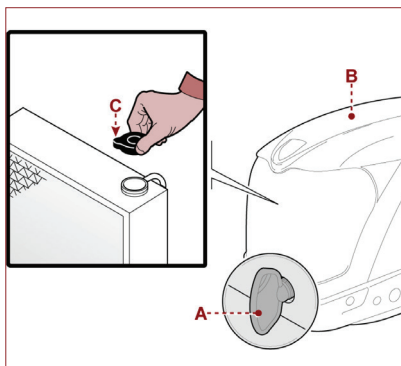
- 3\ Open the bonnet (B) with the key (A).



ATTENTION

DO NOT open the radiator cap before the cooling liquid has reached ambient temperature (cold engine)

- 4\ Unscrew the cap (C) to check the level of the liquid in the radiator and top up if necessary.



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.

- 5\ Screw the cap on again.
- 6\ Shut the bonnet when the operation is concluded.

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

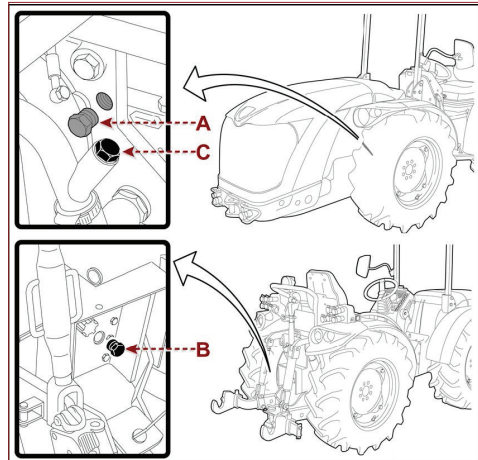
07.16. CHECKING THE OIL LEVEL UNIT 1-2

Proceed as indicated to perform this operation.

- 1\ Lower the power lift unit completely.
- 2\ Stop the machine in safe conditions (→ p. 11).
- 3\ Allow the engine to cool down, so that there will be no risk of scalding.

! ATTENTION Perform this check with the machine on a perfectly level surface and with the engine cold.

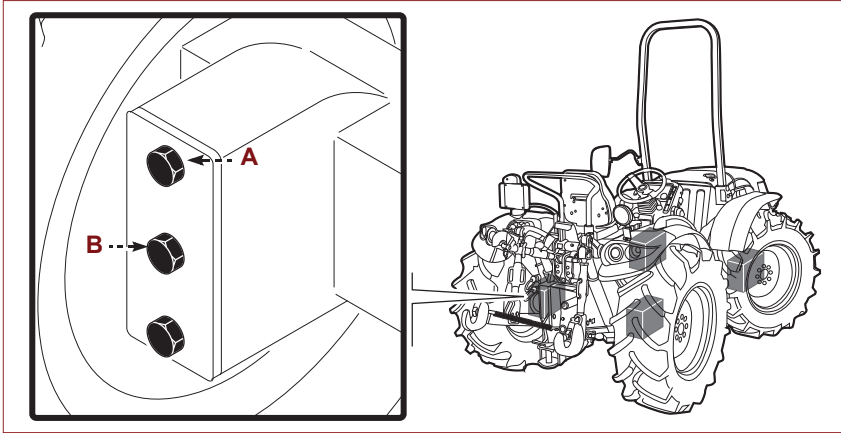
IMPORTANT To perform this operation, it might be necessary to remove the tyre. (→ p. 254)



- 4\ Unscrew the cap **(A)** and check the oil level comes close to the lower edge of the hole.
- 5\ Top up (if necessary) and screw the cap **(A)** on again.
- 6\ Unscrew the cap **(B)** and check the oil level comes close to the lower edge of the hole.
- 7\ Top up (if necessary) and screw the cap **(B)** on again.

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

07.17. CHECKING THE REDUCTION GEAR OIL LEVEL



Proceed as indicated to perform this operation.

- 1\ Lower the power lift unit completely.
- 2\ Stop the machine in safe conditions (→ p. 11).
- 3\ Allow the engine to cool down, so that there will be no risk of scalding.

IMPORTANT Perform this check with the machine on a perfectly level surface and with the engine cold.

- 4\ Unscrew the filler cap **(A)**.
- 5\ Unscrew the cap **(B)** and check the oil level comes close to the lower edge of the hole.
- 6\ Pour new oil in through the filler cap **(A)** until it reaches the lower edge of the hole of the level cap **(B)**.
- 7\ Screw the caps **(A-B)** on again.
- 8\ Repeat the same operation on all other reduction gears.

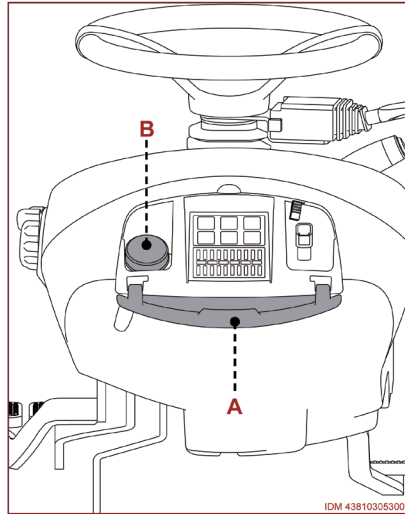
IMPORTANT Do not release polluting materials into the environment. Dispose of all such materials in compliance with applicable legislation.

07.18. CHECKING THE BRAKE FLUID LEVEL

Proceed as indicated to perform this operation.

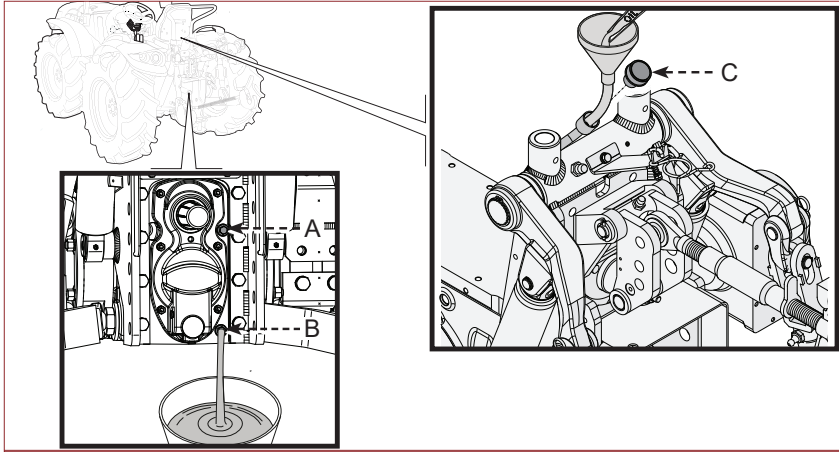
- 1\ Stop the machine in safe conditions.
- 2\ Open the cover (A).
- 3\ Check the correct level of the oil in the tank (B) and top up if necessary.

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. 220).



07.19. CHANGING THE OIL UNIT 1-2

Rear transmission and hydrostatic system (UNIT 1)



ATTENTION

To perform this operation it is necessary to allow the engine to cool down, so that there will be no risk of scalding.

Proceed as indicated to perform this operation.

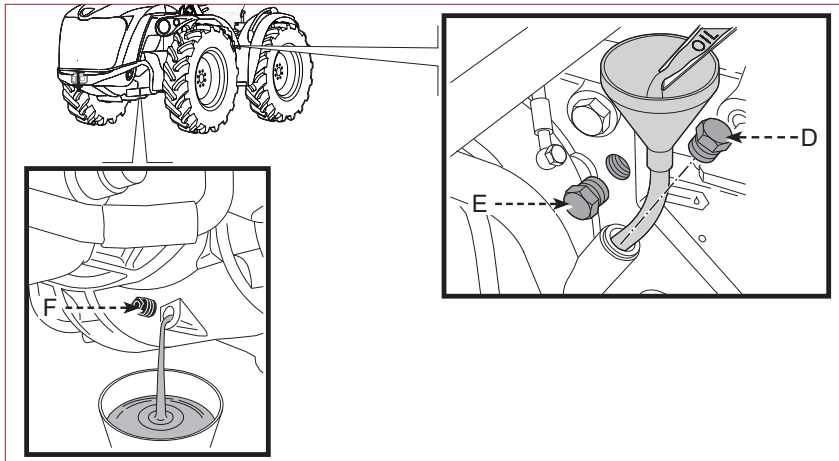
- 1\ Lower the power lift unit completely.
- 2\ Stop the machine in safe conditions (→ p. 11).
- 3\ Prepare a container with suitable capacity, which corresponds with the drain caps.

IMPORTANT Use brake fluid with specifications identical to those indicated (→ p. 220).

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

- 4\ Unscrew the filler cap **(C)**.
- 5\ Unscrew the level cap **(A)**.
- 6\ Unscrew the drain cap **(B)** and let all the oil drain into the container.
- 7\ Screw the drain cap **(B)** on again.
- 8\ Pour new oil in through the filler cap **(C)** until it reaches the lower edge of the hole of the cap **(A)**.
- 9\ Screw the caps **(A-C)** on again.
- 10\ On completion of all operations, check that there are no leaks in proximity of the caps.

Front transmission (UNIT 2)



ATTENTION

To perform this operation it is necessary to allow the engine to cool down, so that there will be no risk of scalding.

- 1\ Lower the power lift unit completely.
- 2\ Stop the machine in safe conditions (→ p. 11).
- 3\ Prepare a container with suitable capacity, which corresponds with the drain caps.

IMPORTANT Use brake fluid with specifications identical to those indicated (→ p. 220).

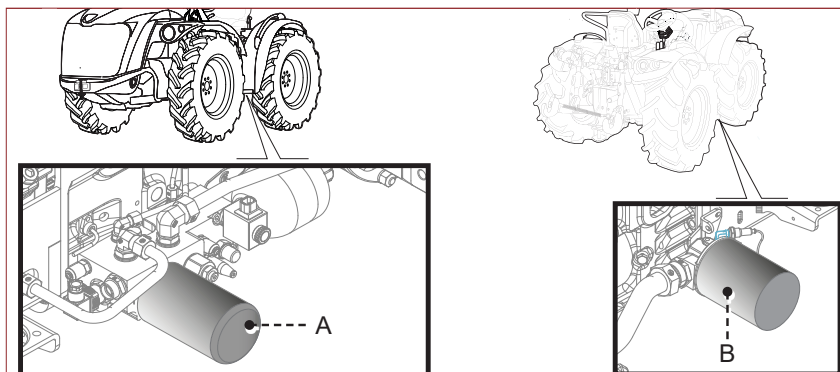
IMPORTANT Do not release polluting materials into the environment. Dispose of all such materials in compliance with applicable legislation.

IMPORTANT To perform this operation, it might be necessary to remove the tyre. (→ p. 254)

- 4\ Unscrew the filler cap **(D)**.
- 5\ Unscrew the level cap **(E)**.
- 6\ Unscrew the drain cap **(F)** and let all the oil drain into the container.
- 7\ Screw the drain cap **(F)** on again.
- 8\ Pour new oil in through the filler cap **(D)** until it reaches the lower edge of the hole of the cap **(E)**.
- 9\ Screw the caps **(D-E)** on again.
- 10\ On completion of all operations, check that there are no leaks in proximity of the caps.

07.20. CHANGING THE HYDRAULIC OIL FILTERS

Rear transmission and hydrostatic system oil filters (UNIT 1)



ATTENTION

To perform this operation allow the engine to cool down, to eliminate the risks related to burns and residual pressure.

Proceed as indicated to perform this operation.

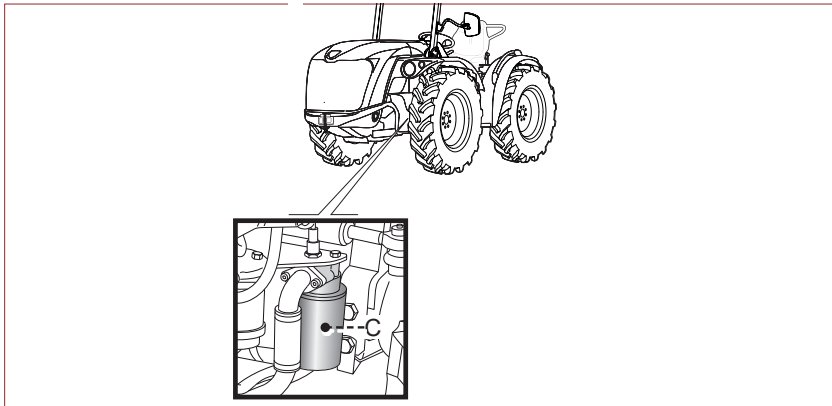
- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Position a container with suitable capacity in the oil draining area.
- 3\ Drain the UNIT 1 oil tank (→ p. 226)

IMPORTANT Use brake fluid with specifications identical to those indicated (→ p. 220).

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

- 4\ Unscrew the hydraulic oil suction filter **(B)**.
- 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\ Unscrew the hydraulic oil pressure filter **(B)**.
- 9\ Lubricate the new filter gasket with hydraulic oil.
- 10\ Mount the new filter and screw it only by hand.
- 11\ Tighten the filter fully home using an appropriate band wrench.
- 12\ Top up the oil level on completing this operation (→ p. 223).

Front transmission oil filter (UNIT 2)



ATTENTION

To perform this operation it is necessary to allow the engine to cool down, so that there will be no risk of scalding.

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Position a container with suitable capacity in the oil draining area.

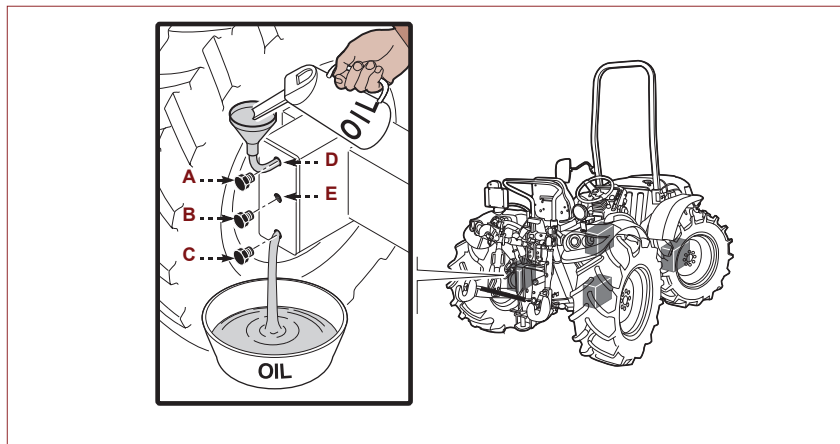
IMPORTANT Use brake fluid with specifications identical to those indicated (→ p. 220).

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

IMPORTANT To perform this operation, it might be necessary to remove the tyre. (→ p. 254)

- 3\ Unscrew the hydraulic oil suction filter **(C)**.
- 4\ Lubricate the new filter gasket with hydraulic oil.
- 5\ Mount the new filter and screw it only by hand.
- 6\ Tighten the filter fully home using an appropriate band wrench.
- 7\ Top up the oil level on completing this operation (→ p. 223).

07.21. CHANGING THE REDUCTION UNIT OIL



Proceed as indicated to perform this operation.

- 1\ Lower the power lift unit completely.
- 2\ Stop the machine in safe conditions (→ p. 11).
- 3\ Allow the engine to cool down, so that there will be no risk of scalding.

IMPORTANT Perform this check with the machine on a perfectly level surface and with the engine cold.

- 4\ Position a container with suitable capacity in the oil draining area.
- 5\ Unscrew the filler cap **(A)**.
- 6\ Unscrew the level cap **(B)**.
- 7\ Unscrew the drain cap **(C)** and let all the oil drain into the container.
- 8\ Screw the drain cap **(C)** on again.
- 9\ Pour new oil in through the filler cap **(D)** until it reaches the lower edge of the level hole **(E)**.
- 10\ Screw the caps **(A-B)** on again.
- 11\ Repeat the same operation on all other reduction gears.
- 12\ On completion of all operations, check that there are no leaks in proximity of the caps.

IMPORTANT Use brake fluid with specifications identical to those indicated (→ p. 220). Do not dispose of polluting materials in the environment. Dispose of all such materials in compliance with applicable legislation.

07.22. BLEEDING THE BRAKES 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

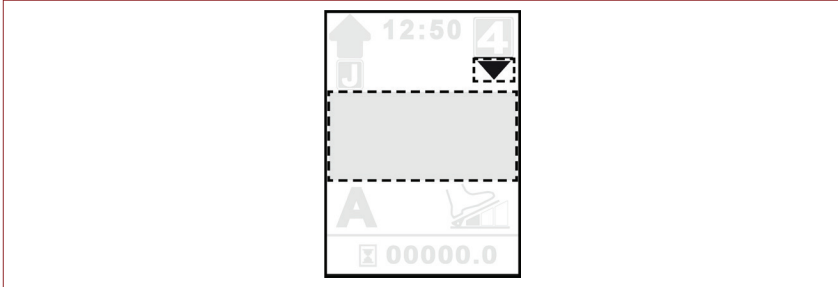
The following instructions are designed to help you identify the cause of faults and anomalies that may occur during the course of normal operation and the corrective actions to undertake.

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










Tab. 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.







Troubles	Causes	Solution
	The shuttle is not in neutral.	Shift the shuttle lever to the neutral position.
	The shuttle control is not working properly.	Consult an authorised workshop
	The drive pedal is not in position 0.	Set the drive pedal to position 0 (foot raised).
	The drive control is not working properly.	Consult an authorised workshop
	The operator is not sitting correctly in the driver's seat.	Sit correctly in the driver's seat.
	The operator present sensor is not working properly.	Consult an authorised workshop.
	The clutch pedal is not pressed.	Press the clutch pedal.


Troubles	Causes	Solution
N	Combined with the following icon  it shows that the shuttle is not in neutral	Shift the shuttle lever to the neutral position.
	Combined with the icon  shows that the drive pedal is not in position 0.	Set the drive pedal to position 0 (foot raised)
	Combined with the icon  shows that the operator is not correctly seated in the operator position	Sit correctly in the driver's seat.
	Combined with the icon  shows that the clutch pedal is not pressed.	Press the clutch pedal.
	Service overdue.	Consult an authorised workshop.
	Service overdue for more than 50h.	
	Transmission oil not at temperature.	Wait for the temperature to rise. (→ p. 168)
		
		

Troubles	Causes	Solution
 blinking	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.
 HIGH	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.
 blinking	Range too high for the operation being performed.	Change down.
 blinking + audible warning		
 blinking	Speed insufficient.	Adapt the speed to the preselected range.
	Load too high.	Keep the range being used.
	Transmission oil temperature too low.	Let the machine warm up adequately.

Troubles	Causes	Solution
	Hydrostatic unit pressure too high.	No intervention necessary: the TMC System will overcome the problem in 1 second.
 blinking + audible warning	An attempt has been made to engage the PTO in synchronised mode, but the first range is not engaged.	Engage the first range.
 blinking + audible warning	Not possible to activate Cruise Control.	Engage a more suitable range. (→ p. 170)
	Engine over-revving.	Use the brake control to slow the machine speed.
	Severe fault in the vehicle.	 (*)  Stop and turn off the engine! Consult an authorised workshop.
 blinking	Vehicle emergency mode.	 (**) Take the vehicle to an authorised service centre.
 blinking	Engine emergency mode.	 (***) Consult an authorised workshop.

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


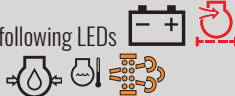



 (*) It is not possible to move the machine. Once the engine is turned off, it might not be possible to restart.











 (**) The machine functions are reduced according to the seriousness of the fault. Once the engine is turned off, it might not be possible to restart.









 (***) The TMC System fixes the engine speed at 1250 rpm to safeguard the machine.

Tab. 8.2: Warning lights

IMPORTANT If the fault persists, contact an authorised workshop.

Problem	Causes	Solution
 red LED	Lights simultaneously with illumination of one or more of the following LEDs 	Follow the instructions given for the individual LEDs.
	Lights simultaneously with an engine  fault or a transmission fault 	 Stop and turn off the engine! Consult an authorised workshop.

Problem	Causes	Solution
 red LED + audible warning	One of the two unit 1 transmission hydraulic filters is clogged.	 (*) Consult an authorised workshop.
 red LED + audible warning	Unit 2 hydraulic circuit filter clogged.	Replace filter.
 red LED + audible warning	Air filter clogged.	Clean and/or replace filter.
 red LED + audible warning	Unit 1 hydraulic system damaged (pump, valve, sensor)	Consult an authorised workshop
	Unit 1 hydraulic oil level low.	 (**)  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 and turn off the engine! Replace the hydraulic oil filters. If the problem persists, contact an authorised workshop.
 red LED + audible warning	Clogged fuel filter.	Replace 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.

Problem	Causes	Solution
 red LED + audible warning	Engine oil level low.	 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 and turn off the engine! Replace the hydraulic oil filters. If the problem persists, contact an authorised workshop.
 red LED + audible warning	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.)

 (*): depending on the level of clogging, the TMC System limits the maximum engine revolutions to safeguard the transmission.

 (**): the TMC System prevents use of the PTO to safeguard the hydraulic clutch.

Tab. 8.3: Problems at engine start-up phase

Troubles	Causes	Solution
Starter motor does not turn	Battery flat	Recharge or replace the battery (See 'Replacing the battery').
	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 fuse (See 'Replacing fuses').
	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

Tab. 8.4: Problems at engine start-up phase

Troubles	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 fuse (See 'Replacing fuses').
	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 (See 'Refuelling')
	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 the filter (See 'Cleaning the engine air filter')
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 the filter (See 'Cleaning the engine air filter')
	Engine overloaded	Select a lower range or reduce the load
	Injectors fouled or defective	Consult an authorised workshop.

Tab. 8.5: Hydrostatic unit problems

Troubles	Causes	Solution
When the hydrostatic drive pedal is pressed, the machine does not move	Mechanical range in neutral (0)	Engage a range.
	'Shuttle' lever in neutral	Select a direction of movement.
	Error detected by ITAC	(→ p. 234)
The machine does not move regularly and/or its power is lower than normal	Hydraulic oil filters clogged	Clean or replace the filter cartridge (See 'Replacing the hydraulic oil filter').
	Hydrostatic unit oil temperature too low	Let the machine warm up adequately before starting work (See 'Starting and stopping the engine')
	Maximum supply pressure valve faulty or dirty	Consult an authorised workshop.
	Oil level low in rear transmission housing	Restore the oil level (see 'Checking the UNIT 1-2 oil level')
	Machine in 'Emergency' mode	Consult an authorised workshop.
The oil in the hydraulic system overheats during normal machine operation.	Radiator dirty	Clean the radiator
	Hydraulic oil filter clogged	Clean or replace the filter cartridge (See 'Replacing the hydraulic oil filter').
	Oil level low in rear transmission housing	Restore the oil level (see 'Checking the UNIT 1-2 oil level')
	Range too high for the operation being performed.	Change down

Tab. 8.6: Problems in the PTO and differential units

Troubles	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 fuse (See 'Replacing fuses').
	PTO electrovalve breakdown	Consult an authorised workshop.
	Services electrovalve block maximum pressure valve breakdown	Consult an authorised workshop.
	It has been attempted to engage the synchronised PTO, but the first range is not engaged	Engage the first range and reactivate the PTO
	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 fuse (See 'Replacing fuses').
	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 fuse (See 'Replacing fuses').
	Differential locking electrovalve breakdown	Consult an authorised workshop.
	Services electrovalve block maximum pressure valve breakdown	Consult an authorised workshop.

Tab. 8.7: Power lift unit problems

Troubles	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 front transmission	Restore the oil level (see 'Checking the UNIT 1-2 oil level')
	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.

Tab. 8.8: Clutch, brake and steering units problems

Troubles	Causes	Solution
Insufficient braking action and excessive brake pedal travel	Air in the hydraulic circuit.	Consult an authorised workshop
	Discs worn	Consult an authorised workshop.
	Brake pump(s) damaged or worn	Consult an authorised workshop.
	Oil level low	Restore the oil level (see 'Checking the brake fluid level')
Uneven wear on tyres	Inflation pressure incorrect:	Restore the correct tyre pressure (See 'Checking tyre pressure').
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 reversal mini-switch is not completely activated	Consult an authorised workshop.
The steering wheel does not steer the machine accurately	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.
	Clearances in the steering components (steering bar, pins, steering joints)	Consult an authorised workshop.

The machine does not steer at all	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 (see 'Checking the UNIT 1-2 oil level')
	The reversal mini-switch is blocked in intermediate position.	Consult an authorised workshop.

Tab. 8.9: Electrical system problems

Troubles	Causes	Solution
No power in electrical circuit.	Main fuse damaged	Replace fuse (See 'Replacing fuses').
	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.

Tab. 8.10: Cab unit problems

Troubles	Causes	Solution
The cab heating system does not work	Engine coolant level too low.	Restore engine coolant level (See 'Checking engine coolant level').
	Air-conditioning control device damaged	Consult an authorised workshop.
	Electric fan breakdown	
		Consult an authorised workshop.

The air conditioning system is not working	Cab protection circuit fuses blown	Replace fuse (See 'Replacing fuses').
	Air-conditioning system condenser dirty	Clean or replace the condenser (See 'Cleaning the cab air filter').
	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 ON PARTS REPLACEMENT

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.

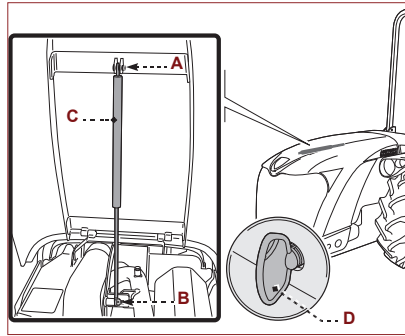
Replace worn parts only with original spare parts. The manufacturer accepts no responsibility for injury or damage caused by the use of non-original or second-hand spares or unauthorised repairs that may affect safety requirements.

To request parts, contact an authorised workshop

09.2. REPLACING THE GAS SPRING (ENGINE HOOD)

Proceed as indicated to perform this operation.

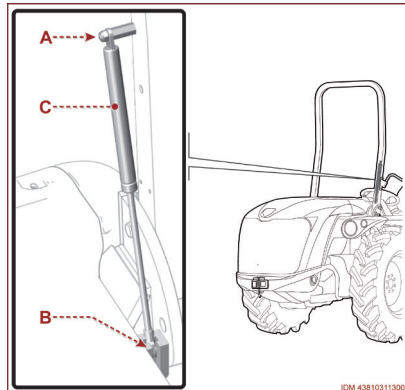
- 13\ Stop the machine in safe conditions (→ p. 11).
- 14\ Allow the engine to cool down, so that there will be no risk of scalding.
- 15\ Open the bonnet with the key **(D)**.
- 16\ Lock the bonnet in the open position with a safety rod.
- 17\ Unscrew the nuts **(A-B)**.
- 18\ Replace the gas spring **(C)** with a new one.
- 19\ Tighten the nuts **(A-B)**.
- 20\ Remove the safety rod and check that the bonnet remains in the open position.
- 21\ Shut the bonnet when the operation is concluded.



09.3. REPLACING THE GAS SPRING (ROPS)

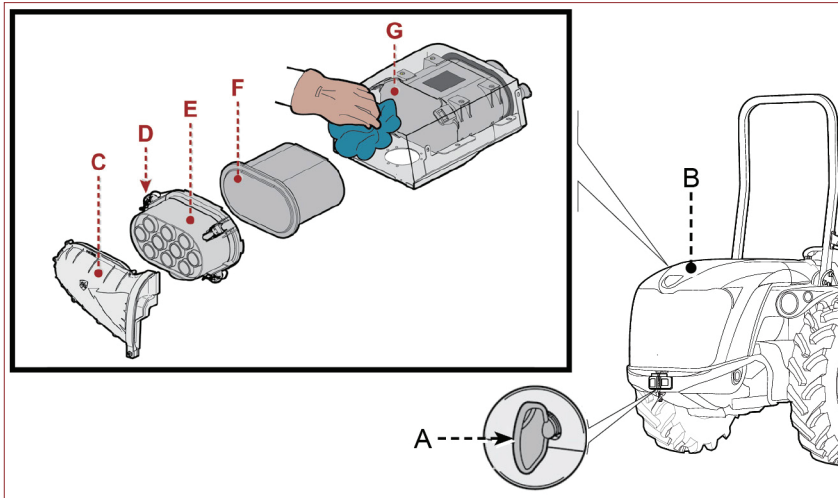
Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions.
- 2\ Ensure that the safety arch is correctly blocked in the raised position.
- 3\ Unscrew the nut **(A)**.
- 4\ Take the gas spring out of its seat **(B)** and replace it with a new one
- 5\ Insert the gas spring **(C)** in its seat **(B)**.
- 6\ Tighten the nut **(A)**



09.4. CHANGING 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\ Refit the duct **(C)**.
- 11\ Shut the bonnet when the operation is concluded.

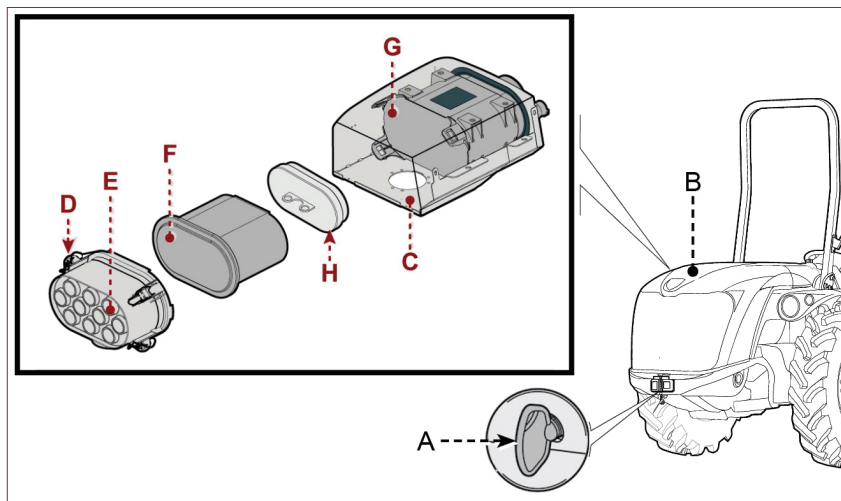


ATTENTION

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.

09.5. CHANGING THE ENGINE AIR FILTER (TYPE B)

Proceed as indicated to perform this operation.



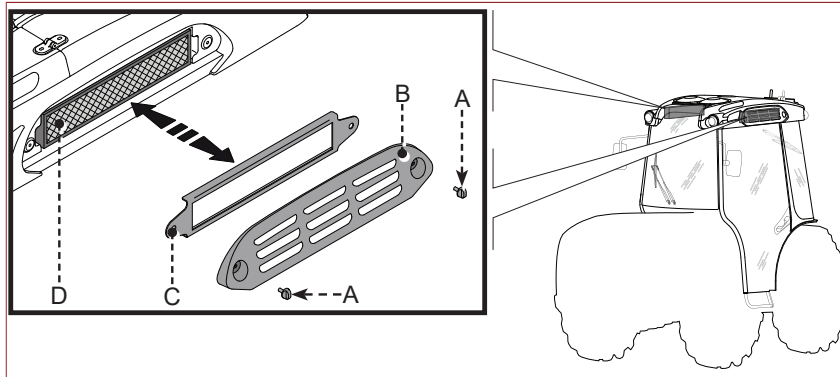
- 1\ Stop the machine in safe conditions.
- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 3\ Open the bonnet **(B)** with the key **(A)**.
- 4\ Open the door **(C)**.
- 5\ Open the hooks **(D)** and remove the cover **(E)**.
 - Slightly raise the filter unit, for easier 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

09.6. REPLACING THE CAB AIR FILTER



Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 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.

09.7. CHANGING THE BATTERY

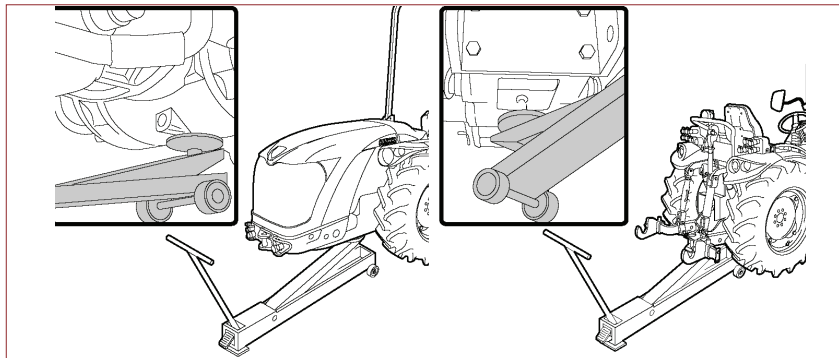
The battery used for the machine has been expressly designed for the type of housing provided and it is equipped with special safety devices.

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.

IMPORTANT Do not release used batteries into the environment. Dispose of all such materials in compliance with applicable legislation.

09.8. CHANGING TYRES



Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Place the jack in the indicated points for lifting.



ATTENTION

Tyre replacement is an operation that can lead to risks, even 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 (for example, a tyre repairer), able to do the job correctly and safely.

- 3\ At the end of the replacement, check that the tightening torque of the screws or fixing nuts of the wheels is correct.

Tab. 9.1: Torque settings

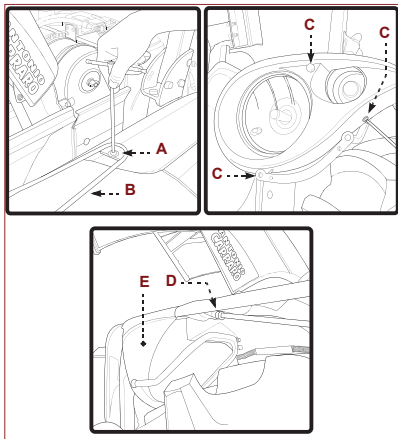
Dimensions of screws / nuts	Torque setting Nm (kgm)
M14 x 1.5	140 (14.3)
M16 x 1.5	210.7 (21.5)
M16 x 1.5 (Flare nut).	210.7 (21.5)

IMPORTANT Consult your vehicle registration document, when changing tyres, so as to identify which tyres can be fitted according to the type approval. Check that the rolling circumference value is correct and re-enter it if necessary (→ p. 110).

09.9. REPLACING THE LIGHT BULBS (FRONT)

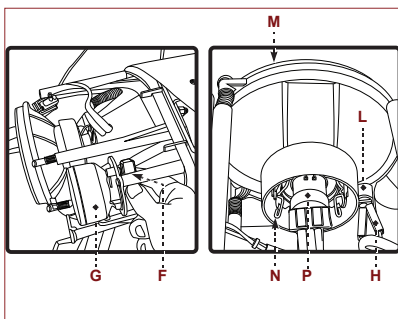
Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 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).



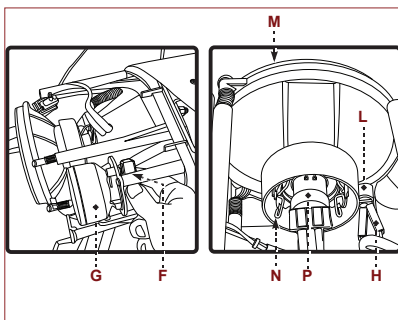
09.9.1. Direction indicator lights

- 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. (→ p. 277)
- 8\ Insert the bulb holder (G) and turn it to block it.
- 9\ Connect the connector (F).



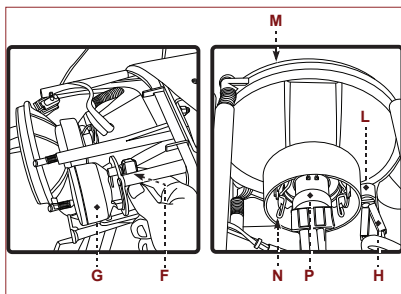
09.9.2. Position lights

- 10\ Disconnect the connector (H).
- 11\ Take out the bulb holder (L) and replace the bulb with a new one of identical rating. (→ p. 277)
- 12\ Reinsert the bulb holder (L).
- 13\ Connect the connector (H).



09.9.3. Low and full beam lights

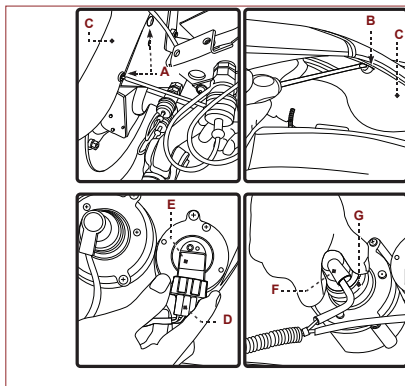
- 14\ Disconnect the connector.
- 15\ Remove the protection (**M**).
- 16\ Release the spring (**N**).
- 17\ Take out the bulb holder (**P**) and replace the bulb with a new one of identical rating. (→ p. 277)



09.10. REPLACING INDICATOR LIGHT BULBS (REAR)

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Unscrew the screws of the hydraulic coupling supports and move them aside.
- 3\ Unscrew the screws (**A-B**) to remove the light cluster (**C**).



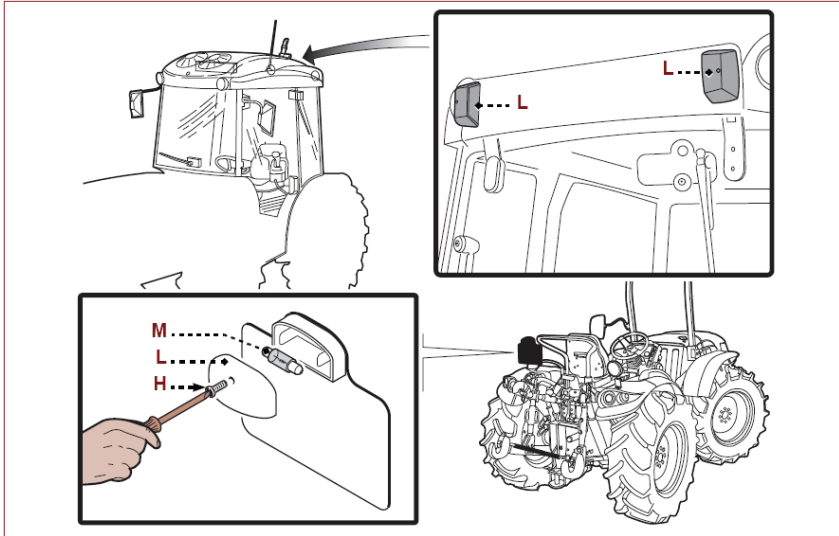
09.10.1. Direction indicator lights

- 4\ Disconnect the connector (**D**).
- 5\ Turn the bulb holder (**E**) and extract it.
- 6\ Remove the bulb and replace with a new one of identical rating. (→ p. 277)
- 7\ Insert the bulb holder (**E**) and turn it to block it.
- 8\ Connect the connector (**D**).

09.10.2. Position lights and stop lights

- 9\ Disconnect the connector (**F**).
- 10\ Turn the bulb holder (**G**) and extract it.
- 11\ Remove the bulb and replace with a new one of identical rating. (→ p. 277)
- 12\ Insert the bulb holder (**G**) and turn it to block it.
- 13\ Connect the connector (**F**).

09.10.3. Licence plate light

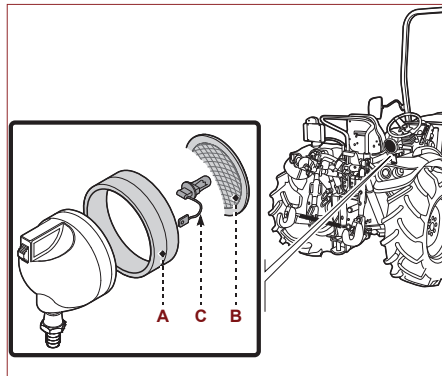


- 1\ Undo the screws **(H)** and remove the protection **(L)**.
- 2\ Remove the bulb **(M)** and replace with a new one of identical rating. (→ p. 277)
- 3\ Reassemble the protection **(L)** and tighten the screws **(H)**.

09.11. REPLACEMENT OF THE WORK LIGHT LAMP

Proceed as indicated to perform this operation.

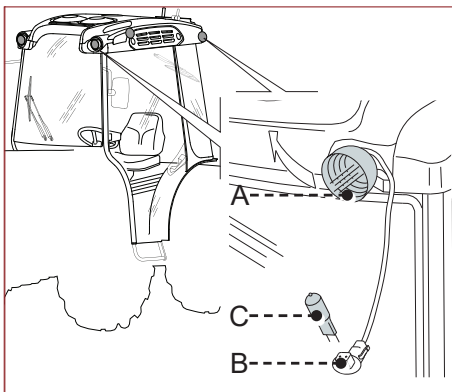
- 1\ Stop the machine in safe conditions (→ p. 11).
- 2\ Take off the gasket (A) and remove the protection (B).
- 3\ Remove the bulb (C) and replace with a new one of identical rating. (→ p. 277)
- 4\ Refit the protection (B) and secure it with the gasket (A).



09.12. REPLACEMENT OF THE CAB WORK LIGHT LAMP (WITH BULB)

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).
- 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 (→ p. 277).
- 4\ Insert the bulb holder **(B)** and turn it to block it.



09.13. REPLACEMENT OF THE CAB WORK LIGHT LAMP (WITH LED)

Lamp replacement is not contemplated.

If it has to be replaced, contact an authorised workshop.

09.14. REPLACEMENT OF THE CAB COURTESY LIGHT (WITH LED)

Lamp replacement is not contemplated.

If it has to be replaced, contact an authorised workshop.

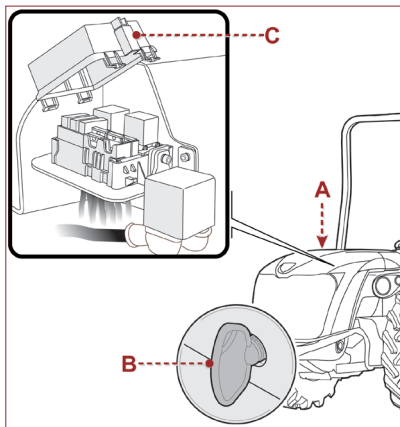
09.15. REPLACEMENT OF FUSES AND RELAYS

Proceed as indicated to perform this operation.

- 1\ Stop the machine in safe conditions (→ p. 11).

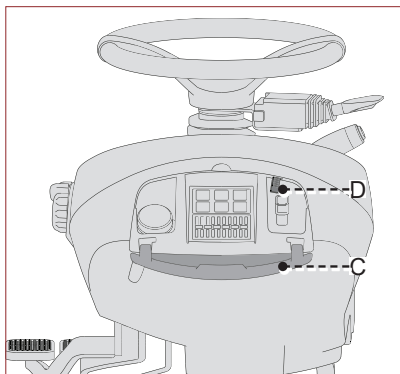
Engine compartment

- 2\ Allow the engine to cool down, so that there will be no risk of scalding.
- 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 the operation is concluded.



Dashboard

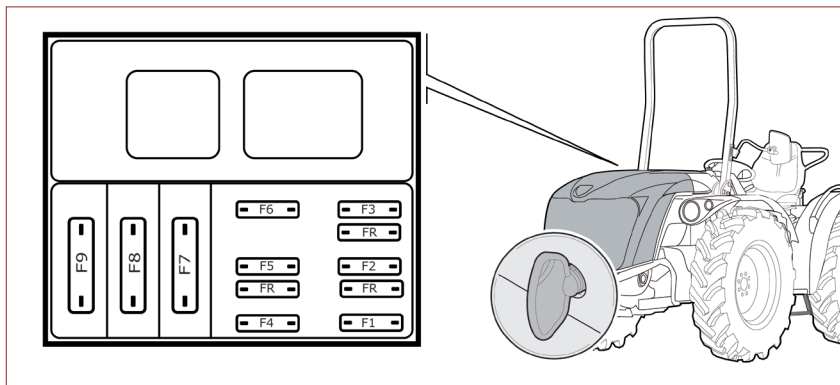
- 7\ Open the cover **(C)**.
- 8\ Replace the fuse with one of identical rating using the appropriate extractor **(D)**.
- 9\ Close the cover **(C)** on completing this operation.



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

09.15.1. Engine compartment fuses

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



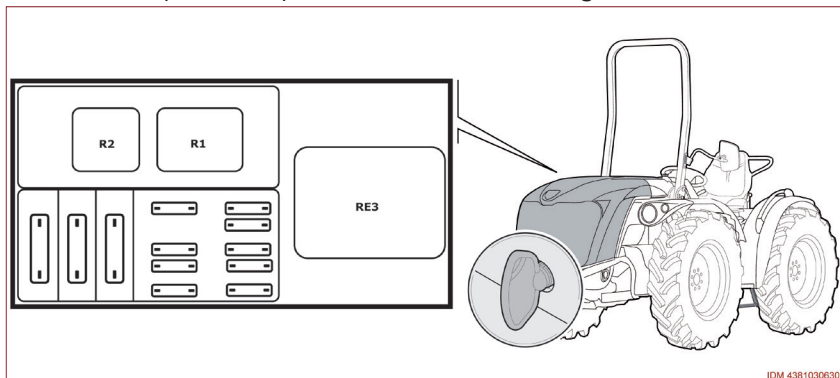
IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

Tab. 9.2: description of engine compartment fuses

Ref.	Description	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	

09.15.2. Engine compartment relays

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



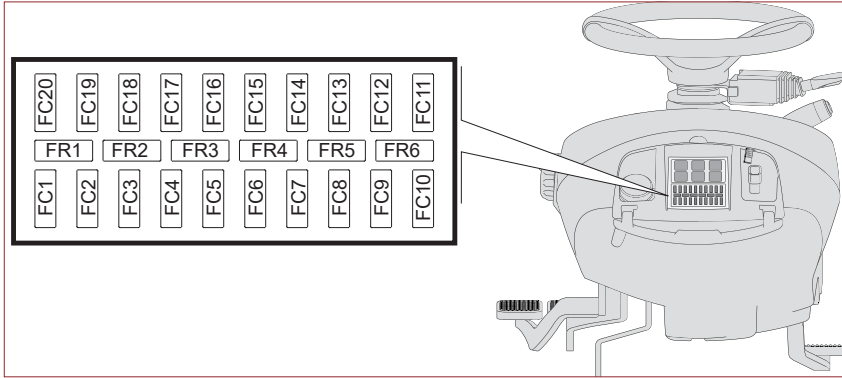
IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

Tab. 9.3: description of engine compartment relays

Ref.	Description	Value [A]
R1	Start relay	70
R2	main relay	30/40
RE3	Intake heater relay	100

09.15.3. Dashboard fuses

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

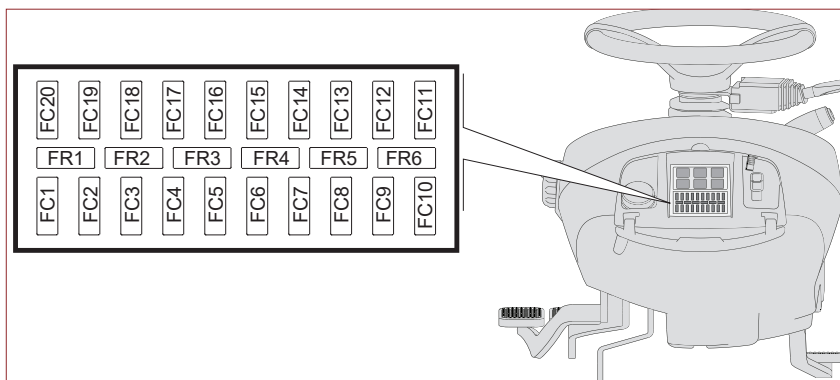


IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

Tab. 9.4: Description of dashboard fuses

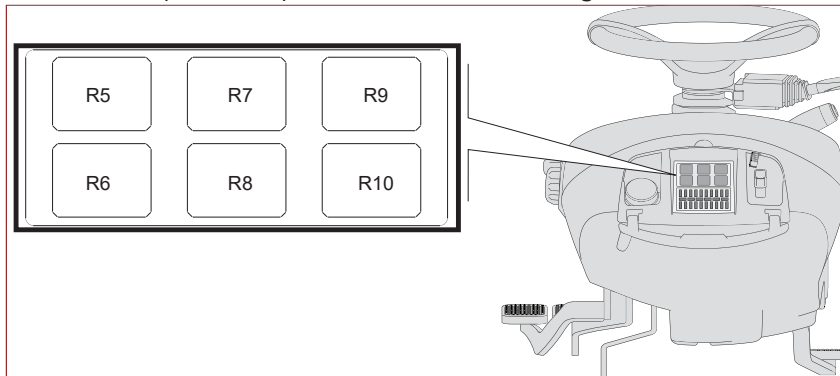
Ref.	Description	Value [A]
FC1	Rear kit	15
	Joystick	
FC2	3-pole socket (power line)	25
FC3	3-pole socket (signal line)	5
	Cab electric supply circuit	
FC4	Work light	10
	Rotating light	
	Pneumatic seat	
FC5	Engine users (engine ECU)	10
FC6	Parking brake	5
FC7	Multifunction instrument (supplied by key)	5
FC8	Transmission ECU (supplied by key)	10

Ref.	Description	Value [A]
FC9	Front kit	15
	Emergency lights	
FC10	Traction disengagement electrovalves	10
	Differential block electrovalves	
FC11	Acoustic warning	10
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 low beam light	7.5
FC16	Right low beam light	7.5
FC17	Left high beam light	7.5
FC18	Brake lights	10
FC19	Direction indicators	15
	Multifunction instrument (supplied by battery)	
FC20	Transmission ECU (supplied by battery)	15
FR	Spare fuses	/



09.15.4. Dashboard relays

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



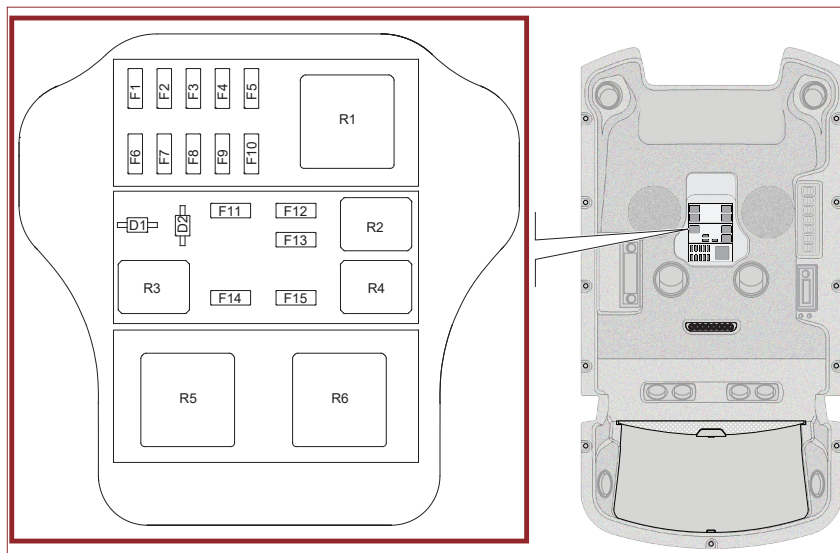
IMPORTANT If it has to be replaced, contact an authorised workshop.

Tab. 9.5: Description of dashboard relays

Ref.	Description
R5	Full beam
R6	Low beam
R7	Start
R8	Brake lights
R9	Parking brake
R10	3-pole socket

09.15.5. Cab fuses

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



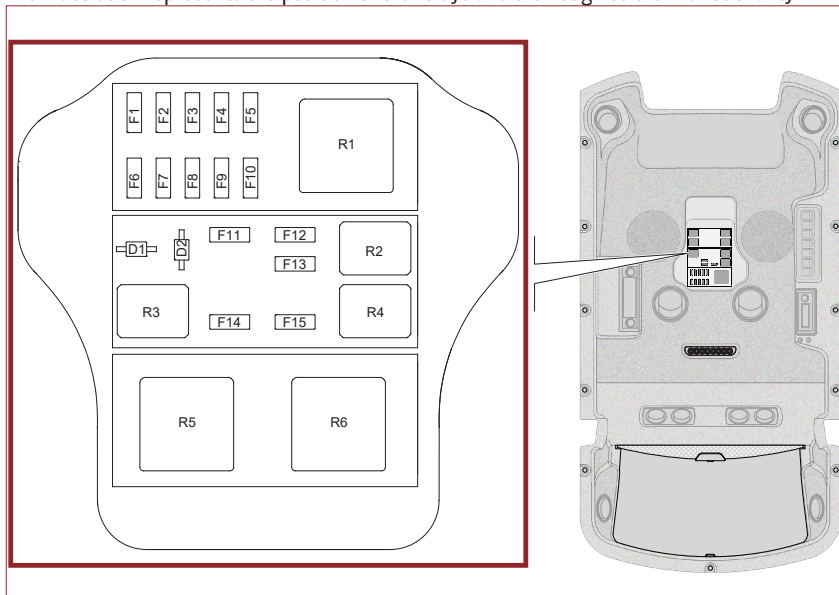
IMPORTANT Replace any burnt out fuses with ones of the same properties stated in the table.

Tab. 9.6: Description of cab fuses

Ref.	Description	Value [A]	Ref.	Description	Value [A]
F1	Single-pole socket	10	F11	Conditioner compressor	5
F2	Rotating lamp	10	F12	Conditioner control unit	5
F3	Rear work lights (optional)	10	F13	Radio (supplied by key)	5
F4	Rear work lights	10	F14	3-pole socket (direct)	10
F5	Ventilation fan	30	F15	Radio + Ceiling light (direct)	5
F6	Front and rear windscreen	15	D1	Front diode	-
F7	3-pole socket (supplied by key)	10	D2	Rear diode	-
F8	Front work lights (optional)	10			
F9	Front work lights	10			
F10	Condenser fans	30			

09.16. CAB RELAYS

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



IMPORTANT If it has to be replaced, contact an authorised workshop.

Tab. 9.7: description of cab relays

Ref.	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	-

09.17. DISPOSAL AND SCRAPPING OF THE MACHINE

IMPORTANT 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

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 type-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.

Tab. 10.1: Kerb weight

Description	Unit of measurement	Value	
		With safety arch	With cab
Total empty weight	kg	2320 to 2430	2500 to 2610
Front axle empty weight	kg	1475 to 1530	1545 to 1600
Rear axle empty weight	kg	845 to 900	955 to 1010

10.3. MACHINE MAXIMUM PERMISSIBLE WEIGHT

The tables show the maximum weight values (including kerb weight) of the vehicle.

Tab. 10.2: Maximum permissible weight

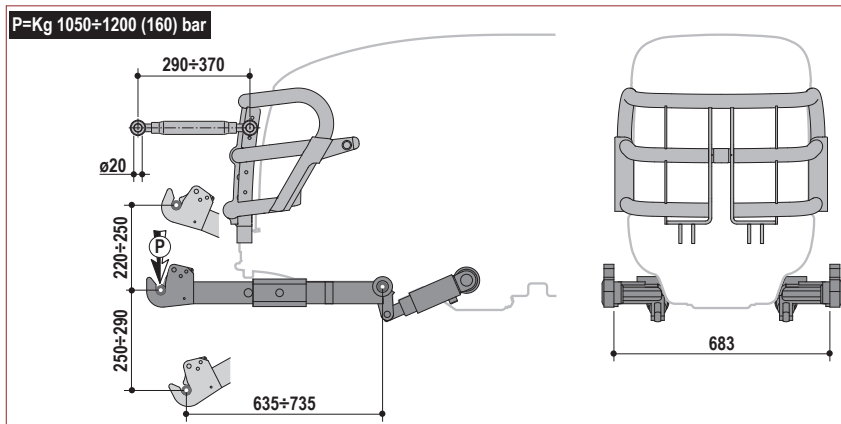
Tyre type	Weight on front axle (kg)	Weight on rear axle (kg)	Total weight (kg)
31x15.50-15 4PR	1740	1740	3480
31x15.50-15 8PR	2300	2300	4000
33x12.50-15 6PR	2300	2300	4000
36x13.50-15 4PR	2300	2300	4000
300/80-15.3 123/111A8	2246	2246	4000
11LR16 122 A8	2300	2300	4000
400/55-17,5 110 A5	1930	1930	3860
250/80-18 8PR (*)	2130	2130	4000
275/80 R18 142 A2/130 B	2300	2300	4000
280/70 R18 114 A8	2300	2300	4000
320/65 R18 109 A8	2060	2060	4000

Tyre type	Weight on front axle (kg)	Weight on rear axle (kg)	Total weight (kg)
340/65 R18 113 A8/110B	2300	2300	4000
9.5 R20 108 A8	2000	2000	4000
280/85 R20 112 A8	2240	2240	4000
300/70 R20 110 A8	2120	2120	4000
320/70 R20 113 A8	2300	2300	4000
360/70 R20 120 A8	2300	2300	4000
400/55-22,5 112 A5	1970	1970	3940
450/55-17 221 4PR	2300	2300	4000
440/50 R17 135D	2300	2300	4000
425/55 R17 134G	2300	2300	4000

(*) *Standard tyres*

10.4. FRONT POWER LIFT DIMENSIONS

The illustration shows the technical data of the front 'quick coupling' power lift unit.



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 'Ballast installation'.

Tab. 10.3: Ballasts weight

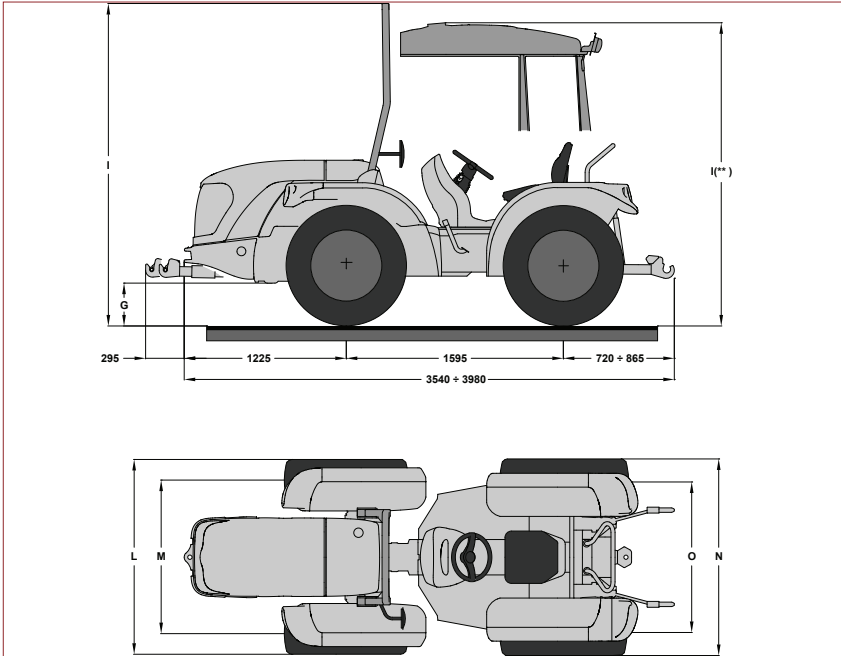
Type	Unit weight	Number of ballasts (for each side)	Number of ballasts (for each wheel)	Number of ballasts (for each axle)	Ballast quantity (maximum total weight on the machine)
Side ballasts	22 kg	3	-	-	6 (132 kg)
Wheel ballasts (for front and rear wheels)	35 kg	-	2	4	8 (280 kg)
Ballasts with flange (only for rear wheels) (20')	65 kg	-	1	2	2 (130 kg)

IMPORTANT On the rear axle it is not possible to install wheel ballast (35 kg) and flange ballast (65 kg) simultaneously

- **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), premature wear of the tyres and consumption of more fuel.

IMPORTANT To keep the machine balanced, install the same amount of ballasts on both sides.

10.7. DIMENSIONS



Tab. 10.4: Machine dimensions

Tyre type	G	I	I (**)	L	M	N	O
31x15.50-15 4PR	240	2310	2150	1690	(→ p. 284)	1690	(→ p. 284)
31x15.50-15 8PR	240	2310	2150	1690		1690	
33x12.50-15 6PR	260	2330	2170	1620		1620	
36x13.50-15 4PR	265	2335	2175	1645		1645	
300/80-15.3 123/111A8	275	2345	2185	1470 to 1675		1440 to 1675	
11LR16 122 A8	275	2345	2185	1420 to 1680		1395 to 1680	
400/55-17.5 110A5	275	2345	2170	1690		1690	
250/80-18 8PR (*)	275	2345	2185	1380 to 1650		1350 to 1685	
275/80 R18 142 A2/130 B	275	2345	2185	1380 to 1715		1410 to 1680	
280/70 R18 114 A8	275	2345	2185	1420 to 1680		1410 to 1680	
320/65 R18 109 A8	275	2345	2185	1460 to 1720	1450 to 1720		
340/65 R18 113 A8/110B	295	2365	2195	1485 to 1670	1475 to 1670		
9.5 R20 108 A8	310	2380	2220	1390 to 1720	1390 to 1720		
280/85 R20 112 A8	335	2405	2245	1410 to 1705	1435 to 1715		
300/70 R20 110 A8	310	2380	2220	1410 to 1705	1410 to 1705		
320/70 R20 113 A8	335	2405	2245	1460 to 1730	1435 to 1730		
360/70 R20 120 A8	370	2440	2280	1610 to 1685	1545 to 1685		
400/55-22,5 112 A5	335	2405	2245	1650	1650		
450/55-17 221 4PR	290	2360	2200	1760	1760		
440/50 R17 135D	275	2345	2185	1820	1820		
425/55 R17 134G	285	2355	2195	1815	1815		

(*) Standard tyres

(**) With cab

10.8. ENGINE, TRANSMISSION AND SYSTEMS FEATURES

Tab. 10.5: 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 turbocharger		
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)
Fuel tank capacity (With safety arch)	l	49
Fuel tank capacity (with frame or cab)	l	47
Cooling circuit capacity	l	10
Transmission parts		
Hybrid mechanical/hydrostatic transmission with continuous variation with 4 robotic ranges. Electronic speed and engine control		
Four-wheel drive transmission and axles with final drives		
Electronic machine management: TMC System		
Virtual safety clutch		

Description and features	Unit of measurement	Value
Front differential lock Electro-hydraulically controlled with switch on instrument panel		
Rear differential lock Electro-hydraulically controlled with switch on instrument panel		
Front-wheel drive disengagement Electro-hydraulically controlled with switch on instrument panel		
Front transmission housing oil capacity	l	16
Gearbox oil capacity	l	25
Front reduction gear oil capacity (right + left)	l	1.8
Rear reduction gear oil capacity (right + left)	l	2.6
Steering unit		
Hydraulic, with a double-acting cylinder acting on the front wheels		
Turning radius (inside) (with 360/70 R20 tyres and 4-wheel drive)	mm	3205
Turning radius (outside) (with 360/70 R20 tyres and 4-wheel drive)	mm	5030
Braking system		
Hydraulic service brake, with discs in oil bath Mechanical control pedal, acting on all wheels		
Multi-disc automatic oil bath brake on the transmission, activated by spring and with hydraulic release. Emergency release for towing. 0.7 litre emergency accumulator.		
Hydraulic system		
Unit 1 (services circuit, hydrostatic unit booster)		
Hydraulic gear pump (unit 1)		
Displacement	cm ³	17
Flow rate (at 2400 rpm)	l/min	50
Hydrostatic unit oil filter on suction with cartridge with filtration rating	μ	25

Description and features	Unit of measurement	Value
Hydrostatic unit oil filter on delivery with cartridge with filtration rating	μ	10
Unit 2 (power lift, hydraulic couplings, steering)		
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
Cartridge oil filter on suction with filtration rating	μ	25
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
Alternator	V - A	12 - 90
Starter motor	kW	3.2
Maintenance-free battery	V - Ah	12 - 75
Hill-starting ability when cold (EN) CCA (-18°C)	A	975
Warning signals and road lights		
Low beam light bulb (asymmetric headlights) (B)	W	55
High beam light bulb (asymmetric headlights) (B)	W	60
Sidelights bulb (front) (D)	W	4
Direction indicator bulb (F)	W	21
Sidelights bulb (rear) (G)	W	5
Rear brake lights bulb (G)	W	21

Description and features	Unit of measurement	Value
Number plate light bulb (E)	W	5
Work light lamp, with bulb (with cab) (C)	W	50
Work light lamp, with LED (With cab)		
Lamp, work light (with protective structure) (A)	W	55
Courtesy light lamp, with LED (With cab)		
Lift unit		
Hydraulic power lifting unit with three-point hitch (category 1-2). (→ p. 272)		

A: Halogen bulbs H3

B: Halogen bulbs H4

C: Halogen bulbs 886

D: Bulbs with wedge base (transparent)

E: Double-end 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.

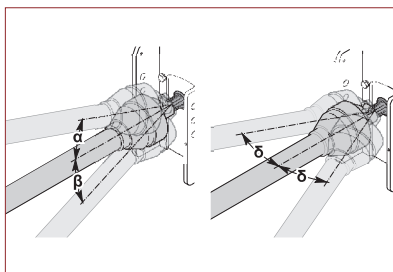


Table 10.6: Cardan shaft joint angles

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 10.7: Rear PTO rpm

Version	PTO independent from gearbox		PTO synchronised with the first range
	Power take-off revolutions	Max. engine speed	PTO rpm - wheel revolution
540 power take-off	540	2357	9.301
540 E PTO	540	1650	13.288
1000 power take-off	540	1277	17.163
540 S power take-off	540	2057	10.661

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 10.8: Noise level

Description		Measured value	
		With safety arch	With cab
Environmental noise emission level (1)	Sound level with machine at standstill	81.5 dB(A)	81.5 dB(A)
	Sound level with machine in motion	83 dB(A)	83 dB(A)
Noise level at operator position (2)	Sound level at driver's ear	86 dB(A)	81 dB(A)

(1) The values were measured in compliance with Directive EU 1322/2014.

(2) The values have been detected in compliance with Directive EU 1322/2014.



ATTENTION

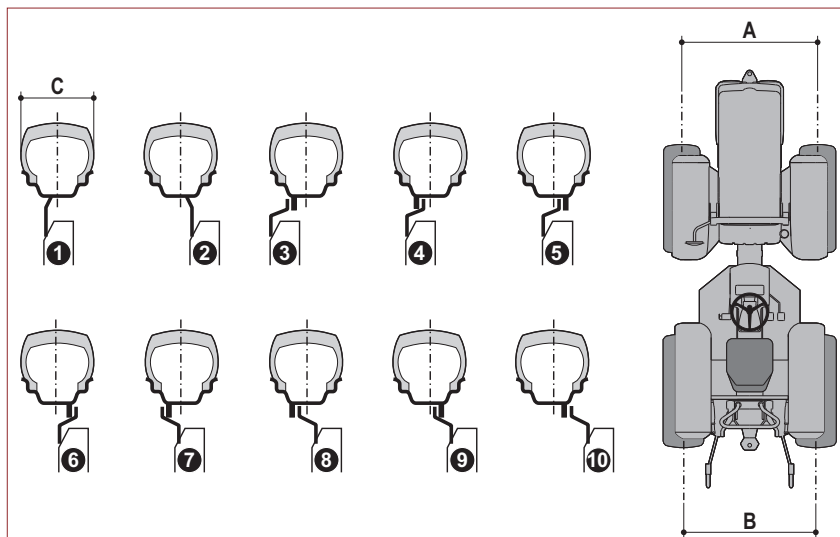
If the machine is to be operated for lengthy and unbroken periods, wear personal protective devices (ear defenders) to limit the level of noise audible when seated in the driving position.

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 TRACKS



Tab. 10.6: Track dimensions

Tyres	C	Size	Type										
			1	2	3	4	5	6	7	8	9	10	
31x15.50-15 4PR	395	A		1295									
		B		1295									
31x15.50-15 8PR	395	A		1295									
		B		1295									
33x12.50-15 6PR	345	A		1275									
		B		1275									
36x13.50-15 4PR	380	A		1265									
		B		1265									
300/80-15.3 123/111A8	300	A	1170						1170	1235	1310	1375	
		B	1140						1170	1235	1310	1375	
11LR16 122 A8	280	A							1140	1200		1400	
		B				1115		1315	1140	1200	1340	1400	

Tyres	C	Size	Type									
			1	2	3	4	5	6	7	8	9	10
400/55-17.5 110A5	400	A		1290								
		B		1290								
250/80-18 8PR (*)	250	A				1130	1240	1315	1140	1220	1325	1400
		B				1100	1205	1280	1175	1250	1360	1435
275/80 R18 142 A2/130 B	280	A				1100	1205	1280	1175	1250	1360	1435
		B				1130	1240	1315	1140	1220	1325	1400
280/70 R18 114 A8	280	A					1240	1315	1140	1220	1325	1400
		B				1130	1240	1315	1140	1220	1325	1400
320/65 R18 109 A8	320	A					1240	1315	1140	1220	1325	1400
		B				1130	1240	1315	1140	1220	1325	1400
340/65 R18 113 A8/110B	345	A					1240	1315	1140	1220	1325	1400 (**)
		B				1130	1240	1315	1140	1220	1325	1400 (**)
9.5 R20 108 A8	245	A					1145	1195	1265	1315	1425	1475
		B					1145	1195	1265	1315	1425	1475
280/85 R20 112 A8	295	A				1115	1215	1280	1175	1240	1340	1410
		B					1140	1205	1250	1320	1420	1485 (**)
300/70 R20 110 A8	295	A				1115	1215	1280	1175	1240	1340	1410
		B				1115	1215	1280	1175	1240	1340	1410
320/70 R20 113 A8	320	A					1140	1205	1250	1320	1410	1485 (**)
		B				1115	1215	1280	1175	1240	1340	1410
360/70 R20 120 A8	355	A						1265		1255	1330	1395 (**)
		B					1200	1265	1190	1255	1330	1395 (**)

Tyres	C	Size	Type									
			1	2	3	4	5	6	7	8	9	10
400/55-22,5 112 A5	400	A		1250								
		B		1250								
450/55 R17 221 4PR	440	A		1320								
		B		1320								
440/50 R17 135D	440	A		1390								
		B		1390								
425/55 R17 134G	440	A		1390								
		B		1390								

(*) Standard tyres

(**) track widths that can be used for working purposes, but not when driving on public roads.

IMPORTANT After every track change operation it must be checked that the wheels do not interfere with the bodywork or other parts of the machine.



IMPORTANT At the end of the track change operations, check that the tightening torque of the screws or fixing nuts of the wheels is correct . (→ p. 254)

10.14. MACHINE SPEED

The table show the speed values based on the version (HS1-HS2). The type of version is shown in the attachment to the vehicle registration document.



The values are theoretical, within a range of $\pm 3\%$. The effective values vary in accordance with the rolling circumference, pressure and make of the tyres, the load, and the degree of wheel slip.

Tab. 10.7: Version HS1 machine speed

Tyre type	Speed							
								
	1	2	3	4	1	2	3	4
31x15.50x15	7.8	14.0	23.1	32.9	7.8	14.0	23.1	32.9
11 LR 16	8.5	15.2	25.0	35.7	8.5	15.2	25.0	35.7
250/80-18 (*)	8.6	15.3	25.3	36.0	8.6	15.3	25.3	36.0
320/65 R18	8.7	15.5	25.6	36.4	8.7	15.5	25.6	36.4
300/80-15.3	8.7	15.5	25.6	36.4	8.7	15.5	25.6	36.4
280/70 R18	8.7	15.5	25.6	36.4	8.7	15.5	25.6	36.4
33x12.50-15	8.8	15.8	26.0	37.0	8.8	15.8	26.0	37.0
400/55-17.5	8.8	15.8	26.1	37.1	8.8	15.8	26.1	37.1
36x13.50-15	9.1	16.2	26.7	38.1	9.1	16.2	26.7	38.1
275/80 R18	9.1	16.3	26.8	38.2	9.1	16.3	26.8	38.2
340/65 R18	9.2	16.4	27.0	38.5	9.2	16.4	27.0	38.5
300/70 R20	9.5	17.0	28.1	40.0	9.5	17.0	28.1	40.0
9.5 R20	9.6	17.1	28.3	40.0	9.6	17.1	28.3	40.0
280/85 R20	9.9	17.8	29.3	40.0	9.9	17.8	29.3	40.0
320/70 R20	9.9	17.8	29.3	40.0	9.9	17.8	29.3	40.0
400/55x22.5	10.0	17.9	29.4	40.0	10.0	17.9	29.4	40.0
360/70 R20	10.6	18.9	31.2	40.0	10.6	18.9	31.2	40.0

(*) Standard tyres

Tab. 10.8: Version HS2 machine speed

Tyre type	Speed							
								
	1	2	3	4	1	2	3	4
31x15.50x15	7.8	14.0	23.1	40.0	7.8	14.0	23.1	40.0
11 LR 16	8.5	15.2	25.0	40.0	8.5	15.2	25.0	40.0
250/80-18 (*)	8.6	15.3	25.3	40.0	8.6	15.3	25.3	40.0
280/70 R18	8.7	15.5	25.6	40.0	8.7	15.5	25.6	40.0
320/65 R18	8.7	15.5	25.6	40.0	8.7	15.5	25.6	40.0
300/80-15.3	8.7	15.5	25.6	40.0	8.7	15.5	25.6	40.0
440/50 R17	8.8	15.7	25.9	40.0	8.8	15.7	25.9	40.0
33x12.50-15	8.8	15.8	26.0	40.0	8.8	15.8	26.0	40.0
400/55-17.5	8.8	15.8	26.1	40.0	8.8	15.8	26.1	40.0
36x13.50-15	9.1	16.2	26.7	40.0	9.1	16.2	26.7	40.0
275/80 R18	9.1	16.3	26.8	40.0	9.1	16.3	26.8	40.0
425/55 R17	9.1	16.3	26.8	40.0	9.1	16.3	26.8	40.0
450/55-17	9.1	16.3	26.9	40.0	9.1	16.3	26.9	40.0
340/65 R18	9.2	16.4	27.0	40.0	9.2	16.4	27.0	40.0

(*) Standard tyres

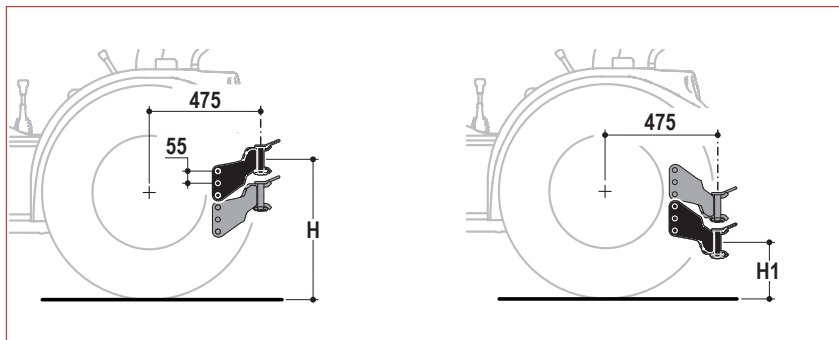
IMPORTANT Consult your vehicle registration document, when changing tyres, so as to identify which tyres can be fitted according to the type approval. Check that the rolling circumference value is correct and re-enter it if necessary (→ p. 110).

10.15. REAR TOWING HOOK

10.15.1. Fixed hook

EU approval: e3 6001 NS

ITALY approval: DGM*6*0041GA



Tab. 10.9: Towing hook height

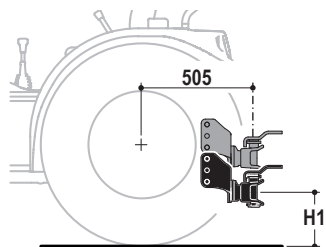
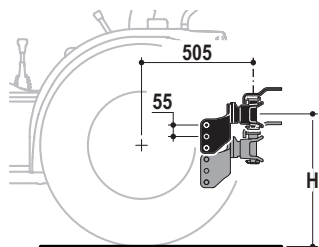
Tyre type	H (mm)	H1 (mm)
31x15.50-15	465 to 630	245 to 410
33x12.50-15	485 to 650	265 to 430
36x13.50-15	490 to 655	270 to 435
300/80-15.3	500 to 665	280 to 445
11LR16 122	500 to 665	280 to 445
400/55-17.5	485 to 650	265 to 430
250/80-18 (*)	500 to 665	280 to 445
275/80 R18	500 to 665	280 to 445
280/70 R18	500 to 665	280 to 445
320/65 R18	500 to 665	280 to 445

Tyre type	H (mm)	H1 (mm)
340/65 R18	510 to 675	290 to 455
9.5 R20 108	535 to 700	315 to 480
280/85 R20	535 to 725	340 to 505
300/70 R20	535 to 700	315 to 480
320/70 R20	560 to 725	340 to 505
360/70 R20	595 to 760	375 to 540
400/55-22.5	560 to 725	340 to 505
450/55-17	515 to 680	295 to 460
440/50 R17	500 to 665	280 to 445
425/55 R17	510 to 675	290 to 455

(*) Standard tyres

10.15.2. Rotating Hook

EU approval: e13*6016, e11*2111



Tab. 10.10: Towing hook height

Tyre type	H (mm)	H1 (mm)
31x15.50-15	465 to 630	245 to 410
33x12.50-15	485 to 650	265 to 430
36x13.50-15	490 to 655	270 to 435
300/80-15.3	500 to 665	280 to 445
11LR16	500 to 665	280 to 445
400/55-17.5	485 to 650	265 to 430
250/80-18 (*)	500 to 665	280 to 445
275/80 R18	500 to 665	280 to 445
280/70 R18	500 to 665	280 to 445
320/65 R18	500 to 665	280 to 445

Tyre type	H (mm)	H1 (mm)
340/65 R18	510 to 675	290 to 455
9.5 R20	535 to 700	315 to 480
280/85 R20	560 to 725	340 to 505
300/70 R20	535 to 700	315 to 480
320/70 R20	560 to 725	340 to 505
360/70 R20	595 to 760	375 to 540
400/55-22.5	560 to 725	340 to 505
450/55-17	515 to 680	295 to 460
440/50 R17	500 to 665	280 to 445
425/55 R17	510 to 675	290 to 455

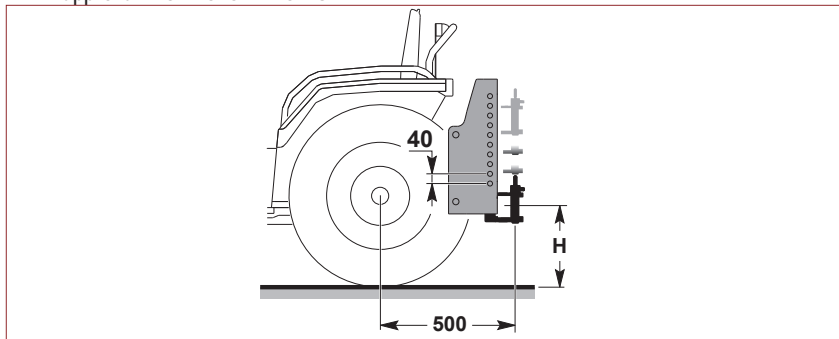
(*) Standard tyres

10.16. "SLIDER" REAR TOWING HOOK

10.16.1. Fixed hook

EU approval: e13*00013 NS

ITALY approval: DGM*3*0241 GA C



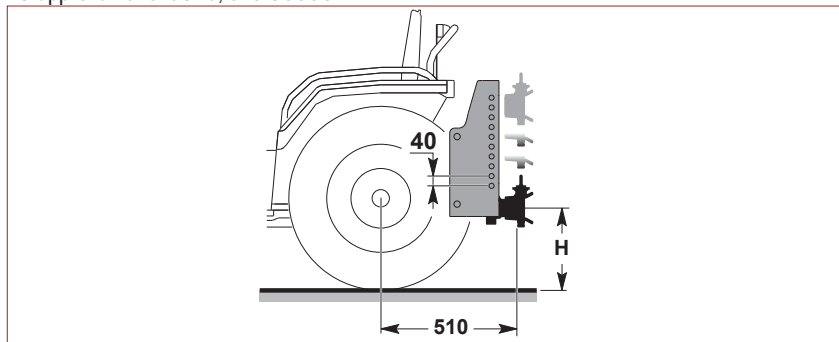
Tab. 10.11: Towing hook height

Tyre type	H (mm)	Tyre type	H (mm)
31x15.50-15	280 to 680	340/65 R18	325 to 725
33x12.50-15	300 to 700	9.5 R20	350 to 750
36x13.50-15	305 to 705	280/85 R20	375 to 775
300/80-15.3	315 to 715	300/70 R20	350 to 750
11LR16	315 to 715	320/70 R20	375 to 775
400/55-17.5	300 to 700	360/70 R20	410 to 810
250/80-18 (*)	315 to 715	400/55-22.5	375 to 775
275/80 R18	315 to 715	450/55-17	330 to 730
280/70 R18	315 to 715	440/50 R17	215 to 715
320/65 R18	315 to 715	425/55 R17	325 to 725

(*) Standard tyres

10.16.2. Rotating hook

EU approval: e13-6016, e13 00008 ND



Tab. 10.12: Towing hook height

Tyre type	H (mm)	Tyre type	H (mm)
31x15.50-15	280 to 680	340/65 R18	325 to 725
33x12.50-15	300 to 700	9.5 R20 108	350 to 750
36x13.50-15	305 to 705	280/85 R20	375 to 775
300/80-15.3	315 to 715	300/70 R20	350 to 750
11LR16	315 to 715	320/70 R20	375 to 775
400/55-17.5	300 to 700	360/70 R20	410 to 810
250/80-18 (*)	315 to 715	400/55-22.5	375 to 775
275/80 R18	315 to 715	450/55-17	330 to 730
280/70 R18	315 to 715	440/50 R17	315 to 715
320/65 R18	315 to 715	425/55 R17	325 to 725

(*) Standard tyres

10.17. 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.).

ROTATING Hook





EU approval: e13 6016 (e11 2111), e13 00006 ND

FIXED Hook

ITALY / EU approval: (DGM*6*0041 GA C) / e3*6001 NS'

Version	Tyre type	Without ballasts N (kg)		With ballasts N (kg)	
					
With safety arch	250/80-18 8PR (*)	8240 (840)	8240 (840)	8044 (820)	8044 (820)
	275/80R18 142A2/130B	9418 (960)	10399 (1060)	8829 (900)	9320 (950)
	280/70R18 114A8	9418 (960)	10399 (1060)	8829 (900)	9320 (950)
	9.5R20 108A8	7259 (740)	7259 (740)	7063 (720)	7063 (720)
	300/70R20 110A8	8142 (830)	8142 (830)	8044 (820)	8044 (820)
	360/70 R20 120A8	7750 (790)	10399 (1060)	7161 (730)	9320 (950)
	320/70R20 113A8	8339 (850)	10399 (1060)	7750 (790)	9320 (950)
	300/80-15.3 123/111A8	9123 (930)	9123 (930)	8829 (900)	8927 (910)
	320/65 R18 109A8	7750 (790)	7750 (790)	7554 (770)	7554 (770)
	340/65R18 113 A8/110B	9221 (940)	10399 (1060)	8633 (880)	9320 (950)
	11LR16 TL XM27 122A8	9418 (960)	10399 (1060)	8829 (900)	9320 (950)
	400/55-17,5 110 A5	6769 (690)	6769 (690)	6573 (670)	6573 (670)
	31x15.50-15 4PR	5199 (530)	5199 (530)	5101 (520)	5101 (520)
	31x15.50-15 8PR	10104 (1030)	10399 (1060)	9320 (950)	9320 (950)
	280/85R20 112A8	8339 (850)	9025 (920)	7750 (790)	8927 (910)
	400/55-22.5 112A5	7063 (720)	7063 (720)	6867 (700)	6867 (700)
	36x13.50-15 4PR	9614 (980)	10399 (1060)	9025 (920)	9320 (950)
	33x12.50-15 6PR	9712 (990)	10399 (1060)	9123 (930)	9320 (950)
	425/55R17 134G	9221 (940)	10399 (1060)	8633 (880)	9320 (950)
	450/55-17 4PR	9123 (930)	10399 (1060)	8535 (870)	9320 (950)
440/50R17 135D	9418 (960)	10399 (1060)	8829 (900)	9320 (950)	

(*) Standard tyres

Version	Tyre type	Without ballasts N (kg)		With ballasts N (kg)	
					
With cab	250/80-18 8PR (*)	8339 (850)	7259 (740)	7259 (740)	8240 (840)
	275/80R18 142A2/130B	9418 (960)	9614 (980)	8535 (870)	8535 (870)
	280/70R18 114A8	9418 (960)	9614 (980)	8535 (870)	8535 (870)
	9.5R20 108A8	7358 (750)	7358 (750)	6278 (640)	6278 (640)
	300/70R20 110A8	8240 (840)	8240 (840)	7161 (730)	7161 (730)
	360/70 R20 120A8	7652 (780)	9614 (980)	6965 (710)	8535 (870)
	320/70R20 113A8	8240 (840)	9614 (980)	7652 (780)	8535 (870)
	300/80-15.3 123/111A8	9123 (930)	9123 (930)	8142 (830)	8142 (830)
	320/65 R18 109A8	7750 (790)	7750 (790)	6769 (690)	6769 (690)
	340/65R18 113 A8/110B	9221 (940)	9614 (980)	8535 (870)	8535 (870)
	11LR16 TL XM27 122A8	9418 (960)	9614 (980)	8535 (870)	8535 (870)
	400/55-17,5 110 A5	6769 (690)	6769 (690)	5788 (590)	5788 (590)
	31x15.50-15 4PR	5297 (540)	5297 (540)	4316 (440)	4316 (440)
	31x15.50-15 8PR	9614 (980)	9614 (980)	8535 (870)	8535 (870)
	280/85R20 112A8	8240 (840)	9123 (930)	7652 (780)	8044 (820)
	400/55-22.5 112A5	7063 (720)	7063 (720)	6082 (620)	6082 (620)
	36x13.50-15 4PR	9614 (980)	9614 (980)	8535 (870)	8535 (870)
	33x12.50-15 6PR	9614 (980)	9614 (980)	8535 (870)	8535 (870)
	425/55R17 134G	9221 (940)	9614 (980)	8535 (870)	8535 (870)
	450/55-17 4PR	9123 (930)	9614 (980)	8437 (860)	8535 (870)
440/50R17 135D	9418 (960)	9614 (980)	8535 (870)	8535 (870)	





(*) Standard tyres

ROTATING Hook





EU approval: e13 6016 (e11 2111), e13 00008 ND

FIXED Hook

ITALY / EU approval: (DGM*3*0241 GA C) / e13*00013 NS

Version	Tyre type	Without ballasts N (kg)		With ballasts N (kg)	
					
With safety arch	250/80-18 8PR (*)	8240 (840)	8240 (840)	7652 (780)	8044 (820)
	275/80R18 142A2/130B	8339 (850)	10399 (1060)	7652 (780)	9320 (950)
	280/70R18 114A8	8339 (850)	10399 (1060)	7652 (780)	9320 (950)
	9.5R20 108A8	7259 (740)	7259 (740)	7063 (720)	7063 (720)
	300/70R20 110A8	7946 (810)	8142 (830)	7259 (740)	7946 (810)
	360/70 R20 120A8	10399 (1060)	10399 (1060)	7946 (810)	9320 (950)
	320/70R20 113A8	7456 (760)	10399 (1060)	6867 (700)	9320 (950)
	300/80-15.3 123/111A8	8339 (850)	9025 (920)	7652 (780)	8927 (910)
	320/65 R18 109A8	7652 (780)	7652 (780)	7554 (770)	7554 (770)
	340/65R18 113 A8/110B	8339 (850)	10399 (1060)	7652 (780)	9320 (950)
	11LR16 TL XM27 122A8	8339 (850)	10399 (1060)	7652 (780)	9320 (950)
	400/55-17,5 110 A5	6769 (690)	6769 (690)	6573 (670)	6573 (670)
	31x15.50-15 4PR	5199 (530)	5199 (530)	5101 (520)	5101 (520)
	31x15.50-15 8PR	9123 (930)	10399 (1060)	8437 (860)	9320 (950)
	280/85R20 112A8	7456 (760)	9025 (920)	6867 (700)	8927 (910)
	400/55-22.5 112A5	7063 (720)	7063 (720)	6867 (700)	6867 (700)
	36x13.50-15 4PR	8927 (910)	10399 (1060)	8339 (850)	9320 (950)
	33x12.50-15 6PR	8731 (890)	10399 (1060)	8142 (830)	9320 (950)
	425/55R17 134G	8339 (850)	10399 (1060)	7652 (780)	9320 (950)
	450/55-17 4PR	8240 (840)	10399 (1060)	7554 (770)	9320 (950)
440/50R17 135D	8339 (850)	10399 (1060)	7652 (780)	9320 (950)	

(*) Standard tyres

Version	Tyre type	Without ballasts N (kg)		With ballasts N (kg)	
					
With cab	250/80-18 8PR (*)	8240 (840)	8240 (840)	7259 (740)	7259 (740)
	275/80R18 142A2/130B	8240 (840)	9516 (970)	7750 (790)	8535 (870)
	280/70R18 114A8	8240 (840)	9516 (970)	7750 (790)	8535 (870)
	9.5R20 108A8	7358 (750)	7358 (750)	6278 (640)	6278 (640)
	300/70R20 110A8	7750 (790)	8240 (840)	7161 (730)	7161 (730)
	360/70 R20 120A8	8535 (870)	9516 (970)	7848 (800)	8535 (870)
	320/70R20 113A8	7358 (750)	9516 (970)	6671 (680)	8535 (870)
	300/80-15.3 123/111A8	9123 (930)	9123 (930)	7750 (790)	8142 (830)
	320/65 R18 109A8	7750 (790)	7750 (790)	6769 (690)	6769 (690)
	340/65R18 113 A8/110B	8240 (840)	9516 (970)	7554 (770)	8535 (870)
	11LR16 TL XM27 122A8	8240 (840)	9516 (970)	7750 (790)	8535 (870)
	400/55-17,5 110 A5	6769 (690)	6769 (690)	5788 (590)	5788 (590)
	31x15.50-15 4PR	5297 (540)	5297 (540)	4218 (430)	4218 (430)
	31x15.50-15 8PR	9025 (920)	9516 (970)	8437 (860)	8535 (870)
	280/85R20 112A8	7358 (750)	9123 (930)	6671 (680)	8044 (820)
	400/55-22.5 112A5	7063 (720)	7063 (720)	6082 (620)	6082 (620)
	36x13.50-15 4PR	8633 (880)	9516 (970)	7946 (810)	8535 (870)
	33x12.50-15 6PR	8633 (880)	9516 (970)	8044 (820)	8535 (870)
	425/55R17 134G	8240 (840)	9516 (970)	7554 (770)	8535 (870)
	450/55-17 4PR	8142 (830)	9516 (970)	7456 (760)	8535 (870)
440/50R17 135D	8240 (840)	9516 (970)	7750 (790)	8535 (870)	

(*) Standard tyres

10.18. MAXIMUM DRAWBAR PULL PROVIDED FOR AT THE COUPLING HOOK

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 tractor (→ p. 57).

10.18.1. Rotating Hook

Approval Type: EU

Approval type: e13 00006 ND / e13 00008 ND / e13 6016 / e11 2111

Type of coupling eyes: ISO 5692-2:2002; ISO 8755:2001; (ISO 1102:2001 combined only with ISO 6489-2:2002 form A not automatic)

Tab. 10.13: Maximum drawbar pull

Type of braking	With safety arch	
	Machine in Kerb weight conditions N (kg)	Machine in Maximum permissible weight conditions N (kg)
towed tool not braked	17658 (1800)	9712 (990)
towed tool with independent braking (mechanical)	-	-
towed tool with inertia braking	78480 (8000)	78480 (8000)
Towed tool with single line hydraulic braking (CUNA)	-	-
Towed tool with single line hydraulic braking (EU)	-	-
Towed tool with double line hydraulic braking	-	-

Tab. 10.14: Maximum drawbar pull

Type of braking	With cab	
	Machine in Kerb weight conditions N (kg)	Machine in Maximum permissible weight conditions N (kg)
towed tool not braked	19620 (2000)	9712 (990)
towed tool with independent braking (mechanical)	-	-
towed tool with inertia braking	78480 (8000)	78480 (8000)
Towed tool with single line hydraulic braking (CUNA)	-	-
Towed tool with single line hydraulic braking (EU)	-	-
Towed tool with double line hydraulic braking	-	-

10.18.2. Fixed Hook

Approval Type: EU / ITALY

Approval type: e3 6001 NS / /e13 00013 NS / DGM*6*0041 GA / DGM*3*0241GA C

Type of coupling eyes: ISO 5692-3:2011 CUNA: E, E1, E2, E3

Tab. 10.15: Maximum drawbar pull

Type of braking	With safety arch	
	Machine in Kerb weight conditions N (kg)	Machine in Maximum permissible weight conditions N (kg)
towed tool not braked	17658 (1800)	9712 (990)
trailed implement with independent braking (mechanical) (*)	49050 (5000)	49050 (5000)
towed tool with inertia braking	58860 (6000)	58860 (6000)
Towed tool with single line hydraulic braking (CUNA)	-	-
Towed tool with single line hydraulic braking (EU)	-	-
Towed tool with double line hydraulic braking	-	-

(*) only Italy approval

Tab. 10.16: Maximum drawbar pull

Type of braking	With cab	
	Machine in Kerb weight conditions N (kg)	Machine in Maximum permissible weight conditions N (kg)
towed tool not braked	19620 (2000)	9712 (990)
trailed implement with independent braking (mechanical) (*)	49050 (5000)	49050 (5000)
towed tool with inertia braking	58860 (6000)	58860 (6000)
Towed tool with single line hydraulic braking (CUNA)	-	-
Towed tool with single line hydraulic braking (EU)	-	-
Towed tool with double line hydraulic braking	-	-

(*) only Italy approval

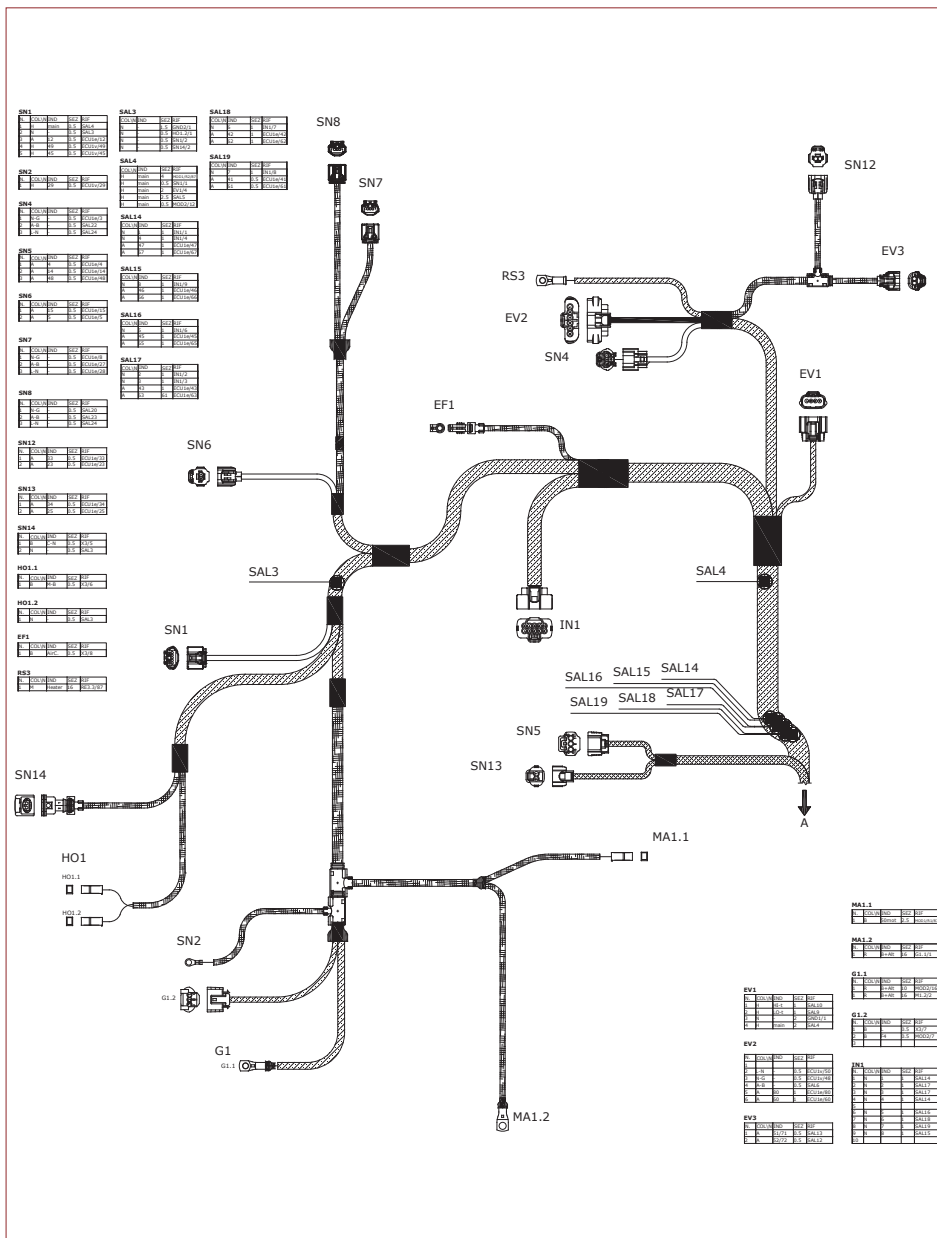


11

ATTACHMENTS

11.1. ENGINE LINE WIRING DIAGRAM

Part 1



Ref.	Description
EF1	Conditioned air compressor electroclutch
EV1	EGR solenoid valve
EV2	Air intake butterfly valve
EV3	Fuel supply pump
G1.1	Alternator
G1.2	Alternator
HO1.1	Horn
HO1.2	Horn
IN1	Injectors
MA1.1	Starter motor
MA1.2	Starter motor
RE3	Pre-heat resistance relay
SAL	Welding
SN1	Air flow sensor
SN12	Fuel temperature sensor
SN13	Air temperature sensor
SN14	Clogged air filter sensor
SN2	Engine oil pressure sensor

Ref.	Description
SN4	Common-Rail pressure sensor
SN5	Air pressure sensor
SN6	Coolant temperature indicator sensor
SN7	Cam shaft sensor
SN8	Crankshaft sensor

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

Ref.	Description
B+1	Battery
ECU1 e	Engine electronic control unit
ECU1 v	Engine electronic control unit
GND1	Ground
GND2	Ground
GND3	Ground
MOD1	Relay holder
MOD2	Fuse holder
SAL	Welding

Ref.	Description
SN10	Temperature sensor DPF (T1)
SN11	Temperature sensor DPF (T2)
SN3	Differential pressure sensor DPF
SN9	Temperature sensor DPF (T0)
X1	CAN service tool connection
X2	Resistance 1000k
X3	Engine/machine line
X4	CAN bus line

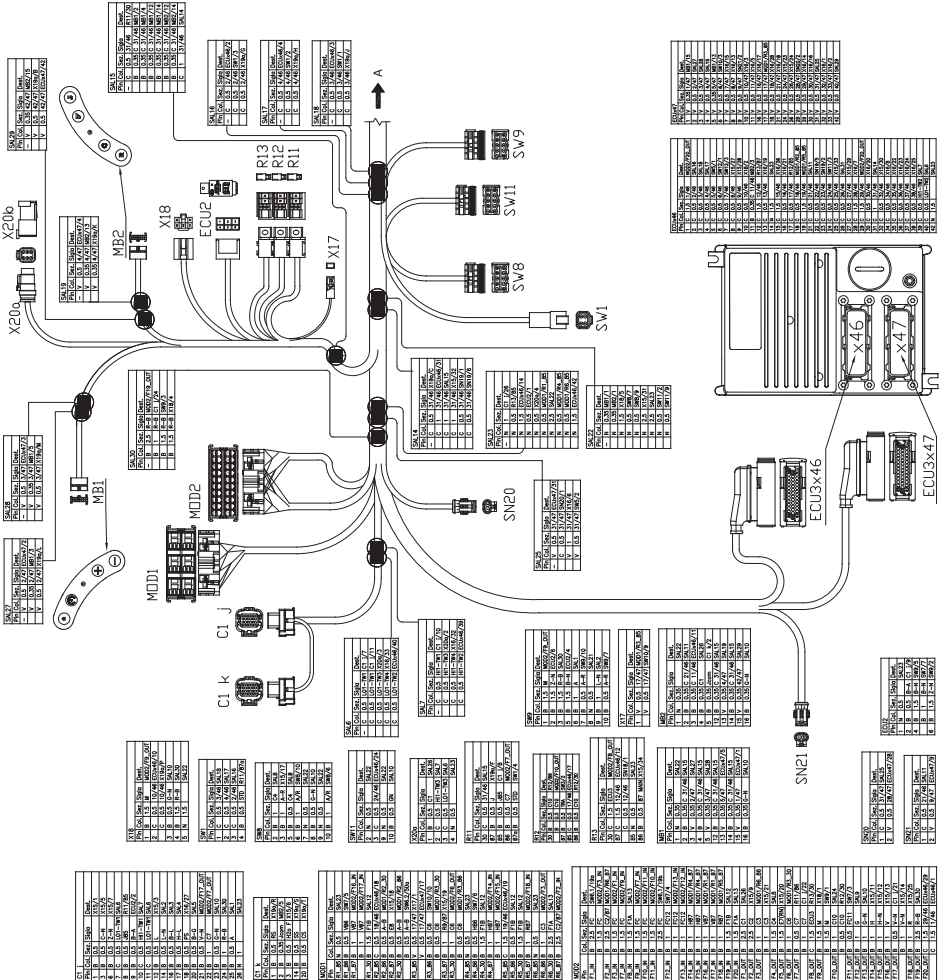
Table: Electric cables colour key

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. DASHBOARD LINE WIRING DIAGRAM

Part 1



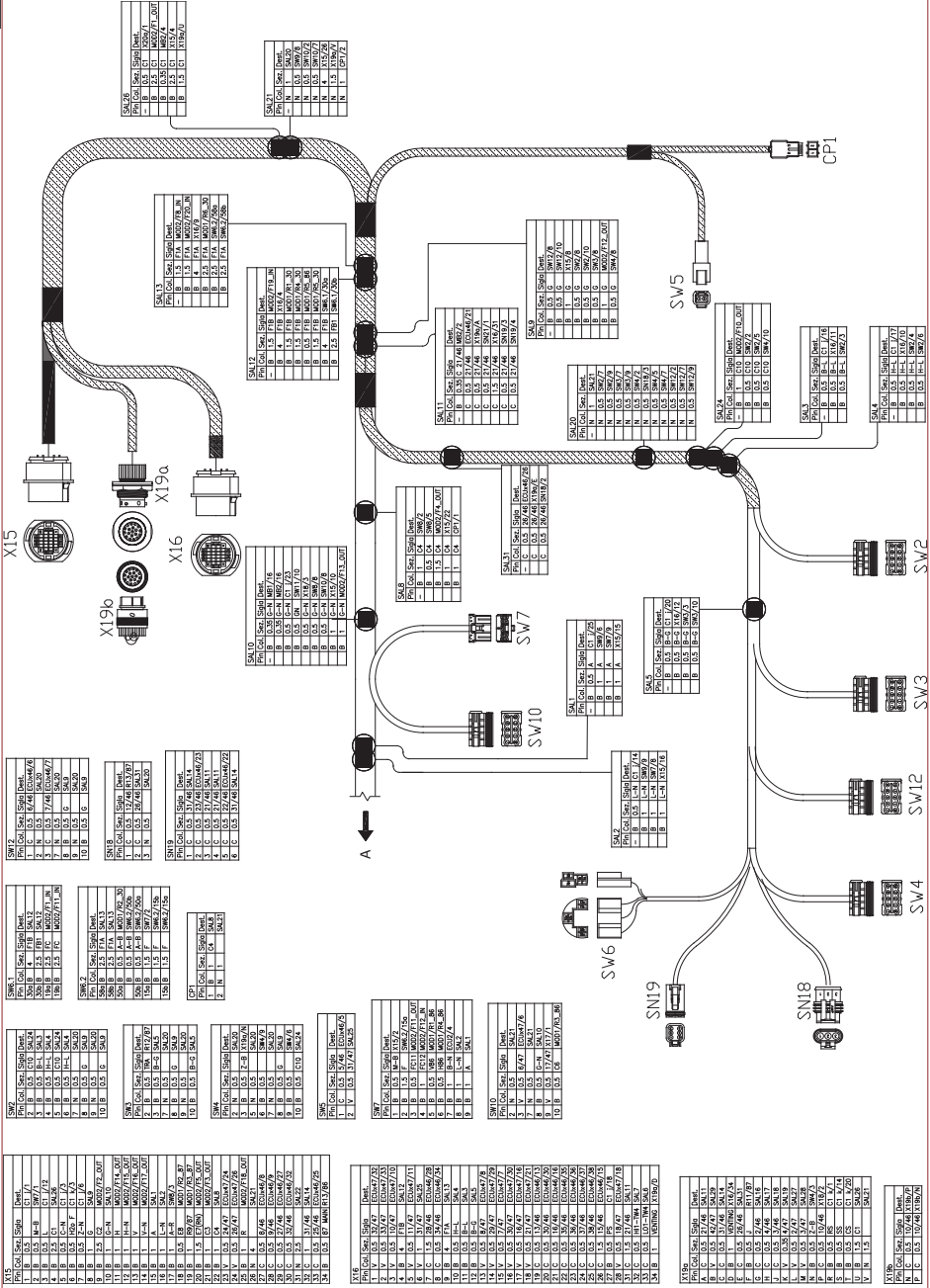
Ref.	Description
C1 j	Multi-function instrument
C1 k	Multi-function instrument
ECU2	Flasher unit
ECU x46	Transmission control unit
ECU x47	Transmission control unit
MB1	RH pushbutton panel
MB2	LH pushbutton panel
MOD1	Relay box
MOD2	Fuse box
R11	Joystic controls relay

Ref.	Description
R12	Drive disengagement control relay
R13	Main ECU power relay
SAL	Welding
SN20	Direction sensor
SN21	Clutch sensor
SW1	Steering stalk
SW8	Flashing light switch
SW9	Four direction indicators switch
SW11	Stationary PTO switch
X20a	CAN service tool connection
X17	Trailer brake kit connection
X18	Front kit connection

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



Ref.	Description
CP1	Air compressor
SAL	Welding
SN18	Hand throttle control
SN19	Drive control sensor
SW2	Locks engagement switch
SW3	Traction disengagement switch
SW4	Rear PTO engagement switch
SW5	OPC switch
SW6,1	Starter board

Ref.	Description
SW6,2	Starter board
SW7	Lights control stalk
SW10	Park brake switch
SW12	Regeneration control
X20b	CAN service tool connection
X15	Machine line (red)
X16	Machine line (green)
X19a	Joystick line
X19b	Joystick line

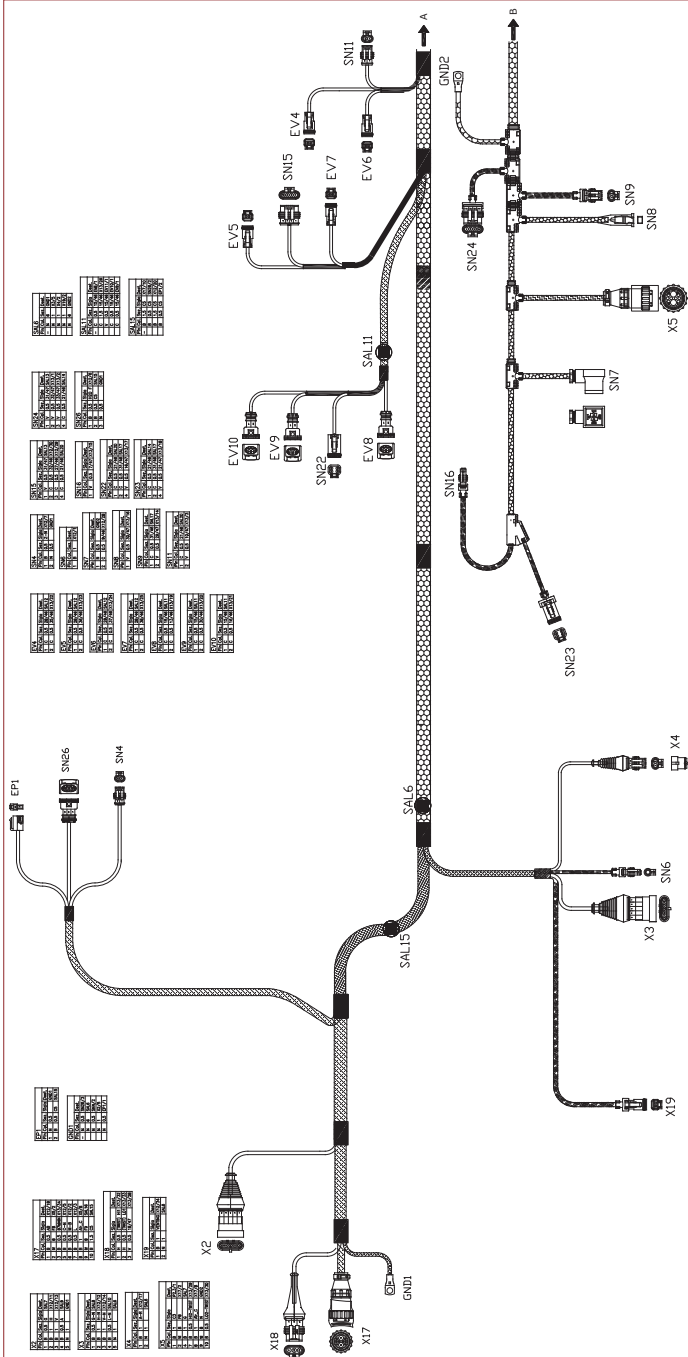
Table: Electric cables colour key

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

11.3. MACHINE LINE WIRING DIAGRAM

Part 1



Ref.	Description
EP1	Fuel supply pump
EV4	1st gear solenoid valve
EV5	2nd gear solenoid valve
EV6	3rd gear solenoid valve
EV7	4th gear solenoid valve
EV8	FW solenoid valve (forward)
EV9	N solenoid valve (neutral)
EV10	RV solenoid valve (reverse)
GND1	Ground
SAL	Welding
SN4	Fuel level sensor
SN6	Users oil filter clogging sensor (unit 1)
SN7	Delivery oil filter clogging sensor (unit 2)
SN8	Services oil temperature sensor
SN9	Parking brake oil pressure sensor
SN11	Standard / synchronised PTO sensor
SN15	Transmission revs sensor (input)

Ref.	Description
SN16	Suction oil filter clogging sensor (unit 2)
SN22	FW pressure sensor (forward)
SN23	RV pressure sensor (reverse)
SN24	Transmission revs sensor (output)
SN26	Water separator filter sensor
X2	Connector for connection to RH front light
X3	Connector for connection to LH front light
X4	Rotating light connector
X5	Cab power line connector
X17	Connection to dashboard central line
X18	CAN BUS line
X19	Unloading 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

X12	Pin	Col	Seq	Signal	Dest.
1	B	0.5	1	SW1	
2	B	0.5	1	SW1	
3	B	0.5	1	SW1	
4	B	0.5	1	SW1	
5	B	0.5	1	SW1	
6	B	0.5	1	SW1	
7	B	0.5	1	SW1	
8	B	0.5	1	SW1	
9	B	0.5	1	SW1	
10	B	0.5	1	SW1	
11	B	0.5	1	SW1	
12	B	0.5	1	SW1	
13	B	0.5	1	SW1	
14	B	0.5	1	SW1	
15	B	0.5	1	SW1	
16	B	0.5	1	SW1	
17	B	0.5	1	SW1	
18	B	0.5	1	SW1	
19	B	0.5	1	SW1	
20	B	0.5	1	SW1	
21	B	0.5	1	SW1	
22	B	0.5	1	SW1	
23	B	0.5	1	SW1	
24	B	0.5	1	SW1	
25	B	0.5	1	SW1	
26	B	0.5	1	SW1	
27	B	0.5	1	SW1	
28	B	0.5	1	SW1	
29	B	0.5	1	SW1	
30	B	0.5	1	SW1	
31	B	0.5	1	SW1	
32	B	0.5	1	SW1	
33	B	0.5	1	SW1	
34	B	0.5	1	SW1	

X13	Pin	Col	Seq	Signal	Dest.
1	V	0.5	1	SW2	
2	V	0.5	1	SW2	
3	V	0.5	1	SW2	
4	B	0.5	1	SW2	
5	V	0.5	1	SW2	
6	C	0.5	1	SW2	
7	C	0.5	1	SW2	
8	B	0.5	1	SW2	
9	B	0.5	1	SW2	
10	B	0.5	1	SW2	
11	B	0.5	1	SW2	
12	B	0.5	1	SW2	
13	B	0.5	1	SW2	
14	B	0.5	1	SW2	
15	V	0.5	1	SW2	
16	V	0.5	1	SW2	
17	V	0.5	1	SW2	
18	V	0.5	1	SW2	
19	V	0.5	1	SW2	
20	V	0.5	1	SW2	
21	V	0.5	1	SW2	
22	V	0.5	1	SW2	
23	V	0.5	1	SW2	
24	V	0.5	1	SW2	
25	V	0.5	1	SW2	
26	V	0.5	1	SW2	
27	V	0.5	1	SW2	
28	V	0.5	1	SW2	
29	V	0.5	1	SW2	
30	V	0.5	1	SW2	
31	V	0.5	1	SW2	
32	V	0.5	1	SW2	
33	V	0.5	1	SW2	
34	V	0.5	1	SW2	

SAL7	Pin	Col	Seq	Signal	Dest.
1	B	0.5	1	SW7	
2	B	0.5	1	SW7	
3	B	0.5	1	SW7	
4	B	0.5	1	SW7	
5	B	0.5	1	SW7	
6	B	0.5	1	SW7	
7	B	0.5	1	SW7	
8	B	0.5	1	SW7	
9	B	0.5	1	SW7	
10	B	0.5	1	SW7	
11	B	0.5	1	SW7	
12	B	0.5	1	SW7	
13	B	0.5	1	SW7	
14	B	0.5	1	SW7	
15	B	0.5	1	SW7	
16	B	0.5	1	SW7	
17	B	0.5	1	SW7	
18	B	0.5	1	SW7	
19	B	0.5	1	SW7	
20	B	0.5	1	SW7	
21	B	0.5	1	SW7	
22	B	0.5	1	SW7	
23	B	0.5	1	SW7	
24	B	0.5	1	SW7	
25	B	0.5	1	SW7	
26	B	0.5	1	SW7	
27	B	0.5	1	SW7	
28	B	0.5	1	SW7	
29	B	0.5	1	SW7	
30	B	0.5	1	SW7	
31	B	0.5	1	SW7	
32	B	0.5	1	SW7	
33	B	0.5	1	SW7	
34	B	0.5	1	SW7	

SAL8	Pin	Col	Seq	Signal	Dest.
1	B	0.5	1	SW8	
2	B	0.5	1	SW8	
3	B	0.5	1	SW8	
4	B	0.5	1	SW8	
5	B	0.5	1	SW8	
6	B	0.5	1	SW8	
7	B	0.5	1	SW8	
8	B	0.5	1	SW8	
9	B	0.5	1	SW8	
10	B	0.5	1	SW8	
11	B	0.5	1	SW8	
12	B	0.5	1	SW8	
13	B	0.5	1	SW8	
14	B	0.5	1	SW8	
15	B	0.5	1	SW8	
16	B	0.5	1	SW8	
17	B	0.5	1	SW8	
18	B	0.5	1	SW8	
19	B	0.5	1	SW8	
20	B	0.5	1	SW8	
21	B	0.5	1	SW8	
22	B	0.5	1	SW8	
23	B	0.5	1	SW8	
24	B	0.5	1	SW8	
25	B	0.5	1	SW8	
26	B	0.5	1	SW8	
27	B	0.5	1	SW8	
28	B	0.5	1	SW8	
29	B	0.5	1	SW8	
30	B	0.5	1	SW8	
31	B	0.5	1	SW8	
32	B	0.5	1	SW8	
33	B	0.5	1	SW8	
34	B	0.5	1	SW8	

SAL9	Pin	Col	Seq	Signal	Dest.
1	B	0.5	1	SW9	
2	B	0.5	1	SW9	
3	B	0.5	1	SW9	
4	B	0.5	1	SW9	
5	B	0.5	1	SW9	
6	B	0.5	1	SW9	
7	B	0.5	1	SW9	
8	B	0.5	1	SW9	
9	B	0.5	1	SW9	
10	B	0.5	1	SW9	
11	B	0.5	1	SW9	
12	B	0.5	1	SW9	
13	B	0.5	1	SW9	
14	B	0.5	1	SW9	
15	B	0.5	1	SW9	
16	B	0.5	1	SW9	
17	B	0.5	1	SW9	
18	B	0.5	1	SW9	
19	B	0.5	1	SW9	
20	B	0.5	1	SW9	
21	B	0.5	1	SW9	
22	B	0.5	1	SW9	
23	B	0.5	1	SW9	
24	B	0.5	1	SW9	
25	B	0.5	1	SW9	
26	B	0.5	1	SW9	
27	B	0.5	1	SW9	
28	B	0.5	1	SW9	
29	B	0.5	1	SW9	
30	B	0.5	1	SW9	
31	B	0.5	1	SW9	
32	B	0.5	1	SW9	
33	B	0.5	1	SW9	
34	B	0.5	1	SW9	

SAL10	Pin	Col	Seq	Signal	Dest.
1	B	0.5	1	SW10	
2	B	0.5	1	SW10	
3	B	0.5	1	SW10	
4	B	0.5	1	SW10	
5	B	0.5	1	SW10	
6	B	0.5	1	SW10	
7	B	0.5	1	SW10	
8	B	0.5	1	SW10	
9	B	0.5	1	SW10	
10	B	0.5	1	SW10	
11	B	0.5	1	SW10	
12	B	0.5	1	SW10	
13	B	0.5	1	SW10	
14	B	0.5	1	SW10	
15	B	0.5	1	SW10	
16	B	0.5	1	SW10	
17	B	0.5	1	SW10	
18	B	0.5	1	SW10	
19	B	0.5	1	SW10	
20	B	0.5	1	SW10	
21	B	0.5	1	SW10	
22	B	0.5	1	SW10	
23	B	0.5	1	SW10	
24	B	0.5	1	SW10	
25	B	0.5	1	SW10	
26	B	0.5	1	SW10	
27	B	0.5	1	SW10	
28	B	0.5	1	SW10	
29	B	0.5	1	SW10	
30	B	0.5	1	SW10	
31	B	0.5	1	SW10	
32	B	0.5	1	SW10	
33	B	0.5	1	SW10	
34	B	0.5	1	SW10	

SAL11	Pin	Col	Seq	Signal	Dest.
1	B	0.5	1	SW11	
2	B	0.5	1	SW11	
3	B	0.5	1	SW11	
4	B	0.5	1	SW11	
5	B	0.5	1	SW11	
6	B	0.5	1	SW11	
7	B	0.5	1	SW11	
8	B	0.5	1	SW11	
9	B	0.5	1	SW11	
10	B	0.5	1	SW11	
11	B	0.5	1	SW11	
12	B	0.5	1	SW11	
13	B	0.5	1	SW11	
14	B	0.5	1	SW11	
15	B	0.5	1	SW11	
16	B	0.5	1	SW11	
17	B	0.5	1	SW11	
18	B	0.5	1	SW11	
19	B	0.5	1	SW11	
20	B	0.5	1	SW11	
21	B	0.5	1	SW11	
22	B	0.5	1	SW11	
23	B	0.5	1	SW11	
24	B	0.5	1	SW11	
25	B	0.5	1	SW11	
26	B	0.5	1	SW11	
27	B	0.5	1	SW11	
28	B	0.5	1	SW11	
29	B	0.5	1	SW11	
30	B	0.5	1	SW11	
31	B	0.5	1	SW11	
32	B	0.5	1	SW11	
33	B	0.5	1	SW11	
34	B	0.5	1	SW11	

SAL12	Pin	Col	Seq	Signal	Dest.
1	B	0.5	1	SW12	
2	B	0.5	1	SW12	
3	B	0.5	1	SW12	
4	B	0.5	1	SW12	
5	B	0.5	1	SW12	
6	B	0.5	1	SW12	
7	B	0.5	1	SW12	
8	B	0.5	1	SW12	
9	B	0.5	1	SW12	
10	B	0.5	1	SW12	
11	B	0.5	1	SW12	
12	B	0.5	1	SW12	
13	B	0.5	1	SW12	
14	B	0.5	1	SW12	
15	B	0.5	1	SW12	
16	B	0.5	1	SW12	
17	B	0.5	1	SW12	
18	B	0.5	1	SW12	
19	B	0.5	1	SW12	
20	B	0.5	1	SW12	
21	B	0.5	1	SW12	
22	B	0.5	1	SW12	
23	B	0.5	1	SW12	
24	B	0.5	1	SW12	
25	B	0.5	1	SW12	
26	B	0.5	1	SW12	
27	B	0.5	1	SW12	
28	B	0.5	1	SW12	
29	B	0.5	1	SW12	
30	B	0.5	1	SW12	
31	B	0.5	1	SW12	
32	B	0.5	1	SW12	
33	B	0.5	1	SW12	
34	B				

Ref.	Description
EV3	Parking brake solenoid valve
EV11	PTO solenoid valve
EV12	Rear lock solenoid valve
EV13	Front lock solenoid valve
EV14	Traction disengagement solenoid valve
GND2	Ground
P1	Trailer socket
P2.1	3-pole socket
P2.2	3-pole socket
P2.3	3-pole socket
SAL	Welding
SN10	PTO 540 / 540 E sensor
SN12	Brakes sensor
SN13	1st - N - 2nd gear sensor
SN14	3rd - N - 4th gear sensor
SN17	Services low pressure sensor
SN25	Suspension pressure sensor
X7	Rear kit connector

Ref.	Description
X8	Licence plate light connector
X9	LH rear light connector
X10	RH rear light connector
X11	Work light connector
X12	Dashboard line link connector (red)
X13	Dashboard line link connector (green)
X16	Rear PTO command
X16.Bis	Rear PTO command

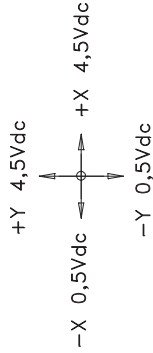
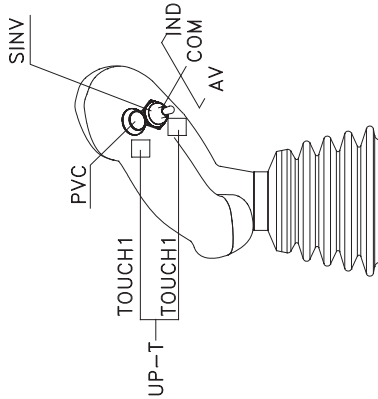
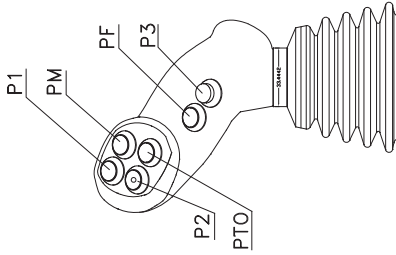
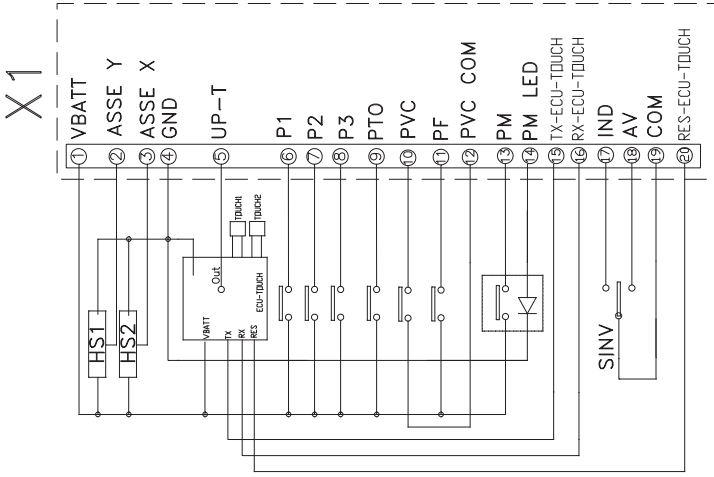
Table: Electric cables colour key

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. "JOYSTICK" WIRING DIAGRAMS

11.4.1. Joystick Line



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
P3	Hydraulic suspension accumulator
	Electric control.
SINV	Reverser control

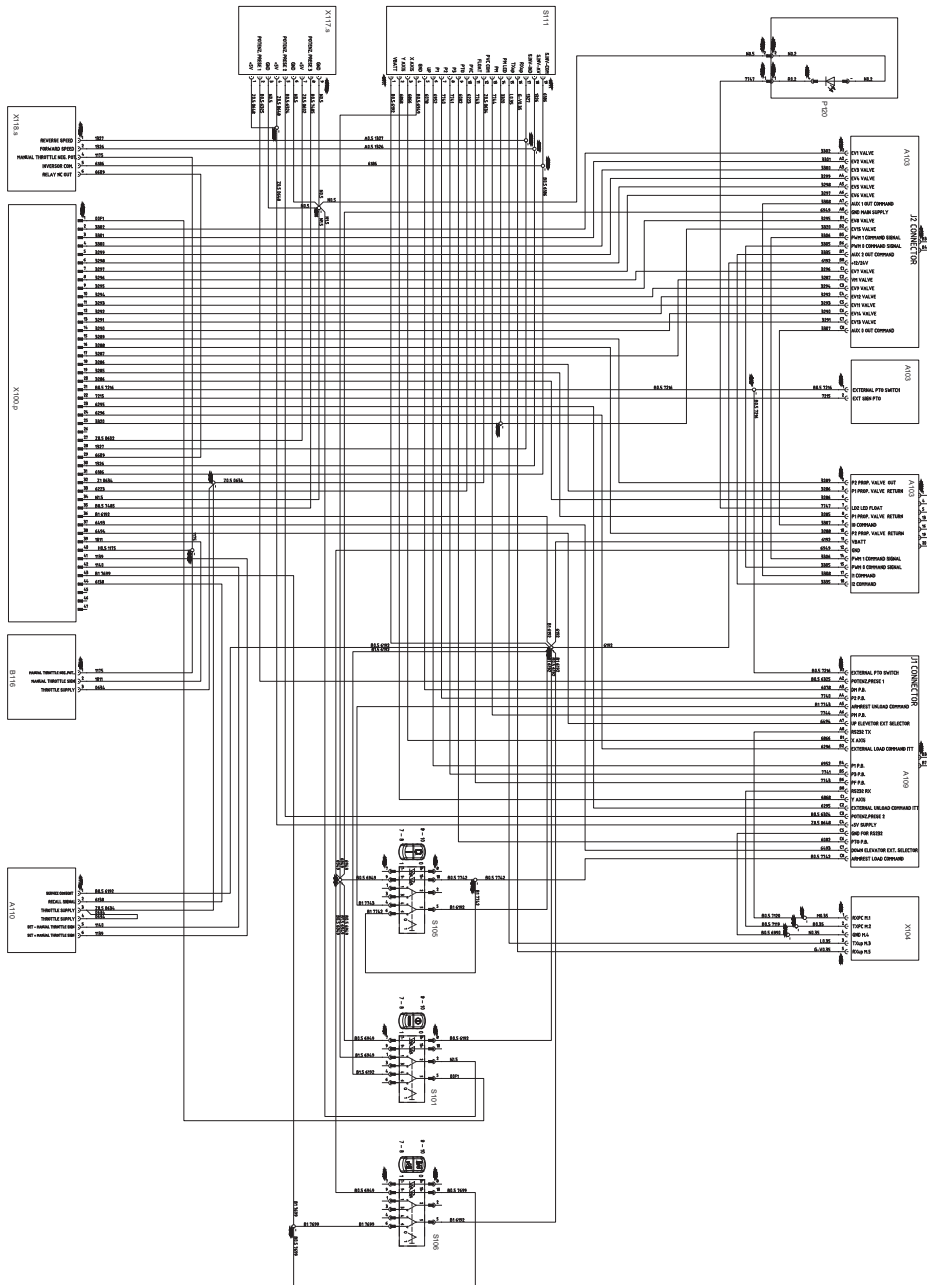
Ref.	Description
AV	forward drive
COM	neutral gear
IND	reverse drive
PVC	Memo cruise control
PF	Rear power lift float
UP-T	Dead man sensitive areas
GND	Ground
VBATT	Power supply
Y AXIS	Joystick forward/reverse movement
X AXIS	Joystick left/right movement
TX	Service connectors
RX	
RES	

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

11.4.2. Armrest line



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

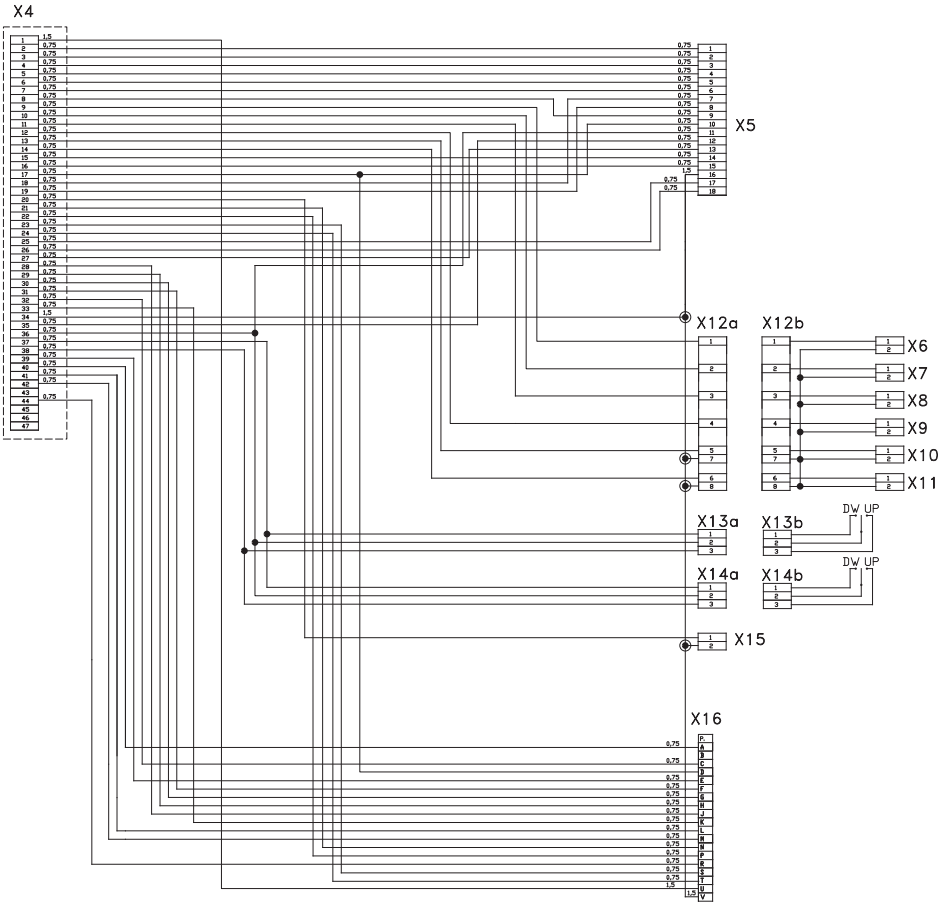
Ref.	Description
S106	Front power lift enabling button
S111	Joystick
X100.p	Connectors interface
X104	Diagnostick
P120	Green LED
X117.s	Potentiometers panel
X118.s	5v Relay

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



Ref.	Description
X4	Armrest line connector
X5	Valve box line connector
X6	Front/rear lift changeover solenoid valve
X7	Hydraulic motor activation solenoid valve
X8	Hydraulic motor solenoid valve
X9	Proportional solenoid valve
X10 a	Connector linking to the proportional block line

Ref.	Description
X10 b	Machine line connector
X11a	Rear power lift external button connector (left side)
X11b	Machine line connector
X12a	Rear power lift external button connector (right side)
X12b	Machine line connector
X13	Electric socket connector
X14	Machine line connector

Table: Electric cables colour key

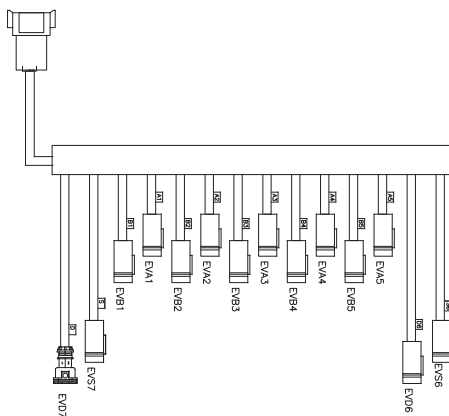
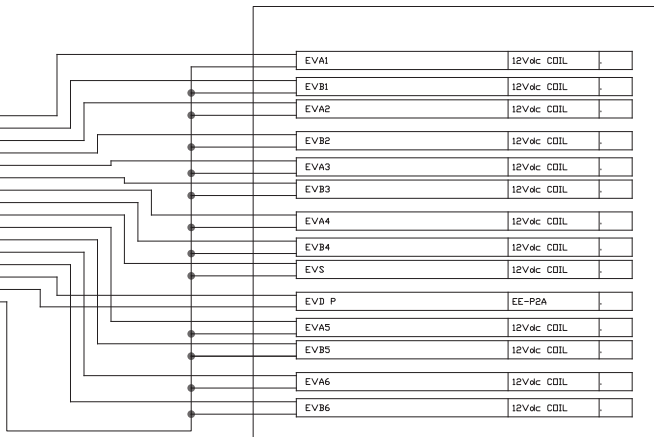
Code	Colour
A	Light blue
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C	Orange
G	Yellow
H	Grey
L	Blue

Code	Colour
M	Brown
N	Black
R	Red
S	Pink
V	Green
Z	Purple

11.4.4. Valve box line

X5

1	0,75
2	0,75
3	0,75
4	0,75
5	0,75
6	0,75
7	0,75
8	0,75
9	0,75
10	0,75
11	0,75
12	0,75
13	0,75
14	0,75
15	0,75
16	0,75
17	
18	



Ref.	Description
X5	Machine line connector
EVD7	Rear power lift solenoid valve (lowering)
EVS7	Rear power lift solenoid valve (raising)
EVA1	Orange double-acting coupling solenoid valve
EVB1	Orange double-acting coupling solenoid valve
EVS6	Single-acting coupling solenoid valve
EVD6	Single-acting coupling solenoid valve
EVA2	Red double-acting solenoid valve couplers

Ref.	Description
EVB2	Red double-acting solenoid valve couplers
EVA3	Green double-acting solenoid valve couplers
EVB3	Green double-acting solenoid valve couplers
EVA4	Blue double-acting solenoid valve couplers
EVB4	Blue double-acting solenoid valve couplers
EVA5	Vertical tie-rod solenoid valve
EVB5	Vertical tie-rod 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
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S	Pink
V	Green
Z	Purple

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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. 52)

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.

