



Installation, operation and maintenance

Handbook



Puller-Tensioner Model: PT1250

ATTENZIONE

Per motivi di sicurezza durante il trasporto la macchina è fornita senza olio idraulico e senza carburante. Nel presente fascicolo troverete informazioni sulle caratteristiche e le quantità richieste. In caso di dubbio consultare la TESMEC.

WARNING

The machine is supplied without hydraulic oil and fuel during transport for precautionary measures. Please refer to this manual for all information regarding the characteristics and quantities required. Should you have any doubt, please get in touch with TESMEC.

ATTENTION

Pour mesures de sécurité, pendant le transport la machine est livrée sans huile hydraulique et sans carburant.

Référez-vous à ce manuel pour renseignements nécessaires sur les caractéristiques et quantités. En cas de doute veuillez contacter TESMEC.

ATENCION

Por motivos de seguridad la máquina se transporta sin aceite hidráulico y sin combustible. En el presente fascículo encontrarán informaciones acerca de las características y de las cantidades requeridas. En caso de dudas, consultar a TESMEC.

ATENÇÃO

Por razões de segurança durante o transporte, a máquina é fornecida sem óleo hidráulico e combustível. No presente folheto poderão encontrar as informações sobre as características a as quantidades requeridas.

Caso tenham alguma dúvida, rogamos-lhes pôr-se em contacto com a TESMEC.

ACHTUNG

Aus Sicherheitsgründen während des Transportes, wird die Maschine ohne Öl und Kraftstoff geliefert. Im vorliegenden Gebrauchsanweisungsheft werden Sie Informationen über die Eigenschaften und Mengen des Öls finden.

Wenn Sie im Zweifel sind, fragen Sie TESMEC um Rat.

ПРЕДУПРЕЖДЕНИЕ

Из соображений безопасности, при поставке машина транспортируется без рабочей жидкости в гидравлической системе и топлива.

Пожалуйста, пользуйтесь настоящим руководством для получения любых сведений, касающихся характеристик и заправочных емкостей.

В случае каких-либо сомнений, пожалуйста, свяжитесь с компанией TESMEC.



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PULLER-TENSIONER

Model: PT1250

Serial number

.....

Manufacturing year

.....

Working order

.....

USE AND MAINTENANCE INSTRUCTIONS



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2. INTRODUCTION

2.1 MANUFACTURER

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2.2 COMMUNICATIONS WITH THE MANUFACTURER

For any information related to the machine (use, maintenance, spare parts) always state Model, Serial Number, Manufacturing Year and Order.

These data can be found in the machine-identifying table.

2.3 PURPOSE OF THE MANUAL

This instruction manual and all publications attached are an integral part of the machine and provides guidance for conducting, conducting, operation and maintenance.

Reading the instruction manual is essential and necessary for the training and information of staff likely to operate on the stretching machine; given the specific use of the instructions were produced for professionals, thereby taking into account the level of general education and acumen that can reasonably be expected from such operators.

Although the book provides information to operate correctly and also shows the residual risks of the operations, this document does not replace the experience of the " experienced " , believed formed and informed their duties and knowledge of operational procedures and safety related to them .

For their own safety and the safety of persons exposed to the risks present during the lifecycle of the vehicle and its equipment, it is compulsory to refer to the instructions and always contact the distributor **Tesmec S.p.A.** in the case of any doubt arising from the lack or difficult interpretation of the instructions themselves .

Read and understand this manual carefully in all its parts before starting operation.

Do not do anything which is difficult to interpret the instructions, should always contact the distributor **Tesmec S.p.A.**

Do not do that no information has been provided by the distributor.

Do not do anything differently than described in this manual.

Do not perform operation expressly prohibited in this manual.

If you experience operating conditions not covered or not described in the instruction manual, contact your distributor immediately **Tesmec S.p.A.**

The distributor **Tesmec S.p.A.** disclaims any liability related to non-compliance of the instructions in this manual.

Using this manual should be kept in mind that each chapter has a specific function and information is distributed to provide the user with a gradual and progressive knowledge of the equipment.

It is mandatory to preserve all of the instructions (instruction manual and documentation) in a safe, accessible and known to all users for future references. This documentation should always accompany the vehicle even in the event of sale to third parties of the same.

2.4 SYMBOLS USED IN THE MANUAL

The following symbols are used in the manual to make available information on:



DANGER

The information marked by side and this style refers to situations of danger to the person exposed.



GENERIC PROHIBITION

The information characterized by the symbol next to the present style and refer to actions or operations prohibited operator, which can lead to dangerous situations for the exposed person.



ATTENTION

The information characterized by the symbol next to the present style and relate to situations that may cause damage to the vehicle and / or its equipment.



INFORMATION

The indications marked by side and this style is for advice, hints and advices.



ENVIRONMENTAL INFORMATION

The indications marked with the symbol by side and this style is for environmental information and ecology, such as the treatment of hazardous substances to the environment, waste or recycling of materials.



WARNING

The information characterized by the symbol next to the present style and relate to situations that may cause damage to property or persons.



PERSONAL PROTECTION

The information marked by the symbols alongside and this style refers to situations in which the operator is obliged to use personal protective equipment.

- Safety shoes
- Protective helmet
- Hearing protection
- Gloves
- Anti-fall harness



SIREN ACTIVATION

The information characterized by the symbol to the left and the present style refer to possible situations or alarms can be activated in which an acoustic signal to the siren.



PROHIBITION OF PASSAGE

The information characterized by the symbol to the left and the present style refer to zones or parts of the means in which is prohibited the passage or transit of the operators.



WARNING

The information characterized by the symbol next to the present style and relate to situations that may cause harm to people.



WARNING & DANGER FOR THE OPERATOR

The information characterized by the symbol next to the present style and relate to situations that may cause harm to people.

- Electrocution.
- Moving parts
- Risk or Burn Hot surfaces
- Crushing ARTS
- Crushing by moving parts
- Suspended loads



MANUAL READING

Information marked with the symbol by side and this style refers to the obligation for the operator to read this manual or the manuals supplied with it.

2.5 ILLUSTRATIONS

All illustrations in this manual refer to the stretching machine in question and are representative for other models to which this manual has been prepared.

Illustrations are used with a general nature and may for this vary slightly from the machine in your possession (ex. Location tool box, panels with ventilation grid, etc.). But do not invalidate the instructions.

It contains always attached technical drawings specific to the machine model to which this manual has been prepared that should always be used to supplement the instructions provided in the following chapters.



DANGER

For the sake of clarity, some illustrations may show the machine safety guards and / or protective measures removed. Please note that you **DO NOT** use the machine safety guards and / or protective measures removed and / or disabled.

3. KNOWING THE MACHINE

3.1 **TYOLOGY AND USING FIELD**

The puller-tensioner mod. PT1250 It is suitable for the traction of 1 conductor with a diameter of max 42 mm and for the recovery of a rope with diameter 16.

The machine is governed by a hydraulic system which allows it to automatically configure itself as PULLER or as a TENSIONER.

The power transmission to the wheels of adhesion is achieved through a closed hydraulic circuit with variable displacement pump and a fixed displacement engine, with the possibility to vary continuously the speed in both directions of rotation.

An hydraulic drive brake allows to automatically lock the wheels of grip when the work stops and in case of failure in the hydraulic circuit.

The puller-tensioner has a reel winder with hydraulic command with automatic lever winder, rear stabilizer, front hydraulic control jack and attacks and for the anchorage to the ground; The case comes in a rigid axle for towing at 30 km/h and of a handbrake hand wheel. The machine can be equipped with special equipment approved for road transport at max. speed of 80 Km/h.

3.2 **PERFORMANCES**

<u>Max. pull.</u>	50 kN
<u>Max. pull speed.</u>	1,5 km/h
<u>Max. speed.</u>	5 km/h
<u>Pull at max. speed.</u>	16 kN

Performances are referred to the machine without optional, at sea level and at 20°C.



DANGER

use with ropes or conductors of smaller diameter than the maximum allowed involves the reduction of the max pull. applicable in relation to the workload guaranteed minimum of rope or conductor.

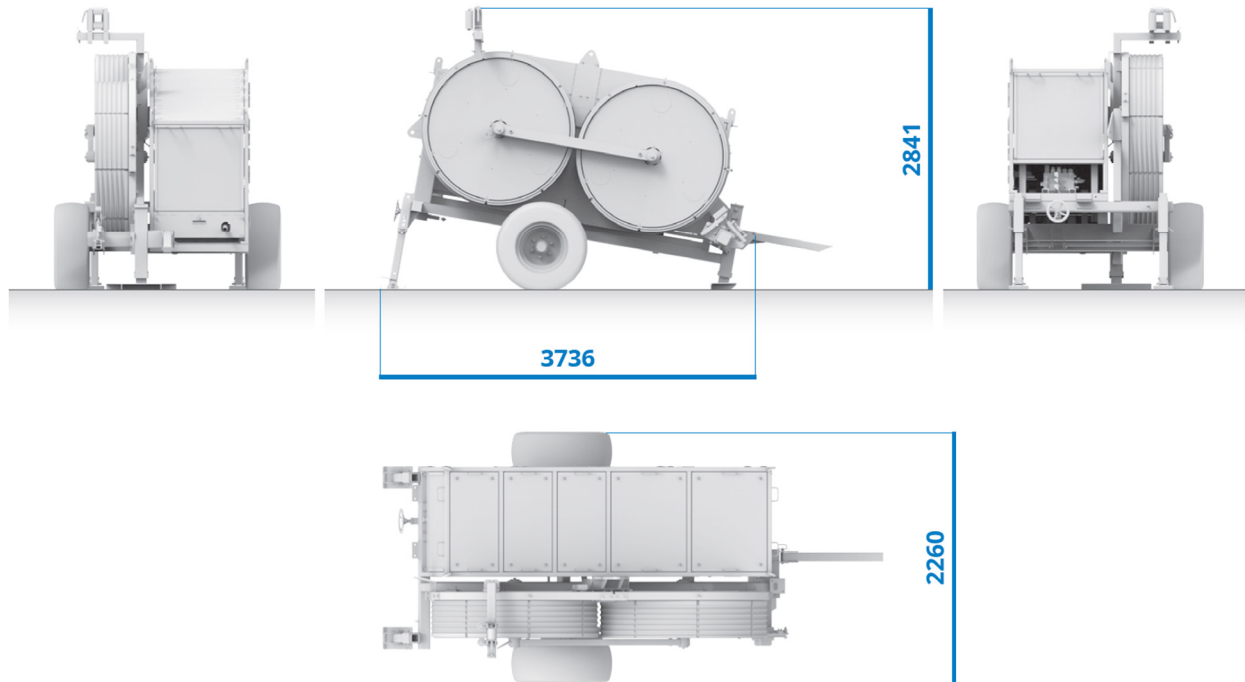
3.3 **TECHNICAL CHARACTERISTICS**

Bull-wheels nominal diameter:	1500 mm
Max. rope conductor:	42 mm
Max. rope diameter:	16 mm
Transmission:	hydraulic circuit of the closed type with hydraulic oil cooling
Safety brake:	negative and self-acting type
Dynamometer:	hydraulic with setting and automatic pull control
Axle:	rigid type with mechanical parking brake for max. towing speed of 30 km/h

HYDRAULIC PULLER-TENSIONER PT1250

Dimensions: length - 3736 mm
width - 2841 mm
high - 2260 mm

Dry mass: 3650 kg



The machine was equipped with engine KOHLER of the latest generation stage4 conforms to the latest anti-pollution standards in force in Europe and in the rest of the world.

The main features of the engine are:

- Diesel engine model KOHLER KDI 2504 TCR
- Displacement 2.5 liters
- Aspiration Common rail engine
- Control Electronic
- Power 55 kW @ 2600 rpm
- Cooling system Water
- Electric System 12 V
- Panels with sound absorbing material for acoustic insulation.



MANUAL READING

For further analysis of DIESEL ENGINE KOHLER KDI2504 installed on the PT1250 , read carefully the reference manual.

3.4 GENERAL INFORMATION FOR THE MACHINE USE

- a. Only employed and qualified operators must use the machine.
Qualified operators is intended to be the person who has received a qualified training from the using Company or, as alternative, from the manufacturer.
- b. Machine must be used **only** for the work it was designed for.
- c. Machine cannot be used with non-authorized personnel on the working site.
- d. For safety reasons, during transport machine comes without hydraulic oil and fuel.
Characteristics and required quantities are listed in the present manual.
- e. For any doubt concerning use, functioning, maintenance or everything else, contact the After-sales Service of the manufacturer.

3.5 GENERAL PRESCRIPTIONS FOR THE OPERATOR CHARGED OF THE MACHINE USE

- a. Operator **has** to know safety directives for accident prevention in force in the machine using country, for a correct use of the same.
- b. The operator in charge with the installation and maintenance of the machine must use **suitable clothes** to the working site and to the situation where he finds himself; in particular, he must avoid the use of very large clothes, chains, bracelets, rings or whatever can get entangled with moving parts.
- c. The operator has to use the necessary protecting devices (i.e. gloves, boots, helmet, etc.).
It is compulsory the use of personal protecting devices for hearing.
- d. The operator must not carry out on his own initiative operations or interventions that are not up to him.
- e. The operator must carefully follow danger and/or prohibition prescriptions contained in the instruction manual or indicated on the machine.
- f. The working area of the operator has to be cleaned from possible oil or liquids wastes and free of materials or equipment that may be considered as an obstacle for the operator work.
- g. The operator **must absolutely avoid** the direct inhalation of the exhaust gas of the endothermic engine.

3.6 GENERAL PRESCRIPTIONS FOR THE OPERATOR CHARGED OF THE MACHINE MAINTENANCE

- a. It is absolutely forbidden to carry out any work of maintenance, adjustment or setting on units while stringing (except for the operations indicated in the present manual).
- b. Before carrying out any maintenance operations, stop the energy feeding (except for the cases indicated in the present manual) and wait till the cooling of the elements subjected to heating.
- c. All the maintenance operations of the machine must be carried out with machine on a level surface and not under load.
- d. Authorized and trained personnel must do all the maintenance operations, ordinary and not ordinary.
Trained personnel are intended to be the person who has received a qualified training from the using Company or, as alternative, from the manufacturer.
- e. The operator in charge with the machine maintenance must use suitable clothes to the working site and to the situation where he finds himself; in particular, he must avoid the use of very large clothes, chains, bracelets, rings or whatever can get entangled with moving parts.
- f. The operator has to use the necessary protecting devices (i.e. gloves, boots, helmet, etc.).
- g. All the maintenance operations, ordinary and not ordinary, must be effectuated respecting the prescriptions included in the present manual or following technical indications written by the manufacturer.

The non-respect of the prescribed restrains relieves the manufacturer from any responsibility causing also the loss of warranty.

3.7 KNOWLEDGE AND CARE OF THE INSTRUCTION MANUAL

- a. The information contained in the instruction manual applies to all the operators charged with the use and/or the maintenance of the machine.
- b. The instruction manual is not a training manual.
- c. Before using the machine, the chief of the job site and the operator must read the instruction manual.
- d. The chief of the job site is obliged to inform all the operators about the instructions contained in the manual.
- e. The user must carefully follow the instructions listed in the present manual.
- f. Before using the machine, the operator must be able to use it and has to exactly know the positions and the operations of all the controls.
- g. The chief of the job site must verify that the instructions contained in the manual are applied.
- h. The instruction manual must be kept, in order to be consulted, for all the life of the machine and also when it is given to another user.
- i. The instruction manual must be kept in a sheltered and dry place.

ATTENTION



Present manual belongs exclusively to the manufacturer. The reproduction, event partial, of the text is forbidden.

3.8 CONDITION OF USE

- a. Temperature: from -10 °C to +40 °C.
- b. Relevant moisture: from 30% to 90% ± 5%.
- c. Weather conditions: any (in line with working conditions).
- a. Natural and/or artificial lighting of the working site.

3.9 ACOUSTIC EMISSION

Level of continuous sound pressure to the operator seat (UNI 9432) $L_{ep} = 85 \text{ dB(A)}$

3.10 TEMPERATURE LIMITS FOR HYDRAULIC OIL

When using the machine, always remember to respect the following temperature limits that can be reached with hydraulic oil as function of the working condition.

TEMPERATURE LIMITS FOR HYDRAULIC OIL (°C)				
Working condition	Hydraulic oil viscosity			
	VG 22	VG 32	VG 46	VG 68
Minimum temperature running in neutral position	-21	-14	-7	-1
Minimum temperature running in full load	8	16	24	32
Maximum temperature running in full load	48	57	67	76
Maximum temperature running in neutral position	63	73	83	93

For additional information concerning the hydraulic oil, see chapter "Maintenance" and the attached comparative table of the oils used on the machine.

3.11 USE NOT ALLOWED

The machine **must not be used**:

- a. for lifting persons and/or goods
- b. in closed/unventilated sites or, however, not sufficiently airy (tunnel or similar)
- c. in sites with presence of gas that can be easily set on fire or explosives
- d. in sites with presence of explosive materials
- e. on aircraft, crafts, floating platforms and similar
- f. for structure demolition, shafts felling or similar
- g. for pulling flexible elements that can be highly lengthening, which allow elastic power accumulation
- h. with ropes or joints having a bigger diameter than the one specified in present manual
- i. when engine is off and bull-wheels are moving
- j. with inhibited and broken safety devices installed on the machine
- k. when winding on the bull-wheels ropes and/or conductors having a smaller diameter as a succession of ropes and/or conductors having a bigger diameter for handling trucks or other moving equipment.



ATTENTION

is not allowed to install on board radio equipment. These could create electronic equipment malfunctions, putting the personnel at serious risk.

3.12 RESPONSIBILITY

The use of the machine for scopes different from those foreseen, even if not well described in this manual, has to be considered extremely **dangerous** and then **forbidden**.



ATTENTION

The non-respect of the prescribed restrains causes a situation of improper use for technical and persons safety purposes and relieve the manufacturer from any responsibility, civil or penal, in case of accidents to persons or damages to things, causing the loss of warranty.

The manufacturer responsibility declines even when one of the following situations happens:

- a. for the consequences caused by tampering and/or modifications carried out without the manufacturer's written acceptance (in this case the operator becomes the manufacturer with relevant obligations and responsibilities, both civil and penal)
- b. for the use of not original spare parts
- c. or bad maintenance
- d. for the use with disconnected safety devices
- e. for the connection to machine and/or plans not produced and not directly authorized by the manufacturer in a written acceptance.

3.13 APPLIED NORMS

If the machine is commercialized in C.E. responds to the following regulatory framework:

2006/42/CE Norm referring to the laws of the machines.

2014/30/UE Norm referring to the laws of the electromagnetic compatibility.

If the machine is commercialized outside the C.E. was made reference to the following regulatory framework:

2006/42/CE Norm referring to the laws of the machines.

2014/30/UE Norm referring to the laws of the electromagnetic compatibility.

4. TRANSPORT AND POSITIONING INSTRUCTIONS

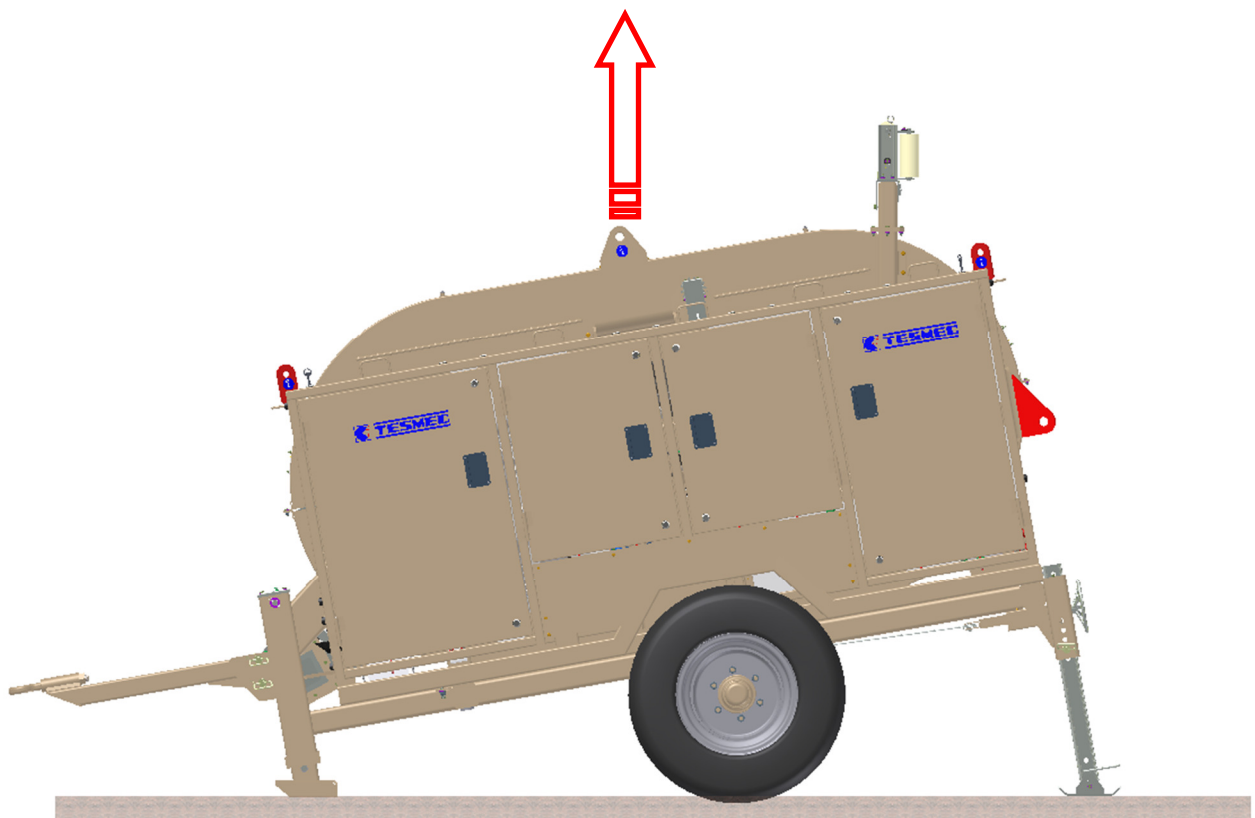
4.1 MACHINE LIFTING

For the machine lifting use only devices as overhead travelling cranes or lift trucks, with a capacity equal to the mass to be lifted.

The instruments used for the machine lifting (ropes, cables, hooks, etc.) have to be exactly dimensioned as compared to the mass to be lifted and have to be connected to the proper elements foreseen on the machine.

For lifting of individual units refer to the corresponding table.

During machine lifting operations, the presence of persons on board the machine is strictly forbidden.



The total dry mass relative to the lifting points and at the center of gravity is shown in the figure below:
3650 kg



PERSONAL PROTECTION

During lifting operations, it is necessary for the operator to use all the safety equipment and personal protection equipment required.

- **Safety shoes**
- **Protective helmet**
- **Hearing protection**
- **Gloves**



DANGER

the non-respect of the above mentioned conditions may cause dangerous situations as well as damages to the machine with the consequent decline of any warranty condition.

4.2 TRANSPORT TYPOLOGIES AND PACKAGE

Transport by land by truck

The machine comes without all the liquids that can be set on fire and protected in the most exposed and delicate parts by means of cardboard and/or plywood and/or polyethylene extensible film.

To fix the machine on the platform of the transporting unit, use nailed wedges and/or metal brackets and/or tie rods.

Transport by sea in wooden cases or container

The machine comes without all the liquids that can be set on fire; metal parts are protected with waterproof wax.

To fix the machine on the package, use nailed wedges and/or metal brackets and/or tie rods. At the inside, the wooden case foreseen a protection with tarpaper.

Materials usually used for the package are:

- ⇒ wooden
- ⇒ nails and/or steel screws
- ⇒ cardboard and/or paper
- ⇒ polyethylene extensible film
- ⇒ adhesive tape.

4.3 UNPACKING

When receiving the machine verify the integrity of the package; advise immediately the manufacturer and the person in charge of the transport (even with photos) when possible damages due to transport or tampering with removal, even partial, of the content happen.

Verify if the supplied material corresponds to the ordered one; immediately advise the manufacturer if there are some discrepancies.

In case of transportation on wooden case, take away, in sequence, the upper cover and lateral panels, before removing the machine.

During unpacking operations, avoid any shock to the structure or to the machine units, in order to avoid any damage to the machine itself.



ENVIRONMENTAL INFORMATION

the elimination of packaging materials must be effectuated in conformity with the norms in force in the relevant country.

4.4 TOWING TRANSPORTATION

The machine is not arranged to be towed on the road.

Possible displacements on trailer in the working site must be carried out by a connection to the towing unit by means of the towing eye on the drawbar (tab. 1) and in the respect of the speed limits of the axle. The used towing unit must be homologated for towing trailers with mass and dimensions as per the described machine.

Before transporting lift the rear stabilizers and the front plough (tab. 2, pos.1,5) through the dedicated

screen on the computer of the machine control (tab. 3, pos.5 and par.5.5.2.2 *Machine Optional*)



(NOTE: This must be done with the engine running).

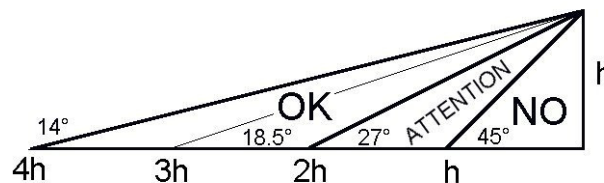
Check the inflation pressure of tires (7 bars).

During machine transport operations, nobody must stay on the machine itself.

4.5 POSITIONING AND ANCHORING

Positioning and anchoring of the machine have to be carried out only by trained personnel, verifying if the ground grants the foreseen stability, support and anchoring.

The machine has to be placed in a distance from the first pylon or trestle for the rope passage (or conductor) included between 2 and 4 times the height h of the pylon itself (see diagram here below)



It is possible to use the machine at a distance from the pole included between 1 and 2 times the height of the pole itself. In this case, the anchorage described thereafter must be over dimensioned of 125% compared to the reported data and some moorings must be provided on the front side of the machine.



PROHIBITION

when the distance between the machine and the pole is lower than the height of the pole itself, the machine use is not possible.

Machine anchoring sequence is the following:

- a. keep the wheel brakes of the machine disengaged.
- b. place the rear stabilizers as close to the ground through the dedicated screen on the computer of the

machine control (tab. 3, pos.5 and par.5.5.2.2 *Machine Optional*)



- c. set the front plough through the dedicated screen on the computer of the machine control (tab. 3, pos.5

and par.5.5.2.2 *Machine Optional*)



in order to support the rear stabilizers to the ground, thereby relieving the tires.

- d. anchor the machine to the ground using 2 ropes each having a load of use guaranteed minimum of 700 kN linking the connections provided (tab. 2 pos.8 and tav.3 pos.10), in the rear of the machine, with anchoring pegs. The attacks used to be an anchor shackle with a breaking load of 17 tons and the safety factor of 5. It is necessary that the ropes make an angle with the direction of pull as shown on the table 9, to allow the machine to withstand even any transverse loads.

IMPORTANT



before starting stringing operations, we suggest to test the pull, reaching the max. value expected for the operations, in order to check the carried out anchoring and the machine settling. It is better to have the rear anchoring slightly released so that the machine can freely settle.

- f. put the anchoring ropes under tension using the suitable turnbuckles (if necessary, anchor the machine also in the front).
- g. block the machine brakes acting on the handle brake wheel.



ATTENTION

the non-respect of the foreseen anchoring operations may cause dangerous situations during machine use.

Around the machine must be a free space of at least 2-m to make easier the operations of use, adjustment, maintenance, etc.

Be sure that around the radiators (endothermic motor, hydraulic oil) cooling air can freely circulate. Otherwise overheating situations with damage for the installed components may happen.



DANGER

machine has not a proper grounding device; for the system machine-rope-conductor in the job site must foresee a grounding device on the towing rope or on the conductors.

5. INSTRUCTION FOR USE

5.1 INTRODUCTION, RULES AND PROHIBITIONS

All the rules of use and maintenance contained in this manual are mandatory and therefore it is recommended a careful and constant application of its contents.

Tesmec S.p.A. is not liable for damage to the vehicle, to persons and property, also against third parties in the event of failed or incorrect observance of even one of the instructions given in this manual, or in general, the lack of enforcement of existing legislation.

The safety systems are electrical and mechanical work, although they are designed for maximum ease of use and effectiveness can still be used improperly. So avoid behaviors that reduce the concentration and attention in using them. Excessive confidence in them may impair the effect and usefulness.

The operator is the only person responsible for his own safety and those around him. Must act professionally meticulously following all safety regulations and instructions in this manual, even those indicated also on plaques located in the machine.

Daily, before starting the work, check:

- The absence of turned on warning lights alarms or malfunctions
- The correct operation of the emergency buttons and of the safety devices.
- The close examination of these provisions, the instructions in the user 's manual and take perfectly aware of the safety devices and emergency;

5.2 PRESCRIPTIONS FOR THE OPERATOR



PROHIBITION

it is forbidden to walk or stop in front or backward the machine and/or under the towing rope due to a constant residual risk of crushing in case of a possible giving in of the rope or of the anchoring.

Daily, before starting the work, check:

- a. if the protection and safety devices are activated and functioning according to the lamps
- b. if the machine liquids levels are in conformity with the indications in maintenance chapter
- c. if the anchoring conditions are in conformity with the indications of present manual.

5.3 PRELIMINARY OPERATIONS

- a. Wind the rope as indicated on table 1 making sure that it is well placed on the grooves.
The free end must be inserted in the suitable roller ways and connected to the reel.
To hang the rope on the reel is necessary to lower the pressure of the reel stands branch command (tab. 1) up to 20 bars.
This ensures that the reel does not get in rotation during coupling operations.
- b. After attaching the rope to raise the pressure up to 50 bar so that the reel putting to rotate put in tension the section of the cable between itself and the bull-wheels.

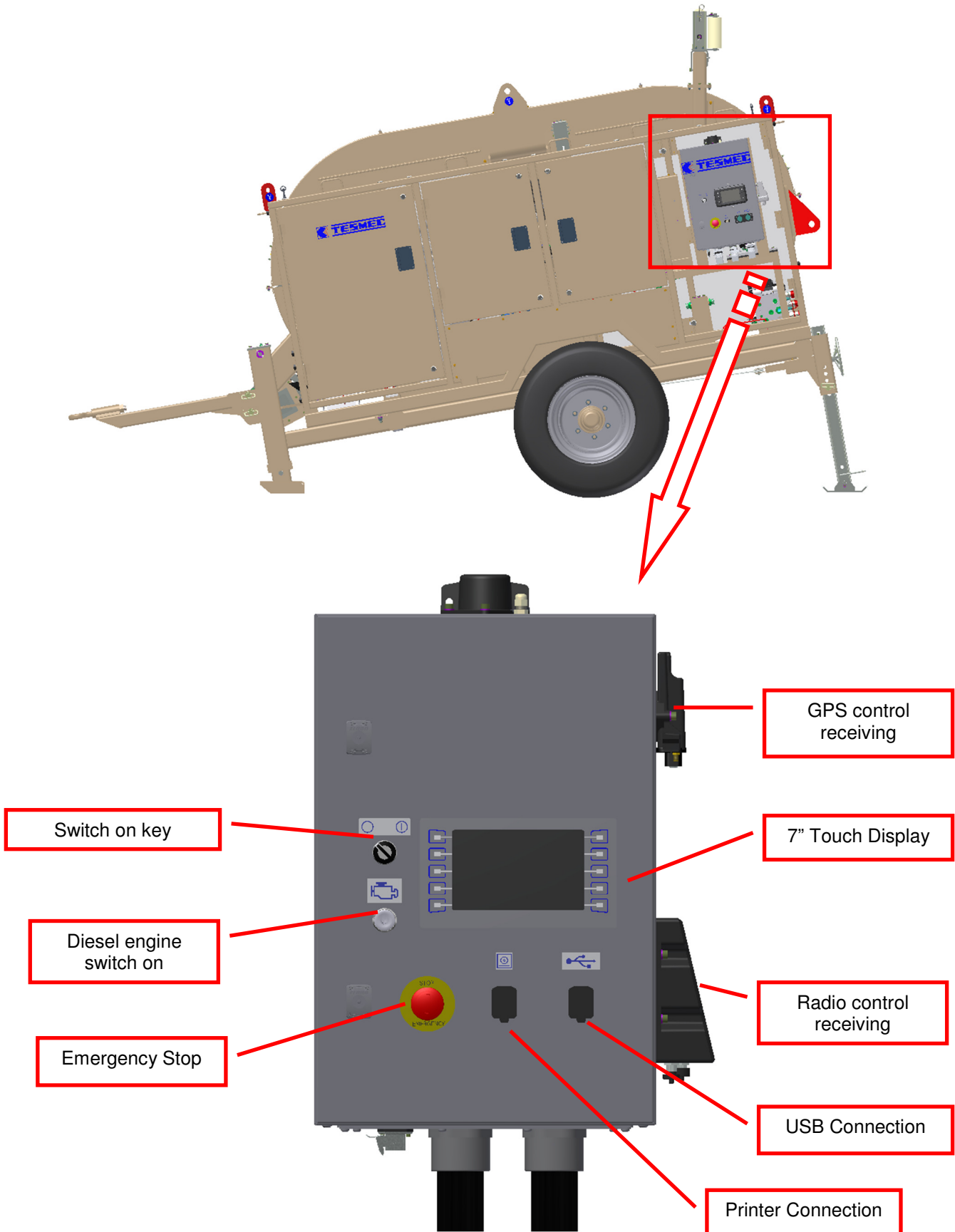


DANGER

please pay attention to the risk to be squeezed during the operations above described.

5.4 CONTROL PANEL and RADIO CONTROL

The machine it is controlled through a dedicated remote control positioned near the bull-wheels:



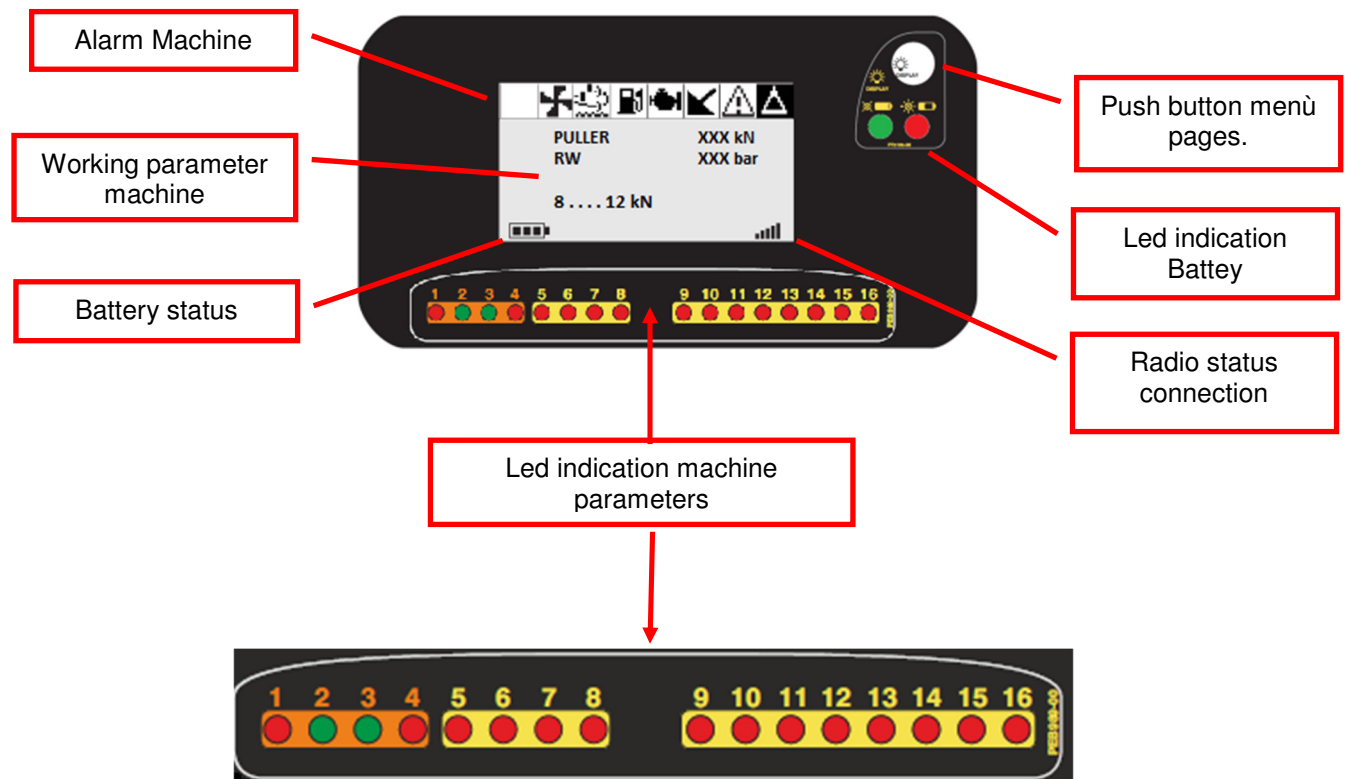
HYDRAULIC PULLER-TENSIONER PT1250

The location and meaning of the elements placed on the control panel are described in the enclosed table 3.

The machine features a radio-remote control for stringing operation:

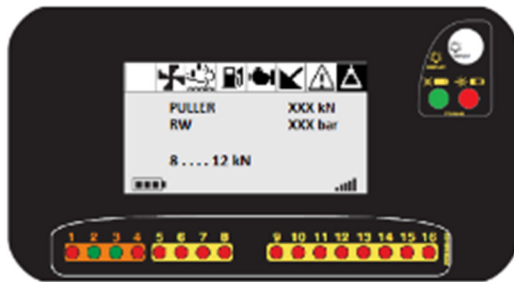


The radio control display is equipped with 4 control pages of the main parameters of the machine, and the operator cannot remain in the vicinity of the machine control panel.



- ➔ Led 1: ROPE CLAMP 1 CLOSED
- ➔ Led 2: NEGATIVE BRAKE BULL-WHEEL 1 OPEN
- ➔ Led 3: NEGATIVE BRAKE REEL ELEVATOR 1 OPEN
- ➔ Led 4: OPERATING MODE PULLER TENSIONER, REVERSE FROM THAT SET
- ➔ Led 5: ROPE CLAMP 2 OPEN (IF PRESENT)
- ➔ Led 6: NO ATTIVE
- ➔ Led 7: NO ATTIVE
- ➔ Led 8: NO ATTIVE
- ➔ Led 9: NO ATTIVE
- ➔ Led 10: OIL TOO HOT
- ➔ Led 11: BULL-WHEEL SELECTION+REEL ELEVATOR DISABLED
- ➔ Led 12: NO ATTIVE
- ➔ Led 13: NO ATTIVE
- ➔ Led 14: NO ATTIVE
- ➔ Led 15: NO ATTIVE
- ➔ Led 16: NO ATTIVE

You can switch from page to page, by using the appropriate button placed on the radio control.



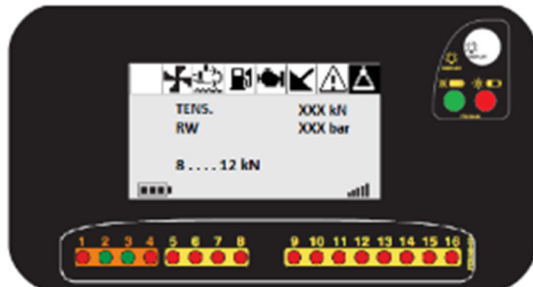
Pull control and machine reel elevator pressure page in PULLER configuration

This page allows the operator to control the pull value on the machine and set the desired pull value

Puller – XXX KN = CURRENT Pull value

8...12 KN = SET Pull value

RW – XXX bar = Reel elevator circuit pressure value.



Pull control and machine reel elevator pressure page in TENSIONER configuration

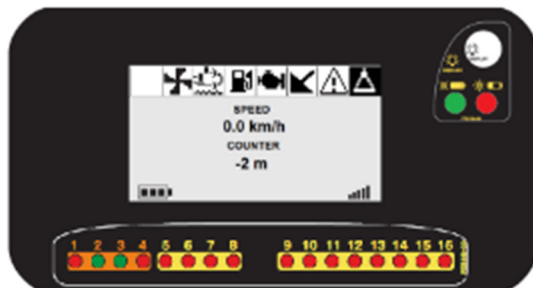
This page allows the operator to control the pull value on the machine and set the desired pull value

Tensioner – XXX KN = CURRENT Pull value

8...12 KN = SET Pull value

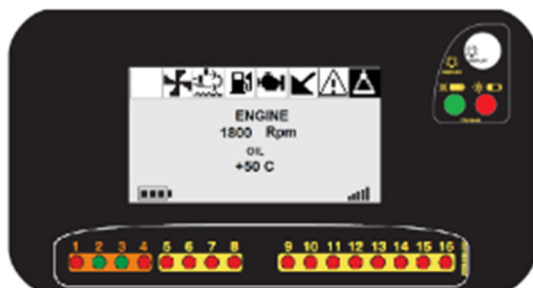
RW – XXX bar = Reel elevator circuit pressure value.

Note: The transition between PULLER and TENSIONER is displayed automatically.



Working machine parameters

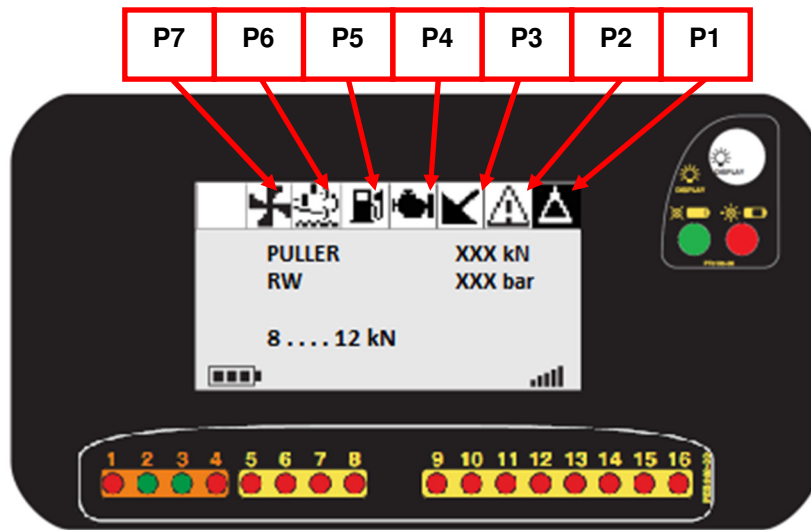
This page lets you control the speed of stringing of conductor and the strung meters of rope or wire.










Diesel engine control parameters

This page allows you to control the speed and the oil temperature of the diesel engine.

The radio control display is equipped with a bar for signaling an alarm or various machine functions:

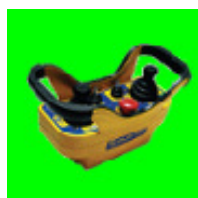
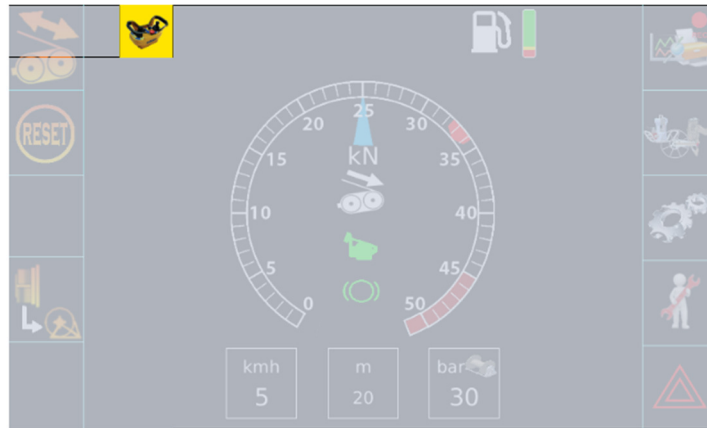


- | | | |
|----|---|---|
| P1 |  | GENERAL WARNING |
| P2 |  | MACHINE ALARM |
| P3 |  | WORKING MACHINE CONFIGURATION (PULLER OR TENSIONER) |
| P4 |  | ALLARMS FROM DIESEL ENGINE |
| P5 |  | FUEL RESERVE |
| P6 |  | UREA RESERVE (If present) |
| P7 |  | COOLING OIL FAN SWITCHED ON |

Connection the remote control

The main control of the machine is on the remote control. The machine is always set to connect the remote control.

It will be possible to see the status of the connection, between the state of the icons in the main control panel and on the transmitter remote control.



Remote control
CONNECTED



Remote control
DICONNECTED



Remote control
OFF

In the follow step, it is described the procedure to connect the radio remote control on the machine:



WARNING

Remember to connect or disconnect the radio remote control only when the bull-wheel machine are stationary.

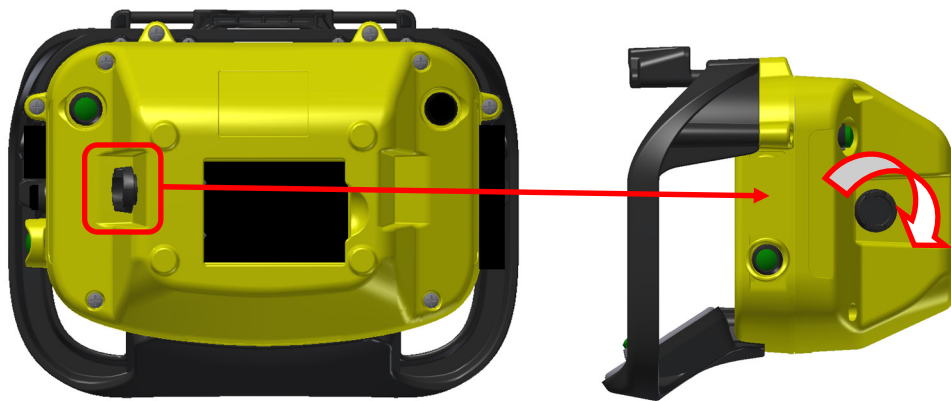
1. Check the status of the joystick position of the remote control. It'll be on neutral position (close negative brake of bull-wheel)



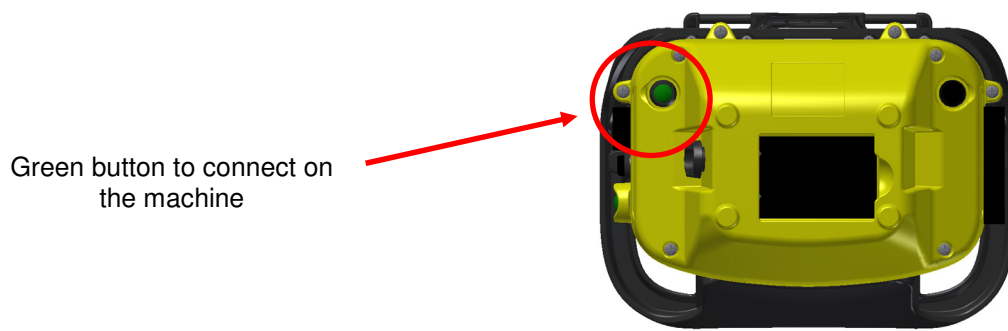
INFORMATION

It will impossible to connect the remote control still the joystick are on neutral position

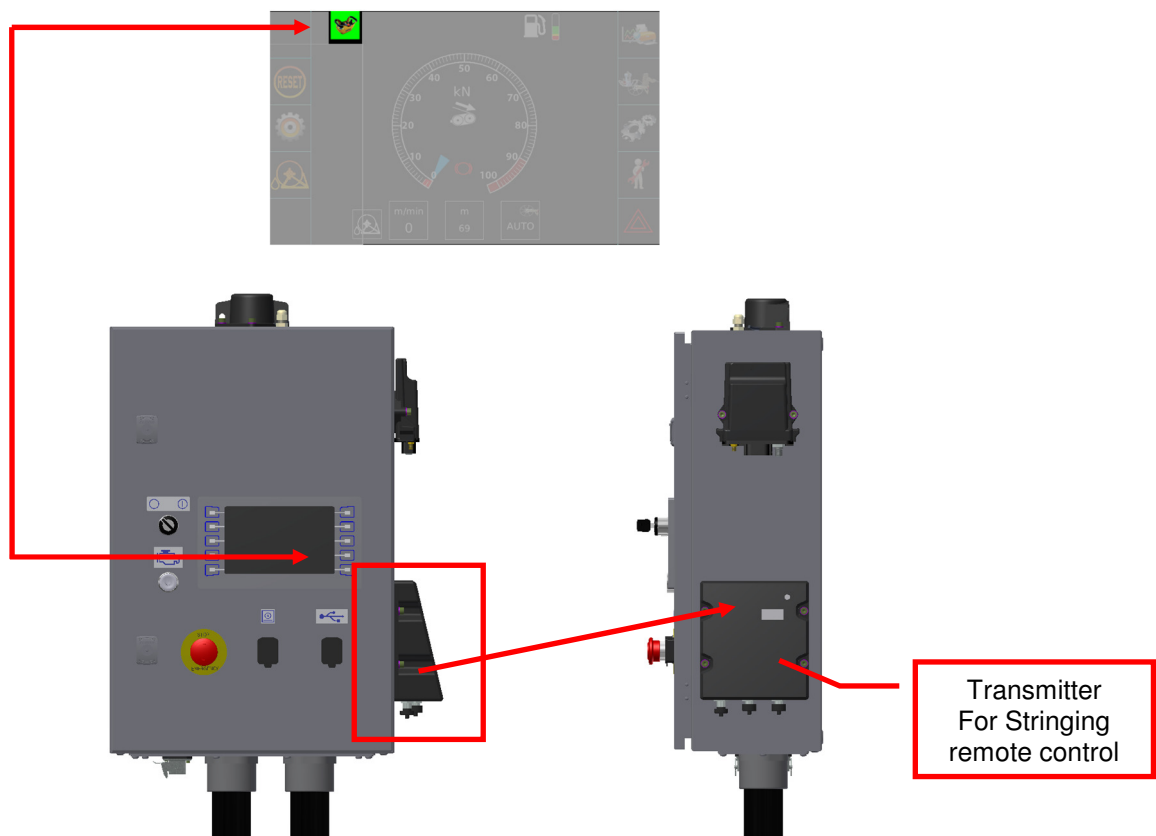
2. Turn On the radio remote control. Rotate the switch to ON position.

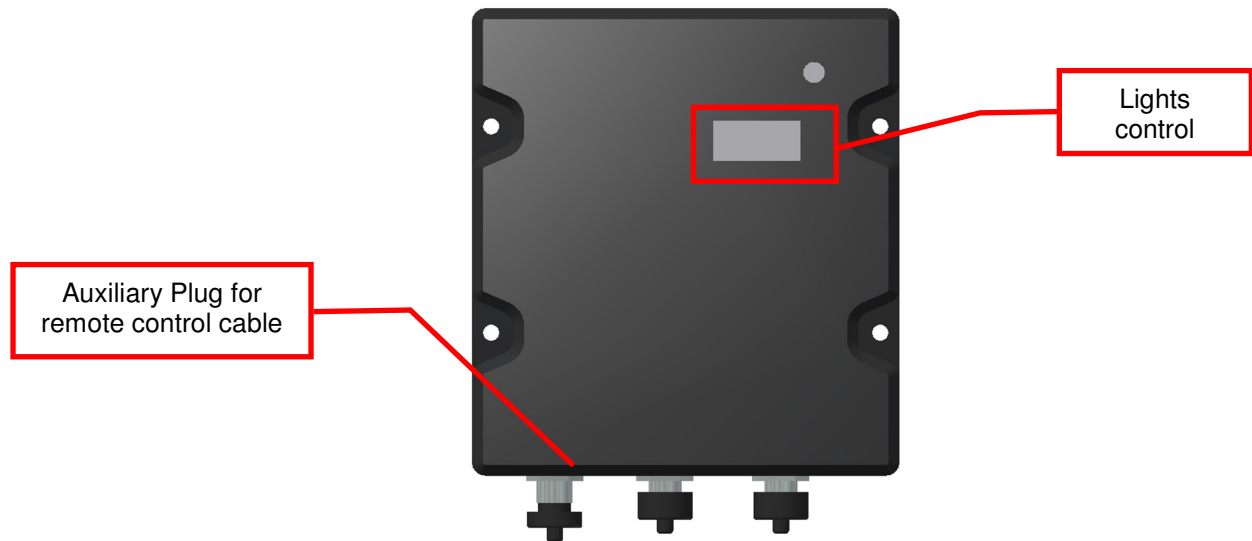


3. Push the green button on the radio remote control.



4. Check the status of the remote control connection on the display machine and on the transmitter.





ATTENTION

If the remote control have any problem, it is possible to use the remote control with auxiliary cable, connect to the transmitter unit.



MANUAL READING

For further analysis about AUTEK remote control allow on the PT1250 , read carefully the reference manual.

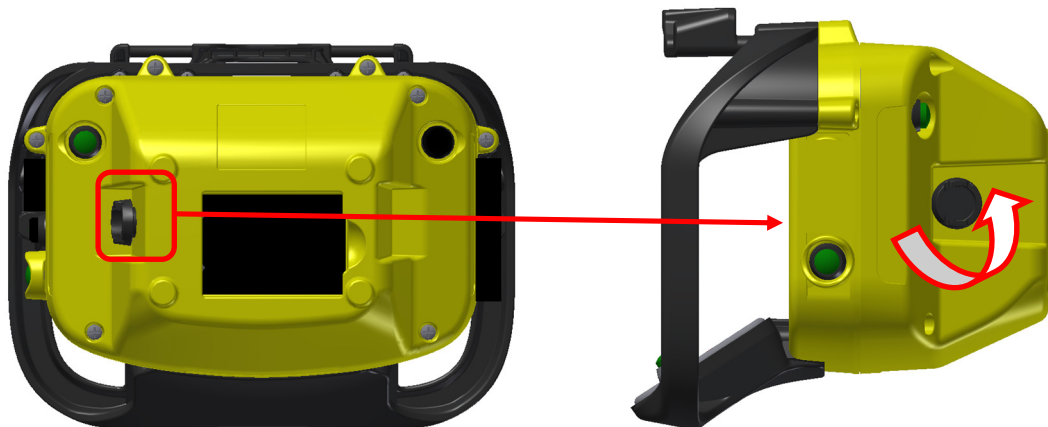
The operator also can check the status of connection between the blink of light.



“Green light blink fast” = Remote control NOT connect

“Green Light blink slowly” = Remote control connected

5. If the operator need to disconnect the remote control, rotate the switch to OFF position.



WARNING



When the remote control loses communication with the receiver, the machine will stop immediately if it is working as ARGAN.

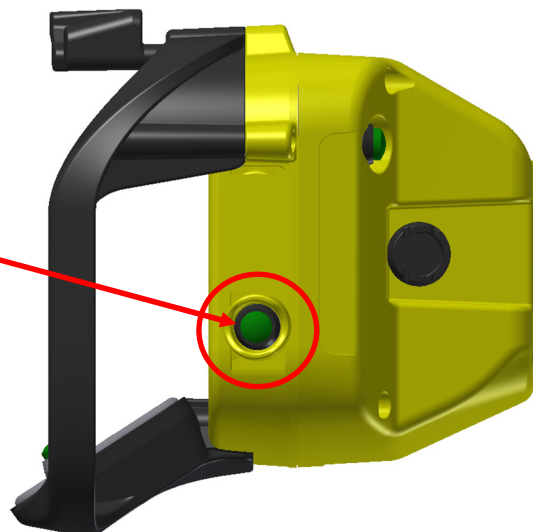
If the machine is configured as a BRAKE, the bull-wheel will continue to move, but there will be an audible alarm, which will signal the connection to the machine.

To reconnect the radio control, simply repeat the above points.

On the radio control is a lateral button: This button allows the operator to rotate the gantry holding closed the negative brake circuit of the bull-wheel.

This command can be useful when loading or unloading the reel from the stands or during the rope loading operations on the machine.

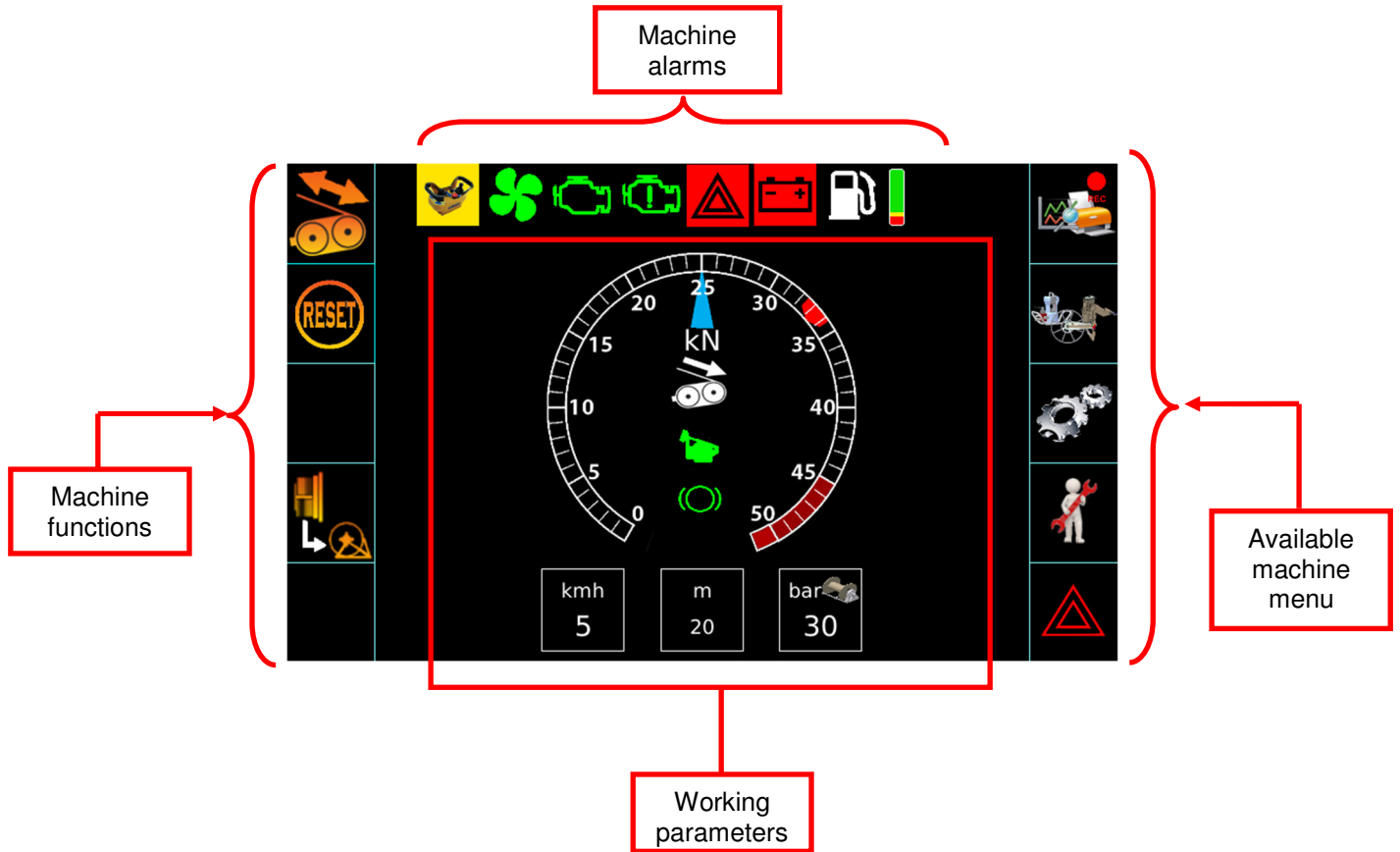
Button for the management of the reel elevator, separately from the bull-wheels circuit.



5.5 MULTIFUNCTION DISPLAY AND MACHINE PARAMETERS

The remote control is equipped with a 7 " multifunction display which contains all the commands and options available machine.

These are enclosed in three main menus, identified by the symbols shown at the bottom right and where you can find several sub-menus that expand the scope and control of the machine and its functions.

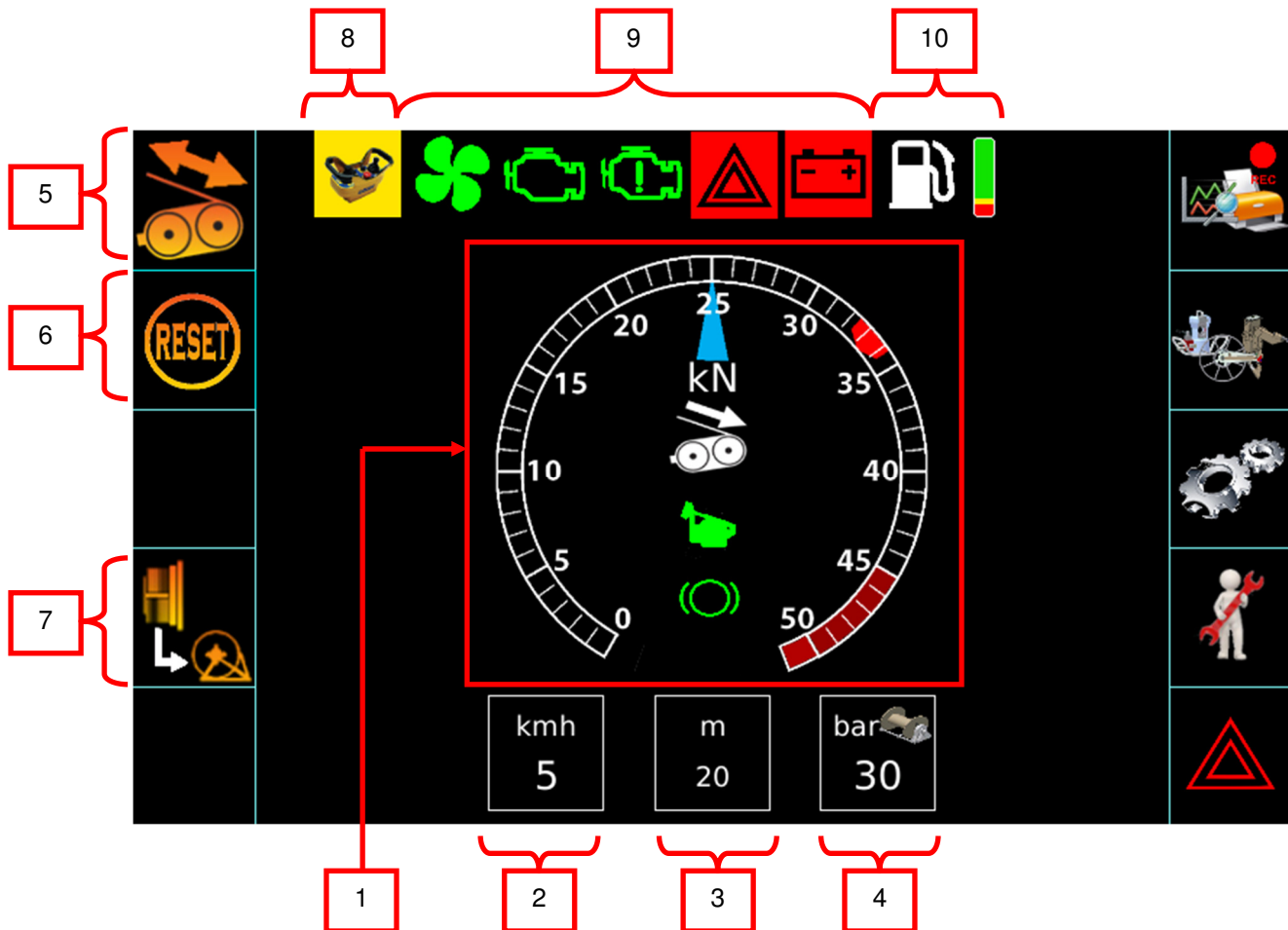


To access the menu simply push the corresponding button



5.5.1 WORKING AREA and MACHINE ALARMS

This menu is the main part of the machine control panel and contains the characteristic work values and the main engine and machine alarms.



Listed below are the main controls of the main work screen.

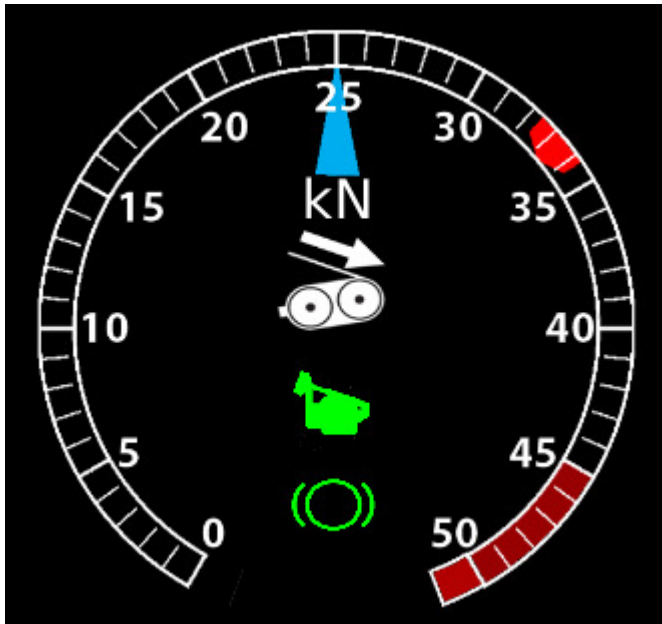
1- Virtual Dynamometer: Displays the pull set and the actual shooting on the machine, depending on the choice of configuration work by the operator.

The machine can work in the following configurations:

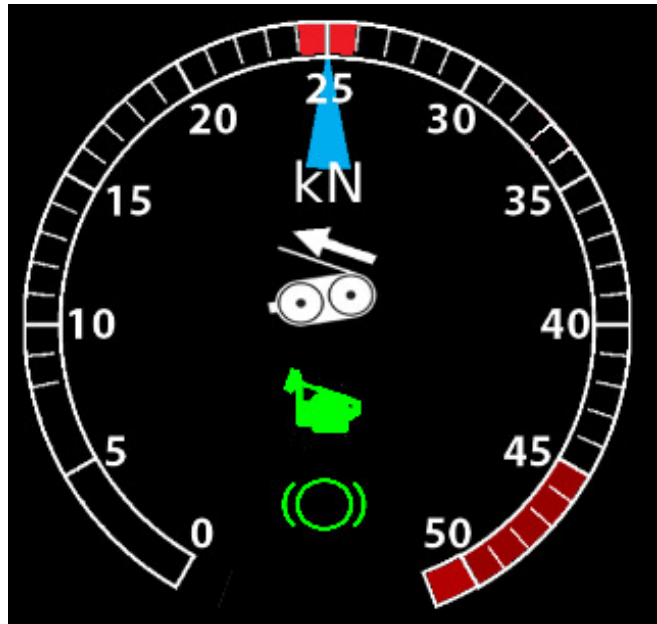
- Puller
- Puller on fine braking
- Tensioner
- Tensioner on fine braking

The dynamometer scale will change automatically as a function of the bull-wheels rotation, if the speed is greater than 0, will be displayed while the set (through the pos.5 button) if the machine is stopped.

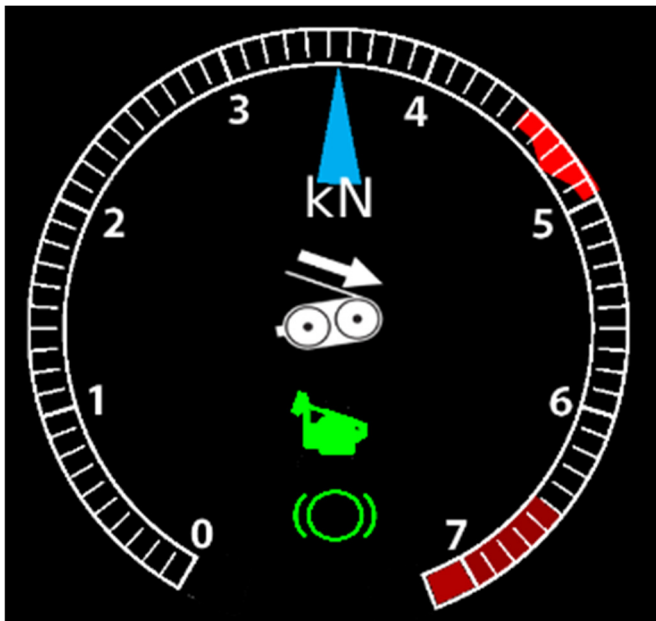
On the following page, shows four configurations of the crane scale can take.



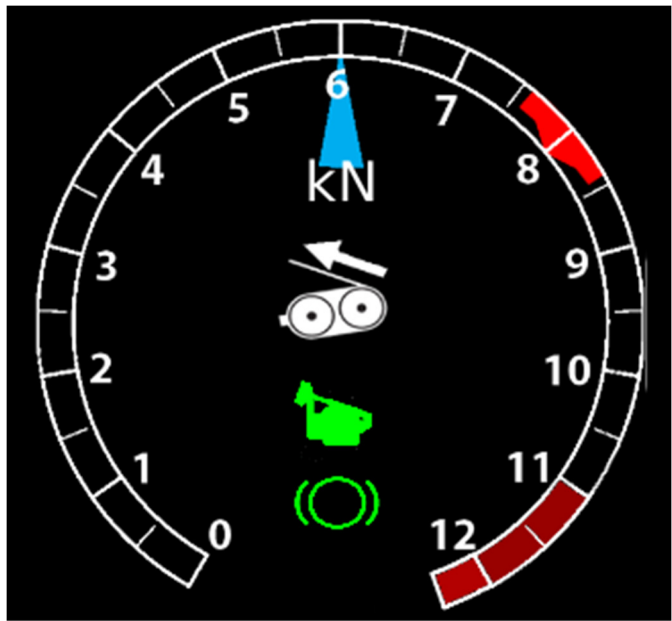
PULLER machine configuration



TENSIONER machine configuration



FINE PULLER machine configuration



FINE TENSIONER machine configuration



BLUE ARROW: indicates the CURRENT pull value in KN on the reference scale.



RED ARROW:

TENSIONER machine: Indicates the pull value SET in KN.

PULLER machine: Indicates the LIMIT pull value in KN.

At the center of the virtual dynamometer, they show the following symbols, which can have different configurations:



MACHINE IN PULLER CONFIGURATION.



MACHINE SET AS PULLER BUT IR WORKS AS A TENSIONER (only with bull-wheels rotation speed > 0).



MACHINE IN TENSIONER CONFIGURATION.



MACHINE SET AS TENSIONER BUT IR WORKS AS A PULLER (only with bull-wheels rotation speed > 0).



ROPE CLAMP OPENED.



ROPE CLAMP CLOSED



NEGATIVE BRAKE BULL-WHEELS CIRCUIT OPEN



NEGATIVE BRAKE BULL-WHEELS CIRCUIT CLOSED

- 2- **Stringing speed:** it is displays the speed in KM / H (or miles / h) which is string or recovered the rope or wire.
- 3- **Strung meters:** it is displays how many meters (or feed) of conductor or rope have been strung
- 4- **Reel Elevator Pressure:** it is displays the set pressure on de reel winder circuit or hydraulic heads mounted on the reel elevators.
- 5- **Choosing Machine Operating Mode:** through this button, the operator can select the scale of the pull to be displayed (MACHINE TENSIONER or MACHINE PULLER). Depending on the chosen configuration, the virtual dynamometer will automatically scale the pull consistently to the direction of rotation of the bull-wheels if $v > 0$.
- 6- **Meter counter reset:** It allows you to reset the counter of the strung meters.

7- Circuit Management Button Reel elevator/Reel winder: through this menu, the operator has the option to choose how to use the reel elevators circuit or reel winder.

It is possible to choose from:

Reel elevator circuit STRINGING mode



In this configuration, the reel elevators circuit is pressurized automatically. Moving the bull-wheels joystick, the reel elevator circuit is under pressure and is ready for operation, allowing you to keep pull the conductor between bull-wheels and reel elevator.

Reel elevator circuit MANUAL mode



In this configuration, you can move the bull-wheels excluding the reel elevators circuit. This operation can be useful in the process of loading of the conductor on the machine and allows the operator to lock the rotation of the reels on the reel elevators.



DANGER

The operator should always turn off this feature before starting the stringing operations, in order not to drag the stand without having the appropriate back-pull on the conductor.

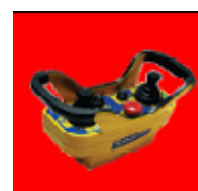
8- Radio control connection: It displays the status of the radio connection to the machine control.



Radio control
CONNECTED



Radio control
DISCONNECTED



Radio control
OFF

9- Alarms and warning lights:



Radiator Status [Black: Turned off – Red: Problem – Green: Switched on]



Engine alarm [Black: Turned off – Yellow: Alarm to engine → see dedicated page]



Engine alarm [Black: Turned off – Yellow: Alarm to engine → see dedicated page]



Machine and/or Engine alarm

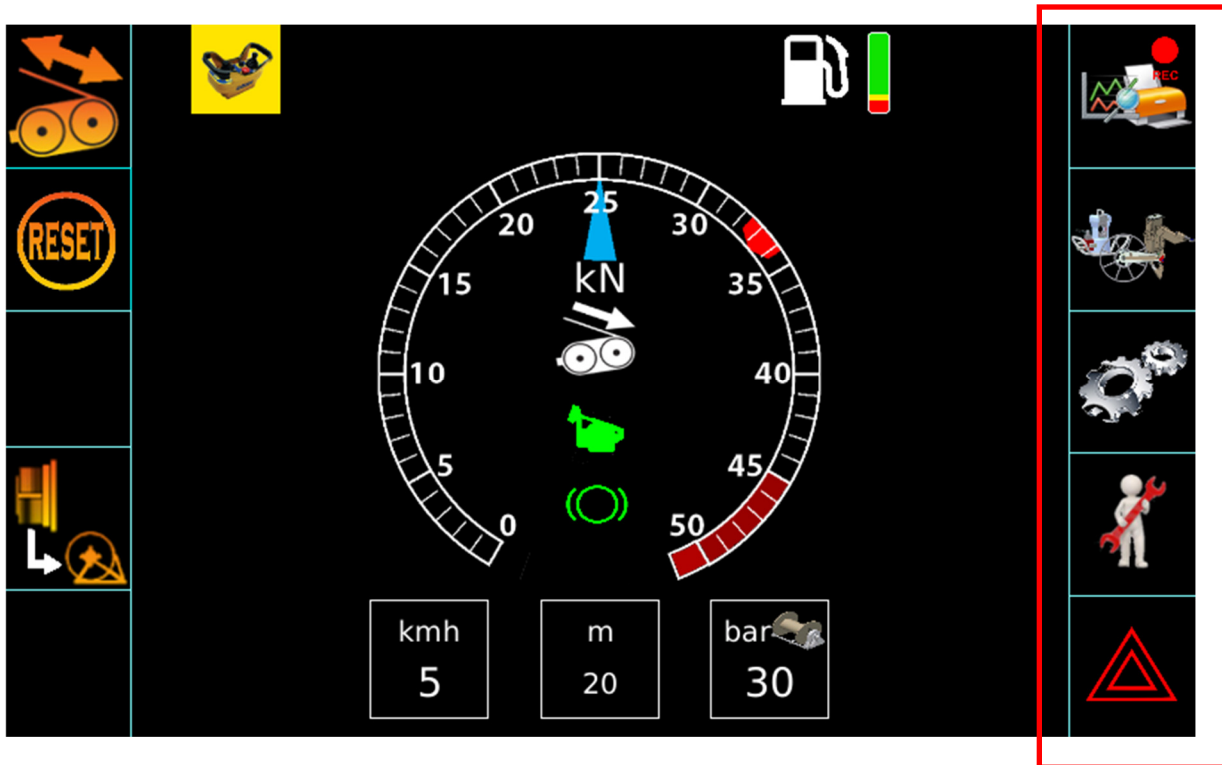


Alternator alarm

10- Fuel Level.

5.5.2 Machine menu

On the right side of the main work screen, lists the available machine menu.



- PULL RECORDER Menu identified with the symbol
- MACHINE SERVICES Menu identified with the symbol
- MACHINE SETTING Menu identified with the symbol
- MACHINE MAINTENANCE Menu identified with the symbol
- ALARMS Menu identified with the symbol



5.5.2.1 Pull Recording Menu



This option allows you to record the key parameters of the machine during the stringing operations. You can save files in PDF or print immediately or subsequently to the stretching operations.

The screenshot shows a menu titled "RECORDING FILE NAME" with a list of files. On the left, there are navigation buttons: "ACK", an upward arrow, and a downward arrow. On the right, there are control buttons: a printer icon, a gear icon, a red "REC" button, a red pause button, and a green arrow pointing to a door icon.

- Viewing Record selected (points to the "ACK" button)
- Registered file upwards scroll (points to the upward arrow)
- Registered file downwards scroll (points to the downward arrow)
- External access for instant printing (points to the printer icon)
- Printer Settings (points to the gear icon)
- Registration *START* (points to the "REC" button)
- Registration *PAUSE* (points to the pause button)
- Exit to Main menu (points to the door icon)

Pressing the "REC" button to start the recording of the main parameters of stringing: registration status is indicated by the symbol "REC" flashes, the symbol dedicated to the shooting recorder on the main screen of the working menu.

By pressing the "REC" meal you can stop the recording: at this point, the name of the recording will be displayed at the center of the screen.



Pressing the button you can view recorded data during the stringing operations:

The screenshot shows recorded data including customer, operator, project, cable type, start/stop times, and pull force. It also includes a table with columns for distance, tension, and speed.

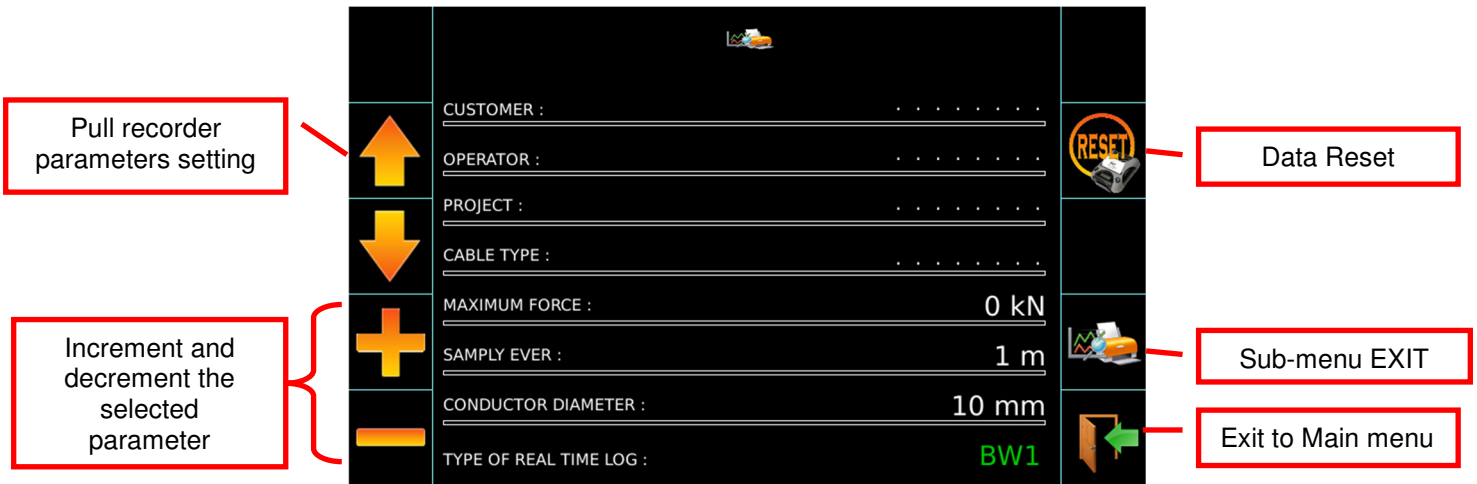
- Data storage on USB only the selected recording (points to a USB icon with a downward arrow)
- Data storage on USB all recordings made (points to a USB icon with a downward arrow)
- Print Registration (points to a printer icon)
- Upwards scroll (points to an upward arrow)
- Downwards scroll (points to a downward arrow)
- Sub-menu EXIT (points to a menu icon)
- Exit to Main menu (points to a door icon)

Dist.	Tens1	Speed
mt	kN	m/min
-16777	0	0.0

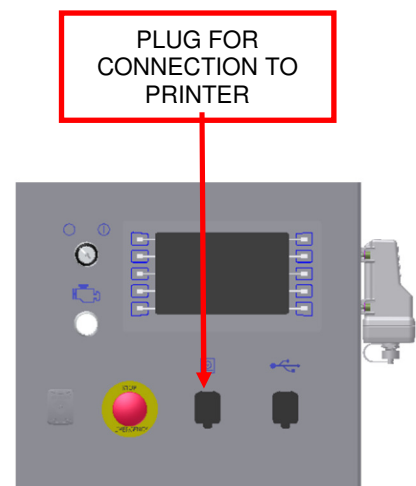
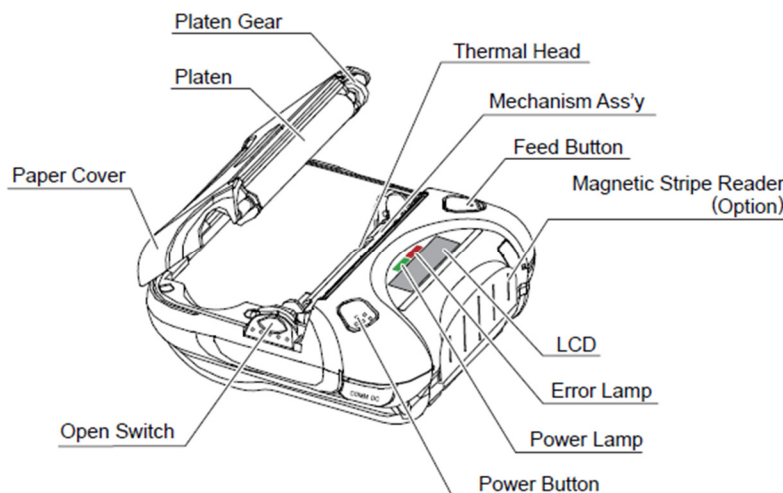
In the recorded files are displayed the strung meters, the effective pull, and the conductor stringing speed. You can also view recording date, operator name, project name, conductor type and date of registration term.



These parameters can be set in the dedicated screen :



- Customer** Name constructor or other information.
- Operator** Name operator or other information.
- Project** Name Project or other information.
- Cable type** Type cable or other information.
- Maximun Force** Maximum shooting value beyond which an alarm is displayed during printing
- Sample Ever** Recording interval expressed in meters.
- Conductor Diameter** Diameter or rope conductor.
- Type of real time Log**
 - OFF: Record only and no snapshot
 - BW1: If the printer is connected to the machine and the REC key is pressed, it is possible to have an instantaneous recording of the recording



READING MANUAL


For a deeper analysis of the usable printer on the puller-tensioner PL1250, please read carefully the reference manual.

5.5.2.2 Machine Services Menu

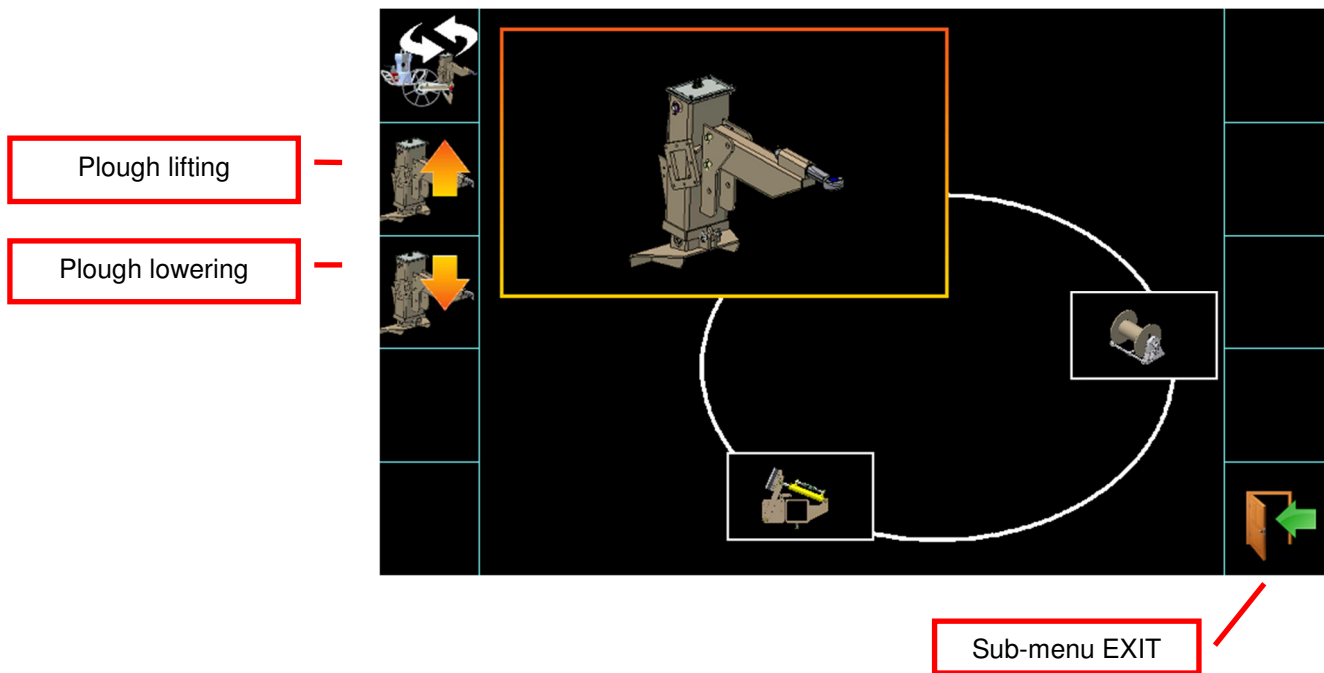


The screen, allows you to scroll through the options available to the machine and allows control through the functions shown in the left column.

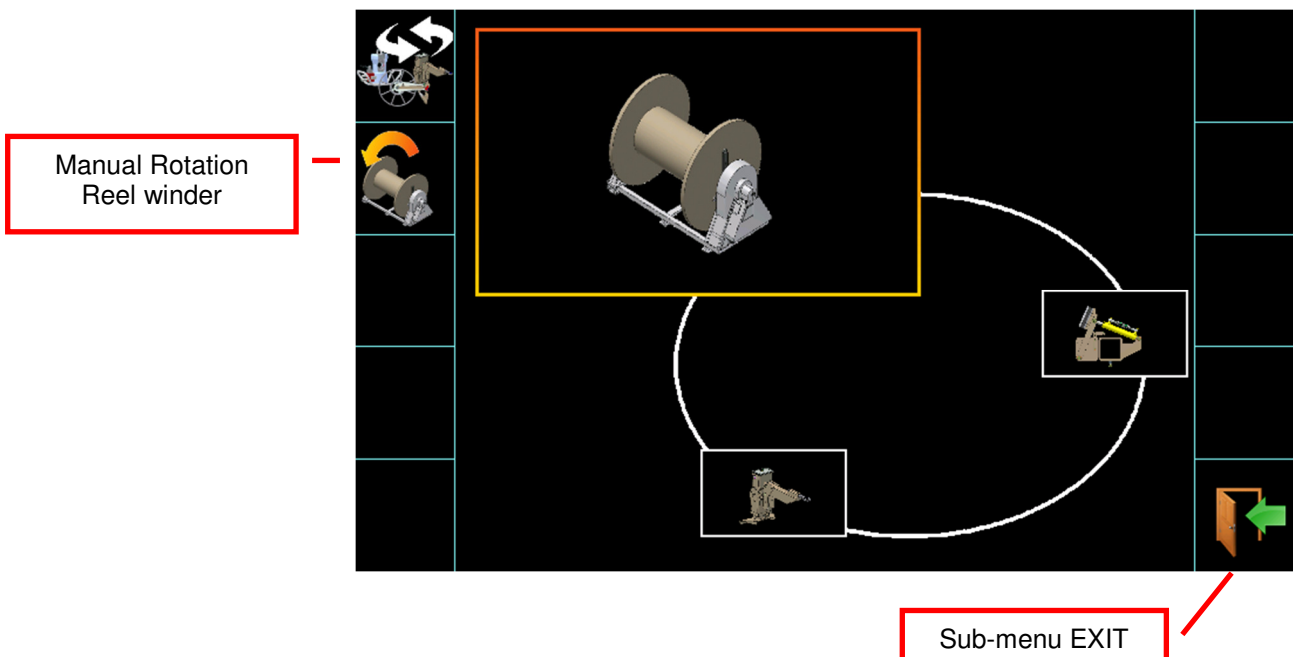


By the symbol , you can scroll through the available menu.

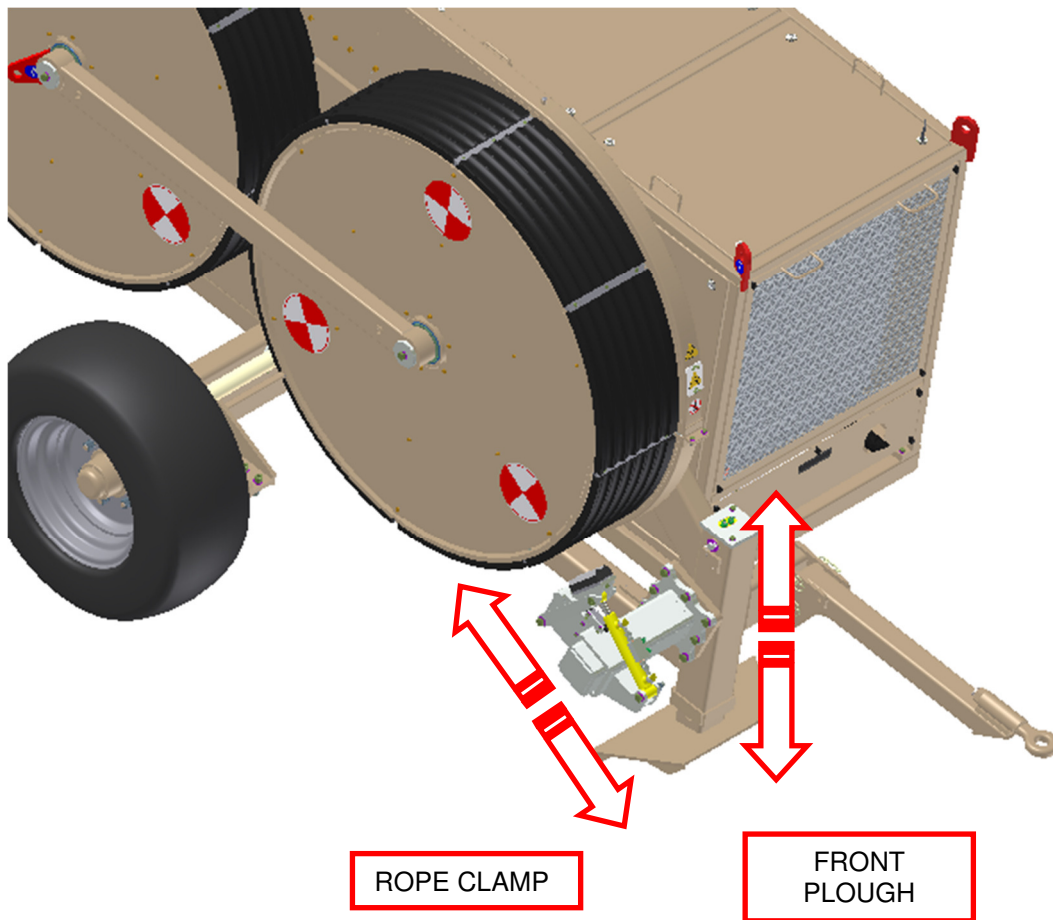
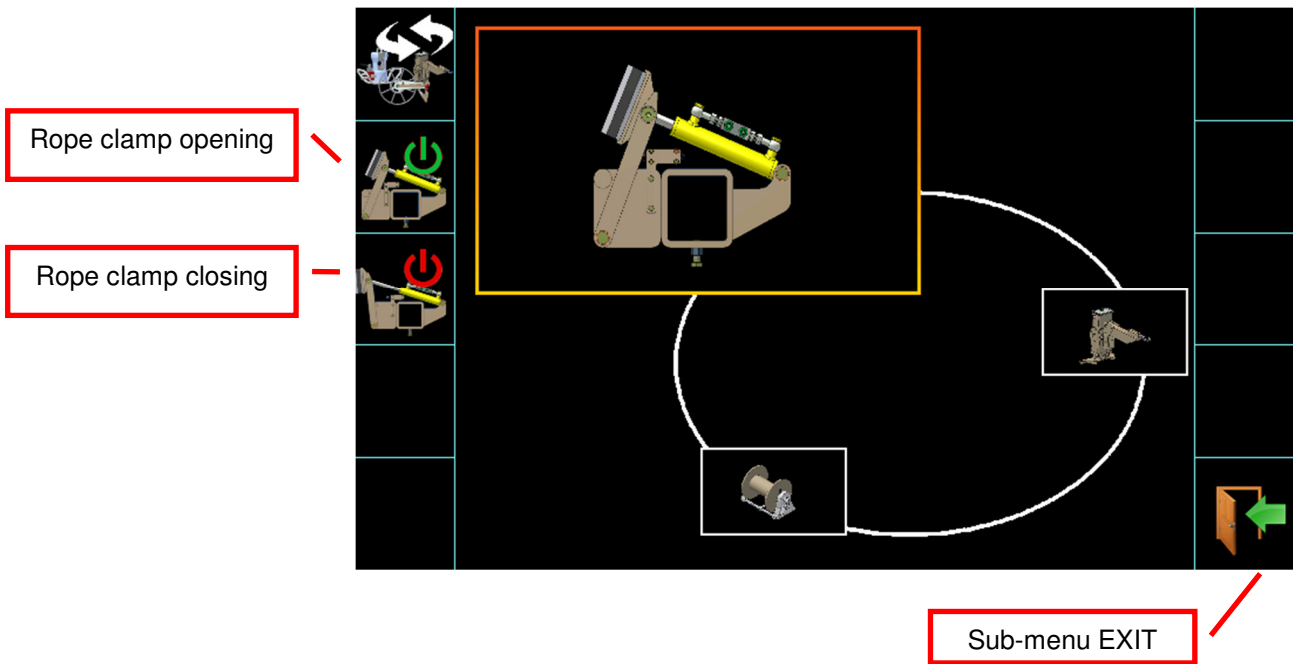
➔ Front plough control



➔ Reel winder Control



→ Rope clamp Control



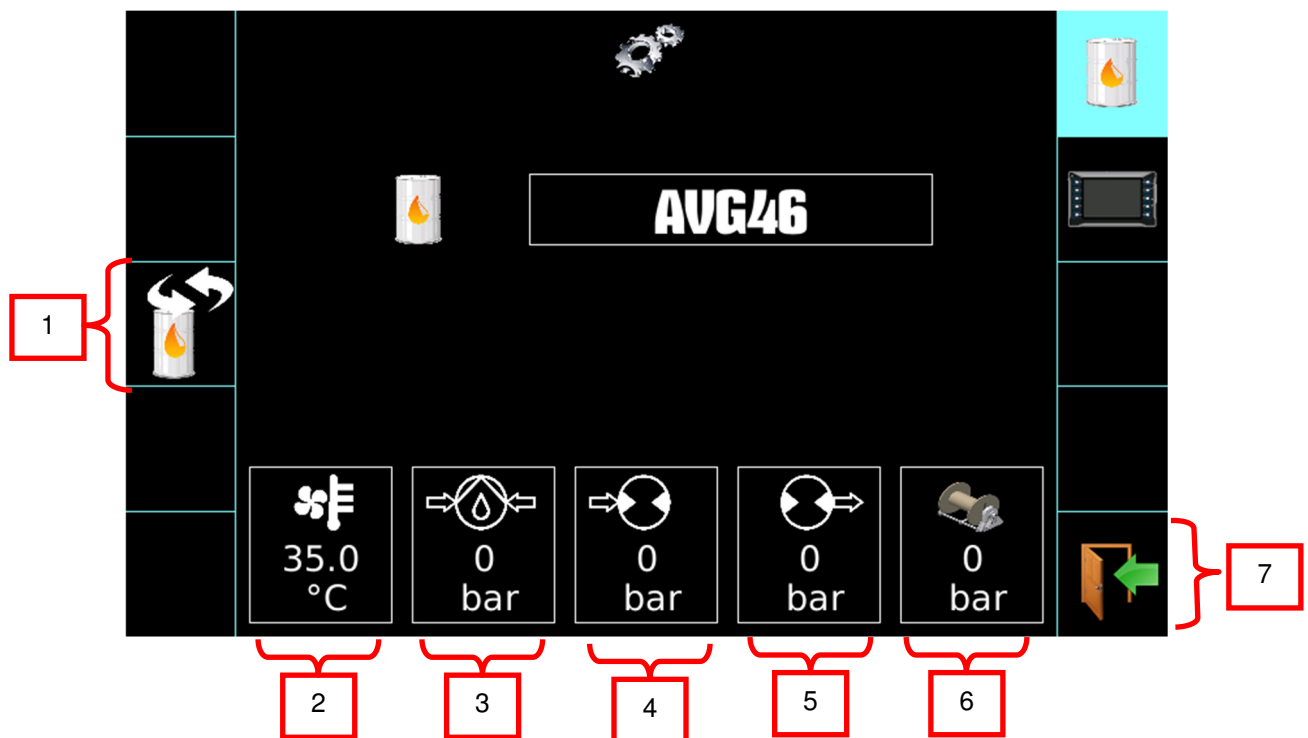


5.5.2.3 MENU SETTINGS and SUB-MENU SETTINGS.

As you can see from the image below, the SETTINGS menu it is made up of THREE sub-menu, each of which is highlighted by the symbol found on the right column of the screen.

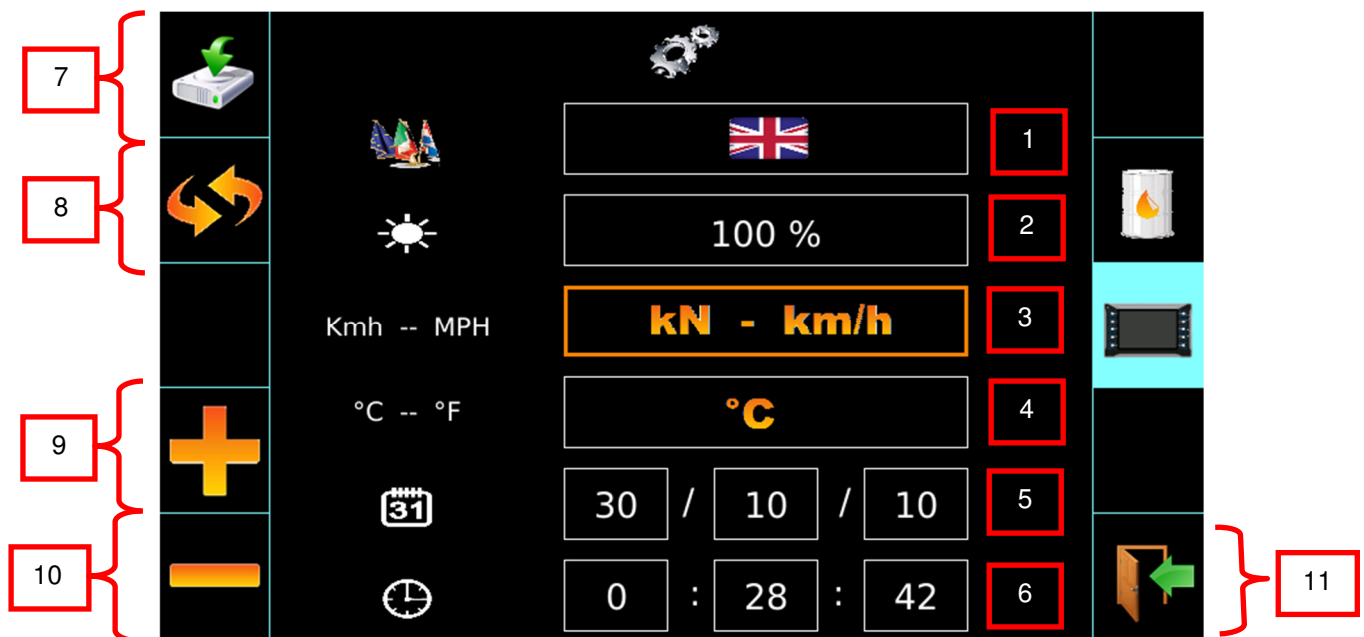
It is possible to select each of the sub-menus through the corresponding buttons on the screen 7 " of the remote control.

- Oil type selection screen




- 1- Choosing the Oil Type (from AVG22 to AVG100).
- 2- Pressure pump value boosting circuit.
- 3- Hydraulic oil temperature.
- 4- Pressure at the entrance of the hydraulic engine.
- 5- Pressure at the exit of the hydraulic engine.
- 6- Reel elevators circuit pressure
- 7- Exit from setting menu.

- Display settings screen



- 1- Screen language selection;
- 2- Display brightness;
- 3- Selecting the speed of stringing and pull set units of measure;
- 4- Selecting temperature units of measure;
- 5- Data settings;
- 6- Hour settings;
- 7- Saving time and date set;
- 8- Button to scroll through the different menus;
- 9- Button to increase the selected menu;
- 10- Button to decrease the selected menu;
- 11- Setting screen menu exit;

 **ATTENTION: In order to take effect any changes to the date and / or time, you must save the settings by pressing the dedicated button "save pos.7 settings".**



5.5.2.4 Maintenance Parameters

- Sub-menu Electronic Cards inputs status - Virtual Radio Control

The screenshot shows a list of electronic cards with the following data:

Pin	Description	Output	Status	Current	Card	Type
103	S1 - Pin 103 Stabilizer 2 - Rise Valve	Y6A	Dout			
104	S1 - Pin 104 On Off Fan 2 - Relay	K12.2	Dout			
105	S1 - Pin 105 Auxiliary Services - Pull Proportional Valve	Y9	Pwm	17 mA		
106	S1 - Pin 106 Proportional Valve Release BW1	Y1B	Pwm	21 mA		
107	S1 - Pin 107 Auxiliary Services - Feedback Proportional Valve	Y9	Fbk	17 mA		
108	S1 - Pin 108 Engine Diesel - Stop Realy	K11.4	Dout			

Callouts from the image:

- Nr. Electronic Card Selection:** Points to the card selection icon (1).
- Main control circuit via the negative pressure brake closing:** Points to the 'T' icon.
- AUX control circuit via the negative pressure brake closing:** Points to the auxiliary valve icon.
- Input or output state in card:** Points to the status icons (green star, red X, red exclamation mark, black circle).
- Downwards scroll:** Points to the yellow arrow icon.
- Initials or hydraulic solenoid valve. Refer to a hydraulic or electrical diagram:** Points to the 'Y9' label.
- PIN type electronic card:** Points to the 'Dout' label.

This menu allows you to view the list and status of PIN inputs or outputs of the electronic cards that is attached to the machine. In case of emergency, reported errors or faults, the operator has the possibility to monitor the electronic state of the machine with an immediate reference to the hydraulic and electrical diagrams.

Electronic card input and output PIN status

- PIN output or input enabled and working properly
- PIN output or input in card NOT managed
- PIN output or input enabled and not working. Hardware problem detected.
- PIN output or input NOT enables. Hardware problem detected.
- PIN output or input NOT enabled. No Hardware Error detected.



ATTENTION: In case of electronic or hydraulic system malfunction, please contact your service agency Tesmec. The screen described here, can be used by customer service Tesmec, to monitor the status of the inputs and outputs as a result of electronic malfunctions detected.



Only the submenu inputs electronic cards, you can access the menu to monitor the operation of the main commands available on the car radio control.



Turning the potentiometer for adjustment of the pull or the reel elevator system pressure, or move the joystick to the bull-wheels control, the values are displayed that may give the operator an indication on the proper functioning of the controls on the radio control.



Reel elevator command circuit potentiometer

Regular Operation: displays values between 128 and 256.

Malfunction: displays values <128 o >256 or different values from those between 128 and 256.



Machine pull setting potentiometer

Regular Operation: displays values between 128 and 256.

Malfunction: displays values <128 o >256 or different values from those between 128 and 256.



Rope clamp switch

Regular Operation: Central position and operating properly.



Regular Operation: Rope clamp closing position and properly functioning.

Malfunction: moving the switch you see the arrow; the switch has a malfunction.



Regular Operation: Rope clamp closing position and properly functioning.

Malfunction: If moving the switch, you see the arrow, the switch has a malfunction.



Command joystick bull-wheel rotation

Regular Operation: displays values between 0 and 256.

If the joystick is centrally located and operating properly, the value 128 is displayed. If the joystick is moved forwards or backwards, displays an arrow indicating the corresponding movement.



Malfunction: If you see a different value from 128 or arrows does not appear.



In radio operation monitoring screen control, there is another button that lets you access a menu by password.

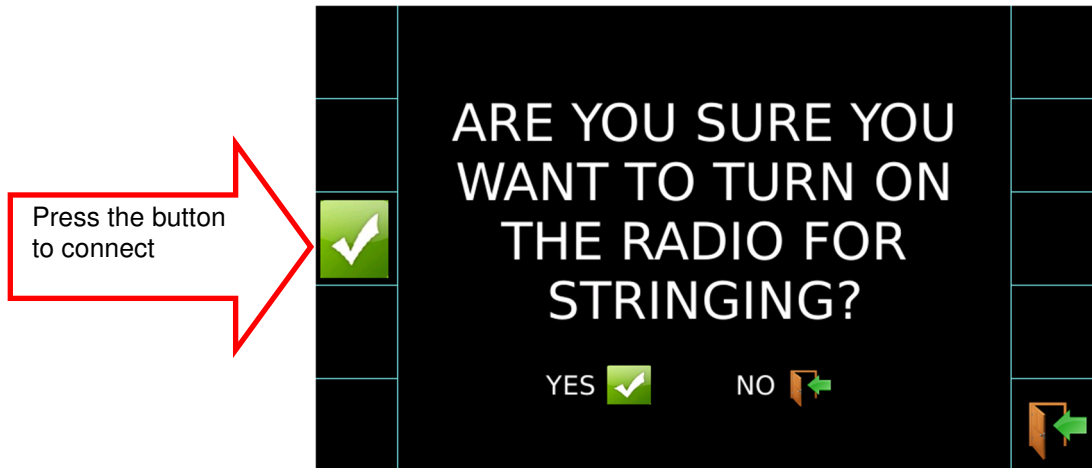
This menu can be used only and exclusively under Tesmec assistance authorization.

If it detects a malfunction of the controls on the radio control, it is possible to completely exclude the radio control and control the machine from the main screen machine.

In the radio control management screen, you can enable or disable the radio control and / or on-screen controls.



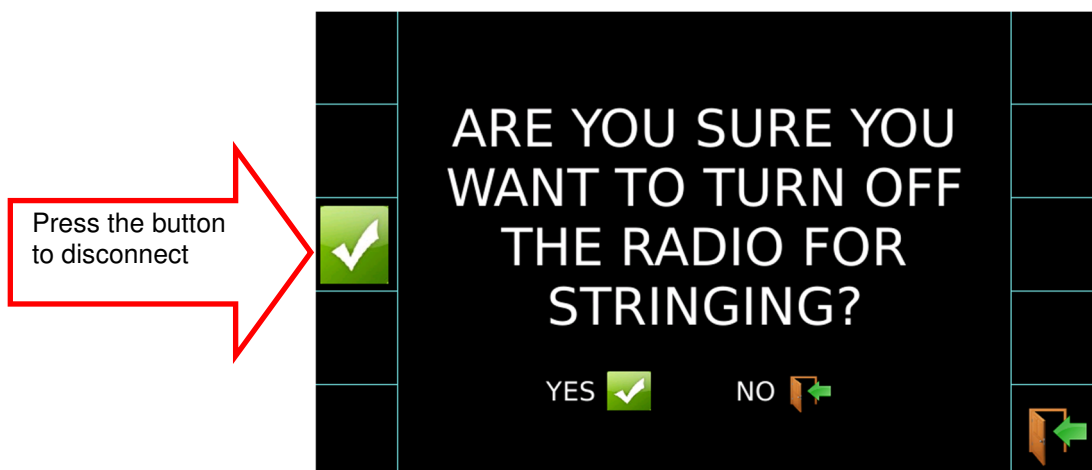
With this button, you can connect your radio controlled exclude commands activated screen 7 ".



Activating one or more commands, the machine's main screen will change, and will be displayed on the relevant buttons for the management of these functions.

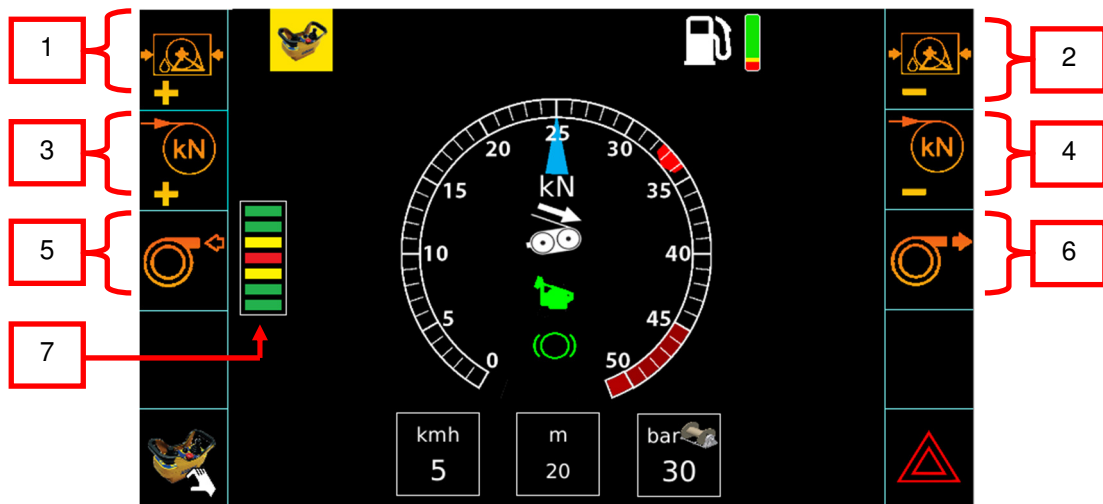
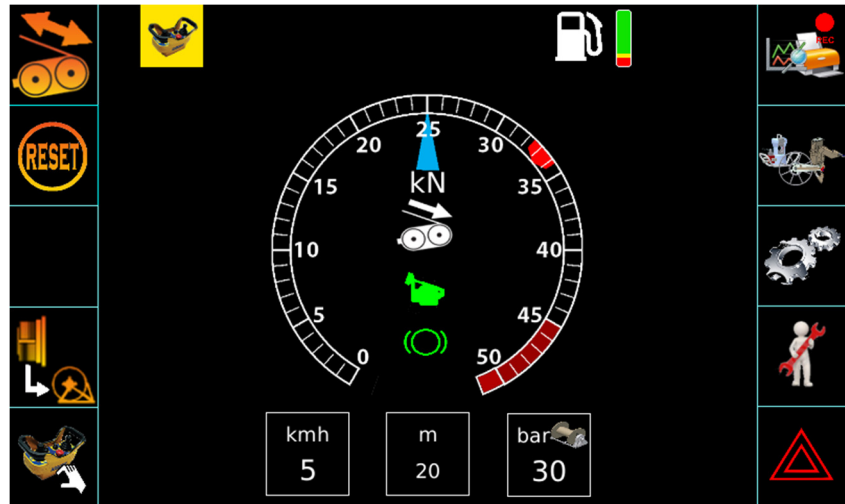


With this button, you can disconnect the radio control to control the machine through the 7 " screen.



Disconnecting the radio control from the machine, the main the machine screen will change and you will see a dedicated button located on the bottom left.

Selecting the button on the bottom left, they activate the selected commands.



This will make it possible:

- 1- Increase the pressure in the circuit reel elevators;
- 2- Decrease the pressure in the circuit reel elevators;
- 3- Increase the value of shooting;
- 4- Decrease the value of shooting;
- 5- Release circuit with bull-wheels (bull-wheels virtual joystick);
- 6- Recover with bull-wheels circuit (bull-wheels virtual joystick);
- 7- Display the Virtual bull-wheels joystick position;



ATTENTION

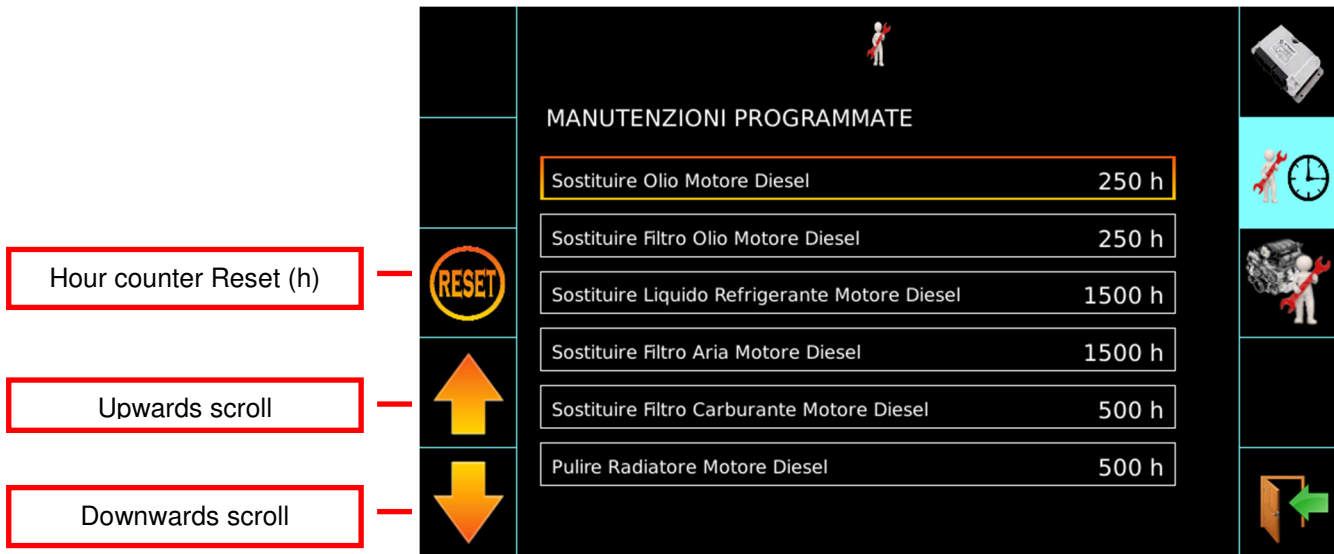
Disconnect the radio control to anything bull-wheels rotation speed (stopped machine).



ATTENTION

Taking command from the screen to the radio control, the stringing parameters are not transferred. The machine is reset by taking the parameters set on the radio control.

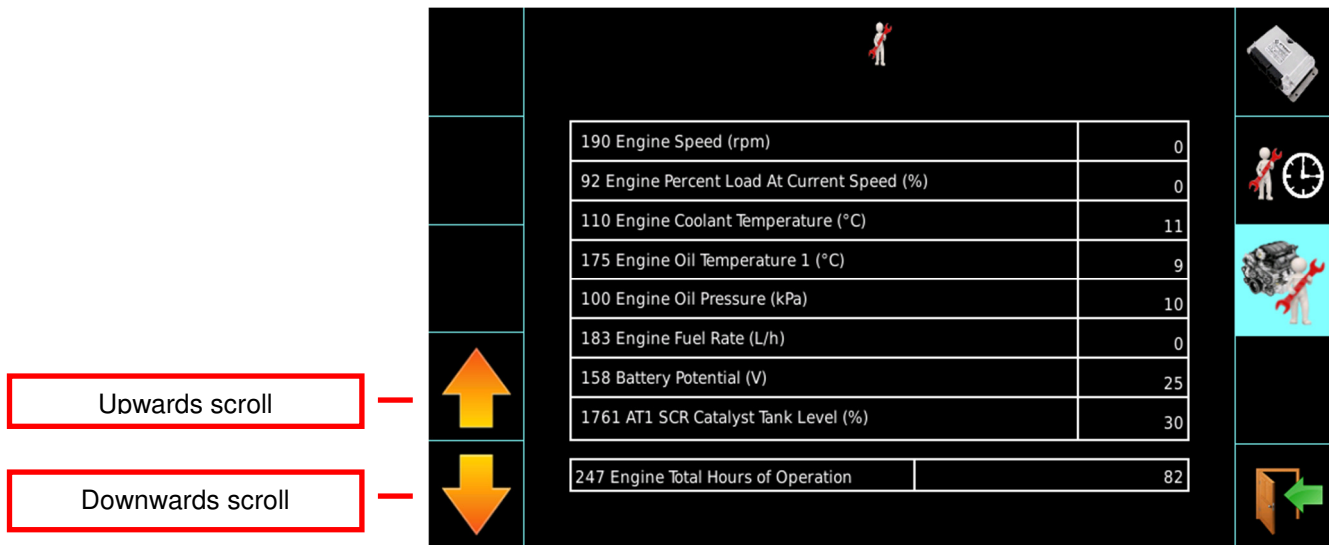
- Extraordinary machine maintenance settings



MANUTENZIONI PROGRAMMATE	
Sostituire Olio Motore Diesel	250 h
Sostituire Filtro Olio Motore Diesel	250 h
Sostituire Liquido Refrigerante Motore Diesel	1500 h
Sostituire Filtro Aria Motore Diesel	1500 h
Sostituire Filtro Carburante Motore Diesel	500 h
Pulire Radiatore Motore Diesel	500 h

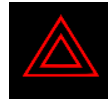
This screen allows the operator to set the counters (in h) of the planned machine maintenance alarms. The values are decreasing and resetting of these, you switch on the remote control, it is reported the need to perform maintenance and / or control.

- SPN engine available list



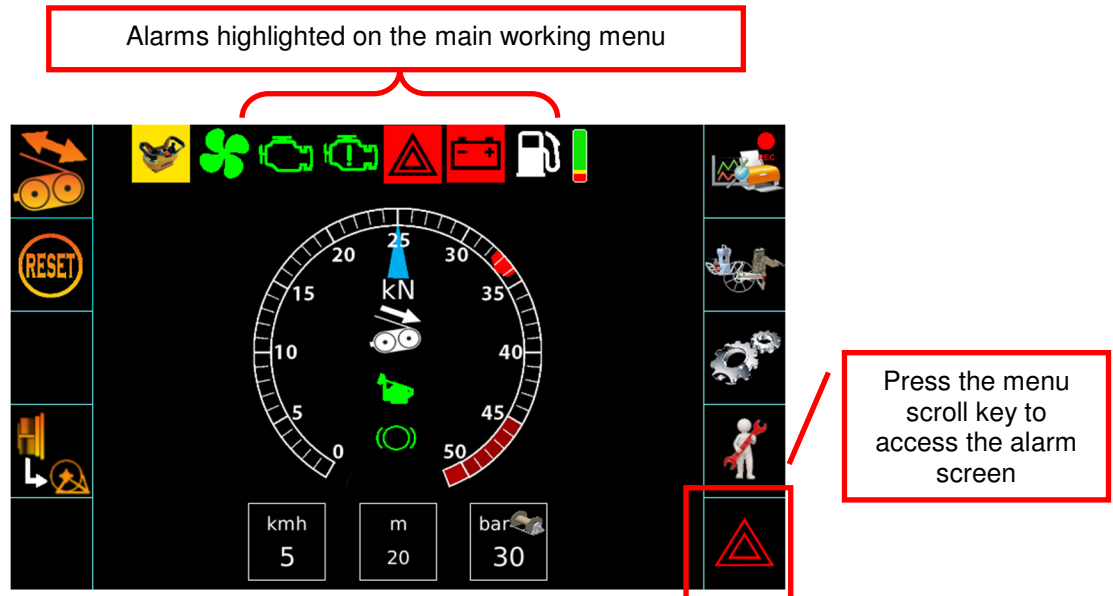
190 Engine Speed (rpm)	0
92 Engine Percent Load At Current Speed (%)	0
110 Engine Coolant Temperature (°C)	11
175 Engine Oil Temperature 1 (°C)	9
100 Engine Oil Pressure (kPa)	10
183 Engine Fuel Rate (L/h)	0
158 Battery Potential (V)	25
1761 AT1 SCR Catalyst Tank Level (%)	30
247 Engine Total Hours of Operation	82

It allows you to view the complete list of the diesel engine parameters of the machine. With this menu, the operator has the ability to control all the major parameters returned by the sensors which is fitted to the engine.



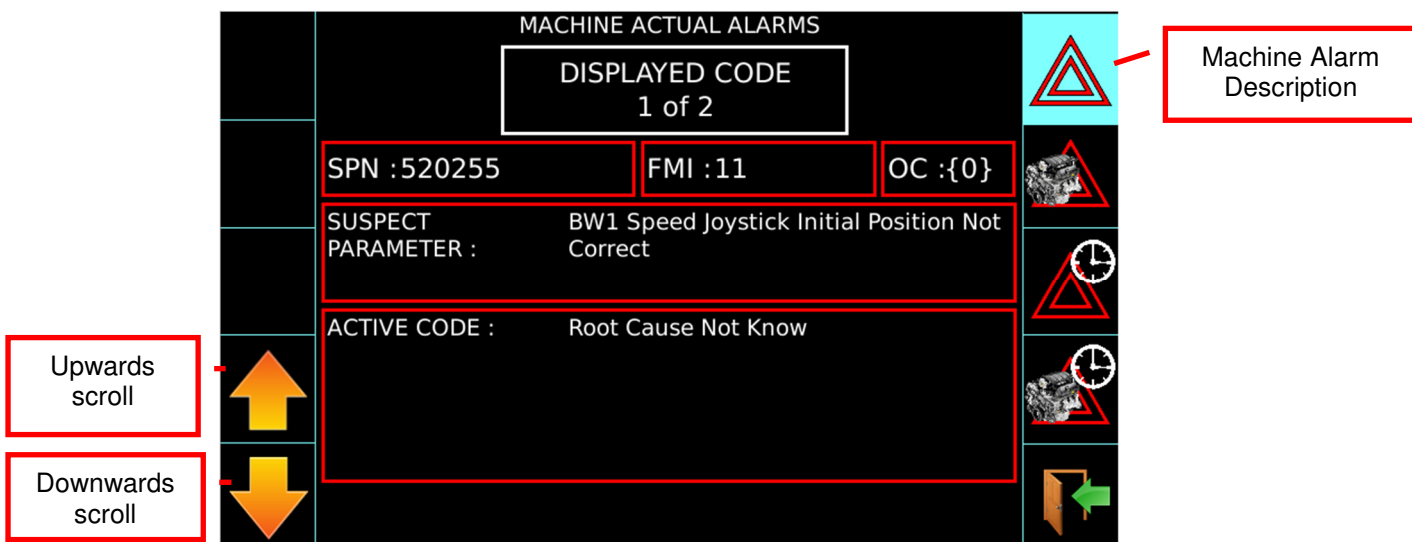
5.5.2.5 ALARMS MENU and ALARMS SUB-MENU.

If during operations stretching, you display a warning and / or error, you can be able to analyze the status or the cause through the four dedicated screens, which can be accessed through the menu scroll key shown at the bottom right of the screen main work.



The ALARMS menu consists of four sub-menus, each of which is indicated by the symbol shown on the screen right column. you can select each of the sub-menu via the corresponding keys on the 7 "screen of the remote control.

- Machine error description.



This screen allows you to view the description of the active faults on the machine at that time

- Engine error description

This screen allows you to view the description of the active faults on the engine at that time.

- Historic Machine Alarm

SPN	FMI	START			STOP		
		H	M	S	H	M	S
520490	5	9	47	24	0	0	0
520490	0	0	0	0	9	47	15
520490	5	9	46	5	0	0	0
520490	0	0	0	0	9	45	36
520490	5	9	45	24	0	0	0
520327	0	0	0	0	9	45	20
520490	0	0	0	0	9	45	11
520327	11	9	45	10	0	0	0
520198	11	9	41	32	0	0	0
520192	11	9	41	31	0	0	0

Displays a list of errors reported by the machine.

Even in this case, each of the errors is highlighted by a code SPN and the IMF description of the same while, in the right column of the list, is given the start time and end error signaling.



ATTENTION






The machine alarm history will be erased every time you turn off the machine. Historical alarms relate to a single power-on/off phase of the machine.



INFORMATION

An attachment to this manual is a list of all the SPN and FMI codes of the machine (see manual attachment).

- Historic Engine Alarm

ENGINE HISTORY ALARMS					
SPN	FMI	START H : M : S	STOP H : M : S		
520203	5	11 : 00 : 00			
520203	40		10 : 30 : 45		
520209	5	09 : 01 : 30			
					
					

Historic Engine Alarm

Displays a list of errors reported by the diesel engine of the machine.

Each error is highlighted by the IMF SPN code and description of the same and, in the right of the column shows the start and end of an error message.

INFORMATION



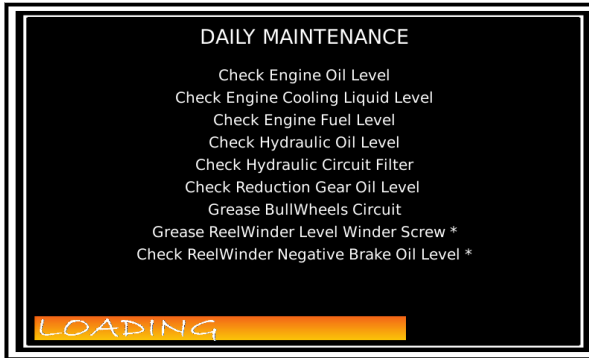
The manual of the diesel engine is attached to this manual, where you can consult the list of all its SPN and FMI codes.

5.6 MACHINE STARTING



ATTENTION: Before starting the work and turn on the diesel engine, check that the key off the battery is inserted and turned to the ON position (Tav.4 pos.1).

- a. Turn the key consensus starter machine positioned on the panel of the power unit. (tab.8 pos.2)
- b. Operate from the remote control of the machine (tab. 3).



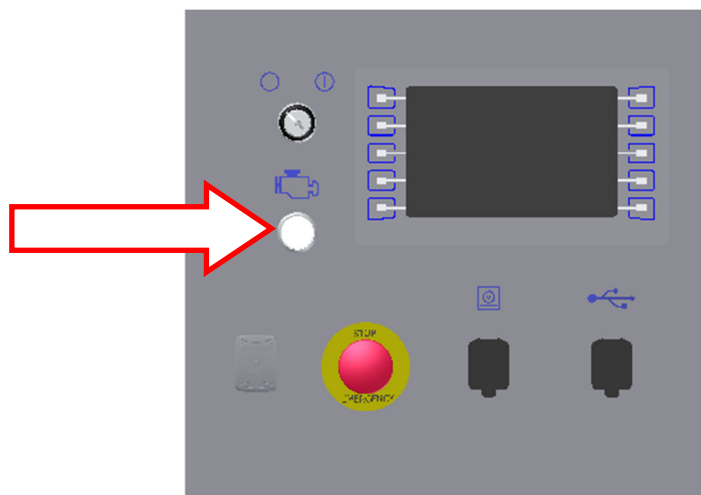
In the 7 " screen of the remote control, you see the loading and setting of the list of controlled parameters for the maintenance of the machine.



The screen shown here to the side, alerts the operator of the need to perform performing maintenance and control.

In the screen "extraordinary settings", it is possible to see which control will be needed

- c. Connect the machine radio control as described in chapter 5.4.
- d. Position centrally the control lever of the variable displacement pump located on the remote control (tab. 9, pos.5).
- e. Via the switch on the panel, turn on the diesel engine.



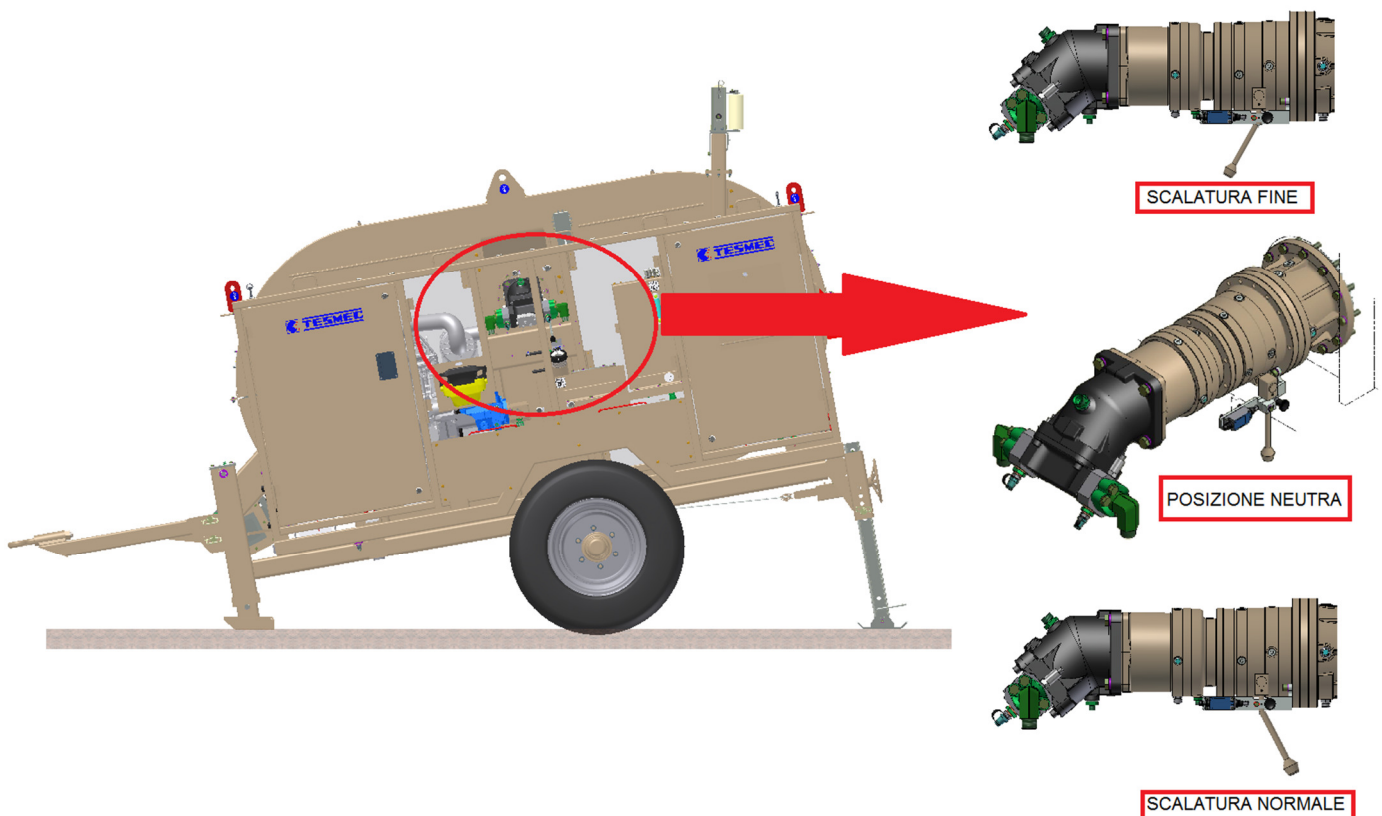
- f. Through the dedicated button, select the operating mode in which you want to use the machine (PULLER or TENSIONER).



This button displays the appropriate scale on the virtual dynamometer, depending on the chosen configuration.

Refer to the symbolist specified in chapter 5.5.2.

- g. Set the gear lever on the machine radiator, depending on whether you want to work with the normal scaling dynamometer (0 a 50 KN) or if you want to use a FINE scaling (from 0 to 7 KN puller or from 0 to 12 KN as tensioner).



ATTENTION: Never change the position of the shift lever without first discharging the line pull, in order to avoid the loss of the rope / conductor.

- h. Check the machine parameters through the main work screen (see Working Menu par.5.5.1)



ATTENTION: During the sequence of cold start leave turn the vacuum machine for about 10 minutes.



ATTENTION: In case of cold starts, after having pre-heated the hydraulic oil as described above, the start of stringing operations for limiting at least the first 15 minutes the maximum performance of work (not exceed 30% of the maximum speed of recovery).

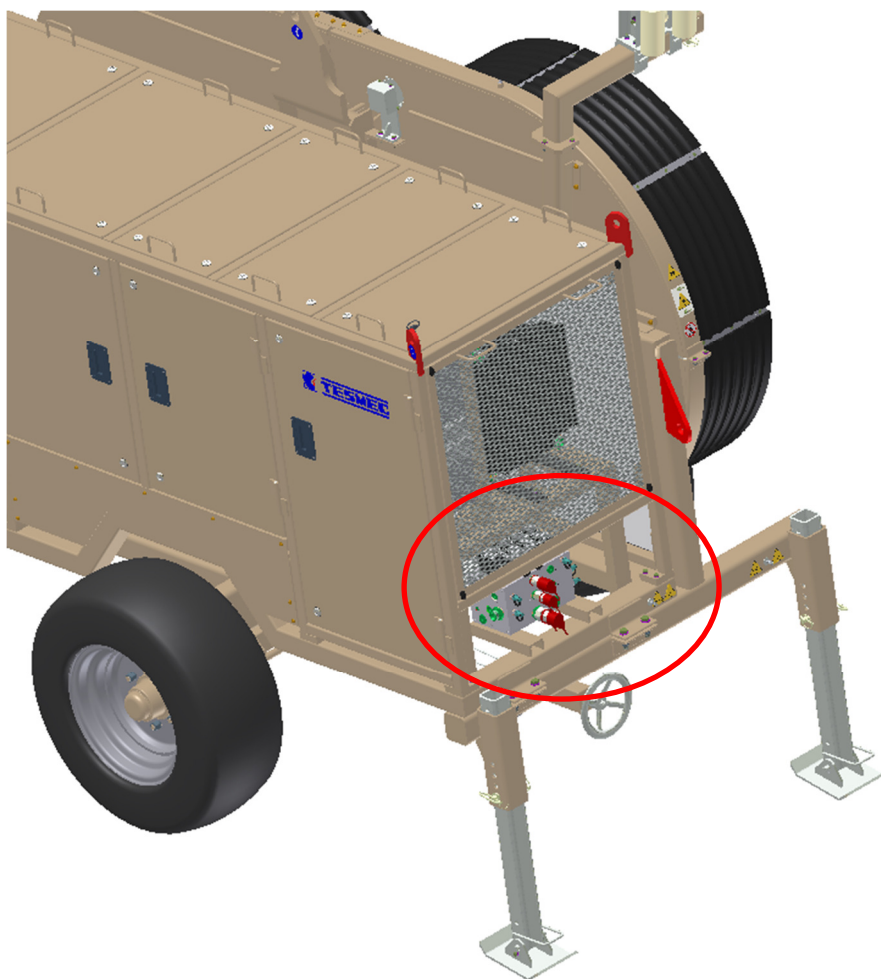
5.7 CONNECTION MACHINE-HYDRAULIC HEAD OF THE REEL ELEVATOR OR REEL WINDER

Machine can feed 2 reel elevators with hydraulic head or 2 reel winders made by Tesmec, both functioning as tensioner and puller.

Each hydraulic head (or each reel winder) has a connecting kit consisting of two pipes.

Each of these pipes has to be connected to the proper rapid coupler making care to connect them properly (otherwise the installation will not work).

Connect the hoses of the reel elevators to the rapid couplers (tav. 7).



ATTENZIONE: it is important that, before connecting the rapid couplers, the operator has checked their cleanliness as the introduction of dirt into the hydraulic circuit can create very serious damages.



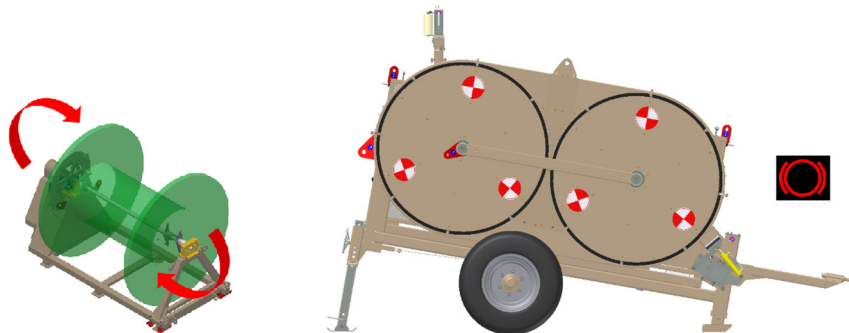
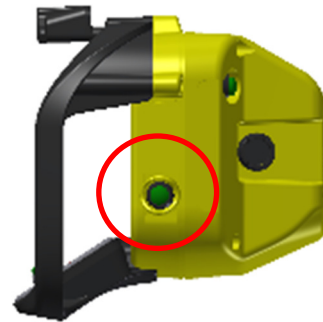
ATTENZIONE: The rapid couplers must be connected before putting the circuit under pressure.

5.8 ROPE OR CONDUCTOR MACHINE CHARGING

In the wire and conductor charging phases on the machine, they can be used two special commands, which allow the operator to separately manage the movement of the bull-wheels or connected to the machine reel elevators.

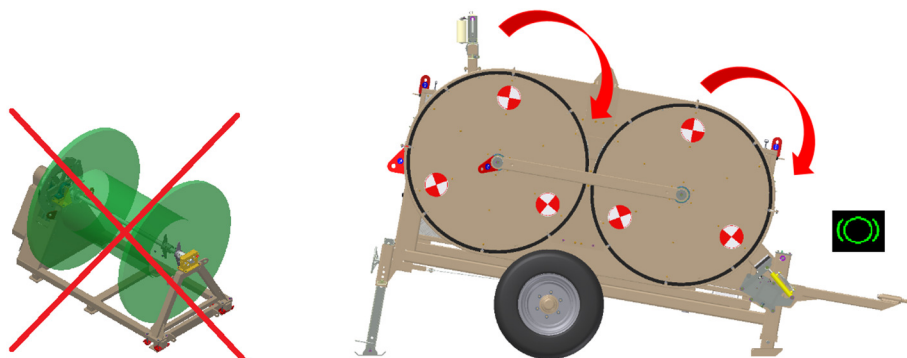
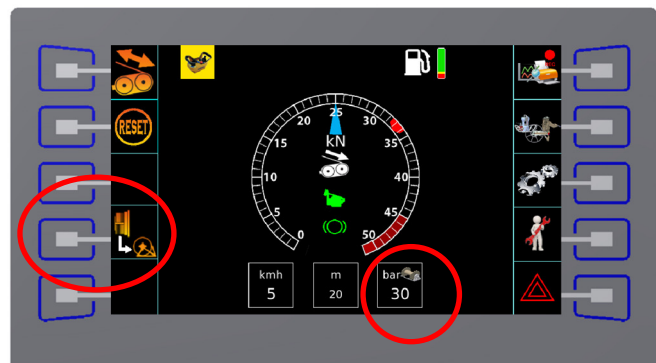
- on radio control button to move the reel elevator.

This button allows the operator to rotate the gantry holding closed the negative brake circuit of the bull-wheels.



- on-screen button to move only the bull-wheels circuit.

In this configuration, you can move the bull-wheels excluding the reel elevators circuit.

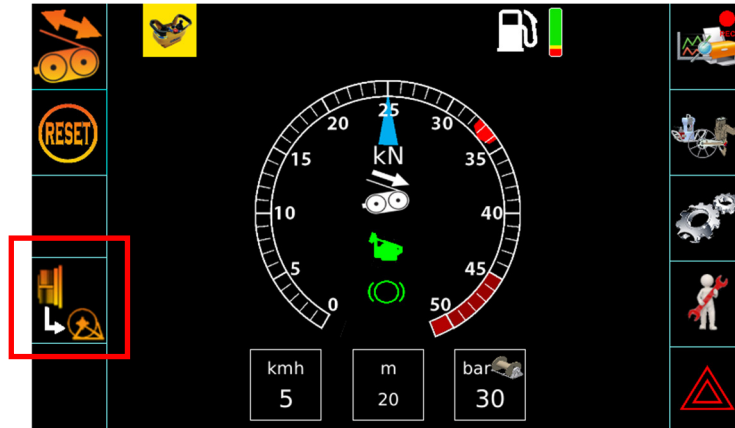


ATTENTION: This function should only be used during loading or separate stand management. During the operations of tensioning and whenever the conductor and the cable is located on both the bull-wheels that on the stand, it is necessary to set the **STRINGING** mode.

5.9 MACHINE USE

The machine is fully automatic and is able to independently manage variations of load or speed of stringing, self-adjusting the number of revolutions of the engine, turning on and off of the radiator, the rotation speed of the reel elevators.

- a. Select or control the reel elevator circuit management button. For stringing operations, it must be set to STRINGING.




- b. Set the desired pull using the dedicated potentiometer, placed on the remote control. By turning the potentiometer, the red notch on virtual dynamometer, will move to the desired value. Simultaneously, it will display the same value on the remote control screen.



- c. Adjust the pull on the branch of wire and / or wire rope to the reel elevator by adjusting the dedicated commands to and read the pressure on the main work screen.

The pressure value is approximately 50 bar when the reel has few turns of rope and wrapped with the increase of the number of the windings of the rope on the reel, the pressure must increase up to a maximum value of 80-100 bar. For the maneuver release the pressure should be 40 bar

- d. Through the dedicated switch, freeing the driver loaded onto bull-wheels opening rope clamp.

- e. Gently move the lever (tab. 9, pos.5) to the position  (down).

The machine is ready for working and automatically start to recover if the pull in the rope is less than that of the puller or will begin to release braking if the kinks in the rope is greater than that of the puller. After setting the pull with dedicated potentiometer, the engine stops or starts independently following the movements of the machine antagonist.



ATTENTION: if the blue arrow reaches the red mark, the machine stops automatically.


- f. To stop the rotation of the bull-wheels, gently bring the lever (table 9, pos. 5) in the center position. This operation has the negative brakes that cause the arrest of the bull-wheels.



NOTE: when situate the lever (tab. 9, pos. 5) to center the negative brakes engage automatically.



ATTENTION: quickly move the lever (tab. 9, pos. 5) from the working position to the central position of the neutral it is harmful to the risks of negative brakes that have to endure at the time of their intervention to heavy load.

- g. For the release of the rope lead position  (up) the command lever (tab. 9, pos.5).

5.10 POINTS TO REMEMBER

- The pressure of the feeding circuit (see par.5.5.2.3) must be higher than 25 bar: otherwise, the stationary brakes will be damaged.
- Adjust the pull of the reel elevators with hydraulic head at minimum indispensable value: otherwise, the hydraulic oil will be uselessly heated and dangerous counter pulls may arise.
- Before beginning the works, check the levels.
- Respect the temperature limits for the hydraulic oil as indicated at paragraph 2.12
- After an emergency intervention of the negative safety brake, verify the condition of the brake discs (see paragraph 5.5.2.4).
- It is strictly forbidden to wind on the bull-wheels ropes and/or conductors with a lower diameter in succession of ropes and conductors with a larger diameter.

5.11 END OPERATIONS

At the end of the operations to download the tension of the cables / conductors using the control lever (tab. 9, pos. 5). Afterwards turn off the engine by turning the ignition key.

6. AVAILABLE DEVICES

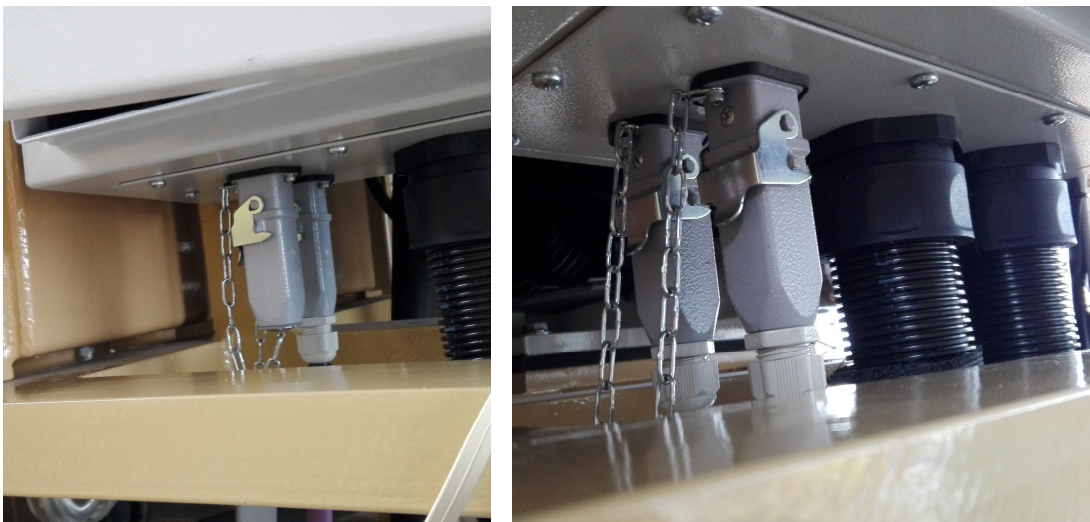
6.1 MACHINE ELECTRONIC CONNECTION (ALL.089)

When machines be equipped with an electronic connection package, this device allows to use multiple machines connected between them, controlled and operated by a single operator for the main working parameters.

Is possible to connect a maximum 4 machines between them, with the possibility to work with 4 independent ropes configurations.

The machines must be connected through a special connecting cable; the un-used plugs on the first and on the last machine (right and left) must **always** be closed with the related caps.

To grant the continuous connection of the machines, a special protection device must be provided for the connection cables, to avoid accidental disconnection of the communication between the machines.



WARNING

Connect the connection cables before switching on and using connected machines. The cables must be connected when the machine have DIESEL OFF.



WARNING

If the operator disconnect the machine connection cables, during operation, you will have the immediate emergency stop of all connected machines.



WARNING

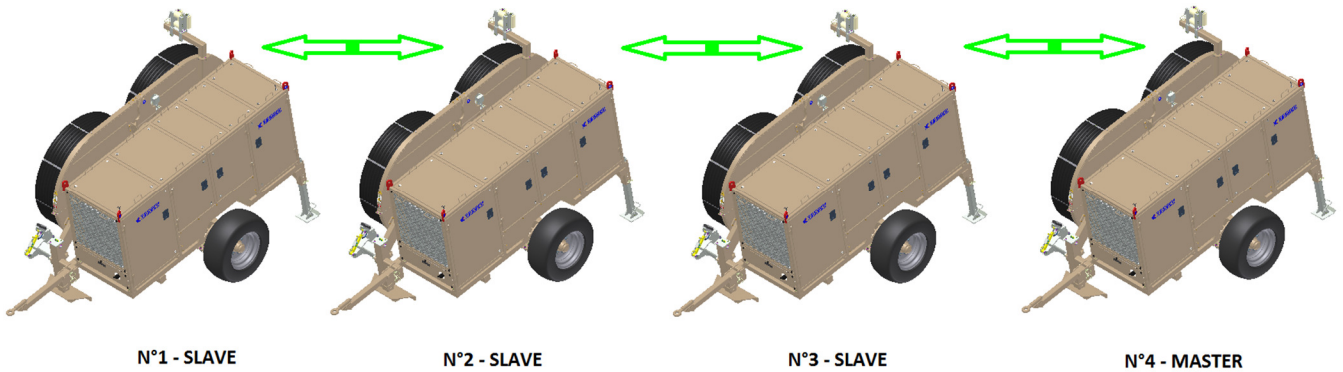
Before using the machines connected to each other, make sure that the fine braking gear configuration is HIGH-PULL in each machine.


6.1.1 MACHINES SET-UP

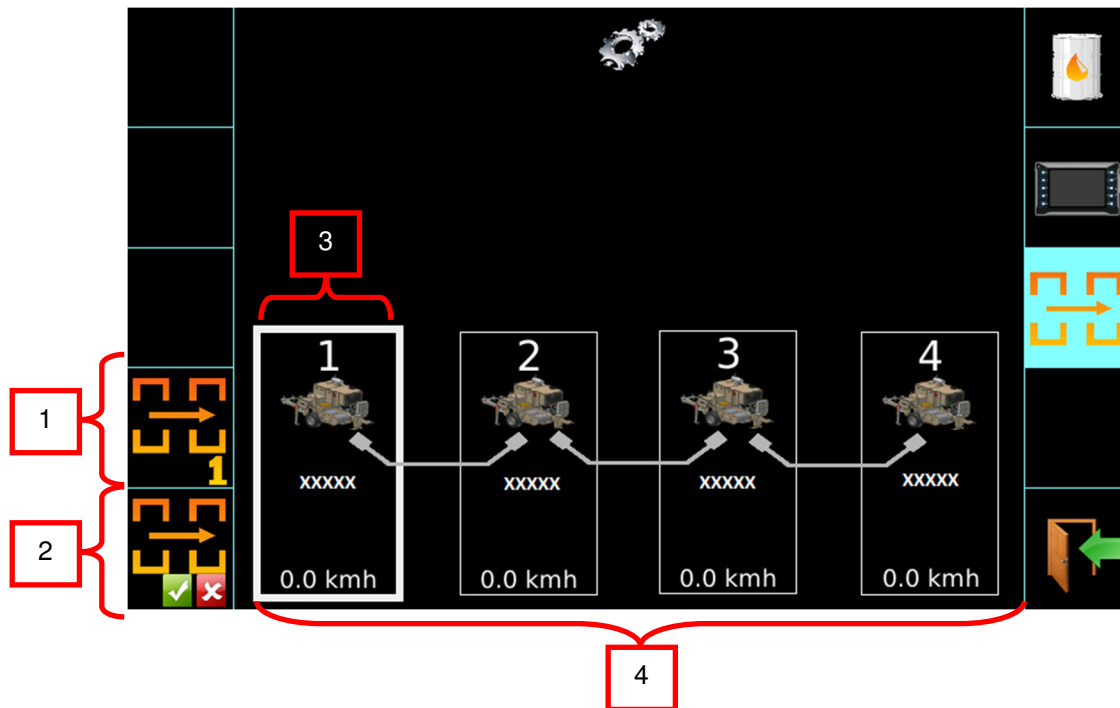
Before use, the machines must be set up to be used in connection by assigning the correct identification numbers.

When machines are connected, the machine with the highest reference number is the MASTER machine, while the lower number machines are all SLAVE machines.

Through the MASTER machine it is possible to move and control all other machines.



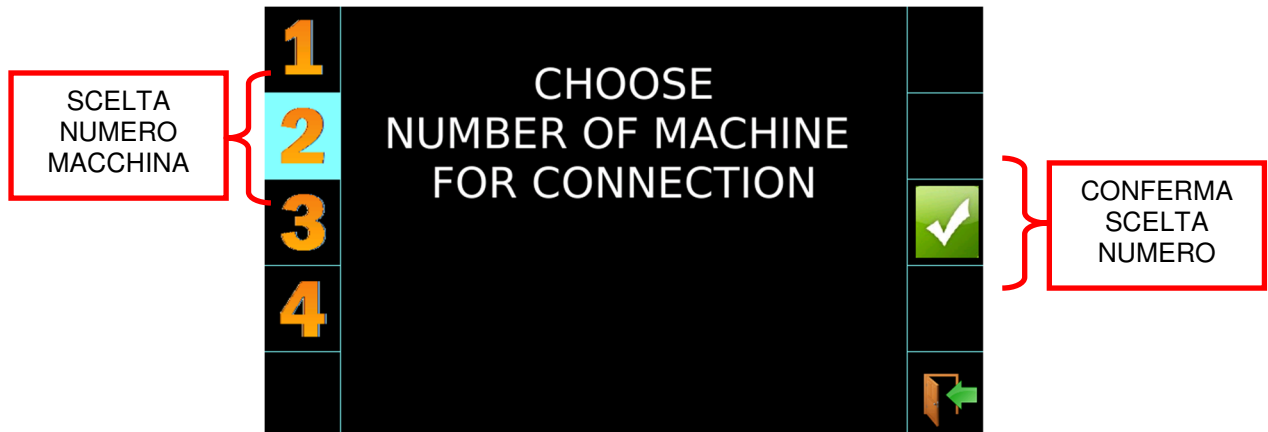
Between the dedicate button  allows you to reach the menu dedicated to the machine connection: through this menu you can set the machine number and connect the machine to the other machines by passing commands from one another.



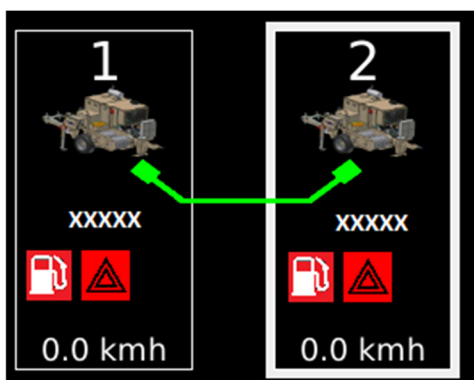
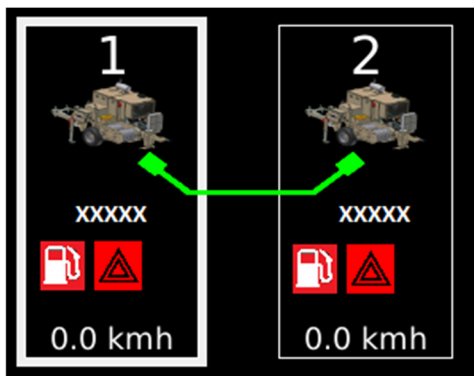
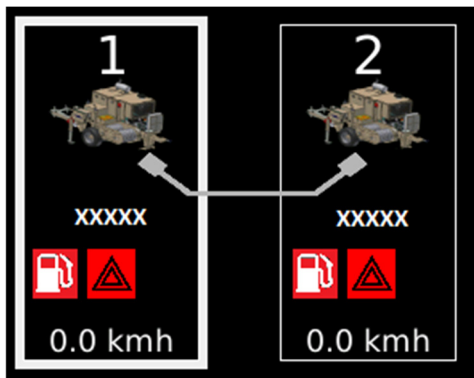
- 1- **Machine number selection:** The SLAVE machine will have a lower value than the MASTER. The MASTER machine will always have a larger number of SLAVE;
- 2- **Activation Connection:** performs the passage of the SLAVE machine commands to the nearest SLAVE machine or to the MASTER;
- 3- **Status of single machine:** Allow to check the status of the single machine;
- 4- **Status about all machine:** Allow to check the status about all machine connected;

To connect the machines, follow these step:

- a. Choose the number of machine, push button n°1;



- b. Connect the machine, passing commands from SLAVE to MASTER, push button n°2;



MACHINE STATUS N°1 (SLAVE)

MACHINE N°1 NOT CONNECT TO MACHINE N°2



BETWEEN THE DEDICATED BUTTON BY MACHINE No. 1 PUTS THE CONTROLS TO MACHINE No. 2



STATUS MACHINE N°1 (SLAVE)

CONNECT

TO

MACHINE N°2

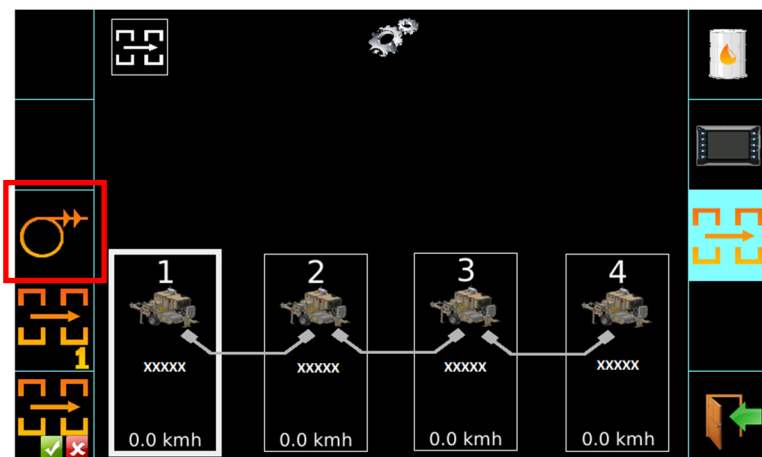
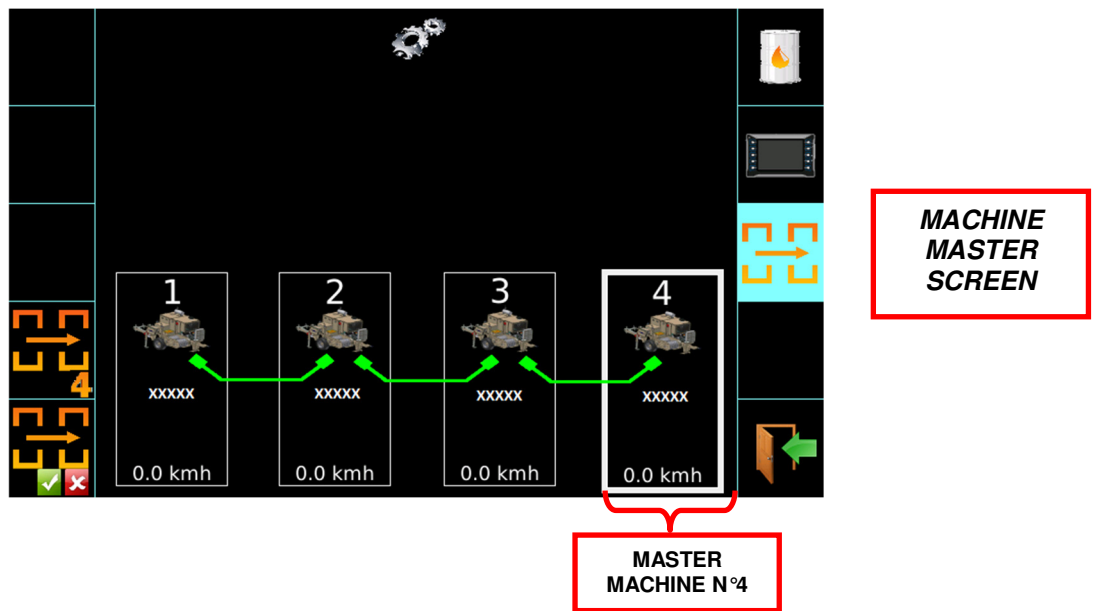
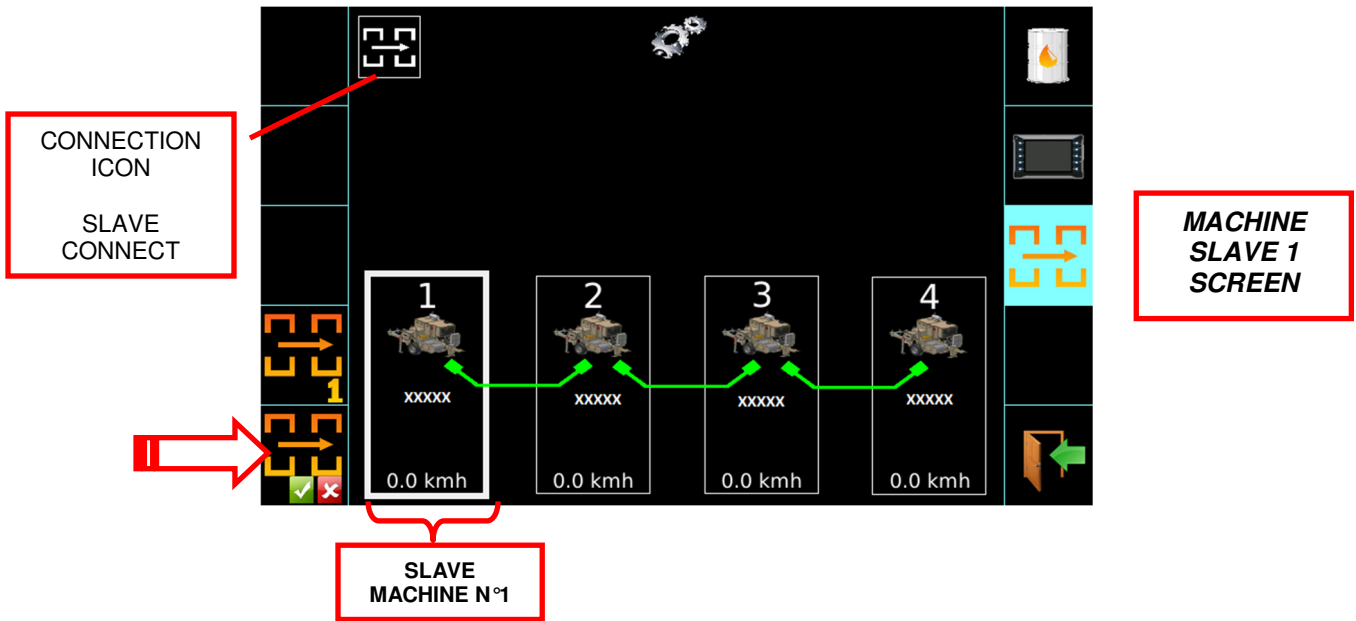
(MACHINE MASTER WILL BE THE HIGHER NUMBER)



STATUS MACHINE N°2 (MASTER)

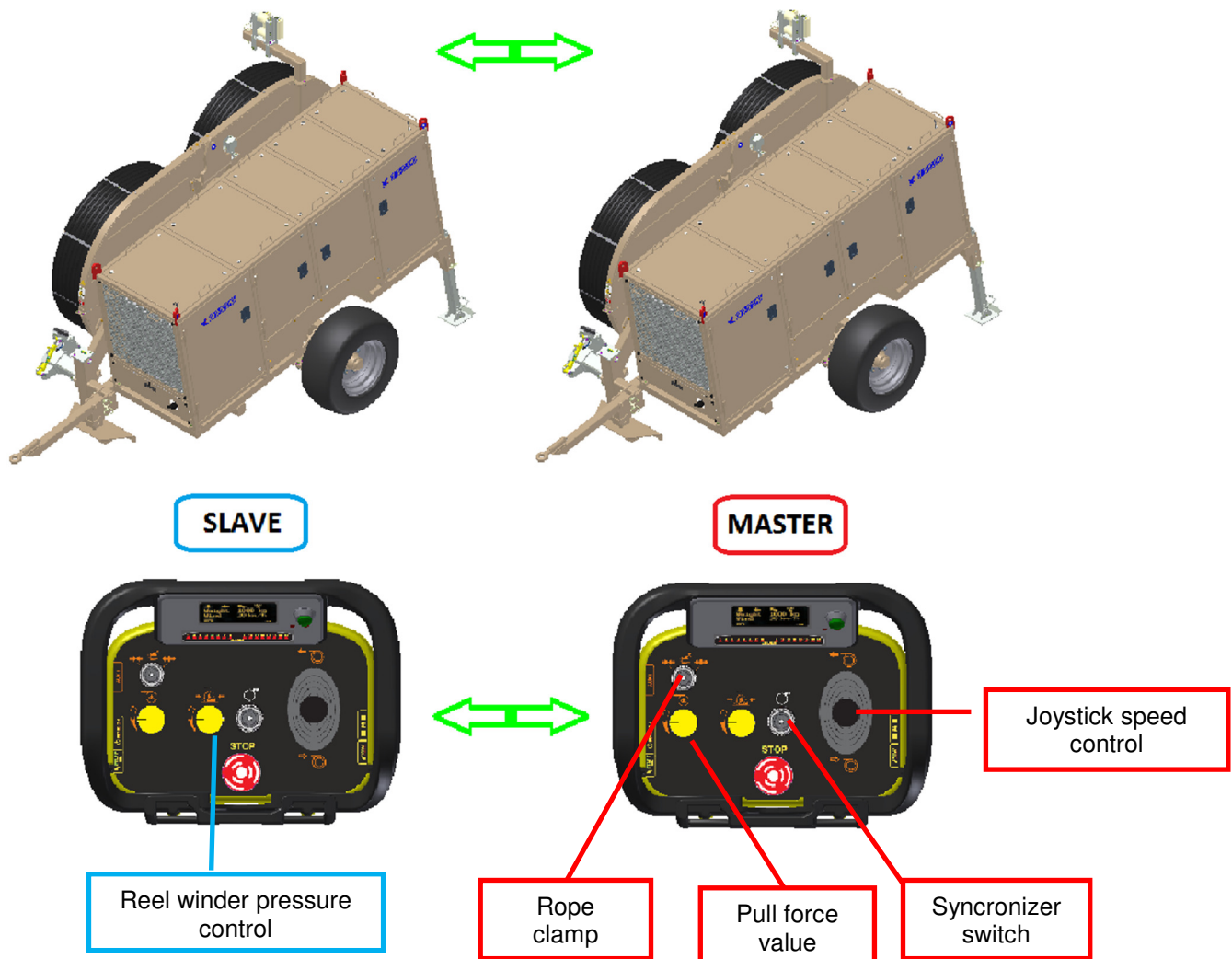
NOTE: TO CONNECT MACHINE 2 TO 1 DO NOT NEED TO KNOW THE MACHINE CONNECTION BUTTON.

THE CONNECTION IS COMPLETED, PUTTING THE CONTROLS FROM SLAVE TO MASTER



If the radio control is switched off and the operator is using the machine via the virtual panel control (par.5.5.4.2), the machine-dedicated screen will display the button dedicated to activating the speed synchronization between the different machines connected

6.1.2 ELECTRONIC CONNECTION AND AUTOMATIC SYNCRONIZE SYSTEM

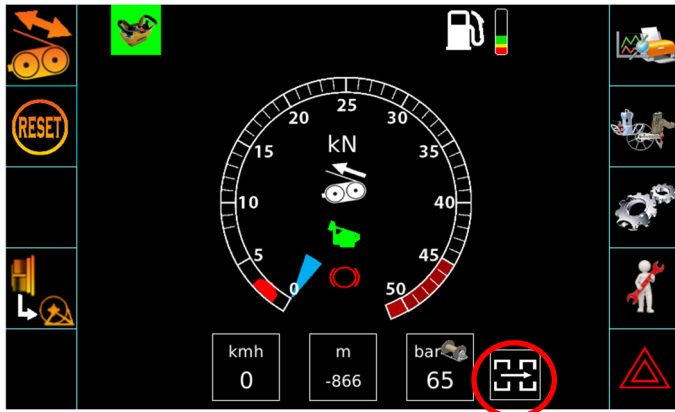


When using connected machines, the following controls effect on all machines when operated from the MASTER machine:

- Speed control (Joystick);
- Pull-adjusting control (potentiometer);
- Rope-clamp selector
- Switch synchronizer;

When using connected machines, the following controls must be operated on each single machine (SLAVE):

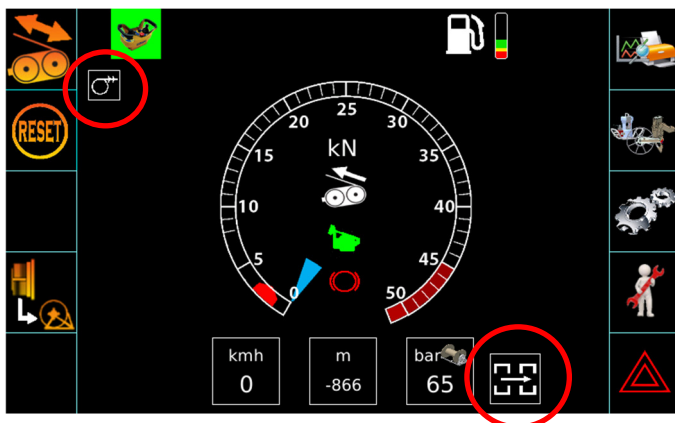
- Reel-winder working pressure
- Reset of meter counter (between display);
- Main front plough position (between menù on display);



When the electronic connection is active, the corresponding symbol on all SLAVE machine will be displayed.

When the machines are electronically connected to each other, it is possible to use **automatic electronic synchronization**: this system automatically adjusts the speeds of both circuits so that you can have the wires or ropes at the same height during the stringing operations.

Synchronization can be used when the machine is powered by PULLER or TENSIONER.



If the electronic connection and electronic synchronization is active, on the main job screen of all SLAVE machines, the corresponding symbol will be displayed.

NOTE: Electronic synchronization can only be activated when the electronic connection is active.

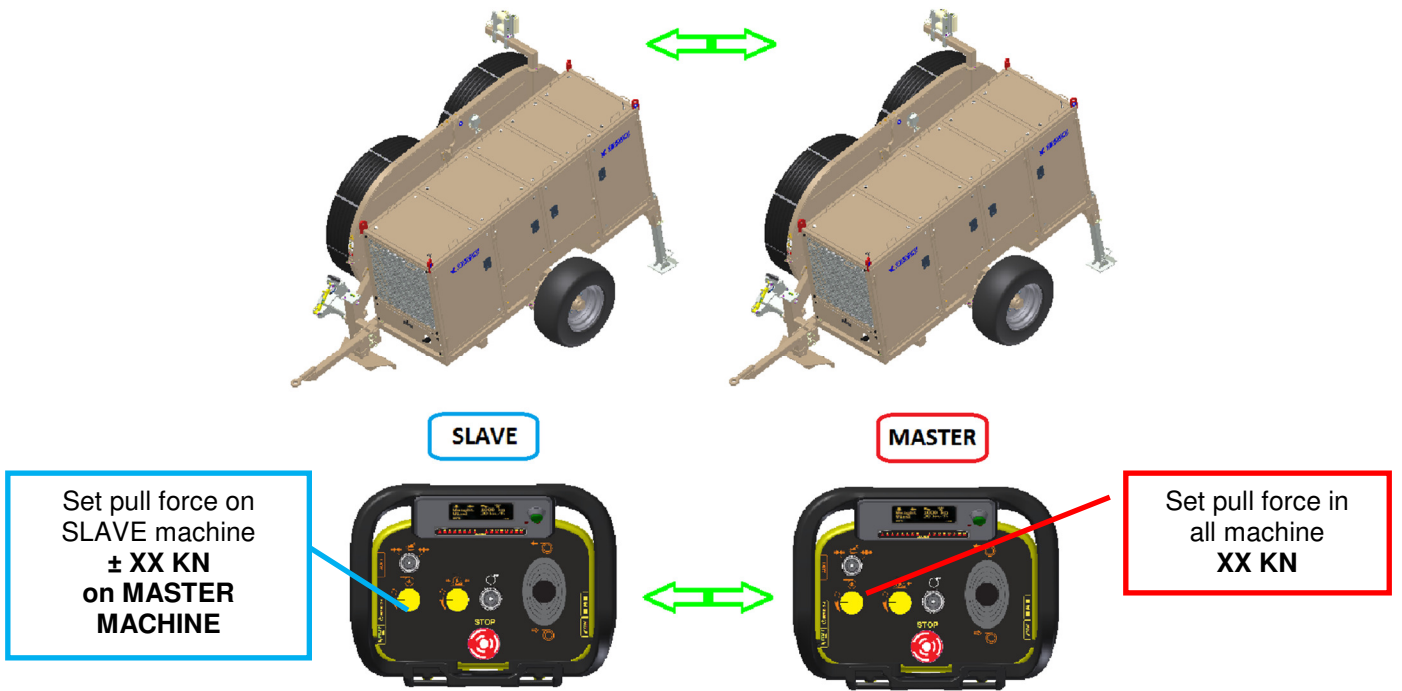
6.1.3 MANUAL ELECTRONIC SYNCHRONIZER

When electronic connection is active but automatic electronic synchronization (OFF switch sync) is disabled, manual adjustment can be made on the pull-force value or the recovery speed of the individual slave machines, depending on the settings set on the master machine.

This system can be used in two different situations:

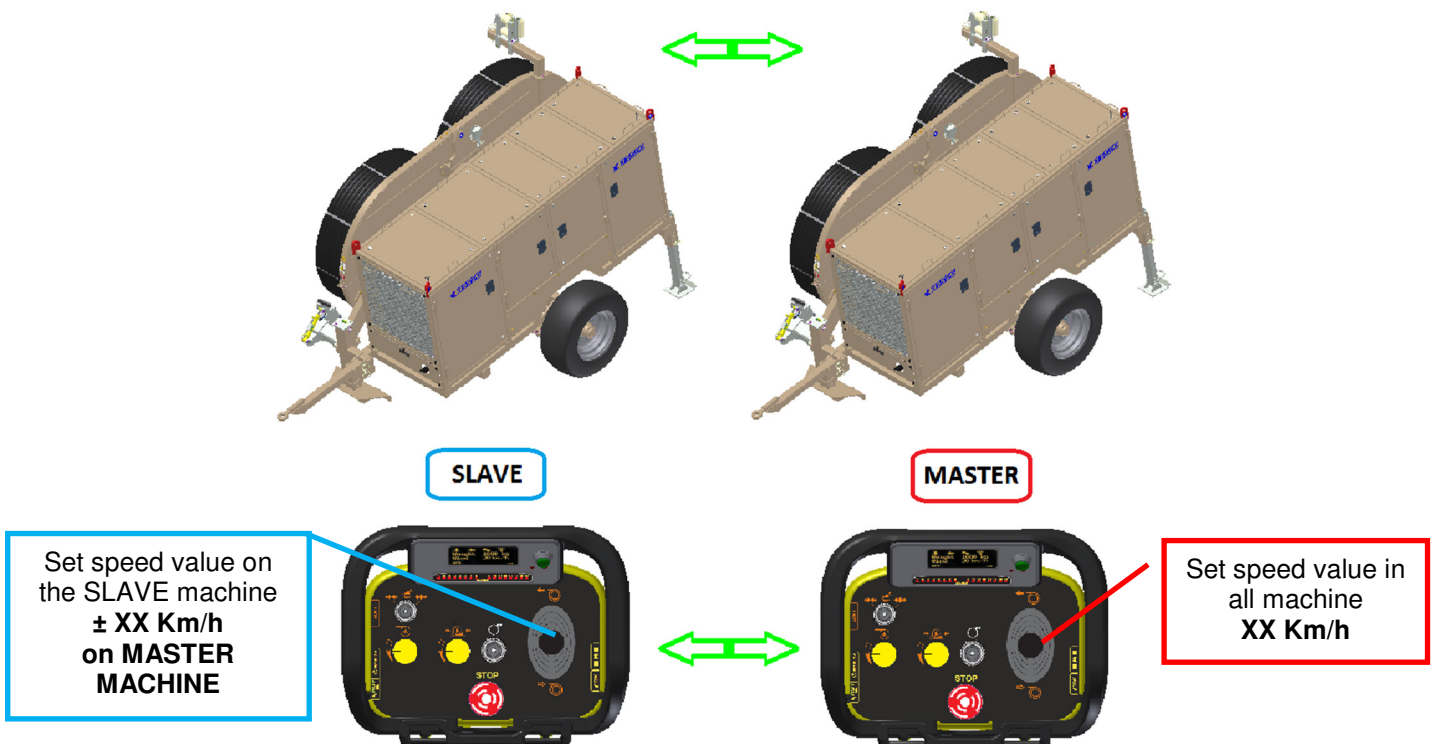
- Machine like **TENSIONER**: Between the MASTER machine pull potentiometer (pos.3 p.9) you can set the pull-force value on all machines, while through the SLAVE drive remote control potentiometer (pos.3 9) you can make a small adjustment on the value of the single circuit, depending on the value set on the master.

In this way, the operator can manually adjust the height of the wire or wire according to the line and the various stretching operations that are being carried out



- Machine like a **PULLER**: With the joystick of the MASTER machine (pos.5 p.9) it is possible to set the recovery speed on all machines, while via the joystick of the SLAVE machines (pos.5 p.9) you can make a small adjustment on the recovery speed of the single circuit, depending on the value set on the master.

In this way, the operator can manually adjust the height of the wire or wire according to the line and the various stretching operations that are being carried out.

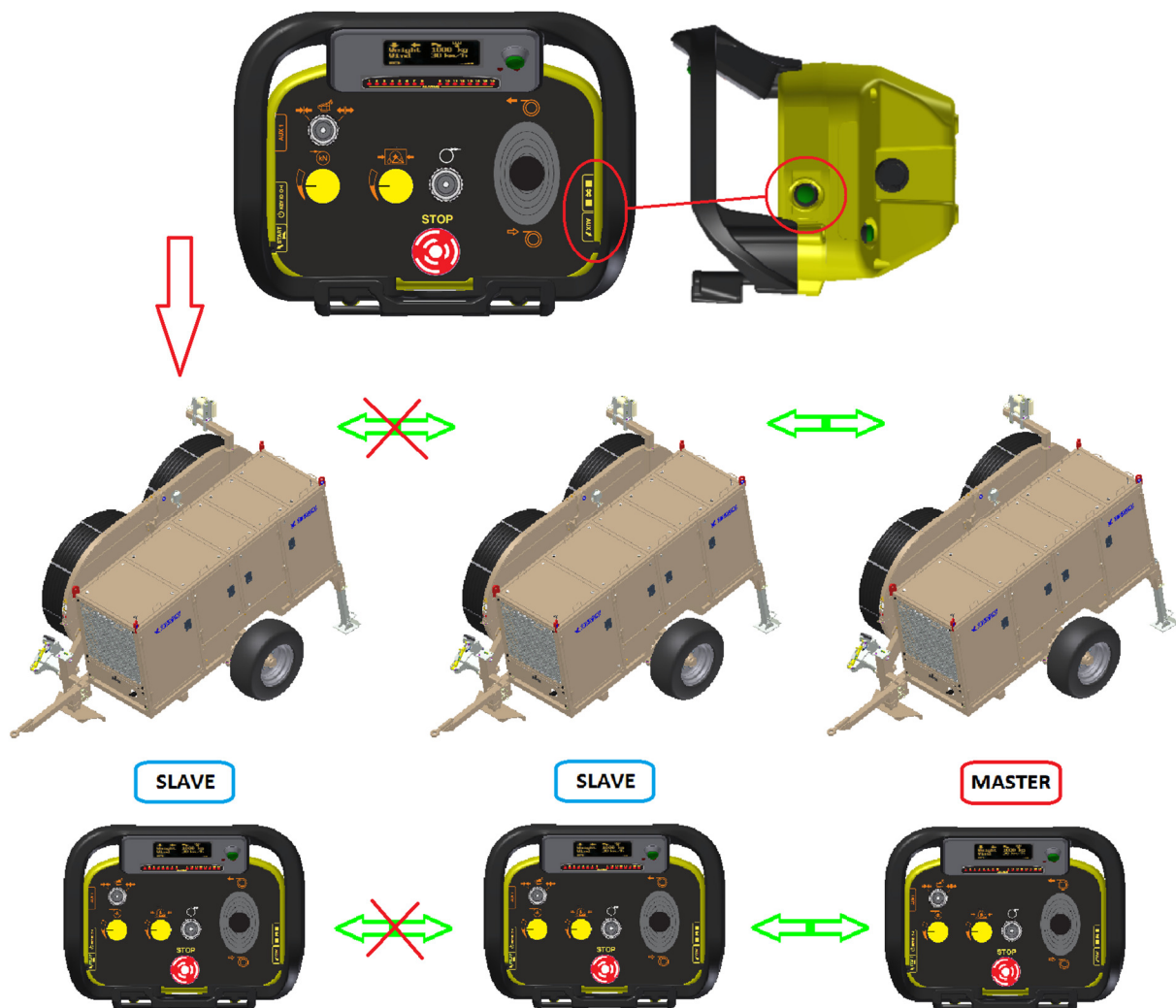


6.1.4 TEMPORARY DISCONNECTION WITH ELECTRONIC CONNECTION

When the machines are electronically connected, the operator can temporarily disconnect one or more machines from the other.

This feature is only available when all connected machines are stop and not working (the MASTER machine joystick in the center).

This function is activated by the button located on the side of each radio control: Holding this button, the operator can disconnect the single radio control, temporarily resuming all the controls on the single machine.



WARNING



Press and hold the button to activate the temporary machine disconnection function. As soon as the button is released, the single machine will reconnect to the other.



WARNING

Fino a quando sarà premuto il tasto di disconnessione sulla singola macchina, non sarà possibile riprendere le normali operazioni di tesatura. Until the button is hold engage on the single machine, it will be impossible to re-start normally stringing operation on the other machines.

6.1.5 CONDITIONS OF ALARM WITH RELATED MACHINES

When using attached machines some situations generate an alarm, stopping the stringing operations or blocking the diesel engine of the machines.

STOP IN EMERGENCY

By pressing the emergency stop on the panel in one of the connected machines, the engine of each single electronically connected machine will stop.

To reset the alarm, move the neutral joystick in the MASTER machine, turn off the emergency stop in the machine in an emergency and turn on the diesel engines of the individual machines.

CAN-BUS DISCONNECTION BETWEEN MACHINES

In the case of disconnected cables between machines (ex. loose plugs, accidental cutting of a cable, ...), tensioning operations stop in all connected machines.

If disconnection will happen with powered motors, disconnecting the connecting cables the diesel engines will turn off.

To reset the alarm, move the neutral joystick to the MASTER machine and check the cause of the failure.



WARNING

**Disconnecting the connection cable is equal to pressing the emergency button.
When disconnecting the cable, all diesel engines of the connected machines will immediately turn off.**

7. SAFETY CONDITIONS

7.1 SAFETY DEVICES

Machine has been equipped with the following safety devices:

1. load-limiting device with automatically stop of the engine once the max. pre-set load value has been exceeded
2. mechanical negative safety brake for movement stop in case of lack of hydraulic pressure
3. timing case and protections on moving parts, where technologically possible.



DANGER: it is absolutely forbidden the use of the machine without protecting timing cases or with damaged/disconnected safety devices.



ATTENTION: after a serious emergency use of the negative safety brake, check the wear condition of the discs and the efficiency of the brake itself; if necessary, replace the brake discs before re-using the machine.

7.2 EMERGENCY STOP DEVICE AND OPERATING STOP BUTTON

The machine has an emergency stop device (Table 8, pos. 5) that runs directly on the Diesel engine, located on the machine panel. An operational stop button is placed on the remote control.

Locking the power generator also causes negative brake operation with the resulting complete shutdown of the machine.



Each situation of danger or alarm is signaled on the main display screen. In case of alarm situations, also it triggers an emergency acoustic signaling.



In case this indication appears, see the alarm list in the dedicated menu



In case this indication appears, see the alarm list in the dedicated menu



ATTENTION: In the event of Warning and Alarm, see alarm list attached to the book itself.



ATTENTION: use the emergency stop **ONLY** in dangerous situations for the safety of the operators.



NOTE:to re-enable the machine to the operation, you must unlock the emergency command with an intentional operation (rotate a quarter turn, in a clockwise direction, the button).



IT IS FORBIDDEN to use this device for the arrest of the normal work of the machine activities.

7.3 PERIODIC OPERATIONS

Daily, before starting the work, the operator **has** to verify the functionality of the machine safety devices.



ATTENTION: do not modify for any reason safety devices of the machine because the manufacturer declines any responsibility as consequence of the non-functioning of the same.

7.4 RESIDUAL RISKS

In the machine there are still the following residual risks:

- 1. Sudden break of the rope.** The break of the rope causes sudden movements of the machine and of the rope or conductor connected to the machine.
To reduce to min., the risks the operator has to:
 - ⇒ check the rope and replace it as soon as appear some defects or wear signs
 - ⇒ respect the working positions indicated in the manual.
- 2. Sudden break of the anchoring stakes.** The sudden break of the anchoring stakes causes the machine instability and sudden movements of the same.
To reduce to min., the risks the operator has to:
 - ⇒ periodically check the anchoring stakes and replace them as soon as appear some defects or wear signs
 - ⇒ follow the anchoring indications described in the present manual
 - ⇒ respect the working positions indicated in the manual.
- 3. Entangling or dragging of the accessible rotating units.** It is not technologically possible to foreseen covering in correspondence of some rotating units (i.e. winding of the rope or of the conductor on the bull-wheels or on the driving gears), due to an excessive restriction of the machine functionality and operative functions.
To reduce to min., the risks the operator has to:
 - ⇒ avoid any possible contact with the machine rotating units except for the control devices
 - ⇒ follow the anchoring indications described in the present manual
 - ⇒ respect the prescriptions indicated in the present manual concerning wearing and the necessary safety devices.
- 4. Limbs crushing during loading or removal of the reel and during rope loading.**
These operations have a large risk margin due to the use of mechanical parts to be moved.
To reduce to min., the risks the operator has to:
 - ⇒ know the directives for accident prevention and apply them.
- 5. Electrostatic discharges.** The machine has not a proper grounding device for this reason during stringing operation it is possible to have dangerous electrostatics discharges on ropes and conductors.
To reduce to min., the risks the operator has to:
 - ⇒ know the directives for accident prevention and apply them
 - ⇒ check if the job site has a suitable grounding device for the machine-rope-conductor's system.
- 6. Inhalation of the endothermic engine exhausting gas.** The machine discharge exhausting gas of the endothermic engine combustion.
To reduce to min., the risks the operator has to:
 - ⇒ respect the working positions indicated in the manual
 - ⇒ respect the indications of attention and prohibition indicated in the present manual
 - ⇒ if necessary, use safety devices for the respiratory tracts.
- 7. Lockable control lever in working position.** For functional reasons and convenience of use the control lever does not provide for the return to zero in the case of returning; The computer of the remote control is equipped with a setting screen control in case of an emergency situation. (see par.5.4.3.2) that allows you to assign some screen buttons, the functions usually assigned to the control lever).

8. MAINTENANCE

8.1 GENERAL PRESCRIPTIONS



ATTENTION: possible repairs not carried out by the manufacturer and not allowed by a written authorization relieve the manufacturer for any responsibility in case of accidents to persons or damages to things and/or to the machine, causing also the loss of warranty.

8.2 LEVELS CONTROL

For safety reasons, during the transport machine comes without hydraulic oil and fuel. Fill the levels as per the following table:

	<i>Quantity</i>
a. Hydraulic oil level (table 5, pos. 6)	120 l
b. Engine oil level (see enclosed engine booklet)	
c. Reduction gear oil level (table 6, pos. 5)	3.7 l
d. Fuel level (table. 5, pos. 3)	100 l



ATTENTION: the non-respect of the correct levels causes serious damages to the installed components



DANGER: do not ingest hydraulic liquids, fuels and cooling liquids because injurious to health and potentially lethal.

8.3 TYRES INFLATION PRESSURE

Tires inflation pressure has to be 7 bars.



ATTENTION: the non-respect of tyres inflation pressure causes dangerous situations during transport operations.

8.4 SUGGESTED LUBRICANTS

The manufacturer tests the machine with the following oils and lubricants:

- hydraulic circuit: AGIP OSO 46 (ISO HM 46)
- mechanical reduction gear: AGIP BLASIA 220 (ISO CKC 220)
- stationary brake reel winder: AGIP OSO 46 (ISO HM 46).

Possible different trademarks must be chosen based on the enclosed table "SUGGESTED LUBRICANTS". It is possible to use different trademarks but with same characteristics and ISO specifications.

When using oil with characteristics and ISO specifications different from the ones declared during test, completely empty out the hydraulic circuit.



ATTENTION: the use of lubricants not in conformity with the technical specifications indicated in the present manual seriously damages the machine components and, consequently, the warranty conditions are not valid.

8.5 ENDOTHERMIC ENGINE MAINTENANCE

For the specific maintenance of the engine, see the enclosed use and maintenance booklet.
For filling the fuel, use the filling cap on the tank (table 2, pos. 3).
For filling the radiator liquid, use the filling cap on the radiator.



DANGER: to fill the fuel and the radiator liquid, turn off the engine; before carrying out any operation let the engine be cooled.

8.6 HYDRAULIC CIRCUIT MAINTENANCE

- a. Change the hydraulic oil after 500 working hours and, thereafter, every 1500 hours (or in any case every year).
- b. To discharge the exhaust hydraulic oil, use the suitable tap in the tank (tab.5, pos. 7).



DANGER: let the hydraulic oil be completely cooled before removing it and always use the suitable safety wears (gloves, etc.).



ATTENTION: the discharge of the exhaust oils has to be effectuated in conformity with the laws in force in the relevant country.

- c. Fill the oil in the tank by means of the suitable filler (tab. 5, pos. 3).



ATTENTION: make maximum care when filling to make sure no foreign matter, which could cause irreparable damages to the circuit's components, enters along with the oil; if possible filter the oil with a 10 µm filter.

- d. Replace the filter cartridge (table 2, pos. 14) after 500 working hours and, thereafter, every 1500 hours (or every year at least).
- e. Daily check the clogging of the oil filters.
If necessary, replace the cartridges taking care of the following filtering grade:
 - ⇒ intake filters for overfeeding pump: 10 µ (nominal values)
 - ⇒ intake services filter (plunged in the hydraulic oil tank): 90 µ (nominal values)

For further maintenance operations of installed hydraulic components (pumps and motors), refer to the enclosed documentation.

8.7 REDUCTION GEAR – STATIONARY BRAKES MAINTENANCE

- a. Change the oil of the reduction gear, of the stationary brake of the reel winder and of the coupler after 50 working hours and, thereafter, every 500 hours (or every year at least).
- b. To discharge the exhaust oil of the reduction gear and of the stationary brake, use the suitable caps on the lower part of the casing.



DANGER: let the hydraulic oil be completely cooled before removing it and always use the suitable safety wears (gloves, etc.).



ATTENTION: the discharge of the exhaust oils has to be effectuated in conformity with the laws in force in the relevant country.

- c. Fill the oil of the reduction gear and of the stationary brake by means of the suitable caps on the upper part of the casing.



ATTENTION: make maximum care when filling to make sure no foreign matter, which could cause irreparable damages to the circuit's components, enters along with the oil.

For further maintenance operations of installed mechanic components (reduction gear, negative brakes), refer to the enclosed documentation.

8.8 RADIATORS' MAINTENANCE

At least once a year, or more in case of use in dusty places, is foreseen a blowhole with compressed air of the radiant mass of the radiators.



ATTENTION: in order to make this operation the one in charge of maintenance, besides wearing all the protection devices already shown in this manual, must also wear a device for protecting respiratory organs.

8.9 GREASING

Grease 2-3 times per day the crown gear of the bull-wheels using the suitable greaser .

Weekly grease all the other parts subjected to rotation or translation and that not foreseen a forced lubrication or an automatic greasing.

Use IP ATHESIA GR2 (ISO XBCEA 2) grease or equivalent of another trademark based on the enclosed "SUGGESTED LUBRICANTS" table.

8.10 OTHER PERIODIC OPERATIONS

When cleaning the machine, avoid direct jets of water or steam on the components of the electric system of the machine and on the control panel.

For the other periodic operations, refer to the summary table for the ordinary maintenance (see next paragraph).

8.11 SUMMARY TABLE FOR ORDINARY MAINTENANCE

In this card are listed main operation of periodic maintenance and relevant intervals.

Part	Object	Interval				
		Daily	50 h	250 h	500 h	1500 h
Diesel engine (***)	Engine oil	CL		ST		
	Oil filter			ST		
	Cooling liquid	CL				ST
	Air filter			VF		ST
	Fuel	CL				
	Fuel filter				ST	
	Radiator				CN(*)	
Hydraulic circuit	Hydraulic oil	CL			ST1	ST(*)
	Filter	VF			ST1	ST(*)
Reduction gear	Oil	CL	ST1		ST(*)	
Negative brake	Disc	(**)				
Bull-wheels greasing circuit	Gears	GR				
Front plow	Cylinder		GR			
Reel winder	Chain transmission		GR			
	Level winder screw	GR				
	Pawl		VF			
	Cylinder		GR			
Reel winder negative brake	Oil	CL	ST1		ST(*)	
	Disc	(**)				
Axle	Tires pressure		VF			
	Stationary brake		GR			

Legend:

CL Check the level (and possible filling up)

GR Grease

ST Replace

ST1 Replace (only for the first time)

VF Check

CN Clean

(*) Or in any case every year

(**) Check the discs wear condition after an emergency stop

(***) For further information see the engine booklet

9. HOW TO DISABLE THE MACHINE

9.1 TRANSPORT

Before transporting the machine, empty any liquid that can be set on fire contained in the machine (oils and fuels).

Transport must be effectuated as per the specifications described in chapter 3 (Transport and positioning instructions).

9.2 EXTENDED SERVICE STOP

When foreseeing an extended service stop (two months at least) protect the external parts with waterproof wax and empty the fuel tank.

During service stop, start the machine at least once every two months and let the machine idle for one hour at least, so that the oil enters in the hydraulic system and to prevent the gaskets drying.

We recommend stocking the machine under a roof; do not cover the machine with pieces of cloth and/or plastic materials that cause an excessive increase of the temperature and humidity.

If the machine does not work for a year or more, before re-starting the machine it is necessary to replace the hydraulic oil and filters of the hydraulic circuit.

9.3 DISMANTLING

Machine dismantling has to be carried out by the manufacturer or by a specialized factory.

All the dismantling operations have to be effectuated in conformity with the norms in force for accidents prevention.

Waste materials have to be divided for typology (i.e. iron scrap, aluminum, plastic, rub, etc.) and disposed of by means of authorized structures in conformity with the laws in force.

Exhausted oils and polluting substances have to be disposed of by means of authorized structures in conformity with the laws in force.

10. ENCLOSED DOCUMENTS

10.1 TABLES

10.2 SYTEMS

10.3 OTHER DOCUMENTS

Manual for engine use and maintenance

Machine operational errors table



PULLER-TENSIONER MOD. PT1250

TABLES



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Tel. 0039 / 035 / 611218
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- 24060 Endine Gaiano (Bg) via Pertegalli
Tel. 0039 / 035 / 825024
Fax 0039 / 035 / 826375
E-mail: info@tesmec.it

Table 1 – Rope Charging

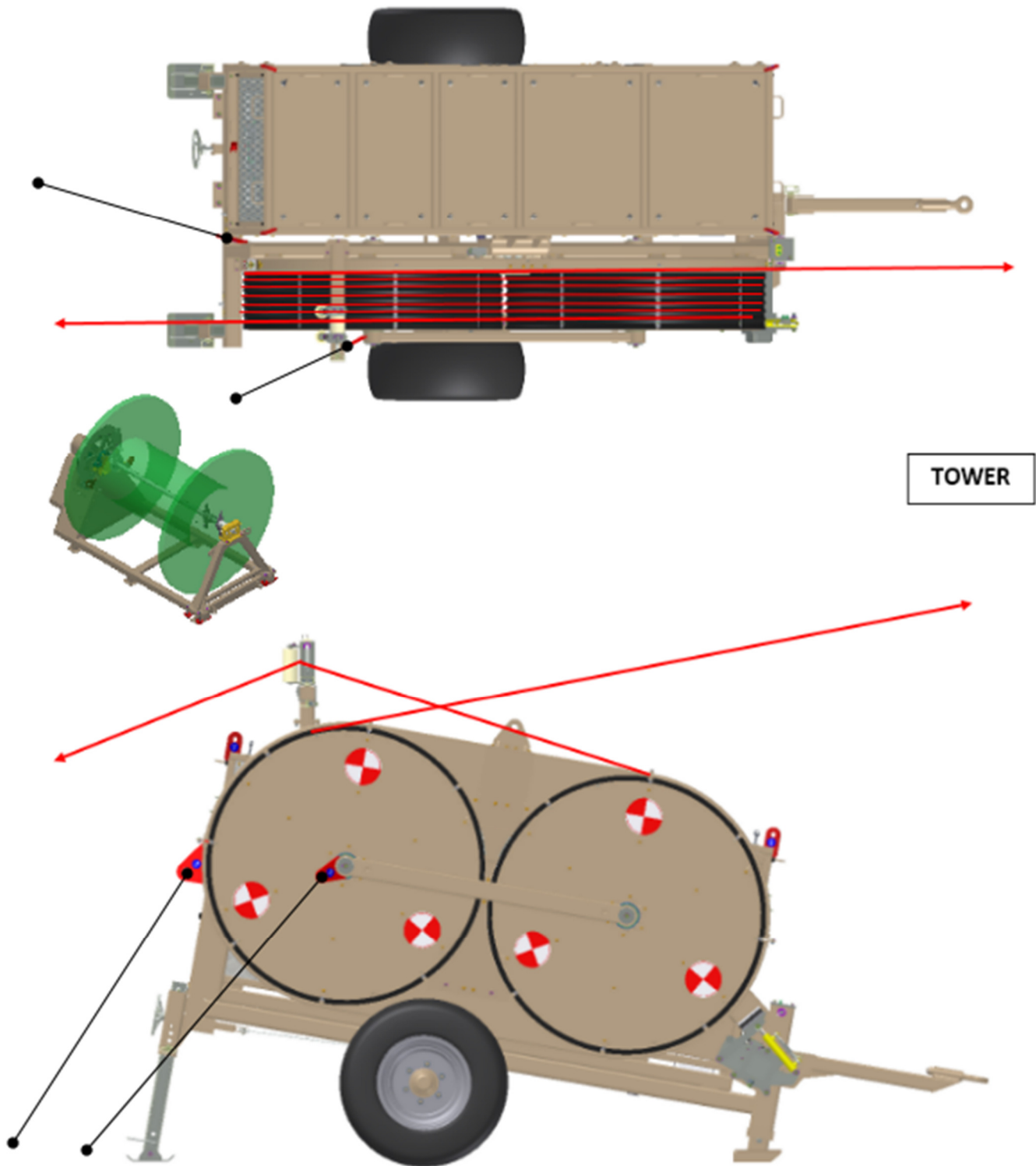
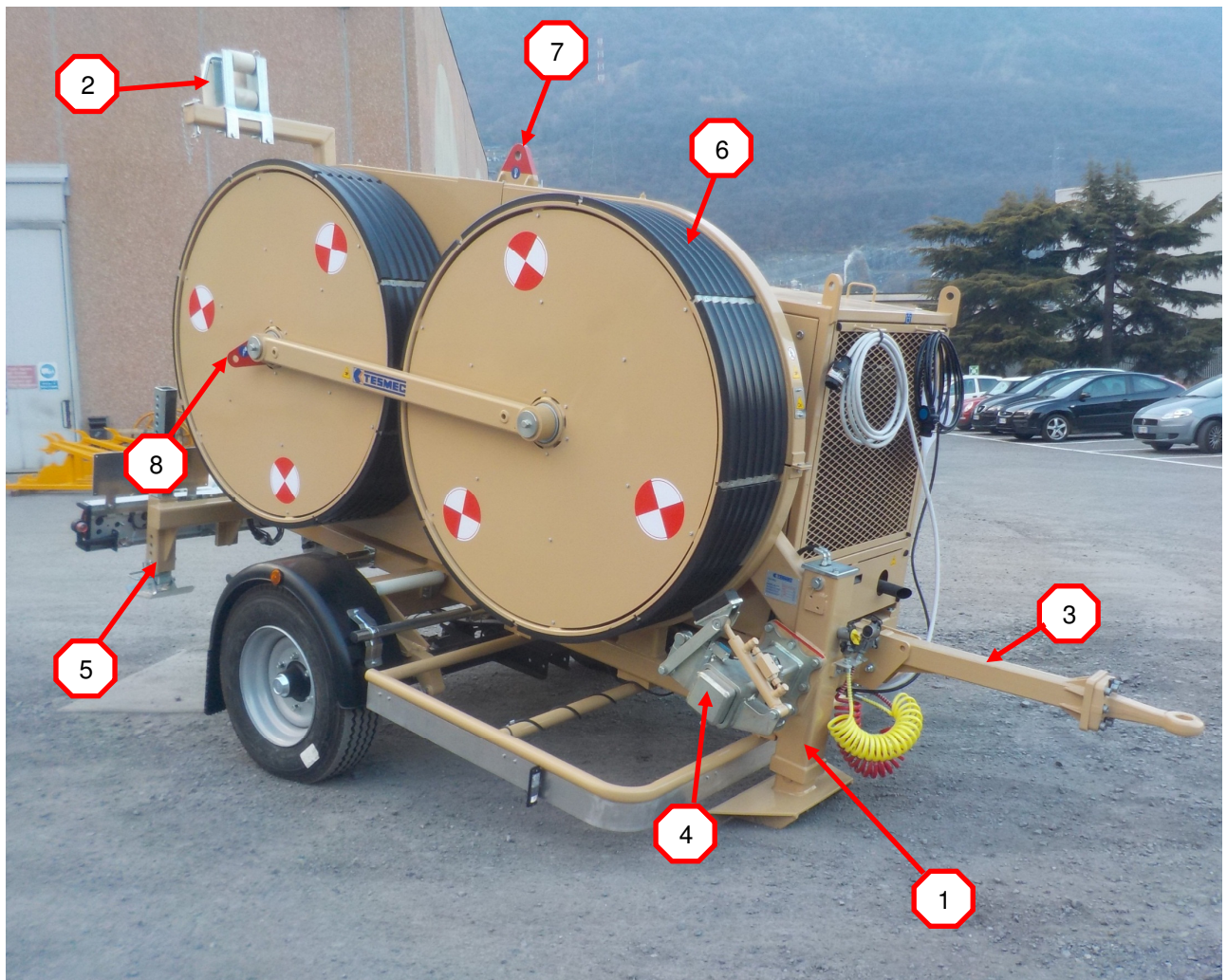
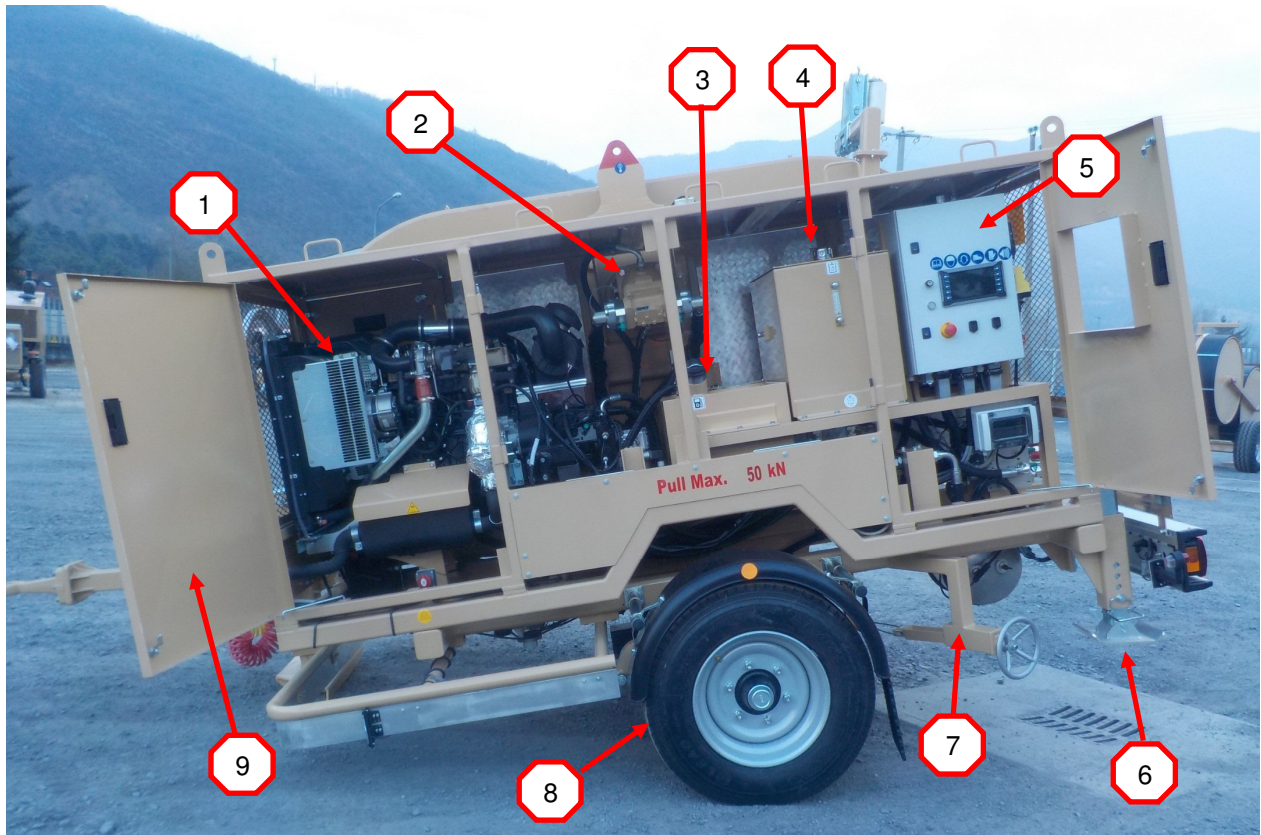


Table 2 – Bull-wheels Lateral View



1. Front Plough;
2. Roller for Reel Elevator Rope Passing;
3. Front Wheel;
4. Hydraulic Rope Clamp;
5. Rear Stabilizers;
6. Bull-wheels;
7. Machine Lifting Point;
8. Anchor machine point;

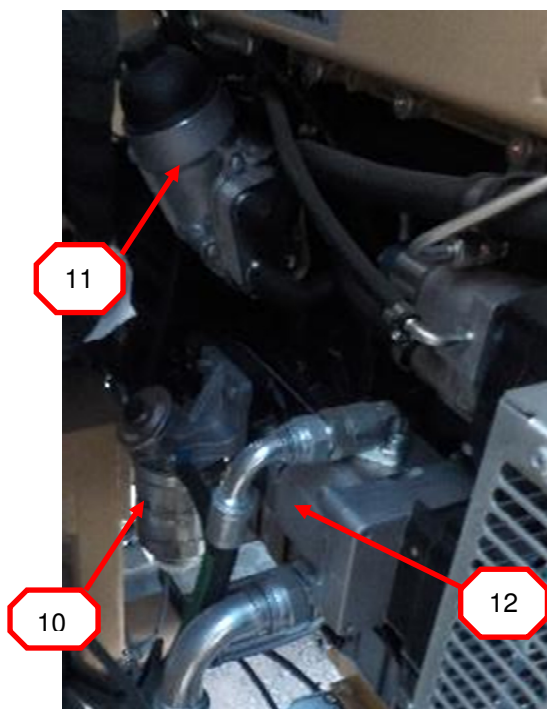
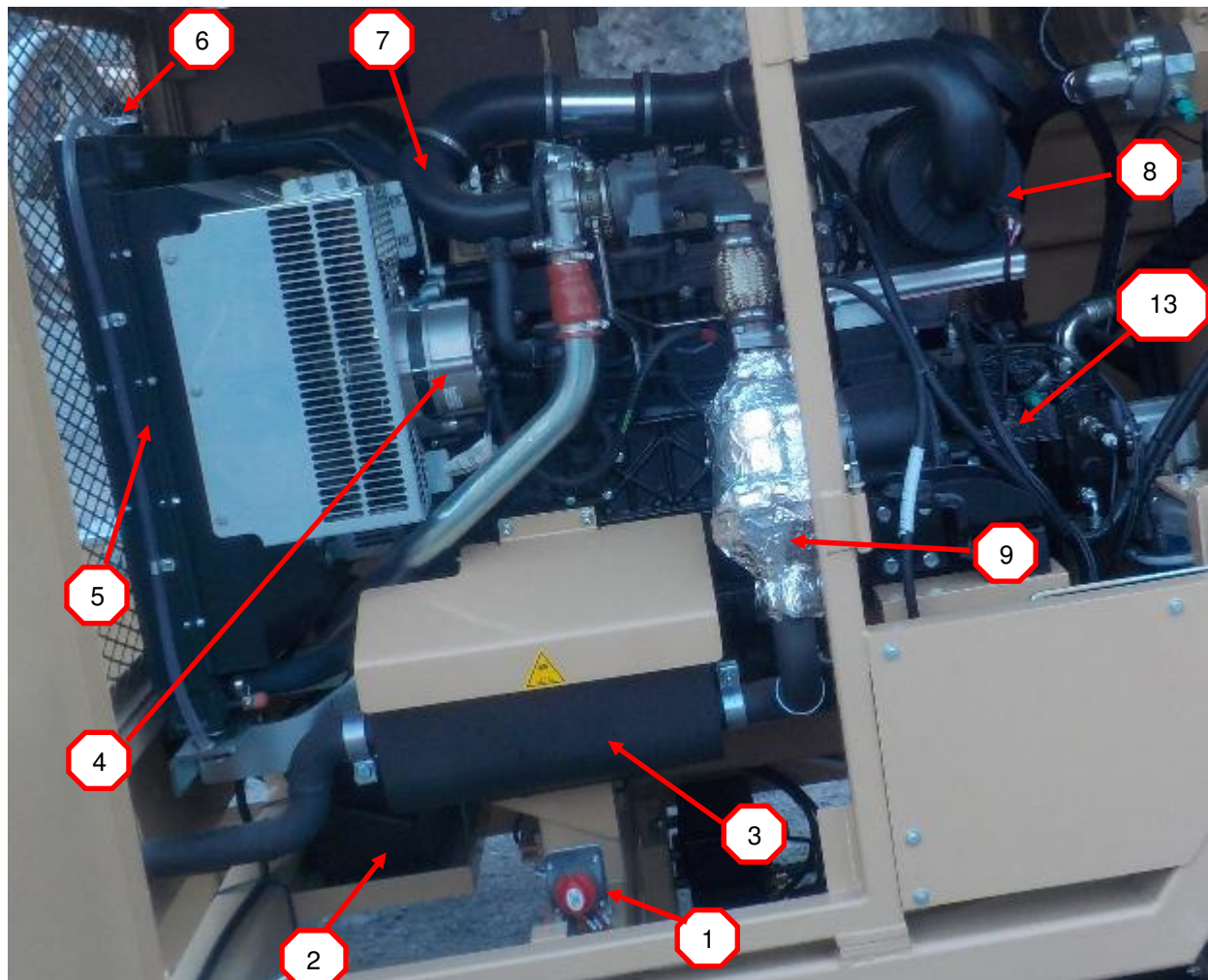
Table 3 – Power Unit Lateral View



1. Diesel Engine;
2. Bull-wheels gearbox;
3. Gasoil Tank;
4. Hydraulic Oil Tank;
5. Control Panel;
6. Rear Stabilizer;
7. Manual Parking Brake;
8. Tires;
9. Sound-absorbing Cover Panel;
10. Anchor machine point;

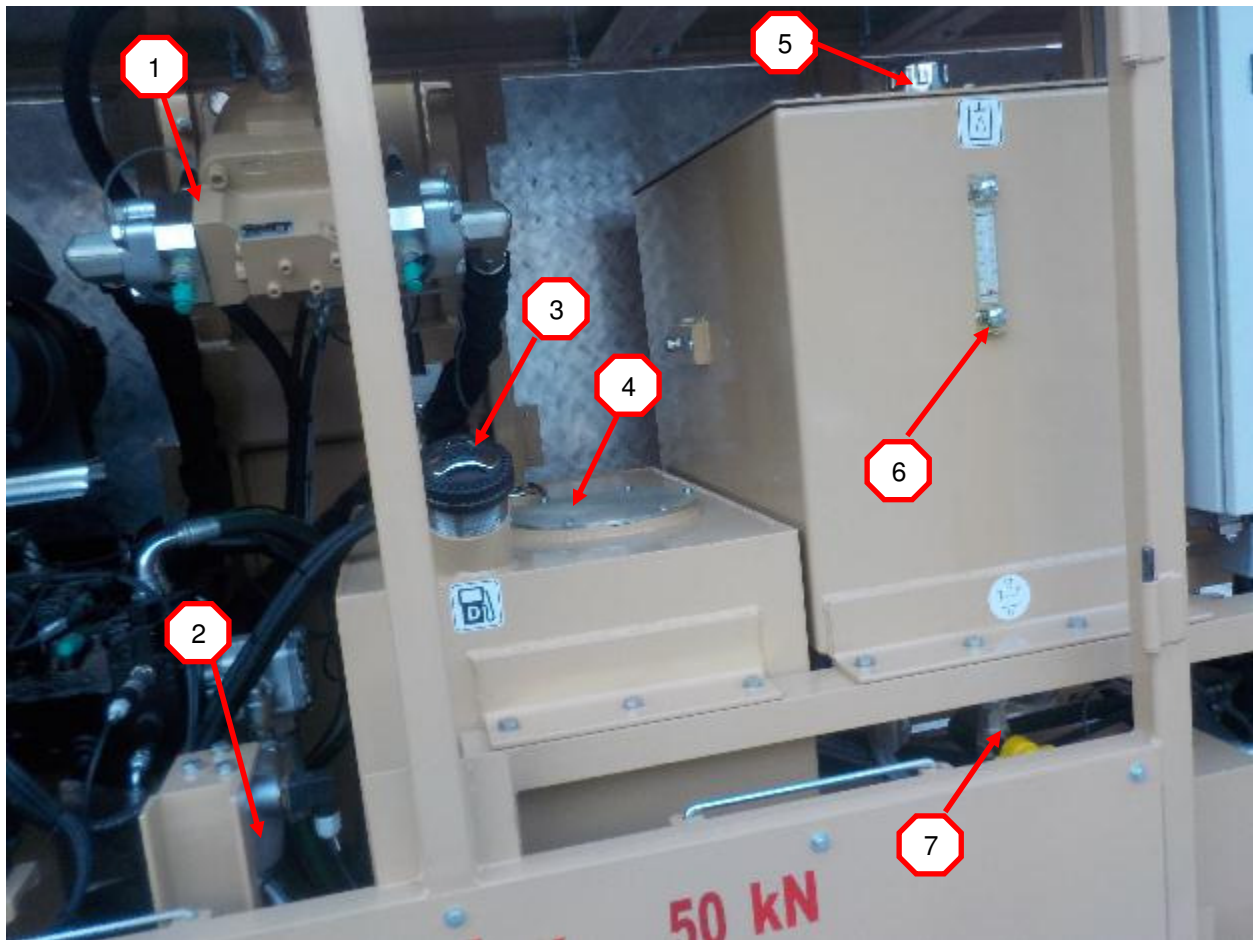


Table 4 – Diesel Engine Area



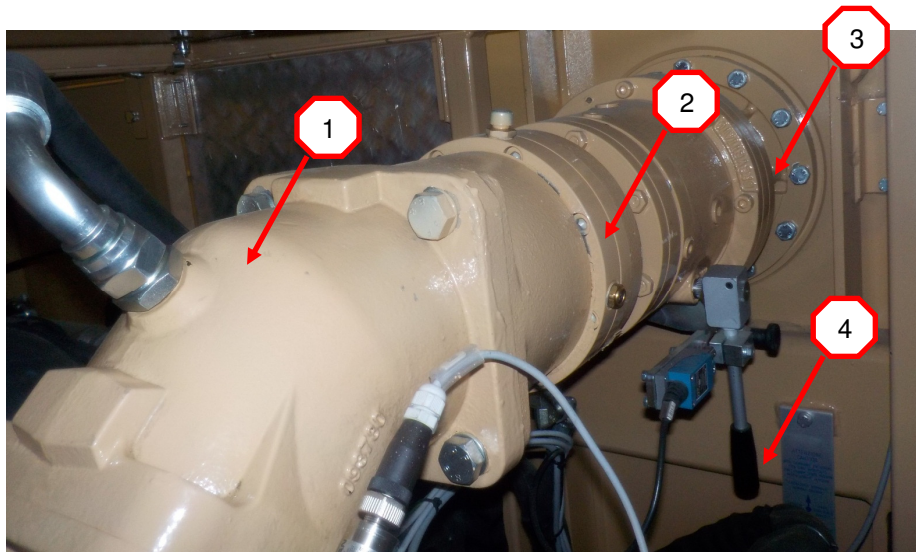
1. Machine Battery-Removal;
2. 12V Battery;
3. Muffler;
4. Alternator;
5. Air Radiator /Diesel Engine Water;
6. Filling plug coolant;
7. Suction pipe;
8. Air Filter;
9. DOC Exhaust;
10. Gasoil Filter;
11. Oil Filter
12. Pump gear services;
13. Bull-wheels Circuit Main Pump plus Gear Services Pump;

Table 5 – Hydraulic System Area

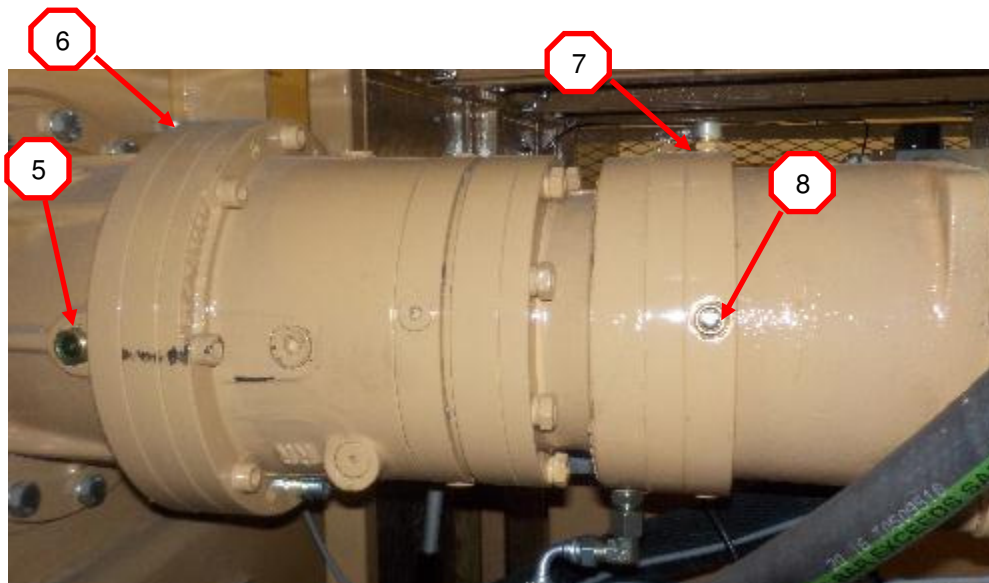


1. Hydraulic Engine – Negative Brake – Main Circuit Gearbox;
2. Hydraulic Oil Filter;
3. Gasoil Filling Plug;
4. Metal Sheet for Diesel Tank Cleaning;
5. Hydraulic Oil Filling Plug;
6. Hydraulic Oil Level;
7. Hydraulic Oil Drain Faucet;

Table 6 – Hydraulic Gearbox

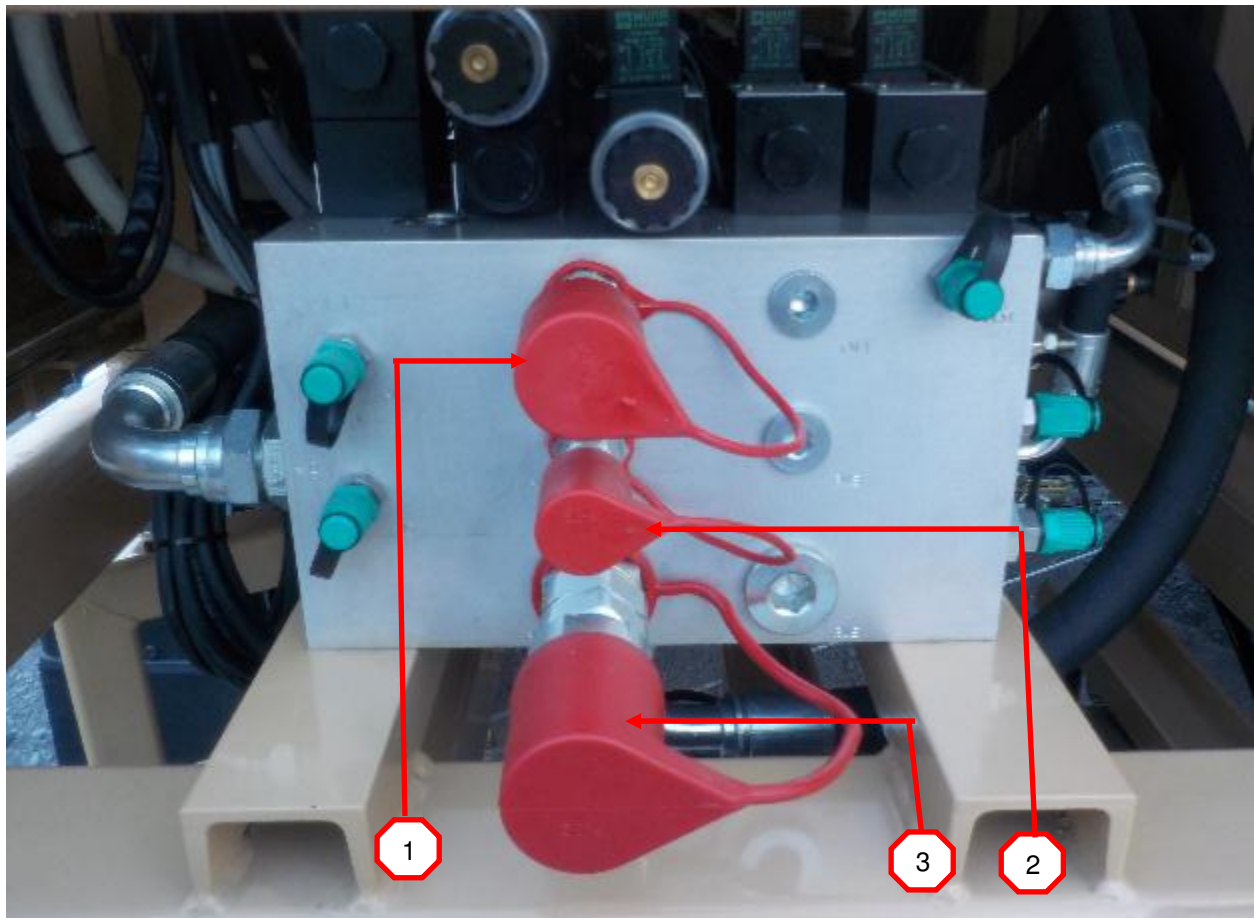


1. Hydraulic Engine;
2. Negative Brake;
3. Reduction Gear;
4. Shift Lever Fine Stringing;



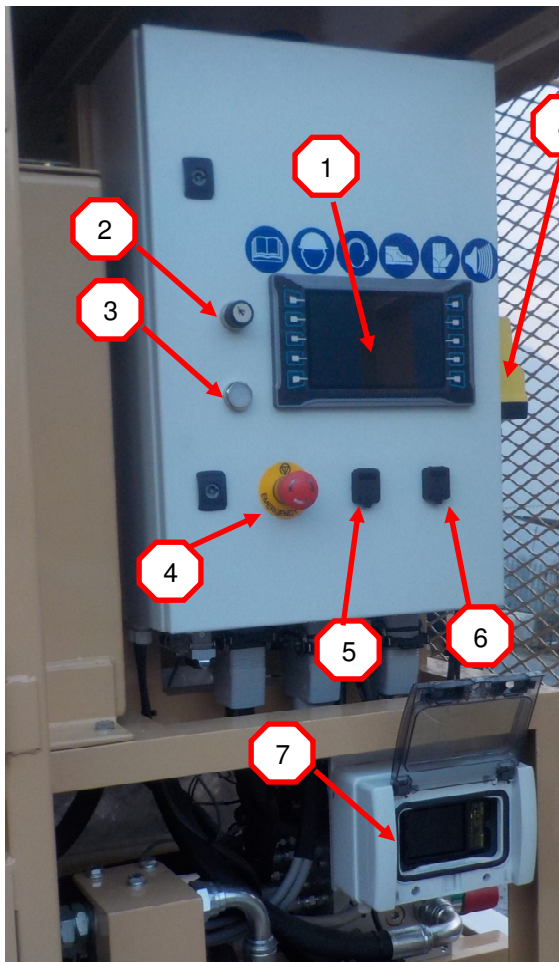
5. Gearbox Oil Level;
6. Gear Oil Filling Plug;
7. Negative Brake Oil Filling Plug;
8. Negative Brake Oil Level;

Table 7 – External Reel Elevator Connections



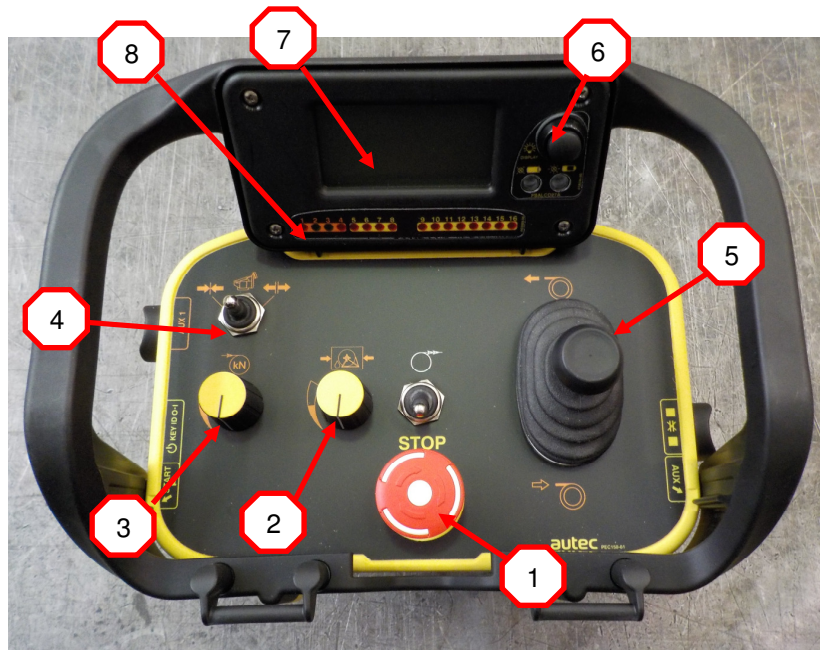
1. Hydraulic Oil to Hydraulic Head Delivery;
2. Drainage;
3. Hydraulic Oil to Hydraulic Head Return;

Table 8 – Machine Control Panel

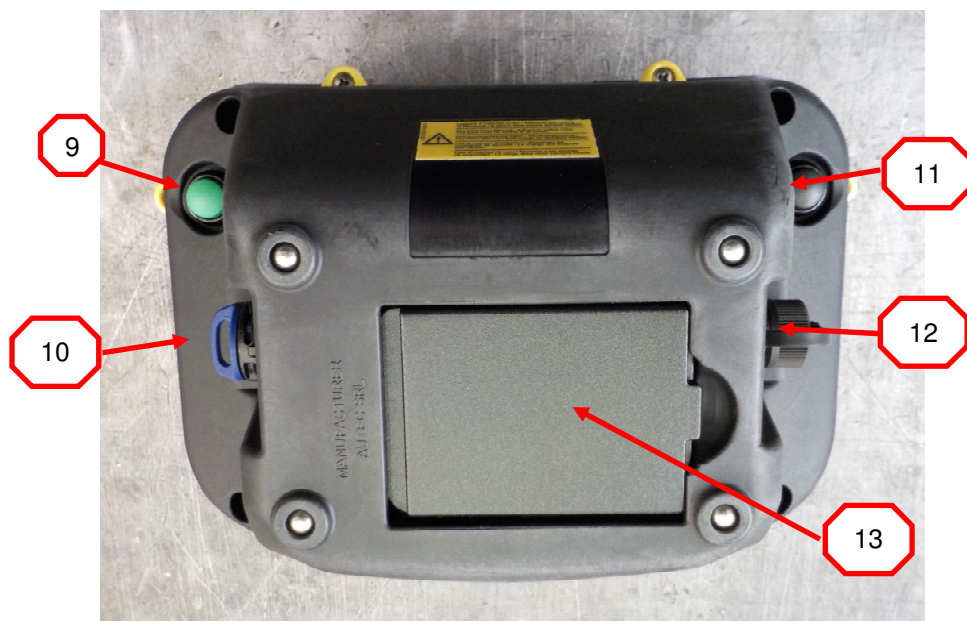


1. 7" Control Display;
2. Machine Ignition Key;
3. Power Button Diesel Engine;
4. Emergency Button;
5. External Printer Connection;
6. USB Input;
7. Radio Control Battery Charger;
8. Radio control Receiving;

Table 9 – Machine Radio control



- | | |
|------------------------------------|---|
| 1. Operational Stop Button; | 9. Radio control Connection Button; |
| 2. Reel Elevator Circuit Pressure; | 10. Radio Control Switch; |
| 3. Pull Settings; | 11. Reel Elevator Rotation Button; |
| 4. Rope Clamp Control; | 12. Socket for Remote Connection Cable; |
| 5. Bull-wheels Movement Control; | 13. Radio control Battery; |
| 6. Page Management Display Button; | |
| 7. Data Display; | |
| 8. Alarm Led/or Several Reports; | |





PULLER-TENSIONER MOD. PT1250

ENCLOSED DOCUMENTS



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IMPORTANTE

Per qualsiasi informazione riguardante questa macchina/attrezzatura (utilizzo, manutenzione, ricambi) citare sempre Modello, Numero di matricola, Commessa, Anno di fabbricazione rilevabile nella targa d'identificazione della macchina.

Questo manuale non descrive le procedure di tesatura, né si è cercato di dare istruzioni all'utilizzatore sui metodi di tesatura.

Il contenuto di questo manuale prevede unicamente un testo di base per l'uso, manutenzione e l'elenco dei pezzi di ricambio della macchina stessa e come s'intende e si suggerisce di utilizzarla. Saranno graditi suggerimenti da parte degli Utilizzatori per migliorare questa pubblicazione. Scriveteci all'indirizzo sotto indicato.

IMPORTANT NOTE

State always "Model, Serial Number and Manufacturing Year" of the machine/equipment in case you need information on use, maintenance and spare parts. The a/m data can be found on the identification plate of the machine itself.

This is not a stringing procedures manual, and no attempt is made or implied herein to instruct the user in stringing methods.

The contents of this manual are intended as base line for operation, maintenance and part list of the unit as it stands alone and as it is intended and anticipated to be used. Recommendation by the individual user for improving this publication is encouraged and should be forwarded to the address on this page.

IMPORTANT

Indiquer toujours le modèle, le numéro de série et l'année de fabrication de la machine/équipement même, en demandant à TESMEC renseignements sur l'utilisation, l'entretien et les pièces de rechange. Ces informations se trouvent sur la plaque d'identification de la machine.

Ce manuel ne décrit pas les procédures de déroulage, ni on a tache de donner instructions à l'Utilisateur sur les méthodes de déroulage.

Le contenu de ce manuel prévoit seulement un texte pour l'utilisation, l'entretien et la liste de pièces de rechange et comme TESMEC conseille d'utiliser la machine même. Pour chaque suggestion pour améliorer cette machine, écrire à l'adresse au-dessous.

IMPORTANTE

Para cualquier información relativa a esta máquina/equipo (utilización, mantenimiento, repuestos) citar siempre Modelo, Número de serie, Orden de compra, Año de fabricación que se hallan en la tarjeta de identificación de la máquina.

Este manual no describe los procedimientos de tensado y tampoco se ha tratado de dar instrucciones al utilizador acerca de los métodos de tensado. El contenido de este manual prevé únicamente un texto básico para el uso, mantenimiento y el listado de repuestos de la misma máquina y cómo se pretende y se sugiere utilizarla. Se apreciarán sugerencias por parte de los utilizadores para mejorar esta publicación.

Nos pueden escribir a la dirección indicada abajo.

IMPORTANTE

Para qualquer informação a respeito desta máquina/equipamento (utilização, manutenção, peças sobresselentes) citar sempre o Modelo, o Número de Série, a Encomenda, o Ano de fabrico, dados que podem ser encontrados na placa de identificação da máquina.

Este manual não descreve os procedimentos de entesadura, tão pouco foi nossa intenção dar instruções ao utilizador sobre os métodos de entesadura. O conteúdo deste manual de instruções prevê unicamente um texto básico para o uso, a manutenção e a lista das peças sobresselentes da mesma máquina e como se entende e se sugere utilizá-la.

Serão muito bem aceitas sugestões por parte dos Utilizadores, no intento de melhorar esta publicação.

Escrevam-nos no endereço abaixo indicado.

WICHTIG

Geben Sie für alle Informationen über diese Maschine/Ausrüstung (Verwendung, Wartung, Ersatzteile) immer Modell, Matrikel nummer, Bestellung und Baujahr an, was Sie dem Identifizierungsschild der Maschine entnehmen können.

Dieses Handbuch beschreibt nicht die Verfahren des Spannsens, und es wurde auch nicht versucht, dem Verwender Anleitungen über die Methoden des Spannsens zu geben. Der Inhalt dieses Handbuchs enthält allein einen Basistext für den Gebrauch und die Wartung, die Ersatzteilliste der Maschine und außerdem, welche Verwendung für sie bezweckt und empfohlen wird.

Wir freuen uns über Tipps von Seiten der Verwender, um diese Veröffentlichung zu verbessern.

Schreiben Sie uns an unten angegebene Adresse.

ВАЖНОЕ ПРИМЕЧАНИЕ

Всегда следует указывать «модель, серийный номер и год выпуска» машины/оборудования в случае, если вам необходима информация по эксплуатации, техническому обслуживанию и запасным частям. Вышеупомянутые данные можно найти на паспортной табличке на самой машине.

Руководство по эксплуатации не является руководством по методикам натяжения, и в нем не делается никаких попыток инструктирования пользователя способам натяжения, и они не подразумеваются.

Цель настоящего руководства состоит только в том, чтобы дать описание эксплуатации и технического обслуживания, а также список запасных частей машины, и указать ее назначение и рекомендуемое использование. Рекомендации отдельных пользователей по улучшению данной публикации приветствуются, и их следует направлять по адресу, указанному в руководстве.



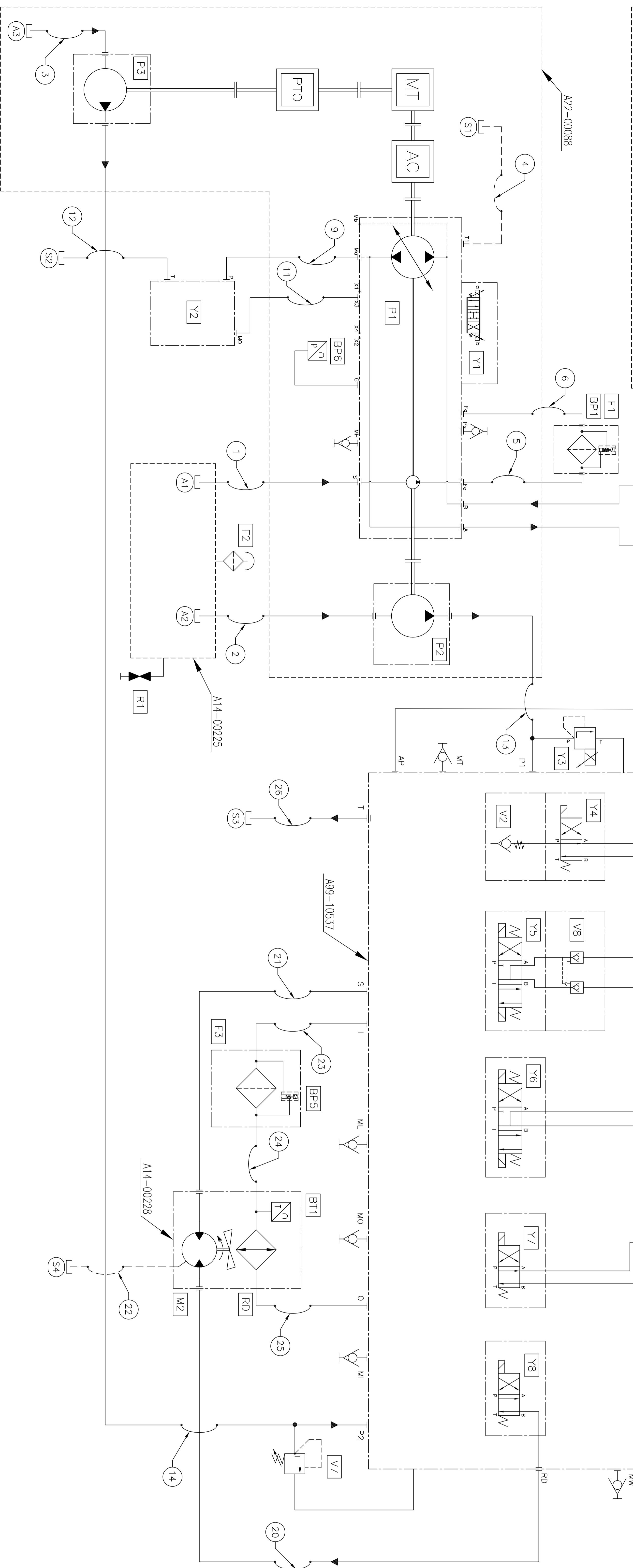
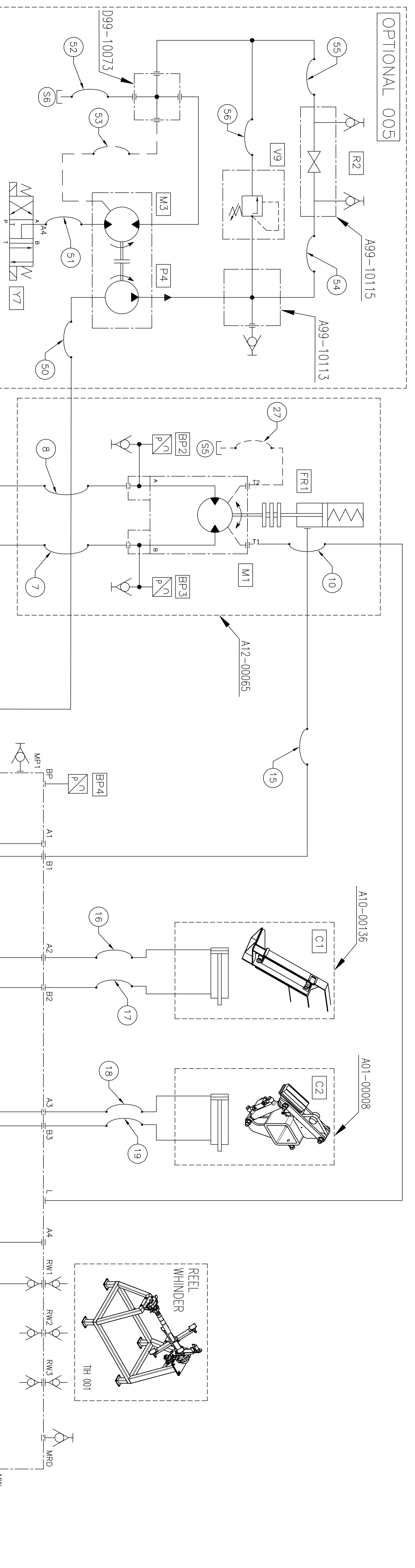
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Comparative table of suggested oils and greases

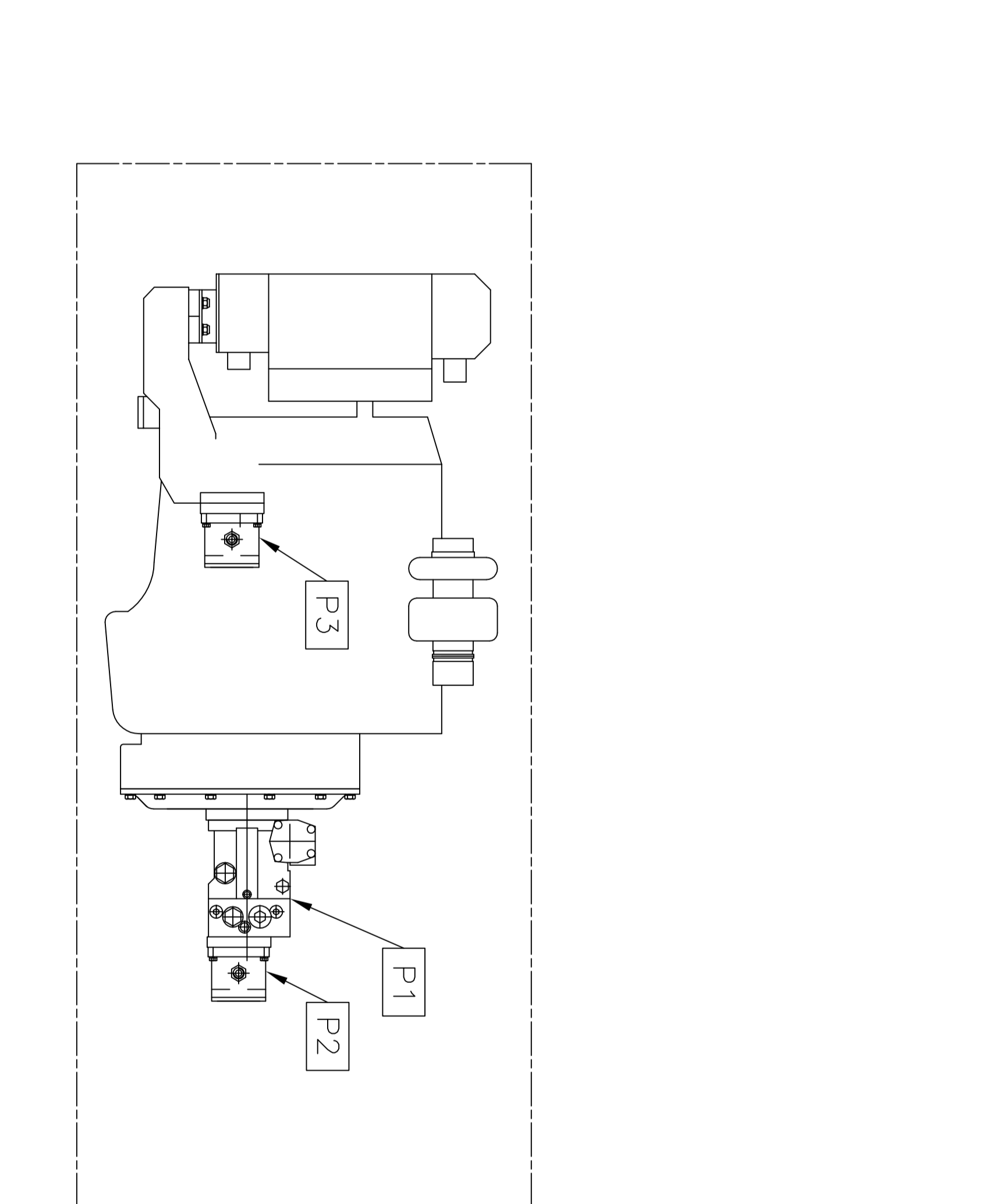
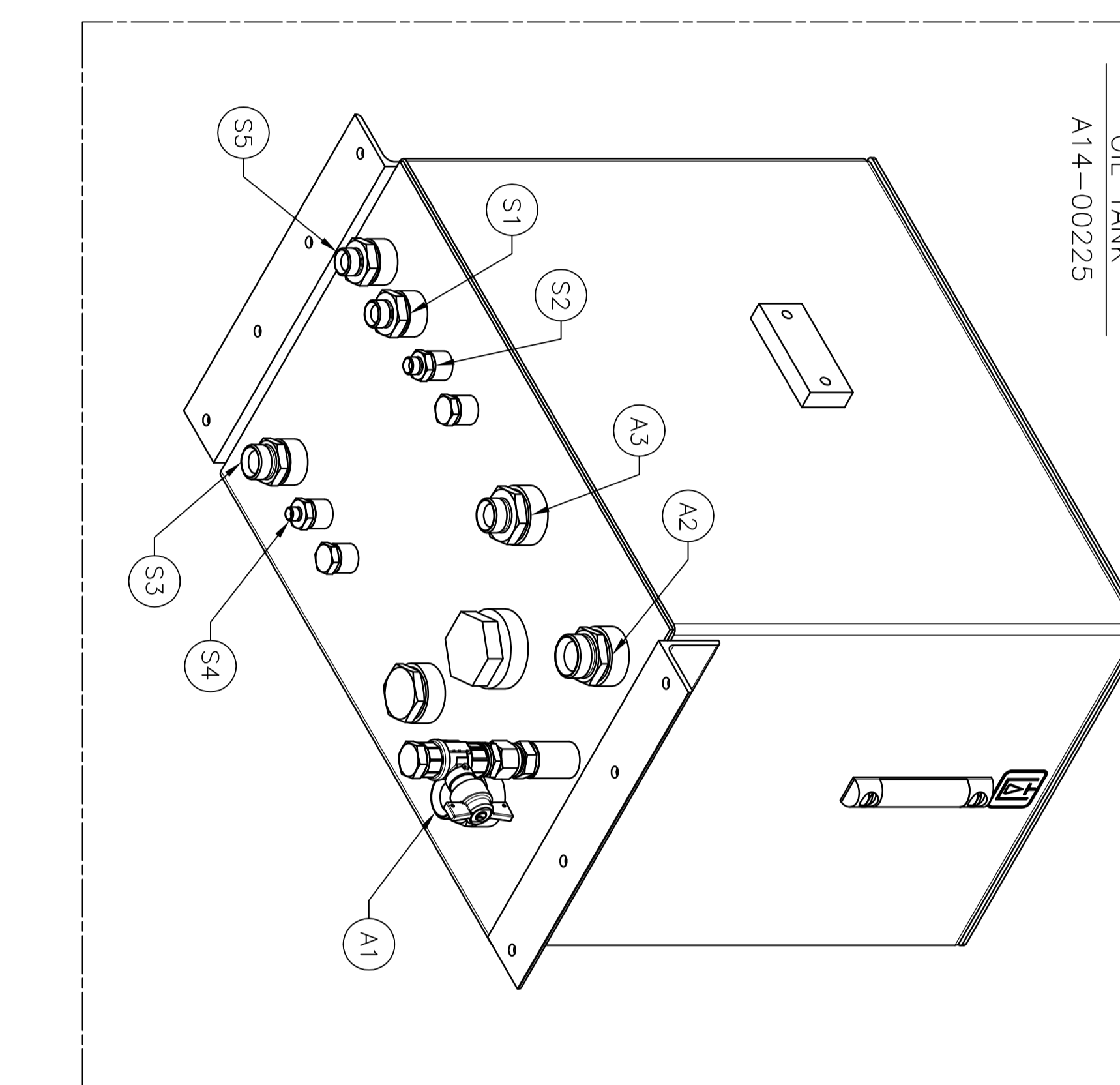
TYPE	HYDRAULIC CIRCUIT OIL FOR ENVIROMENTAL CONDITION:				REDUCTION UNIT - COUPLERS REDUCTION UNIT OIL FOR ENVIROMENTAL CONDITION:				GREASING
	ARTIC	WINTER	SUMMER	TROPICAL	ARTIC	WINTER	SUMMER	TROPICAL	GREASE FOR EACH AMBIENT
VISCOSITY (ISO 3448)	VG 22	VG 32	VG 46	VG 68	VG 100	VG 150	VG 220	VG 320	NLGI 2
AGIP	OSO 22	OSO 32	OSO 46	OSO 68	BLASIA 100	BLASIA 150	BLASIA 220	BLASIA 320	GR MU EP 2
API	APILUBE CIS 22	APILUBE CIS 32	APILUBE CIS 46	APILUBE CIS 68	DT 100	DT 150	DT 220	DT 320	PGX 2
ARAL	ARAL VITAM GF 22	ARAL VITAM GF 32	ARAL VITAM GF 46	ARAL VITAM GF 68	DEGOL BG 100	DEGOL BG 150	DEGOL BG 220	DEGOL BG 320	ARALUB HL 2
AVIA	AVILUB RSL 22	AVILUB RSL 32	AVILUB RSL 46	AVILUB RSL 68	AVILUB RSX 100	AVILUB RSX 150	AVILUB RSX 220	AVILUB RSX 320	-
BP	ENERGOL HLP 22	ENERGOL HLP 32	ENERGOL HLP 46	ENERGOL HLP 68	ENERGOL GR-XP 100	ENERGOL GR-XP 150	ENERGOL GR-XP 220	ENERGOL GR-XP 320	GREASE LTX 2
CASTROL	HYSPIIN AWS 22	HYSPIIN AWS 32	HYSPIIN AWS 46	HYSPIIN AWS 68	ALPHA SP 100	ALPHA SP 150	ALPHA SP 220	ALPHA SP 320	SUPERGREASE 2
CHEVRON	EP HYDRAULIC 22	EP HYDRAULIC 32	EP HYDRAULIC 46	EP HYDRAULIC 68	COMPOUND GEAR 100	COMPOUND GEAR 150	COMPOUND GEAR 220	COMPOUND GEAR 320	DURALITH EP 2
ELF	ELFOLNA DS 22	ELFOLNA DS 32	ELFOLNA DS 46	ELFOLNA DS 68	REDUCTELF SP 100	REDUCTELF SP 150	REDUCTELF SP 220	REDUCTELF SP 320	ROLEXA 2
ESSO	NUTO H 22	NUTO H 32	NUTO H 46	NUTO H 68	SPARTAN EP 100	SPARTAN EP 150	SPARTAN EP 220	SPARTAN EP 320	BEACON 2
FINA	HYDRAN 22	HYDRAN 32	HYDRAN 46	HYDRAN 68	GIRAN 100	GIRAN 150	GIRAN 220	GIRAN 320	MARSON EP L2
FUCHS	RENOLIN MR 5	RENOLIN MR 10	RENOLIN MR 15	RENOLIN MR 20	-	RENEP COMPOUND 104	-	RENEP COMPOUND 108	-
GULF	HARMONY 22 AW	HARMONY 32 AW	HARMONY 46 AW	HARMONY 68 AW	-	EP LUBRICANT HD 150	EP LUBRICANT HD 220	EP LUBRICANT HD 320	CROWN EP 2
IP	HYDRUS OIL 22	HYDRUS OIL 32	HYDRUS OIL 46	HYDRUS OIL 68	MELLANA 100	MELLANA 150	MELLANA 220	MELLANA 320	ATHESIA EP GR 2
KLUBER	LAMORA 22	LAMORA 32	LAMORA 46	LAMORA 68	LAMORA 100	LAMORA 150	LAMORA 220	LAMORA 320	CENTOPLEX 2 EP
MOBIL	DTE 22	DTE 24	DTE 25	DTE 26	-	MOBILGEAR 629	MOBILGEAR 630	MOBILGEAR 632	MOBILUX EP 2
Q8	HAYDIN 22	HAYDIN 32	HAYDIN 46	HAYDIN 68	GOYA 100	GOYA 150	GOYA 220	GOYA 320	REMBRANDT EP 2
ROLOIL	LI 22	LI 32	LI 46	LI 68	EP 100	EP 150	EP 220	EP 320	LITEX EP 2
SHELL	TELLUS 22	TELLUS 32	TELLUS 46	TELLUS 68	OMALA 100	OMALA 150	OMALA 220	OMALA 320	SUPERGREASE EP2
SYNECO	-	PACEMAKER 32	PACEMAKER 46	PACEMAKER 68	-	PACEMAKER RODI 12	-	PACEMAKER RODI 24	SINT GREASE EP 2
TAMOIL	HYDRAULIC OIL 22	HYDRAULIC OIL 32	HYDRAULIC OIL 46	HYDRAULIC OIL 68	CARTER EP 100	CARTER EP 150	CARTER EP 220	CARTER EP 320	TAMLITH GREASE EP2
TEXACO	RANDO HD 22	RANDO HD 32	RANDO HD 46	RANDO HD 68	MEROPA 100	MEROPA 150	MEROPA 220	MEROPA 320	MULTIFAK EP 2
TOTAL	AZOLLA ZS 22	AZOLLA ZS 32	AZOLLA ZS 46	AZOLLA ZS 68	CARTER EP 100	CARTE EP 150	CARTER EP 220	CARTER EP 320	MULTIS EP 2
VALVOLINE	ELIOS HVI 22	ELIOS HVI 32	ELIOS HVI 46	ELIOS HVI 58	ELIOS EP 100	ELIOS EP 150	ELIOS EP 220	ELIOS EP 320	LITHIUM BASE EP 2



27	L01-0012-332	1
26	L01-0016-248	1
25	L01-0016-252	1
24	L01-0016-248	1
23	L01-0016-264	1
22	L01-0004-395	1
21	L01-0008-133	1
20	L02-0008-018	1
19	L02-0004-212	1
18	L02-0004-212	1
17	L02-0004-212	1
16	L02-0004-212	1
15	L02-0004-033	1
14	L02-0008-061	1
13	L02-0008-188	1
12	L01-0006-054	1
11	L01-0004-397	1
10	L01-0004-396	1
9	L04-0004-002	1
8	L03-1116-032	1
7	L03-1116-031	1
6	L01-0012-237	1
5	L01-0012-237	1
4	L01-0012-333	1
3	L01-0016-219	1
2	L01-0020-190	1
1	L01-0020-082	1

56	L01-0004-	1
55	L01-0004-	1
6	L08-0004-	1
54	L01-0004-	1
53	L01-0004-	1
52	L01-0008-	1
51	L02-0008-	1
50	L01-0008-	1
1	L01-0008-	1

POS	CODE	QTY
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2	L01-0020-190	1
3	L01-0016-219	1
4	L01-0012-333	1
5	L01-0012-237	1
6	L01-0012-237	1
7	L03-1116-031	1
8	L03-1116-032	1
9	L04-0004-002	1
10	L01-0004-396	1
11	L01-0004-397	1
12	L01-0006-054	1
13	L02-0008-188	1
14	L02-0008-061	1
15	L02-0004-033	1
16	L02-0004-212	1
17	L02-0004-212	1
18	L02-0004-212	1
19	L02-0004-212	1
20	L02-0008-018	1
21	L01-0008-133	1
22	L01-0004-395	1
23	L01-0016-264	1
24	L01-0016-248	1
25	L01-0016-252	1
26	L01-0016-248	1
27	L01-0012-332	1



Y7b	V00-6100-172 (replace V00-6100-110)	COMPRESSOR SOLENOID VALVE CONTROL
V9	V00-6203-016	COMPRESSOR RELIEF VALVE
R2	V00-6130-017	COMPRESSOR BY-PASS VALVE
P4	V00-6007-001	COMPRESSOR FEED PUMP
M3	V00-6052-006	COMPRESSOR HYDRAULIC MOTOR
POS	CODE	DESCRIPTION

Y8	V00-6100-110	FAN RADIATOR CONTROL SOLENOID VALVE
Y7d	V00-6100-110	CONTROL SOLENOID VALVE
Y6	V00-6100-172	ROPE LOCKING CYLINDER FRONT LOCKING VALVE
Y5	V00-6100-172	FRONT STABILIZER CYLINDER CONTROL SOLENOID VALVE
Y4	V00-6100-110	VACUUM-BRAKE BULL WHEEL OPENINGS SOLENOID VALVE CONTROL
Y3	V00-6209-037	PROPORTIONAL RELIEF VALVE
Y2	V00-6200-039	PULL REGULATION PROPORTIONAL VALVE CONTROL
Y1	V00-6001-169	PUMP 1 PROPORTIONAL VALVE CONTROL
V8	V00-6204-020	DOUBLE PILOT CHECK VALVE
V7	V00-6203-049	RELIEF VALVE
V2	V00-6204-055	CHECK VALVE
RD	V00-6610-046	RADIATOR
R1	V00-6130-006	EMPTY TANK HYDRAULIC OIL
P3	V00-6004-124	RADIATOR FEED PUMP
P2	V00-6004-022	REEL WINDER / AUXILIARY EQUIPMENT FEED PUMP
P1	V00-6001-169	PULLER/TENSIONER FEED PUMP
MT	V00-4500-092	DIESEL ENGINE
M2	V00-6052-006	RADIATOR MOTOR
M1	V00-6050-046	BULLWHEEL MOTOR
FR1	V00-5702-106	VACUUM BRAKE
F3	V00-6600-113	RETURN FILTER
F2	V00-4801-008	OIL TANK AIR BREAKER
F1	V00-6600-082	P1 BOOST FILTER
C2	099-19901	ROPE LOCKING CYLINDER
C1	V00-6500-061	FRONT STABILIZER CYLINDER
BT1	V00-8510-145	TEMPERATURE TRANSMITTER
BP5	V00-8510-239	P1 PUMP BOOST-FEEDING PRESSURE TRANSDUCER
BP4	V00-8510-239	CLOGGING FILTER F3
BP3	V00-8510-224	REEL WINDER/AUXILIARY EQUIPMENT PRESSURE TRANSDUCER
BP2	V00-8510-224	BULL WHEEL IN MOTOR PRESSURE TRANSDUCER
BP1	V00-8510-179	BULL WHEEL OUT MOTOR PRESSURE TRANSDUCER
AC	V00-4603-023	CLOGGING FILTER F1 DRIVE PUMP
POS	CODE	DESCRIPTION

TESMEF
ORGANISMO IRI - IRISS/42301 - Via G. Cesare, 15 - 20139 Milano - Tel. 02/4782445
ESCLUSIVO PER IL MERCATO ITALIANO - Distribuzione esclusiva in Italia e nei paesi limitrofi
TUTTE LE NOMINE RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE
SALVATURE IN ACCORDO CON - WRS 1 & 9
GRADO DI PRECISIONE PER QUOTE LINEARI: 0,01 mm
GRADO DI PRECISIONE PER QUOTE ANGOLARI: 10" / 100000 mm
UNI EN 22758-1 H
UNI EN 22758-2 H
UNI EN 22758-3 H
UNI EN 22758-4 H
UNI EN 22758-5 H
UNI EN 22758-6 H
UNI EN 22758-7 H
UNI EN 22758-8 H
UNI EN 22758-9 H
UNI EN 22758-10 H
UNI EN 22758-11 H
UNI EN 22758-12 H
UNI EN 22758-13 H
UNI EN 22758-14 H
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UNI EN 22758-99 H
UNI EN 22758-100 H

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ARGANO-FRENO 2.0
Modello AES 521 001
IMPIANTO OLFODINAMICO
SCHEMA IDRAULICO
Numero disegno S02-00107S

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Notes:



AFS 521 050

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REV	REVIEW	DATE	SIGN

SERIES :

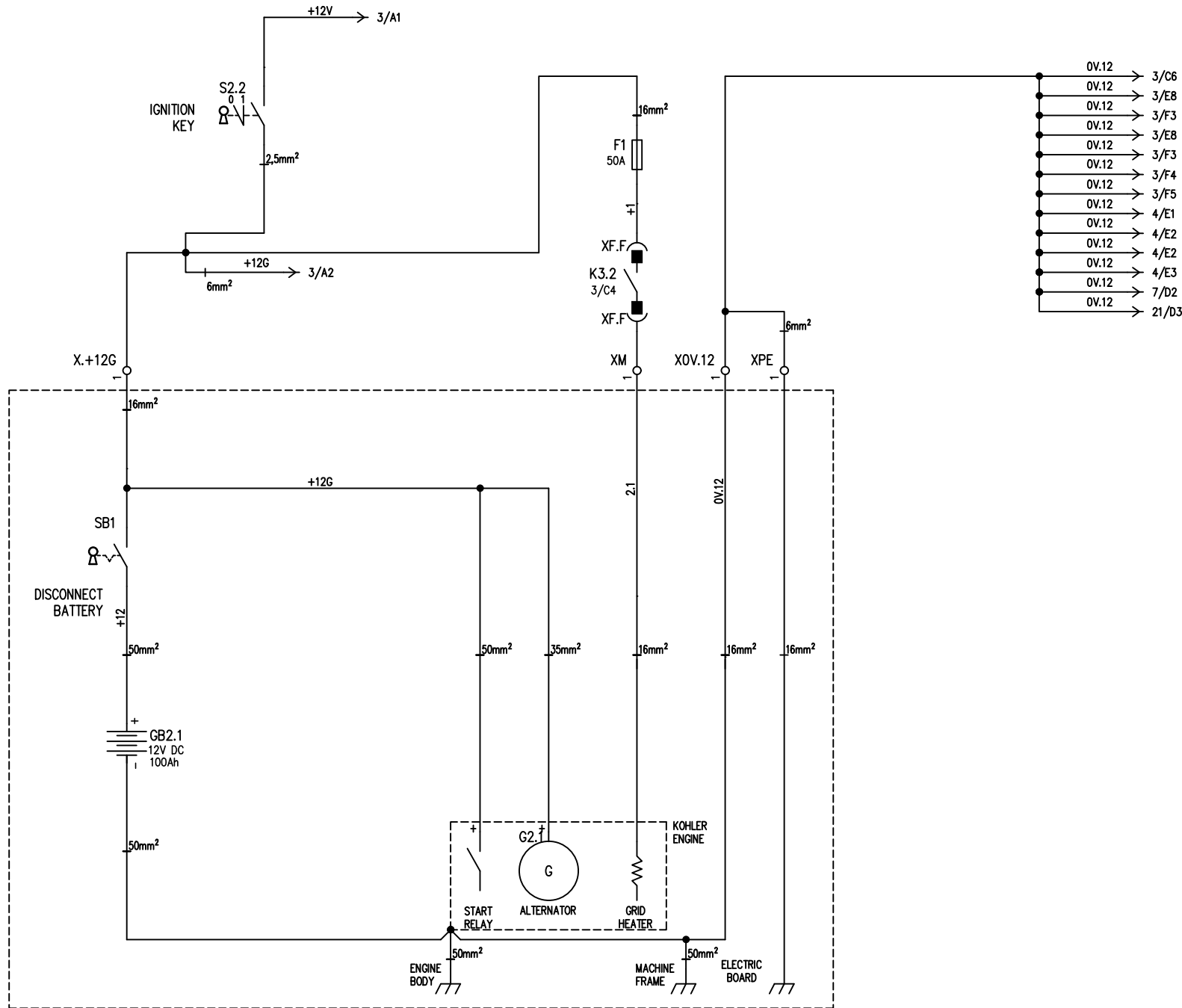
WORKING ORDER : S01-00141

CUSTOMER : AFS 521 050

	DATE	SIGNATURE
DRAFTSMAN	27/06/2017	Locatelli
VERIFIED		
APPROVED		
LOG. PROD.		

PRESETTINGS :	EQUIPMENT :
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ARCHIVES FILES:	\TESMEC\UT\EGPSchemi\Electrici\ \TESMEC\PLOT\TESATURA\S01\	SHEET
	S01-00141.DWG	1
		TOTAL SHEET
		42



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Electric scheme

POWER SUPPLY

Drawn: Locatelli

Drawing Nr: S01-00141
 Archive Nr: S01

Sheet 2 of 42

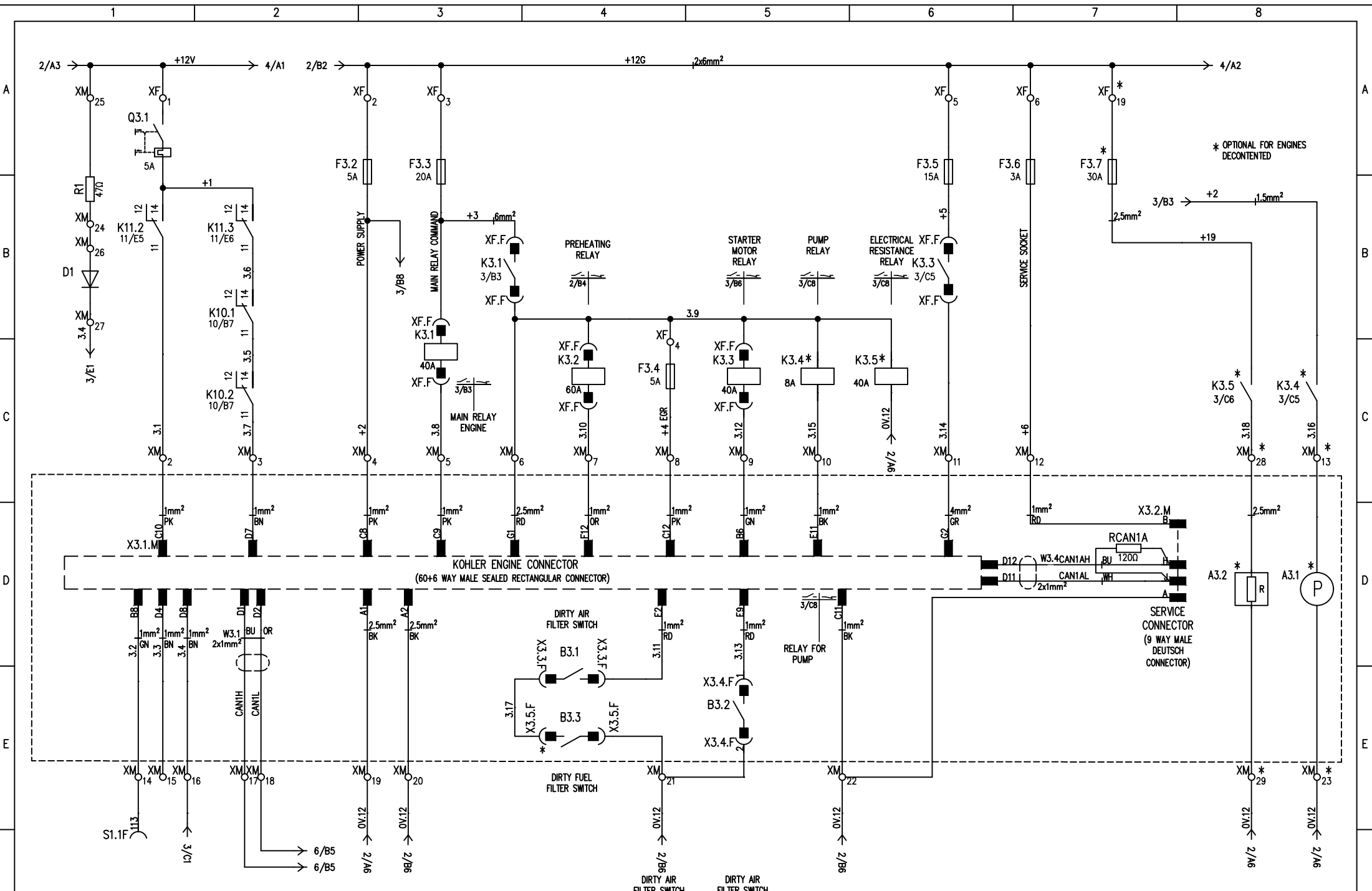
Grassobbio BG via Zanica, 17/o - Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
 Sede di Engine Gatano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

Checked:

Date: 27/06/2017

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Electric scheme

ENGINE CONNECTION

Drawn:

Locatelli

Drawing Nr: S01-00141
 Archive Nr: S01

Sheet 3 of 42

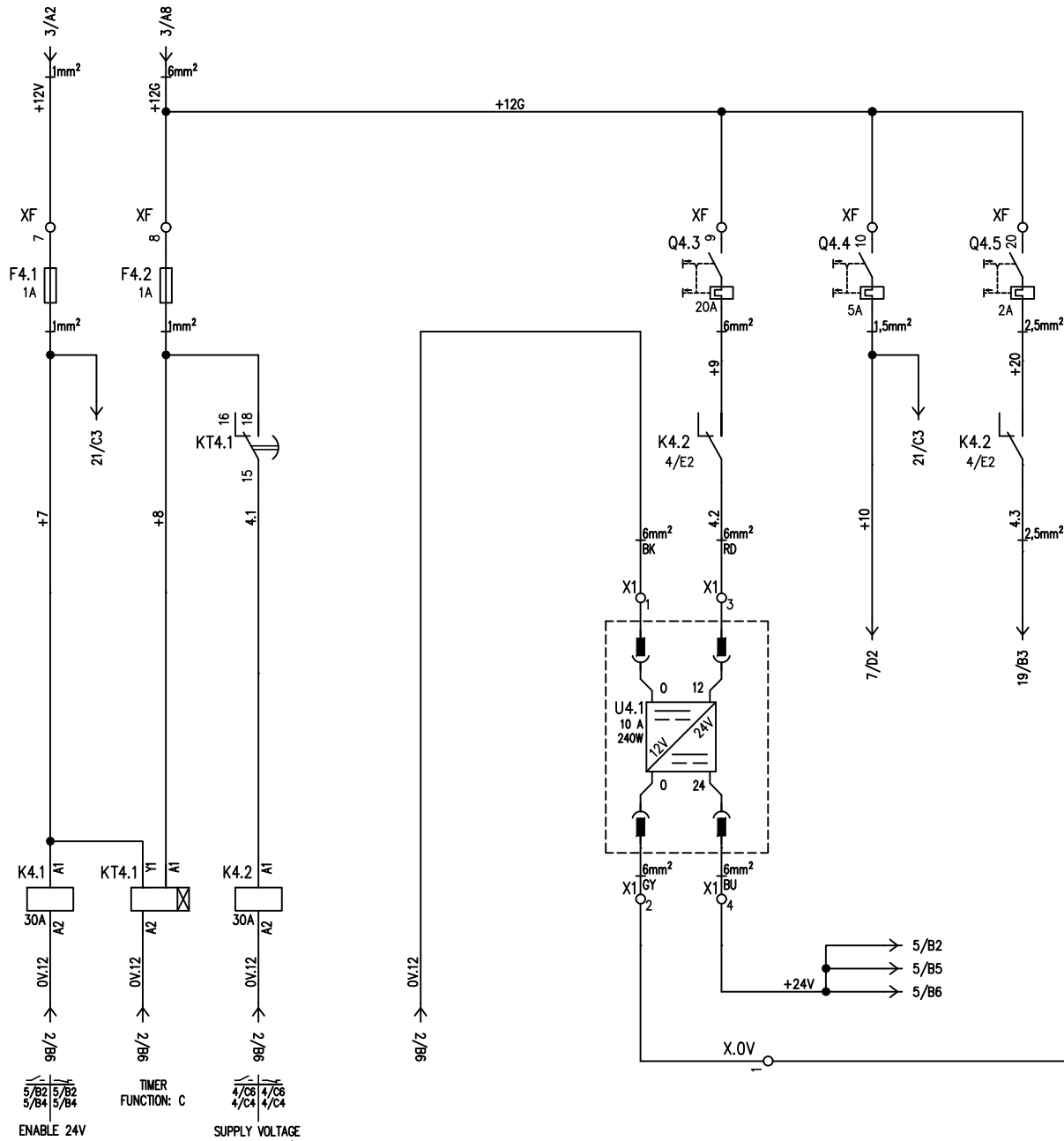
Grassobbio BG via Zanica, 17/o - Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
 Sede di Engine Gatano BG via Pertegalii - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

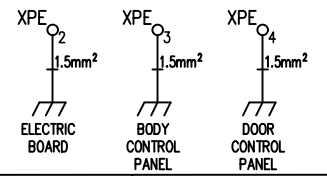
Checked:

Date: 27/06/2017

Following 4



- 0V → 19/E3
- 0V → 17/D4
- 0V → 17/C4
- 0V → 17/C4
- 0V → 16/B3
- 0V → 15/B6
- 0V → 15/B5
- 0V → 15/B5
- 0V → 15/B4
- 0V → 15/B3
- 0V → 15/B2
- 0V → 15/B2
- 0V → 14/B4
- 0V → 13/B3
- 0V → 11/E6
- 0V → 11/E5
- 0V → 11/E3
- 0V → 11/E2
- 0V → 11/E2
- 0V → 10/B7
- 0V → 10/B7
- 0V → 10/C8
- 0V → 10/C6
- 0V → 10/C5
- 0V → 10/C4
- 0V → 10/C2
- 0V → 9/C5
- 0V → 9/C5
- 0V → 9/C3
- 0V → 7/C3
- 0V → 6/C4
- 0V → 6/B4
- 0V → 6/B4



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Electric scheme

LINE 12-24V

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 4 of 42

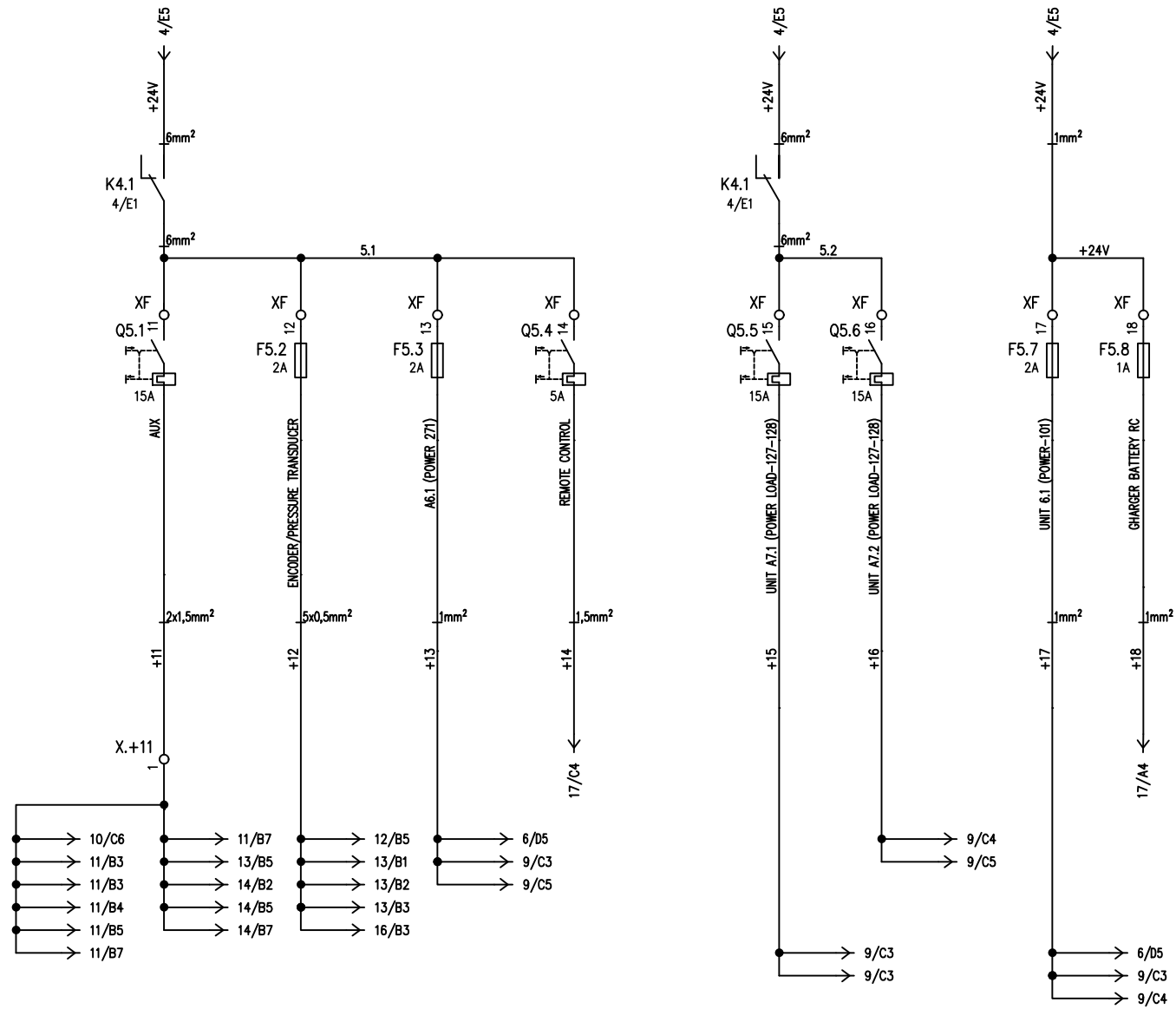
Grassobbio BG via Zanica, 17/o - Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Engine Galano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

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Following 5



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Electric scheme

PROTECTIONS

Drawn:

Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 5 of 42

Grassobbio BG via Zanica, 17/o - Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalii - Italy - tel: +39 035 825024 fax: +39 035 826375

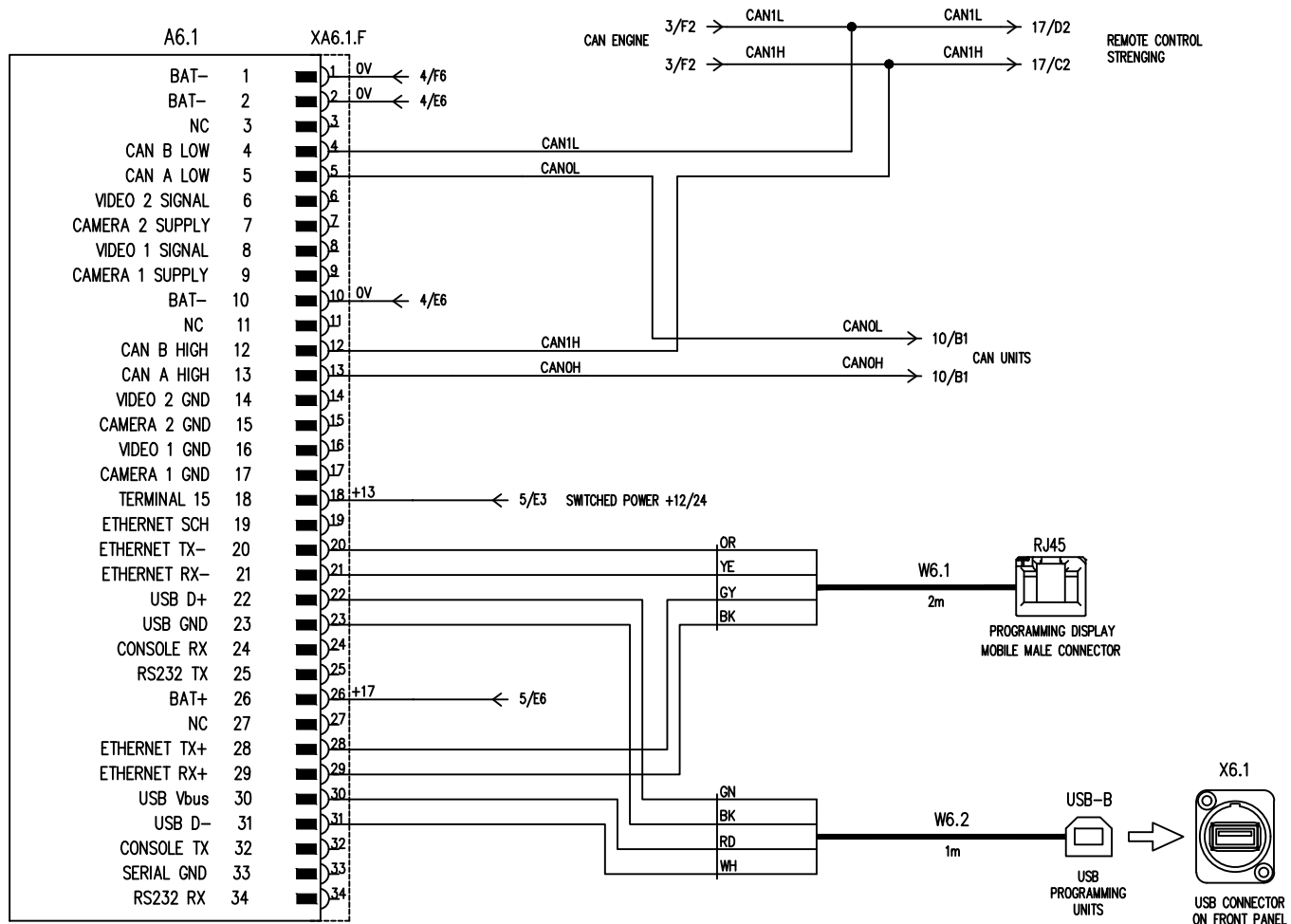
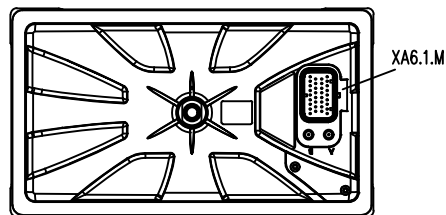
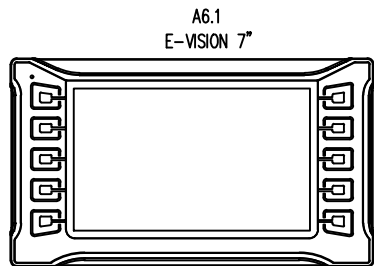
Design:

AFS 521 050

Checked:

Date: 27/06/2017

Following 6



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Electric scheme

E-VISION DISPLAY

Drawn:

Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 6 of 42

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Sede di Endine Gaiano BG via Pertegalii - Italy - tel: +39 035 825024 fax: +39 035 826375

Design:

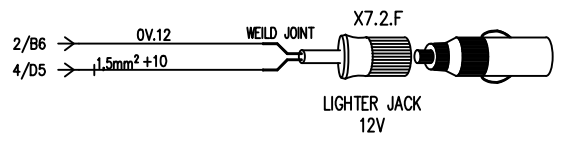
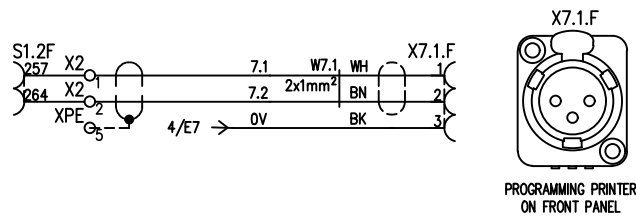
AFS 521 050

Checked:

Date:

27/06/2017

Following 7



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Electric scheme

PRINTER

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 7 of 42

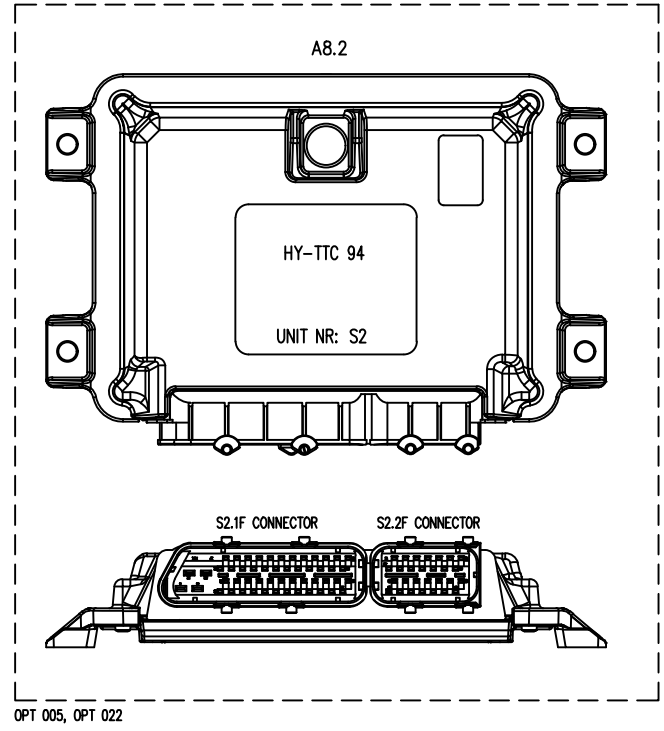
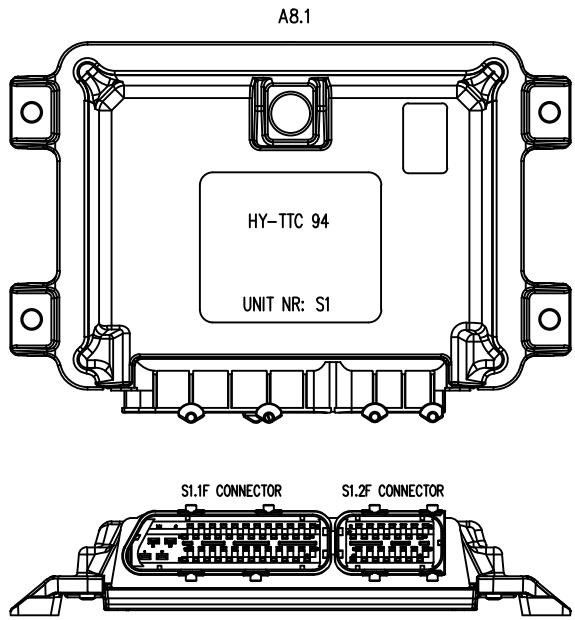
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Following 8



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Electric scheme

ELECTRONIC CARD

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 8 of 42

Grassobbio BG via Zanica, 17/o -Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Persegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

Checked:

Date: 27/06/2017

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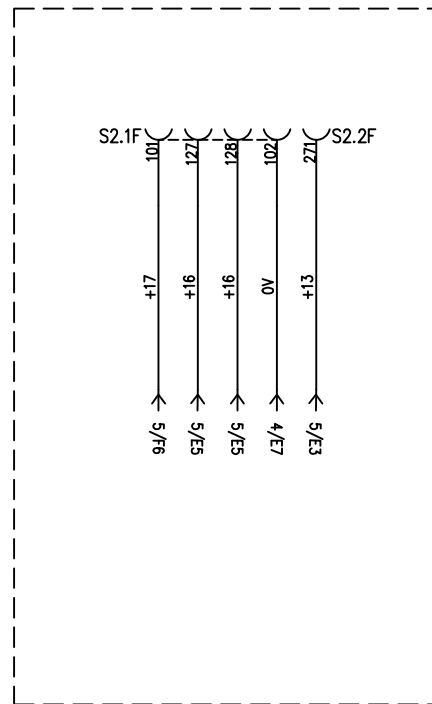
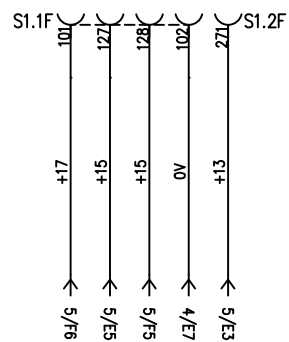
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OPT 005, OPT 022



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Electric scheme

ELECTRONIC CARD: SUPPLY

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 9 of 42

Grassobbio BG via Zanica, 17/o -Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Engine Gaiano BG via Persegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

Checked:

Date: 27/06/2017

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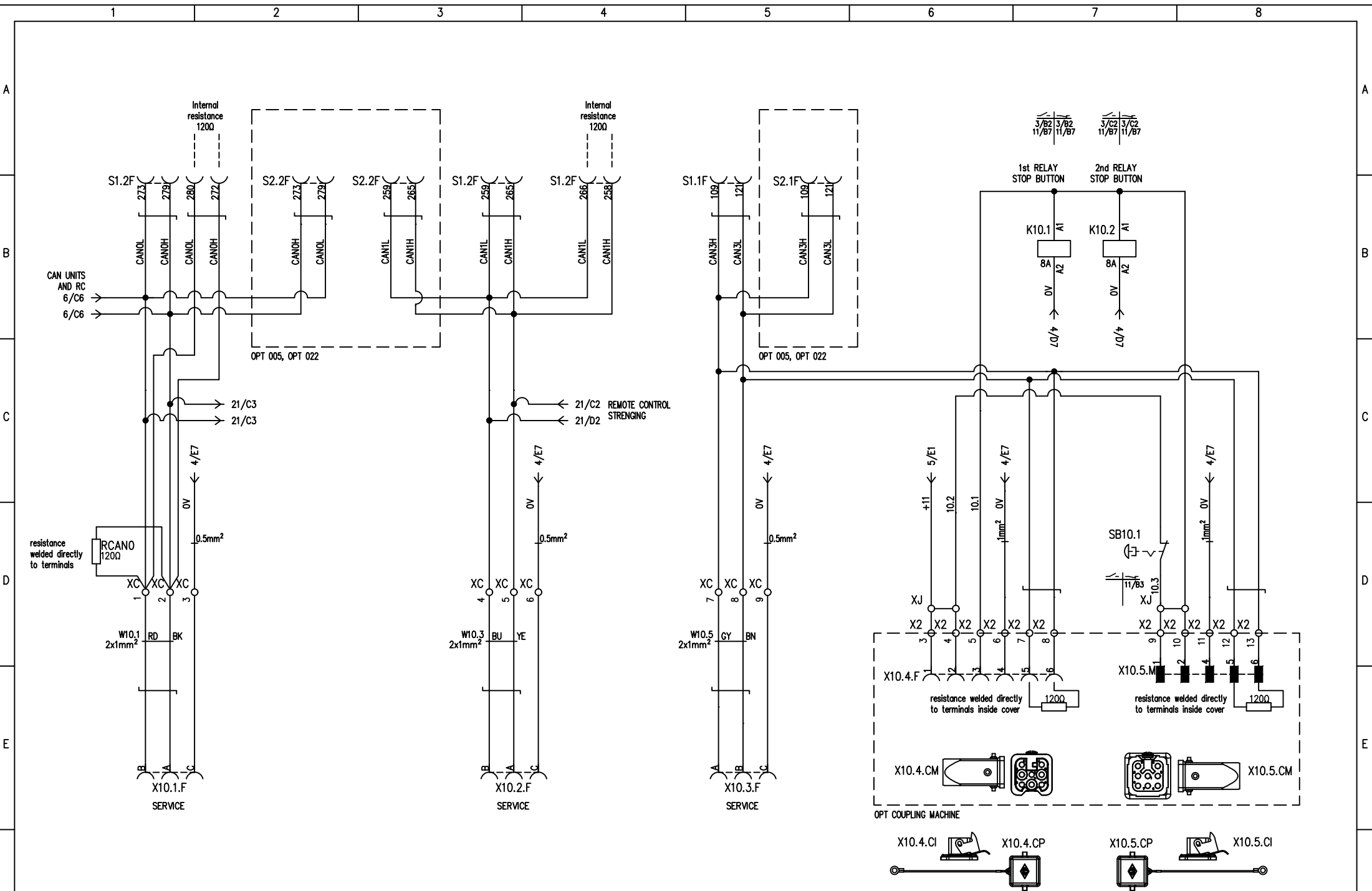
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Electric scheme

ELECTRONIC CARD: CANBUS

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 10 of 42

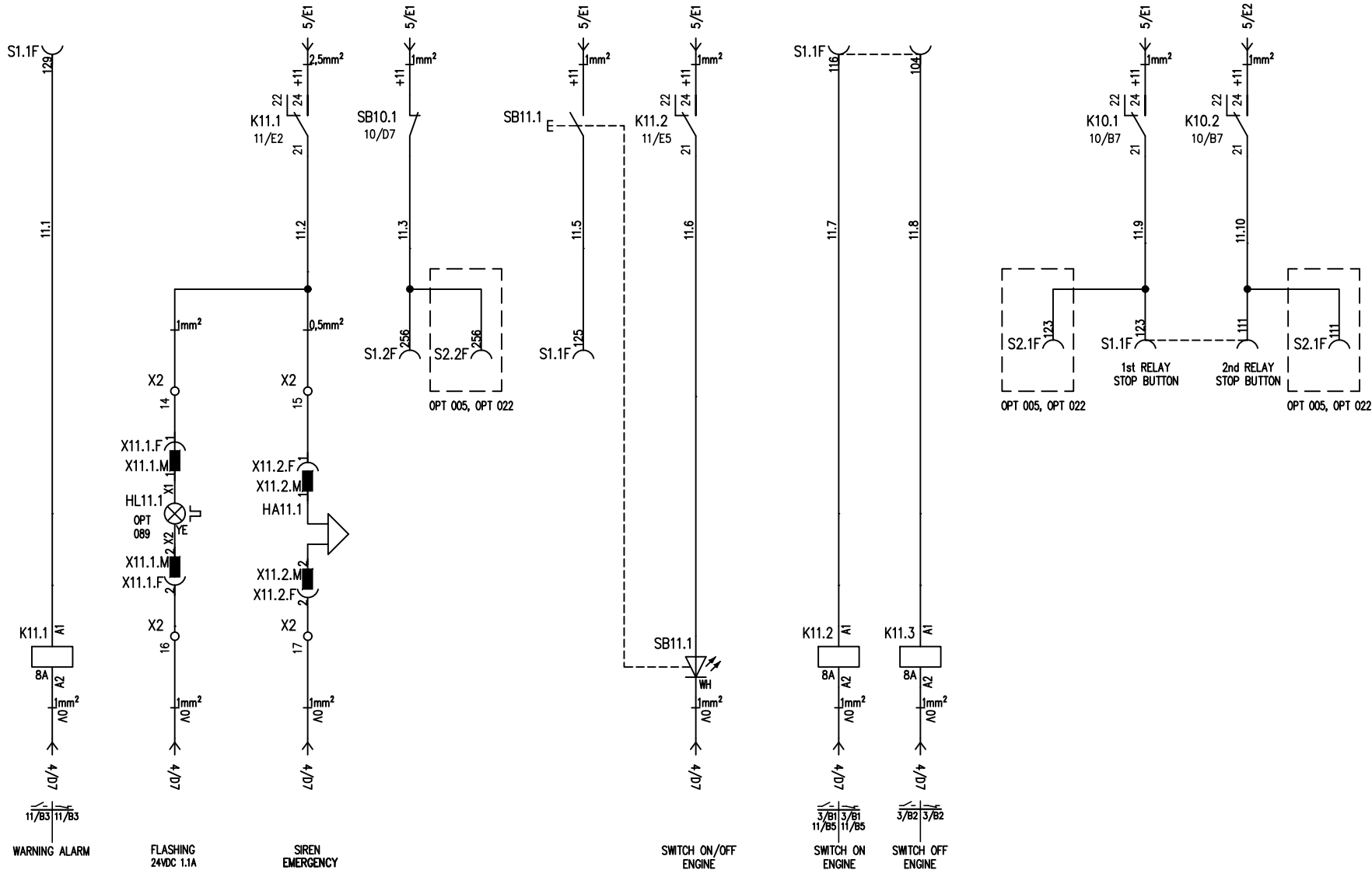
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Sede di Engine Gatano BG via Pertegalii - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

Checked:

Date: 27/06/2017

Following 11



WARNING ALARM

FLASHING
24VDC 1.1A

SIREN
EMERGENCY

SWITCH ON/OFF
ENGINE

SWITCH ON
ENGINE

SWITCH OFF
ENGINE



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Electric scheme

ALARM AND SWITCH ON/OFF ENGINE

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 11 of 42

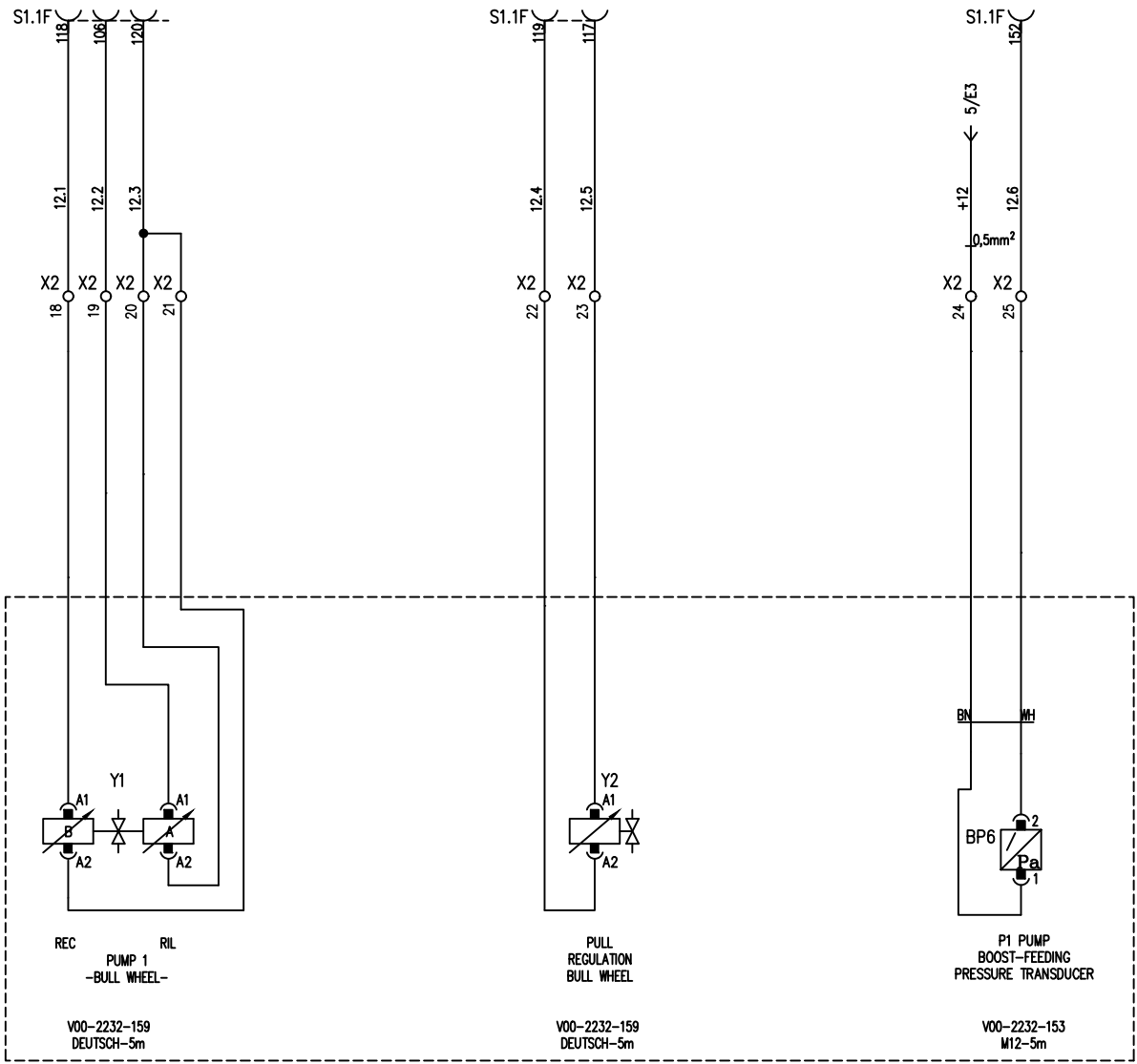
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Design: AFS 521 050

Checked:

Date: 27/06/2017

Following 12



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Electric scheme

MACHINE CONNECTIONS

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 12 of 42

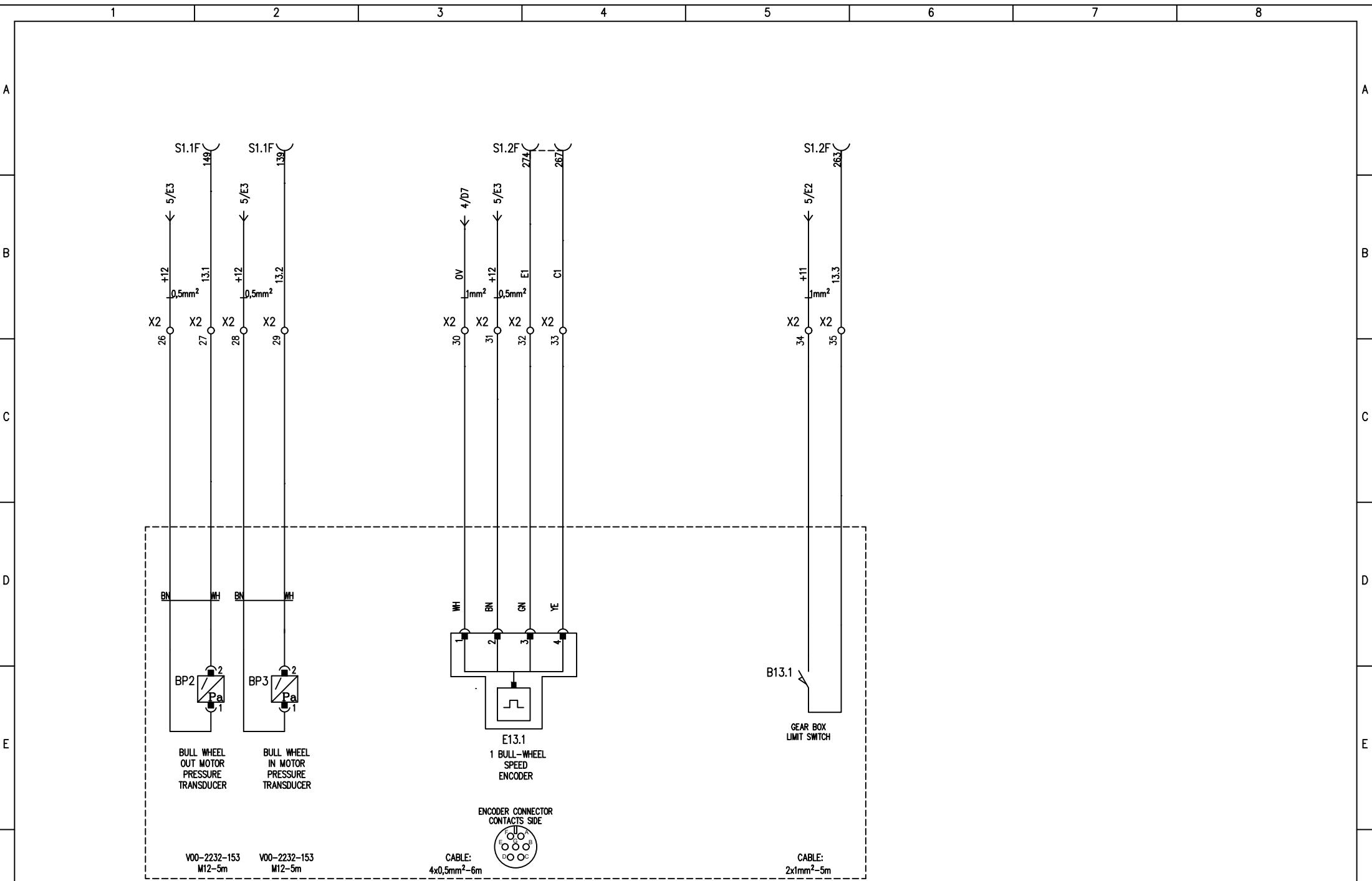
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Sede di Engine Gatano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

Checked:

Date: 27/06/2017

Following 13



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Electric scheme

MACHINE CONNECTIONS

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 13 of 42

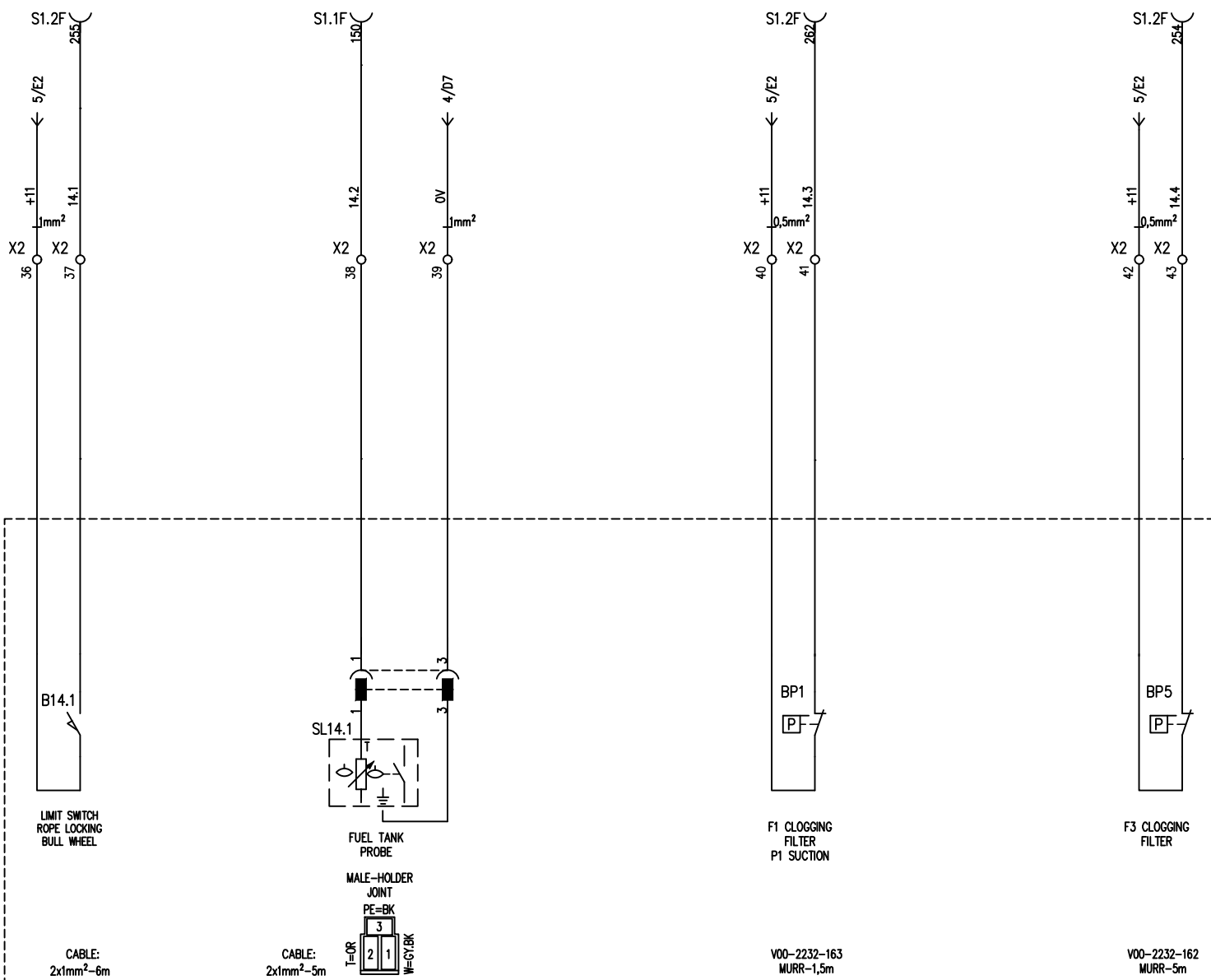
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Sede di Engine Gatano BG via Pertegalii - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

Checked:

Date: 27/06/2017

Following 14



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Electric scheme

MACHINE CONNECTIONS

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 14 of 42

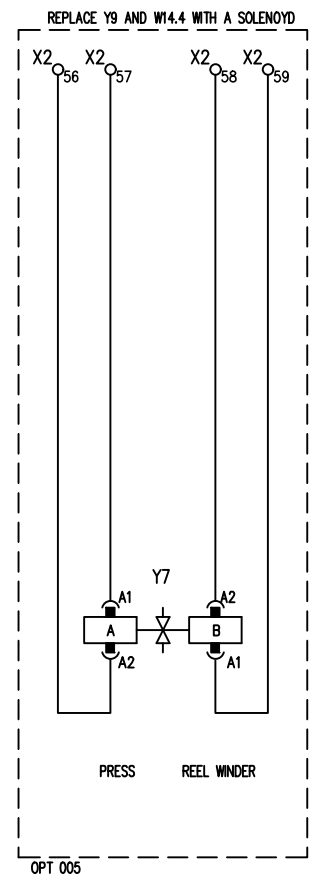
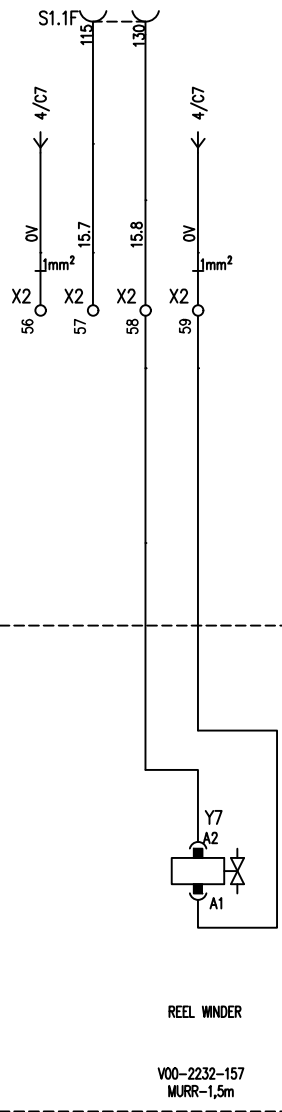
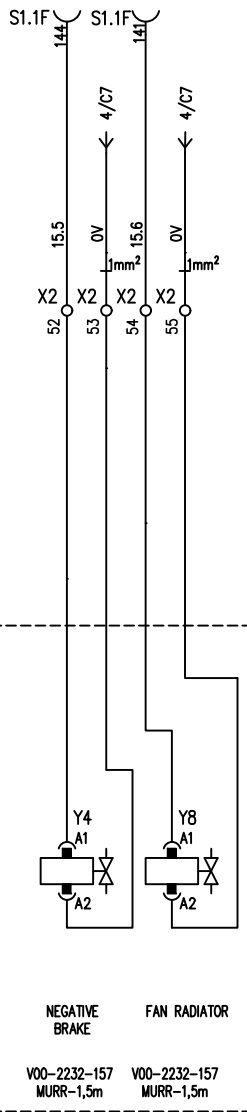
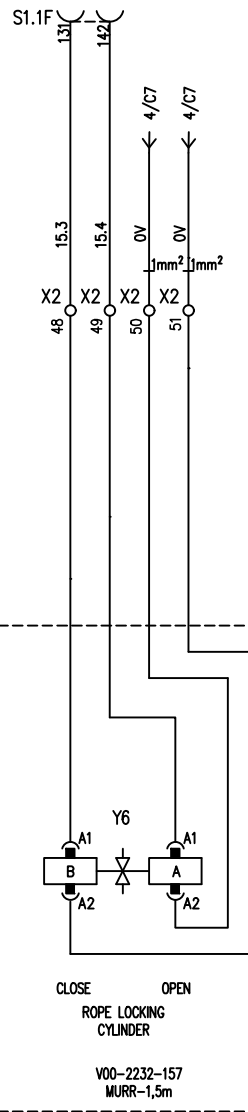
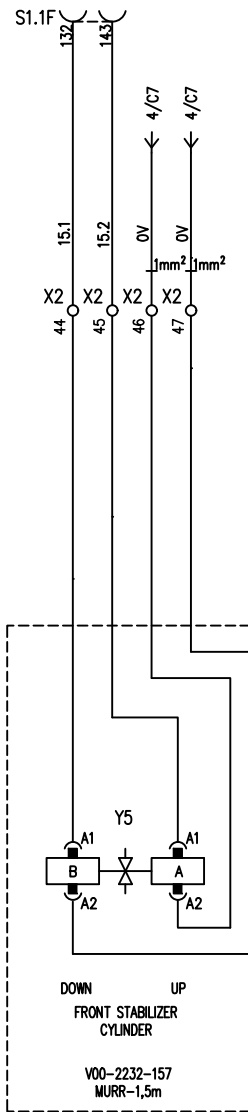
Grassobbio BG via Zanica, 17/o -Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Engine Gaiano BG via Pertegalii - Italy - tel: +39 035 825024 fax: +39 035 826375

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Following 15



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Electric scheme

MACHINE CONNECTIONS

Drawn: Locatelli

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Archive Nr: S01

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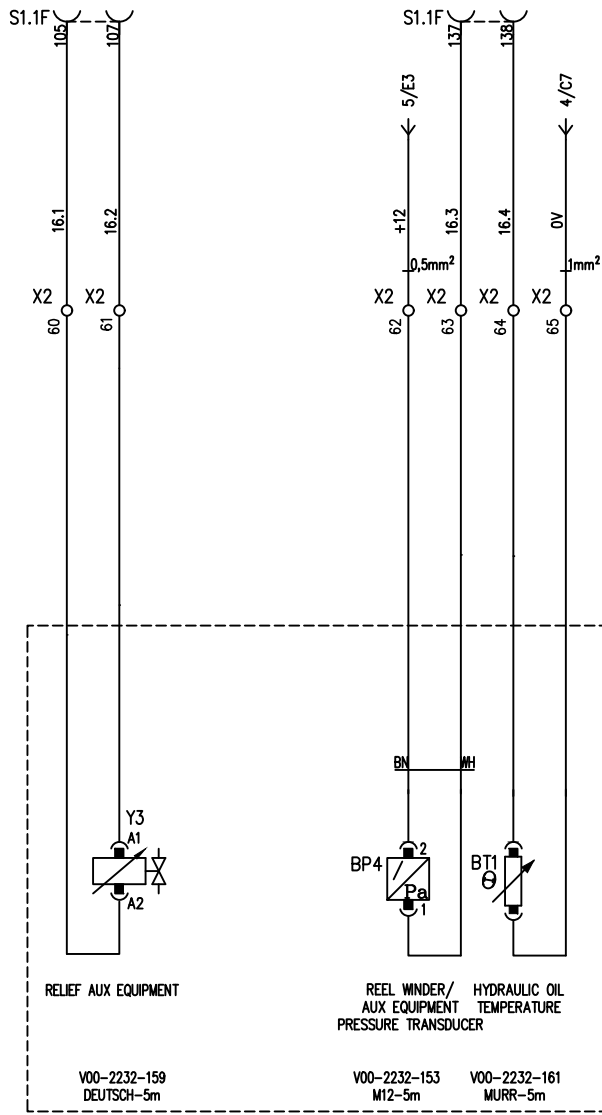
Grassobbio BG via Zanica, 17/o - Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
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MACHINE CONNECTIONS

Drawn: Locatelli

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Archive Nr: S01

Sheet 16 of 42

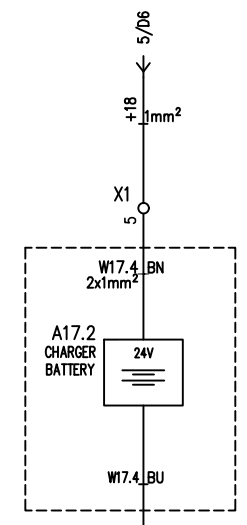
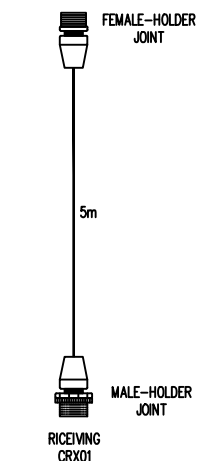
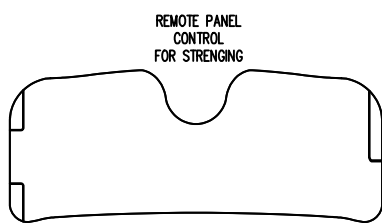
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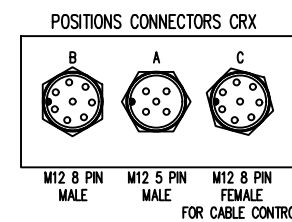
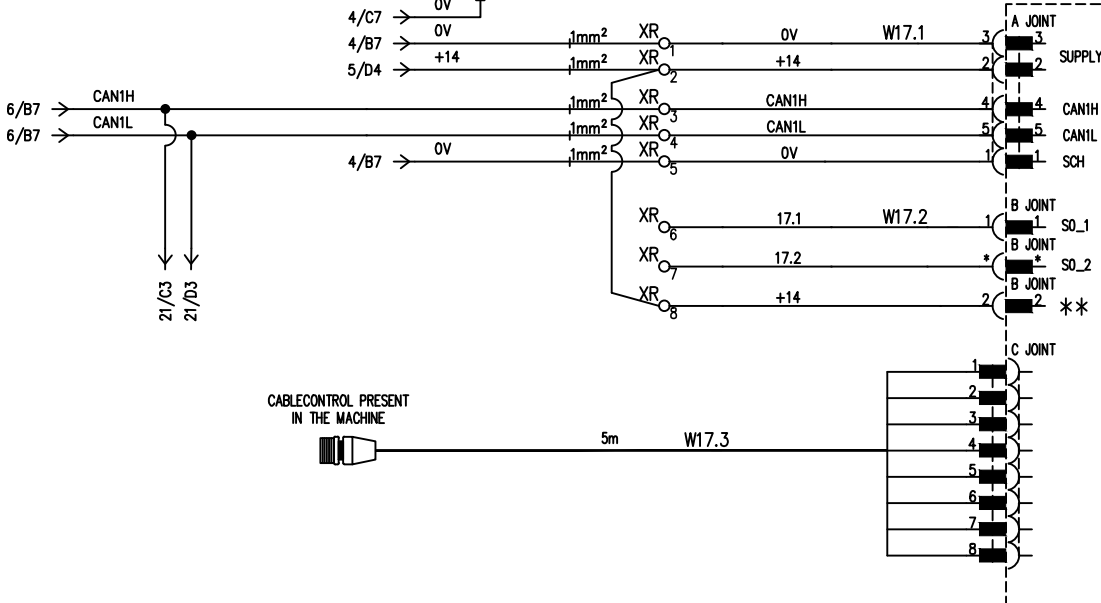
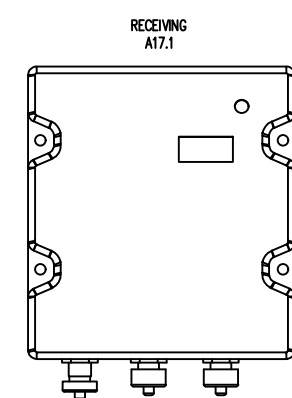
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Following 17



colours cable of receiving	
colours A joint	pin 1: brown pin 2: white pin 3: blu pin 4: black pin 5: gray
colours B joint for crx/crd 135	pin 1: white pin 2: brown pin 3: green for crd pin 4: yellow forx crx
colours B joint for crx/crd 156	pin 1: brown pin 2: white pin 3: blue for crd pin 4: black for crx



*	for crx receiver connect pin4
*	for crd receiver connect pin3
**	connect only for crd receiver pin2



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Electric scheme

REMOTE CONTROL STRENGING

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 17 of 42

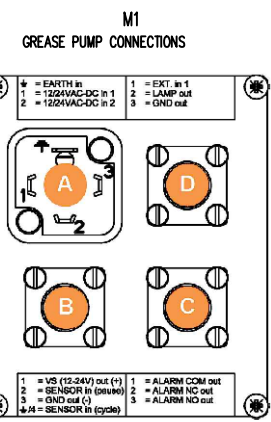
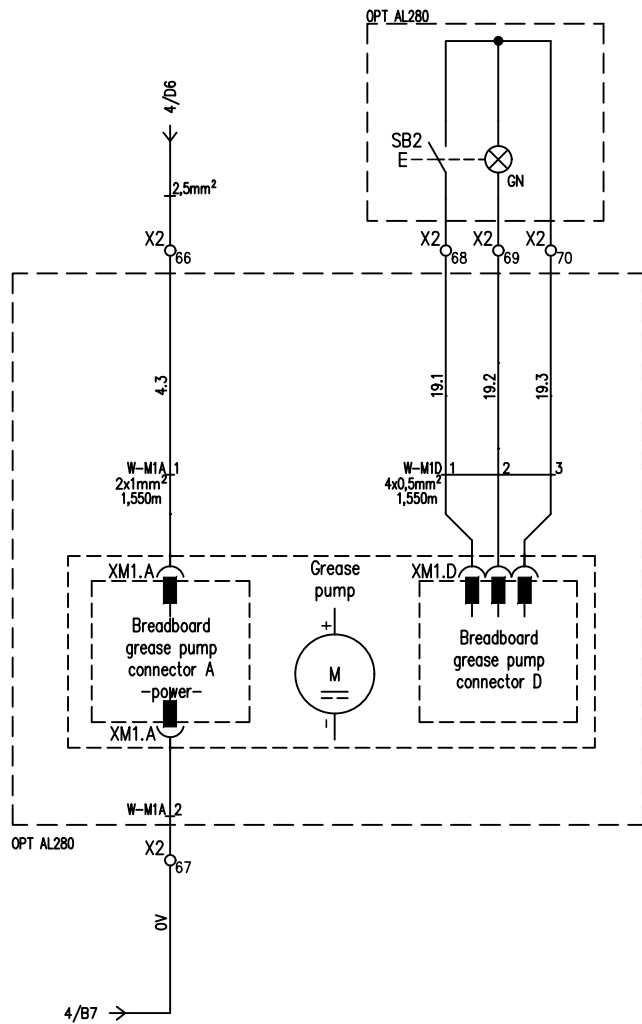
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Following 19



Setting for DROPSA BRAVO grease pump:

MODE - CYCLE
P.Hou - 2
P.Cou - 0
C.min - 4
Pr.El - ON
duty - 100
NCYC - 1
P.toa - OFF



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PUMP

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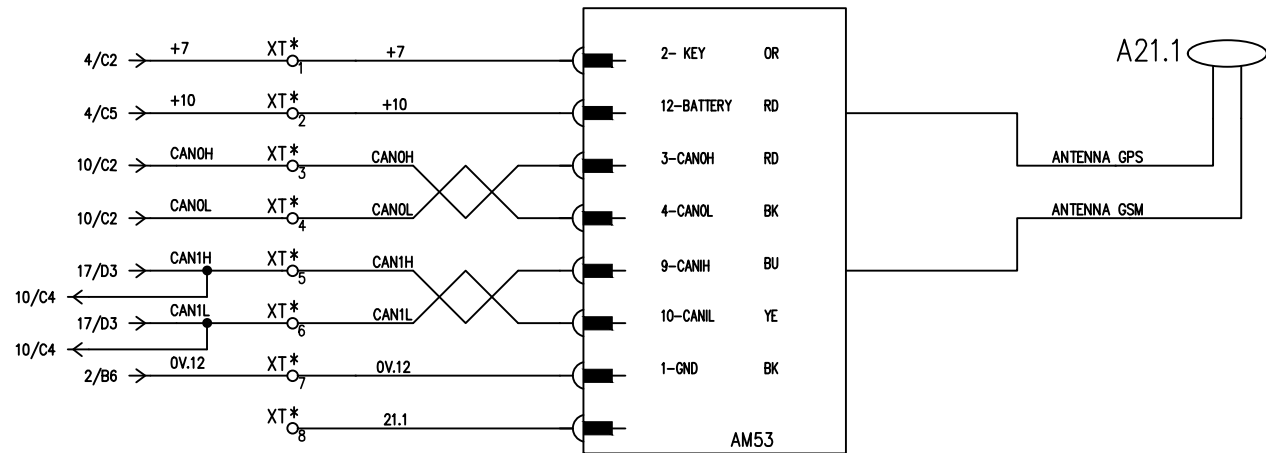
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Date: 27/06/2017

Following 21

*	For Serial Number: - AFS52108744 - AFS52108745 XT terminals are not available and all cables are wired directly.
---	---



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Electric scheme

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Date: 27/06/2017

Following 22

A

A

B

B

C

C

D

D

E

E

F

F

X3.1.M CONNETTORE ENGINE KOHLER MALES-HOLDER JOINT 60+6-WAYS						
PIN	WIRE	POSITION	FUNCTION	CABLE	LENGTH (m)	DESIGNATION
A1	0V.12	3/D4	POWER GND	BK 2.5mm ²		BOX
A2	0V.12	3/D4	POWER GND	BK 2.5mm ²		BOX
A3						
B1						
B2						
B3						
B4						
B5						
B6	3.12	3/D5	STARTER MOTOR RELAY	BK 1mm ²		K3.3-BOX
B7						
B8	3.2	3/D1	GRID HEATER LAMP	1mm ²	---	PANEL
B9						
B10						
B11						
B12						
C1						
C2						
C3						
C4						
C5						
C6						
C7						
C8	+2	3/D3	POWER SUPPLY	RD 1mm ²		F3.2-BOX
C9	3.8	3/D3	MAIN RELE COMMAND	BK 1mm ²		K3.1-BOX
C10	3.1	3/D1	12V COMMAND TO ECU	1mm ²	---	PANEL
C11	0V.12	3/D5	EGR VALVE GND	1mm ²	---	BOX
C12	+4	3/D5	EGR VALVE POWER SUPPLY	RD 1mm ²		F3.4-BOX
D1	CAN1H	3/D2	J1939 CAN-H	W3.1	---	PANEL
D2	CAN1L	3/D2	J1939 CAN-L	W3.1	---	PANEL
D3						
D4	3.3	3/D2	OIL PRESSURE LAMP	1mm ²	---	PANEL
D5						
D6						

X3.1.M CONNETTORE ENGINE KOHLER MALES-HOLDER JOINT 60+6-WAYS						
PIN	WIRE	POSITION	FUNCTION	CABLE	LENGTH (m)	DESIGNATION
D7	3.7	3/D2	IGNITION	1mm ²	---	PANEL
D8	3.4	3/D2	ALTERNATOR D+	1mm ²	---	PANEL
D9						
D10						
D11	CAN1AL	3/D6	ISO 15765 CAN-L	W3.4	---	PANEL
D12	CAN1AH	3/D6	ISO 15765 CAN-H	W3.4	---	PANEL
E1						
E2	3.11	3/D5	DIRTY AIR FILTER SWICHT	BU 1mm ²		BOX
E3						
E4						
E5						
E6						
E7						
E8						
E9	3.13	3/D5	WATER IN-FUEL DETECTION	BU 1mm ²		BOX
E10						
E11	3.15	3/D5	OPTIONAL PUMP RELAY	1mm ²		K3.4
E12						
F1						
F2						
F3						
F4						
F5						
F6						
F7						
F8						
F9						
F10						
F11						
F12	3.10	3/D4	GRID HEATER	1mm ²	---	PANEL
G1	3.9	3/D4	POWER SUPPLY	RD 2.5mm ²		K3.1-BOX
G2	3.14	3/D6	12V COMMAND TO STARTER	RD 4mm ²		K3.3-BOX
G3						



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X3.1.M KOHLER ENGINE JOINT

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Drawing Nr: S01-00141
Archive Nr: S01

Sheet 22 of 42

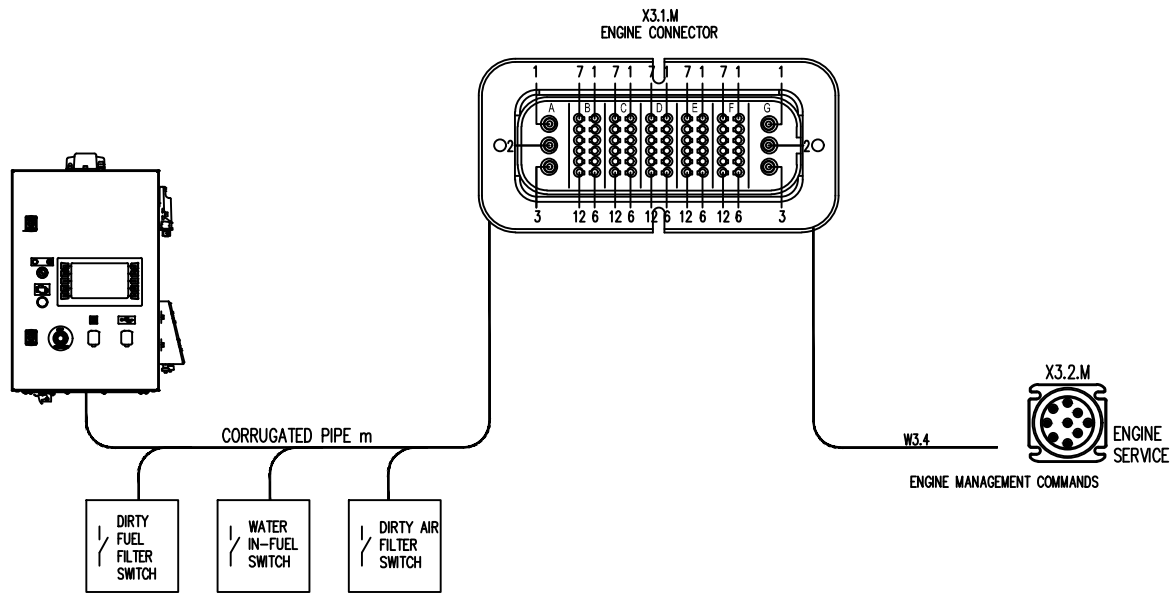
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Electric scheme

ENGINE BOX WIRING

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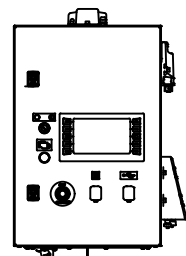
Grassobbio BG via Zanica, 17/o -Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
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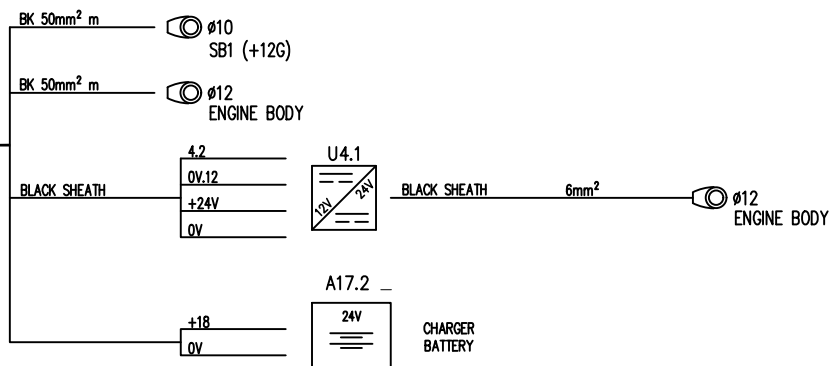
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CORRUGATED PIPE $\phi=29$



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Electric scheme

SUPPLY TO PANEL AND ENGINE SIGNALS WIRING

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Archive Nr: S01

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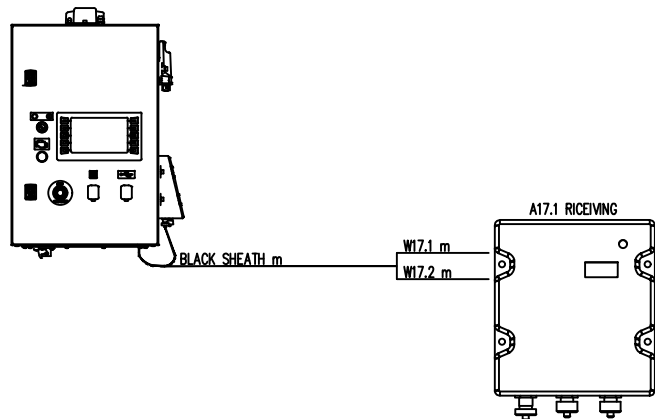
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Following 25

REMOTE CONTROL STRENGING



X17.2.F
CONNETTORE A RICEVENTE
M12 FEMALE 5 PIN

PIN	WIRE	POSITION	COLOUR
1	SCH	17/D6	SCH
2	+14	17/C6	RD
3	OV	17/C6	BK
4	CAN1H	17/D6	BU
5	CAN1L	17/D6	WH

X17.2.F
CONNETTORE A RICEVENTE
M12 FEMALE 8 PIN

1	17.1	17/D6	WH
2	+14	17/D6	BR
3*	17.2	17/D6	GN
4*	17.2	17/D6	YE
5	/	/	GY
6	/	/	PK
7	/	/	BU
8	/	/	RD

*	for crx receiver connect pin4
	for crd receiver connect pin3



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Electric scheme

REMOTE CONTROLS

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Drawing Nr: S01-00141
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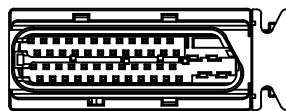
Date: 27/06/2017

Following 26

S1.1F CONNETTORE 52 PIN SCHEDA TTC94 FEMALES-HOLDER JOINT 52-WAYS				
PIN	WIRE	POSITION	CABLE	DESIGNATION
101	+17	9/B3	1.5mm ²	BATT. +
102	0V	9/B3	1.5mm ²	BATT. -
103				
104	11.8	11/C6	0.5mm ²	K11.3
105	16.1	16/A1	0.5mm ²	X2
106	12.2	12/A2	0.5mm ²	X2
107	16.2	16/A2	0.5mm ²	X2
108				
109	CAN3H	10/B5	0.5mm ²	CAN COUPLING
110				
111	11.10	11/C7	0.5mm ²	K10.2
112				
113	3.2	3/E1	0.5mm ²	XM
114				
115	15.7	15/A6	0.5mm ²	X2
116	11.7	11/C6	0.5mm ²	K11.2
117	12.5	12/A4	0.5mm ²	X2
118	12.1	12/A2	0.5mm ²	X2
119	12.4	12/A4	0.5mm ²	X2
120	12.3	12/A2	0.5mm ²	X2
121	CAN3L	10/B5	0.5mm ²	CAN COUPLING
122				
123	11.9	11/C7	0.5mm ²	K10.1
124				
125	11.5	11/C4	0.5mm ²	SB11.1
126				
127	+15	9/B3	1.5mm ²	POWER (LOAD)
128	+15	9/B3	1.5mm ²	POWER (LOAD)
129	15.8	15/A6	0.5mm ²	X2
130	15.8	15/A6	0.5mm ²	X2
131	15.3	15/A3	0.5mm ²	X2
132	15.1	15/A1	0.5mm ²	X2
133				
134				
135				
136				
137	16.3	16/A3	0.5mm ²	X2
138	16.4	16/A3	0.5mm ²	X2
139	13.2	13/A2	0.5mm ²	X2
140				
141	15.6	15/A5	0.5mm ²	X2
142	15.4	15/A3	0.5mm ²	X2
143	15.2	15/A2	0.5mm ²	X2
144	15.5	15/A5	0.5mm ²	X2

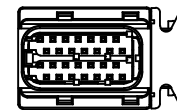
S1.1F CONNETTORE 52 PIN SCHEDA TTC94 FEMALES-HOLDER JOINT 52-WAYS				
PIN	WIRE	POSITION	CABLE	DESIGNATION
145				
146				
147				
148				
149	13.1	13/A2	0.5mm ²	X2
150	14.2	14/A3	0.5mm ²	X2
151				
152	12.6	12/A5	0.5mm ²	X2

S1.1F



S1.2F CONNETTORE 28 PIN SCHEDA TTC94 FEMALES-HOLDER JOINT 28-WAYS				
PIN	WIRE	POSITION	CABLE	DESIGNATION
253				
254	14.4	14/A7	0.5mm ²	X2
255	14.1	14/A2	0.5mm ²	X2
256	11.3	11/C3	0.5mm ²	SB10.1
257	7.1	7/B2	0.5mm ²	X2
258	CAN1H	10/B4	0.5mm ²	CAN UNIT TTC
259	CAN1L	10/B3	0.5mm ²	CAN ENGINE
260				
261				
262	14.3	14/A5	0.5mm ²	X2
263	13.3	13/A5	0.5mm ²	X2
264	7.2	7/C2	0.5mm ²	X2
265	CAN1H	10/B3	0.5mm ²	CAN ENGINE
266	CAN1L	10/B4	0.5mm ²	CAN UNIT TTC
267	C1	13/A4	0.5mm ²	X2
268				
269				
270				
271	+13	9/B3	1.5mm ²	SWITCHED POWER
272	CAN0H	10/B2	0.5mm ²	CAN UNIT TTC
273	CAN0L	10/B1	0.5mm ²	CAN UNIT TTC
274	E1	13/A4	0.5mm ²	X2
275				
276				
277				
278				
279	CAN0H	10/B1	0.5mm ²	CAN UNIT TTC
280	CAN0L	10/B2	0.5mm ²	CAN UNIT TTC

S1.2F



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Electric scheme

A8.1 WIRING

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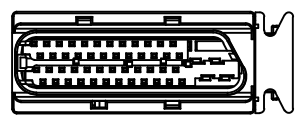
S2.1F
CONNETTORE 52 PIN SCHEDA TTC94
FEMALES-HOLDER JOINT 52-WAYS

PIN	WIRE	POSITION	CABLE	DESIGNATION
101	+17	9/B4	1.5mm ²	BATT. +
102	0V	9/B5	1.5mm ²	BATT. -
103				
104				
105				
106				
107				
108				
109	CAN3H	10/B5	0.5mm ²	CAN COUPLING
110				
111	11.10	11/C8	0.5mm ²	K10.2
112				
113				
114				
115				
116				
117				
118				
119				
120				
121	CAN3L	10/B5	0.5mm ²	CAN COUPLING
122				
123	10.9	11/C6	0.5mm ²	K10.1
124				
125				
126				
127	+16	9/B5	1.5mm ²	POWER (LOAD)
128	+16	9/B5	1.5mm ²	POWER (LOAD)
129				
130				
131				
132				
133				
134				
135				
136				
137				
138				
139				
140				
141				
142				
143				
144	15.7	15/A6	0.5mm ²	X2

S2.1F
CONNETTORE 52 PIN SCHEDA TTC94
FEMALES-HOLDER JOINT 52-WAYS

PIN	WIRE	POSITION	CABLE	DESIGNATION
145				
146				
147				
148				
149				
150				
151				
152				

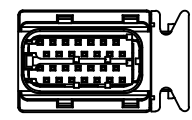
S2.1F



S2.2F
CONNETTORE 28 PIN SCHEDA TTC94
FEMALES-HOLDER JOINT 28-WAYS

PIN	WIRE	POSITION	CABLE	DESIGNATION
253				
254				
255				
256	11.3	11/C4	0.5mm ²	SB10.1
257				
258				
259	CAN1L	10/B3	0.5mm ²	CAN ENGINE
260				
261				
262				
263				
264				
265	CAN1H	10/B3	0.5mm ²	CAN ENGINE
266				
267				
268				
269				
270				
271	+13	9/B5	1.5mm ²	SWITCHED POWER
272				
273	CAN0L	10/B2	0.5mm ²	CAN UNIT TTC
274				
275				
276				
277				
278				
279	CAN0H	10/B2	0.5mm ²	CAN UNIT TTC
280				

S2.2F



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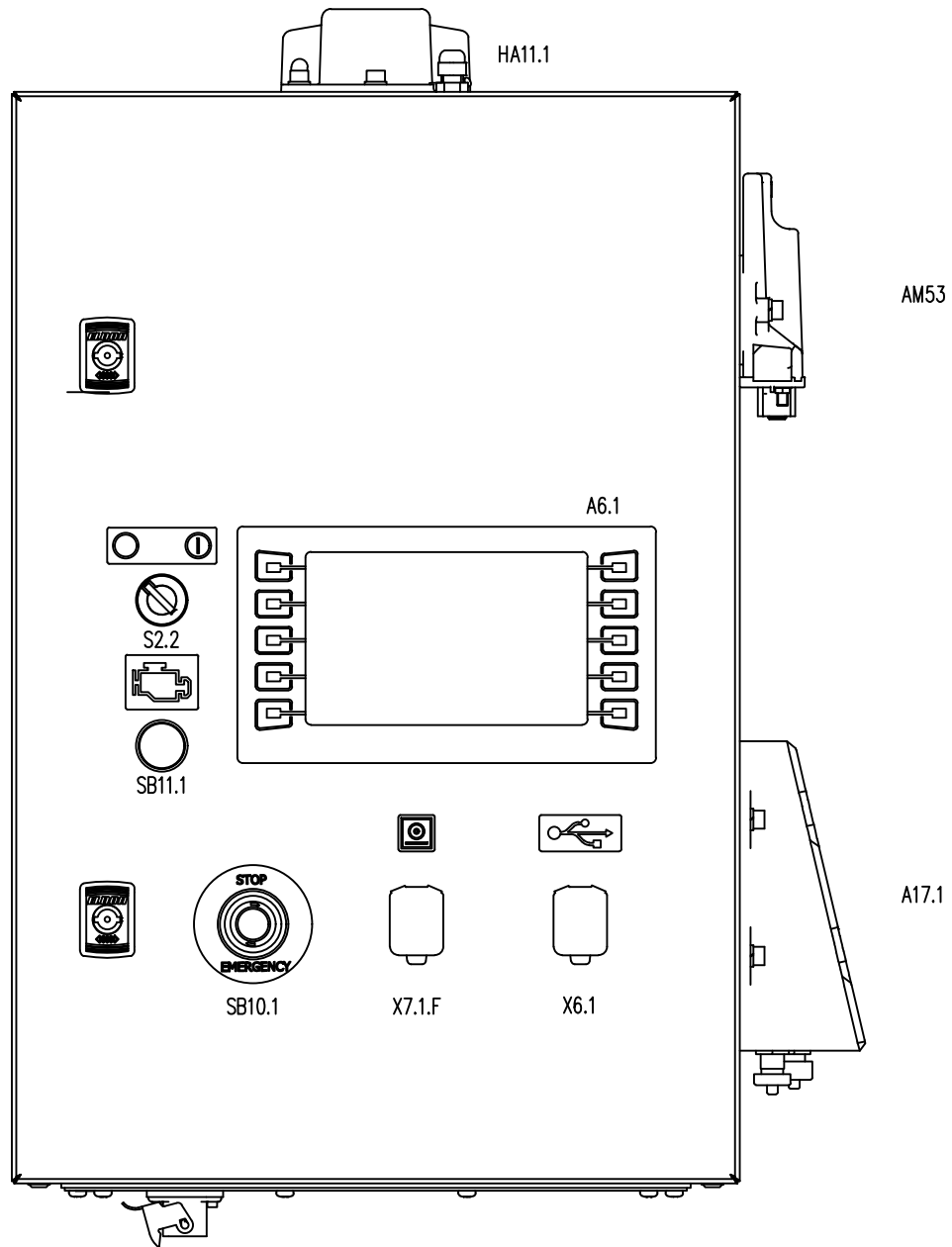
Electric scheme

A8.2 WIRING (OPT)

Drawn: Locatelli

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 Archive Nr: S01

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Electric scheme

CONTROL PANEL

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

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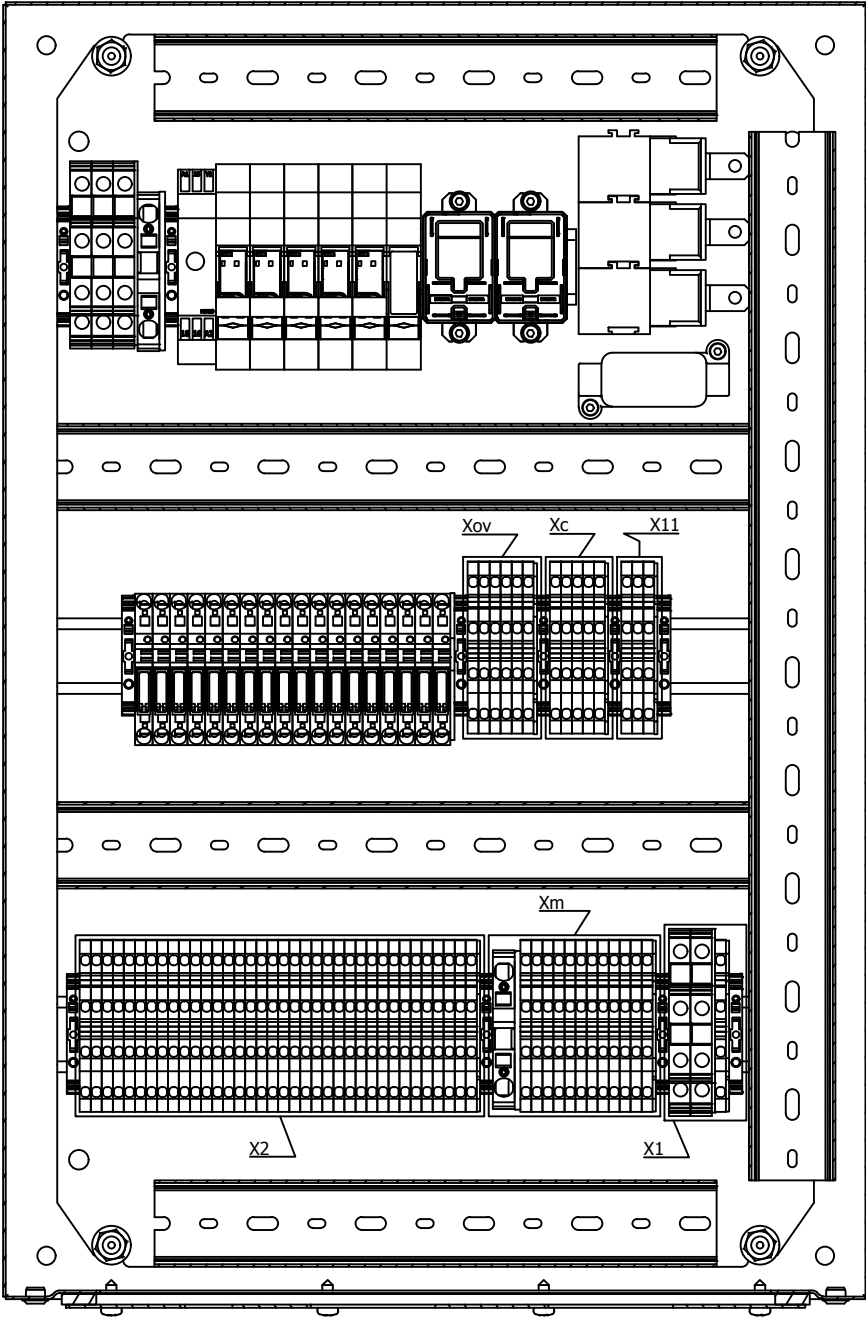
Grassobbio BG via Zanica, 17/o -Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
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Date: 27/06/2017

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ELECTRIC BOARD

Drawn:

Locatelli

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Archive Nr: S01

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Date: 27/06/2017

Following 30

A

B

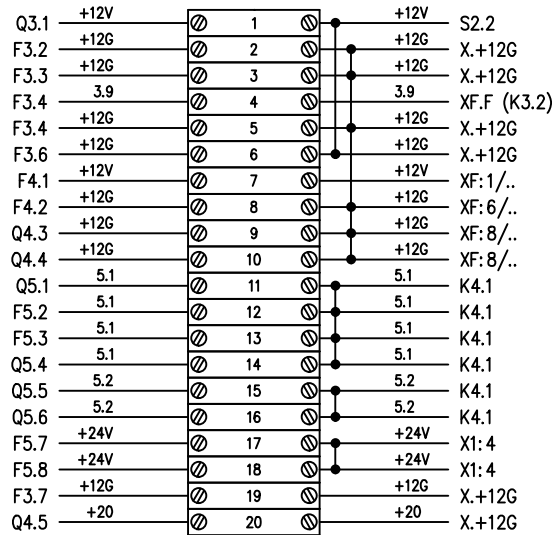
C

D

E

F

XF



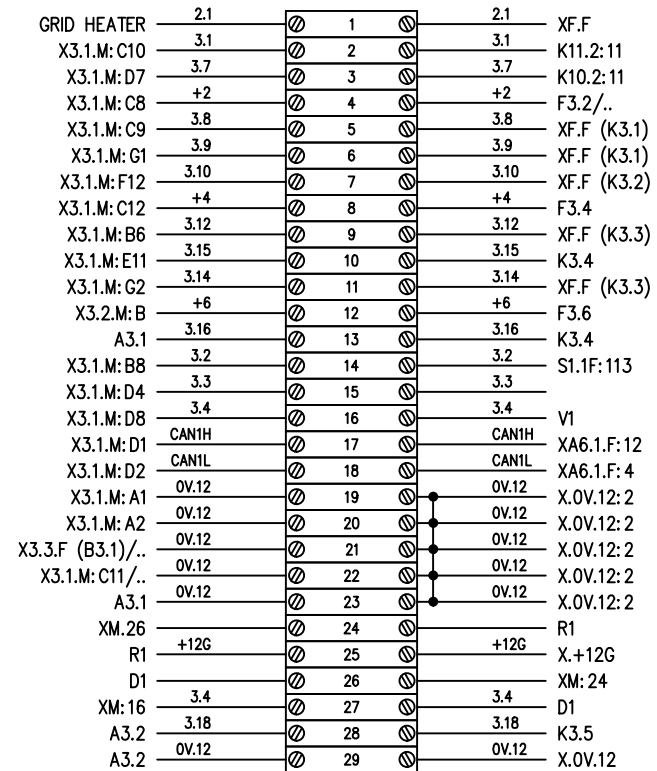
* OPTIONAL

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* OPTIONAL

XM



Electric scheme

TERMINALS BOARD

Drawn:

Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

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Design:

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Checked:

Date:

27/06/2017

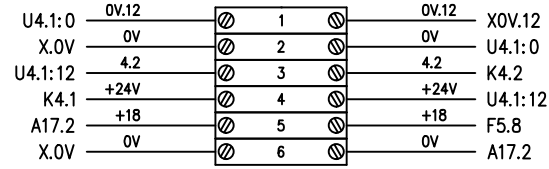
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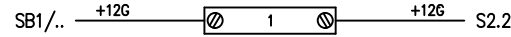
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Sede di Endine Gaiate BG via Pertegalii - Italy - tel: +39 035 825024 fax: +39 035 826375

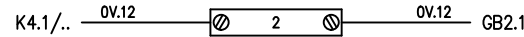
X1



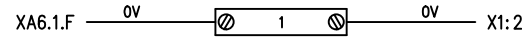
X.+12G



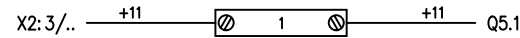
X0V.12



X.0V



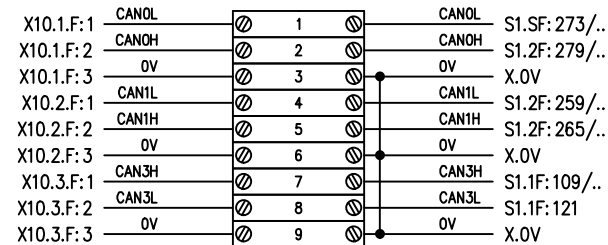
X.+11



XPE



XC



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Electric scheme

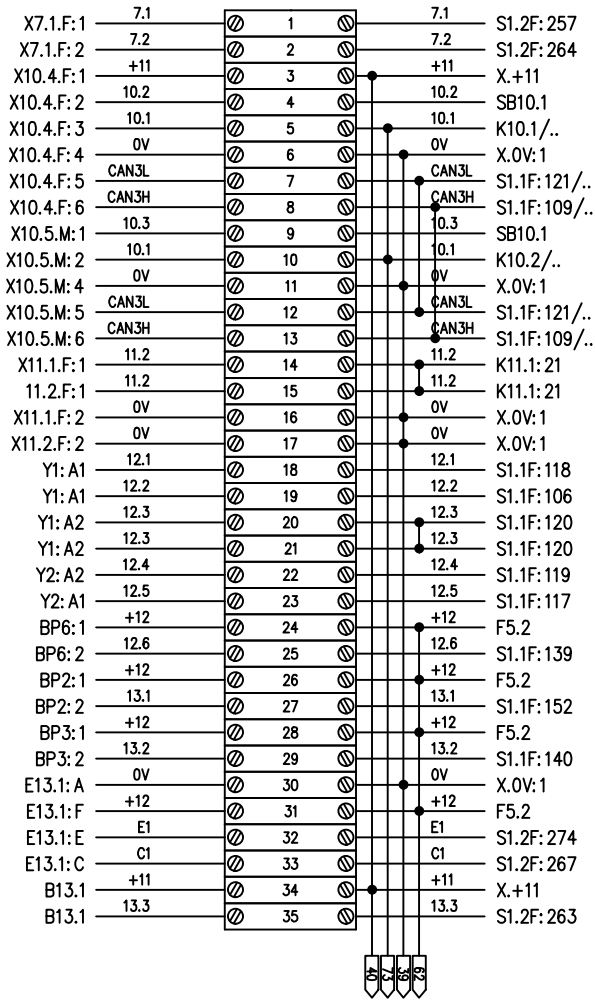
TERMINALS BOARD

Drawn: Locatelli

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X2



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Electric scheme

TERMINALS BOARD

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Sede di Endine Gaiano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

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Date: 27/06/2017

Following 33

X2



B14.1	+11	36	+11	X.+11:1
B14.1	14.1	37	14.1	S1.2F: 255
SL14.1	14.2	38	14.2	S1.1F: 150
SL14.1	0V	39	0V	X.OV:1
BP1	+11	40	+11	X.+11:1
BP1	14.3	41	14.3	S1.2F: 262
BP5	+11	42	+11	X.+11:1
BP5	14.4	43	14.4	S1.2F: 254
Y5: A1	15.1	44	15.1	S1.1F: 132
Y5: A1	15.2	45	15.2	S1.1F: 143
Y5: A2	0V	46	0V	X.OV:1
Y5: A2	0V	47	0V	X.OV:1
Y6: A1	15.3	48	15.3	S1.1F: 131
Y6: A1	15.4	49	15.4	S1.1F: 142
Y6: A2	0V	50	0V	X.OV:1
Y6: A2	0V	51	0V	X.OV:1
Y4: A1	15.5	52	15.5	S1.1F: 144
Y4: A2	0V	53	0V	X.OV:1
Y8: A1	15.6	54	15.6	S1.1F: 141
Y8: A2	0V	55	0V	X.OV:1
		56	0V	X.OV:1
		57	15.7	S1.1F: 115
Y9: A1	15.8	58	15.8	S1.1F: 130
Y9: A2	0V	59	0V	X.OV:1
Y3: A2	16.1	60	16.1	S1.1F: 105
Y3: A1	16.2	61	16.2	S1.1F: 107
BP4: 2	+12	62	+12	F5.2
BP4: 1	16.3	63	16.3	S1.1F: 137
BT1	16.4	64	16.4	S1.1F: 138
BT1	0V	65	0V	X.OV:1
PUMP (XM1.A)	4.3	66	4.3	Q5.12
PUMP (XM1.A)	0V	67	0V	X.OV
PUMP (XM1.D)	24.1	68	24.1	AB2
PUMP (XM1.D)	24.2	69	24.2	LAMP (SB2)
PUMP (XM1.D)	24.3	70	24.3	SB2/..



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Electric scheme

TERMINALS BOARD

Drawn:

Locatelli

Drawing Nr: S01-00141
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Grassobbio BG via Zanica, 17/o -Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

Design:

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Checked:

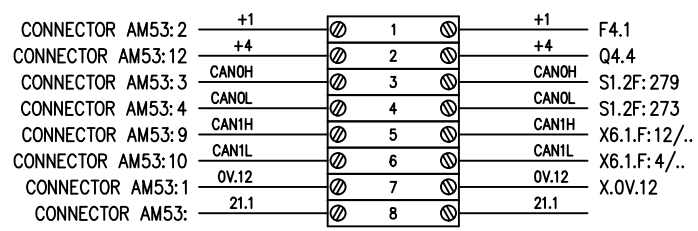
Date:

27/06/2017

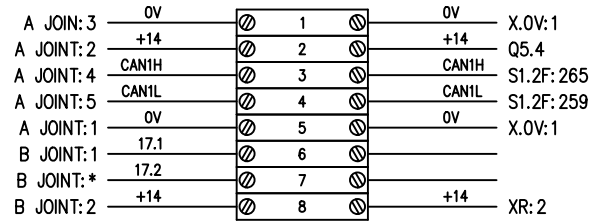
Following

34

XT



XR



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TERMINALS BOARD

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

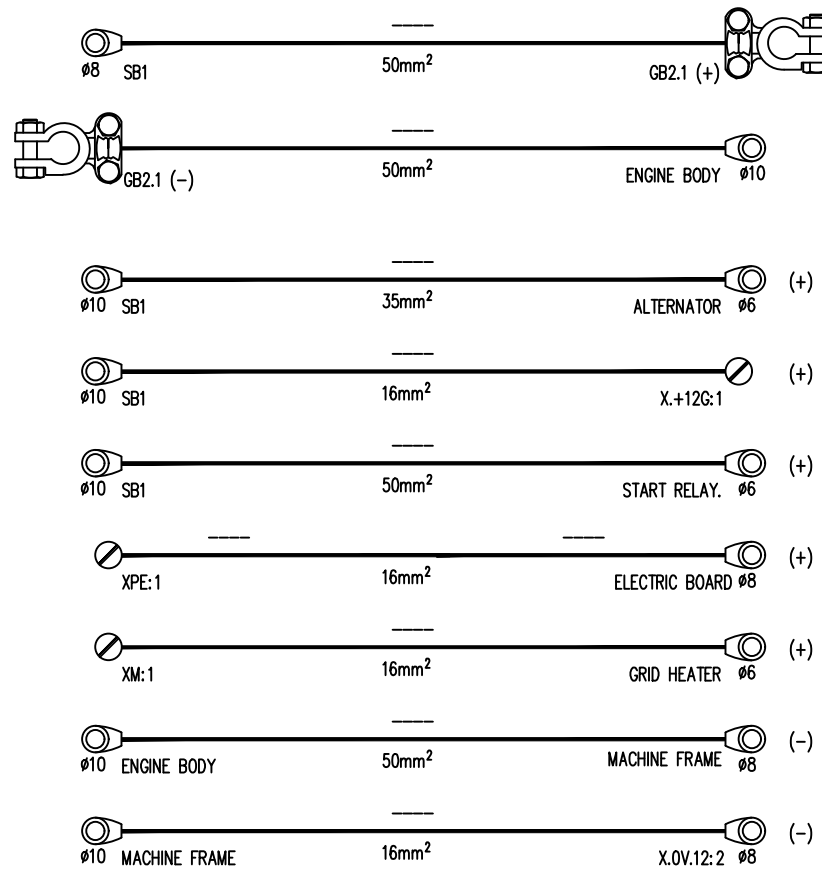
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Date: 27/06/2017

Following 35



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POWER CABLES

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Drawing Nr: S01-0141
Archive Nr: S01

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Sede di Engine Gatano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

Design: AFS 521 050

Checked:

Date: 27/06/20147

Following 36

1 2 3 4 5 6 7 8

A

A

B

B

C

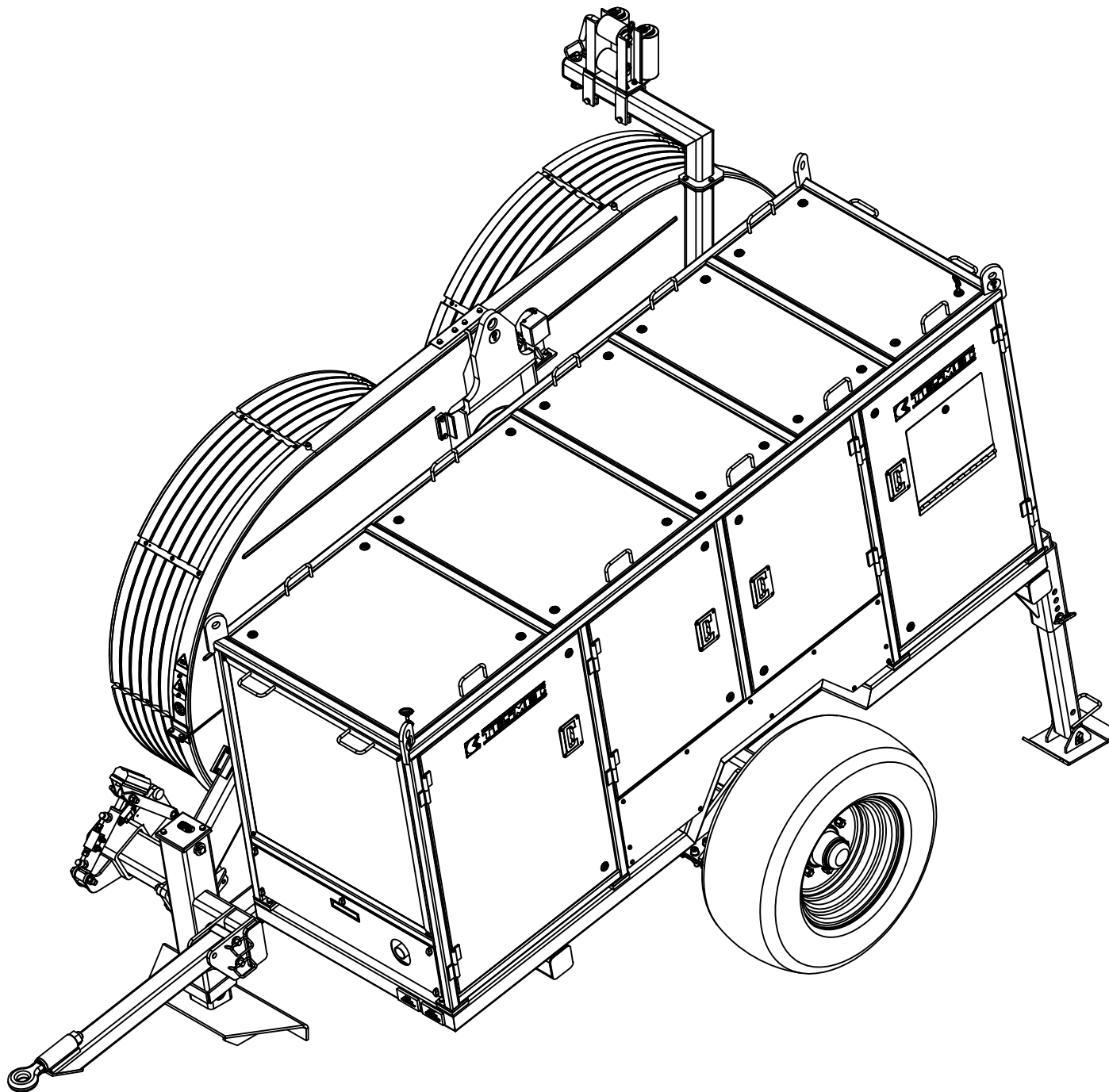
C

D

D

E

E



F

F



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Electric scheme

ASS'Y MACHINE

Drawn:

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 Sede di Endine Gaiano BG via Persegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

Design:

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Checked:

Date:


27/09/2017


Following

37

1 2 3 4 5 6 7 8

1	2	3	4	5	6	7	8
Sigla	Codice	N°	Descrizione da Archivio Materiali	Funzione Componente	Function Component		
A	V00-2225-002	4	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1				A
	V00-2225-010	16	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1				
	V00-2225-022	3	BLOCCACONTATTI - FEMMINA ARANCIONE - Nø3				
	V00-2225-039	1	CONNETTORE - Nø12POLI -FEMMINA -GRIGIO				
	V00-2225-040	1	BLOCCACONTATTI - FEMMINA ARANCIONE - Nø1				
	V00-2225-055	1	CONNETTORE - - Nø9POLI -MASCHIO -NERO -D				
B	V00-2227-018	2	CUSTODIA MOBILE- CON 2 PIOLINI- USCITAV				B
	V00-2227-158	9	CONTATTO A CRIMPARE MASCHIO -10 A SEZION				
	V00-2227-159	10	CONTATTO A CRIMPARE FEMMINA -10 A SEZION				
	V00-2227-189	20	CONTATTO A CRIMPARE SUPER SEAL SEZIONE F				
	V00-2227-190	15	TAPPO SUPER SEAL - TYCO : 4-1437284-3				
	V00-2227-205	1	CONNETTORE PORTAMASCHI - Nø 60+6 POLI -				
	V00-2227-206	18	CONTATTO A CRIMPARE MASCHIO SEZIONE FILO				
	V00-2227-207	4	CONTATTO A CRIMPARE MASCHIO SEZIONE FILO				
	V00-2227-355	2	CUSTODIA DA INCASSO -CON 1 LEVA METALLIC				
	V00-2229-046	1	PONTICELLO ISOLATO ZQV 2.5/10 X MORSETTO				
	V00-2229-048	5	PONTICELLO ISOLATO ZQV 6/2 GE - 2 POLI -				
D	V00-2229-052	5	PONTICELLO ISOLATO ZQV 2.5/2 X MORSETTO				D
	V00-2229-098	1	COPRIMORSETTO POLO POSITIVO BATTERIA -AD				
	V00-2229-099	1	COPRIMORSETTO POLO NEGATIVO BATTERIA -AD				
	V00-2229-104	1	MORSETTO BATTERIE POLO POSITIVO CONNESSI				
	V00-2229-107	10	CAPICORDA FASTON FEMMINA - LINGUETTA: 6.				
	V00-2229-111	1	MORSETTO BATTERIE POLO NEGATIVO CONNESSI				
	V00-2231-207	1	RACCORDO LGP DRITTO M63 - MATERIALEPA6.6				
	V00-2231-208	0,5	GUAINA CORRUGATA NERA - D.ES=55. IN=48MM				
	V00-2231-209	1	CONTRODADO M63X1.5 - MATERIALEPA6.6 -LE				
	V00-2231-212	0,25	GUAINA TERMORETRAIBILE - NERO D.70 /35 S				
	V00-2232-153	4	CAVO M12 DIRITTO - L. 5M - 4 FILI - PVC				

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			Design: AFS 521 050	Checked:	Archive Nr: S01	

1		2		3		4		5		6		7		8	
Sigla	Codice	N°	Descrizione da Archivio Materiali			Funzione Componente			Function Component						
A	V00-2232-155	1	CAVO M12 DIRITTO - L. 1.5M - 5 FILI - PU												
	V00-2232-156	1	CAVO M12 DIRITTO - L. 1.5M - 8 FILI - PU												
	V00-2232-157	14	CONNETTORE FORMA A (18MM) - - L.1.5M -MU												
	V00-2232-160	3	CONNETTORE DEUTSCH MDC06-2S CON CAVO E L												
	V00-2232-161	1	CONNETTORE JUNIOR TIMER - - L.5M -MURR :												
B	V00-2233-002	5	CAVO FLESSIBILE FROR - 10 X 1												
	V00-5305-036	2	GUARNIZIONE PIANA IN GOMMA STIRENE-BUTAD												
	V00-8430-088	2	TAPPO IN OTTONE X PG.11 -CEMBRE :CEM2052												
	V00-8700-087	1	PIANO TARIFFARIO ACQ. E GEST. DATI-TOP												
C	F1	V00-8401-045	1	FUSIBILE - 50A MIDIVAL ROSSO - INTERASSE			FUSIBILE GRID HEATER								
	F3.2	V00-8401-036	1	FUSIBILE A LAME 5A BEIGE - INTERASSE LAM			FUSIBILE ALIMENTAZIONE								
	F3.3	V00-8401-027	1	FUSIBILE A LAME 20 A GIALLO - INTERASSE			FUSIBILE RELE PRINCIPALE DI COMANDO								
	F3.4	V00-8401-036	1	FUSIBILE A LAME 5A BEIGE - INTERASSE LAM			FUSIBILE EGR								
	F3.5	V00-8401-026	1	FUSIBILE A LAME 15 A BLU - INTERASSE LAM			FUSIBILE G2								
	F3.6	V00-8401-011	1	FUSIBILE A LAME 3A VIOLETTO - INTERASSE			FUSIBILE PER PRESE DI SERVIZIO								
D	F4.1	V00-8401-054	1	FUSIBILE A LAME 1A NERO - INTERASSE LAME			FUSIBILE ABILITAZIONE 24V								
	F4.2	V00-8401-054	1	FUSIBILE A LAME 1A NERO - INTERASSE LAME			FUSIBILE CONVERTITORE DI TENZIONE								
	F5.2	V00-8401-073	1	FUSIBILE A LAME 2A GRIGIO - INTERASSE LA			FUSIBILE ENCODER/TRASDUTTORE DI PRESSIONE								
	F5.3	V00-8401-073	1	FUSIBILE A LAME 2A GRIGIO - INTERASSE LA			FUSIBILE 1 SCHEDA								
	F5.7	V00-8401-073	1	FUSIBILE A LAME 2A GRIGIO - INTERASSE LA			FUSIBILE 2 SCHEDA								
E	F5.8	V00-8401-054	1	FUSIBILE A LAME 1A NERO - INTERASSE LAME			FUSIBILE CARICA BATTERIA								
	GB2.1	V00-1500-003	1	BATTERIA 100AH -12V - EN750A - LUNGH.32			BATTERY								
	GB2.1	V00-2229-091	1	MORSETTO BATTERIA POLO POSITIVO FISSAGGI											
	GB2.1	V00-2229-092	1	MORSETTO BATTERIA POLO NEGATIVO FISSAGGI											
	GB2.1	V00-2229-093	1	COPRIMORSETTO POLO POSITIVO BATTERIA -AD											
F	GB2.1	V00-2229-094	1	COPRIMORSETTO POLO NEGATIVO BATTERIA -AD											
	Q3.1	V00-8401-085	1	PROTEZIONE TERMICA - 5 A - INTERASSE LAM			PROTEZIONE RELE 12V								
	Q4.3	V00-8401-090	1	PROTEZIONE TERMICA - 20 A - 32 VDC - INT			PROTEZIONE ALIMENTATORE 12-24V								
		The design and drawing are property of tesmec SpA copying and unauthorized disclosure are forbidden			Electric scheme		COMPONENTS LIST			Drawn: Locatelli		Drawing Nr: S01-00141 Archive Nr: S01		Sheet 38 of 42	
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	1	2	3	4	5	6	7	8
	Sigla	Codice	N°	Descrizione da Archivio Materiali	Funzione Componente	Function Component		
A	Q4.4	V00-8401-085	1	PROTEZIONE TERMICA - 5 A - 32 VDC - INTE	PROTEZIONE ACCENDISIGARI/TIERRA			
	Q4.5	V00-8401-131	1	PROTEZIONE TERMICA - 2 A - 32 VDC - INTE	PROTEZIONE POMPA GRASSO			
	Q5.1	V00-8401-089	1	PROTEZIONE TERMICA - 15 A - 32 VDC - INT	PROTEZIONE AUSILIARI			
	Q5.4	V00-8401-085	1	PROTEZIONE TERMICA - 5 A - 32 VDC - INTE	PROTEZIONE CONTROLLO REMOTO			
B	Q4.5	V00-8401-131	1	PROTEZIONE TERMICA - 2 A - 32 VDC - INTE	PROTEZIONE POMPA GRASSO			
	Q5.5	V00-8401-089	1	PROTEZIONE TERMICA - 15 A - 32 VDC - INT	PROTEZIONE SCHEDA TTC (CARICO)			
	Q5.6	V00-8401-089	1	PROTEZIONE TERMICA - 15 A - 32 VDC - INT	PROTEZIONE SCHEDA 2 TTC (CARICO)			
	RCANO	V00-8400-034	1	RESISTENZA 120 OHM 1/4 W - RS : 135-780	RESISTENZA CANO			
	W6.1	V00-2232-110	1	CAVO ETHERNET DI PROLUNGA RJ45 FEMM - RJ	CAVO PRESA RJ45 PER PROGRAMMAZIONE DISPLAY			
	W6.2	V00-2232-037	1	CAVO USB A-B - L. 1M	CAVO PRESA USB-B PER PROGRAMMAZIONE SCHEDE			
C	X7.2.F	V00-8401-075	1	CAPPUCCIO PER CHIAVE AVVIAMENTO - PVC MO	CONNETTORE ACCENDISIGARI			
	X10.1.F	V00-2225-021	1	CONNETTORE - - Nø3POLI -FEMMINA -GRIGIO	CONNETTORE CANO			
	X10.1.F	V00-2225-010	1	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1				
	X10.1.F	V00-2225-022	1	BLOCCACONTATTI - FEMMINA ARANCIONE - Nø3				
	X10.2.F	V00-2225-021	1	CONNETTORE - - Nø3POLI -FEMMINA -GRIGIO	CONNETTORE CAN1			
	X10.2.F	V00-2225-010	1	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1				
	X10.2.F	V00-2225-022	1	BLOCCACONTATTI - FEMMINA ARANCIONE - Nø3				
D	X10.3.F	V00-2225-021	1	CONNETTORE - - Nø3POLI -FEMMINA -GRIGIO	CONNETTORE CAN3			
	X10.3.F	V00-2225-010	1	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1				
	X10.3.F	V00-2225-022	1	BLOCCACONTATTI - FEMMINA ARANCIONE - Nø3				
	X10.4.F	V00-2227-356	1	FRUTTO PRESA Nø8 POLI -50V -10A -ILME :C	1' CONNETTORE ACCOPPIAMENTO MACCHINE			
	X10.5.F	V00-2227-357	1	FRUTTO SPINA Nø8 POLI -50V -10A -ILME :C	2' CONNETTORE ACCOPPIAMENTO MACCHINE			
E	X11.1.F	V00-2225-027	1	CONNETTORE - Nø2POLI -MASCHIO -GRIGIO -	CONNETTORE LAMPEGGIANTE			
	X11.1.F	V00-2225-002	1	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1				
	X11.1.F	V00-2225-028	1	BLOCCACONTATTI MASCHIO VERDE - Nø2POLI				
	X11.1F	V00-2225-012	1	CONNETTORE - Nø2POLI -FEMMINA -GRIGIO -	CONNETTORE LAMPEGGIANTE			
	X11.1F	V00-2225-010	1	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1				
F	X11.1F	V00-2225-013	1	BLOCCACONTATTI FEMMINE ARANCIO - Nø2POL				



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COMPONENTS LIST

Drawn: Locatelli

Drawing Nr: S01-00141
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Design: AFS 521 050

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Date: 27/06/2017

Following 40

	1	2	3	4	5	6	7	8					
	Sigla	Codice	N°	Descrizione da Archivio Materiali	Funzione Componente	Function Component							
A	X11.2.F	V00-2227-001	1	CONNETTORE - Nø 2 POLI - M - MTA : 44101	CONNETTORE SIRENA								
	X11.2.F	V00-2227-021	1	CONNETTORE PORTAFEMMINA - Nø 2 POLI - MO	CONNETTORE SIRENA								
	XA6.1.F	V00-2227-188	1	CONNETTORE VOLANTE - Nø 34 POLI - PORTAF	CONNETTORE PER E-VISION 7"								
		V00-2229-039	1	PIASTRA TERMINALE ZAP ZDU6-2 SW PER PORT									
		V00-2229-042	2	PIASTRA TERMINALE ZAP/TW ZDU10 10MMQ -1									
B		V00-2229-045	6	PIASTRA TERMINALE ZAP/TW ZDK2.5 2.5MMQ -	PIASTRA TERMINALE								
		V00-2229-051	11	TERMINALE DI FISSAGGIO ZEW 35 -WEIDMULLE	TERMINALE DI FISSAGGIO								
		V00-2229-183	2	PIASTRA TERMINALE WAP WDK10 BEIGE -WEIDM	PIASTRA TERMINALE								
		V00-2231-001	1,6	CANALETTA MODULO 20 FERITOA 8 -40 X 60	CANALINA								
		V00-2231-070	1	PRESSACAVO PASSO PG7 - MATERIALEPA6.6 -	PRESSACAVO								
C		V00-2232-147	1	CONNETTORE DA PANNELLO -USB 2.0 - TIPO A	CONNETTORE								
		V00-2232-148	1	CONNETTORE DA PANNELLO -XLR - IEC 61076-	CONNETTORE								
		V00-8401-014	1	PORTAFUSIBILI VOLANTE D.MAX CAVO 16MMQ -									
		V00-8402-079	3	ZOCOLO RELE 5 POLI CON FASCETTA DI FISS									
		V00-8410-003	1	TARGHETTA STOP - D22 - D. TARGHETTA59 -	TARGHETTA STOP PER SB10.1								
		V00-8410-099	3	SUPPORTO IN METALLO -TELEMECANIQUE :ZB4B	SUPPORTI IN METALLO PER PULSANTI								
D		V00-8410-100	2	CONTATTO NC A MOLLA -TELEMECANIQUE :ZBE1									
		V00-8410-101	2	CONTATTO NO A MOLLA -TELEMECANIQUE :ZBE1									
		V00-8410-102	1	PORTALAMPADA A LED BIANCOA 24VDC A MOLLA	PORTALAMPADA								
	A6.1	V00-8600-074	1	DISPLAY . 800X450 EVISION2 7.0" - TTCONT	DISPLAY eVision 7"								
	A8.1	V00-8600-085	1	UNITA' - ECU HY-TTC 94 DI CONTROLLO - TT	TT CONTROL								
	AM53	V00-8700-131	1	SCHEDA ACQ. E TRASM. DATI AM53 - TOPCONT	TIERRA								
E	HA11.1	V00-8401-010	1	AVVISATORE ACUSTICO -9-32V 95DB -COBO :3	AVVISATORE ACUSTICO DI EMERGENZA								
	K3.1	V00-8402-077	1	RELE -12V 1 NO -40A -HELLA :4RA 007 793	RELE DI COMANDO								
	K3.2	V00-8402-065	1	RELE' -12V 1 NO -60A -HELLA :4RA 003 43	RELE PRERISCALDAMENTO								
	K3.3	V00-8402-077	1	RELE -12V 1 NO -40A -HELLA :4RA 007 793	RELE PARTENZA MOTORE								
	K4.1	V00-8402-016	1	RELE -- -12V 2 SC -30A -FINDER :66.82.9.0	RELE ABILITA 24V								
F		V00-8402-016	1	RELE -- -12V 2 SC -30A -FINDER :66.82.9.0	RELE ALIMENTA ELETTROVALVOLE DI TENSIONE								
				The design and drawing are property of tesmec SpA copying and unauthorized disclosure are forbidden		Electric scheme COMPONENTS LIST		Drawn: Locatelli Design: AFS 521 050		Drawing Nr: S01-00141 Archive Nr: S01		Sheet 40 of 42 Following 41	
		Grassobio BG via Zanica, 17/o -Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445 Sede di Endine Gaiano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375											

	1	2	3	4	5	6	7	8
	Sigla	Codice	N°	Descrizione da Archivio Materiali	Funzione Componente	Function Component		
A	K10.1	V00-8402-028	1	RELE -24V 2 SC -8A -FINDER :46.52.9.024	1° RELE INTERFACCIA PULSANTE ARRESTO			
	K10.1	V00-8402-020	1	MODULO DIODO + LED -6-24V DC/AC -FINDER				
	K10.1	V00-8402-039	1	ZOCCOLO RELE 2SC MORSETTOA MOLLA MONTAGG				
B	K10.2	V00-8402-028	1	RELE -24V 2 SC -8A -FINDER :46.52.9.024	2° RELE INTERFACCIA PULSANTE ARRESTO			
	K10.2	V00-8402-020	1	MODULO DIODO + LED -6-24V DC/AC -FINDER				
	K10.2	V00-8402-039	1	ZOCCOLO RELE 2SC MORSETTOA MOLLA MONTAGG				
	K11.1	V00-8402-028	1	RELE -24V 2 SC -8A -FINDER :46.52.9.024	RELE SEGNALE ALLARME			
	K11.1	V00-8402-020	1	MODULO DIODO + LED -6-24V DC/AC -FINDER				
	K11.1	V00-8402-039	1	ZOCCOLO RELE 2SC MORSETTOA MOLLA MONTAGG				
C	K11.2	V00-8402-028	1	RELE -24V 2 SC -8A -FINDER :46.52.9.024	RELE ACCENDI MOTORE			
	K11.2	V00-8402-020	1	MODULO DIODO + LED -6-24V DC/AC -FINDER				
	K11.2	V00-8402-039	1	ZOCCOLO RELE 2SC MORSETTOA MOLLA MONTAGG				
	K11.3	V00-8402-028	1	RELE -24V 2 SC -8A -FINDER :46.52.9.024	RELE SPEGNI MOTORE			
	K11.3	V00-8402-020	1	MODULO DIODO + LED -6-24V DC/AC -FINDER				
	K11.3	V00-8402-039	1	ZOCCOLO RELE 2SC MORSETTOA MOLLA MONTAGG				
D	KT4.1	V00-8402-081	1	RELE TEMPORIZZATORE MODULARE MULTIFUNZIO	TEMPORIZZATORE PER RITARDO DISABILITA 24V			
	S1.1F	V00-8600-087	1	CAVO - 3 M - TTCONTROL : 10373 PRECABLAT	CONNETTORE 52 PIN SCHEDE TTC94			
	S1.2F	V00-8600-087	1	CAVO - 3 M - TTCONTROL : 10373 PRECABLAT	CONNETTORE 28 PIN TTC94			
	S2.1F	V00-8600-087	1	CAVO - 3 M - TTCONTROL : 10373 PRECABLAT	CONNETTORE 52 PIN SCHEDE TTC94 (OPT)			
	S2.2	V00-8410-104	1	SELETORE A CHIAVE - ESTRAZIONE A SX - N	SELETORE A CHIAVE ACCENSIONE			
	S2.2F	V00-8600-087	1	CAVO - 3 M - TTCONTROL : 10373 PRECABLAT	CONNETTORE 28 PIN TTC94 (OPT)			
E	SB1	V00-8401-095	1	INTERRUTTORE STACCABATTERIA -12-24V -225	STACCABATTERIA			
	SB10.1	V00-8420-001	1	PULSANTE EMERGENZA - D. PULSANTE:22 MM -	PULSANTE ARRESTO MACCHINA			
	SB11.1	V00-8410-103	1	PULSANTE LUMINOSO D.22 BIANCO - IP69K -T	PULSANTE LUMINOSO			
	X0V.12	V00-2229-182	1	MORSETTO DOPPIO PASSANTE WDK10 SEZIONE F	MORSETTO 0V.12			
	X1	V00-2229-044	2	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO			
F	X1	V00-2229-182	4	MORSETTO DOPPIO PASSANTE WDK10 SEZIONE F	MORSETTO			
	X2	V00-2229-044	65	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO			



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Electric scheme

COMPONENTS LIST

Drawn: Locatelli

Drawing Nr: S01-00141
Archive Nr: S01

Sheet 41 of 42

Grassobbio BG via Zanica, 17/o - Italy - Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli - Italy - tel: +39 035 825024 fax: +39 035 826375

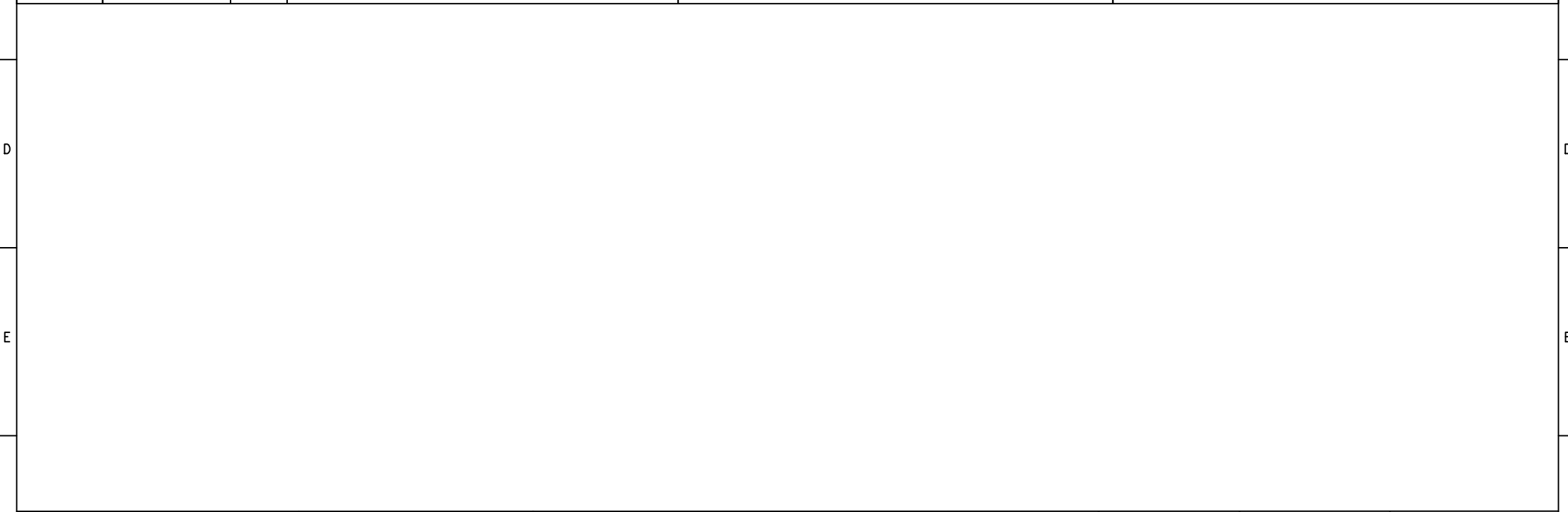
Design: AFS 521 050

Checked:

Date: 27/06/2017

Following 42

	1	2	3	4	5	6	7	8
	Sigla	Codice	N°	Descrizione da Archivio Materiali	Funzione Componente	Function Component		
A	X.OV	V00-2229-044	1 (6)	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO OV			
	X.+12G	V00-2229-182	1	MORSETTO DOPPIO PASSANTE WDK10 SEZIONE F	MORSETTO +12G			
	XC	V00-2229-044	9	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO PER CONNETTORE SERVICE			
	XF	V00-2229-039	20	PIASTRA TERMINALE ZAP ZDU6-2 SW PER PORT	MORSETTO PORTAFUSIBILE			
	XM	V00-2229-041	1	MORSETTO PASSANTE A MOLLA ZDU 10 SEZIONE	MORSETTO GRID HEATER			
B	XM	V00-2229-044	22	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO			
	XPE	V00-2229-064	1	MORSETTO DI TERRA PASSANTE A MOLLA ZPE 1	MORSETTO TERRA			
	XR	V00-2229-044	8	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO RICEVENTE			
	XT	V00-2229-044	8	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO TIERRA			
	F3.7	V00-8401-028	1	FUSIBILE A LAME 30A VERDE - INTERASSE LA	FUSIBILE PER RISCALDATORE			
	M (PUMP)	V00-4550-001	1	POMPA GRASSO -2Kg -12/24V BRAVO -DROPSA	POMPA GRASSO (OPT)			
C	V1	V00-8400-099	1	DIODO P600M - 6 A - 1000 V	DIODO			
	R1	V00-8400-047	1	RESISTENZA 47 ohm 6 W - RS : 485-2754	RESISTENZA PER DIODO			



ALARM LIST DESCRIPTION

ID MACHINE	DESCRIPTION ALARM OR WARNING
ID520193	Monitor - Card S1 - Can Comunication Fault
ID520194	Monitor - Card S2 - Can Comunication Fault
ID520195	Monitor - Card S3 - Can Comunication Fault
ID520196	Monitor - Card S4 - Can Comunication Fault
ID520197	Monitor - Card S5 - Can Comunication Fault
ID520198	Monitor - Radio Stringing - CanComunicationFault
ID520224	Radio Stringing Receiver - CanComunicationFault
ID520225	Radio Stringing - CanComunicationFault
ID520226	Radio Stringing - Radio Switch Or Joystick Not In Middle Position
ID520227	Radio Stringing - Emergency Push Button Pressed
ID520228	Emergency Push Button Pressed
ID520229	Oil - Temperature Too High
ID520230	Return Oil Filter Obstructed
ID520231	Remote Emergency Push Button Pressed
ID520232	Error on emergency relays
ID520233	Oil - Pressure Too High
ID520234	Over Max Rpm
ID520235	Engine Oil Pressure Too High
ID520236	Engine Water Temperature Too High
ID520237	Connected machines are not of the same model
ID520239	Connection With Machine ID 1 Fault
ID520240	Connection With Machine ID 2 Fault
ID520241	Connection With Machine ID 3 Fault
ID520242	Connection With Machine ID 4 Fault
ID520249	Engine - Error Air Cleaner
ID520250	Engine - Battery Not In Charge
ID520251	Engine - Temperature Too Cold
ID520252	Alarm From Machine Connected - ID 1
ID520253	Alarm From Machine Connected - ID 2
ID520254	Alarm From Machine Connected - ID 3
ID520255	Alarm From Machine Connected - ID 4
ID520256	Warning From Machine Connected - ID 1
ID520257	Warning From Machine Connected - ID 2
ID520258	Warning From Machine Connected - ID 3
ID520259	Warning From Machine Connected - ID 4
ID520260	Stringing Not Permitted Because Bypass Is Active On Othe Connected Machine
ID520288	S1 - Eeprom Error
ID520289	S1 - Internal Temperature
ID520290	S1 - Battery Value
ID520298	BW1 Speed Joystick Fault

ALARM LIST DESCRIPTION

ID520299	BW1 Pull Set Potentiometer Fault
ID520300	RW1 Pull Set Potentiometer Fault
ID520301	BW1 Boost Pump Pressure - TooLow
ID520302	BW1 Boost Pump Oil Filter Obstructed
ID520303	BW1 Speed Joystick Initial Position Not Correct
ID520304	BW1 Pull Max
ID520305	BW1 Stringing Mode - One Output Pin Card Fault
ID520306	BW1 Stringing Mode - Initial Rpm Value Incorrect
ID520307	BW1 Stringing Mode - Pull Valve Set Error
ID520308	BW1 Stringing Mode - Auxiliary Pull Value Not Correct
ID520309	BW1 Stringing Mode - Minimum Pressute To Unlock Brake Incorrect
ID520310	BW1 Stringing Mode - Connected Bull Wheel Not Ready
ID520311	BW1 Stringing Mode - Rotation Valve Regulation Fault To Unlock Brake
ID520312	BW1 Stringing Mode - One Proportional Valve Not Zero Value
ID520313	BW1 Auxliary Valve Already Used to Other Functions
ID520314	BW1 Rope Locker Close
ID520315	BW1 StringingMode - Rpm Not Reached For Tensioner
ID520316	BW1 Gear Box Switch Inconsistent
ID520317	BW1 Lock/Unlock Negative Brake Switch Not In Correct Position
ID520318	BW1 Auxiliary Pull Value Low
ID520319	BW1 Pull Pressure Too High For Release
ID520321	BW1 Release Function Not Permitted
ID520322	BW1 Low Tensioner Active: Function Not Permitted
ID520323	BW1 Negative Brake Closure Requested
ID520324	BW1 Stringing Mode - Auxiliary Pull Value Already In Use
ID520325	BW1 StringingMode - Switch Low Tensioner Not Correct
ID520326	BW1 Rotation Not Concorde With That Of BW Reference
ID520327	BW1 Low Tensioner Set Different From Other Bull Wheel
ID520328	BW1 ReelWinder Encoder Error
ID520329	BW1_Fast Speed Selection Already In Use
ID520330	BW1_Release Function Not Permitted
ID520331	BW1_Electrical Coupling Setting Non Available
ID520332	BW1_Recovery/Release Selector On Radio Not In Correct Position
ID520333	BW1_Selettore Bloccafune Non Abilitato
ID520334	BW1 Rotazione encoder discorde tra cabestani collegati meccanicamente
ID520416	S2 - Eeprom Error
ID520417	S2 - Internal Temperature
ID520418	S2 - Battery Value
ID520426	BW2 Speed Joystick Fault
ID520427	BW2 Pull Set Potentiometer Fault
ID520428	RW2 Pull Set Potentiometer Fault

ALARM LIST DESCRIPTION

ID520429	BW2 Boost Pump Pressure - TooLow
ID520430	BW2 Boost Pump Oil Filter Obstructed
ID520431	BW2 Speed Joystick Initial Position Not Correct
ID520432	BW2 Pull Max
ID520433	BW2 Stringing Mode - One Output Pin Card Fault
ID520434	BW2 Stringing Mode - Initial Rpm Value Incorrect
ID520435	BW2 Stringing Mode - Pull Valve Set Error
ID520436	BW2 Stringing Mode - Auxiliary Pull Value Not Correct
ID520437	BW2 Stringing Mode - Minimum Pressure To Unlock Brake Incorrect
ID520438	BW2 Stringing Mode - Connected Bull Wheel Not Ready
ID520439	BW2 Stringing Mode - Rotation Valve Regulation Fault To Unlock Brake
ID520440	BW2 Stringing Mode - One Proportional Valve Not Zero Value
ID520441	BW2 Auxiliary Valve Already Used to Other Functions
ID520442	BW2 Rope Locker Close
ID520443	BW2 Stringing Mode - Rpm Not Reached For Tensioner
ID520444	BW2 Gear Box Switch Inconsistent
ID520445	BW2 Lock/Unlock Negative Brake Switch Not In Correct Position
ID520446	BW2 Auxiliary Pull Value Low
ID520447	BW2 Pull Pressure Too High For Release
ID520448	BW2 Pull Pressure No Reached
ID520449	BW2 Release Function Not Permitted
ID520450	BW2 Low Tensioner Active: Function Not Permitted
ID520451	BW2 Negative Brake Closure Requested
ID520452	BW2 Stringing Mode - Auxiliary Pull Value Already In Use
ID520453	BW2 Stringing Mode - Switch Low Tensioner Not Correct
ID520454	BW2 Rotation Not Concorded With That Of BW Reference
ID520455	BW2 Low Tensioner Set Different From Other Machine
ID520456	BW2 ReelWinder Encoder Error
ID520457	Fast Speed Selection Already In Use
ID520458	BW2 Release Function Not Permitted
ID520459	BW2 Electrical Coupling Setting Non Available
ID520460	BW2 Recovery/Release Selector On Radio Not In Correct Position
ID520461	BW2_Selettore Bloccafune Non Abilitato
ID520462	BW2 Rotazione encoder discorde tra cabestani collegati meccanicamente
ID520480	S1 - Pin 103 ReelWinder - Down Valve (BW1)
ID520481	S1 - Pin 104 Engine Diesel - Stop Relay
ID520482	S1 - Pin 105 BW1 Auxiliary Services - Pull Proportional Valve
ID520483	S1 - Pin 106 BW1Rotation - Valve Release
ID520485	S1 - Pin 108 ReelWinder - LockUnlock Brake Valve (BW1)
ID520486	S1 - Pin 111 Rele' Di Emergenza 1
ID520488	S1 - Pin 113 Engine - Oil Pressure

ALARM LIST DESCRIPTION

ID520490	S1 - Pin 115 ReelWinder - Rise Valve (BW1)
ID520491	S1 - Pin 116 Engine Diesel - Start Relay
ID520492	S1 - Pin 117 BWRotation - Proportional Pull Valve (BW1)
ID520493	S1 - Pin 118 BWRotation - Valve Recovery (BW1)
ID520494	S1 - Pin 119 BWRotation - Feedback Proportional Pull Valve (BW1)
ID520495	S1 - Pin 120 BWRotation - Feedback Proportional Release- Recovery Valve (BW1)
ID520496	S1 - Pin 123 Relè Di Emergenza 2
ID520500	S1 - Pin 129 Warning Buzzer Relay
ID520501	S1 - Pin 130 RW - Lock Unlock Brake Valve (BW1)
ID520502	S1 - Pin 131 Rope Locker - Lock Valve (BW1)
ID520503	S1 - Pin 132 Front Stabilizer Valve - Machine Down
ID520504	S1 - Pin 137 Auxiliary Services - Pull Trasducer (BW1)
ID520505	S1 - Pin 138 Oil - Temperature Trasducer
ID520506	S1 - Pin 139 BWRotation - Pull Trasducer (Input Motor) (BW1)
ID520508	S1 - Pin 141 Oil Cooler - Fan Valve
ID520509	S1 - Pin 142 BW Rope Locker - UnLock Valve (BW1)
ID520510	S1 - Pin 143 Front Stabilizer Valve - Machine Rise
ID520511	S1 - Pin 144 BWRotation - Lock Unlock Brake Valve (BW1)
ID520512	S1 - Pin 149 BWRotation - Pull Trasducer (Output Motor) (BW1)
ID520513	S1 - Pin 150 Fuel Level - Sensor
ID520515	S1 - Pin 152 Boost Pump Pressure - Pull Trasducer (BW1)
ID520529	S1 - Pin 103 Back BW1 Side Stabilizer - Down Valve
ID520530	S1 - Pin 103 Engine Diesel - PreHeating Relay
ID520531	S1 - Pin 104 Engine Diesel - Decrease Rpm Relay
ID520532	S1 - Pin 104 Back BW1 Side Stabilizer - Rise Valve
ID520533	S1 - Pin 108 Alarm Relay
ID520536	S1 - Pin 115 Differential Valve
ID520537	S1 - Pin 115 Engine - Starter Relay
ID520539	S1 - Pin 116 Engine Diesel - Increase Rpm Relay
ID520544	S1 - Pin 130 ReelWinder - Rotation Valve (BW1)
ID520545	S1 - Pin 108 Engine Diesel - Stop Relay
ID520546	S1 - Pin 104 Oil Cooler 2 - Fan Valve
ID520553	S1 - Pin 129 ReelWinder - Rotation Valve (BW1)
ID520562	S2 - Pin 103 Back BW2 Side Stabilizer Valve - Machine Down
ID520563	S2 - Pin 104 Back BW2 Side Stabilizer Valve - Machine Rise
ID520564	S2 - Pin 105 BW2 Auxiliary Services - Pull Proportional Valve
ID520565	S2 - Pin 106 BW2 Rotation - Proportional Valve Release
ID520568	S2 - Pin 111 Emergency Realy 01
ID520572	S2 - Pin 115 Press - Valve On/Off
ID520573	S2 - Pin 116 Oil Cooler - Proportional Fan Valve
ID520574	S2 - Pin 117 BWRotation - Proportional Pull Valve (BW2)

ALARM LIST DESCRIPTION

ID520575	S2 - Pin 118 - 106 BWRotation - Pump Proportional Valve (BW2)
ID520578	S2 - Pin 123 Emergency Realy 02
ID520582	S2 - Pin 129 Fast Speed Rotation - Valve (BW2)
ID520583	S2 - Pin 130 ReelWinder - Rotation Valve (BW2)
ID520584	S2 - Pin 131 Rope Locker - Lock Valve (BW2)
ID520585	S2 - Pin 132 Fast Speed Rotation - Valve (BW1)
ID520586	S2 - Pin 137 Auxiliary Services - Pull Trasducer (BW2)
ID520588	S2 - Pin 139 BWRotation - Pull Trasducer (Input Motor) (BW2)
ID520590	S2 - Pin 141 Slow Speed Rotation - Valve (BW2)
ID520591	S2 - Pin 142 BW Rope Locker - UnLock Valve (BW2)
ID520592	S2 - Pin 143 Slow Speed Rotation - Valve (BW2)
ID520593	S2 - Pin 144 BWRotation - Lock Unlock Brake Valve (BW2)
ID520594	S2 - Pin 149 BWRotation - Pull Trasducer (Output Motor) (BW2)
ID520597	S2 - Pin 152 Boost Pump Pressure - Pull Trasducer (BW2)
ID520610	S2 - Pin 132 Hydraulic differential n°1
ID520611	S2 - Pin 141 Hydraulic differential n°2
ID520612	S2 - Pin 143 Hydraulic differential n°3