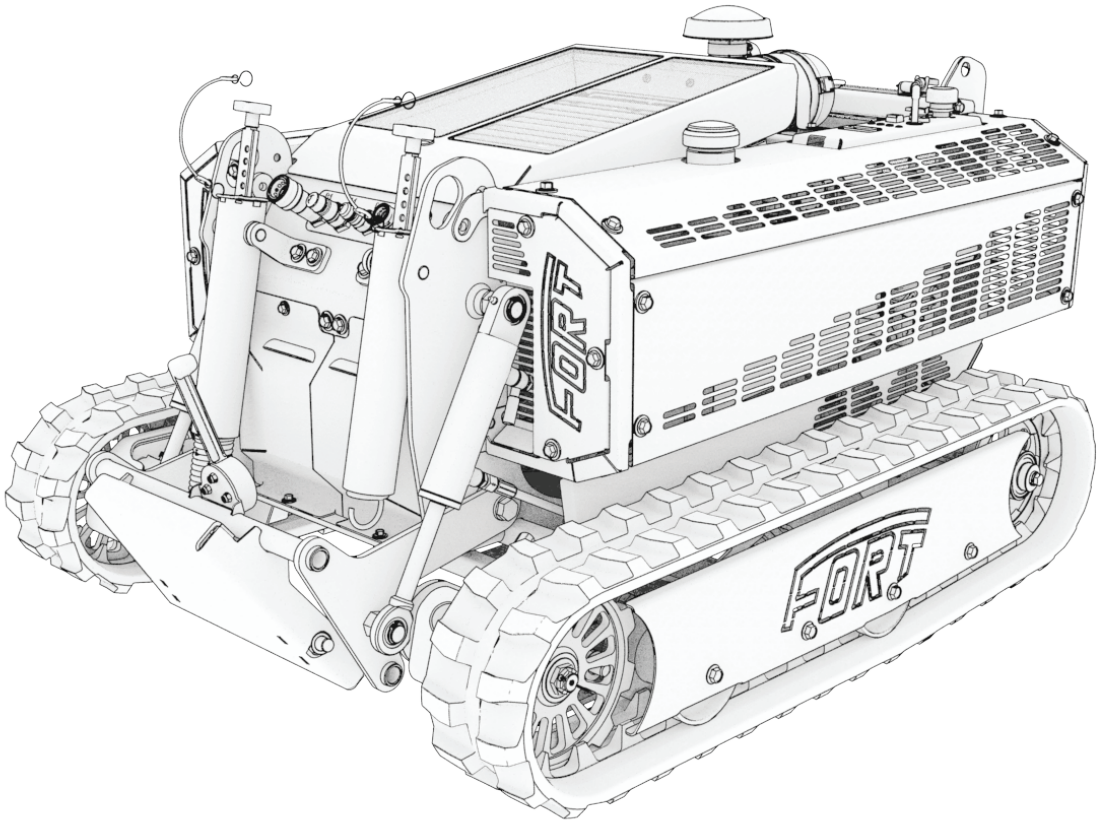
FORT®

USE AND MAINTENANCE INSTRUCTION MANUAL



MONOLITH

MULTI-PURPOSE MACHINE FOR MAINTAINING PUBLIC GREEN SPACES

Dynamic solutions with men and equipment always in the forefront

CE

ENGLISH (EN-GB)

Translation of the original instructions

Rev. 00
11/2020

MONOLITH

MULTI-PURPOSE MACHINE FOR MAINTAINING PUBLIC GREEN SPACES

CAUTION

READ THIS MANUAL CAREFULLY BEFORE USING THE MACHINE.

Dear Customer,

Thank you for having purchased an “FORT” product. We are pleased to provide you with this user manual to enable you to use our product correctly and obtain the best results with your work.

Please read the recommendations in the following pages with care, and make the manual available to the personnel who will be responsible for operating and maintaining machine.

FORT Srl is at your complete disposal for any clarifications you may require when commissioning or using the machine.

Should you require routine or extraordinary maintenance interventions, FORT Srl puts its personnel at your disposal to give you all the support, assistance and spare parts you might need.

Please find below a list of our useful phone numbers and address in order to receive faster assistance:

FORT S.r.l.
Via Seccalegno, 29
36040 Sossano (Vicenza) - Italy
Phone: +39 0444 788000
Fax: +39 0444 788020
Website: http://www.fort-it.com
e-mail: info@fort-it.com

1. GENERAL DESCRIPTION

1.1 PRELIMINARY INFORMATION

This use and maintenance manual complies with the Machinery Directive 2006/42/EC and subsequent amendments and integrations.

Do not destroy or modify it; any additions must be made by adding files.

Manual code:	**EENUM87000**
Revision no.:	**00**
Edition:	**11/2020**
Machine type:	**Remote-controlled, self-propelled machine**
Model:	**MONOLITH**

The manual is valid from serial number: **MONOL102000001**

Manufacturer data:

FORT Srl
Via Seccalegno, 29
36040 Sossano (VI) - Italia
Phone: + 39 0444 788000
Fax: + 39 0444 788020
http://www.fort-it.com
E-mail: info@fort-it.com

Annex list:

- Equipment manual, if present
- Three-phase engine use and maintenance
- Warranty coupon booklet

1.2 TRAINING REQUIRED OF THE OPERATOR

Reading this manual thoroughly:

- All machine operators and maintenance personnel must read this entire manual thoroughly and carefully and follow the instructions provided.
- It is the duty of the employer to ensure that operators possess the skills required to operate the machine and that they have read this manual carefully.

1.3 INSTRUCTIONS FOR USE AND STORAGE

The operating instructions contained in this manual are valid exclusively for the machine
FORT Srl Mod. MONOLITH.
This instruction manual must be read and used as follows:

- The instructions manual must be considered an integral part of the machine and must be read carefully;
- The instructions manual must be easily accessible to operators and maintenance technicians;
- Keep the manual for the entire lifetime of the machine;
- Ensure that any updates are incorporated in the text;
- Give the manual to any other user or subsequent owner of the machine;
- Use the manual in such a way as not to damage it or its contents;
- Do not remove, tear out or rewrite any part of the manual for any reason;
- Keep the manual away from moisture and heat;
- In the event that the manual is lost or partially damaged or it is otherwise not possible to read part or all of its content, a new copy should be requested from the manufacturer.

Pay the maximum attention to the following symbols and their meanings. They serve to highlight particular information such as:

CAUTION

Refers to supplements or suggestions for correct use of the machine.

WARNING

Refers to dangerous situations which can occur when using the machine, that could cause serious injuries or property damage.

DANGER

Refers to dangerous situations that may arise when using the machine, which if not avoided, could cause serious injuries or death.

1.4 INTRODUCTION

The service standards outlined in this manual represent an integral part of the machine supply contract.

These instructions are also addressed to operators already specifically trained to operate this kind of machinery and contain all information necessary and essential for safe operation and correct/optimal use of the machine. Rushed and incomplete preparations lead to improvisation, the cause of many accidents.

Read the following suggestions carefully and put them into practice before starting work:

- Familiarise yourself with all the operations that can be performed and work positions before manoeuvring the machine;
- The instructions manual must be available to the operator at all times;
- Programme all interventions carefully;
- Get all the information necessary for the transporting the machine on the road such as distance, rout, height of level crossing, bridge capacity etc.
- Have a detailed understanding of where and how the machine is intended to be used: ground bearing capacity, arm scope needed, limitations to movement due to the presence of buildings, power lines etc.
- Before starting work, make sure that the safety devices are working correctly and that there are no doubts regarding their functionality. If they are not working correctly or you have doubts, do not under any circumstances use the machine;
- While travelling on the road comply with all the rules and regulations of the highway code.
- Carefully follow the warnings regarding specific hazards indicated in this manual;
- Regular and thorough preventive maintenance will guarantee that the machine is always at its highest possible level of operational safety. Never put off the necessary operations, and ensure they are performed exclusively by specialised personnel, using only original spare parts.

1.4.1 Updates to the manual

The information, the descriptions and the illustrations contained in this manual reflect the state of the art at the moment the machine was sold.

The manufacturer reserves the right to make modifications to its products at any time for technical or commercial reasons. In the event that such modifications are made, the Manufacturer is under no obligation (for safety reasons) to modify the other machines sold up to that moment or issue updates to the manual. Moreover, this publication shall not be considered lacking in any way. Any supplements that the Manufacturer considers appropriate to supply at a later date must be kept together with the manual and considered an integral part of it.

1.4.2 Copyright

The copyright of this manual belongs to the machine's manufacturer This manual contains technical texts, drawings and illustrations which may not be divulged or transmitted to third parties, in whole or in part, without the written authorisation of the machine manufacturer.

1.5 WARRANTIES

Materials supplied by FORT Srl are covered by a 12-month warranty from the date of commissioning as indicated on the delivery note. In any case, refer to the machine order confirmation for special arrangements agreed during the sale.

FORT Srl reserves the right to repair, or substitute, the pieces it agrees are defective during the warranty period (see the coupon booklet enclosed).

By replacing the defective part, FORT Srl shall consider itself absolved from any other expense borne by the Dealer and the Dealer's Customer, for instance presumed damages, either present or future, such as lost earnings, liquidated damages, etc.

Scheduled and extraordinary maintenance must be performed in accordance with the instructions given in this manual. For all the cases not included and for any type of customer assistance, please contact FORT Srl directly by registered letter or fax, even if agreements have already been made by telephone. FORT Srl does not accept any liability for any delays or the failure to carry out work. FORT Srl shall not be held liable for any damage or malfunctions due to work of a technical nature being carried out on the machine by unauthorised personnel.

1.6 LIABILITY

FORT Srl shall not be held liable for any accidents involving personal injury or damage to property that may occur due to:

- Failure to comply with the instructions provided in this manual regarding the operation, use and maintenance of the machine.
- Abrupt movements or incorrect manoeuvres when operating or carrying out maintenance on the machine.
- Modifications made to the machine without the prior written authorisation from FORT Srl;
- Events that fall outside the normal and correct use of the machine.

In any event, should the user ascribe any incident or accident to a machine defect, they must be able to demonstrate that the consequent damage was a principal and direct consequence of such a defect.

Any tampering with the machine or the use of non-original spare parts can be grounds for voiding the warranty and put the operator's safety at risk.

WARNING

- **Always use original spare parts for repairs and maintenance.**
- **FORT Srl shall not be held liable for any damage as a result of failure to follow the above instructions.**
- **The machine is guaranteed according to the contractual agreements specified at the time of sale.**
- **The warranty shall nevertheless lapse whenever the regulations and instructions laid out in this manual should not be followed.**

1.7 PERMITTED USES

MONOLITH is a machine designed for professional use. The machine is a self-propelled radio-controlled vehicle that can be used in both the agricultural field with the chance to be able to apply different equipment to be applied to the raiser equipment front and/or rear.

MONOLITH (hereinafter called the machine) and the equipment are not toys but a PROFESSIONAL MACHINE. Always respect the conditions of use specified by the producers of the machine. The machine is suitable for performing flail mowing operations at a speed of up to 4-5 km/h, depending on the conditions of the ground and the type and condition of material to be cut (length, whether dry or wet, density etc.) and on slopes having a maximum inclination of 50°.

This machine is generally used during daylight hours. If, under exceptional circumstances, it has to be used at night or in conditions of reduced visibility, an auxiliary lighting system must be used. Always operate in daylight or with artificial lighting which guarantees visibility of at least 100 m.

1.8 IMPROPER OR NON-PERMITTED USES

CAUTION

This section indicates some of the uses considered improper or otherwise not permitted. Because it is impossible to predict all possible improper uses, in the event that you wish to use the machine for uses other than those indicated, contact FORT Srl before carrying out any work.

WARNING

Instructions for the permitted optional accessories are given in the corresponding use and maintenance manuals. Instructions for installing permitted equipment, controls requiring a provision on the machine, and the hydraulic attachments necessary for the equipment to operate are included in the final section of this manual.

The following uses must always and absolutely be avoided:

- Use of the machine by minors, inexperienced, untrained persons.
- Use of the machine to lift persons or things.
- Use of the mulching head as a piledriver.
- Use of the machine to tow accident-damaged vehicles.
- It must not be used on surfaces contaminated by glass, loose stones, pieces of iron or other extraneous bodies that could be kicked up by the blades of the equipment.
- Lifting or pulling oblique loads;
- Putting the machine into contact with accessories or equipment classified as dangerous due to their chemical or physical properties (e.g. flammable, toxic, explosive, etc. materials).
- Overloading the machine beyond its permitted limits.
- Increasing the operational length, width and distance using equipment without prior authorisation from FORT Srl;
- Using the machine with equipment that has not been authorised by FORT Srl;
- Make modifications to the machine (hydraulic, electric or mechanical).
- The machine must not be used on public roads.

CAUTION

RANGE OF ACTION means an area that should be free of people, as it could be hazardous. Also consider the information contained in the individual equipment manuals and the different work modes in which the machine operates.

DANGER

Using the machine as mentioned above can cause tipping hazards or structural failure that could result in injuries or even death.

1.9 RUNNING IN AND TESTING THE MACHINE

Every machine is scrupulously adjusted and tested before delivery.

A new machine must however be used with caution for the first 100 hours, to carry out a good running-in of the various components.

If the machine is subjected to an excessive work load when it is first used, its performance may be affected and its functionality reduced within a short space of time.

During the running-in period, pay great attention to the following points:

- After start-up, allow the engine to turn at a low number of revs for 5-6 minutes;
- Avoid operating machine at its maximum capacity for the first 100 hours of operation. Avoid sudden acceleration or deceleration.

Refer to the service booklet attached for the various types of maintenance to be carried out. Also refer to the engine manual and to the equipment manual for any type of work that has to be carried out.

WARNING

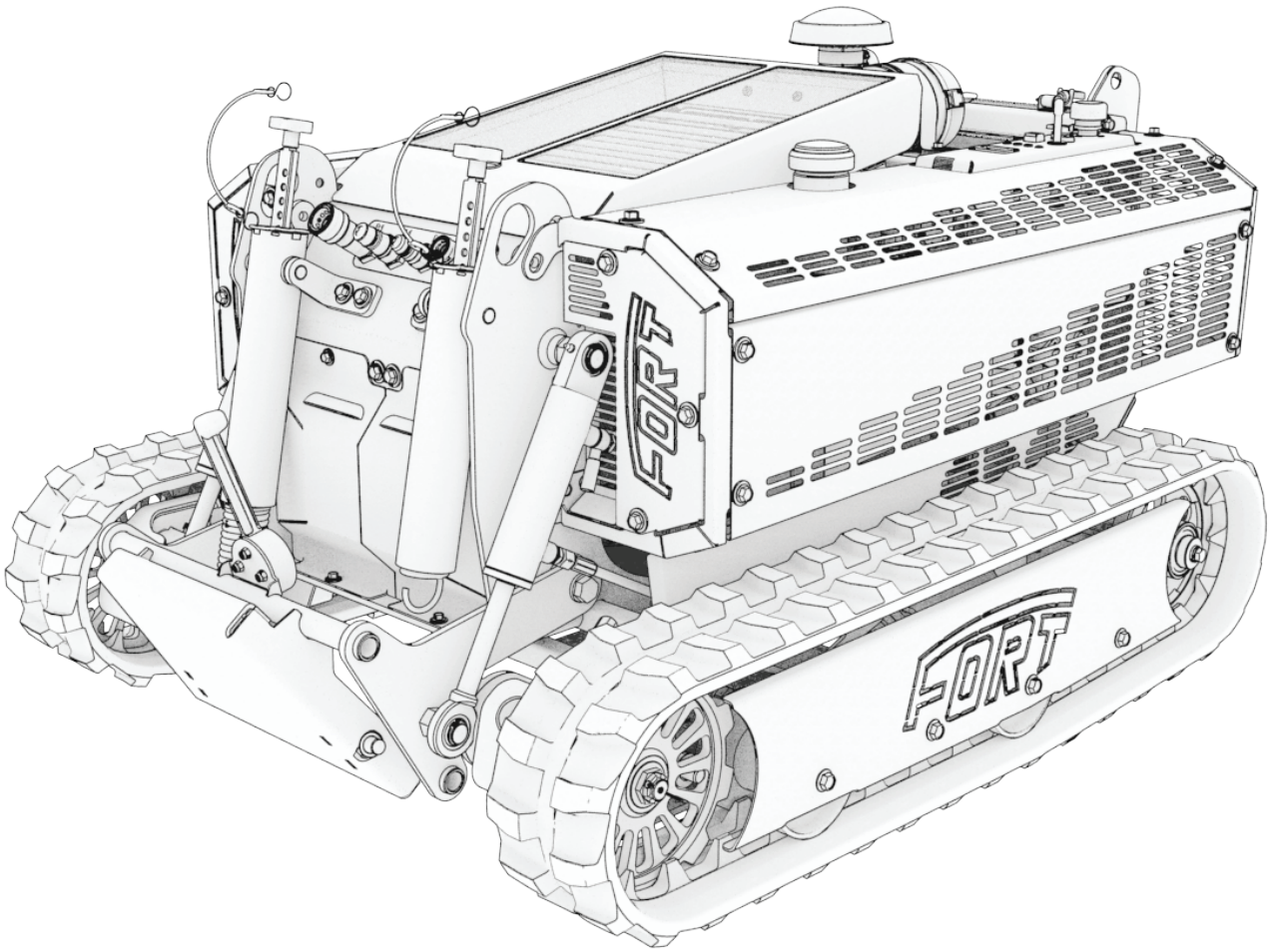
When replacing oil and fuel filters, inspect them internally to check if there are any deposits. If there are, check for possible causes before restarting the machine.

2. MACHINE CHARACTERISTICS

2.1 MACHINE DESCRIPTION

Multi-purpose machine designed for cutting grass, shrubs, maintenance of roadside verges, embankments etc.

The machine is equipped with a quick hitch lifter that allows the assembly of all the equipment allowed by FORT Srl and of a hydraulic connection with quick couplers that allows the replacement of various equipment according to the operating requirements.



2.2 AUTHORISED EQUIPMENT

All the equipment validated by FORT Srl and listed here, does not alter the stability of the vehicle, including the equipment, up to the permitted gradient (both for equipment with and without ballast).

The approved equipment enables the machine to remain stable at the maximum permitted gradients.

CAUTION

- **FORT Srl declines all responsibility for damage of any kind caused by improper use or use other than that described above.**
- **For custom machines refer to the appendix of this manual.**

2.3 STANDARDS FOLLOWED

This machine was designed and constructed in compliance with EC directives on safety and approximation of the laws of Member States.
Specifically to the Machinery Directive 2006/42/EC, where applicable.

The following Standards were also taken into account during the machine's design:

- UNI EN ISO 12100:2010 “Safety of machinery” (terminology);
- EN 60204-1:2016 “Safety of machinery” (electrical equipment);
- 2014/30/EU Electromagnetic compatibility;

The following harmonised standards were used for updating the machine:

- ISO 12100:2010
- EN ISO 4254-1:2015
- EN ISO 4254-12:2018

As well as the following technical specifications:

- EN ISO 3767-1:2016;
- ISO 11684:1995;

2.4 COPY OF EC DECLARATION

DICHIARAZIONE CE DI CONFORMITà
DECLARATION OF EC CONFORMITy
CE_KONFORMITÄTSERKLÄRUNG
DÉCLARATION CE DE CONFORMITÉ

Con la presente la Ditta
With the present, the Company
Hiermit erklärt die Firma
Par la présente, la Société

FORT S.r.l.
Via Seccalegno 29 - 36040 Sossano (VI) Italy
P. IVA / VAT N.: 02867730240
Cod. Fisc. / Tax: 00864250329

per tramite del Sig. / through Mr. / durch Hr. / représentée par M.: Valentino Novello
in qualità di / in quality of / als / en qualité de:
Amministratore / Administrator / Verwalter / Administrateur

Con la presente dichiara che la macchina nuova / Declares that the new machine
Hiermit wird erklärt, dass die neue Maschine / Déclare par la présente que la machine heuve :

TIPO/TyPE: MACCHINA MULTIFUNZIONE CINGOLATA / MULTI-FUNCTION TRACKED MACHINE
MEHRZWECKMASCHINE MIT RAUPENKETTENANTRIEB / MACHINE MULTIFONCTION à CHENILLES

MODELLO / MODEL / MODELL / MODÈLE: _____

MATRICOLA / SERIAL NUMBER / SERIENNUMMER / N° DE SÉRIE: _____

ANNO / YEAR / BAUJAHR / ANNÉE DE CONSTRUCTION: ____

E' conforme a quanto previsto da:

Direttiva 2006/42/CE del Parlamento Europeo e del Consiglio, del 17 Maggio 2006
Direttiva 2014/30/UE del Parlamento Europeo e del Consiglio, del 26 Febbraio 2014

Complies with that forseen by:

Directive 2006/42/CE of the European Parlament and Council, of May 17, 2006
Directive 2014/30/UE of the European Parlament and Council dated 26 February 2014

Mit folgenden Richtlinien übereinstimmt:

Richtlinie 2006/42/EG des Europaparlaments und des Europäischen Rats vom 17. Mai 2006
Richtlinie 2014/30/EU des Europaparlaments und des Europäischen Rats vom 26. Februar 2014

Est conforme aux dispositions des:

Directive 2006/42/CE du Parlament Européen et du Conseil, du17 mai 2006
Directive 2014/30/UE du Parlament Européen et du Conseil, du 26 Février 2014

Il fasciolo tecnico è costituito dal Sig. / The technical file is compiled by / die technischen Unterlagen wurden von Hr. als
Le dossier technique est constitué par M.: Valentino Novello
in qualità di / in quality of / erstellt / en qualité de: Amministratore / Administrator / Verwalter / Administrateur

Nome e Cognome del firmatario:
Name and Surname of the signatory:
Vor- und Nachname des Unterzeichnenden:
Nom et prénom du signataire :

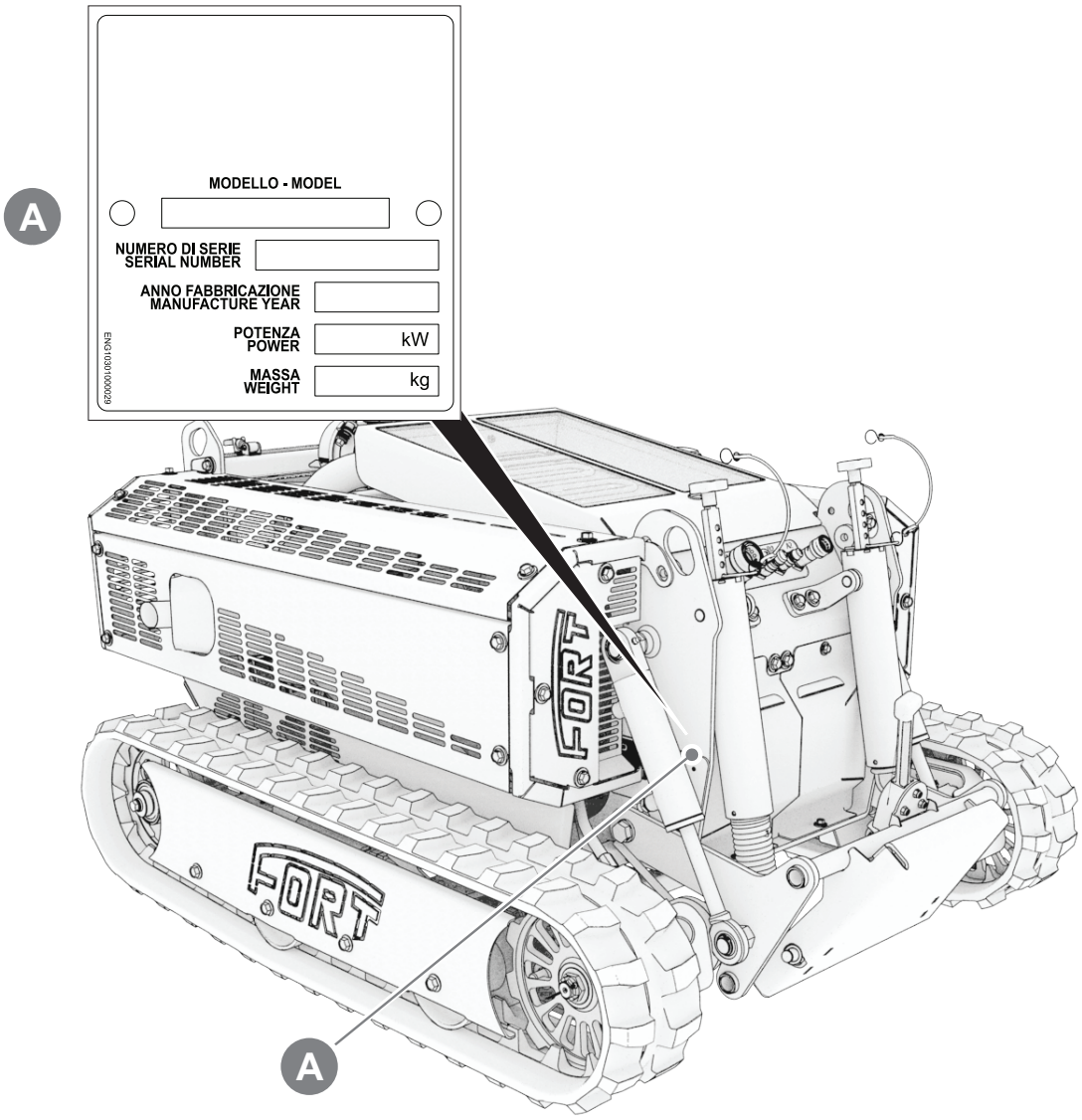
Sossano (VI) - Italy

_____

Valentino Novello

2.5 IDENTIFICATION OF THE MACHINE

An identification plate (**A**) is attached to each machine. For its location, please refer to the figure below.

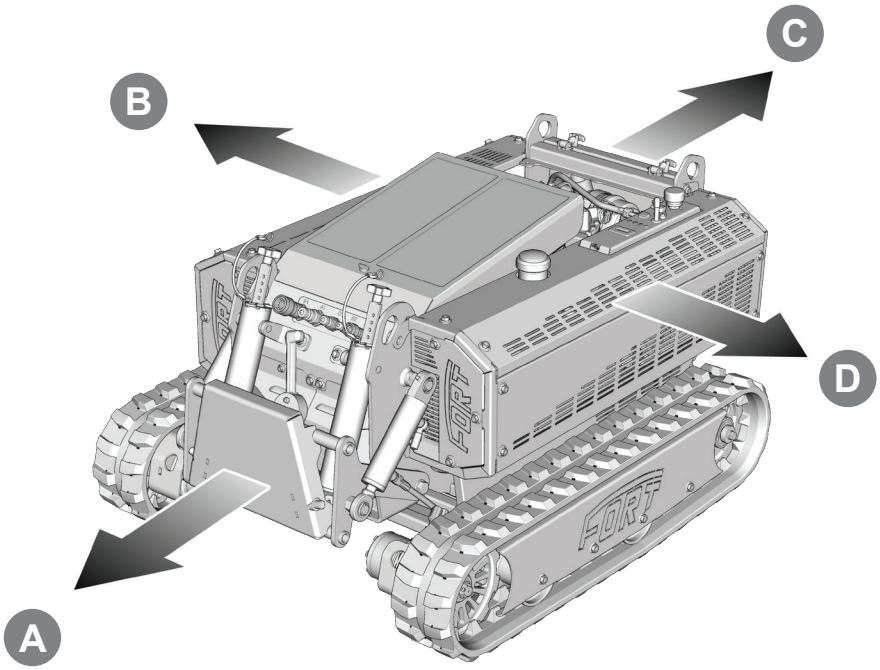


CAUTION

The serial number and year of manufacture must always be indicated in assistance requests and spare parts orders.

2.5.1 Definitions of machine directions

Left or right means with respect to the forward direction of movement.

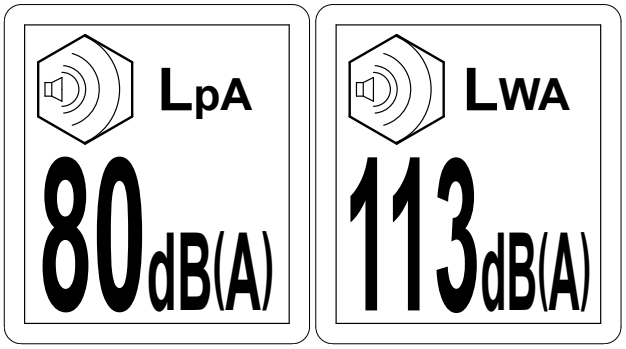


POS.	FORWARD DIRECTION OF MOVEMENT
A	Forwards
B	Right
C	Backwards
D	Left

2.6 NOISE LEVEL

LpA = This value indicates the maximum sound level perceived by the operator calculated by making a worst case assessment at the 4 points around the machine being tested.

LWA = This value indicates the sound level outside the machine and refers to the noise perceived by those who are in the vicinity of the work area.



Standards:

- ISO 3744:2010
- ISO 11201:2010

LpA was also measured at greater distances. The results were 89 dB(A) at five meters and 80 dB(A) at thirteen metres.

WARNING

Always wear protective earmuffs as the measured noise values require noise protection devices to be used.

3. SAFETY INSTRUCTIONS

3.1 GENERAL SAFETY RULES

WARNING

- **Adhesive warning/information plates have been affixed to the machine, the purpose of which is to make it safer to use. They must be replaced if they are no longer legible.**
- **Operators must not be occasional users, but those who have a certain amount of experience with this type of machine.**
- **Whenever direct visibility of the work zone from the control station is not sufficient, the operator must be assisted by a specifically assigned person.**
- **Check the condition and operation of any part subject to wear on a monthly basis: (pins, valves, piping, etc.). When necessary, replace with original materials.**
- **Do not, for any reason, tamper with the hydraulic system and in any case never remove the seal from the valves, as this will void all warranties. Contact an authorised repair shop if the valves should require adjustment.**
- **Excessive heating of the oil can damage the seals of the hydraulic circuit and lead to the deterioration of the fluid itself. Heating is caused by the rolling oil by means of the pressure relief valve. For this reason, avoid prolonged operation with the jacks at the end stop.**
- **Check that the machine emergency stop button and the radio control stop button are working correctly. If the emergency or stop buttons are damaged, the machine must not be started up or its operation must be stopped immediately.**
- **The machine user is responsible for all property damage or personal injuries caused by machine operation.**
- **It is strictly forbidden to carry out maintenance, cleaning, adjustments or similar operations on any part of the machine or the interchangeable equipment connected to it when the machine is running. Any maintenance, cleaning or adjustments must always be performed with the engine off.**
- **It is forbidden to remove or modify the guards for the moving parts or hot surfaces of the machine, or interchangeable equipment connected to it.**

3.1.1 Fully understand the machine

The machine must be used exclusively by qualified personnel, who must be familiar with the location and function of all controls, tools, indicators, indicator lights and the various safety plates.

3.1.2 Wearing protective clothing

Wear tight-fitting clothing and use safety equipment which meets applicable regulations.
In particular the following should be worn:

Noise protection earmuffs

Safety footwear

Overalls

Work gloves

While being used, the machine may give rise to dust emissions. If you are working with dry materials (straw or bare soil), it is recommended that you wear personal protective equipment such as:

Protective eyewear

Respiratory protection dust mask

3.1.3 Using safety equipment

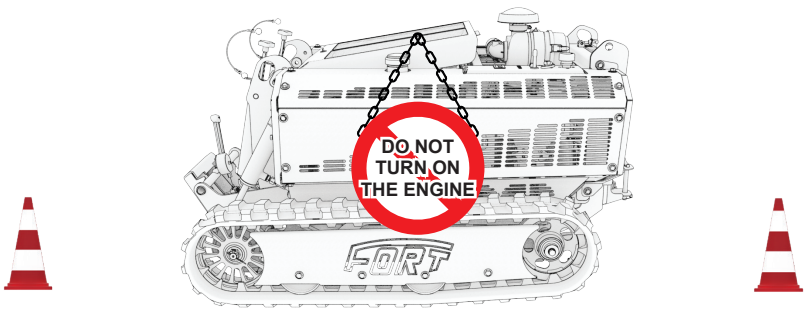
- A first aid kit should be on hand when the machine is in use.
- A powder type fire extinguisher should be on hand when the machine is in use so that you can take action quickly in case of an emergency
- Always make sure that the extinguisher is full
- Use the extinguisher according to current regulations
- Be prepared to fight a fire and / or handle an emergency
- Have the numbers of emergency services at hand:
  - Doctor
  - Ambulance
  - Hospital
  - Fire brigade

CAUTION

- **The owner of the machine and/or employer is responsible for providing a fire extinguisher and a first aid kit and for periodically making sure that they are in good order.**
- **A CO2 fire extinguisher is specific for extinguishing fires of an electrical nature. We recommend using a powder fire extinguisher on the machine in general.**

Upon request, FORT Srl can provide a special configuration in order for a powder fire extinguisher to be attached to the machine.

3.1.4 Instructions for carrying out inspections and maintenance



Apply a “DO NOT START THE ENGINE” sign to the machine. Remove the keys from the ignition before carrying out checks or maintenance work and delimit the area (for example with road cones).

3.1.5 Inspecting the machine

- Inspect the machine thoroughly every day before using it, following the checklist indicated in this manual.
- Start the engine only in a well ventilated area and ensure that there are no persons in the machine's working range.
- Covers and safety devices must not be removed. They are designed and manufactured for your safety.
- Do not use the machine if the safety devices or covers are damaged or missing.
- Make sure all safety devices are put back in place immediately after cleaning or repair work has been carried out.
- Keep the machine and all its accessories clean and in good working order at all times.
- It is strictly prohibited to make modifications to the machine without prior authorisation from the manufacturer. Changes to the machine can cause hazards and injuries. The manufacturer shall not be held responsible for the machine if these instructions are not followed.
- Only refuel when the machine is switched off, if possible before having turned it on, and when the fuel tank is cold. If you need to refuel whilst work is in progress, do not add fuel to the tank if the tank is hot or if the engine is still warm. Allow the machine to cool down.

CAUTION

RANGE OF ACTION means an area that should be free of people, as it could be hazardous. Also consider the information contained in the individual equipment manuals and the different work modes in which the machine operates.

DANGER

DANGER OF EXPLOSION OR FIRE

During normal daily maintenance do not clean with high pressure water (pressure washer) electrical components, such as:

- **Receiver unit and radio control;**
- **Fuse box and relays;**
- **Engine control unit and the machine ECUs;**

Put a guard or cover adequately before washing so as to isolate the electrical components.

3.2 GENERAL PRECAUTIONS

- It is mandatory to read and follow the instructions indicated in the use and maintenance manual before performing any operation or manoeuvre with the machine. It is too late to do so while working. Improper use or an incorrect manoeuvre can result in serious damage to persons or property;
- Operators and maintenance technicians must be very familiar with the machine, especially regarding the dangers associated with misuse or making incorrect repairs.
- Before starting carry out all the checks on the tractor and equipment regarding:
  - Operation
  - Accident prevention regulations
  - Guards.
- Even when the machine is being used correctly, stones or other things can be thrown a considerable distance by the machine. Therefore, there must not be anyone within the danger area (20 m). Pay great attention when working near roads or buildings;
- Before beginning a day's work, always check the condition of the tools and all the guards. If they are damaged or missing, replace them.
- Make sure that nobody can start the machine by mistake whilst the machine is being inspected or repairs are being carried out.
- Do not wear loose clothing.
- Never transport anyone on the machine.
- Never carry persons on the mulching head or on any other mounted equipment.
- Do not stand near the machine until the equipment is at completed standstill;
- Before starting the machine make sure that there are no people and/or animals around it;
- Before leaving the machine unattended, proceed as follows:
  - Park the machine on a flat surface.
  - Reduce the rpm of the engine before turning it off. Press the radio control red button and turn the ignition key to the "O" position.
  - Remove the ignition key and take the radio control away with you.
- Replace any missing or worn warning plates or pictograms immediately.
- Never underrate or ignore safety regulations.
- Go to an authorised workshop if the safety devices are not working.
- Keep the radio control out of the reach of unauthorised personnel and especially children.

3.2.1 Safety instructions

The machine has been designed and constructed according to the current state of the art and technical standards for mowing grass, cutting shrubs and the maintenance of road verges, slopes, canals, drainage ditches etc. Observe the laws, dispositions, prescriptions, ordinances and directives in force for such machines.

The materials used and the equipment parts, as well as the production procedures, quality guarantee and checks meet the highest safety and reliability standards.

If the machine is used for the purposes specified in this manual, manoeuvred with care and maintenance and servicing is carried out carefully and correctly, the machine can provide constant reliability and high performance over time.

When being used on public land, comply with all the rules and regulations of the Highway Code for the country in which the machine is being used.

3.2.2 Road safety regulations

The manufacturer accepts no liability for accidents whilst the machine is being used if the operator does not comply with current legislation, directives, recommendations and regulations for machines used for mowing grass, shrubs, the maintenance of roadside verges, slopes, canals, drainage ditches etc.

The machine is designed to work in normal weather conditions at a temperature ranging from

-10°C to +40°C. It should therefore only be operated in these conditions.

As regards the mowing on public roads, please refer to the instructions given by the work supervisor as this is a mobile site.

WARNING

Check that the overall dimensions of the machine, which are also shown in the technical data, comply with the regulations governing road traffic in the country the machine is used.

3.2.3 Operational safety

The manufacturer cannot be held responsible in case of malfunction and damage if the machine:

- is used for purposes other than those for which it was intended;
- is not manoeuvred, operated and maintained according to the instructions specified in the following manual;
- is not regularly and periodically maintained as indicated, or non-original spare parts are used;
- is modified or its equipment is replaced without the written permission of the manufacturer, especially when the efficiency of the safety systems has been reduced or they have been removed.
- is used outside the permitted temperature range.

3.2.4 Safety when using grass mowing equipment

- Before using the machine, remove from the mowing area all stones, sticks, glass, metal wires, bones, branches and any other objects that could be collected and tossed around by the flail rotor or that could damage the mulching head.
- Avoid obstacles during machine operation. Do not use the machine near steep slopes, unstable terrain or areas in which it could tip over.
- When the machine is being used, be very careful not to let it come into contact with hard objects such as drain covers, manhole covers, curbs, guard rails, railway tracks etc. This could cause the tools to break and they could be projected at very high speed.
- Whenever wire, cables, chains or other objects become caught in the rotor, stop immediately in order to avoid damage or dangerous situations. Stop the rotation of the cutter, switch off the engine and remove the key. After having put on work gloves, remove any materials that have been caught in the rotor with the aid of pliers or shears.
- Do not continue to use the machine if there vibrations from the mulching and/or forestry head that could cause breakages or serious damage. Ascertain the cause of such problem and eliminate it.
- During operation, pay attention to the electrical cables, especially if you need to pass under them, as you could lose the radio signal. In these cases, the machine immediately deactivates (disconnects) the commands and stops with the engine running at idle speed.
- Before raising/lowering the equipment with the raiser, make sure nobody is within 20 meters of the machine.

DANGER

Do no try to free the rotor by making it turn in a counterclockwise direction.
Danger of projection of materials.

WARNING

If you are using other equipment, refer to the manual of that equipment.

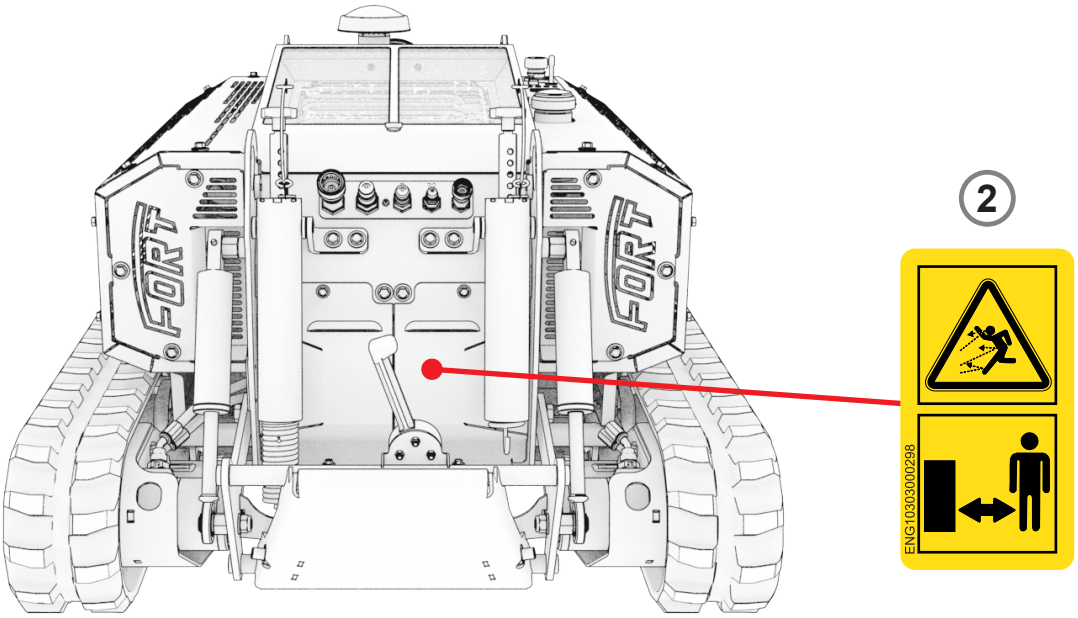
3.2.5 Safety rules concerning the hydraulic system

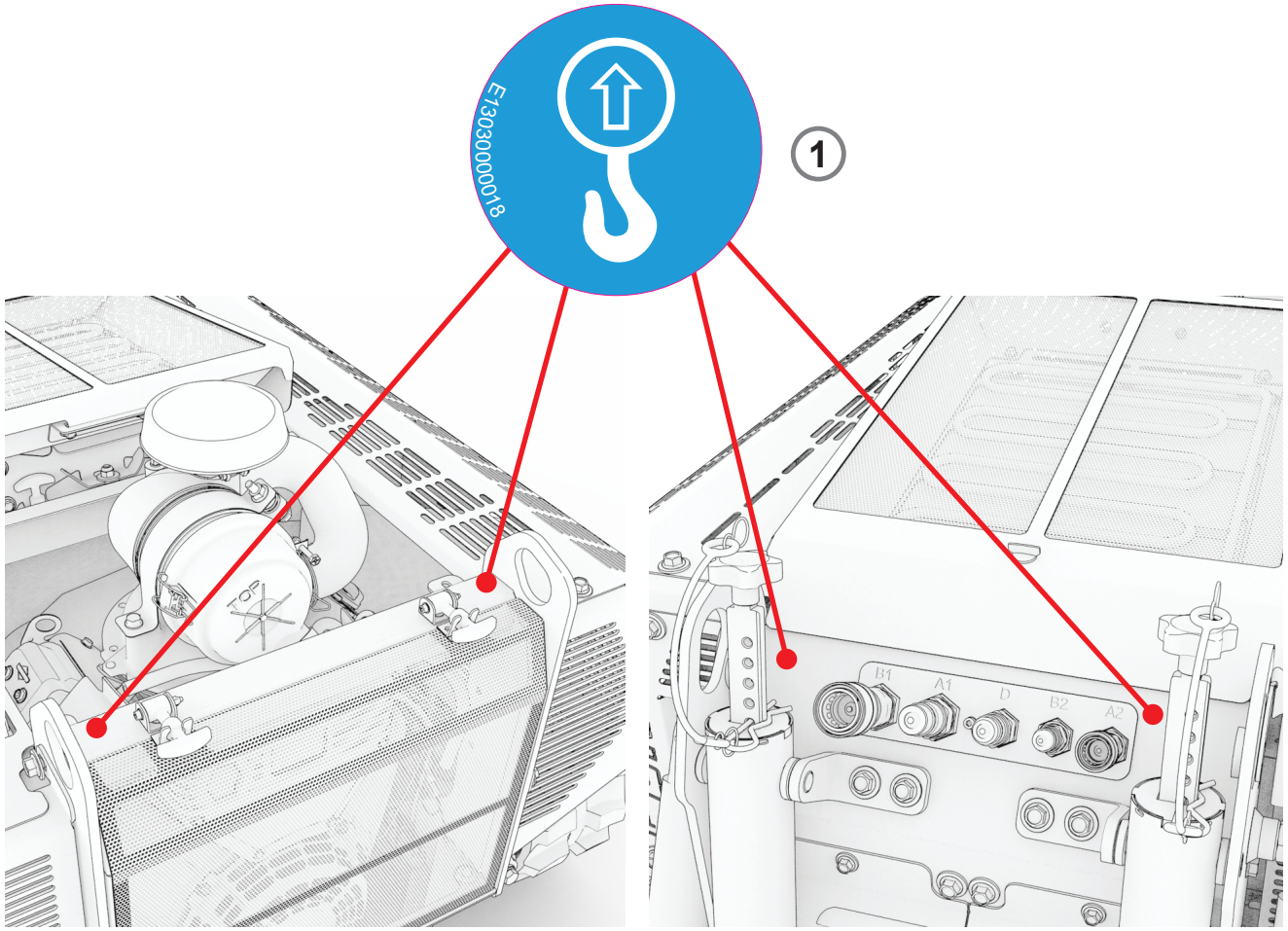
- Stop immediately if you notice oil leaks.
- Periodically check hoses. If they are worn, contact FORT Srl. Before working on the system lay the head on the ground (or any other mounted equipment) and turn off the engine.
- Oils and greases must be disposed of according to anti-pollution standards.

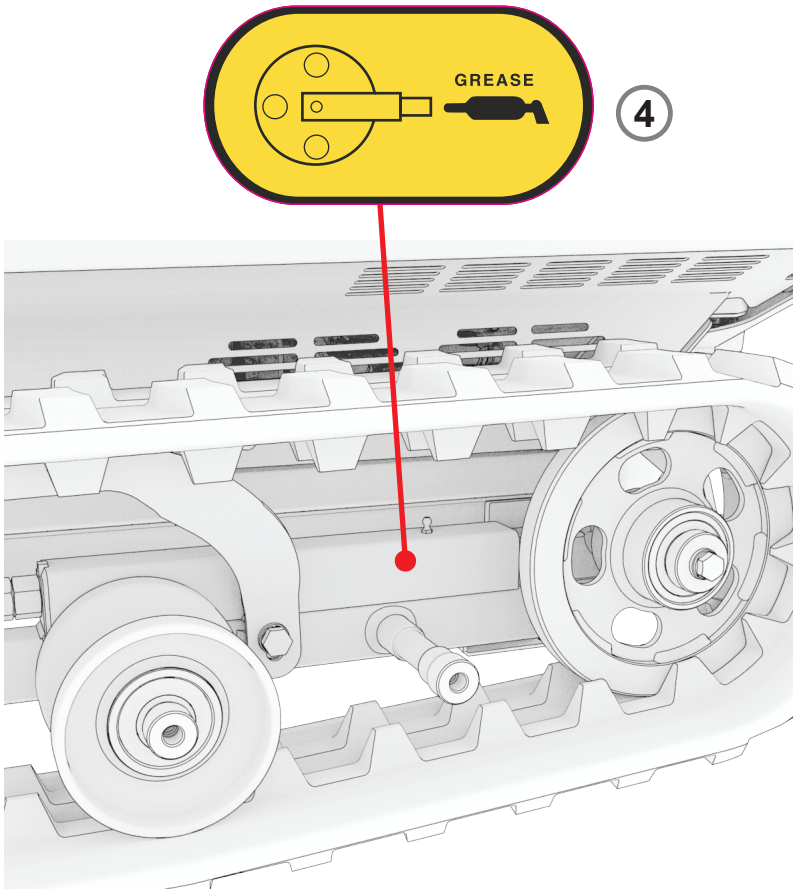
CAUTION

- **Do not look for oil leakages with your bare hands or other parts of your body. Use paper or rags to identify the leak.**
- **Always wear waterproof gloves and safety goggles.**
- **Wait for the oil to cool down before performing any work.**
- **Bleed out the oil pressure before disconnecting pipes or during maintenance of the system.**
- **High pressure oil could penetrate the skin and cause serious infections. If this happens, see a physician immediately.**
- **These operations *MUST* be performed by authorised personnel.**

3.2.6 Location of the safety plates



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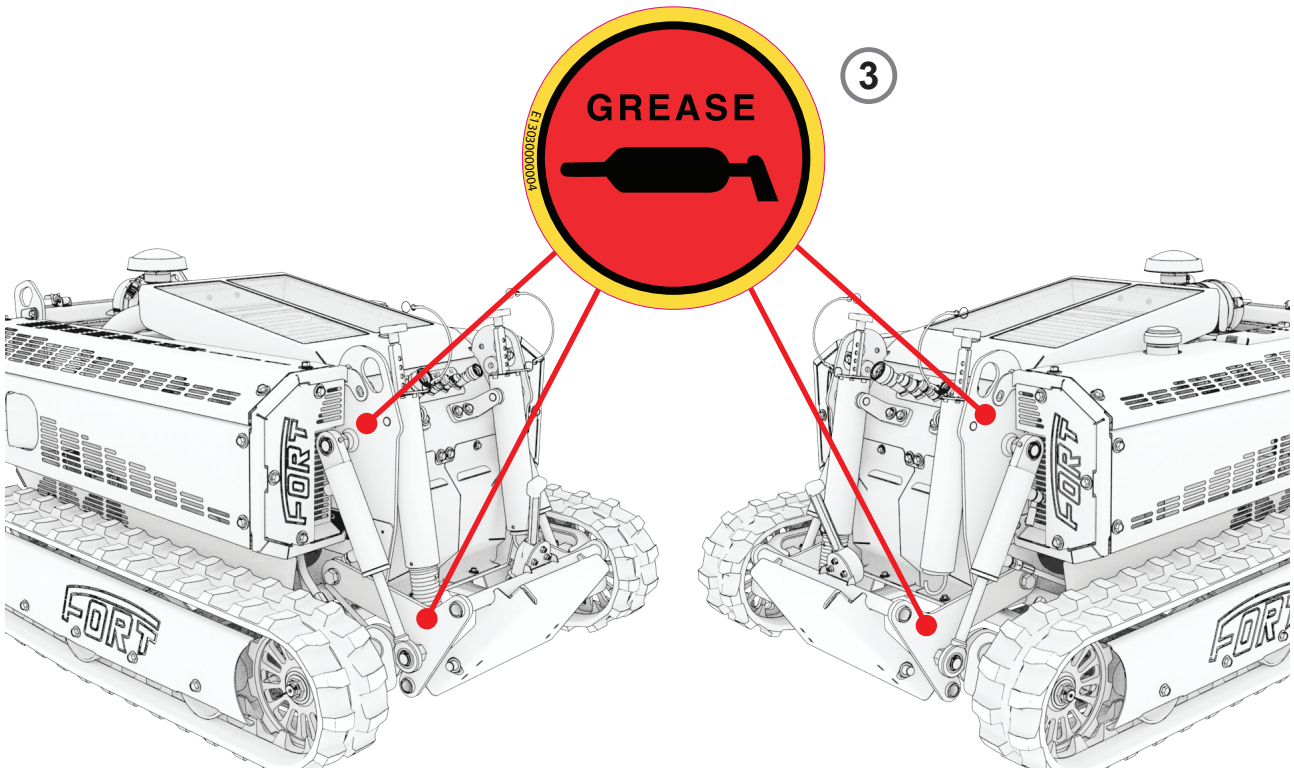
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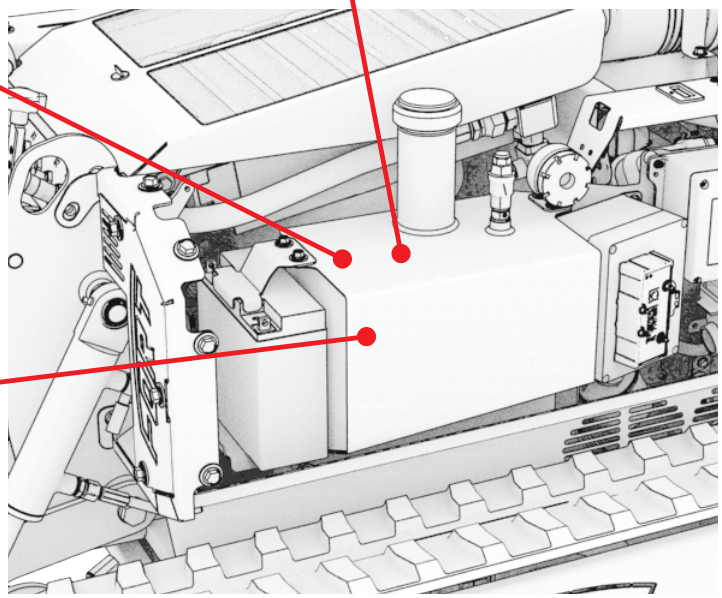

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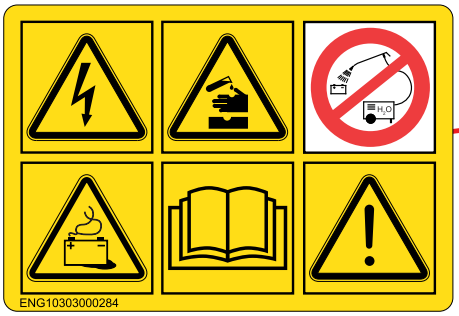

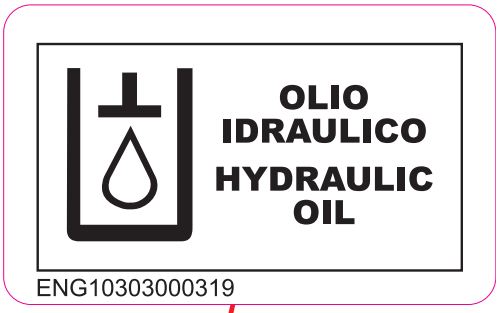

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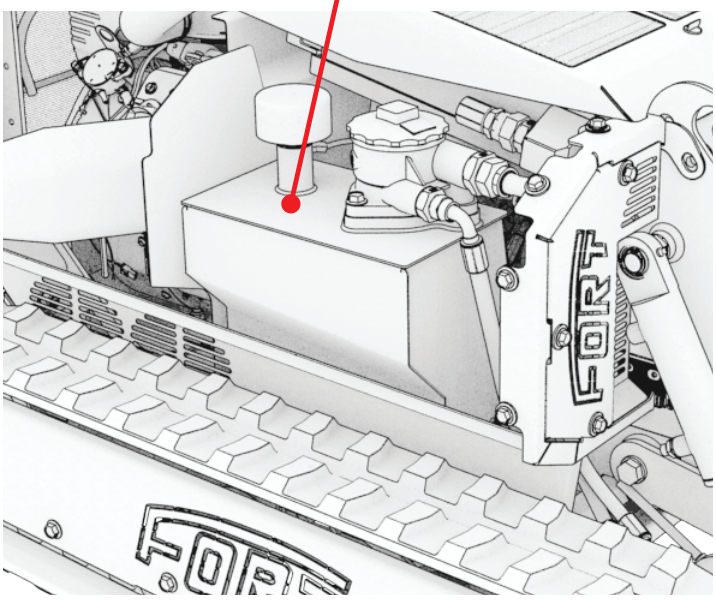

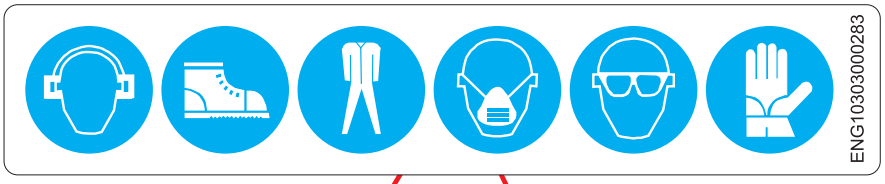
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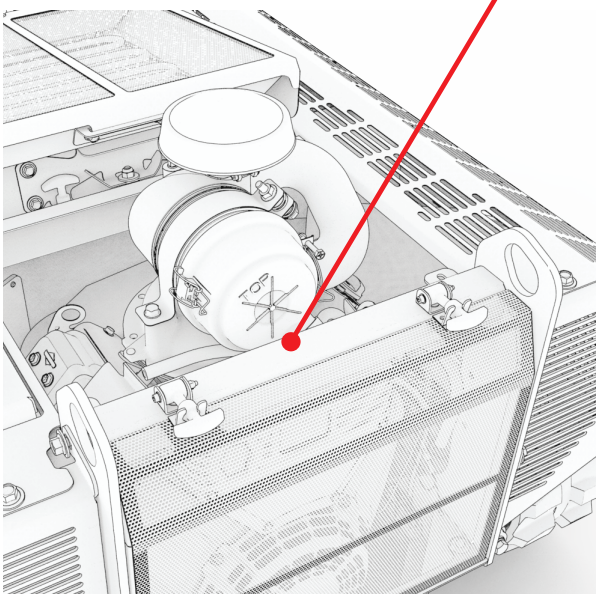

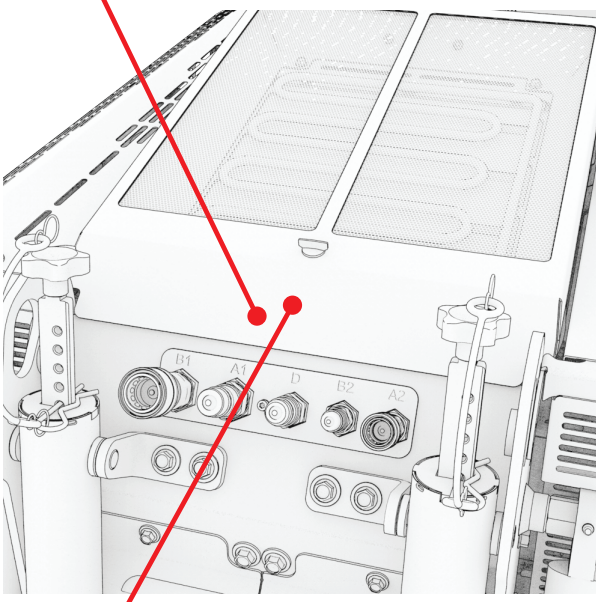
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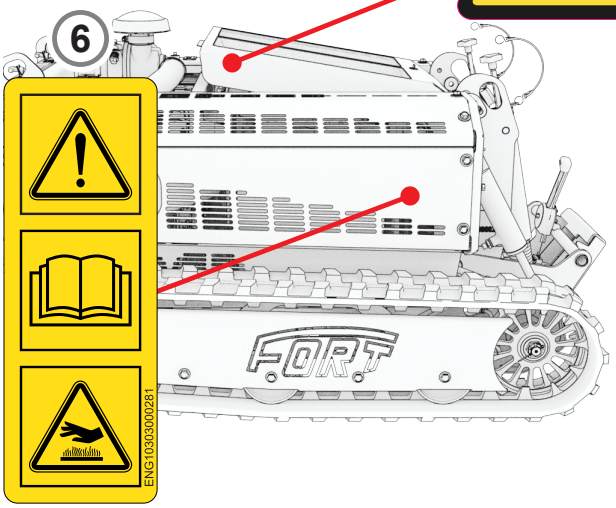
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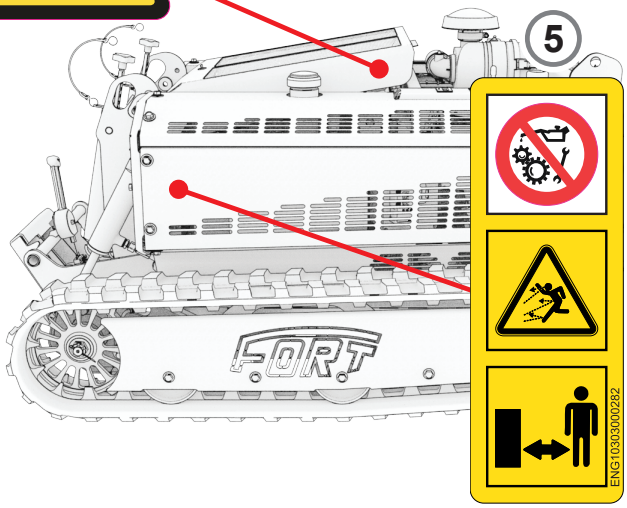
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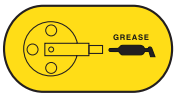
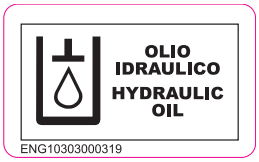
3.2.7 *Description of the safety plates*

CAUTION

Make sure that the safety plates are in good condition. If the plates are damaged, they must be replaced with original plates that can be requested from FORT Srl and placed in the position indicated in the manual. Make sure that the safety decals are readable. Clean them using a damp cloth dipped in soap and water.

POS.	SIGNS	DESCRIPTION
1		Lifting points provided for handling the machine
2		**Danger sign - Flying objects** This indicates that stones or other objects may be thrown out by the machine and instructs you to work at a safe distance.
3		**Lubrication zone sign** Indicates the greasing and lubrication points (and possibly the frequency).
4		**Lubrication zone sign** Indicates the greasing point of the track.
5		**Moving parts danger warning signs** Indicates the presence of moving mechanical parts. **Danger sign - Flying objects** This indicates that stones or other objects may be kicked up by the machine and means people must stay well away from the machine's range of action.
6		**Warning signs** regarding dangers due to the lack of knowledge of the machine, its functions and the consequent risks. Read the use and maintenance manual carefully before using the machine. **Hot parts warning sign** Indicates the presence of hot parts such as exhaust pipes or bonnets. Do not touch the areas around the sign.
7		Fuel tank.
8		**Warning signs - Flammable materials** • Indicates the presence of flammable material. • Keep away from open flames.

POS.	SIGNS	DESCRIPTION
9		**Hazards associated with the battery** • Read the use and maintenance manual carefully before using the machine. • Keep flames, lighted matches and sparks away from the battery. Battery gas can explode. • Do not check the charge of the battery by connecting the two poles with a metal object. Use an acidimeter or a voltmeter. • Do not charge a frozen battery. Explosion hazard! Warm the battery to 16°C. • Danger of electric shock. • Danger of corrosion. To check it, refer to section ***"9.10 Checking and maintaining the electrical system"***.
10		Hydraulic oil tank
11		**Personal protective equipment (PPE)** All operators and personnel should be provided with appropriate PPE. In particular the following should be worn: • Noise protection earmuffs • Safety footwear • Overalls • Dust mask • Protective eyewear • Work gloves
12		**Hot parts warning sign** Indicates the presence of hot parts such as exhaust pipes or bonnets. Do not touch the areas around the sign.

3.2.8 Precautions regarding the equipment

When optional equipment is installed and used, carefully read the relative manual and abide strictly by the instructions it contains.

Do not use optional or special equipment without being authorised to do so in writing by FORT Srl.

Fitting and using equipment that has not been authorised by FORT Srl could cause safety problems and damaging effects both for operations and the life of the machine.

All damage, accidents or reduction in machine efficiency deriving from the application and use of non authorised equipment does not involve FORT Srl liability.

3.3 GENERAL SAFETY RULES

3.3.1 Care and maintenance

The cause of many damages and accidents can be attributed to mistakes or lack of maintenance, such as:

- Lack of oil, grease and anti-freeze.
- Lack of cleaning.
- Lack of hydraulic system maintenance (damaged hoses, loose fittings etc.).

- Carry out maintenance works carefully as they are also important for your own safety.
- Never put off repairs.
- Assign only specialised or authorised personnel to carry out repairs.
- Always follow the safety instructions given below, even when you are fully familiar with all the controls.
  - Adapt the speed to the conditions of the travel path.
  - Before beginning work, check that all the movements of the protective devices are functioning properly.
  - Check that the emergency stop devices are in perfect working order (on the radio control and the fuse box).
  - Continually ensure that there is nobody in the danger zone of the machine (greater than 20 m). Warn them using the horn or verbally and stop working if they do not leave the danger zone.
  - Do not allow anyone to climb onto the machine.
  - Do not use the machine to lift persons.
  - Never leave the operating position when the machine is on.
  - If for some reason, the rotor of the equipment begins to shake, stop the equipment immediately and try to understand the reason and / or restore correct operation. FORT Srl declines all liability for injury to people or damage to property if the operator fails to comply with these instructions.
  - Clean the machine after use. Do not use petrol or solvent-based products to clean the machine.
  - During operation, and in particular in windy conditions, the user must carefully choose his position in order not to be exposed to exhaust gases, dust or mown grass.
  - Do not operate the equipment if you are unable to see it (behind ridges, round corners of buildings, in tall grass etc.).

WARNING

Due to vibrations, regularly check that all screw connections are firmly tightened.

This check must be carried for the first time after eight hours of operation and repeated at least weekly.

WARNING

- **Do not clean electrical parts (for example the fuse box, actuator and control units) with high pressure water.**
- **Cover electrical parts with a plastic bag to protect them during washing.**

3.3.2 Safety during filling and topping up

- Fuel, oil and some types of anti-freeze are highly flammable.
- Keep away from naked flames.
- Turn off the engine and do not smoke when fuelling up.
- Fuel up only when the engine is off and in a well-ventilated area.
- Do not let unauthorised persons come near.
- During filling, hold the fuel pump pistol or the jerry can and keep them always touching the fuel filler hole until the filling operation is over to avoid sparks due to static electricity.
- When refuelling is complete, tighten the safety caps.
- Do not fill the tank completely. Leave some space in order for the fuel to expand.
- Immediately dry off the fuel that might have spilled out.

3.4 MAINTENANCE REQUIREMENTS

3.4.1 Warning plates

Position the machine on a firm and flat surface, rest the equipment on the ground and turn off the engine before performing any maintenance operation. If other persons start the engine and activate the control levers while maintenance works are being carried out, serious injuries or death can result. To avoid these dangers, before carrying out the maintenance, put the radio control in a safe position, remove its battery and hang the warning signs on the machine.

3.4.2 Tools

Use only tools specified by the machine manufacturer. To prevent personal injury discard worn, damaged, poor quality or makeshift tools.

WARNING

Tools that are not indicated or modified without authorisation will void the warranty and release the manufacturer from any liability for injury to people or damage to property.

3.4.3 Staff

The routine maintenance indicated in the manual must be carried out exclusively by authorised and trained personnel. For the maintenance or overhaul of components that are not specified in this manual, contact FORT Srl.

3.4.4 Works performed under the machine

The routine maintenance indicated in the manual must be carried out exclusively by authorised and trained personnel. For the maintenance or overhaul of components that are not specified in this manual, contact FORT Srl.

DANGER

Do not climb on or get under the machine when it is raised and not properly supported as indicated in the safety standards.

Make sure that you use cables, chains and lifting means appropriate for the load and for the lifting of objects.

3.4.5 Keeping the machine clean

The routine maintenance indicated in the manual must be carried out exclusively by authorised and trained personnel. For the maintenance or overhaul of components that are not specified in this manual, contact FORT Srl.

- Regularly remove all flammable materials (dry grass and leaves) from the area around the exhaust pipe, engine, battery and all the points in which they can come into contact with oil or fuel and therefore ignite.
- Clean the machine after use.
- Do not use petrol or solvent-based products to clean the machine. Do not clean electrical parts with water under pressure.

3.4.6 Periodic replacement of essential safety components

Check periodically the following components, important for fire prevention:

- **Fuel supply system:** fuel delivery and return pipes;
- **Hydraulic system:** main hydraulic pump delivery pipes;
- **hydraulic system:** user tubes from hydraulic cylinder type distributor.

Carefully check the state of efficiency and cleanliness of the quick couplers the machine is fitted with.

Even if they appear to be in good condition, these components have to be periodically replaced with new ones. These components tend to deteriorate with time. If one of these parts is defective, replace or repair it even if it is still not scheduled to be replaced.

3.4.7 Hydraulic system

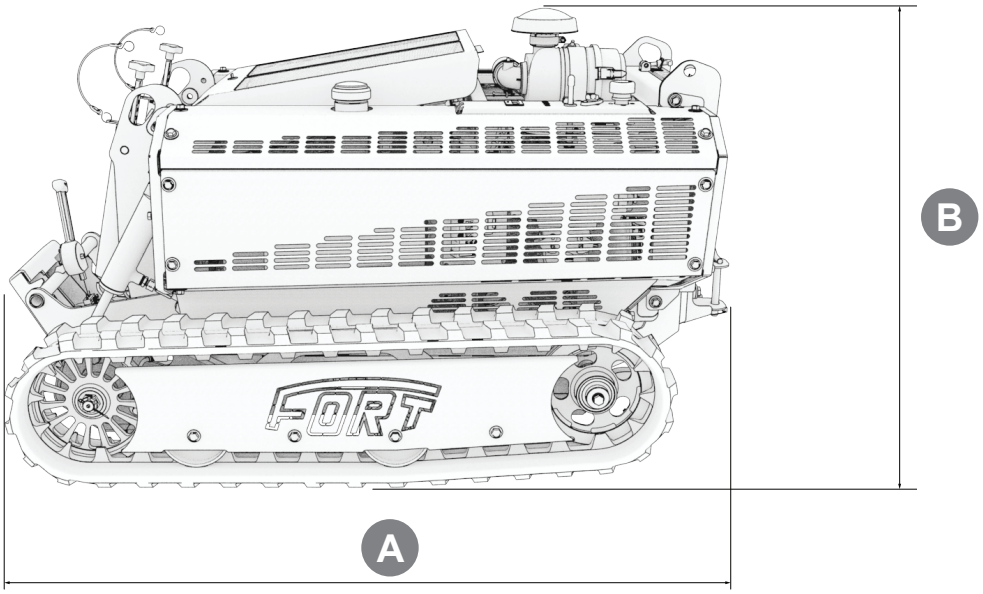
When the machine's engine is switched off, there may be a residual pressure of 2 bar on all its hydraulic systems. In order to discharge this pressure from the systems for carrying out maintenance, proceed as follows:

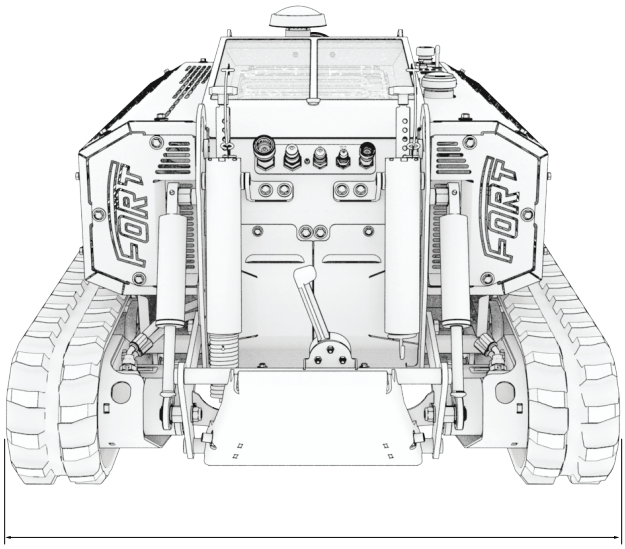
1) Lower the lifting device completely.
2) If the mulching head is attached, close the guard.
3) Make sure that the engine has been switched off and that the mechanisms are stationary.
4) Loosen the fittings of the lifter cylinders.
5) Loosen the fittings of the guard-opening cylinder.
6) Loosen the fittings of the drainage lines of the translation and mulching head motors.
7) As regards the control valve, the pressure equalizes with that of the tank.

4. TECHNICAL DATA

4.1 TECHNICAL CHARACTERISTICS

4.1.1 Dimensions





POS.	DIMENSIONS
A	1335 mm
B	770 mm
C	1010 mm

4.1.2 Weight

The total weight of the MONOLITH machine without equipment is 420 kg.

4.1.3 Engine

Make	BRIGGS & STRATTON	**Type**	38E3
No. of cylinders	2	**Displacement:**	627 cc
Power	17.2 kW / 23 CV	**Peak torque**	46 Nm @ 3400 rpm
Cooling	AIR	**Air filter**	Dry

4.1.4 Electrical system

Voltage	12 VDC
Alternator	40 A
Battery MONOLITH	18 Ah

4.1.5 Hydraulic system

Circuit	**Pump type**	**No.**	**Maximum capacity**	
			L/min	**Bar**
Translation	Tandem variable displacement piston pump in closed circuit	2	19.4 each	180
PTO	Gear pump, in open circuit.	1	31	180
Lifter			3	130
Services				

4.1.6 Transfer speed

	Forwards	**Reverse**
Km/h	0 - 4	0 - 4

4.1.7 Tracks

Type	**Width (mm)**	**Cup weight/single track (kg)**
Rubber	150 x 34 x 72	36 / 18

4.1.8 Capacities table

	Quantity (litres)
Engine oil	1.42
Fuel tank capacity	15
Hydraulic oil tank capacity	12.5

4.1.9 Transmitter battery

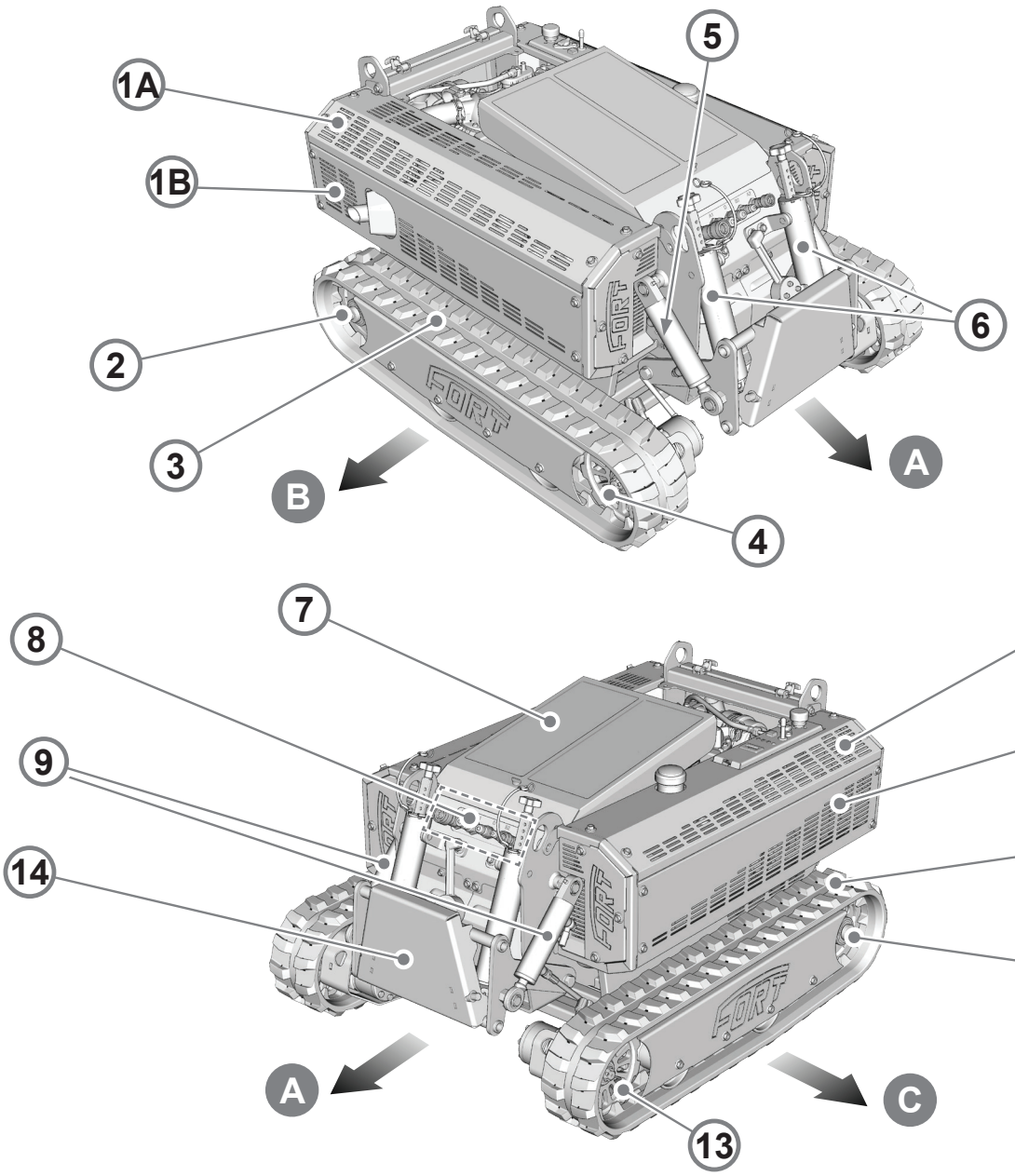
Voltage:	7.4 Volt
Average battery time (*):	18.5 hours
Battery charge time:	2 hours and 40 minutes
The transmission frequency for EU member states is	863 - 870 MHz
RF POWER OUTPUT is	< 25 mW ERP
The operating radius of the radio control is	150 metres

(*) Depending on how many operations are carried out using the radio control.

WARNING

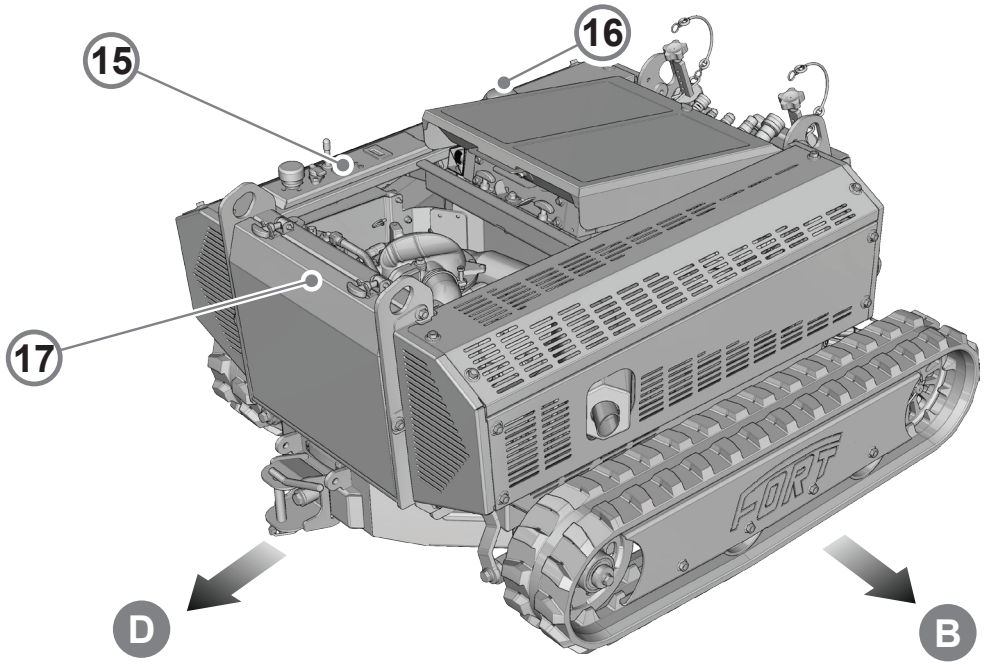
It is recommended that the machine be visually monitored at all times so do not operate it at a distance greater than 50 - 80 metres.

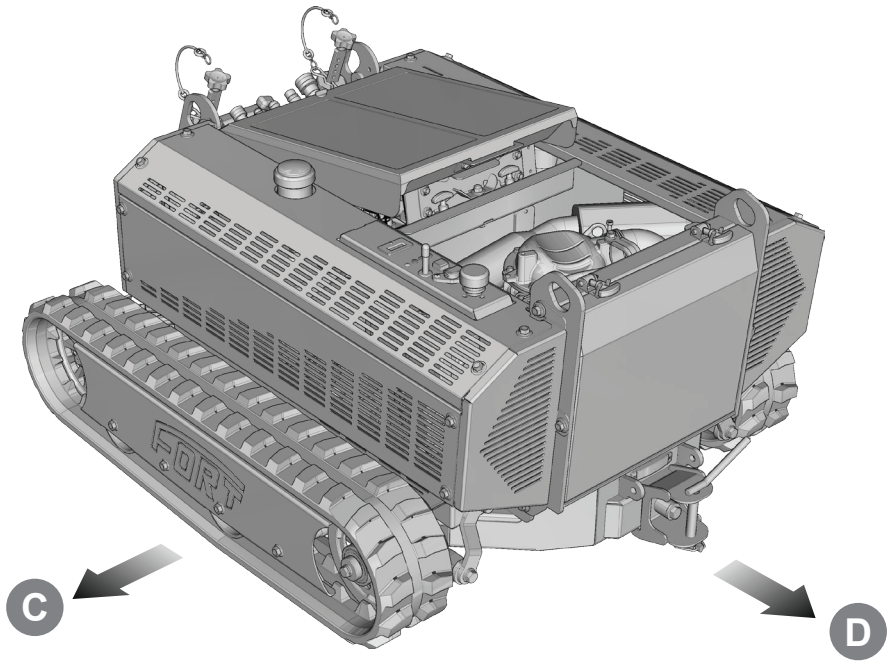
4.2 MACHINE NAME



POS.	DESCRIPTION
1A	Upper right bonnet
1B	Lower right bonnet
2	Right idler wheel
3	Right track
4	Right drive wheel
5	Machine plate
6	Suspensions
7	Radiator casing
8	Hydraulic quick couplers
9	Lifter cylinders
10A	Upper left bonnet

POS.	DESCRIPTION
10B	Lower left bonnet
11	Left track
12	Left idler wheel
13	Left hand side wheel drive
14	Lifter
A	Front side
B	Right side
C	Left side





POS.	DESCRIPTION
15	Control panel
16	Fuel level indicator
17	Engine cover
B	Right side
C	Left side
D	Rear side

5. TERMINOLOGY

5.1 DEFINITION OF THE TERMS USED

OPERATOR

Personnel trained to manoeuvre the machine when in operation, to move it and carry out normal machine inspection and cleaning.

Must not have disabilities of any kind or health problems.

SPECIALISED OR MAINTENANCE PERSONNEL

Personnel trained to carry out ordinary maintenance, mounting, disassembly and reassembly of some machine components.

Must not have disabilities of any kind or health problems.

AUTHORISED PERSONNEL

Personnel trained to carry out operations of extraordinary maintenance, mounting, disassembly and reassembly of particular machine components.

Must be authorised in writing by FORT Srl to work on the machine.

Must not have handicaps of any kind or health problems.

OPERATOR ASSISTANT

Personnel trained to assist the operator with certain machine manoeuvres (manoeuvres on worksites with reduced visibility, loading and unloading from vehicles, using the manual pump etc.) and assists the activities on a mobile worksite (public road verge maintenance).

Must know the main work safety requirements.

AUTHORISED REPAIR WORKSHOP

Repair workshop with personnel trained to carry out extraordinary maintenance, mounting, disassembly and reassembly of specific machine components.

Must be authorised in writing by FORT Srl to work on the machine.

The operator is asked to refer to standard UNI EN 12100-2010, for the definition of the other terms in this manual.

6. USING THE MACHINE

6.1 PRELIMINARY CHECKS

The operator must check that the machine has been supplied with the:

- Machine and equipment user manual
- Inspection log / coupons booklet
- Registration certificate (if requested)
- Third party liability insurance policy (if requested)
- Three-phase engine;
- Technical appendix;

If the machine is resold as a “second hand” machine, the customer / user must provide the purchaser with the complete use and maintenance manual as well as the inspection log book.

6.2 CHECKS TO BE PERFORMED AT THE START OF EACH WORKING DAY

- Carry out an external inspection of the machine (joints, hoses, hydraulic components, etc.) and check for any leaks of oil or other liquids.
- Check the rubber hoses and make sure there are no cuts, holes, wear, leaks etc.
-

CAUTION

Do not look for oil leakages with your bare hands or other parts of your body. Use paper or rags to identify the leak. Always wear waterproof gloves and safety goggles.

6.3 CHECKING THE CHROME-PLATED PARTS

Inspect the chrome-plated parts of the machine (cylinders) and make sure that they are not scored or damaged. In the case of damage, replace.

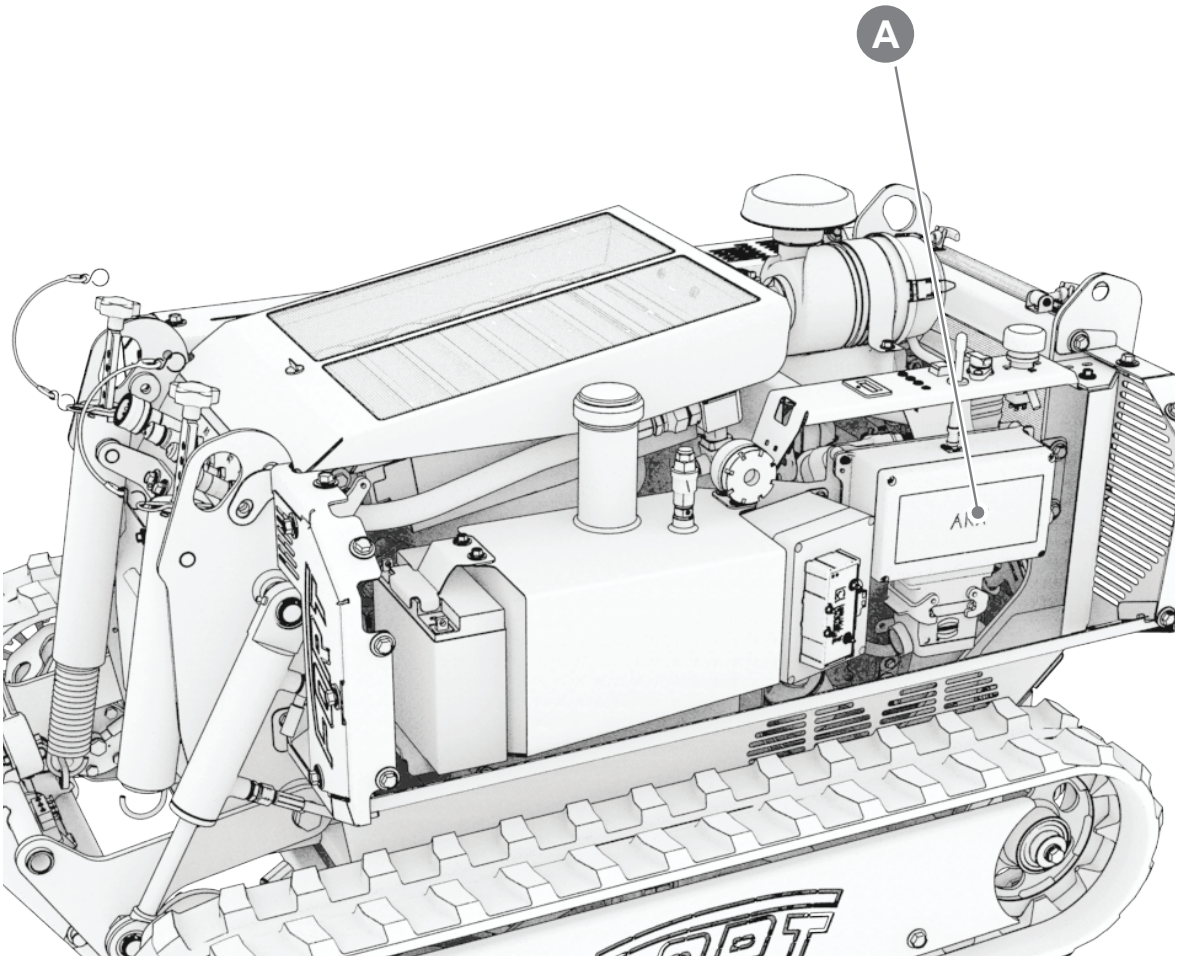
6.3.1 Technical documentation and radio control box

The radio control equipment and the technical documentation are kept in a box that is provided with the machine.

The technical documentation is an integral part of the machine, it must be kept and looked after carefully, it must accompany the machine so that it is always available to the operator.

6.4 RECEIVER UNIT

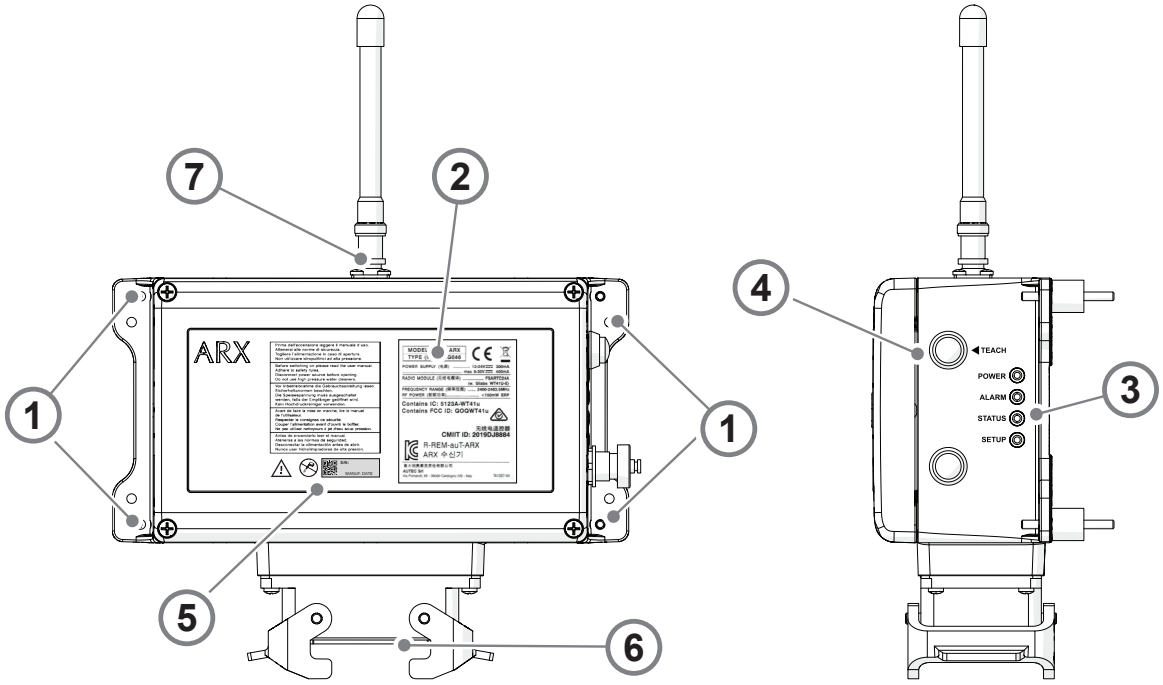
The receiver radio unit (**A**) is on the left side. It can only be accessed by removing the left side casing.



CAUTION

If you wish to clean the machine with a pressure washer, do not direct the jet towards the machine left side. Take care to cover and insulate the area of the battery, fuse box and receiver.

6.4.1 Receiver unit description



POS.	DESCRIPTION
1	Fastening holes
2	Rating plate
3	LED
4	TEACH button
5	Radio control unit identification plate
6	Plug
7	Aerial

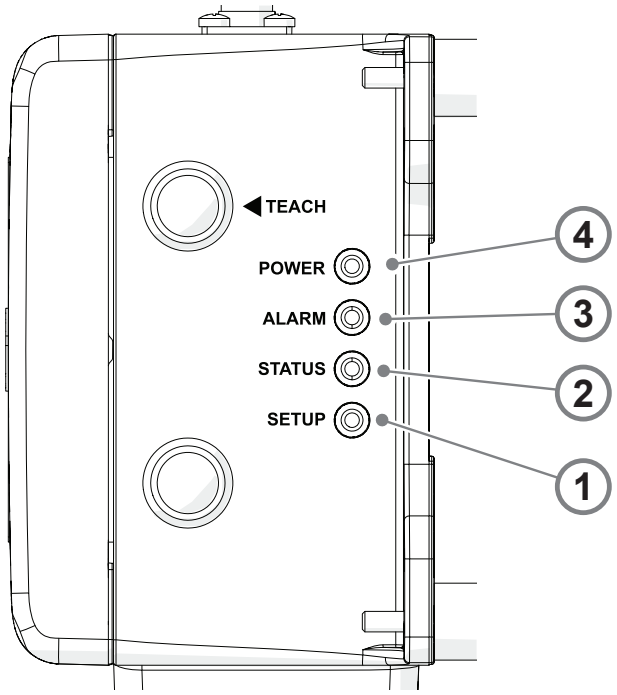
6.4.2 Receiver identification plates

The following plates are on the receiver unit:

Position	Plate	Information contained
Receiver unit cover	Radio control unit identification plate	The serial number of the radio control (S/N), a QR code and the year of manufacture.
	Rating plate	The MODEL, TYPE and main technical data of the receiver unit, the markings and any radio control trademarks.

6.4.3 Receiver unit light signals

The receiver unit features four LEDs



POS.	DESCRIPTION
1	SETUP
2	STATUS
3	ALARM
4	POWER

The meaning of the light signals will be described in the following paragraphs.
The possible actions to be taken are reported in the section ***"6.5.4 Light signals"***

6.4.4 POWER LED

The POWER LED indicates the status of the receiver unit and the radio connection.

POWER LED	
SIGNAL	**Meaning**
Off	The receiver unit is off.
On	The receiver unit is powered up and there is no radio connection
Flashing	The receiver unit is powered up and there is a radio connection

6.4.5 ALARM LED

The ALARM LED indicates faults in the receiver unit.

ALARM LED	
SIGNAL	**Meaning**
Off	The receiver unit is working properly.
Flashes once	There is an error on outputs SO1 and SO2 configured as STOP outputs.
Flashes twice	There is an error on outputs SO1 and SO2 configured as SAFETY outputs.
Flashes three times	The is an error on the outputs relative to the direction commands.
On	There is a configuration error on outputs SO1 and SO2.

6.4.6 STATUS LED

The STATUS LED signals the presence of faults in the outputs or power supply and indicates the reception of data from the transmitter unit.

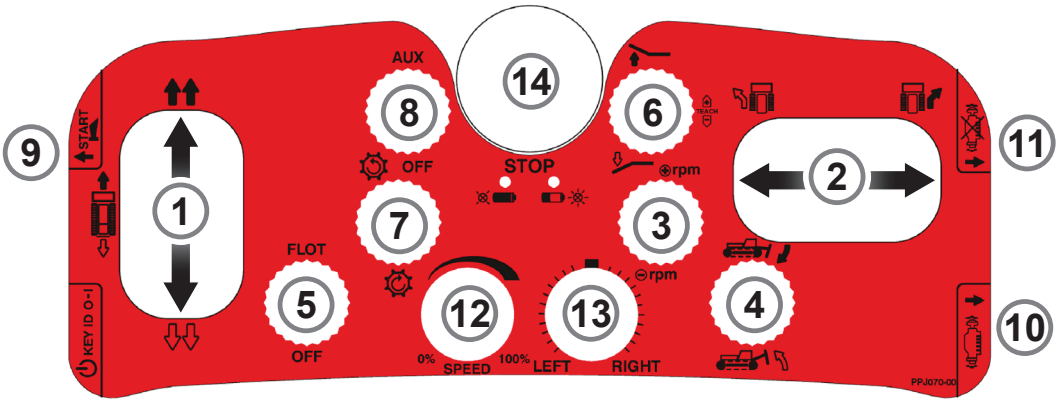
STATUS LED	
SIGNAL	**Meaning**
Off	The radio electric connection is absent.
Flashes slowly	There is an overvoltage in the power supply.
Flashes quickly	The Receiver unit receives data from the transmitter unit.
On	There is an overcurrent in one of the PWM proportional outputs.

6.4.7 SETUP LED

The SETUP LED indicates the status of the data memory and code key depending on the operating status of the receiver unit.

STATUS LED	
SIGNAL	**Meaning**
Off	The receiver unit is working properly.
Flashes once	There is an error in the code key
Flashes twice	There is an error in the memory card.
Flashes three times	Within the REMOTE SETUP procedure,the rest position values of the proportional outputs are being calibrated (see the installation manual).
Flashes 4 times	within the REMOTE SETUP procedure the direction of movement of the joystick axis is reversed (see the radio control installation manual)
Flashes quickly	Within the REMOTE SETUP procedure: • more than one analogue controller is activated simultaneously, or • the factory default values are being restored (see the radio control installation manual)
On	Within the REMOTE SETUP procedure the maximum and minimum values of the proportional outputs are being calibrated (see the radio control installation manual).

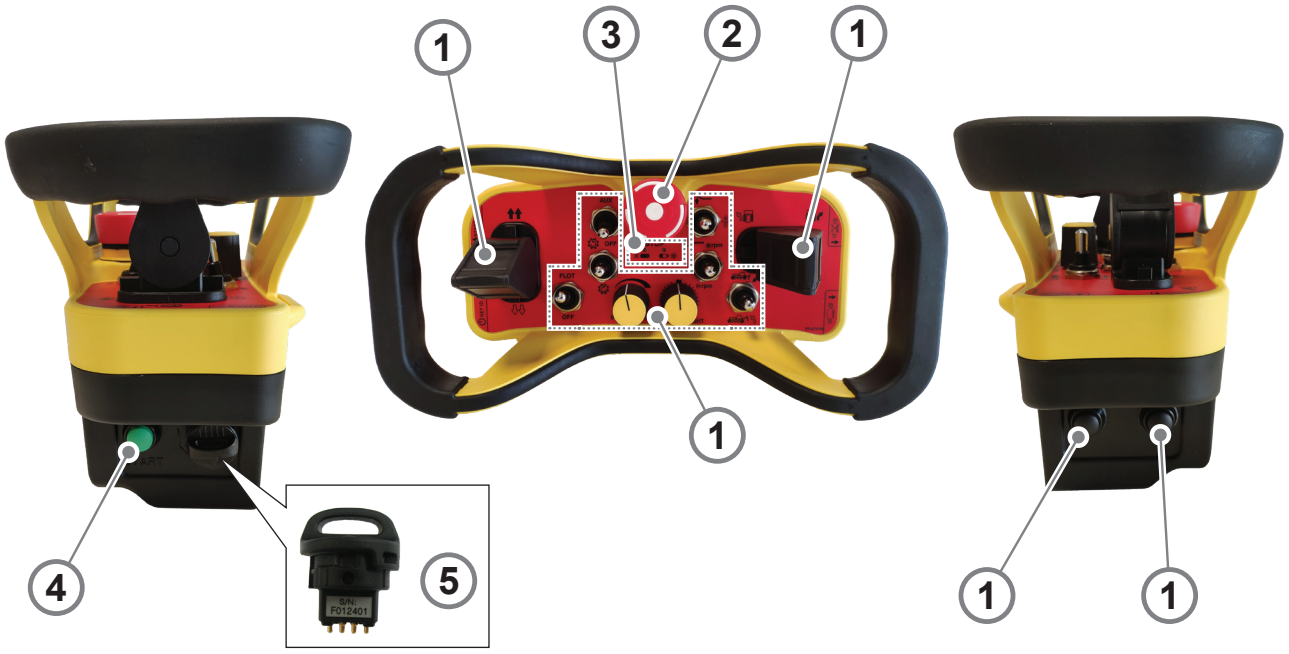
6.5 TRANSMITTER UNIT



TRANSMITTER FUNCTIONS	
1	Forward movement/ backward movement joystick
2	Steering joystick
3	Engine rpm increment switch
4	Tool lifting
5	Floating function
6	Open / close mulching head guard switch
7	Mulching head clockwise / anti-clockwise rotation switch
8	AUX
9	Radio control - receiver unit connection search button
10	Engine ignition button
11	Engine power down button
12	Speed of progress regulation potentiometer
13	Right / left direction corrector potentiometer
14	Emergency button

- The transmission frequency for EU member states is 863 - 870 MHz;
- RF POWER is < 25 mW ERP;
- The operating radius of the radio control is 150 metres. Obviously, it is recommended that the machine be visually monitored at all times so do not operate it at a distance greater than 50-80 metres.

6.5.1 Transmitter description



POS.	DESCRIPTION
1	Actuators (joystick, selector switches, buttons)
2	Emergency Stop Button
3	LED
4	ENTER button
5	S-KEY (electronic ignition key)

6.5.2 *Transmitter unit identification plates*

The following plates are present in the transmitter unit.

POS.	PLATE	POSITION	INFORMATION CONTAINED
1	Radio control unit identification plate.	Key ID 0-1 Battery housing	The serial number of the radio control
2	Transmitter unit identification plate.	Battery housing	The year of manufacture, the battery code and the identification number of the transmitter unit (TU ID)
3	Rating plate.	Rear of transmitter unit.	The MODEL, TYPE and main technical data of the transmitter unit, the markings and any radio control trademarks.

6.5.3 *Transmitter light signals*

The transmitter unit features two LEDs.

1	Green LED
2	Red LED

In both cases there is always a green LED (**1**) and a red LED (**2**) that give information concerning the radio control.

6.5.4 *Light signals*

The meaning of the signals provided by the green LED (**1**), when the red LED (**2**) is off, is described in the following table.

GREEN LED	
SIGNAL	**Meaning**
Green LED off. Red LED off.	The transmitting unit is off.
The green LED flashes rapidly. Red LED off.	There is no communication between the transmitter and the receiver units.
The green LED flashes slowly. Red LED off.	The radio control is enabled and the units communicate with one another.

The signals given by the red LED (**2**) indicate a malfunction of the radio control.
The meanings of these signals and possible actions to be taken are described in the following table:

RED LED [a]		
SIGNAL	**Possible cause**	**Solutions**
The green LED flashes rapidly. The red LED[a] flashes for 3.5 minutes.	The battery is not sufficiently charged or the Transmitter Unit has been on for eight hours[b].	It is necessary to replace the battery with a new one (see section ***"6.5.7 Transmitter battery"***) or turn off the Transmitter Unit and restart the Radio Control.
The green LED flashes slowly. The red LED[a] flashes for 3.5 minutes.		
The green LED is off. The red LED[a] flashes ONCE for a very long time.	The transmitter unit is not working properly.	Carry out the address storage procedure.
When the Radio Control is started, the green LED is off and the red LED[a] flashes ONCE for a long time[b].	The STOP button is pressed.	Remove the STOP BUTTON.
When the Radio Control is started, the green LED is off and the red LED[a] flashes TWICE for a long time[b].	At least one of the actuators relative to the D2-D20 controllers and the SAFETY is active.	Move the actuators into the rest position.
When the Radio Control is started, the green LED is off and the red LED[a] flashes THREE TIMES for a long time[b].	The battery is very low.	It is necessary to replace the battery with a new one (see section ***"6.5.7 Transmitter battery"***).
When the Radio Control is started, the green LED is off and the red LED[a] flashes FOUR TIMES for a long time[b].	At least one of the actuators relative to the A1-A8, H1-H8 and L1-L8 controllers is active.	Move the actuators into the rest position.

(a) -When the red LED comes on it is accompanied by a beep.
(b) – The signal is followed by the transmitter unit turning off
(c) - At the end of the alarm, the transmitter unit switches off automatically.

CAUTION

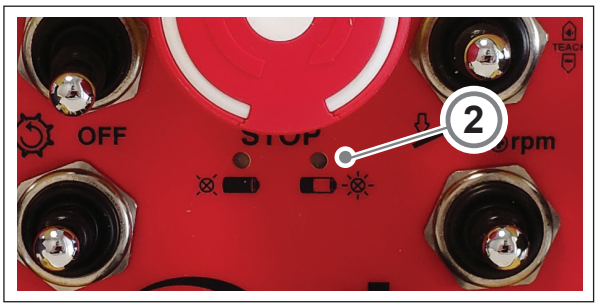
If the problem persists after implementing the indicated solution, contact the Machine Manufacturer's customer care.

6.5.5 Audible signals

The transmitter unit is fitted with an audible warning device that is activated when:

- the battery is running low;
- the transmitter unit has been on for eight hours;
- the transmitter unit is not working properly;
- the STOP button is pressed or faulty when the radio control is started;
- the SAFETY command is active when the radio control is started;
- one of the commands between D2 and D20 is active when the radio control is started;
- one of the controllers between A1 and A8 is active when the radio control is started;
- one of the commands between H1 and H8 is active when the radio control is started;
- one of the commands between L1 and L8 is active when the radio control is started;
- the battery is flat when the radio control is started.

The audible warning device is activated each time the red LED (**2**) lights up. The meaning of the red LED (**2**) turning on, the audible warning device being activated and any action that needs to be taken are described in section ***"6.5.4 Light signals"***.



6.5.6 S-KEY

There is an ignition key in the radio control referred to as the S-KEY. The radio control cannot operate if the ignition key has not been inserted into the transmitter unit.

- The S-KEY allows the transmitter unit to be powered.
- The address of the radio control is stored in the S-KEY.
- Therefore, the S-KEY must be used exclusively with the transmitter unit of the radio control to which it belongs.
- Because address of the radio control is stored in the S-KEY it must be used with the utmost care.

WARNING

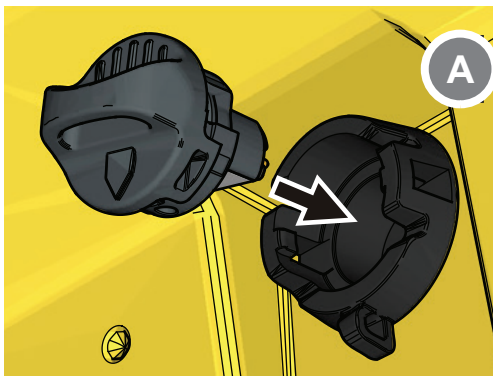
Use the S-KEY only for the transmitter unit with which it has been supplied.

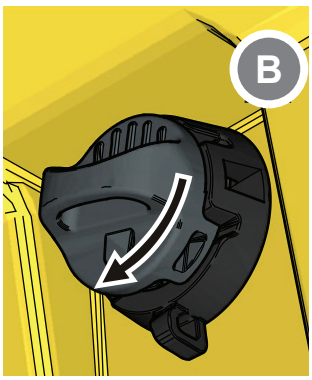
INSERTING THE S-KEY

To insert the s-KEY, carry out the following operations:

A) Insert the S-KEY into the relative housing.

B) Turn the S-KEY clockwise.



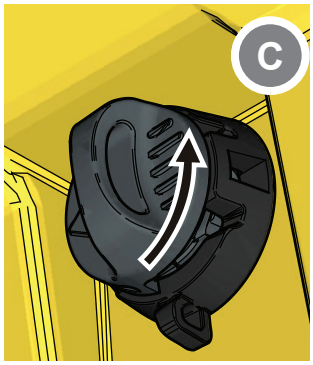


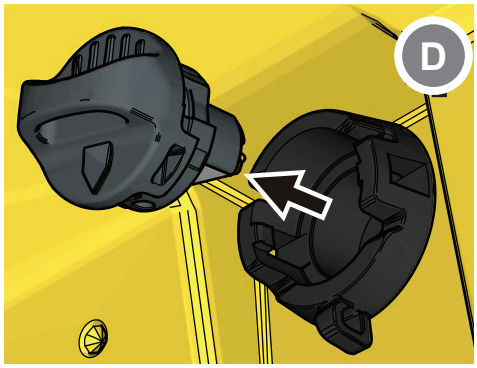
REMOVING THE S-KEY

To remove the s-KEY, carry out the following operations:

C) Turn the S-KEY anticlockwise.

D) Pull the S-KEY to remove it from its housing.

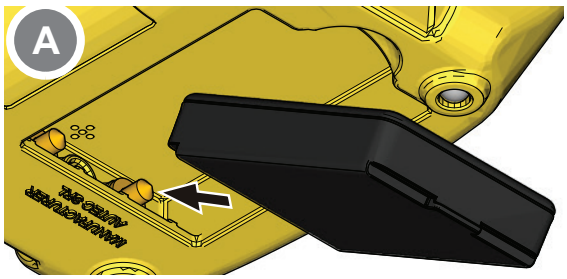


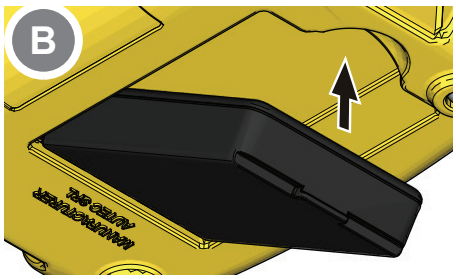


6.5.7 Transmitter battery

INSERTING THE BATTERY

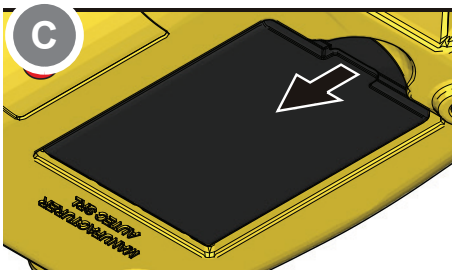
A) Push the battery towards the contacts on the transmitter unit.
B) Insert it into the slot.

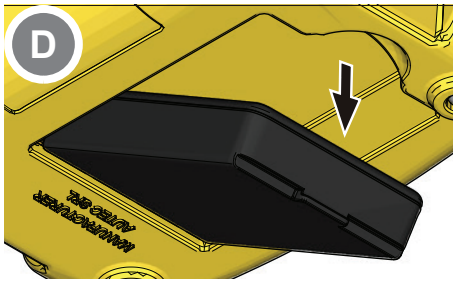




REMOVING THE BATTERY

C) Push the battery towards the contacts on the transmitter unit.
D) Pull it out of the slot.





CAUTION

Remove the battery, if possible, whenever the transmitter unit is not being used.

BATTERY LOW

A battery can normally operate for approximately 3-4 hours. This is obviously an average value. One should also consider how many operations are carried out as this will determine a higher / lower power consumption.

The transmitter unit indicates if the battery is not sufficiently charged (the red LED flashes and an audible alarm is emitted).

The transmitter unit switches off automatically 3.5 minutes after the warning was issued.

CAUTION

Place the machine in a safe condition and replace the battery with one that is charged.

The battery removed should be recharged. It can be charged in approximately 2 hours and 40 minutes.

6.6 START-UP

WARNING

- **Before starting up the machine, the information and safety instructions contained in the user manual must be read and understood.**
- **Professional operators must be instructed and trained.**
- **Familiarise yourself with the controls before starting operation.**

DANGER

- **DO NOT take drugs or drink alcohol before or while using the machine and tools. The use of drugs and alcohol or being in a non-optimal psycho-physical condition can affect responsiveness and coordination, and therefore, impair the capability to use the equipment safely.**
- **Before using the machine or equipment, the operator who usually takes medicines must consult a physician as regards the side effects of the drug that might impair the ability to use the equipment safely.**
- **NEVER consciously allow anyone to use the machine when their attention or coordination is compromised.**
- **This could result in serious injuries or death of the operator or third parties if the operator is under the influence of drugs or alcohol.**

6.7 STARTING THE ENGINE

DANGER

- **Observe the safety instructions.**
- **Start the machine only outdoors, never indoors, otherwise you could be poisoned by exhaust fumes.**

DANGER

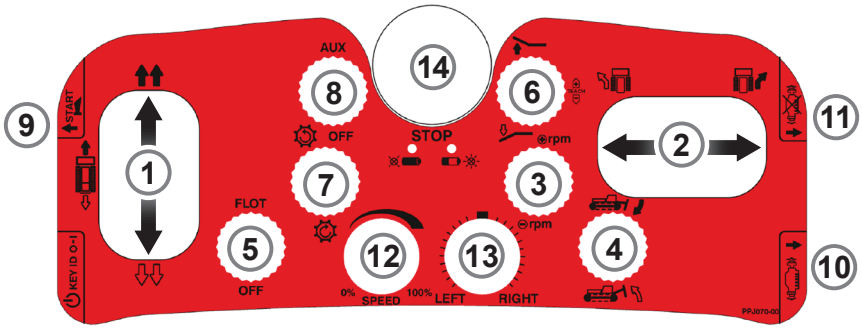
The engine exhaust contains carbon monoxide, a harmful gas that can kill in minutes. It is NOT visible, it has no taste or smell. Even if you do not breathe in exhaust gases, you may still be exposed to carbon monoxide. If you feel sick, with a feeling of discomfort or weakness when using the product, stop the engine and get out into the fresh air IMMEDIATELY. Seek medical attention. Carbon monoxide poisoning may have occurred.

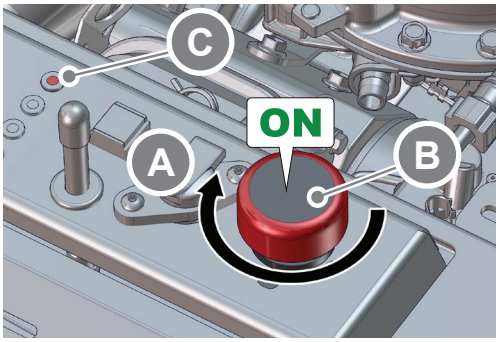
CAUTION

Before starting the machine, check the fuel level and fuel up if necessary.

6.7.1 Starting the machine using the battery

1) Activate the transmitter by turning the emergency button (**15**) clockwise.
2) Set the emergency button (**B**) of the machine to **ON** by turning the mushroom button (**A**) clockwise.
3) The engine oil pressure light (**C**) is activated.
4) Press the radio control/receiver connection search button (**9**) to enable the connection between transmitter and receiver.
5) You will hear an audible signal (horn) to confirm that the connection has been established.
6) Press the engine on button (**10**).
7) Increase the number of rpms by pressing the switch (**3**).





WARNING

- **The starter motor must only be operated continuously for a maximum of 5 seconds.**
- **Trying to start the engine for too long will damage the starter motor.**
- **Wait one minute before attempting to start again.**

BURNT OUT STARTER MOTORS ARE NOT COVERED BY THE WARRANTY.

CAUTION

- **If for any reason the radio control loses the connection signal between the transmitter and receiver, the machine stops immediately and the engine revs will be reduced to idle speed.**
- **The connection between the transmitter and receiver has to be re-established in order to continue.**
- **When the connection is lost, it cannot be re-connected automatically and a new connection has to be established.**

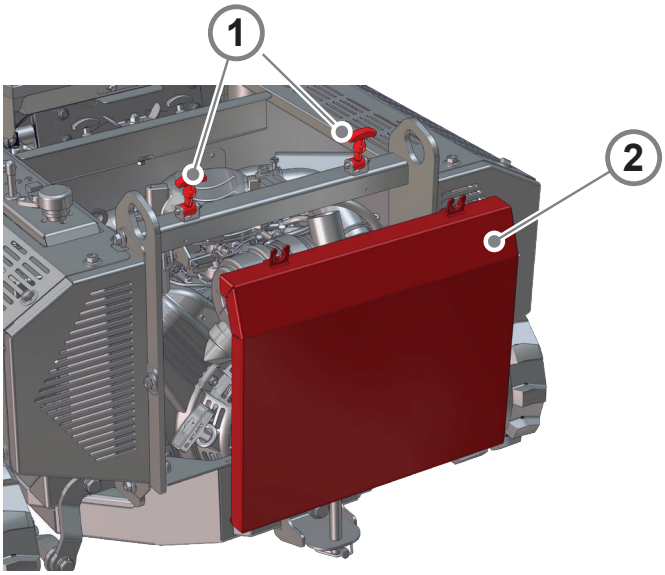
6.7.2 Starting the machine with low battery

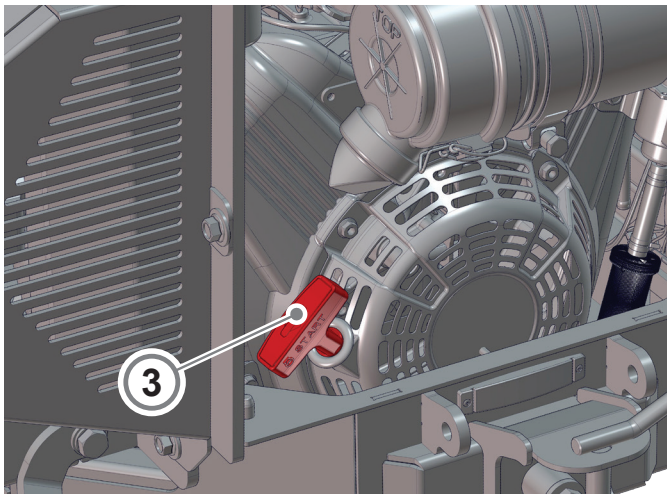
To start the machine with a low battery, proceed with one of the following methods:

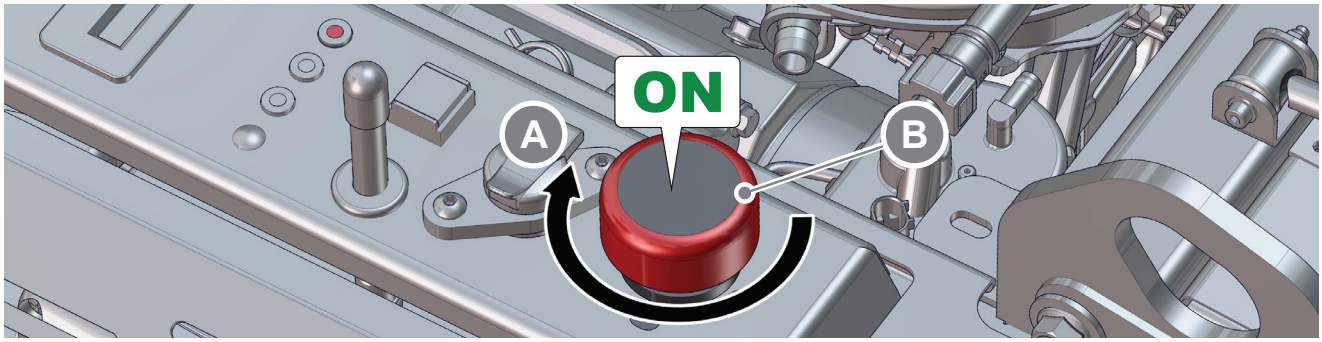
- Starting with an auxiliary battery (*"7.2 Starting the engine using an auxiliary battery"*);
- Starting the engine manually (cranking).

Starting the engine manually (cranking):

8) Release the two tie rods (**1**);
9) Remove the rear panel (**2**);
10) Set the emergency button (**B**) of the machine to **ON** by turning the mushroom button (**A**) clockwise.
11) Hold the handle (**3**) of the starter motor cable firmly. Pull the starter crank slowly until feeling some resistance and then pull quickly.

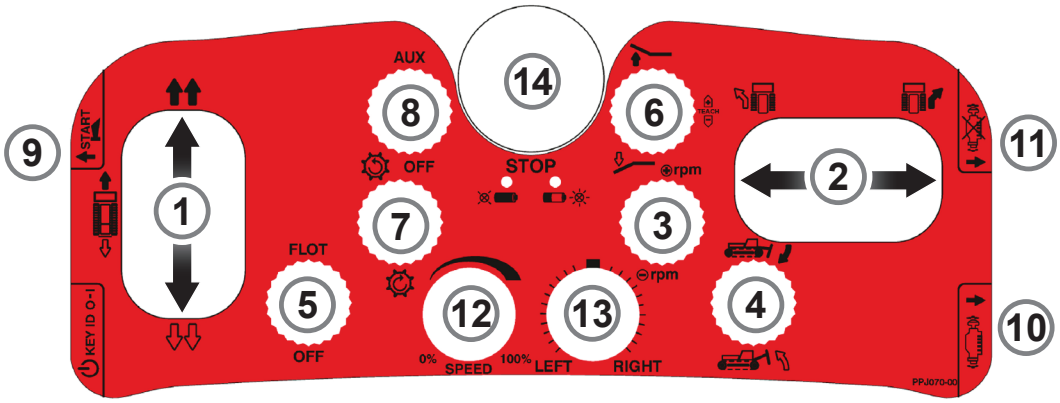






CAUTION

It is possible that the quick return of the starter cable (kickback) will pull your hand and arm towards the engine before you can let go of the crank. This can cause bone breakage, fractures, contusions or sprains. To avoid kickback when starting the engine, first pull slowly until feeling some resistance, then pull quickly.



6.7.3 Stop engine

Do the following to stop the engine:

1) lower the number of rpms by pressing the switch (**3**).
2) Wait 30 seconds.
3) Press the engine off button (**11**);
4) Press the emergency button (**14**) to turn off the radio control.
5) Press the machine's emergency stop button

6.7.4 Emergency stop and reset

An emergency stop can be carried out as follows:

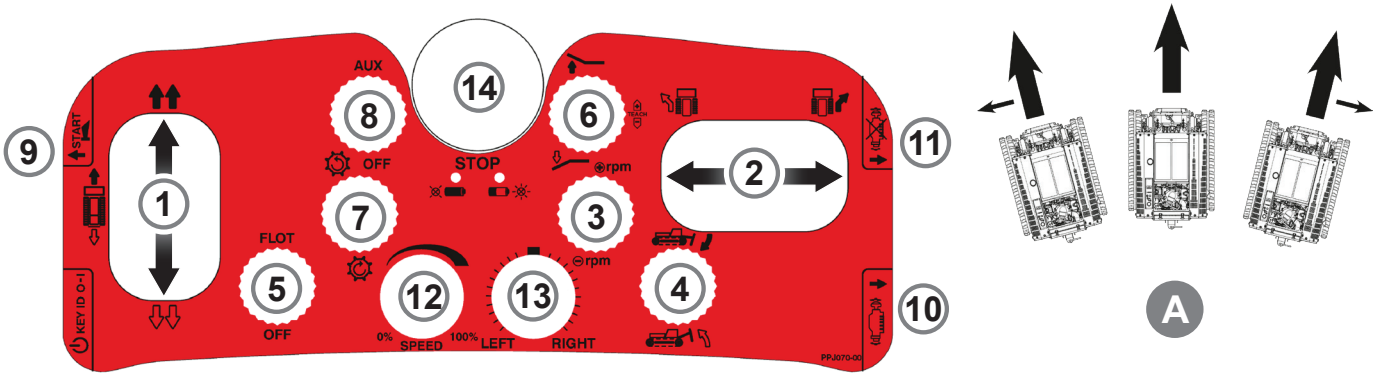
A) Pressing the machine's emergency stop button.
   - All the functions stop, including the engine.
   - In order to operate the machine again, the emergency button has to be reset and the radio control re-activated by carrying out the connection procedure.

B) Pressing the emergency button on the radio control:
   1) In case of an emergency, press the emergency button (**14**) on the radio control;
   2) The engine will continue to run at idle speed and all operational functions will be cancelled;

In order to operate the machine again, the emergency button (**14**) has to be reset and the procedure for connecting the radio control carried out.

CAUTION

- **Always remember to turn off the ignition key after having turned off the engine. If the key remains in the "ON" position, the electric fuel pump can overheat and draw in air causing it to break. Additionally, if it is left like this for a long time, it uses a large amount of power and damages the battery.**
- **FORT RESERVES THE RIGHT TO REPLACE DAMAGED PARTS ONLY AFTER HAVING EXAMINED THEM.**



6.8 MACHINE HANDLING WITH TRANSMITTER

6.8.1 *Adjusting the engine speed*

The switch (**3**) is used to increase and decrease the engine speed.
Move the switch (**3**) to make the required changes.

6.8.2 *Moving the machine forwards and backwards*

To move the machine forwards or backwards, move the left-hand side joystick (**1**) forwards or backwards.
It is a proportional control so the more you move the joystick the faster the machine moves.
The top speed that can be achieved will be determined by the potentiometer position (**12**).

6.8.3 *Speed potentiometer*

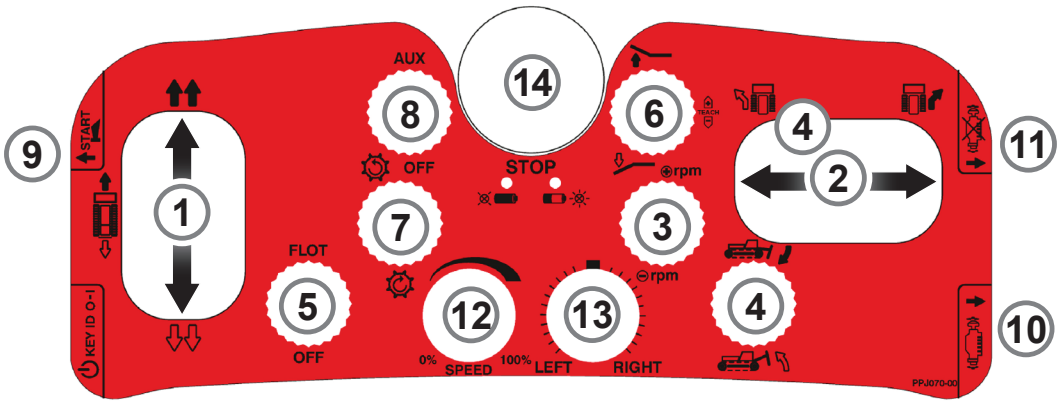
The potentiometer (**12**) regulates the maximum speed of the machine from 0 to 100%. The potentiometer setting chosen will depend on the various work conditions that the operator will come across and should always ensure maximum control over the machine.

6.8.4 *Steering*

The machine is steered by using the right-hand side joystick (**2**). Move the joystick to the right or left in to steer the machine.
Used in combination with the left-hand joystick (**1**) it makes it possible to steer the machine by 180° (counter-rotation).

6.8.5 *Steering bias control*

The potentiometer (**13**) enables the direction of travel to be compensated when working on steep slopes (**A**).
Turn the potentiometer to the right or left to correct the path of the machine.



6.9 LIFTER

The height of the equipment attached to the lifter can be adjusted using the right-hand joystick (**4**) (see authorised equipment). Move the joystick forwards to lower the equipment, move it backwards to lift it.

WARNING

- **It is recommended not to adjust the lifter when the equipment is in operation to prevent cutting residues from being thrown long distances.**
- **It is recommended not to adjust the lifter if you are on a slope with the front of the machine facing uphill.**

6.9.1 How to attach equipment

DANGER

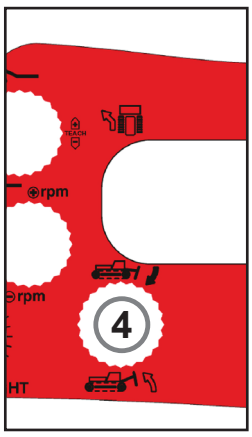
- **When coupling or uncoupling equipment, stand at the side of the machine away from the equipment (at least one metre away).**
- **Before connecting the quick hitches, the equipment must be connected to the machine mechanically.**

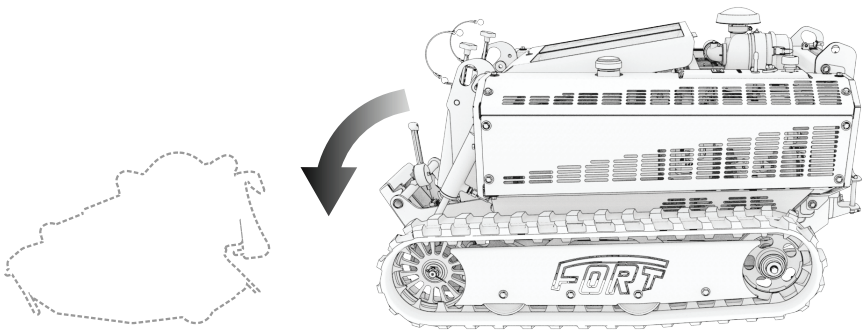
WARNING

- **Read and follow the instructions provided to ensure safety during the use of the equipment moved by the PTO.**
- **Comply with the indications provided by the equipment manufacturer.**
- **Use the safety devices prescribed and make sure that they are in good condition.**
- **Make sure that the equipment is correctly connected and that it does not hit other parts of the machine when raised.**

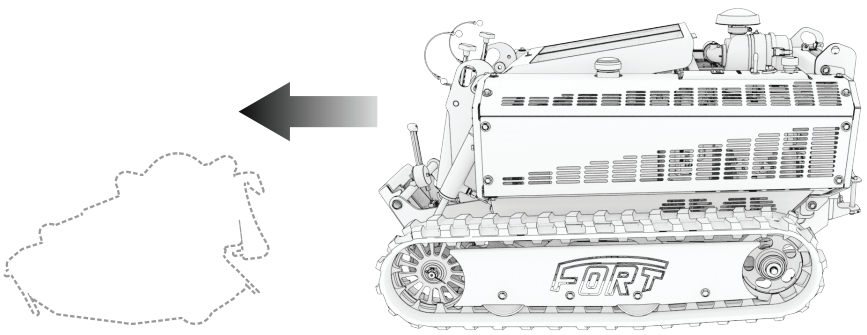
The machine is fitted with a lifter on which the different approved equipment can be attached. To do this, follow the steps below:

1) Start the engine and connect to the radio control (see section ***"6.7 Starting the engine"***).
2) Lower the lifter as far as possible using the right-hand joystick (**4**).

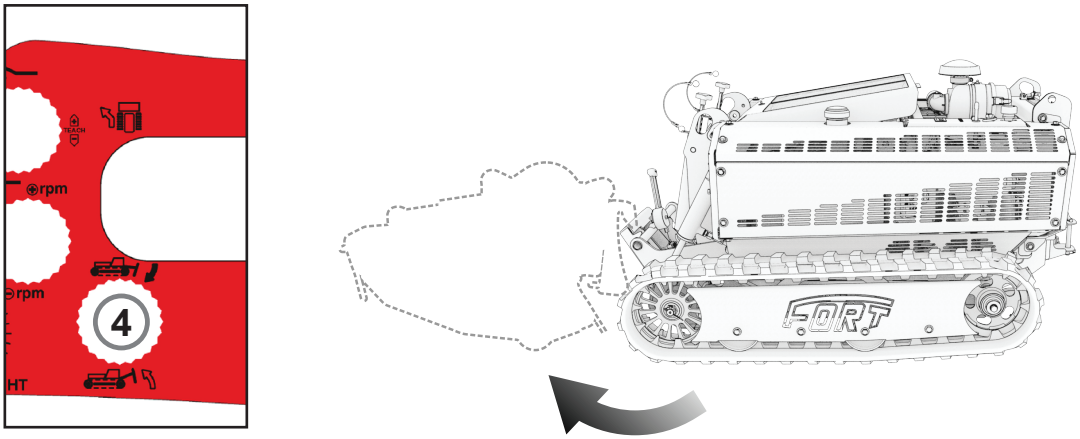




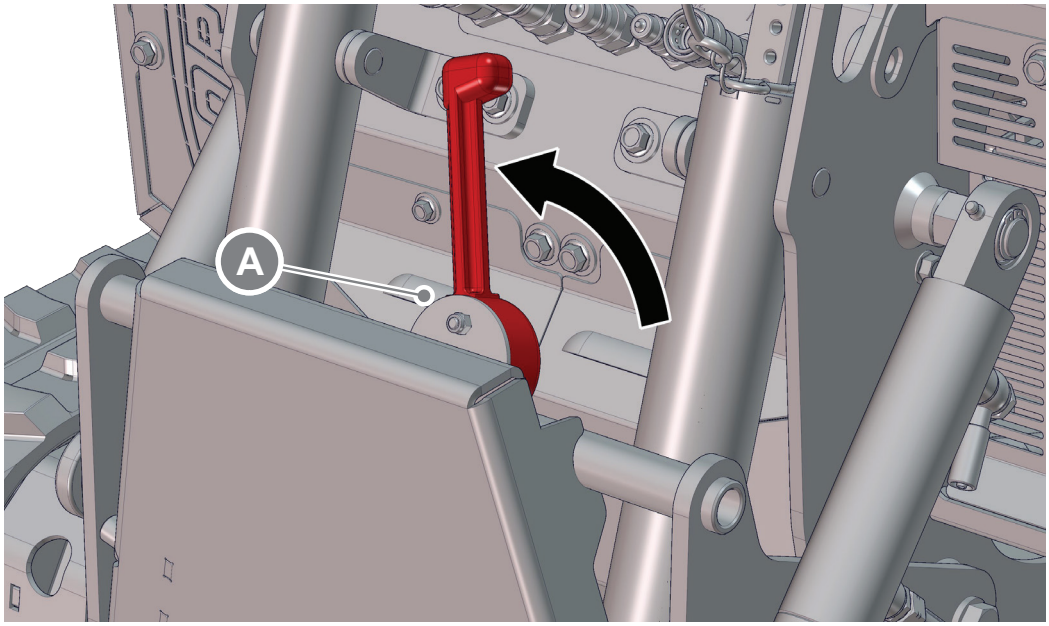
3) Slowly move the MONOLITH until it is close to the mounting plate of the tool that was previously placed in front of the machine.



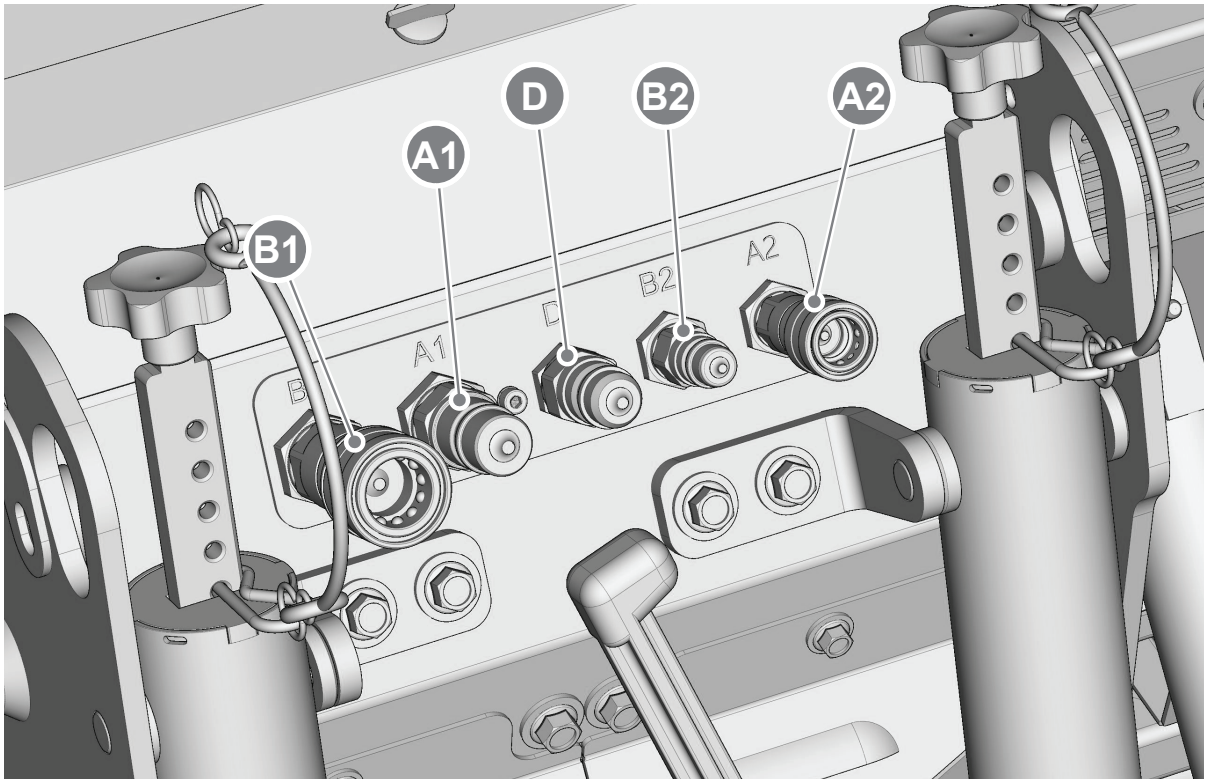
4) Using the right-hand joystick (**4**), slowly raise the lifter to attach the equipment.



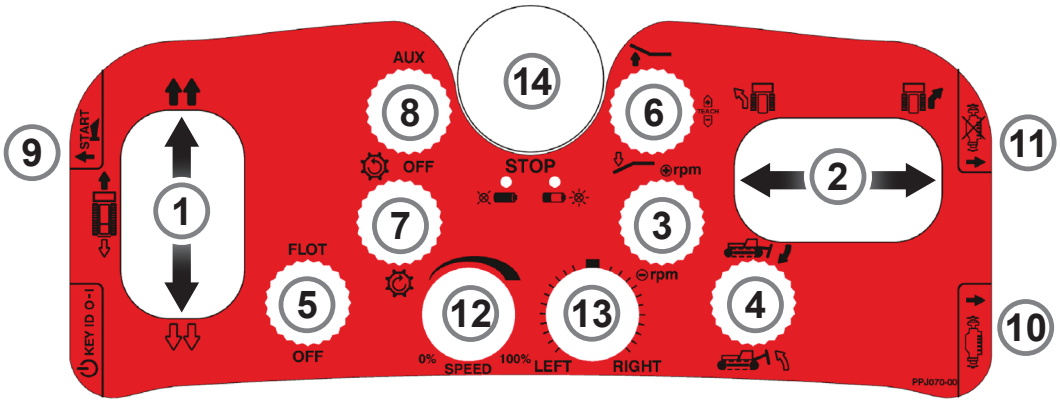
5) Use the lever (**A**) to secure the equipment to the lifter.
6) Turn off the engine.



7) Connect the hydraulic power lines to the quick couplings on the front side of the machine, making sure that you clean the couplings before connecting them. The central coupling concerns the drainage line **D**, while the lines to be connected to the engine are **A1** and **B1**.
8) If present, connect the hydraulic hoses for the services **A2** and **B2** to the quick couplers before connection.



POS.	DESCRIPTION
A1	Engine supply line
B1	Engine return line
D	Drainage line
A2	Service supply line
B2	Service return line



6.9.2 *Operating the tool*

The rotor is controlled by the switch (**7**). Follow the instructions below to start it.

- Select the cutting direction by moving the switch (**7**). Upwards to select anti-clockwise rotation and downwards for clockwise rotation.
- At this point, you can increase the speed of the engine to the required working speed by pressing switch (**3**).

6.9.3 *Stopping the tool*

Reduce the speed of the engine using the switch (**3**).

To stop the rotor / tool, move the switch (**7**) to the central position.

6.9.4 *Opening the head guard / auxiliary function*

Moving the switch (**6**) upwards actuates the cylinder that opens the head guard and / or the auxiliary function.

Moving it downwards closes the guard and / or the auxiliary function.

CAUTION

If you use equipment other than a mulching head, refer to its use and maintenance manual as this equipment may have a different use.

6.10 ADJUSTING THE LIFTER SPRINGS

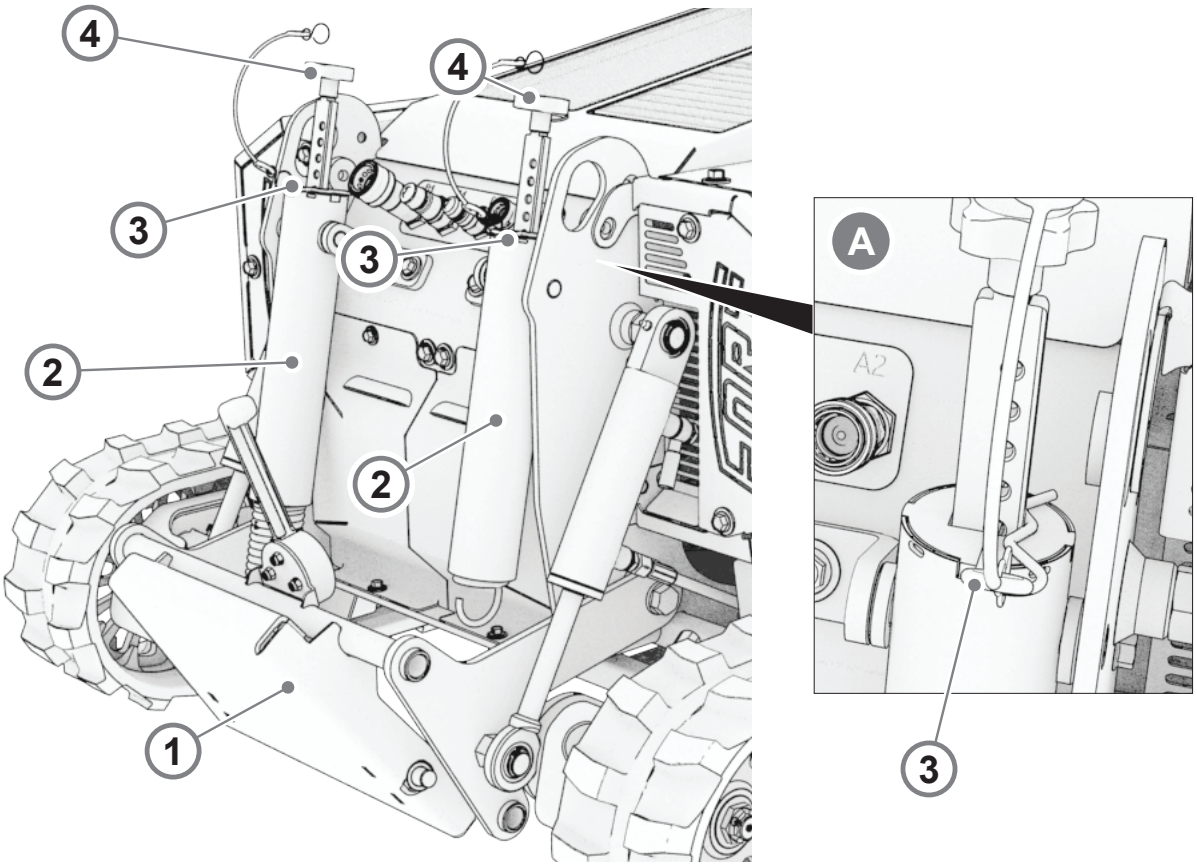
WARNING

Before adjusting the springs (2) of the lifter (1) disconnect the equipment and lift the lifter completely.

By adjusting the height of the springs (**2**) of the lifter (**1**), the weight of the equipment in contact with the ground is changed during the float function. The higher the rods (**4**) are set, the more influence the springs have on keeping the equipment off the ground.

For adjustment, proceed on both tie rods (**2**) as follows:

1) Place the machine on level ground with the engine switched off.
2) Pull up the rod (**4**) of the tie rod (**2**) and hold it in position.
3) Pull out the cotter pin (**3**).
4) Choose, depending on the desired height, one of the adjustment holes (**A**) positioned on the rod (**4**).
5) Insert the cotter pin (**3**) into the desired hole (**A**).
6) Follow the rod (**4**) downwards until you reach the end stop of the cotter pin (**3**).

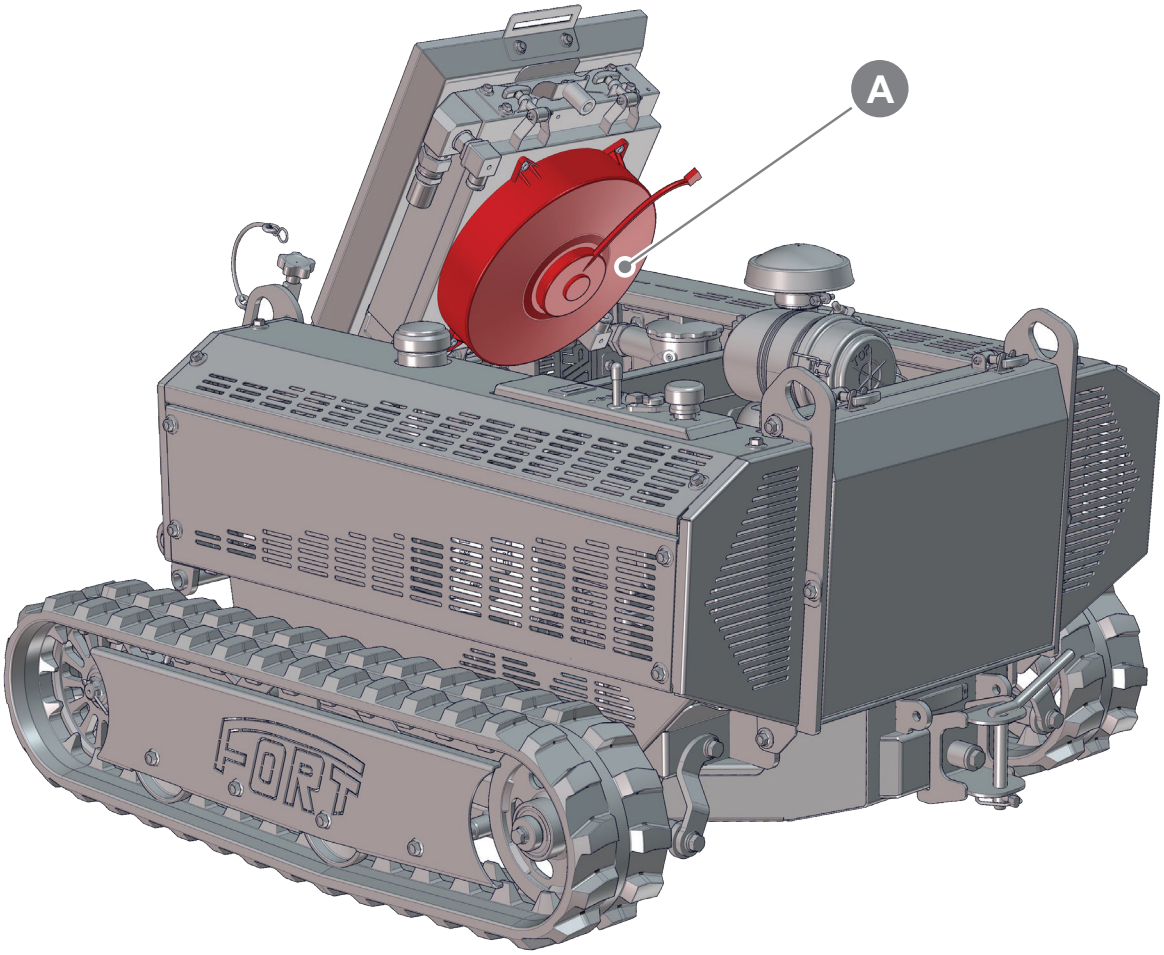


6.11 SELF-CLEANING FAN

MONOLITH is equipped with a fan (**A**) that allows it to self-clean the hydraulic oil radiator grille. This function is activated independently by MONOLITH every three minutes of operation.

WARNING

- **Make sure that there are no people or animals close to the machine or in the direction of the radiator to prevent them being covered with dust.**
- **Maintain a distance of at least 10 meters from the machine and wear the recommended PPE.**



06-Ventola auto pulente (MONOLITH)

6.12 FUSES AND RELAYS

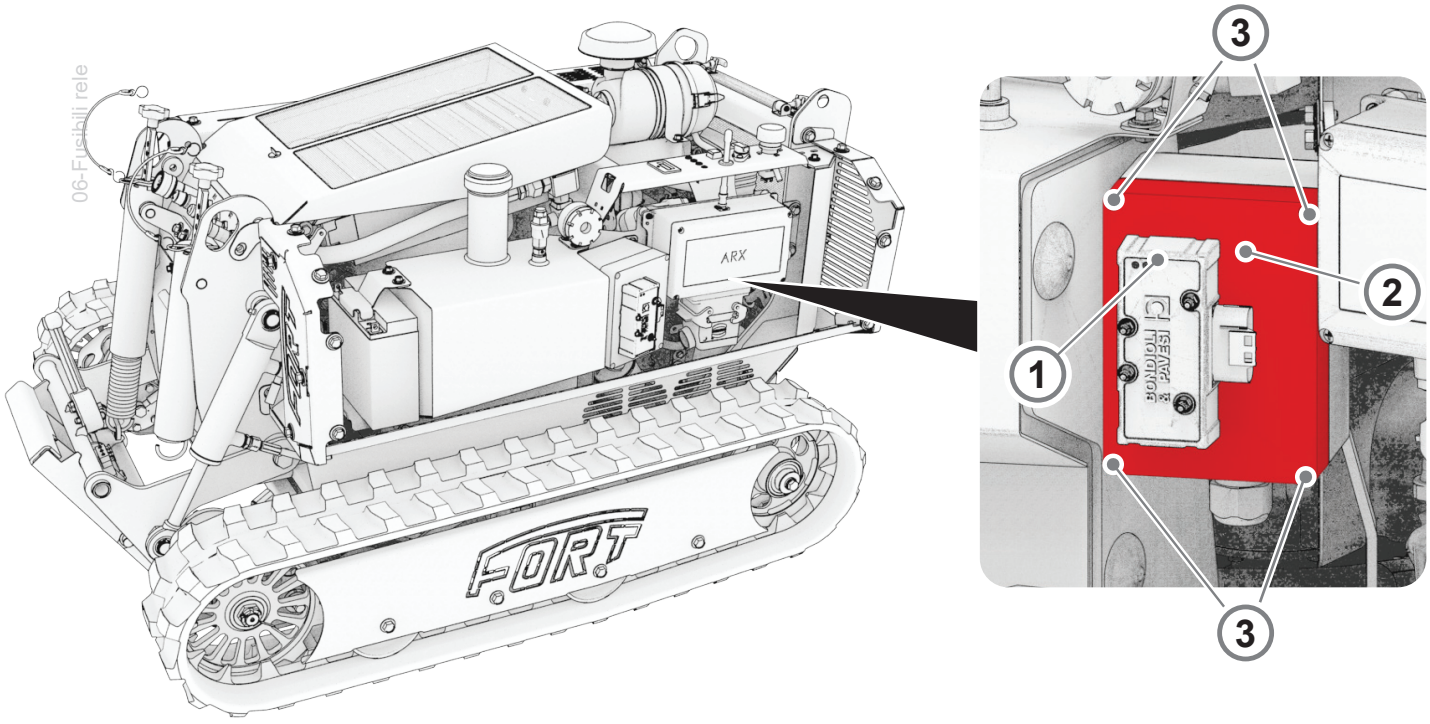
WARNING

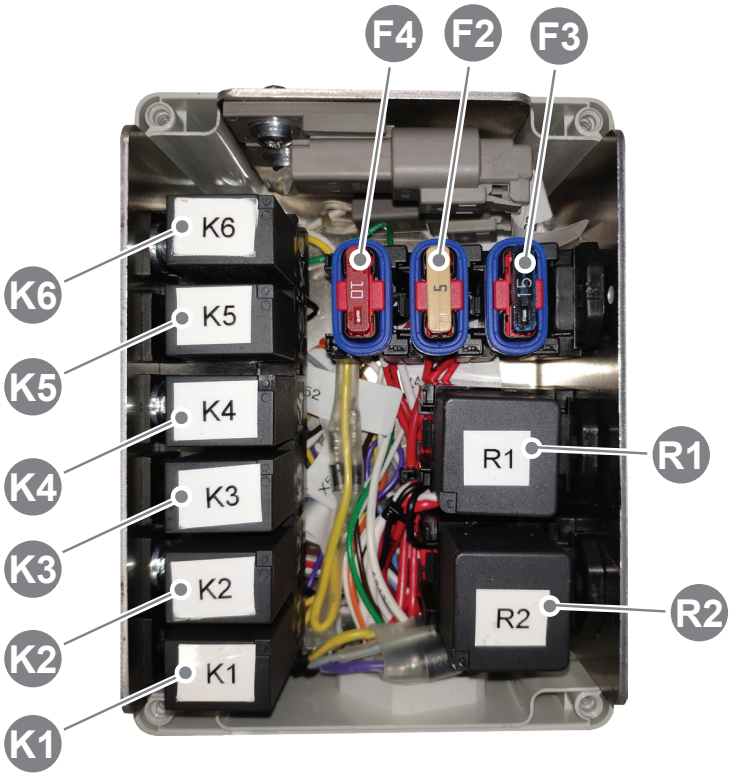
- **Before replacing a fuse, make sure that you have removed the ignition key.**
- **If the fuses are oxidised, corroded or not properly held in position, replace them with fuses that have the same rating.**
- **If the engine does not turn on when the starter switch is placed in the ON position, check the main fuse and if necessary, replace it.**

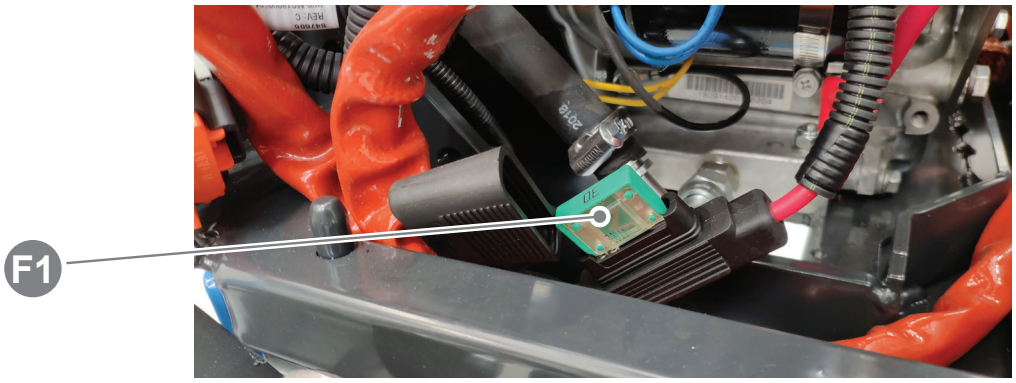
6.12.1 Fuses and relays of the central control unit

The fuses and the relays are located in the box (**1**) at the left side of the machine; remove the cover (2) and replace the fuses and relays if necessary.

To access it, first loosen the four screws (**3**) that secure the cover.



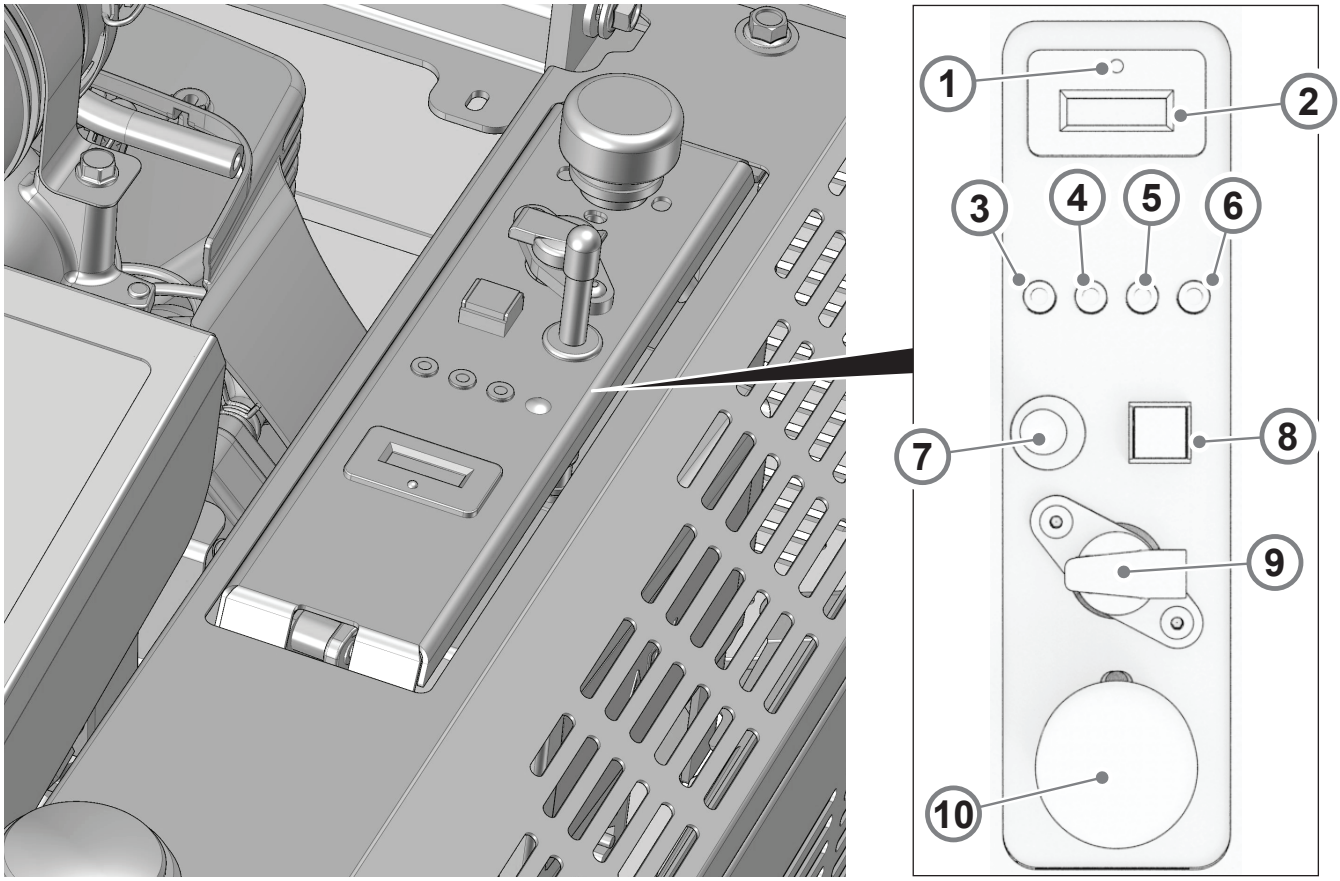




Position	A	Function
F1	30	General positive
F2	5	Emergency mushroom button
F3	15	Power supply
F4	10	12 V socket

Position	Function
K1	Start-up
K2	Power down
K3	Engine on
K4	Engine oil low pressure
K5	Engine rpm
K6	Fuel pump
R1	Intake electric fan
R2	Ventilation electric fan

6.13 CONTROL PANEL



06-Pannello comandi (MONOLITH)

POS.	DESCRIPTION
1	Engine diagnostic LED
2	Engine rpm counter
3	(Empty)
4	LED warning light - Low hydraulic oil level
5	LED warning light - Hydraulic oil temperature
6	LED warning light - Engine oil pressure
7	Receiver antenna
8	Working light switch
9	12 V socket
10	Emergency stop button

6.13.1 HOUR METER / REV COUNTER / DIAGNOSTICS

MONOLITH is equipped with an instrument which has the function of hour meter, rev counter (**2**) and also has an LED (**1**) reserved for the diagnosis of the engine.

Instrument operation:

- Emergency mushroom (**10**) released (ON), engine off: display and diagnostic LED off.
- Emergency mushroom (**10**) released (ON), in engine starting or stopping: the display shows the hours for a short time; moreover the diagnostic LED remains on (steady light).

- Emergency mushroom (10) released (ON), engine running and no malfunction: the display shows the engine revolutions; the diagnostic LED goes off after starting.

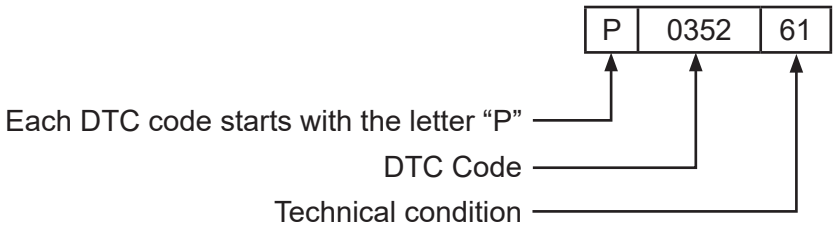
- Emergency mushroom (10) released (ON), engine running with malfunction: the display shows the engine revolutions; the diagnostic LED flashes (indicating the engine-related DTC error).

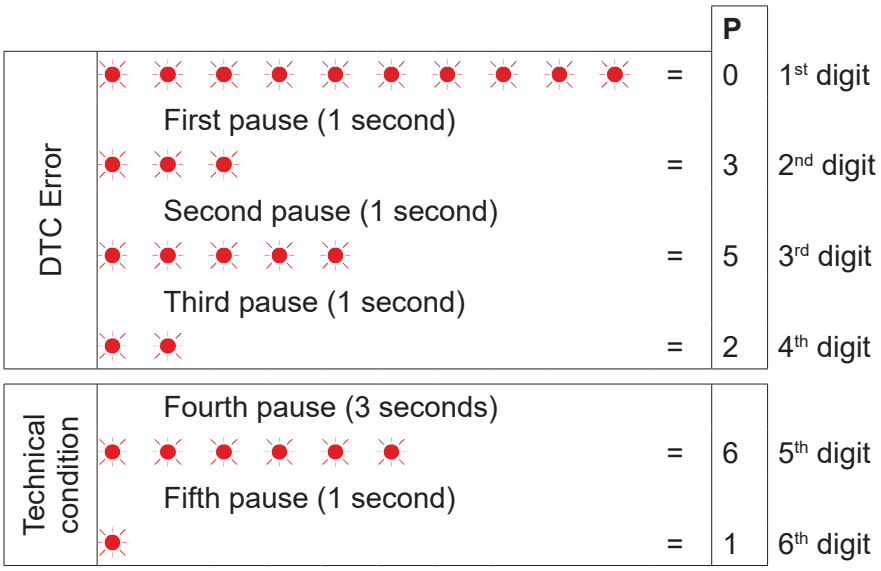
WARNING

In case of malfunction it is advisable to switch off the engine and contact the FORT customer care.

As soon as the DTC error is present, the diagnostic LED starts a sequence of flashes: each sequence indicates a specific DTC error.

Example of DTC fault sequence P035261.





1) Count the number of flashes to get the first of four digits. If the first digit is zero, it is represented as a series of ten flashes. There is a one-second pause between each sequence.
2) Count the number of flashes to get the second digit of the DTC.
3) Count the number of flashes to get the third digit, then count the number of flashes after the third one-second pause to get the fourth digit.

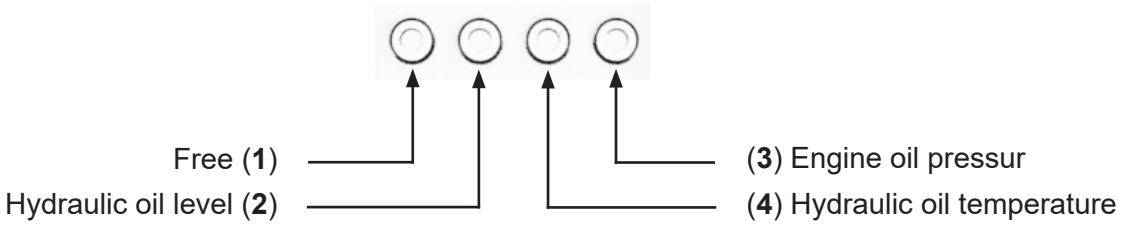
Make a note of each digit as it is displayed.
If there is more than one DTC, the next DTC starts flashing after a three-second pause.

4) After all DTCs have been reported and after a further three-second pause, the example number “61” is reported to indicate this condition to the technician. The flashing sequence is then restarted.

In the event of an error, refer to the DTC code table in section ***“6.14.1 Engine faults”***, and notify FORT Srl customer care.

6.13.2 MONOLITH diagnostic LED

In the MONOLITH there are four LEDs that light up according to the detected fault.



1. LED currently not used.

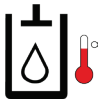
2. Hydraulic oil level LED:

Caution	Status	Cause	Solution
LED	On	Low hydraulic oil level	Turn off the MONOLITH. Check for leaks and top up.
HORN	Yes		
STOPS ENGINE	No		

3. Engine oil pressure LED:

Caution	Status	Cause	Solution
LED	On	Engine oil pressure too low	Check the engine oil level and/or the engine oil sensor.
HORN	No		
STOPS ENGINE	Yes		

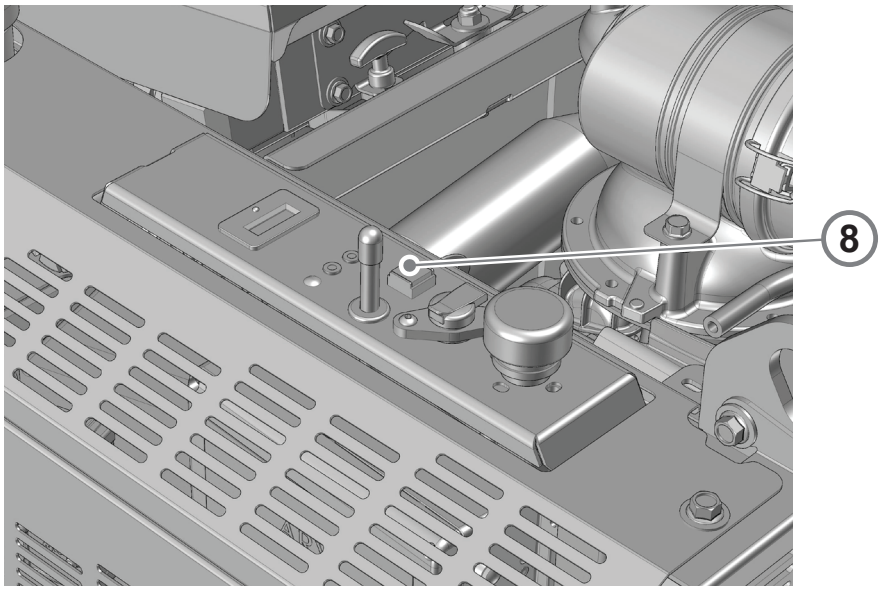
4. Hydraulic oil temperature LED:



Caution	Status	Cause	Solution
LED	On	Hydraulic oil temperature too high.	Clean radiator and/or check hydraulic oil level.
HORN	Yes		
STOPS ENGINE	No		

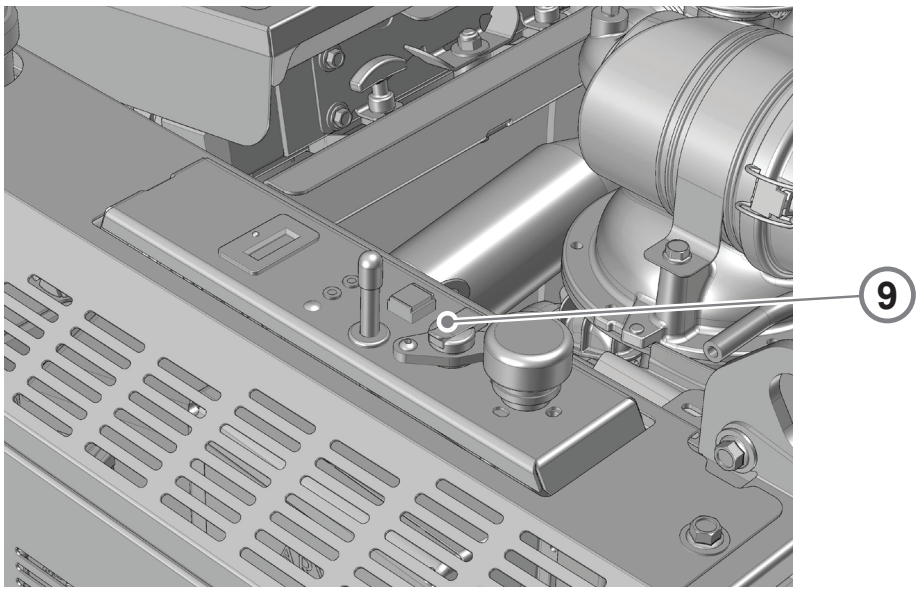
6.13.3 Working light switch (optional)

If MONOLITH is equipped with work lights, press the switch (**8**) to activate them.
Press it again to turn them off.



6.13.4 12V socket

There is a 12V socket (**9**) on MONOLITH.



6.13.5 Battery switch / emergency button

Battery disconnecting switch function

Before starting the MONOLITH, supply power to its electrical system by turning the battery switch clockwise and turning it to the ON (**A**) position.

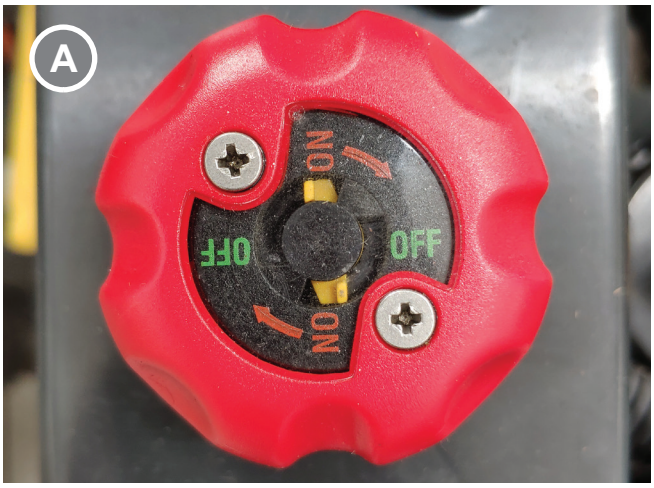
At the end of each use, after having switched off the engine, press the button to cut off the power to the electrical system of the MONOLITH, turning it to the OFF position (**B**).

Emergency button function

The battery disconnect can be used as an emergency button, should the situation require it. In this way all functions of the MONOLITH including the engine are stopped.

WARNING

If an emergency stop has been performed, the battery switch must be turned back to the ON position and a new connection between transmitter and receiver must be made in order to operate again.



6.14 FAULTS

Given that most of the functioning defects occur because of the improper use of the machine, the following table shows a number of possible malfunctions that could arise and steps to take to avoid them.

CAUTION

In the case the anomaly or the cause that has caused it do not come under the defects indicated, contact the FORT Srl company.

6.14.1 Engine faults

Component	DTC	Description
Manifold pressure (MAP) sensor	P0107	Signal voltage is low
	P0108	Signal voltage is high
Manifold air temperature (MAT) sensor	P0112	Signal voltage is low
	P0113	Signal voltage is high
Engine head temperature (EHT) sensor	P0117	Signal voltage is low
	P0118	Signal voltage is high
Fuel injector	P0201	Main circuit interrupted or short-circuited to ground
	P0262	Main circuit short circuit on B +
Fuel pump	P0230	Main circuit interrupted or short-circuited to ground
Cylinder 1 ignition coil	P0351	Circuit interrupted or short-circuited to ground
Cylinder 2 ignition coil	P0352	Circuit interrupted or short-circuited to ground
Accelerator actuator motor	P0506	Few rpm
	P0507	Too many rpm
	P2102	Main circuit interrupted or short-circuited to ground
Engine oil pressure switch	P0520	Switching circuit open or short-circuited to ground
	P0524	Oil pressure too low
Engine control unit (ECM)	P0562	Low power voltage
	P0563	High power voltage
MAT/MAP supply voltage sensor	P0661	Low power voltage
Speedometer	P1693	Main circuit interrupted or short-circuited to ground
	P1694	Main circuit short circuit on B +

6.14.2 Transmitter unit (radio control)

Malfunctions	Causes	Measures
The green LED flashes rapidly. The red LED[a] flashes for 3.5 minutes.	The battery is not sufficiently charged or the Transmitter Unit has been on for eight hours[b].	It is necessary to replace the battery with a new one (see section ***"6.5.7 Transmitter battery"***) or turn off the Transmitter Unit and restart the Radio Control.
The green LED flashes slowly. The red LED[a] flashes for 3.5 minutes.		
The green LED is off. The red LED[a] flashes ONCE for a very long time.	The transmitter unit is not working properly.	Carry out the address storage procedure.
When the Radio Control is started, the green LED is off and the red LED[a] flashes ONCE for a long time[b].	The STOP button is pressed.	Remove the STOP BUTTON
When the Radio Control is started, the green LED is off and the red LED[a] flashes TWICE for a long time[b].	At least one of the actuators relative to the D2-D20 controllers and the SAFETY is active.	Move the actuators into the rest position.
When the Radio Control is started, the green LED is off and the red LED[a] flashes THREE TIMES for a long time[b].	The battery is very low.	It is necessary to replace the battery with a charged one (see paragraph ***"6.5.7 Transmitter battery"***).
When the Radio Control is started, the green LED is off and the red LED[a] flashes FOUR TIMES for a long time[b].	At least one of the actuators relative to the A1-A8, H1-H8 and L1-L8 controllers is active.	Move the actuators into the rest position.

(a) -When the red LED comes on it is accompanied by a beep.
(b) – The signal is followed by the transmitter unit turning off
(c) - At the end of the alarm, the transmitter unit switches off automatically.

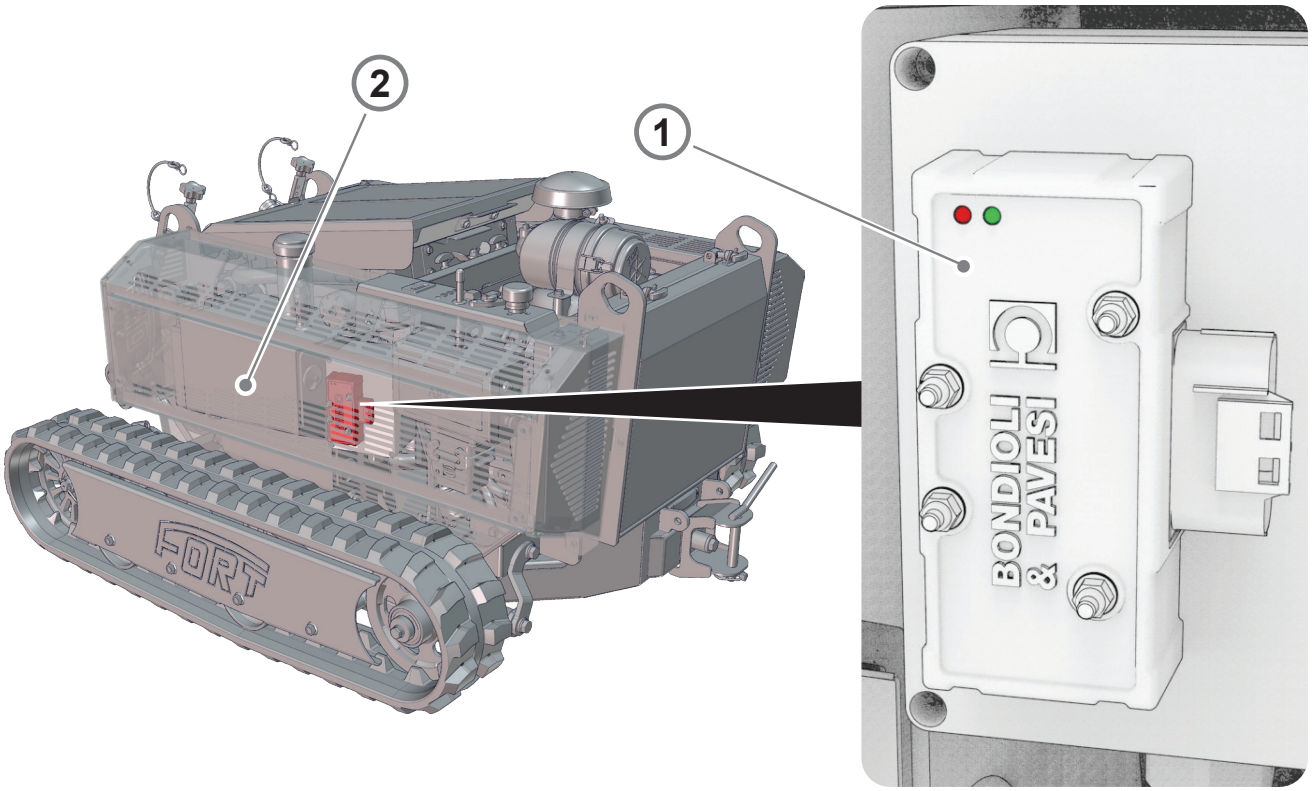
6.14.3 ***Receiver unit***

Malfunctions	Causes	Measures
The POWER LED is off.	The receiver unit is off.	Disconnect the power supply and connect it again after 5 minutes to check that the thermal resettable fuse incorporated in the Receiver Unit has not temporarily tripped. Connect the plug and power the receiver unit.
The POWER LED is on.	The radio electric connection is absent.	Bring the transmitter unit towards the receiver unit.
The ALARM LED flashes once.	There is an error on outputs SO1 and SO2 configured as STOP outputs.	Check the integrity of fuse F1. Connect the plug correctly. Check the correct wiring of the STOP outputs.
The ALARM LED flashes twice.	There is an error on outputs SO1 and SO2 configured as SAFETY outputs.	Check the integrity of fuse F1. Connect the plug correctly. Check the correct wiring of the SAFETY outputs.
The ALARM LED flashes three times.	The is an error on the outputs relative to the direction commands.	Check the correct wiring of the outputs relative to the direction commands. Contact FORT Srl customer care
The ALARM LED is on.	There is a configuration error on outputs SO1 and SO2.	Check that the DIP switches are set as indicated in the Data Sheet. Contact FORT Srl customer care.
The STATUS LED flashes slowly.	There is an overvoltage in the power supply.	Check that the power supply to the receiver unit is within the voltage limits specified in the technical data.
The STATUS LED is flashing rapidly and discontinuously.	The Receiver unit loses some of the data sent by the Transmitter unit.	Bring the transmitter unit towards the receiver unit. If this signal persists contact the machine manufacturer's customer care.
The STATUS LED is on.	There is an overcurrent in one of the PWM proportional outputs.	Contact the machine manufacturer's customer care.
The SETUP LED flashes once.	There is an error in the code key.	Contact the machine manufacturer's customer care.
The SETUP LED flashes twice.	There is an error in the memory card.	Contact the machine manufacturer's customer care.
The SETUP LED flashes rapidly.	More than one analogue controller is activated simultaneously within the REMOTE SETUP procedure.	Check the actuators in the Transmitter unit and activate only one analogue controller.
If the fault or the reason for it is not indicated in the list of faults shown, contact FORT Srl in order for repairs to be carried out.		

6.14.4 Translation pump control unit

Translation pump control unit (**1**) is placed on the left side of the machine. It can be accessed by removing the left side bonnet (**2**). The control unit features two LEDs: one red LED and one green LED.

In case of pump fault, the red LED starts a sequence of flashes: each sequence indicates a specific error. In the meanwhile the green LED is off



1) Count the number of flashes to get the error. There is a two-second pause between each sequence.
2) Write down the digit and contact FORT Srl customer care.

Sequence of flashes			Error codes
Green LED	Red LED		
Status	Status	Frequency	
Off	Off	-	0
Off	1 flash	Normal	1
Off	2 flashes	Normal	1
Off	3 flashes	Normal	2
Off	4 flashes	Normal	2
Off	5 flashes	Normal	3
Off	6 flashes	Normal	3
Off	7 flashes	Normal	4
Off	8 flashes	Normal	4
Off	9 flashes	Normal	5
Off	10 flashes	Normal	5

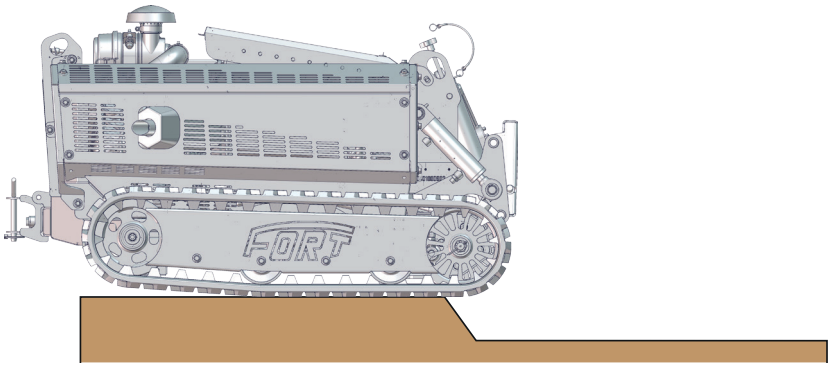
Sequence of flashes			Error codes
Green LED	Red LED		
Status	Status	Frequency	
Off	11 flashes	Normal	6
Off	12 flashes	Normal	6
Off	13 flashes	Normal	7
Off	1 flash	Fast	8
Off	2 flashes	Fast	9
Off	3 flashes	Fast	10
Off	4 flashes	Fast	11
Off	5 flashes	Fast	12
Off	6 flashes	Fast	13
Off	7 flashes	Fast	14
Off	8 flashes	Fast	15
If the fault or the reason for it is not indicated in the list of faults shown, contact FORT Srl in order for repairs to be carried out.			

6.15 WORKING WITH THE MACHINE

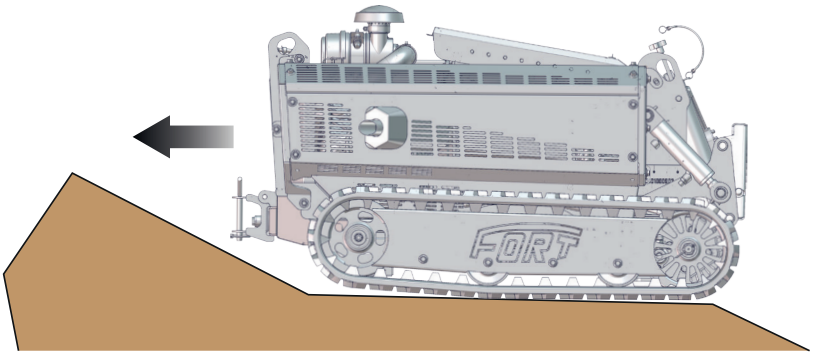
DANGER

- **Before moving the machine, make sure that you are familiar with the controls and the relative safety regulations. The operator must be in the vicinity of the machine.**
- **Before moving the machine, ensure that no persons are in the range of action of the machine and that the area of action is free of obstacles. Use great caution before starting the reverse motion and always check for the presence of people, equipment or obstacles.**

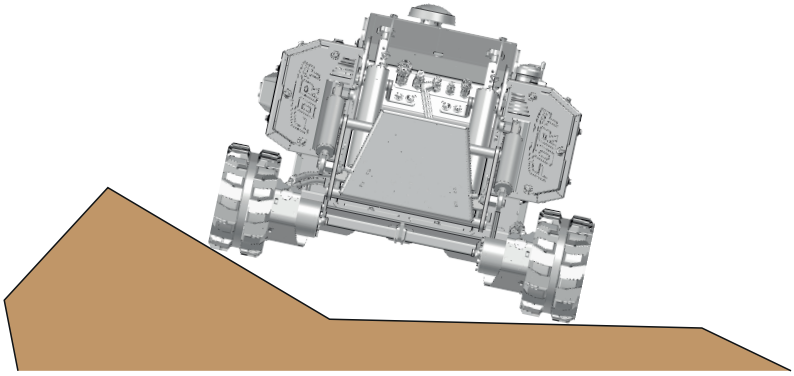
- Before starting to cut, make sure that there are no foreign objects such as stones, pieces of metal or animals on the area to be mowed.
- Only cut grass and light brushwood that the machine is capable of processing without difficulty.
- When mowing slopes, always start from the bottom.
- Always turn round in an upwards direction.
- Never go down slopes that have an inclination greater than 50°
- Never stand directly in the line of fall of the machine.



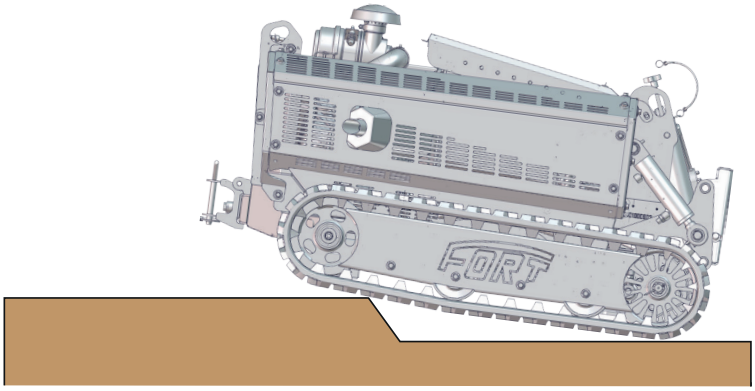
Never change the direction of the machine while moving on curbs, rocks or surfaces with large differences in height (greater than 20 cm). In these cases, always proceed perpendicular with respect to any obstacles.



When reversing uphill, do not change direction in the transition area between the flat ground and the slope. If it is unavoidable to do so, carry out the manoeuvre gradually.



Avoid moving along the edge of a slope or on uneven ground with one track in a horizontal position and the other inclined or partially raised (with the machine inclined more than approximately 10°). In order not to damage the tracks, always proceed with the sliding blocks resting on the same horizontal plane.



When the machine manoeuvres over an obstacle it creates an empty space between the bearing rollers and the tracks and there is a risk that the track may come out of its seat.

The same may happen if the machine is reversing uphill and you try to make a sharp turn. An empty space is created between the bearing roller, the front idler roller and the track, and there is a risk that it may come out of its seat.

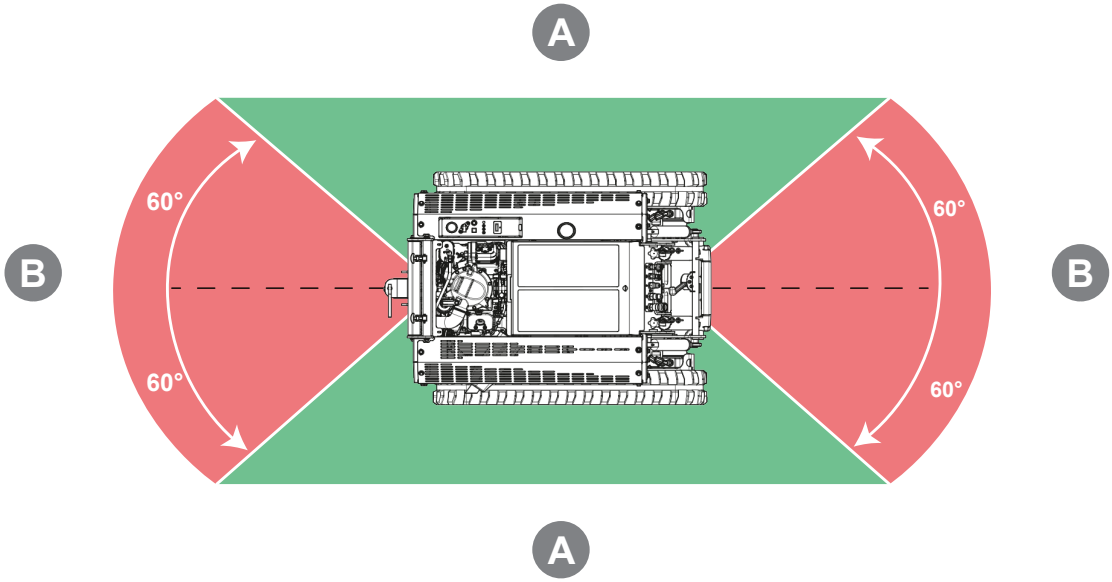
When changing direction and the track cannot move sideways due to an obstacle, the track could become damaged and come out of its seat.

DANGER

- **Before moving the machine, make sure that you are familiar with the controls and the relative safety regulations. The operator must be in the vicinity of the machine.**
- **Before moving the machine, ensure that no persons are in the range of action of the machine and that the area of action is free of obstacles. Use great caution before starting the reverse motion and always check for the presence of people, equipment or obstacles.**

6.16 CONTROL STATION – OPERATOR WORK AREA

- The operator must always stand at a minimum distance of at least 10 metres from the machine (at the side).
- The operator should have PPE, personal protective equipment (footwear, overalls and protective glasses). Furthermore, in the case of particularly dusty work he or she is also advised to wear a mask.
- The operator must try to position himself or herself in the recommended work areas with respect to the machine, both to avoid being in the area of movement of the machine and in the area where objects might be thrown out. Apart from when working on slopes with an inclination of more than 25°, for which the previous instructions should be followed.



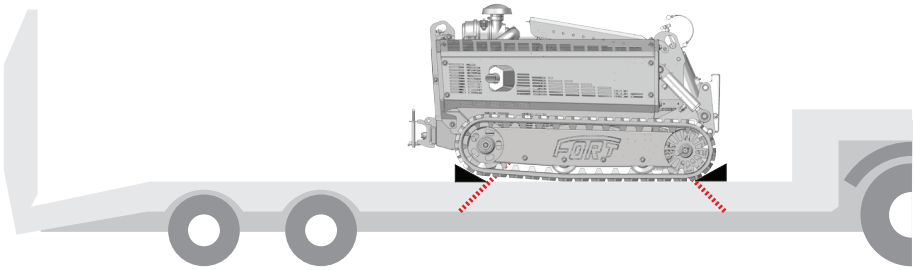
POS.	FORWARD DIRECTION OF MOVEMENT
A	PERMITTED WORK AREA Minimum distance 10 m.
B	DANGER ZONE Minimum distance: 20 meters depending on the tool used

7. TRANSPORT AND HANDLING

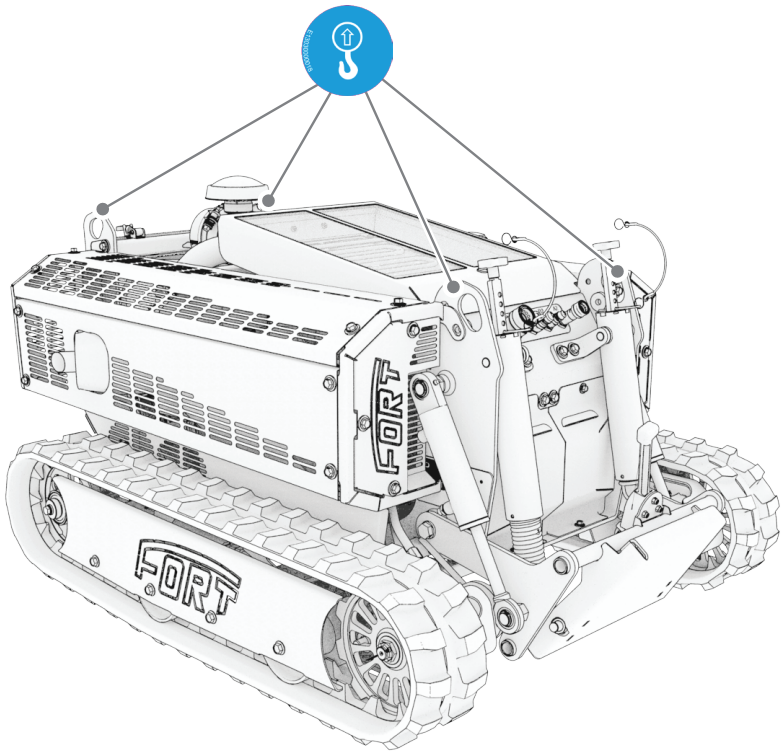
7.1 LOADING AND UNLOADING FOR ROAD TRANSPORT

Use suitable vehicles with a carrying capacity of greater than 1200 kg to transport the machine. Use loading ramps, both of which are suitable for supporting a load of not less than 600 kg and which are hooked to the bed of the vehicle. The ramps must be positioned at the correct distance for the tracks and must make and angle with respect to the ground of no more than 50°.

Once the machine has been loaded onto the vehicle, it is recommended to secure it to the bed of the vehicle using wire ropes or slings attached to the lifting rings indicated below.

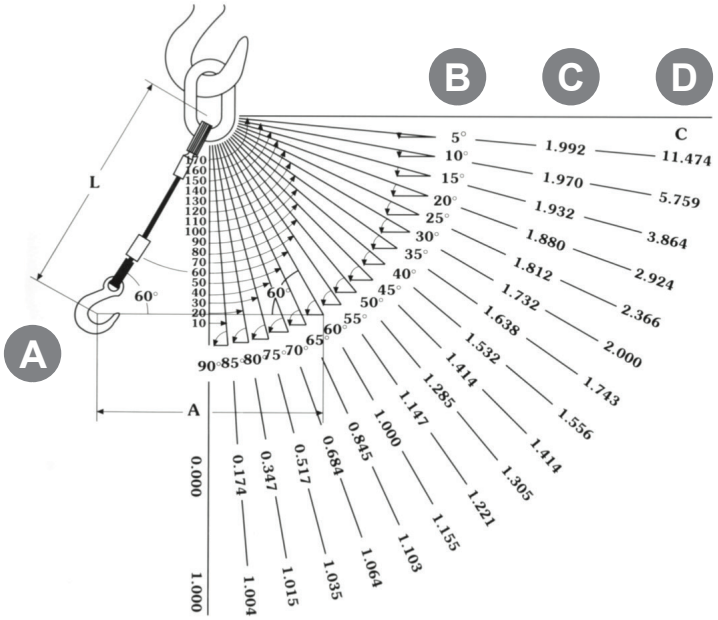


If the machine has to be lifted in order to load it, make sure that you use suitable chains or wire ropes for lifting and loading it.



Connect the ropes or chains to the lifting rings provided (**A**). The machine should always be lifted without the equipment attached.

It should be noted that when using wire ropes, slings or chains to lift the machine, you must comply with the diagram below that indicates the minimum lifting angles.



Angle at top (A)	Load increase factor (D)
0°	1
10°	1,004
20°	1,015
30°	1,035
40°	1,064
50°	1,103
60°	**1,155**
70°	1,221
80°	1,305
90°	**1,414**
100°	1,556
110°	1,743
120°	**2,000**
130°	2,336
140°	2,924
150°	3,864
160°	5,759
170°	11,474

POS.	DESCRIPTION
A	Rope opening angle
B	Angle of rope with respect to horizontal
C	A/L
D	Load increase factor

WARNING

Do not attach wire ropes or slings to the roll bar in order to lift the machine. This element is not designed for lifting the machine.

7.1.1 If the machine breaks down

If the motor or the hydraulic system breaks down, do not tow the machine. Only lift it.

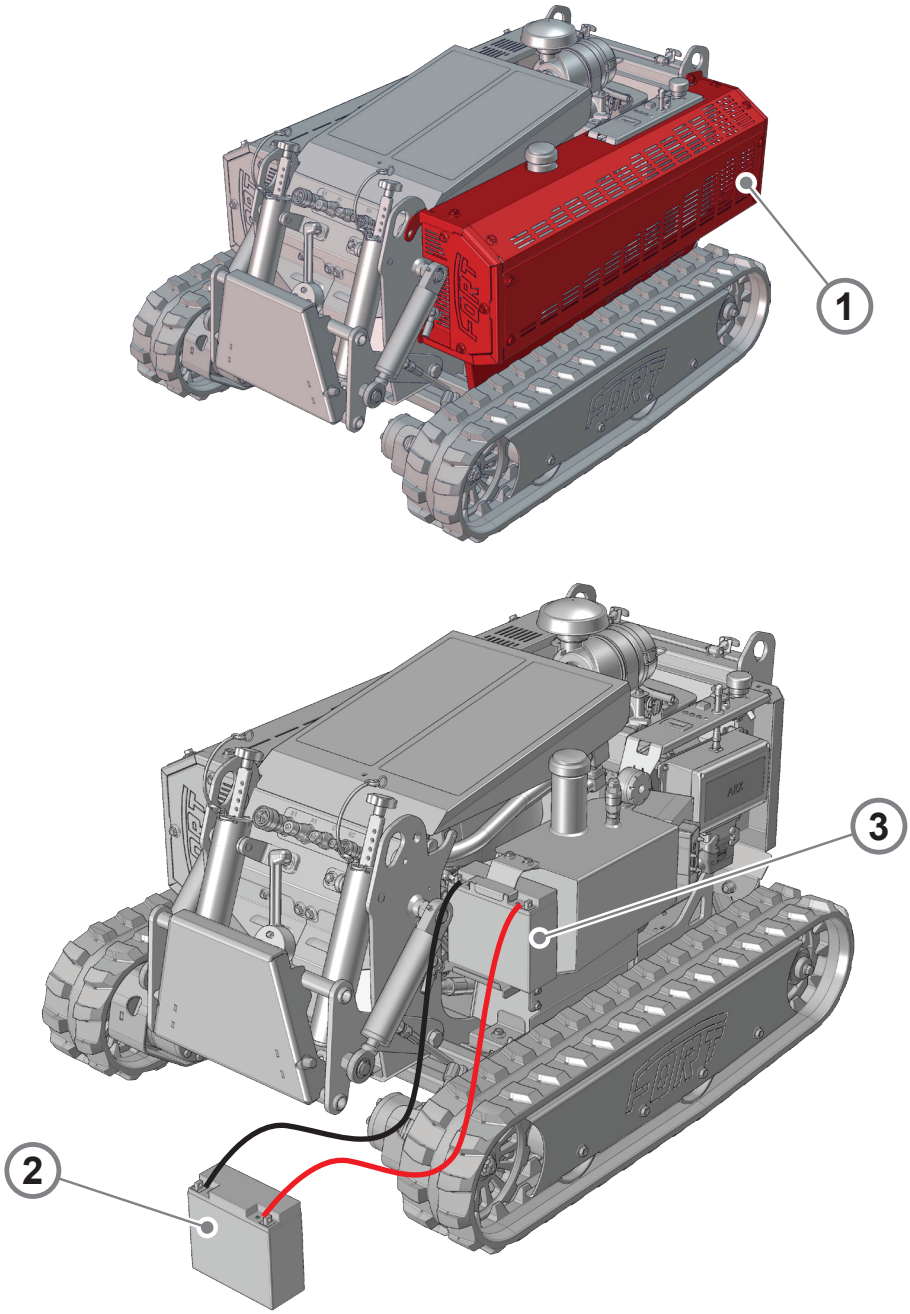
WARNING

- **Lift the machine at the lifting points, using suitable ropes or chains.**
- **Do not attach wire ropes or slings to the roll bar in order to lift the machine. This element is not designed for lifting the machine.**
- **If equipment is attached to the machine, it must be disconnected and lifted at a later stage (refer to the equipment manual for lifting instructions).**

7.2 STARTING THE ENGINE USING AN AUXILIARY BATTERY

If the engine has to be started using an auxiliary battery, proceed as follows:

1) Open the rollbar (**1**), the top bonnet (**2**) and remove the side (**3**).
2) Connect one terminal of the red cable to the auxiliary battery (**4**) and the other to the positive terminal (**+**) of the auxiliary battery (**5**) of the MONOLITH.
3) Connect the terminal of the black cable to the auxiliary battery (**4**) and the other to the negative terminal (**-**) of the auxiliary battery (**5**) of the MONOLITH.
4) The engine can now be started using the radio control.
5) Bring the speed of the engine to 1000 rpm and wait for a few minutes before disconnecting the auxiliary battery.



07-Avviamento con batteria ausiliaria (MONOLITH)

WARNING

Do not use starting systems such as battery chargers or start boosters to start the engine as they may damage the electronic control units.

DANGER

- **Do not check the charge of the battery by connecting the two poles with a metal object. Use a voltmeter.**
- **The battery earth connector (-) must always be the first to be disconnected and the last to be re-connected.**
- **The sulphuric acid in the battery electrolyte is poisonous. It can burn the skin, pass through fabrics and cause blindness if it comes into contact with the eyes.**
- **Please note that lead and its compounds cause cancer and other damage to reproductive organs. These substances are present in the battery poles, terminals and accessories. Wash your hands after touching them.**

8. STORAGE

If the machine is to be unused for a long time, it should be stored in an area sheltered from the elements to protect it from damage. Before storing the machine, it is recommended that you clean it thoroughly and lubricate all mechanical components to protect them from rust. The machine should be stored at a temperature between 0 °C and 40 °C.

Before storing the machine for long periods, it is recommended that you prepare it as follows:

- Free the equipment (e.g. the rotor and the tools) from any cutting or other residuals;
- Clean the machine carefully.
- Visually inspect the entire machine to identify any structural damage or deep scratches on the paintwork. Make sure that the original safety signs are still present in their proper positions and that they are integral and legible.
- Grease all mechanical parts that are subject to friction, the locking pins and all machine parts that are no longer covered with their original coating of paint in order to prevent rust from forming;
- If possible, store the machine in a covered area and on a flat and firm surface;
- The machine must be stored with the equipment in the transport position.

8.1 DISMANTLING AND DECOMMISSIONING

Should you decide to no longer use the machine or part of it, it must be dismantled and decommissioned. Before scrapping, the plastic/rubber parts and electrical and electronic materials must be separated. Drain any used fluids and dispose of them in a dump/recycling facility equipped to handle this product.

Carry out these operations according to the regulations in force.

WARNING

If the machine or parts of it were decommissioned, all parts that could constitute a hazard must be made safe.

WARNING

Remember that every time you change the oil, replace batteries, rubber pipes, tyres and any other parts of the machine that should be disposed of separately, always refer to current legislation regarding waste disposal. Take used hydraulic fluid to a dump/recycling facility equipped to handle this product.

9. MAINTENANCE

9.1 INTRODUCTION

To obtain the machine's best performances and ensure maximum durability of all its components, the instructions for use and maintenance must be followed carefully by machine operators.

We therefore recommend, and it is in our Customer's own interest, to read these instructions carefully and that they consult the manual every time they might need advice on how to overcome possible faults. Because the machine usually operates in contact with water, sand, earth, etc., regular lubrication is necessary. This is of vital importance not only to ensure the long life of the machine, but also to keep running costs low.

For further information, please contact our service centre:

Contact the FORT Srl Technical Assistance Service:

Phone	+39 0444 788 000
E-mail	info@fort-it.com

9.2 GENERAL INSTRUCTIONS

- Before carrying out any maintenance or inspecting and / or checking the machine, turn off the engine and remove the ignition key.
- When removing or reinstalling parts of the machine, always use suitable extractors, spanners and equipment that will not damage the components.
- - To release parts that are solidly adherent, use copper or wooden hammers.
- Separate the pieces of the various units and partially screw the nuts onto their corresponding pins or stud bolts. Clean the parts using brushes or rags, then wash them using paraffin or warm water and remove all residues using compressed air.
- After grinding or finishing using abrasive tools, thoroughly clean the parts, making sure that all the abrasive dust has been removed.
- When re-assembling the pieces, make sure that they are clean and then lubricate appropriately.
- Pay great attention to the safety rings and cotter pins. Replace them immediately if there are signs of breakage.
- Maintenance of the machine and/or equipment must be carried out by authorised personnel.

9.3 EXTRAORDINARY INTERVENTIONS

These are repairs or replacements of one or more components of the machine, which only usually become necessary after years of good operation and which do not alter the characteristics of the machine. In the case of substantial modifications, the manufacturer cannot be considered liable for any risks that could arise. These interventions must be performed by authorised personnel.

9.4 FLUIDS AND GREASES

9.4.1 Lubricants table

COMPONENT	RECOMMENDED LUBRICANT	INTERNATIONAL SPECIFICATIONS
ENGINE	SAE 30; BRIGGS & STRATTON 1000095 5W30	API SG/CD; CCMG4
HYDRAULIC SYSTEM Mineral oil	ISO 46 Q8 HELLER 46	DIN 51 524, 2-HLP DIN 51 524, 3-HLP API CD, CE, CF
HYDRAULIC SYSTEM Biodegradable oil	PANOLIN BIO HLP SYNTH E	FZG Test A/8.3/90 stage 12 ISO 15380 HEES
	Q8 HOLBEIN HP SE Bio 46	ISO 11158 Category HV Din 51524, Part 3 Category HVLP ISO 15380 / CEC-L33-A-93 - Water Hazard Class (VwVwS) WGK 1 - Category HEES
PINS AND BUSHINGS	MOLY GREASE EP NLGI2 or NLGI3EP GREASE	Black lithium soap grease with Molybdenum Disulphide. For automatic greasing the use of added CONTACT GREASE NLGI2 with purple lithium soap is recommended.
BEARINGS	PAKELO GREENPLEX EP NLGI 2 GREASE	EP ADHESIVE Grease, Aluminium complex soap

WARNING

- **When using biodegradable hydraulic oils, avoid mixing them with more than 5% of other oils.**
- **The use of non recommended lubricants and/or grease results in the forfeiture of the warranty.**

9.4.2 Fuel recommendations

Fuel must comply with these requirements:

- Clean, new, unleaded fuel.
- Minimum 87 octanes/87 AKI (91 RON). For use at high altitudes see below.
- Petrol with an ethanol (petrol/alcohol mixture) content of up to 10% is considered acceptable.

CAUTION

Do not use non-approved fuel such as E15 and E85. Do not add oil to fuel or modify the engine so that it can run on alternative fuels.

The use of non-approved fuels will cause damage to engine components, which are not covered by warranty.

To protect the fuel system from gumming, mix a stabiliser to the fuel. See Storage. Not all fuels are the same. If starting problems occur or the performance of the unit is unsatisfactory, change the supplier or make of fuel. This engine is certified to operate with gasoline.

9.5 ENGINE MAINTENANCE

Some warnings to follow to avoid damage to the engine system:

WARNING

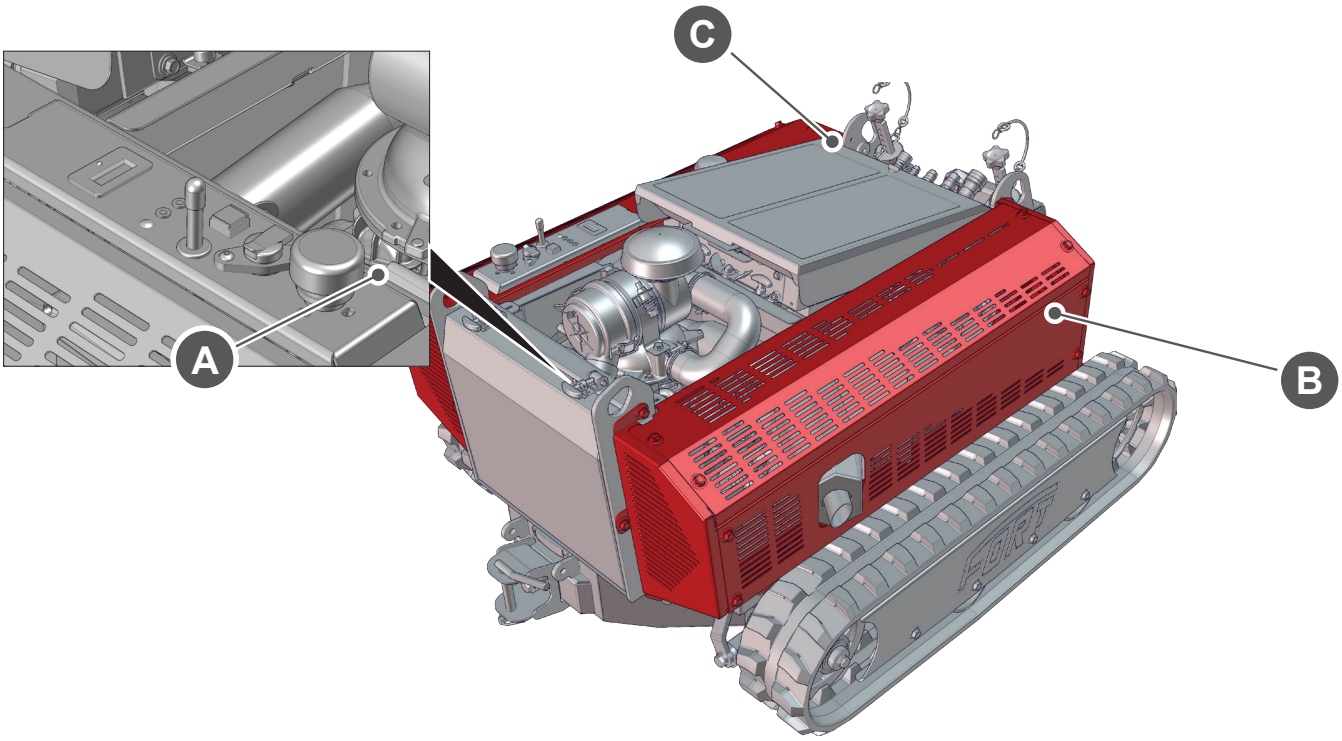
- **Never start the engine if the battery cables are loose.**
- **Press or disconnect the battery to the OFF position before disconnecting, removing and/or installing the battery.**
- **Never use a battery charger to start the engine.**
- **Never disconnect the battery cables when the engine is running.**
- **When connecting the battery cables, always connect the positive (+) cable first, then the negative (-) cable to the battery.**
- **When charging the battery, press the battery switch to the OFF position, then disconnect the negative (-) battery cable.**
- **Do not spray water directly onto the electronic control unit.**

9.5.1 Checking the spark plugs

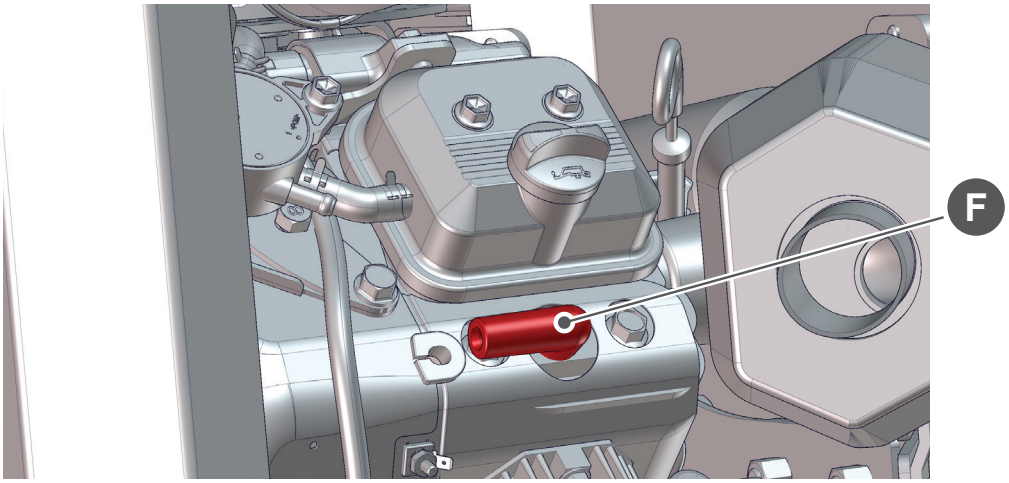
CAUTION

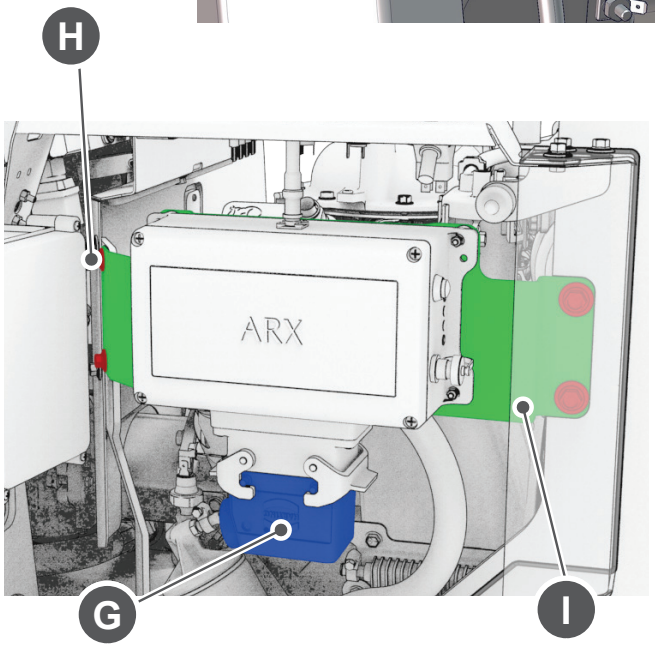
Check the distance between the electrodes every *50 hours* with a feeler gauge.

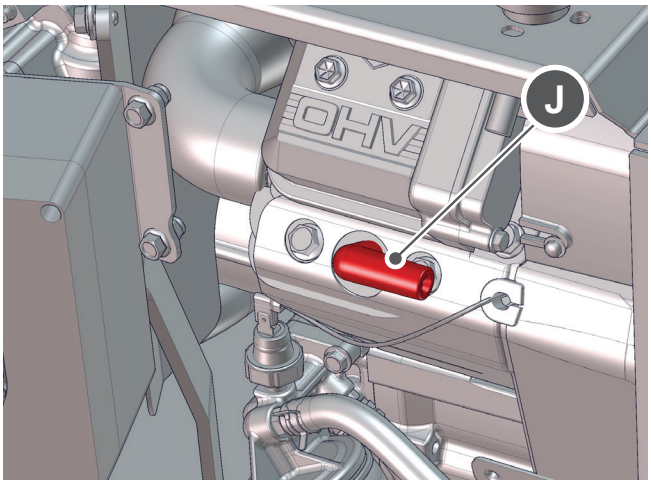
1) Press the battery switch (**A**);
2) Remove the right side (**B**) and the left side (**C**) bonnets;



3) On the right side remove the cover (**F**) and with a 16 mm wrench unscrew the spark plug;
4) On the left side disconnect the connector (**G**) from the receiver;
5) Loosen the four screws (**H**) that secure the support (**I**) of the receiver with a 10 mm wrench;
6) Remove the cover (**J**) and with a 16 mm wrench unscrew the second spark plug;
7) Check the electrodes of both spark plugs with a feeler gauge.
8) If necessary, restore a distance of *0.76 mm*.
9) Fit and tighten the spark plug to a torque of *20 Nm*.
10) Reinstall everything following the above instructions in reverse.





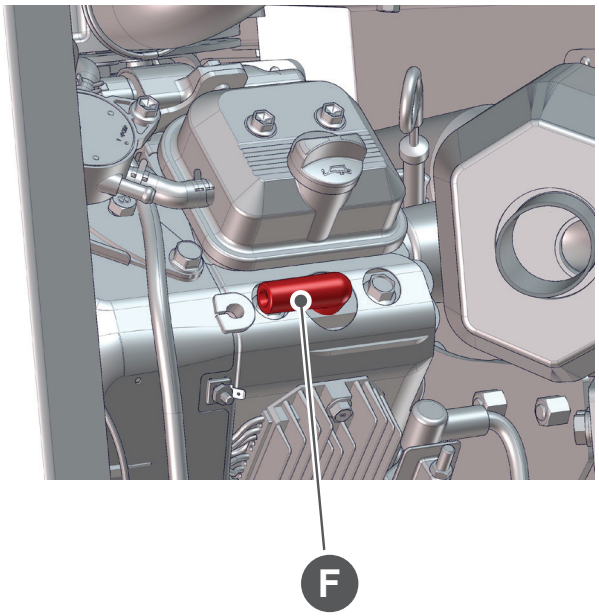


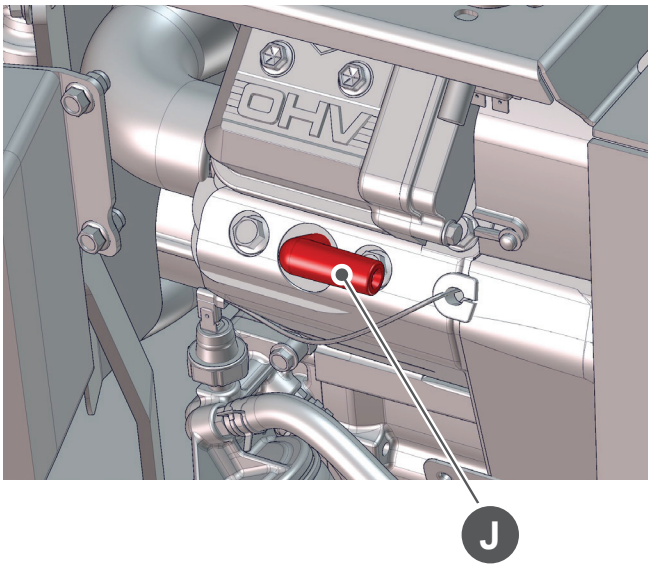
9.5.2 Replacing the spark plugs

CAUTION

Replace both spark plugs in the engine *every 100 hours*.

1) To access the spark plugs follow the procedure explained in the previous section ***"9.5.1 Checking the spark plugs"***.
2) On the right side remove the cover (**F**) and with a 16 mm wrench unscrew the first spark plug;
3) Remove the cover (**J**) and with a 16 mm wrench unscrew the second spark plug;
4) Replace and tighten the spark plugs to a torque of *20 Nm*.
5) Replace everything.





9.5.3 Checking the engine oil level

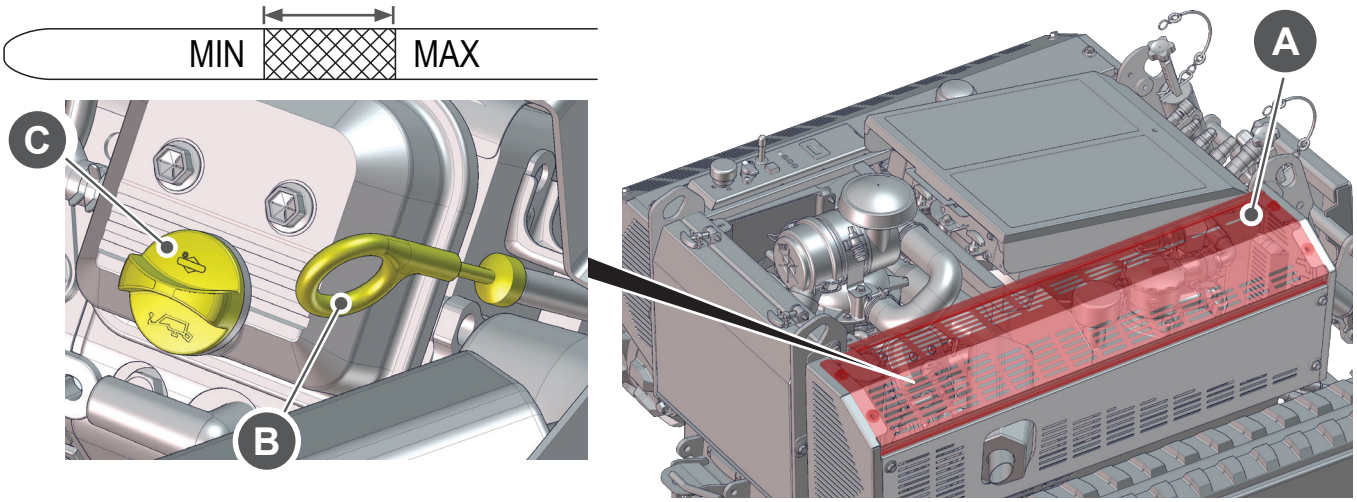
CAUTION

Check the engine oil level *daily or before each use*.

Before proceeding with the oil change and check, make sure that the MONOLITH is placed on a horizontal plane during maintenance operations. Remove all debris from the oil filling area. Refer to the table in section ***"9.4.1Lubricants table"***.

The engine oil level must be checked when the engine is cold and with the machine parked on a horizontal surface.

6) Remove the upper right bonnet (**A**);
7) Remove the dipstick (**B**) and clean it with a clean cloth;
8) Insert the dipstick completely;
9) Remove the dipstick and check the oil level. The correct oil level must be between the minimum and maximum marks;
10) If the oil level is low, unscrew the plug (**C**) and top up with specific oil. Do not overfill. After adding some oil, wait a minute before checking the oil level again;
11) Screw the cap back on and insert the dipstick completely.



The engine is equipped with a sensor that indicates if the oil level is low.

If you are in a similar situation, the sensor will activate the relevant alarm LED and stop the engine (see section ***"6.13.2 Diagnostic LEDs MONOLITH"***).

Stop the engine and follow the procedure indicated below before restarting the engine:

- Make sure the engine is on a level surface.
- Check the oil level again and top it up, if necessary.
- Start the engine and ensure that the warning light (if any) does not turn on.
- If the oil level is not low, do not start the engine. Contact FORT Srl customer care.

9.5.4 Changing the filter and engine oil

CAUTION

- **Change the engine oil *every 100 hours*.**
- **Quantity of oil to be used *1.42 litres*.**
- **Take the utmost care when choosing the type of engine oil; refer to the table in section *"9.4.1 Lubricants table"*.**

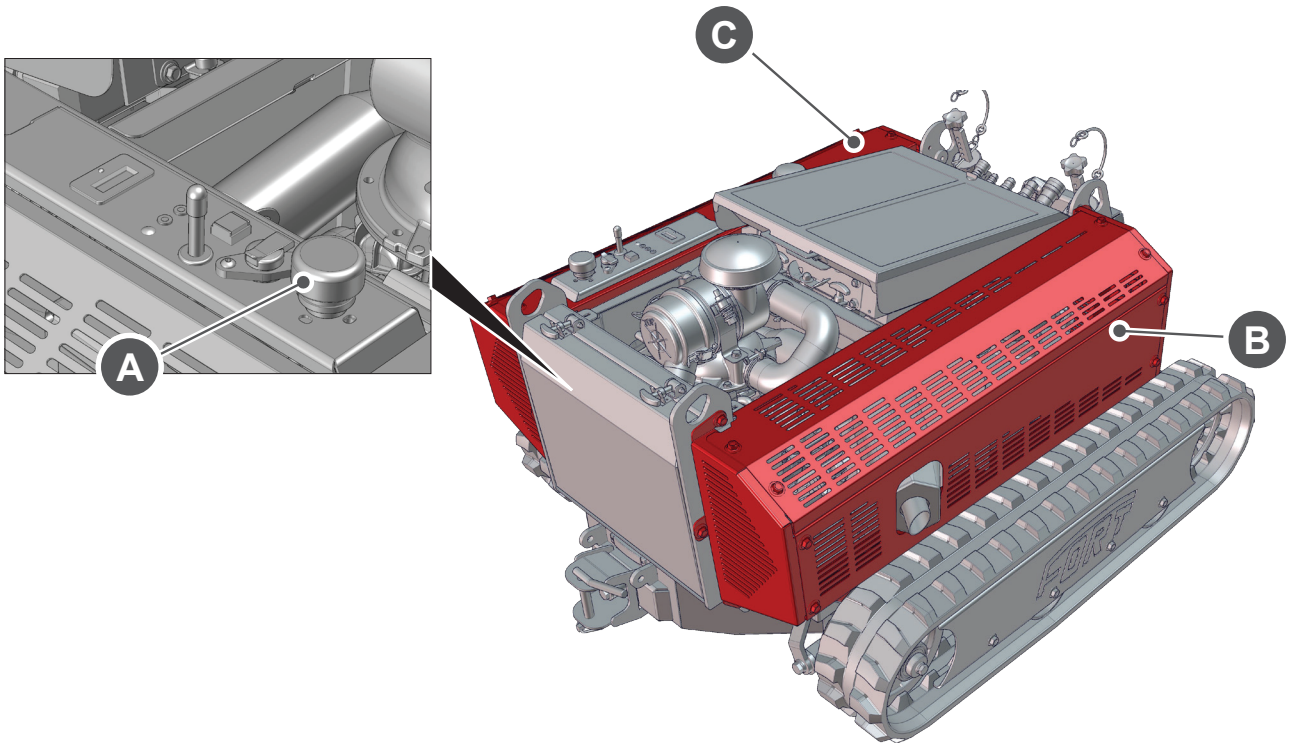
CAUTION

Used oil is a hazardous waste and must be disposed of correctly. Do not dispose of with household waste. Contact your local authority, service centre or dealer for disposal/recycling facilities.

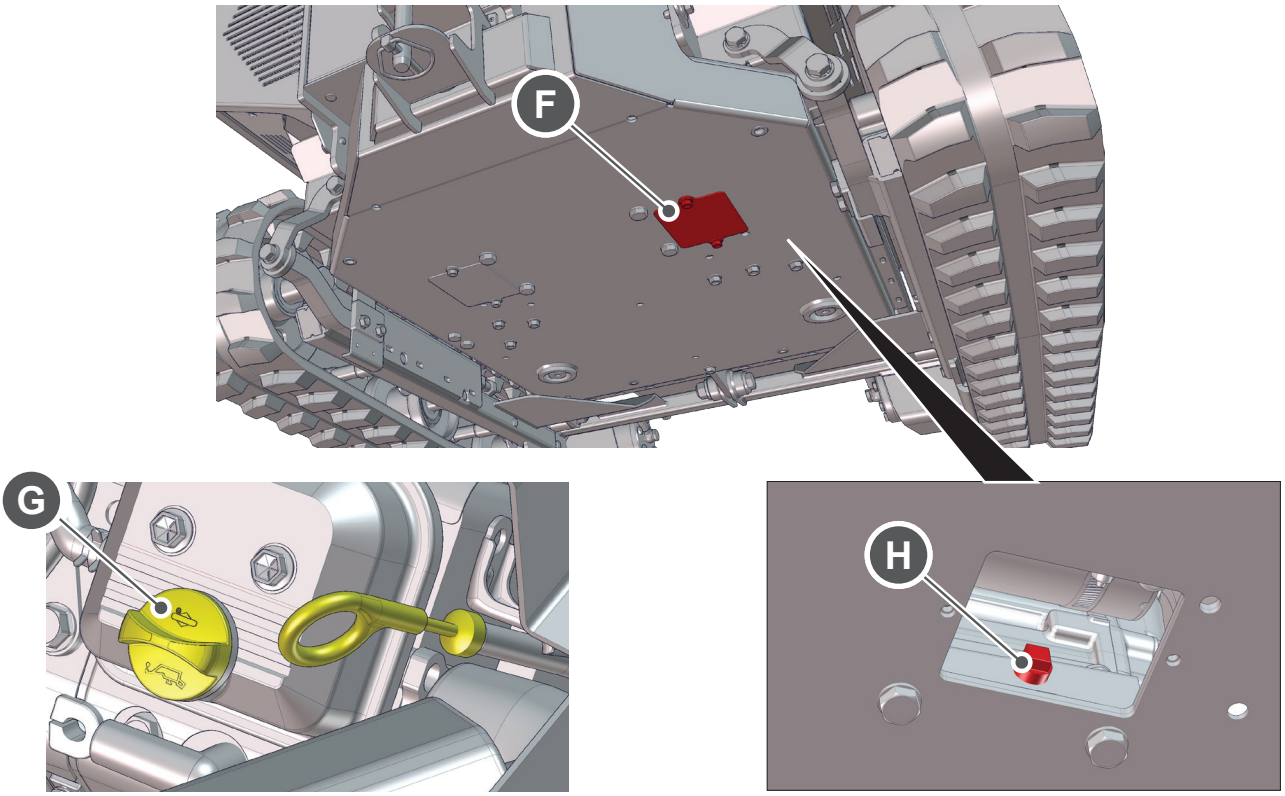
Before proceeding with the oil change and check, make sure that the MONOLITH is placed on a horizontal plane during maintenance operations. Remove all debris from the oil filling area. Refer to the table in section ***"9.4.1 Lubricants table"*** for the choice of oil to use.

Proceed as follows to remove the engine oil:

1) When the engine is cold, turn on and place the MONOLITH on a lifter, then lift it up.
2) Leave it on, at idle for about three minutes, then turn it off;
3) Press the battery switch (**A**);
4) Remove the right side (**B**) and the left side (**C**) bonnets;

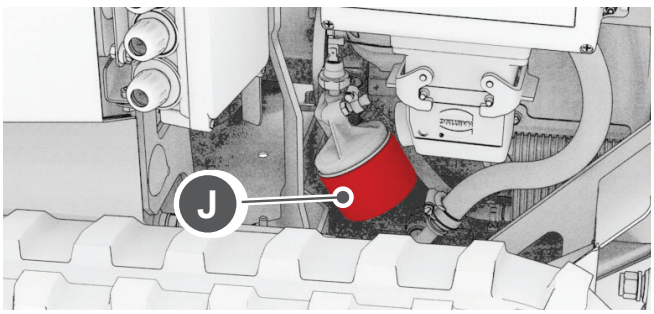


5) Using a 10 mm wrench, loosen the two screws securing the right plate (**F**);
6) Remove both top-up plugs (**G**) from the two heads;
7) Place a container underneath, near the nipple (**H**). In order to collect the waste oil;
8) Unscrew the plug (**H**) and wait for the oil to run out;
9) Tighten the plug (**H**).



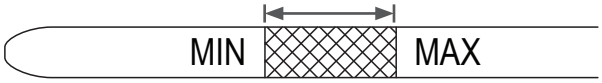
To change the engine oil filter proceed as follows:

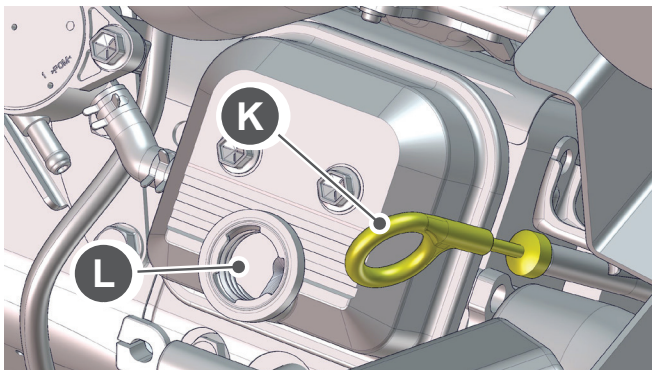
10) On the left side remove the oil filter (**J**) and dispose of it according to the regulations;
11) Before installing the new oil filter, lubricate the oil seal with a clean, fresh coat of oil;
12) Install the oil filter and tighten by hand until the gasket touches the oil filter adapter, then tighten the oil filter by another 1/2 - 3/4 turn;

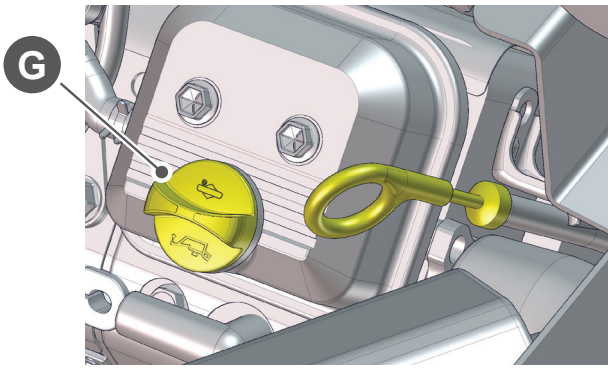


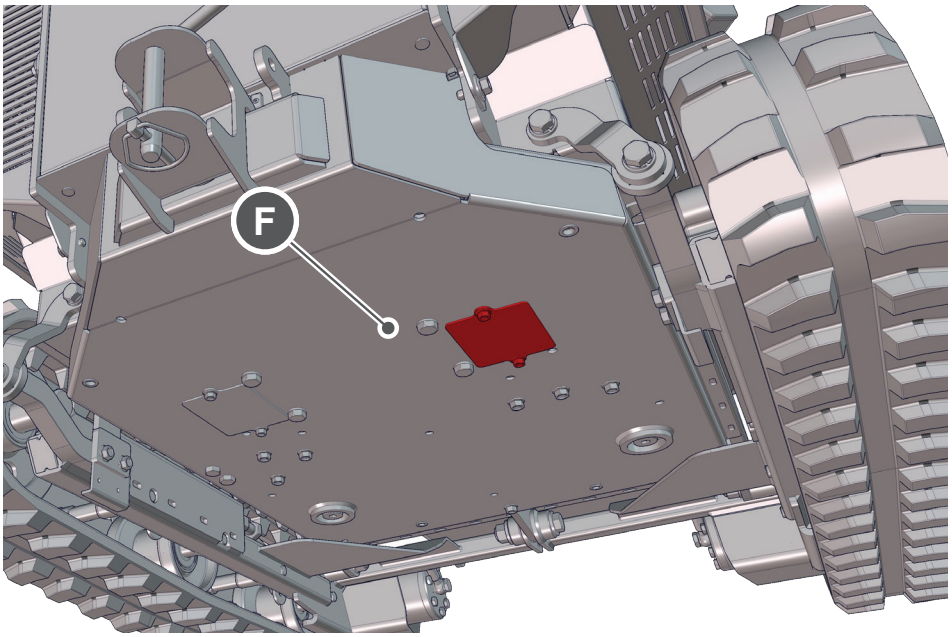
To top up the engine oil, proceed as follows:

13) Remove the dipstick (**K**) and clean it with a cloth.
14) Fill the oil through the holes (**L**). Do not overfill. After adding some oil, wait a minute before checking the oil level again.
15) Install and tighten the dipstick (**K**).
16) Remove the dipstick and check the oil level. The correct oil level must be between the minimum and maximum marks;
17) Reinstall and tighten the dipstick.
18) Manually tighten the top-up plugs (**G**) in the two heads.
19) Start and run the engine. When the engine has warmed up, check for oil leaks.
20) Stop the engine and recheck the oil level. The correct oil level is at the top of the fill level indicator.
21) Secure the right hand plate (**F**);





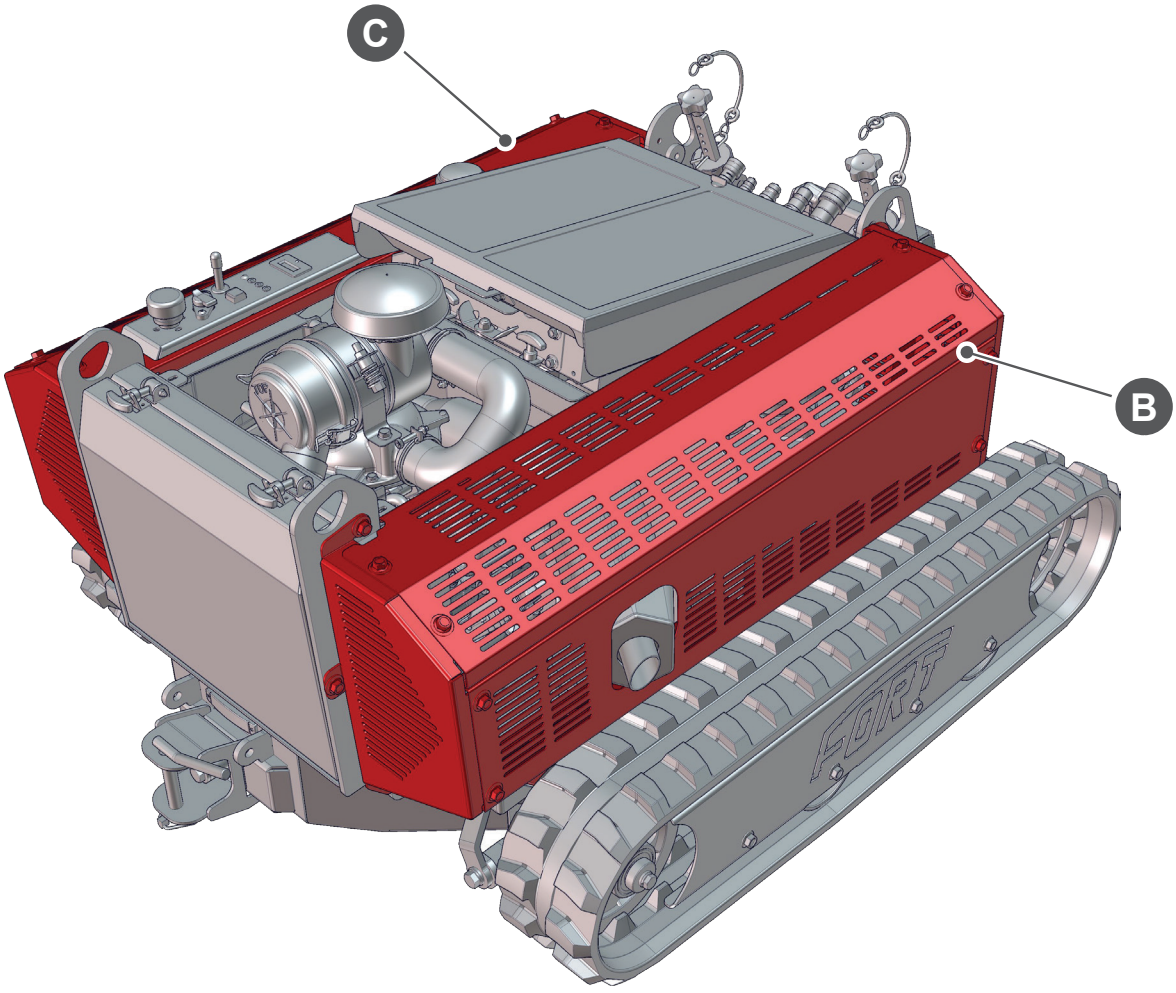




22) Refit the side bonnets (**B**) and (**C**).

DANGER

- **Do not carry out these operations if the engine has just been switched off. Wait until the engine becomes warm (40-45°C).**
- **The oil spilled during the change can cause personnel to slip. Wear protective clothing and slip resistant shoes and immediately remove any traces of oil.**
- **Because the oil and filter are considered special waste, they must be disposed of according to the waste disposal regulations in force in the country in which the machine is used.**



9.5.5 Removing the cooling system

CAUTION

The cooling system must be cleaned *every 200 hours*.

DANGER

The running engines generate heat; some parts of the engine, especially the exhaust pipe, become extremely hot.

In case of contact there is a risk of serious burns.

Flammable debris such as leaves, grass, straw, etc. can ignite.

- **Before touching, let the exhaust pipe, engine cylinder and fins cool down.**
- **Remove accumulated debris from the exhaust pipe and cylinder area.**

CAUTION

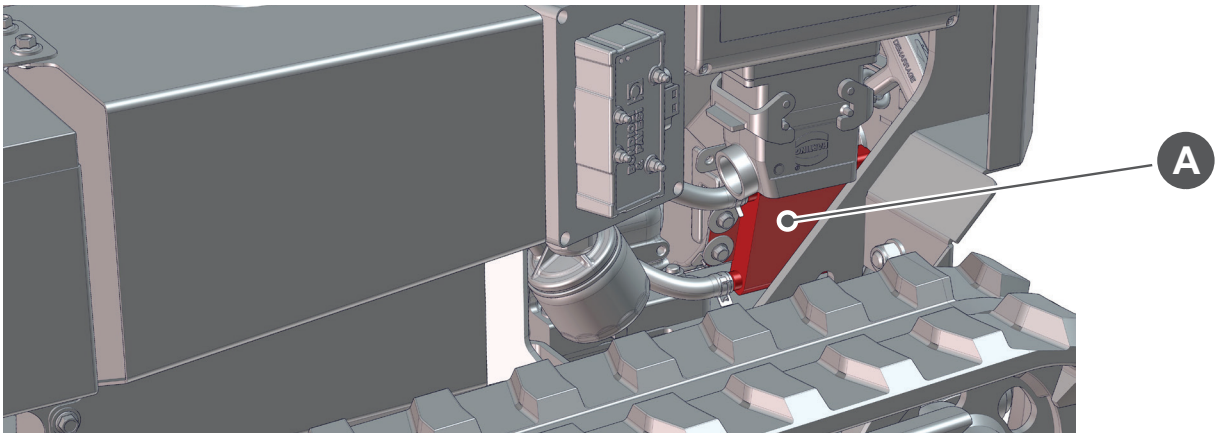
Do not use water to clean the engine: water could contaminate the fuel system. Use a dry brush or cloth to clean the engine.

This engine is air-cooled. The presence or debris can restrict airflow and cause the engine to overheat, and reduce engine performance and life.

To keep the engine clean, it is recommended to:

- Using a dry brush or cloth, remove debris from the air intake grille.
- Always keep the linkage, springs and controls clean
- Also keep the area near the exhaust pipe clean of flammable materials
- Make sure that the oil radiator fins (**A**) are free of dirt and debris.

Over time, debris may accumulate in the cooling fins of the cylinder and cause the engine to overheat, and this debris can be observed without partially dismounting the engine. For inspection and cleaning of the air cooling system, contact the FORT Srl customer care.



9.5.6 Checking and topping up the fuel

CAUTION

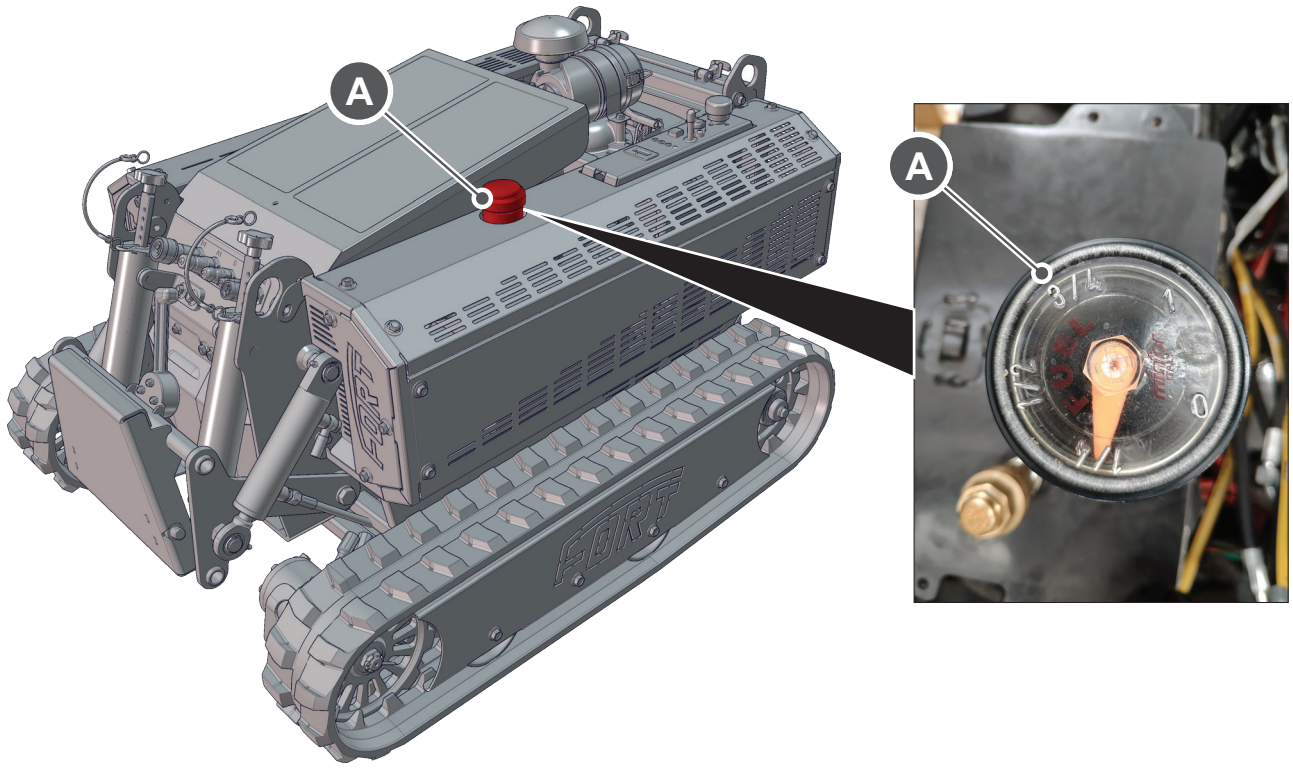
Check the fuel level in the tank each time it is used.

The level is displayed on the indicator (**A**) which also works as a fuel tank cap. If the level is low, unscrew the plug (**A**) and top up.

CAUTION

Be careful when unscrewing the cap and removing it from its seat. The cap may break if it is not removed vertically.

TANK LEVEL	LITRES
1	15
3/4	11.25
1/2	7.5
1/4	3.75
0	0



9.5.7 Replacing the fuel filter

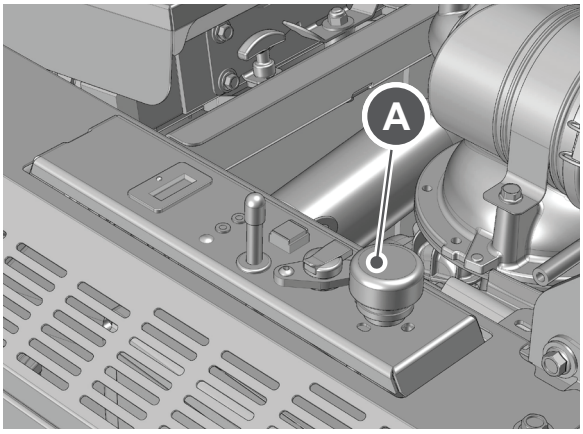
CAUTION

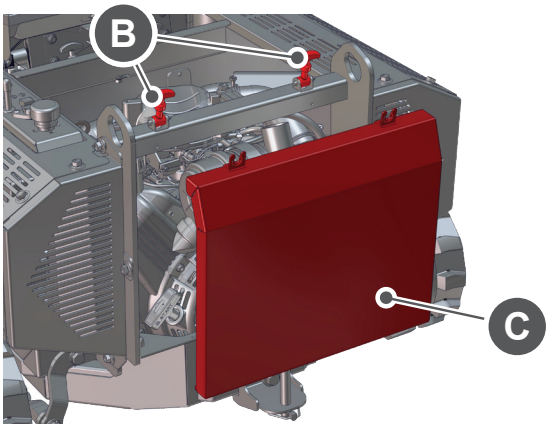
Replace the fuel filter *every 400 hours*.

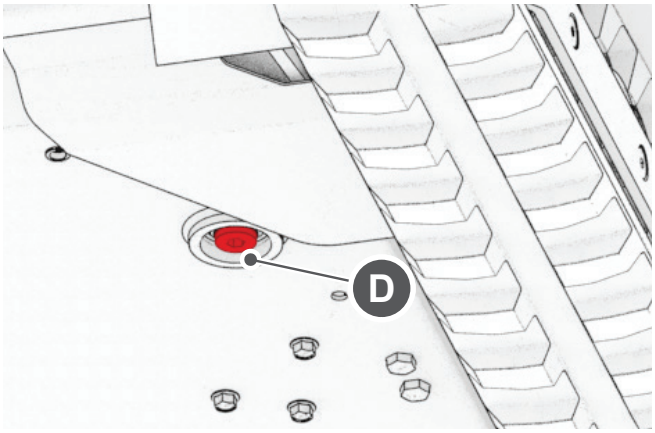
Before replacing the fuel filter, make sure that the MONOLITH is placed on a horizontal plane during maintenance operations.

To change the engine filter proceed as follows:

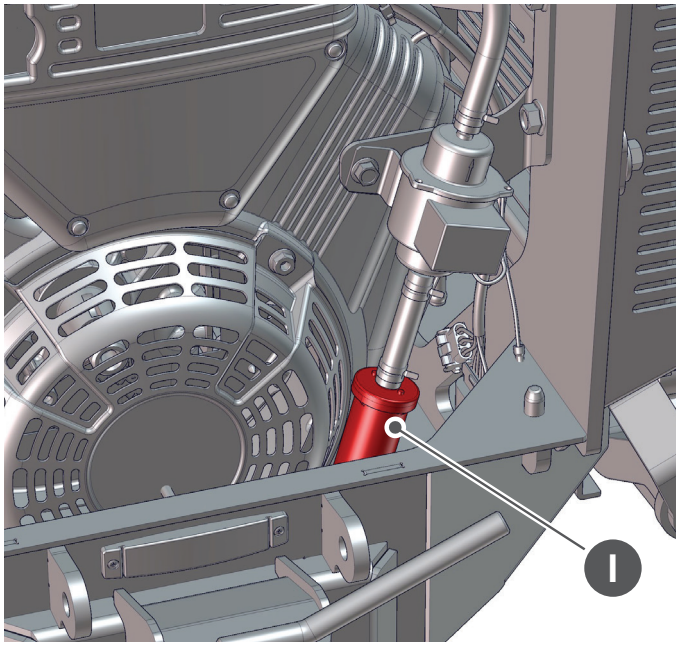
1) Place the MONOLITH on a lifter, then lift it up;
2) Press the battery switch (**A**);
3) Release the two tie rods (**B**);
4) Remove the rear panel (**C**);
5) Under the MONOLITH, near the tank, place a container to collect the fuel;
6) Using a 10 mm Allen wrench, unscrew the plug (**D**);
7) Empty the fuel tank;
8) Retighten and tighten the plug (**D**);

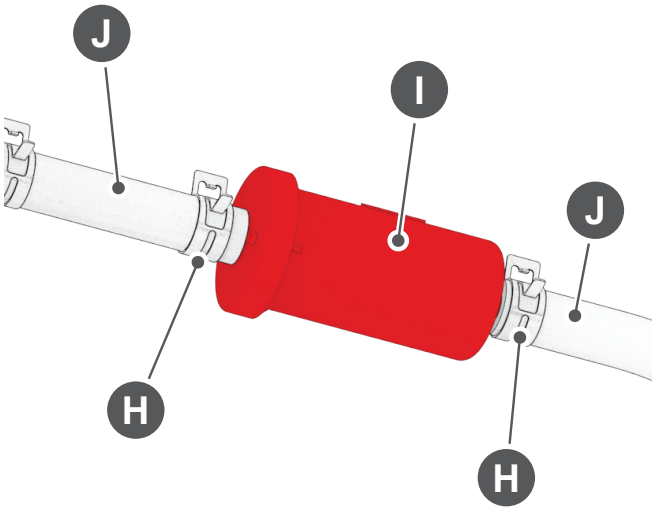






9) Use pliers to tighten the clamp fins (**H**), then slide the clamps away from the fuel filter (**I**). Rotate and slide the fuel supply pipes (**J**) away from the fuel filter;
10) Replace the fuel filter (**I**);
11) Secure the fuel supply pipes with the clamps (**H**);
12) Fill the fuel tank;
13) Check the fuel supply pipes (**J**) for cracks or leaks. Replace them if necessary.
14) Replace everything.





DANGER

Fuel and its vapours are extremely flammable and explosive.

Fires and explosions can cause severe burns or death.

- **Keep fuel away from sparks, open flames, pilot flames and other sources of ignition.**
- **Frequently check fuel lines, fuel tank, fuel cap and accessories for damage or leakage. Replace if necessary.**
- **Before cleaning or replacing the fuel filter, drain the fuel tank or close the fuel shut-off valve.**
- **If fuel spills, wait until the fuel has evaporated before starting the engine.**
- **Spare parts must be the same and installed in the same position as the original components.**

9.6 CLEANING OR REPLACING AIR FILTERS

DANGER

Remove the filter only with the engine off and do not start the engine with the air filter open. Wear protective clothing when carrying out cleaning.

CAUTION

The air filter assembly consists of a primary large capacity cartridge and a safety cartridge. The primary cartridge can be cleaned with a jet of air, but the safety cartridge must only be replaced. Whenever you replace the primary cartridge, replace also the safety cartridge.

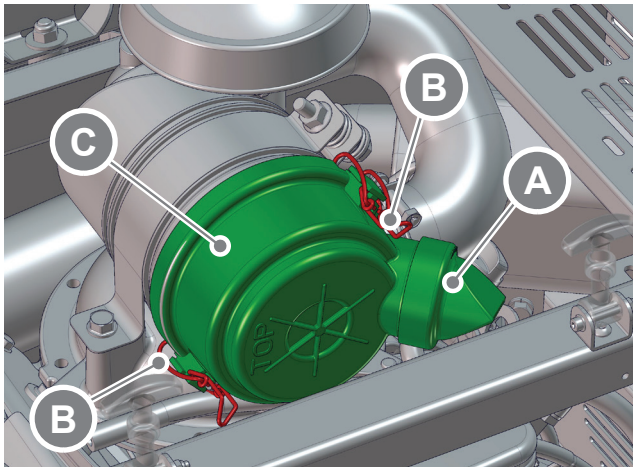
CAUTION

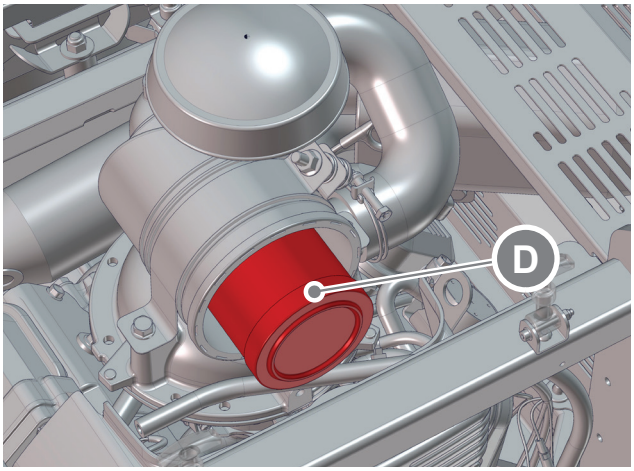
- **The air filter must be cleaned *every 8 hours or daily*.**
- **The air filter must be replaced *every 200 hours*. In case of heavy use, replace sooner.**

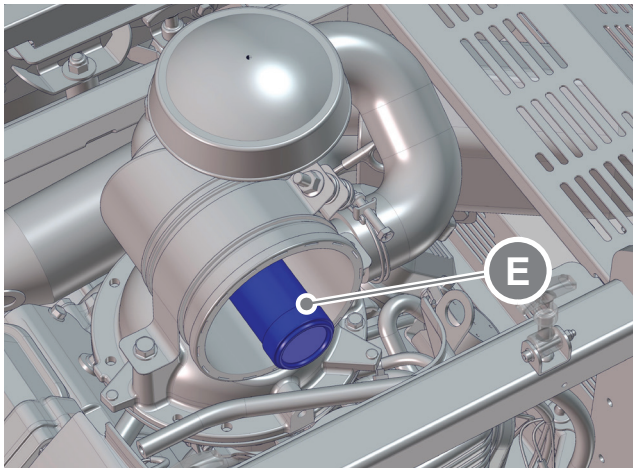
1) Place a container under the filter valve (**A**);
2) Press on the sides of the valve (**A**) to remove any residual dirt;
3) Release the two tie rods (**B**) and remove the cover (**C**);
4) Remove the primary cartridge (**D**): if it is difficult to remove, turn the cartridge slightly whilst pulling it at the same time. Clean it with a jet of air or replace it;
5) Remove the safety cartridge (**E**): if it is difficult to remove, turn the cartridge slightly whilst pulling it at the same time. Clean it with a jet of air or replace it;
6) Refit the cartridges (**D**) and (**E**);
7) Replace the cover (**C**) and fasten it using the two tie rods (**B**);

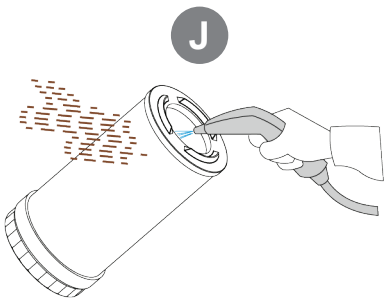
WARNING

- **Do not wash the air filter elements.**
- **Do not use solvents.**
- **Do not oil the cartridges.**
- **When using compressed air for cleaning, pay attention when directing the jet of air as it could damage the cartridge. The air jet must always flow from the inside to the outside, otherwise the filter will not work and when the engine is running, it will allow dust to enter the motor intake system and damage the engine. See figure (J)**









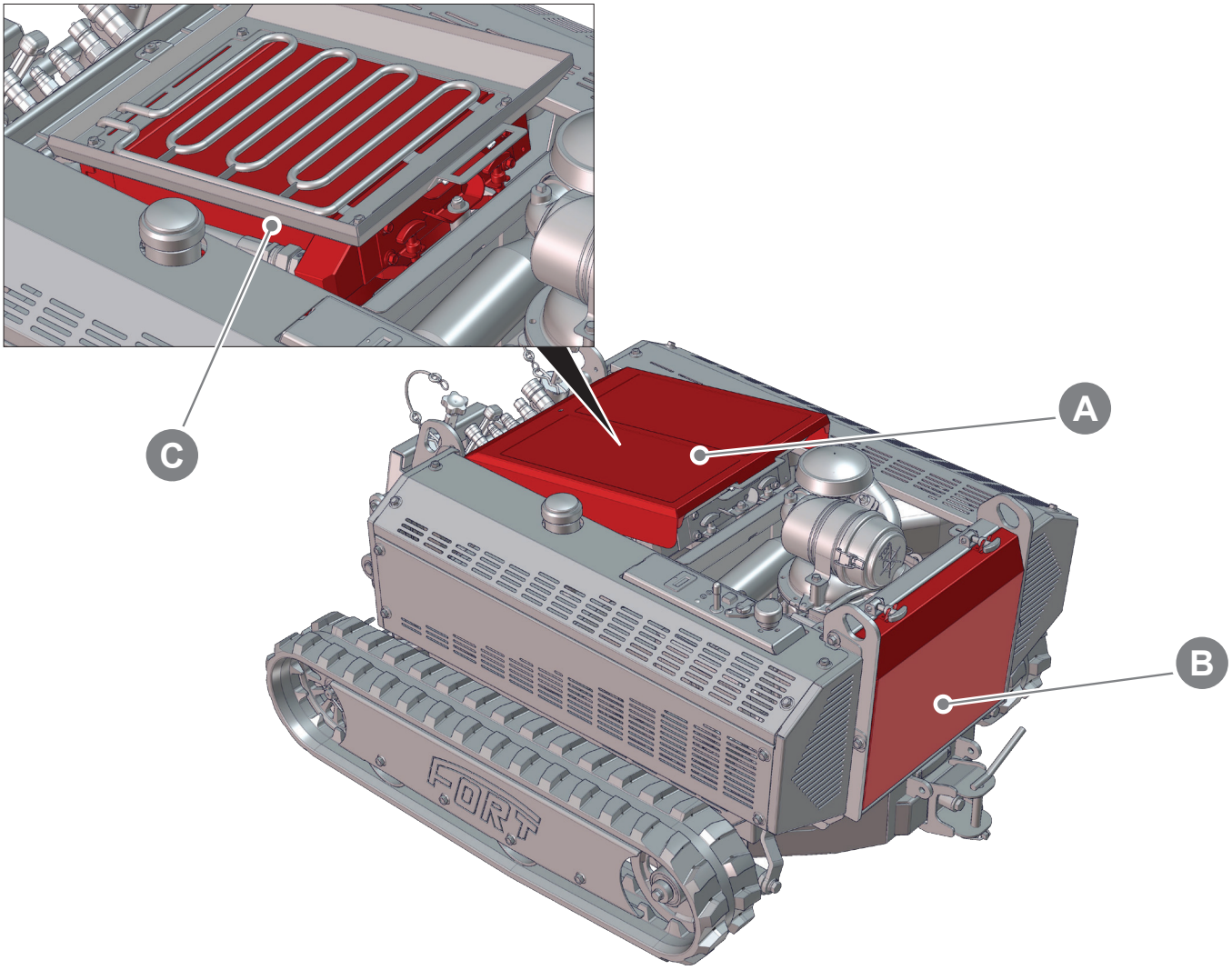
9.7 CLEANING THE GRILLES

To improve the efficiency of the engine and hydraulic oil cooling system, in addition to using the self-cleaning fan (*" 6.11 Self-cleaning fan"*), it is recommended to check and clean any dust from the radiator before each use.

1) Blow the grilles (**A**), (**B**) and the radiator (**C**) with compressed air.
2) Then clean them with specific products following the instructions provided with the products themselves.

CAUTION

Clean the grilles (A), (B) and the radiator (C) every *8 hours or daily*. In case of heavy use, clean more often.



09-Pulizia radiatore (MONOLITH)

9.8 MAINTENANCE OF THE HYDRAULIC SYSTEM

9.8.1 Hydraulic oil level check

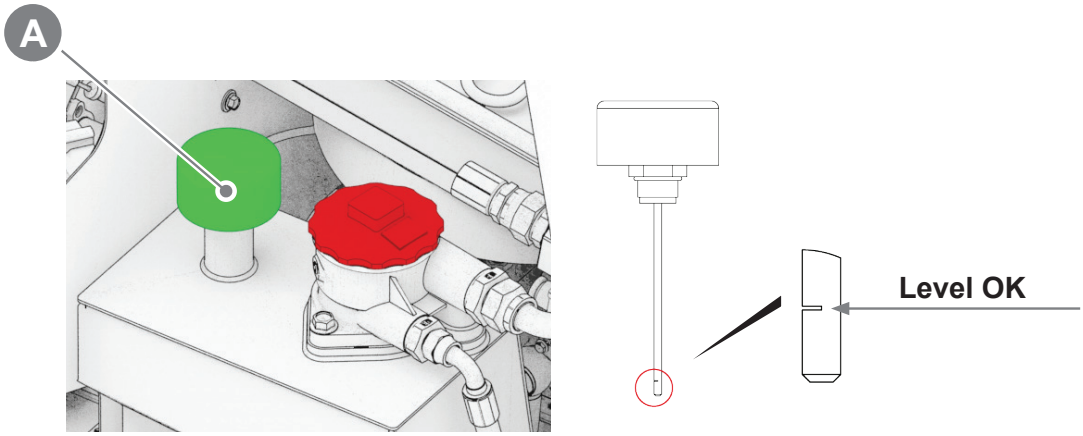
CAUTION

The hydraulic oil level should be checked *daily every 8 hours.*

To check the oil, the machine must be on a level surface. The hydraulic oil level is correct when it reaches the mark on the dipstick attached to the filler cap.

To check the oil level:

1) Unscrew the cap (**A**) and check the oil level on it.
2) If the level of oil is low, top it up until it reaches the mark.
3) Close the cap.



CAUTION

- **Do not top up oil beyond the MAX level, this could cause oil to leak from the tank.**
- **Restore the level only using the hydraulic oil shown in the table (see *"9.4.1 Lubricants table"*).**
- **When using Panolin HLP Synth E biodegradable oil, avoid mixing it with other oils.**
- **The use of non recommended lubricants and/or grease results in the forfeiture of the warranty.**

DANGER

Use protective clothes when topping up.

9.8.2 Changing the hydraulic oil

DANGER

The oil change must be carried out with the machine switched off, the equipment resting on the ground and the oil cold. The machine must be on solid and flat ground.

The hydraulic oil must be changed at regular intervals in order to ensure proper lubrication and viscosity in the hydraulic pumps. Refer to the following table for the frequency of substitutions and the type of oil to be used.

WARNING

Always change the oil with the same type that was removed.

Do not mix different types of oil.

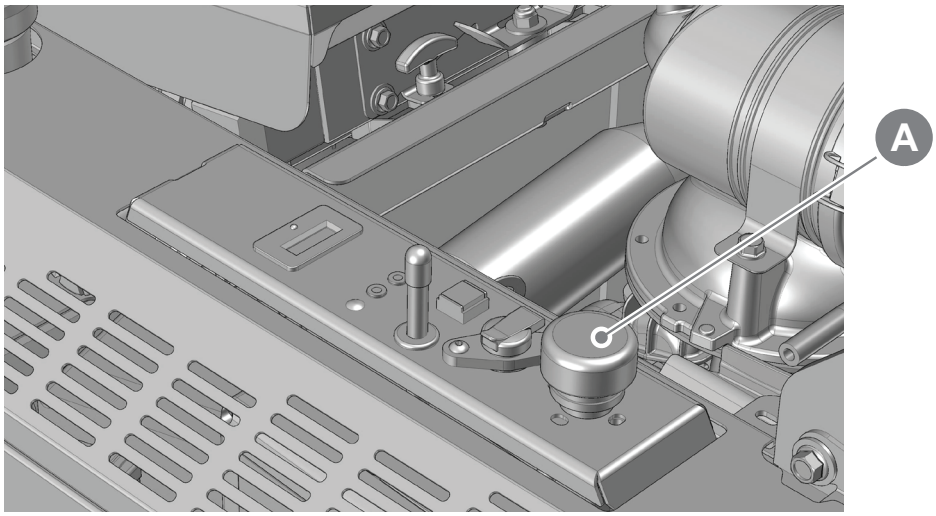
- Quantity required for filling: 12.5 litres
- The hydraulic oil must be changed, see table below:

Type	Make	Substitution by
Mineral	Q8 HELLER 46	1000 hours
Biodegradable	Q8 HOLBEIN HP SE BIO 46	2000 hours
	PANOLIN HLP SYNTH E 46	15000 hours

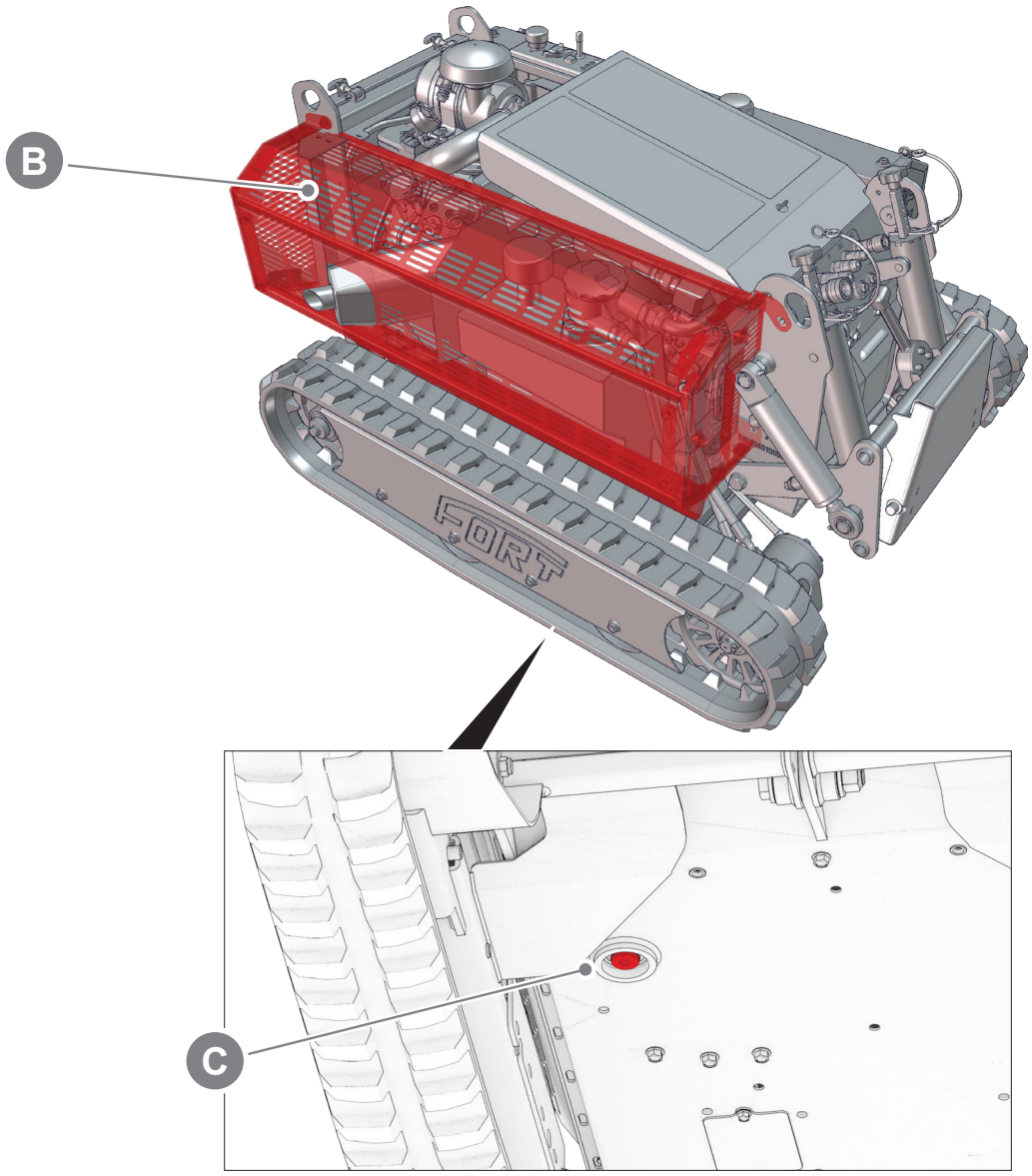
Before replacing the hydraulic oil filter, make sure that the MONOLITH is placed on a horizontal plane during maintenance operations.

Proceed as follows to replace the hydraulic oil:

1) Place the MONOLITH on a lifter, then lift it up;
2) Press the battery switch (**A**);



3) Unhook and then remove the right side bonnet (**B**);
4) Under the MONOLITH, near the tank, place a container to collect the exhausted oil;
5) Using a 10 mm Allen wrench, unscrew the magnetic cap (**C**): if necessary, clean any metal residue stuck to the magnet;
6) Empty the hydraulic oil tank;
7) Retighten and tighten the cap (**C**);
8) Fill with new oil. As soon as the correct level has been reached (see section ***"9.8.1 Hydraulic oil level check"***), start the engine and leave it running for ten seconds.
9) - Turn the engine off again and recheck the oil level.
10) If necessary, top up with oil until the oil level is restored.



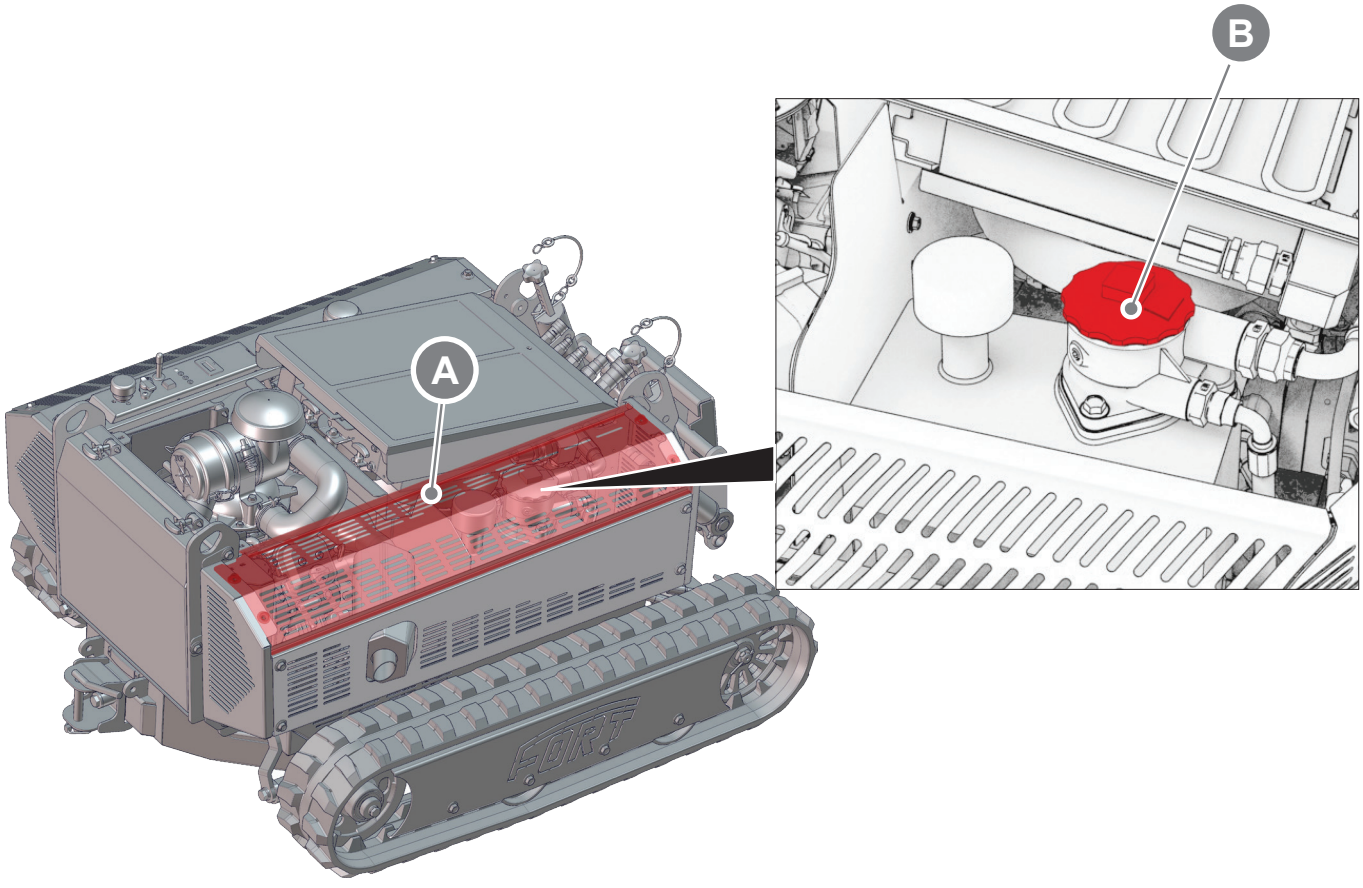
9.8.3 Changing the hydraulic oil filter

CAUTION

- **The hydraulic oil filter should be replaced *every 200 hours.***

To change the hydraulic oil filter proceed as follows:

11) Remove the upper right guard (**A**)
12) Unscrew the red cap (**B**) on top of the filter using a 32 mm wrench.
13) Extract the filtering element;
14) Filters should only be replaced with original filters and before they become completely clogged;
15) Always check the O-ring and seals when a component of the hydraulic circuit is dismounted or is replaced. If broken or damaged, replace them;
16) Close the cap again and tighten it with the spanner with a maximum torque of *35 Nm*.



9.9 MAINTENANCE OF THE HYDRAULIC MOTORS AND HYDRAULIC VALVES

Periodically check that:

- There are hydraulic motor and hydraulic oil leaks. If there are try tightening the fixing screws.
- The hydraulic fittings connected to the motor and valves are not loose. If they are, tighten them.
- If the problem persists, Contact FORT Srl customer service.

DANGER

Use protective clothes when topping up.

9.10 CHECKING AND MAINTAINING THE ELECTRICAL SYSTEM

This is a visual inspection that must be carried out with the utmost care in order to avoid short-circuits in the system that would damage the machine.

CAUTION

Specifically check every *200 hours*.

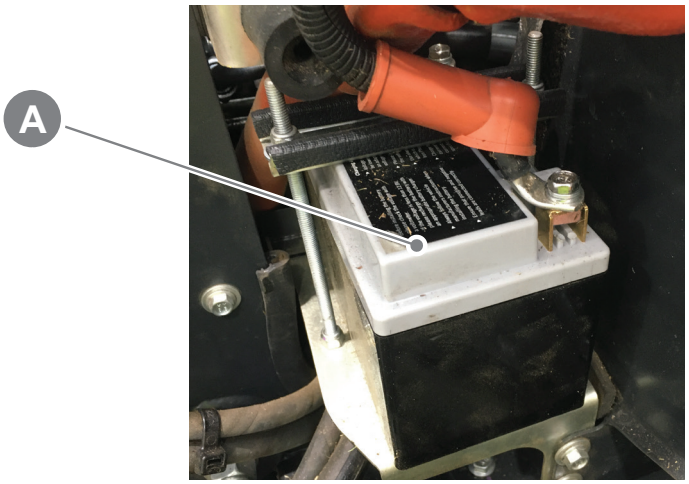
- Fuses, if corroded or rusty, replace them with fuses of the same capacity.
- Battery (**A**), check the battery clamp connections. If they are oxidised, remove the oxidation and coat them with appropriate grease. When carrying out this operation, be very careful not to let the earth wire (black) touch the power supply wire (red).
- Starter motor, check the cables.
- Check the tightness of connectors

WARNING

If the cables show signs of a short circuit, look for the causes and contact the FORT Srl customer care department

Electrical system maintenance tasks are:

- Checking the battery charge (**A**).

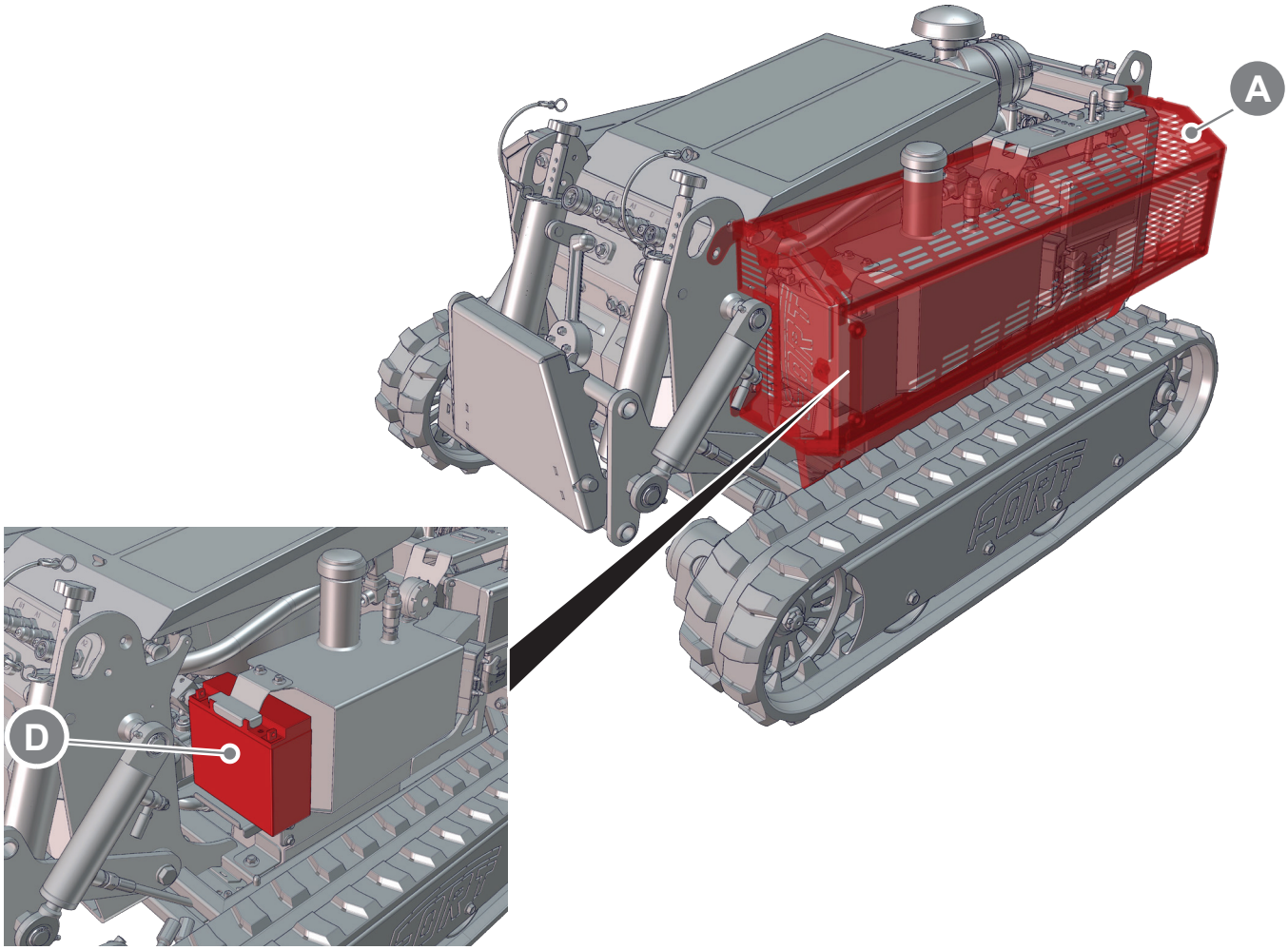


9.10.1 ***Checking the battery charge***

To check the charge of the battery:

1) Switch off the machine
2) Unhook and then remove the left side bonnet (**A**);
3) Check the voltage of the battery (**B**) using a multimeter (tester) by connecting the red test lead to the positive lead and the black test lead to the machine ground (e.g. to the frame or the engine of the machine).

09-Controllo carica batterie



WARNING

If the voltage of the batteries with the engine switched off is sufficient (at least 12 - 12.5 Volts), but the machine does not start, DO NOT CONTINUE and proceed as indicated below.

Furthermore, make sure that:

- No modifications are made to the electrical system without FORT Srl authorisation.
- Do not remove or install any components without the prior authorisation of FORT Srl.
- Prevent the electrical system from coming into contact with water.
- Protect the connection pins with anti corrosives.

DANGER

- **Never check the battery charge status by connecting the two poles with a metal object, use the voltmeter.**
- **Always disconnect the earth connector (—) of the battery first and reconnect it last.**
- **The sulphuric acid in the battery electrolyte is poisonous. It can cause burns to the skin get through fabrics and cause blindness if it comes into contact with the eyes.**
- **Please note that lead and its compounds cause cancer and other damage to reproductive organs. These substances are present in the battery poles, terminals and accessories. Wash your hands after touching them.**

9.11 PERIODICALLY REPLACE THE SAFETY COMPONENTS

To guarantee safety at any time while the machine is being used, the operator is required to make the replacements listed below.

Periodically replace the safety components		
Component	**Years**	**Hours**
Fuel pipes	2	2000
Hydraulic pipes	4	4000

9.12 DRIVE WHEEL MAINTENANCE

9.12.1 Checking the tightness of the screws

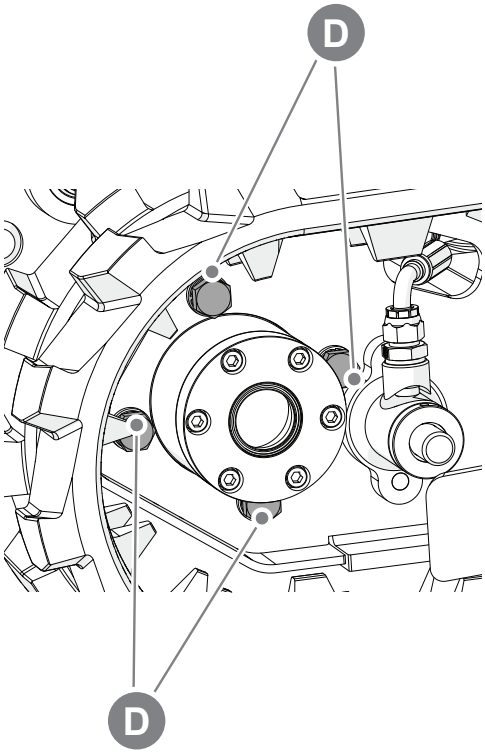
The tightening torque of the wheel drive fixing screws should be checked every ***200 hours***. The check must be carried out using a torque wrench. This should be carried out on both sides of the machine.

To reach the drive wheel screws:

1) Loosen the track, see paragraph ***"9.13.1 Checking the track tension"***;
2) Fold and pull out the cotter pin (**A**);
3) Unscrew the nut (**B**) using a 30-mm wrench;
4) Pull out the wheel (**C**);
5) Check the tightening of the four screws (**D**);
6) Tighten the nut (**B**) with a torque of 200 ÷ 210 Nm;
7) Fit the cotter pin (**A**).

Refer to the table below for the required tightening torques.

Nut size (D)	M10
Wrench	16 mm
Tightening torque	67 Nm



9.13 TRACK MAINTENANCE

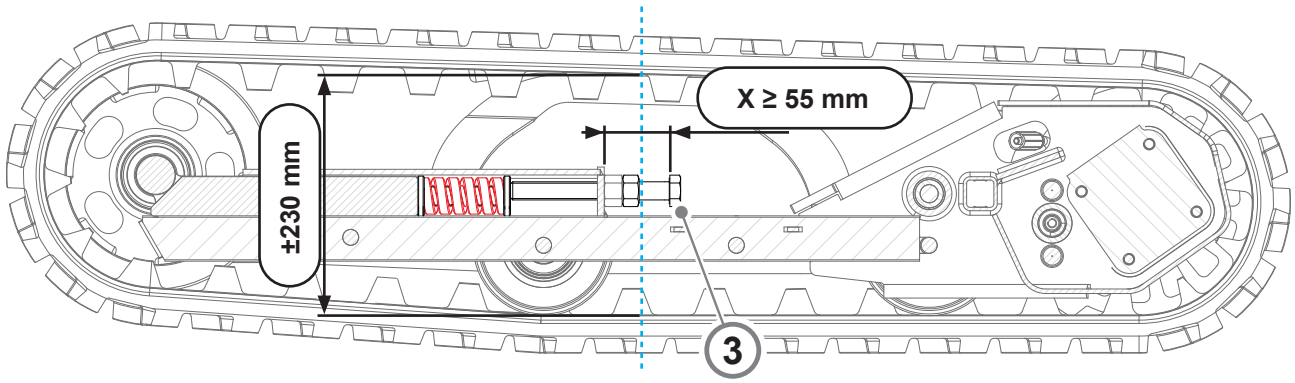
9.13.1 Checking the track tension

CAUTION

It is important that the tracks of the machine are properly tensioned during operation. If the machine is used with insufficiently tensioned tracks, there is a risk that the tracks will come out of their seats and be lost during operation. Conversely, if they are too tensioned, there is a risk of early wear of the idler roller bearings.

CAUTION

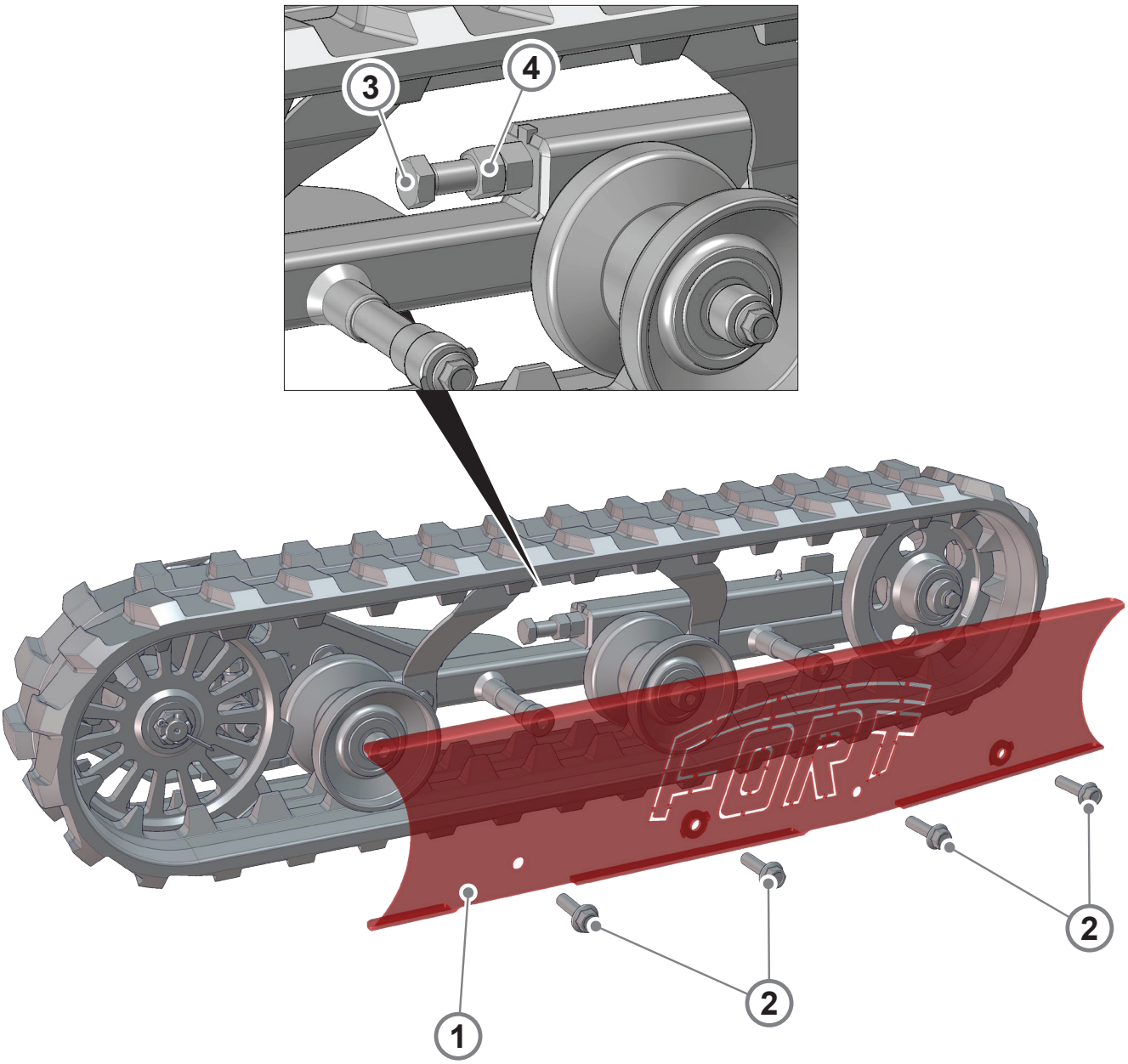
- **An initial check should be carried out *after the first 8 hours* of the machine's life or when the tracks are replaced.**
- **Check the tensioning of the tracks *every 50 working hours*.**



The correct tensioning is measured between the two central idle wheels (blue dotted axle). The correct value must be approximately ± 230 mm; if the latter is greater, the value must be restored by tensioning the track. The distance between the screw (**3**) and the carriage must never be less than 55 mm, otherwise there is a risk of early wear of the idler roller bearings.

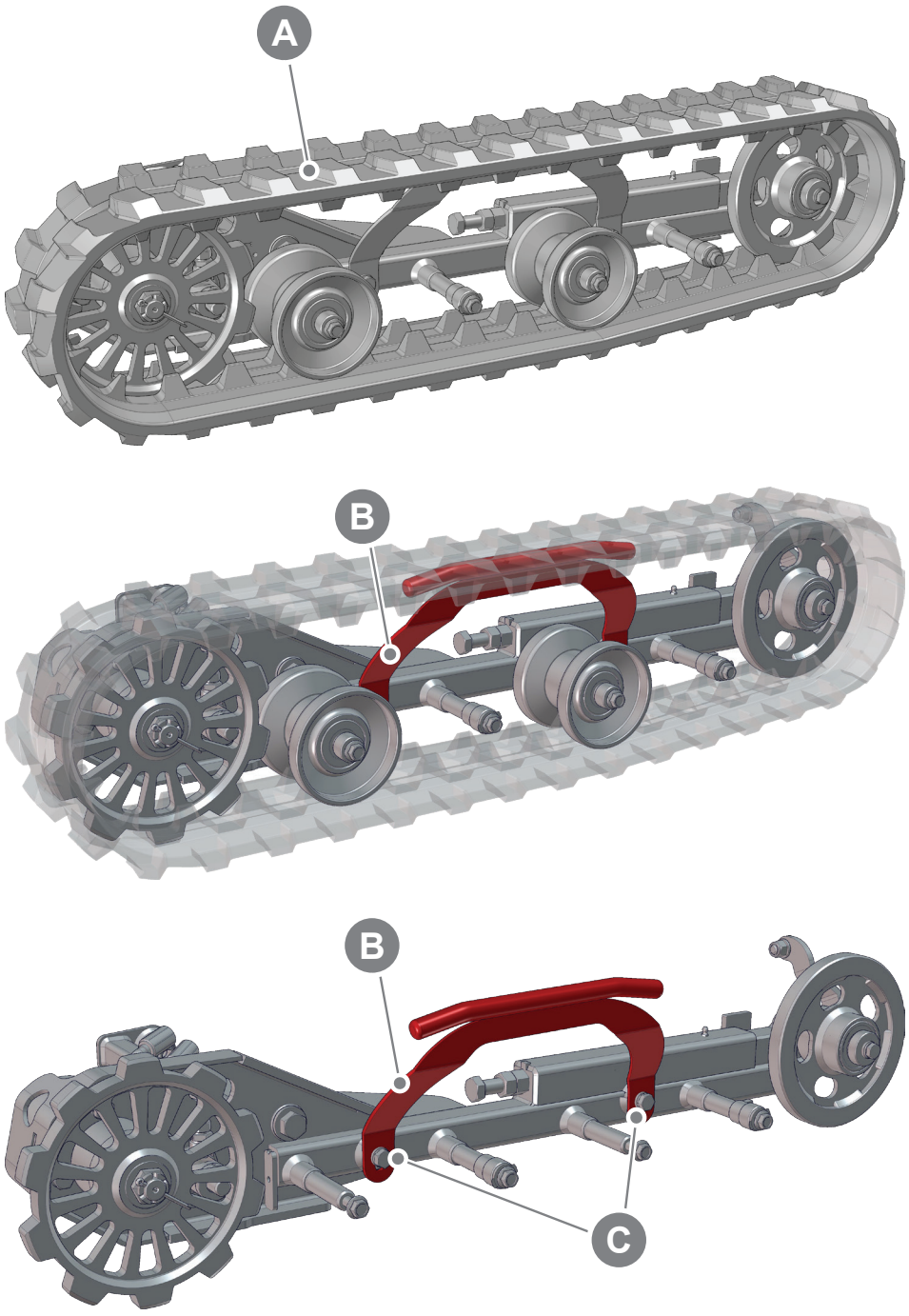
Tension the crawler tracks as follows:

1) Place the machine on level ground with the engine switched off and lifted off the ground.
2) Remove the guard (**1**) by unscrewing the screws (**2**).
3) Loosen the nut (**4**).
4) Tighten the screw (**3**) until the correct track tension is reached. Tightening the screw increases the tension of the track; loosening it, on the other hand, loosens the track.
5) Once the track has been tensioned, tighten the nut (**4**).
6) Reinstall the guard (**1**) using the screws (**2**).



Furthermore, if you notice vibrations on the upper part of the track (**A**), it is likely that the upper track guide (**B**) must be adjusted.

1) Loosen the two screws (**C**) with a 16 mm wrench;
2) Raise the track guide (**B**);
3) Tighten the two screws (**C**) with a torque of 67 Nm.

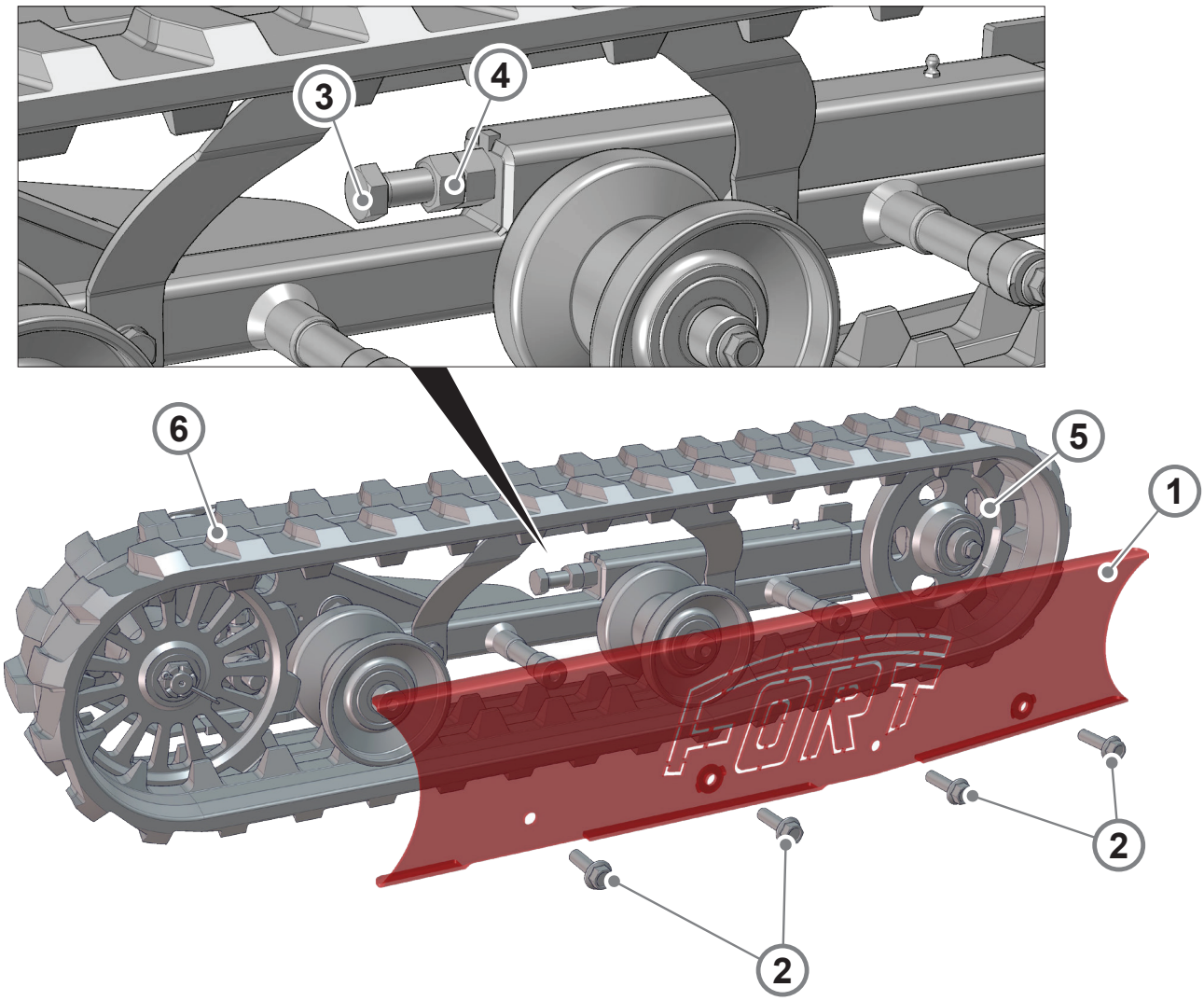


Replacing the track

Tracks should be replaced when only 10mm of tread is left, or before if they show signs of having been cut.

Proceed as follows:

1) Place the machine on level ground with the engine switched off and raised (30 - 40 cm) off the ground.
2) Thoroughly clean the parts of the carriage and undercarriage.
3) Remove the guard (**1**) by unscrewing the screws (**2**).
4) Loosen the nut (**4**).
5) Loosen the screw (**3**) by pulling back the rear wheel (**5**).
6) Lift the lower half of the track (**6**).
7) Move the track (**6**) out from its seat (outwards) by levering it off from the idle wheel (**5**).
8) To install the new track follow the instructions above in reverse order.
9) Tension the track as seen in the previous paragraph.



DANGER

The machine support must be capable of supporting the load and keep it in a stable and safe position.

To lift the machine, refer to chapter *"7. Transport and handling"* and section *"9.13.1 Checking the track tension"*.

9.13.2 Roller wear

The rollers are considered wear parts. Their duration depends on the ground on which they operate (muddy, sandy or other types) and the working conditions in which the machine is used.

It is recommended that you check a roller (by removing it) as soon as you realise that it doesn't rotate freely and establish the reason for it.

9.14 GREASING

All the parts of the machine that need to be greased are fitted with grease nipples.

The parts to be greased are:
Idler rollers: 2 points
Lifter cylinders: 4 points

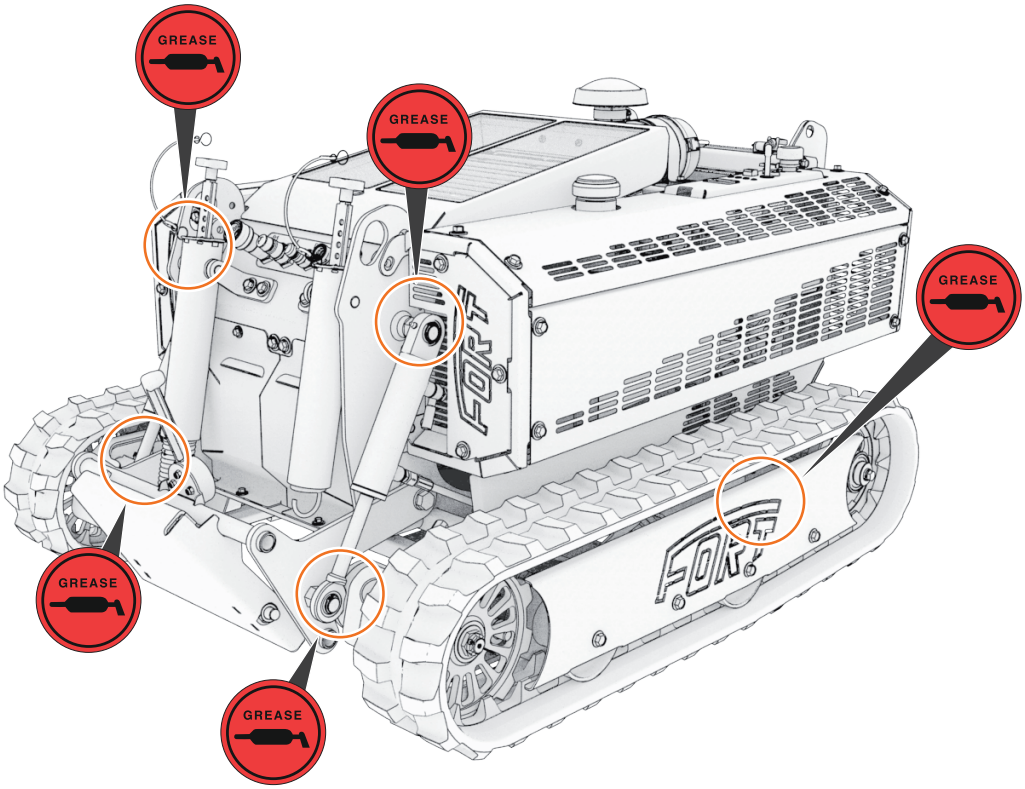
To grease the machine you must:
1) have an appropriate pump.
2) Connect the nozzle of the grease gun to the grease nipple on the machine.
3) Pump in grease into it until a small amount seeps out from the joints.
4) Repeat the entire procedure for the other side as well.

Refer to the grease table in section ***"9.4.1 Lubricants table"*** for what grease to choose. Proper lubrication is very important. Insufficient and infrequent lubrication may cause premature faults or overheating in some of the working parts as well as damage to the gaskets.

CAUTION

Grease every *50 working hours* or *weekly*.

09-Ingrassaggio



9.15 CHECKING THE CHROME-PLATED PARTS

CAUTION

Inspect the chrome-plated parts of the machine (cylinders) and make sure that they are not scored or damaged every *50 working hours or weekly*.

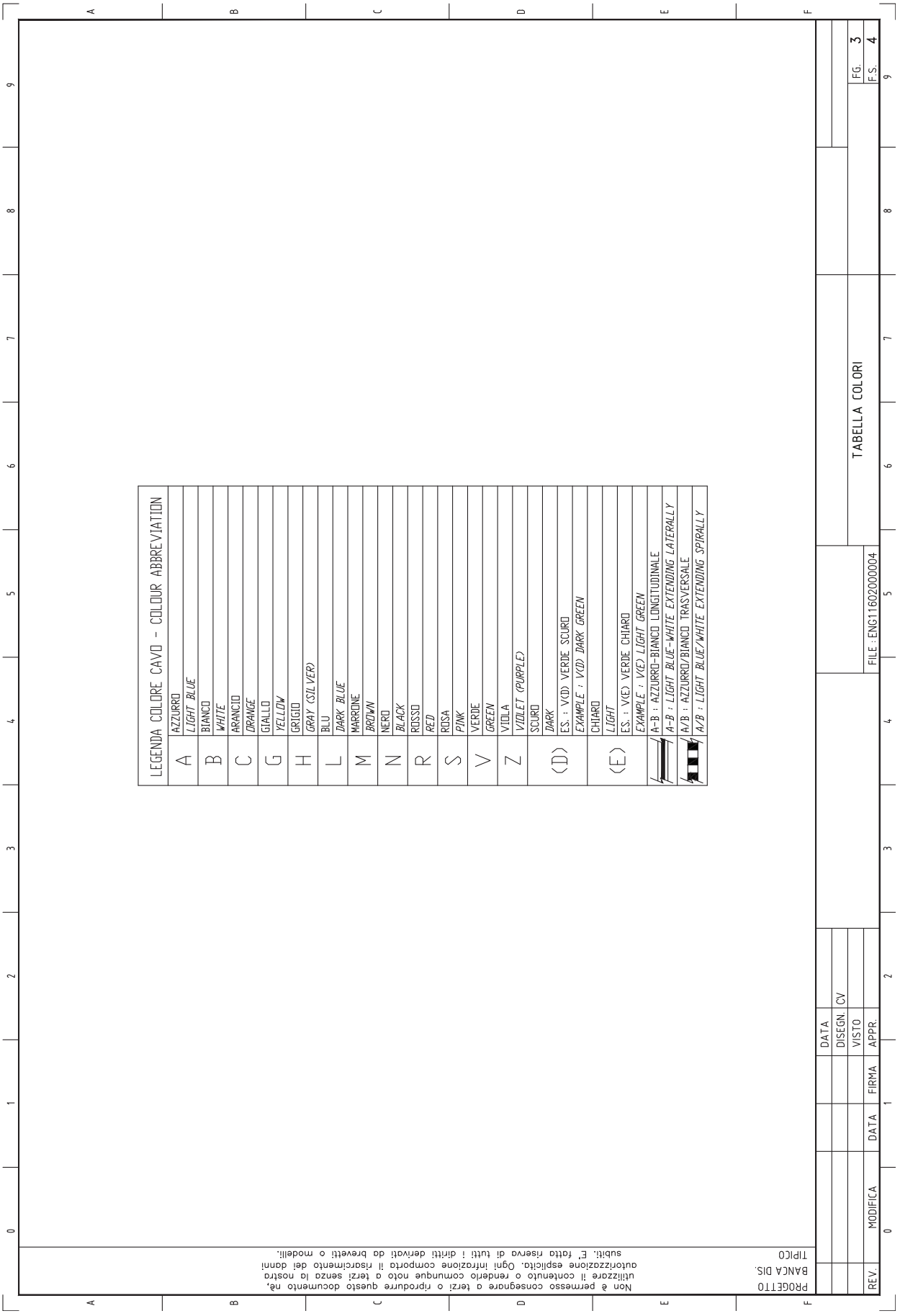
9.16 MAINTENANCE OPERATIONS

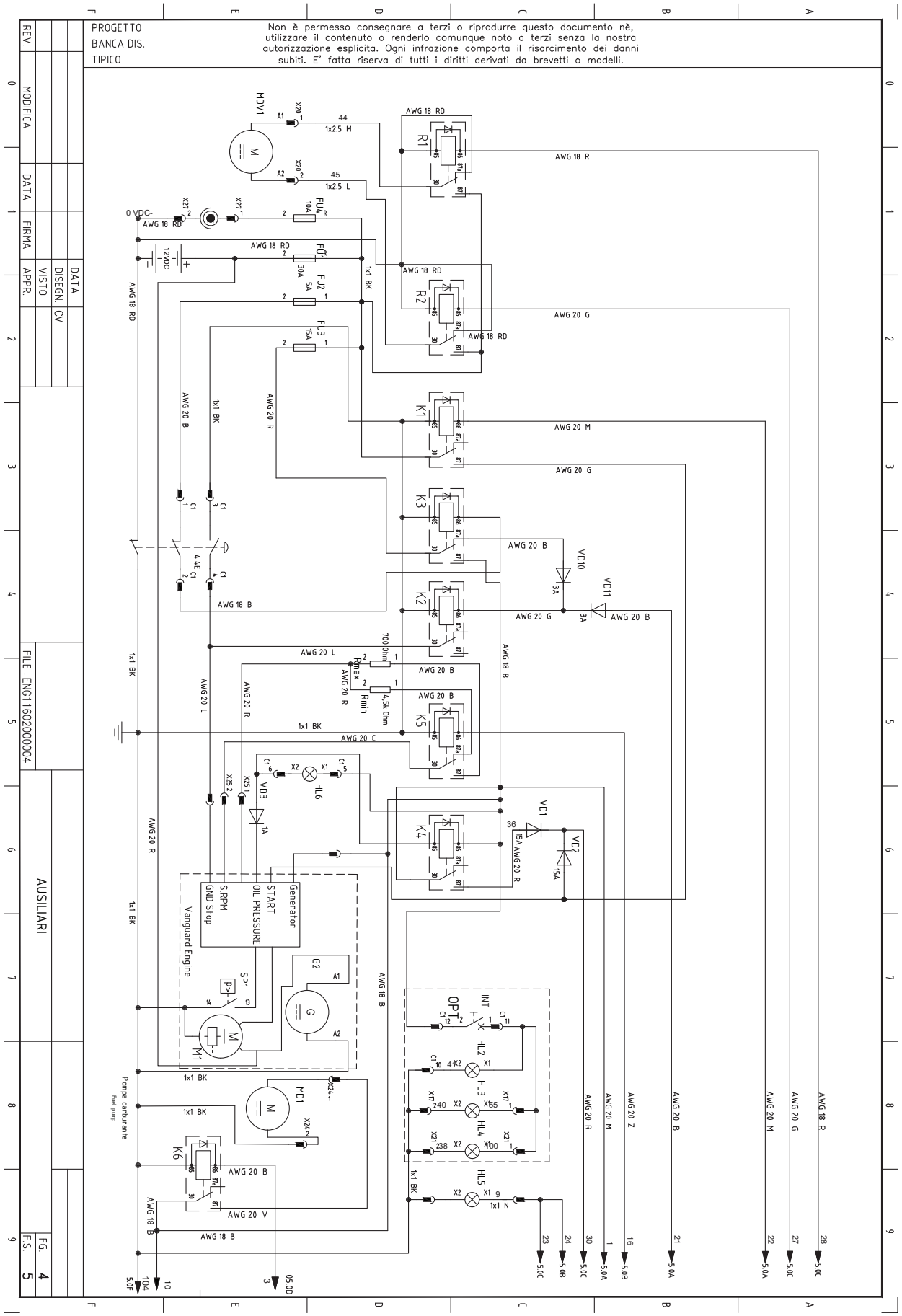
9.16.1 Maintenance Frequency

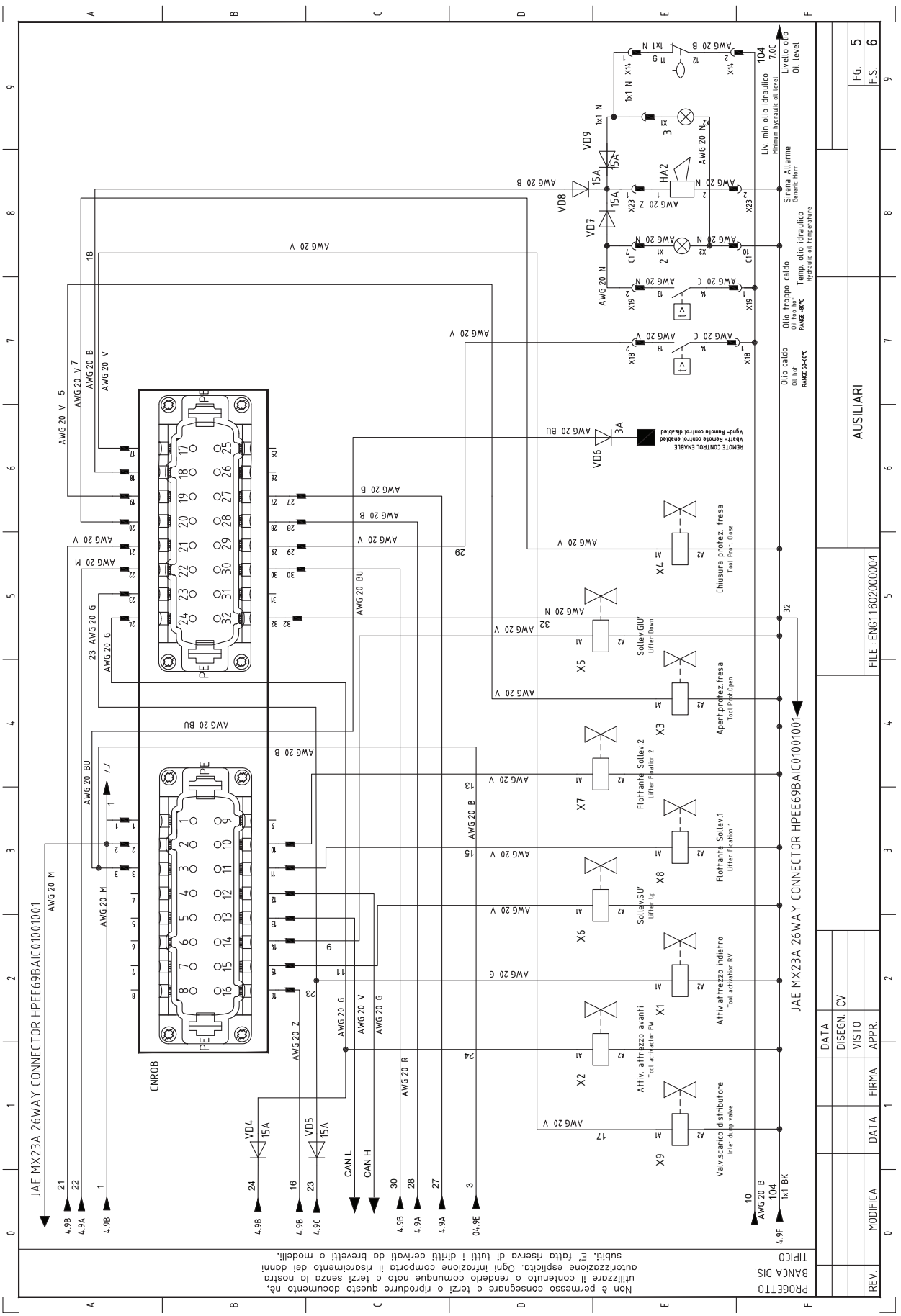
		Every 8 hours / Daily	Every 50 hours / every week	100 hours	200 hours	300 hours	400 hours	500 hours	600 hours	700 hours	800 hours	900 hours	1000 hours
SPARK PLUGS	Check / top-up		X										
	Substitution			X	X	X	X	X	X	X	X	X	X
ENGINE OIL	Check / top-up	X											
	Substitution			X	X	X	X	X	X	X	X	X	X
ENGINE OIL FILTER	Substitution			X	X	X	X	X	X	X	X	X	X
ENGINE OIL RADIATOR	Cleaning				X		X		X		X		X
ENGINE COOLING SYSTEM	Cleaning				X		X		X		X		X
FUEL	Check / top-up	X											
FUEL FILTERS	Substitution						X				X		
ENGINE AIR FILTERS	Control / Cleaning	X											
	Substitution				X		X		X		X		X
ELECTRIC SYSTEM	Check				X		X		X		X		X
CHARGER	Check				X		X		X		X		X
HYDRAULIC OIL	Check / top-up	X											
	Substitution												X[(a)]
HYDRAULIC OIL FILTER	Substitution				X		X		X		X		X
GRILLES	Cleaning	X											
HYDRAULIC OIL RADIATOR	Cleaning	X											
TRACK TENSIONING	Check	X[(b)]	X										
DRIVE WHEEL RETAINER	Check				X		X		X		X		X
IDLER ROLLER	Greasing		X										
LIFTER	Greasing		X										
CHROME-PLATED PARTS	Check		X										

[(a)] Change according to the type of hydraulic oil in the machine. (Please, refer to the tables in sections ***"9.4.1 Lubricants table"*** and ***"9.8.2 Changing the hydraulic oil"***).
[(b)] Only for the first check / replacement.

10. ELECTRICAL SYSTEM






AUSILIARI
FILE : ENG11602000004
FG. 5
F.S. 6
DATA
DISEGN. CV
VISTO
APPR.
REV.
MODIFICA
DATA
FIRMA
PROGETTO
BANCA DIS.
TIPICO
JAE MX23A 26WAY CONNECTOR HPEE69BAIC01001001
JAE MX23A 26WAY CONNECTOR HPEE69BAIC01001001
CNROB
CAN L
CAN H
VD4
VD5
VD6
VD7
VD8
VD9
HA2
X1
X2
X3
X4
X5
X6
X7
X8
X9
Attiv. attrezzo avanti
Attiv.attrezzo indietro
Aperl protez.fresa
Chiusura protez. fresa
Floftante Sollev.1
Floftante Sollev.2
Sollev.GIU'
Sollev.SU'
Valv.scarico distributore
Olio caldo
Olio troppo caldo
Temp. olio idraulico
Liv. min olio idraulico
Sirena Allarme
Livello olio
REMOTE CONTROL ENABLE
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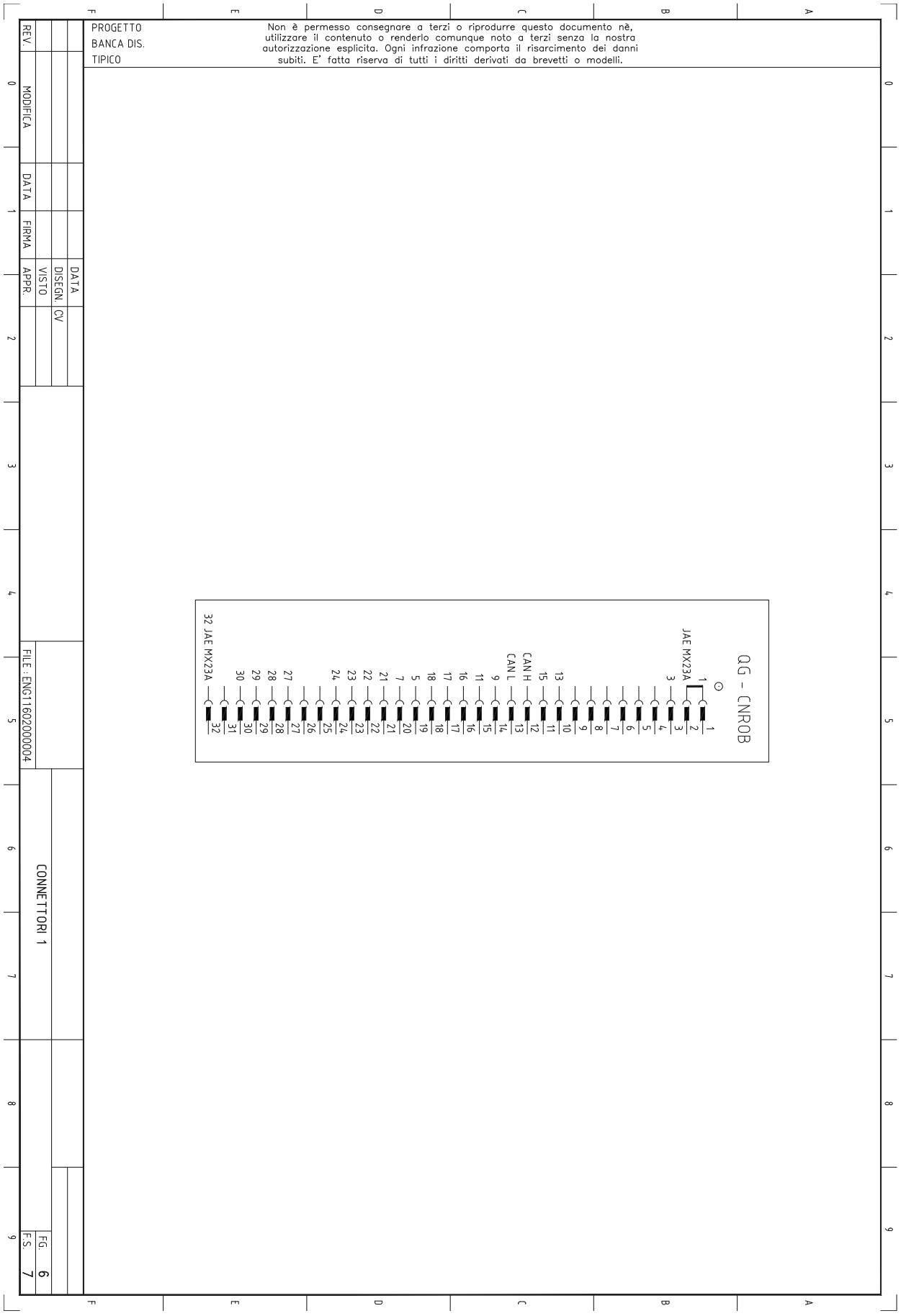

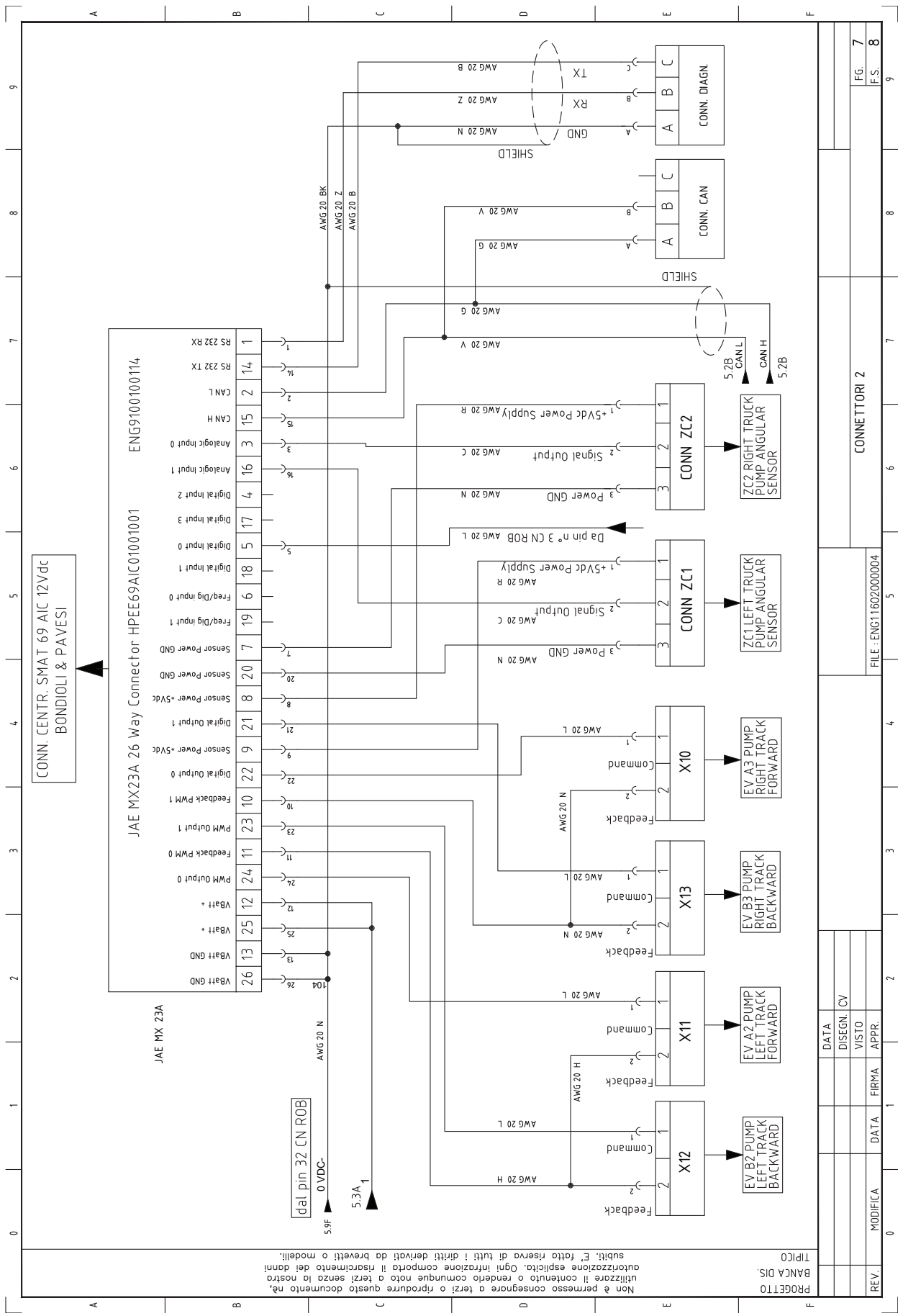
CONN. CENTR. SMAT 69 AIC 12Vdc
BONDIOLI & PAVESI
JAE MX23A 26 Way Connector HPEE69AIC01001001
ENG9100100114
JAE MX 23A
RS 232 RX
RS 232 TX
CAN L
CAN H
Analogic Input 0
Analogic Input 1
Digital Input 2
Digital Input 3
Digital Input 0
Digital Input 1
Freq./Dig Input 0
Freq./Dig Input 1
Sensor Power GND
Sensor Power GND
Sensor Power +5Vdc
Digital Output 1
Sensor Power +5Vdc
Digital Output 0
Feedback PWM 1
PWM Output 1
Feedback PWM 0
PWM Output 0
VBatt +
VBatt +
VBatt GND
VBatt GND
CONN. DIAGN.
CONN. CAN
SHIELD
TX
RX
GND
AWG 20 B
AWG 20 Z
AWG 20 N
AWG 20 BK
AWG 20 Z
AWG 20 B
AWG 20 V
AWG 20 G
5.2B CAN L
CAN H 5.2B
CONN ZC2
+5Vdc Power Supply AWG 20 R
Signal Output AWG 20 C
Power GND AWG 20 N
ZC2 RIGHT TRUCK PUMP ANGULAR SENSOR
Da pin n° 3 CN ROB AWG 20 L
CONN ZC1
+5Vdc Power Supply AWG 20 R
Signal Output AWG 20 C
Power GND AWG 20 N
ZC1 LEFT TRUCK PUMP ANGULAR SENSOR
X10
X13
X11
X12
Command
Feedback
AWG 20 L
AWG 20 N
AWG 20 H
EV. A3 PUMP RIGHT TRACK FORWARD
EV. B3 PUMP RIGHT TRACK BACKWARD
EV. A2 PUMP LEFT TRACK FORWARD
EV. B2 PUMP LEFT TRACK BACKWARD
dal pin 32 CN ROB
0 VDC-
5.9F
5.3A 1
104
CONNETTORI 2
FILE : ENG1160200004
FG. 7
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REV.
MODIFICA
DATA
FIRMA
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PROGETTO
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TIPICO
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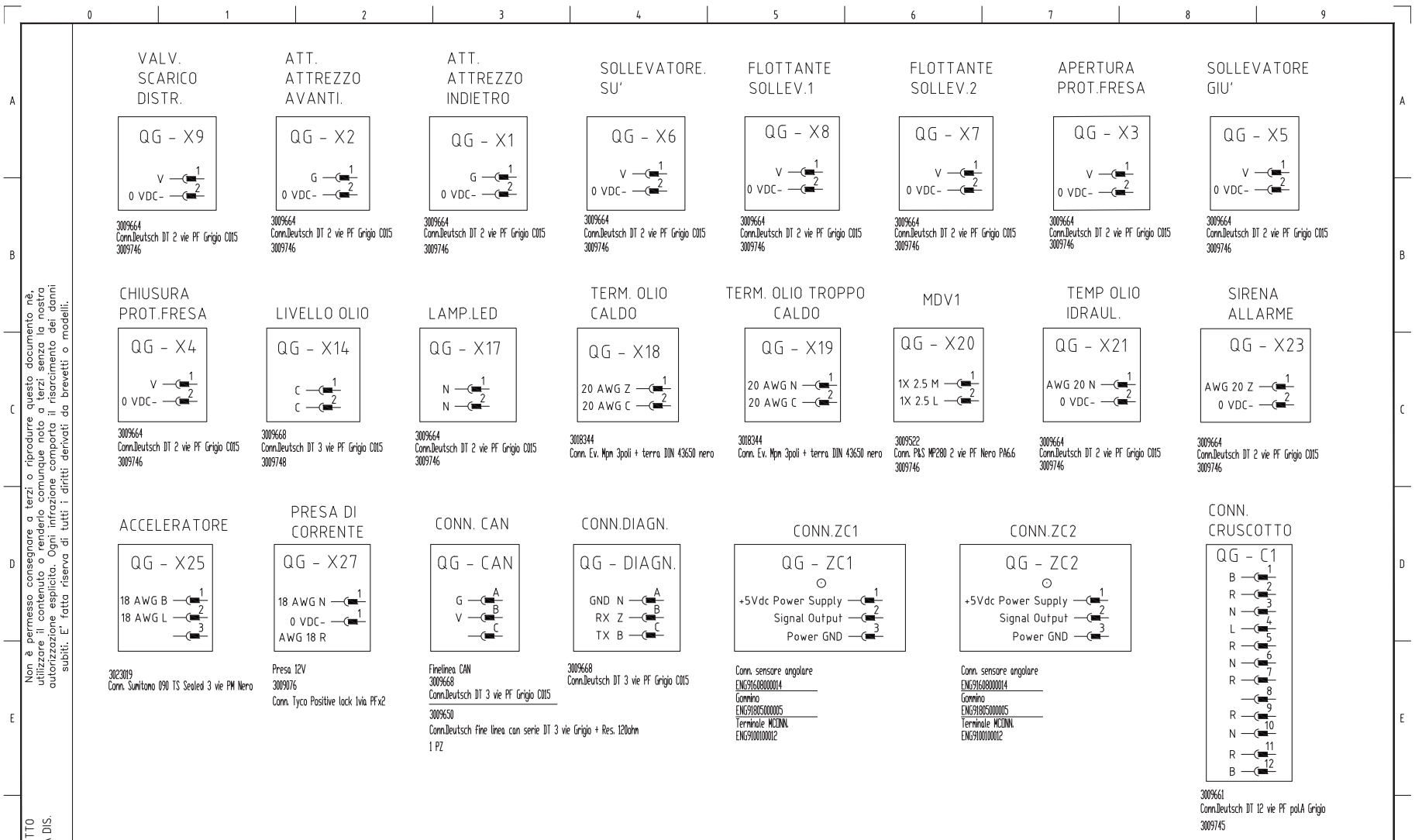
VALV. SCARICO DISTR.
QG - X9
V
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
ATT. ATTREZZO AVANTI.
QG - X2
G
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
ATT. ATTREZZO INDIETRO
QG - X1
G
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
SOLLEVATORE. SU'
QG - X6
V
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
FLOTTANTE SOLLEV.1
QG - X8
V
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
FLOTTANTE SOLLEV.2
QG - X7
V
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
APERTURA PROT.FRESA
QG - X3
V
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
SOLLEVATORE GIU'
QG - X5
V
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
CHIUSURA PROT.FRESA
QG - X4
V
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
LIVELLO OLIO
QG - X14
C
C
3009668
Conn.Deutsch DT 3 vie PF Grigio C015
3009748
LAMP.LED
QG - X17
N
N
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
TERM. OLIO CALDO
QG - X18
20 AWG Z
20 AWG C
3018344
Conn. Ev. Mpm 3poli + terra DIN 43650 nero
TERM. OLIO TROPPO CALDO
QG - X19
20 AWG N
20 AWG C
3018344
Conn. Ev. Mpm 3poli + terra DIN 43650 nero
MDV1
QG - X20
1X 2.5 M
1X 2.5 L
3009522
Conn. P&S MP280 2 vie PF Nero PA6.6
3009746
TEMP OLIO IDRAUL.
QG - X21
AWG 20 N
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
SIRENA ALLARME
QG - X23
AWG 20 Z
0 VDC-
3009664
Conn.Deutsch DT 2 vie PF Grigio C015
3009746
ACCELERATORE
QG - X25
18 AWG B
18 AWG L
3023019
Conn. Sumitomo 090 TS Sealed 3 vie PM Nero
PRESA DI CORRENTE
QG - X27
18 AWG N
0 VDC-
AWG 18 R
Presa 12V
3009076
Conn. Tyco Positive lock 1via PFx2
CONN. CAN
QG - CAN
G
V
Finelinea CAN
3009668
Conn.Deutsch DT 3 vie PF Grigio C015
3009650
Conn.Deutsch fine linea con serie DT 3 vie Grigio + Res. 120ohm
1 PZ
CONN.DIAGN.
QG - DIAGN.
GND N
RX Z
TX B
3009668
Conn.Deutsch DT 3 vie PF Grigio C015
CONN.ZC1
QG - ZC1
+5Vdc Power Supply
Signal Output
Power GND
Conn. sensore angolare
ENG91608000014
Gommino
ENG91805000005
Terminale MCONN.
ENG9100100012
CONN.ZC2
QG - ZC2
+5Vdc Power Supply
Signal Output
Power GND
Conn. sensore angolare
ENG91608000014
Gommino
ENG91805000005
Terminale MCONN.
ENG9100100012
CONN. CRUSCOTTO
QG - C1
B
R
N
L
R
N
R
R
N
R
B
3009661
Conn.Deutsch DT 12 vie PF polA Grigio
3009745
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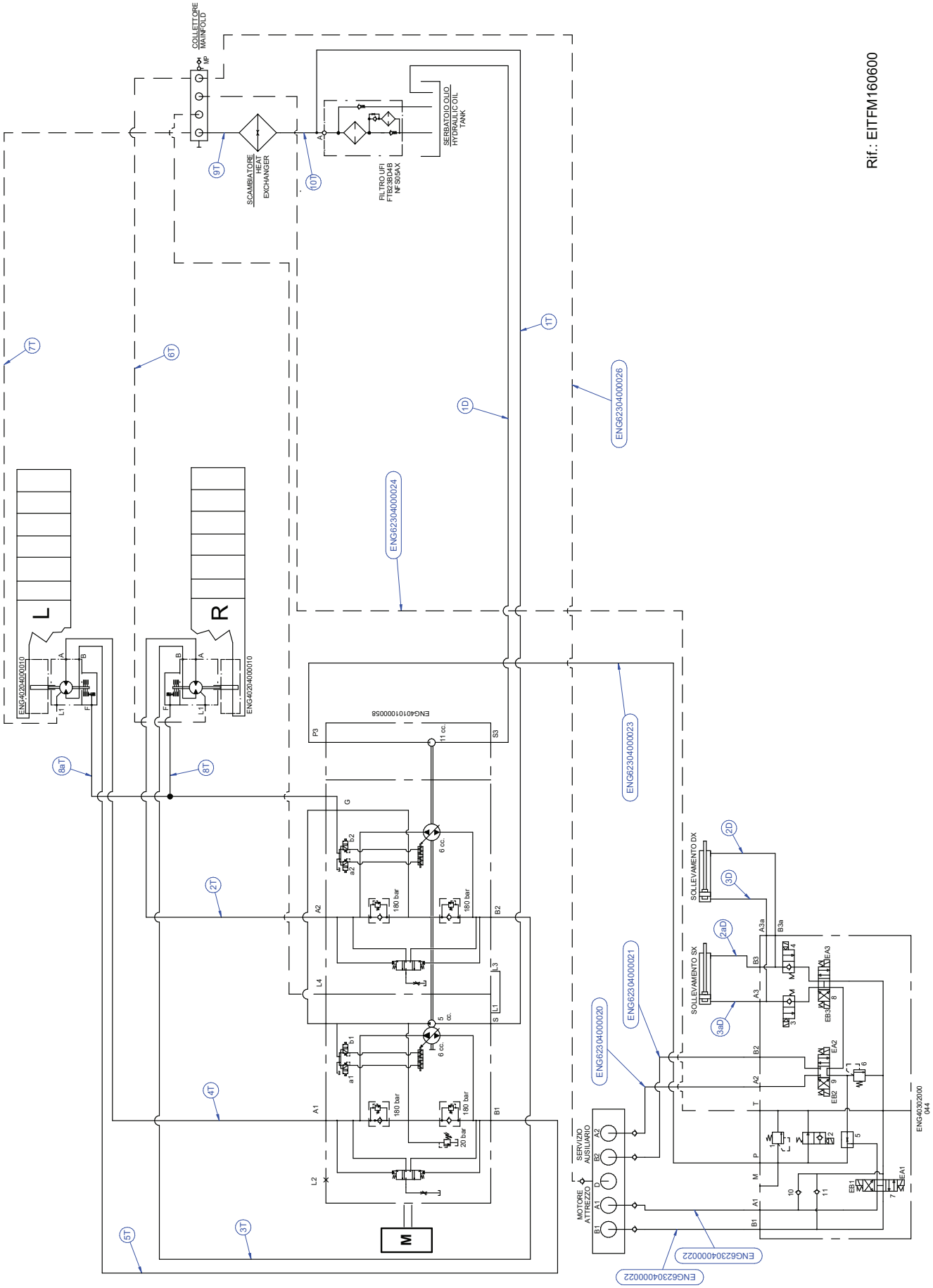
PROGETTO
BANCA DIS.
TIPICO
DATA
DISEGN. CV
VISTO
REV. MODIFICA DATA FIRMA APPR.
FILE : ENG11602000004
CONNETTORI 3
FG. 8
F.S. 9

11. HYDRAULIC SYSTEM



12. INSTRUCTIONS FOR EMERGENCY SITUATIONS

12.1 FIRE

In case of fire, use a fire extinguisher in accordance with current regulations. If the machine catches fire or it is close to a fire, raise the alarm and contact the fire service.

12.2 ASSISTING THE OPERATOR IN CASE OF ILLNESS

If the operator feels unwell, you need to act quickly, following the steps indicated below:

Get to the operator, if you are unable to do so safely, contact medical or first aid personnel.

Lay the operator on the ground following first aid procedures.

Contact a doctor or the emergency services if you have not already done so.

13. TIGHTENING CHARTS

13.1 SCREW TIGHTENING CHART

Rated thread measurement	Actual area As section sq.mm	Resistance class								
		12.9			10.9			8.8		
		Yield strength	Initial tightening force	Tightening torque	Yield strength	Initial tightening force	Tightening torque	Yield strength	Initial tightening force	Tightening torque
		N	N	Nm	N	N	Nm	N	N	Nm
M 3×0.5	5.03	5523	3865	2	4728	3316	1	3218	2256	1
M 4×0.7	8.78	9643	6749	4	8260	5778	3	5621	3934	2
M 5×0.8	14.2	15597	10918	8	13361	9349	7	9094	6367	5
M 6×1	20.1	22082	15460	14	18914	13234	12	12881	9015	8
M 8×1.25	36.6	40211	28144	33	34433	24103	28	23446	16412	19
M 10×1.5	58	63725	44606	65	54563	38200	56	37150	26006	38
M 12×1.75	84.3	92626	64834	114	79304	55515	97	54004	37798	66
M 14×2	115	126352	88446	181	108194	75733	155	73673	51571	105
M 16×2	157	172499	118102	282	147699	103388	241	100572	70397	164
M 18×2.5	192	210954	147669	387	180632	126441	332	126765	88731	232
M 20×2.5	245	269186	18843	549	230496	161345	470	161757	113227	330
M 22×2.5	303	332912	233036	748	285059	199535	640	200046	140028	449
M 24×3	353	387848	271491	950	332098	232468	813	233056	163140	571

13.2 FITTINGS TIGHTENING CHART

Series	Pipe diam.	THREAD - TIGHTENING TORQUE					
		Gas thread diam.	B MT (Nm) shape	E MT (Nm) shape	Metric thread diam.	B MT (Nm) shape	E form MT (Nm)
Light	6	G 1/8”	25	20	M 10 x 1	25	20
	8	G 1/4”	45	40	M 12 x 1.5	30	30
	10	G 1/4”	45	40	M 14 x 1.5	50	50
	12	G 3/8”	85	80	M 16 x 1.5	80	60
	15	G 1/2”	160	100	M 18 x 1.5	90	80
	18	G 1/2”	105	100	M 22 x 1.5	150	140
	22	G 3/4”	230	200	M 26 x 1.5	240	200
	28	G 1”	390	380	M 33 x 2	400	380
	35	G 1” 1/4	600	500	M 42 x 2	600	500
	42	G 1” 1/2	800	600	M 48 x 2	800	600
Strong	6	G 1/4”	60	60	M 12 x 1.5	45	45
	8	G 1/4”	60	60	M 14 x 1.5	60	60
	10	G 3/8”	110	90	M 16 x 1.5	95	80
	12	G 3/8”	110	90	M 18 x 1.5	120	100
	14	G 1/2”	170	130	M 20 x 1.5	170	140
	16	G 1/2”	140	130	M 22 x 1.5	190	150
	20	G 3/4”	320	200	M 27 x 2	320	200
	25	G 1”	390	380	M 33 x 2	450	380
	30	G 1” 1/4	600	500	M 42 x 2	600	500
	38	G 1” 1/2	800	600	M 48 x 2	800	600

13-Tabella serraggio raccordi

14. NOTES

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