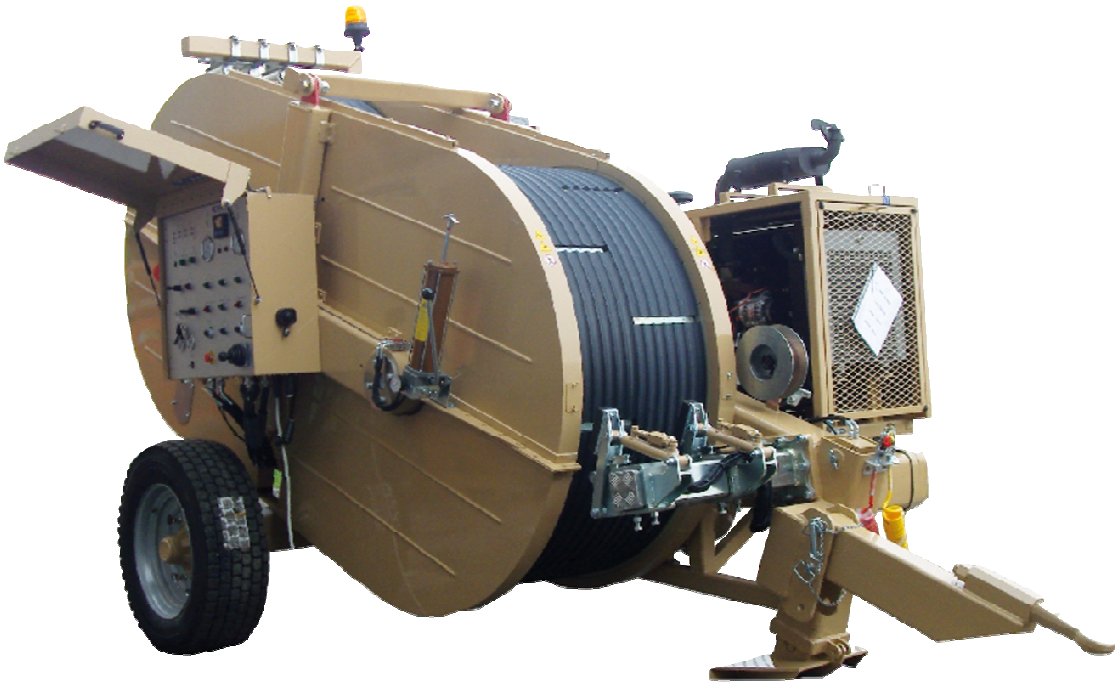
TESMEC

Installation, operation and maintenance

Handbook



Tensioner Model: FRB616

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.

ATENCIÓN

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 ТЕСМЕК.

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Tel. 0039 / 035 / 4232911
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TENSIONER

Model: FRB616

Serial number

.....

Manufacturing year

.....

Working order

.....

USE AND MAINTENANCE INSTRUCTIONS

CE

1. GENERAL INDEX

Page

2. GENERAL DATA AND PRESCRIPTIONS

2.1 MANUFACTURER

TESMEC S.p.A.

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e-mail: service-stringing@tesmec.it
parts-stringing@tesmec.it
info@tesmec.it

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 TYPOLOGY AND USING FIELD

The machine mod. FRB616 is suitable for the simultaneous drive of 2 conductors with a max. diam. of 46 mm with two couple of bull-wheels at independent control.
The conductors' braking is obtained by the pressure regulation in the hydraulic circuit.
This system guarantees, besides a remarkable sensibility, a nearly constant braking by varying the stringing speed change.

The power transmission to the large groove bull-wheels for the functioning as puller is transmitted through a close hydraulic circuit with a variable delivery pump and fixed displacement motor.

Two hydraulic vacuum brakes stop automatically the two large groove bull-wheels should the work be interrupted and a damage in the hydraulic circuit occur.

The tensioner is equipped with connections for anchoring and lifting; the frame is equipped with a rigid axle for towing on road at 30 km/hour and hand wheel brake and front lifting jack.

2.4 PERFORMANCES

Functioning as a tensioner

	1 conductor	*2 conductors*
Max. tension	140 kN	2 x 70 kN
Max. speed	5 km/h	5 km/h

Functioning as a puller

Max. tensions	140 kN	2 x 70 kN
Max. speed	0.7 km/h	0.7 km/h

ATTENTION: the use with conductors with diameter lower than the max. admitted one, causes the reduction of the max. applicable pull in comparison with the min. working load granted by conductor.

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

2.5 TECHNICAL CHARACTERISTICS

Bull-wheels nominal diameter:	1700 mm
Max. conductor diameter:	46 mm
Diesel engine:	46 kW – 2600 rpm
Electric system:	24 V
Transmission:	2 open hydraulic circuits with hydraulic oil cooling
Safety brake:	2 negative and self-acting type
Dynamometer:	2 hydraulic type
Meter-counters:	2 electronic type
Axle:	rigid type with mechanical parking brake for towing at max. speed of 30-km/h
Dimensions:	length - 4295 mm width - 2500 mm height - 2920 mm
Mass:	7500 kg

2.6 ACOUSTIC EMISSION

Level of continuous sound pressure to the operator seat (UNI 9432) Lep = 85 dB(A)

2.7 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-authorised 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.

2.8 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 on obstacle for the operator work.
g. The operator **must absolutely avoid** the direct inhalation of the exhaust gas of the endothermic engine.

2.9 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. Authorised 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.

2.10 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.

2.11 CONDITION OF USE

a. Temperature: from -10°C to +45°C (in standard configuration).
b. Relevant moisture: from 30% to 90% $\pm$ 5%.
c. Weather conditions: any (in line with working conditions).
d. Natural and/or artificial lighting of the working site.

2.12 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.

2.13 USE NOT ALLOWED

The machine **must not be used**:
a. lifting persons and/or goods
b. in grounds on which the machine cannot be positioned and anchored in a proper way
c. in areas with brushwood or other materials presence that can be easily set on fire
d. in closed/unventilated sites or, however, not sufficiently airy (tunnel or similar)
e. in sites with presence of gas that can be easily set on fire or explosives
f. in sites with presence of explosive materials
g. on aircraft, crafts, floating platforms and similar
h. for structure demolition, shafts felling or similar
i. for pulling flexible elements that can be highly lengthening, which allow elastic power accumulation
j. with ropes or joints having a bigger diameter than the one specified in present manual
k. with inhibited and broken safety devices installed on the machine
l. 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.

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

2.14 RESPONSIBILITY

The use of the machine for scopes different from those foreseen on paragraph 2.3 (Typology and using field), even if not well described in this manual, has to be considered extremely **dangerous** and then **forbidden.**

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 authorised by the manufacturer in a written acceptance.

2.15 APPLIED NORMS

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

2006/42/CE Norm of the European Parliament and Council referring to the laws of the machines member States.

2004/108/CE Norm of the European Council referring to the laws of the electromagnetic compatibility member States.

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

2006/42/CE Norm of the European Parliament and Council referring to the laws of the machines member States.

2004/108/CE Norm of the European Council referring to the laws of the electromagnetic compatibility member States.

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3. TRANSPORT AND POSITIONING INSTRUCTIONS

3.1 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 (table 1, pos. 2).

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

⚠ **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.

3.2 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.

3.3 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.

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

3.4 ASSEMBLING OPERATIONS

Assemble the tyres in the suitable seats.
Assemble the entry rollers in the suitable seats (see tables 4 and 5).

3.5 TRANSPORT ON TRAILER

Machine is not suitable for road towing.

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 (table 1, pos. 12) 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.

To connect the towing unit to the towing eye of the drawbar, lift the rear stabiliser (table 1, pos. 11), lift the plough lifting jack (table 1, pos. 14) using the control on the panel (table 4, pos. 4).

Check the inflation pressure of tyres (7 bar).

During trailer machine transport operations is nobody must stay in the machine itself.

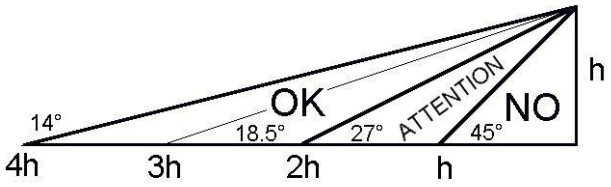
ATTENTION: dangerous situations during towing if the tyres inflation pressure and the speed limit are not respected may happen.

When transporting on truck or trailer, verify if the machine has been fixed on the platform with nailed wedges and/or metal brackets and/or tie rods.

3.6 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 130% 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, the machine cannot be used.

Machine anchoring sequence is the following:

a. keep the wheel brakes of the machine disengaged.
b. anchor the machine to the ground using adequate ropes and turnbuckles, connecting the ears (table 2, pos. 4), located at the rear of the machine, to the anchoring stakes.
   The ropes must form an angle with the direction of the pull as shown on table 2, to allow the machine to react to possible transverse forces as well.
c. load the cables on the bull-wheels as shown on tables 2-3.

⚠ **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.**

d. put the anchoring ropes under tension using the suitable turnbuckles.
e. block the machine brakes acting on the special handle (table 1, pos. 10).

⚠ **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 radiator (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 foreseen a grounding device on the towing rope or on the conductors.

4. INSTRUCTION FOR USE

4.1 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 connections with the power unit are in good conditions
c. if the machine liquids levels are in conformity with the indications in maintenance chapter
d. if the anchoring conditions are in conformity with the indications of this manual.

4.2 CONTROLS

Position and meaning of the elements on the control board are described on table 4 enclosed.

4.3 PRELIMINARY OPERATIONS

a. Load the rope on the bull-wheels as shown on tables 2 and 3 and place the intake rollers for rope guiding in the most suitable position.

Tensioner mod. FRB616

Recommended number of grooves to be used

Pulling force in every conductor (kN)	One conductor	Two conductors		
5 ÷ 45	5	5		
46 ÷ 70	6	6		
71 ÷ 90	8			
91 ÷ 140	9			

N.B.: with Conductor or OPGW recommended number is Ok; with rope, if particulary greased, number of groove should be one or two more

ATTENTION: do not use excessively lubricated or greased ropes because possible adherence problems on the bull-wheels with a consequent sliding of the ropes themselves may arise.

b. Lubricate the gears before each starting of the machine using the proper greasers (table 2, pos. 2).

ATTENTION: this operation must be made only with stopped machine and without applied loads.

⚠ **DANGER:** please pay attention to the risk to be squeezed during the operations above described.

4.4 MACHINE SET-UP

Before the use, the machine must be set in stand-alone using mode, operating on the control panel (table 4).

a. insert and turn the ignition key (table 4, pos. 1) in "1" position
b. wait up to the multifunction display switch on (table 4, pos. 19)
c. on the electronic multifunction display press the (✱) key
d. on the screen page "MACHINE ID:" set the number "1" by using the up (▲) or down (▼) key press the return key (↵) to save the settings

NOTE: in case of stand-alone using mode the ID of the machine must always be set at 1

e. on the screen page "BULL WHEELS PIN CONNECTION?" set the "YES" or "NO" option, depending on the configuration of use by using the up (▲) or down (▼) key, press the return key (↵) to save the settings.

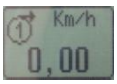
When the machine is used in stand-alone configuration the two plug connectors must be closed with the related caps

4.5 ELECTRONIC MULTI-FUNCTIONS DISPLAY PAGES

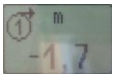
The electronic multifunction display shows 4 working pages:

1. METER COUNTER & SPEED PAGE

This page shows the speed and the meter counter for each independent circuit

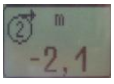


speed of capstan nr.1



meter counter of capstan nr.1

speed of capstan nr.2



meter counter of capstan nr.2

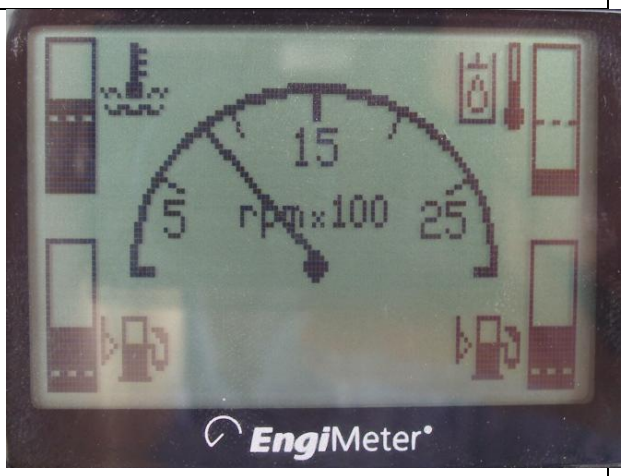
2. RPM & DIESEL ENGINE PAGE

This page shows the rpm of the diesel engine in the center and 4 percentage check icons on the edges:


diesel engine water cooling temperature

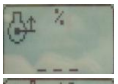

hydraulic oil temperature


diesel engine fuel level



3. DIESEL ENGINE DATA PAGE

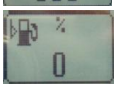
This page shows 4 percentage check icons of diesel engine data:



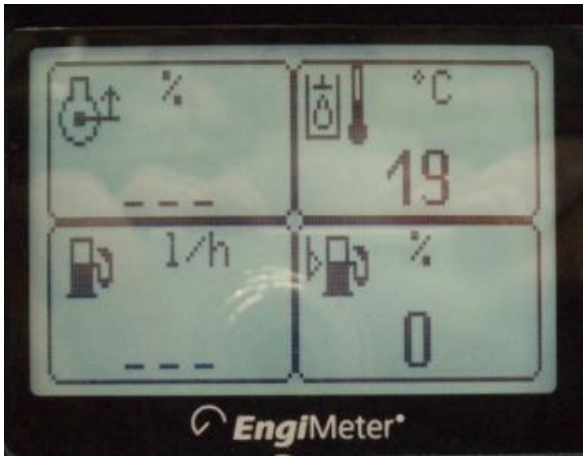
diesel engine torque output

hydraulic oil temperature

diesel engine fuel consumption



diesel engine fuel level

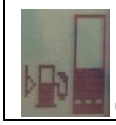


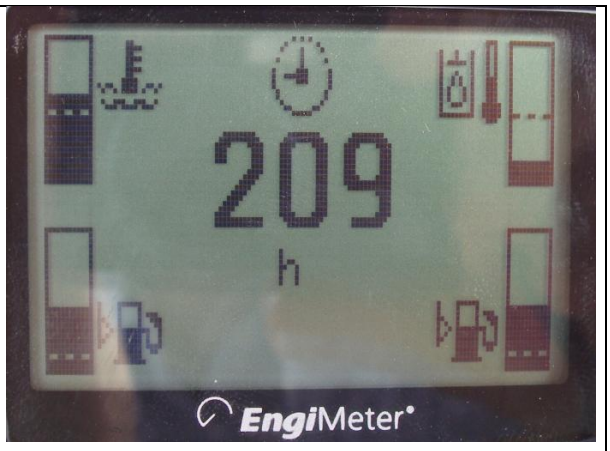
4. HOUR COUNTER PAGE

This page shows the working hour of the diesel engine in the center and 4 percentage check icons on the edges:

 diesel engine water cooling temperature

 hydraulic oil temperature

 diesel engine fuel level



Switch from one page to the other one by using the up (▲) or down (▼) key

4.6 MACHINE START-UP

a. Open the valve completely (table 4, pos. 6); check if the joystick (table 4, pos. 11) is on central neutral position and if the selectors (table 4, pos. 13,17) are on →|← position (BLOCKED).
b. To start the Diesel engine insert and maintain leftwards the key until the light turns off (table 4, pos. 42). Turn rightwards the key (table 4, pos. 1) Push the key (table 7, pos. 1) and turn it rightwards once again, at the same time lower the lever (table 4, pos. 2).
c. The Diesel engine must always be on movement, even if working as tensioner or as puller.
   The engine rpm can be regulated using the accelerator (table 4, pos. 3).
   Before starting the work (especially if working in cold climates), heat the hydraulic oil by letting the engine idle for 15 minutes and closing slightly the valve (table 4, pos. 6) till a pressure of 50 bar can be read on the manometers (table 4, pos. 7).

ONCE THE DIESEL ENGINE IS STARTED, AND WITH THE BULL-WHEELS IN MOTION, IT IS NECESSARY TO CONTROL THAT:

a. the filter lamps (table 4, pos. 29,30,34) not indicate the filters clogging when the oil has reached the working temperature.
   However, it may happen when starting the machine (especially with low external temperatures) that they indicate the filters clogging even if it has not happened.
   In this case, wait for the lamps to turn off before let the bull-wheels run.
b. if you want to work by reel elevators it is important to connect the quick release couplings (table 6, pos. 1-3, 2-4) to the machine when it is not functioning, or the pressure in the circuits makes difficult this manoeuvre.
c. after connecting the reel elevators, close the max. relief valves (table 4, pos. 6) till on the manometer can be read a pressure of 40 bar (table 4, pos. 7) sufficient to tighten the cable or the rope.

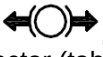
⚠ **NOTE: when starting a cold machine, after heating the hydraulic oil as previously described, begin stringing operations limiting at 30% the maximum working performances for at least the first 15 minutes.**

4.7 MACHINE USE FOR THE INDEPENDENT BRAKING OF RIGHT AND LEFT BULL-WHEELS

a. Check if the connecting pins (table 5) of the bull-wheels are disengaged. If not, disengage them.
b. Move the selector (table 4, pos. 38, 39) towards left .
c. Move the selectors (table 4, pos. 13,17) towards  position (BLOCKED).
d. Move the selector (table 4, pos. 22) towards left
e. Move the joystick (table 4, pos. 11) towards central neutral position.
f. Move the selectors (table 4, pos. 13, 17) towards  position (FREE).
Now the bull-wheels can rotate freely.
g. Use the potentiometers (table 4, pos. 12,16) to separately brake right and left bull-wheels.
The circuits' pressure, proportional to the pull, can be read on the manometers (table 4, pos. 14,18).
A suitably graduated ring nut mounted outside them can read the conductors tension.

PROHIBITION: is not possible to low or lift the joystick (table 4, pos. 11) from central neutral position and move the selectors (table 4, pos. 38, 39) rightwards, in this phase . Can damage seriously the machine.

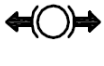
4.8 MACHINE USE FOR THE SIMULTANEOUS BRAKING OF RIGHT AND LEFT BULL-WHEELS

a) Connect right and left bull-wheels by the suitable pins (table 6).
b) Move the selectors (table 4, pos. 13,17) towards  position (BLOCKED).
c) Move the selector (table 4, pos. 22) towards right.
d) Move the joystick (table 4, pos. 11) towards central neutral position.
e) Move the selector (table 4, pos. 17) towards  position (FREE).
Now the bull-wheels can rotate freely. The selector (table 4, pos. 13) is not connected.
f) Use the potentiometer (table 4, pos. 16) to brake right and left bull-wheels.
This potentiometer controls the two circuits while the other potentiometer (table 4, pos. 12) is not connected.
The circuits' pressure, proportional to the pull, can be read on the manometers (table 7, pos. 14,18).
The cables tension can be read by a suitably graduated ring nut mounted outside them.

PROHIBITION: is not possible to low or lift the joystick (table 4, pos. 11) from central neutral position and move the selectors (table 4, pos. 38, 39) rightwards, in this phase . Can damage seriously the machine.

4.9 MACHINE STOP

To stop the machine after the use as tensioner and after the stop of the puller, act as follows:
a. turn the potentiometers (table 4, pos. 12,16) in clockwise direction till the bull-wheels stop.
b. move the selectors (table 4, pos. 13,17) towards  position (BLOCKED) to lock the bull-wheels. Before carrying out this manoeuvre it is better to wait to the bull-wheels stop if it is not an emergency intervention; in this way the vacuum brakes damage is avoid.

NOTE: if the Diesel engine stops for unknown reasons, the vacuum brakes automatically lock. Before restarting the Diesel engine, move the selectors towards  position (BLOCKED).

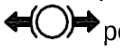
4.10 MACHINE USE WITH ONE CIRCUIT FOR BRAKING (TENSIONER) AND THE OTHER FOR RECOVERY (PULLER)

To set the 1 capstan circuit for recovery (puller) follow these instructions:

a. Increase the Diesel rpm till the max. value (2600 rpm) acting on the accelerator (table 4, pos. 3).
b. Check the selector is leftwards (table 4, pos. 22).
c. Move the selector (table 4, pos. 13) towards  position (BLOCKED).
d. Move the selector (table 4, pos. 38) rightwards.
e. pre-set the desired recovering value:
   1. slightly move downwards the joystick (table 4, pos. 11) into "RECOVERY" position  ;
   2. turn the valve (table 4, pos. 12) till reading on the dynamometer (table 4, pos. 14) the desired pull value (puller scale);
   3. return to centre with the joystick (table 4, pos. 11).
f. Move the selector (table 4, pos. 13) towards  position (FREE).
g. Move the joystick (table 4, pos. 11) towards  (recovery) to turn the capstans, the pull is controlled in the dynamometer scale (table 4, pos. 14).

To set the c capstans circuit for the braking (tensioner) see cap. 4.7.
The same setting can be done on inverted circuits.

4.11 MACHINE USE AS PULLER (RECOVERY FUNCTION) FOR THE CONDUCTORS ON CAPSTANS

a) Increase the Diesel rpm till the max. value (2600 rpm) acting on the accelerator (table 4, pos. 3).
b) Turn the selectors (table 4, pos. 33,38) rightwards.
c) Turn the potentiometers (table 4, pos. 12,16). till the max. value (10).
d) Move the joystick (table 4, pos. 11) towards  (release - upwards).
   Now it is possible to let the bull-wheels turn moving the selectors (table 4, pos. 13, 17) towards  position (FREE).
e) It is possible to regulate the circuit pressure (max. 240 bar) acting on the potentiometers (table 4, pos. 12,16). The pressure can be read on the dynamometers (table 4, pos. 14,18), "puller" scale.
f) To stop the machine, turn slightly the potentiometers (table 4, pos. 12,16) in counter-clockwise direction till the bull-wheels rotation can be interrupted.
g) Move the joystick (table 4, pos. 11) on central neutral position.
h) Move the selectors (table 4, pos. 13,17) towards  position (BLOCKED).

⚠ **NOTE: if necessary to use only right or left bull-wheels, act as described above, but only on one circuit.**

⚠ **NOTE: if the bull-wheels are mechanically or hydraulically connected (selector table 4, pos. 22 placed rightwards), the vacuum brakes can be controlled only by the selector (table 4, pos. 17), the brake by the potentiometer (table 4, pos. 16).**

4.12 MACHINE USE AS PULLER (RECOVERY FUNCTION) FOR THE CONDUCTORS SAGGING REGULATION

a) Increase the Diesel rpm till the max. value (2600 rpm) acting on the accelerator (table 4, pos. 3).
b) Turn the selectors (table 4, pos. 33,38) rightwards.
c) Turn the potentiometers (table 4, pos. 12,16). till the max. value (10).

d) Move the joystick (table 4, pos. 11) towards  (recovery - downwards).
Now it is possible to let the bull-wheels turn moving the selectors (table 4, pos. 13, 17) towards  position (FREE).
e) It is possible to regulate the circuit pressure acting on the potentiometers (table 4, pos. 12,16). The pressure can be read on the dynamometers (table 4, pos. 14,18), "puller" scale.
f) To stop the machine, turn slightly the potentiometers (table 4, pos. 12,16) in counter-clockwise direction till the bull-wheels rotation can be interrupted.
g) Move the joystick (table 4, pos. 11) on central neutral position.
h) Move the selectors (table 4, pos. 13,17) towards  position (BLOCKED).

⚠ **NOTE: if necessary to use only right or left bull-wheels, act as described above, but only on one circuit.**

⚠ **NOTE: if the bull-wheels are mechanically or hydraulically connected (selector table 4, pos. 22 placed rightwards), the vacuum brakes can be controlled only by the selector (table 4, pos. 17), the brake by the potentiometer (table 4, pos. 16).**

4.13 REEL ELEVATORS USE

The machine can feed all the reel elevators made by Tesmec.
It can feed 2 reel elevators for the use as tensioner or puller.

If using two ropes or two conductors, act as follows:
a. connect the reel elevator to one of two power takeoffs (table 6, pos. 1-2, 3-4) and disconnect the not necessary power takeoffs by completely closing the regulator installed on the delivery rapid couplers.

⚠ **ATTENTION: this operation must be carried out when the machine is not functioning. Verify if the regulators installed on the delivery rapid couplers which are connected the hoses, are completely opened.**

⚠ **NOTE: the power takeoffs (table 6, pos. 1-3, 2-4) are feed by only an hydraulic circuit by the regulation valve (table 4, pos. 6) .**

b. regulate the desired back pull acting on the valves (table 4, pos. 6).
The pressure can be read on the relevant manometers (table 4, pos. 7).

Generally, a pressure of 50 bars is set when the machine is braking (min. pressure 20 bars-max. pressure 70 bars) and 80 bars when the machine is recovering (min. pressure 50 bars-max. pressure 120 bars). In both cases, the pressure depends on the reel dimensions and weight and on the desired back pull.

⚠ **NOTE: if the power takeoffs are not connected, open the valves (table 4, pos. 6) till on the manometer can be read the min. admitted pressure.**

4.14 ROPE LOCKING CLAMP (OPTIONAL)

The rope locking clamp allows blocking the rope end towards the reel winder and therefore the operations for removing the reel are speed up.

To engage the rope locking clamp, turn the selector (table 4, pos.31-32) on position (leftwards - blocked – no light) and keep them in position for a few second to allow the complete closing of the clamp.

To dis-engage the rope locking clamp, turn the selector on position (rightwards – free – green light) and keep them in position for a few second to allow the complete opening of the clamp.

4.15 COMPRESSOR CONNECTION (OPTIONAL)

The machine has been studied to be connected to a Tesmec compressor.
a. Connect the rapid couplers (table 7, pos. 3 and 4).
b. Start the machine, turn the selector (table 4, pos. 33) towards right position ◎.
c. Lower the lever (table 7, pos. 2) in "A" position.

Once ended the compressing operations, to use the machine act as follows:
a. lift the lever (table 7, pos. 1) in "B" position.
b. turn the selector (table 4, pos. 33) towards left position .
c. remove the rapid couplers (table 7, pos. 3 and 4).

⚠ **ATTENTION: the connection of the rapid couplers has to be effectuated with the lever (table 7, pos. 2) in "B" position to discharge the pressure in the hydraulic circuit.**
If there is residual pressure in the hydraulic circuit, it is not possible to connect and disconnect the rapid couplers.

⚠ **ATTENTION: Use the press only when the capstans are stopped.**

5. INSTRUCTION FOR USE – CONNECTED MACHINES

5.1 GENERAL ASPECTS

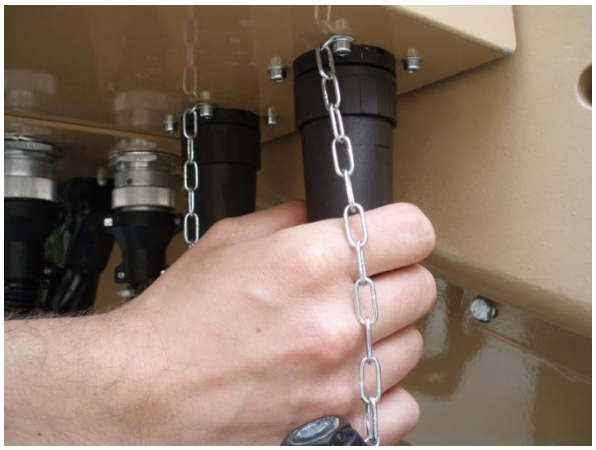
This machines could be equipped with an electronic connection package as an optional device.

This device allow to use multiple machines connected between them, controlled and operated by a single operator for the main working parameters (basically speed, pull, diesel engine rpm).

It is possible to connect up to 6 machines between them, with possibility to work in independent bull-wheels configuration (equal to 12 independent ropes working at the max pull of each single circuit) or connected bull-wheels (equal to 6 independent ropes working at the max pull of twin connected circuits).

The machines must be numbered with ID number (see next chapter) from 1 to the number of total connected machines starting from right to left, looking at the machines from the back (reel-winder position). The last machine, positioned on the right, is the master machine. See table 8 as example.

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.



It is necessary to provide a correct grounding of each machine, to avoid trouble at the electronic devices. For this reason each machine is equipped with a special grounding device that must be connected prior to switch on each machine.
The correct grounding configuration is realized with a grounding stakes to be placed on the ground in front at the machine, and a connecting ground cable, that must connect all the ground stakes between them.

Prior to operate the set-up of the machines, check that:

- The machines are connected through the special connecting cable
- The ground devices are installed and connected

5.2 MACHINES SET-UP

Before the use the machine must be set in connected mode by assign to each machine the correct ID number, starting from left to right, as described in the previous chapter.

a. insert and turn the ignition key (table 4, pos. 1) in “1” position
b. wait up to the multifunction display switch on (table 4, pos. 19)
c. on the electronic multifunction display press the (✱) key
d. on the screen page “MACHINE ID:” set the correct number by using the up (▲) or down (▼) key press the return key (↵) to save the settings

NOTE: the ID of the machines must be set from 1 to the total number of connected machines starting from left to right (looking at the machines from the back – reel-winder position)

e. on the screen page “BULL WHEELS PIN CONNECTION?” set the “YES” or “NO” option, depending on the configuration of use, by using the up (▲) or down (▼) key press the return key (↵) to save the settings.

f. set each machine in connection configuration, except the final one, by turning rightwards the selector (table 1, pos. 36)

5.3 CONNECTED MACHINES FUNCTION (OPT. 057)

When using connected machines, the simultaneous opening and closing control is executed in all the machines adjusting the master machine.
With the connected machines the selectors (tab. 4, pos. 13,17), block and unblock the negative brake.
The selector (tab. 4, pos. 35), works as negative brake block / unblock (if selected) of all connected machines.
The rest of controls remain independents or must be executed in every machine.

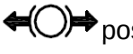
5.4 MACHINE USE FOR THE INDEPENDENT BRAKING OF RIGHT AND LEFT BULL-WHEELS

a) Check if the connecting pin (table 6) of the bull-wheels is disengaged. If not, disengage it.
b) Move the selector (table 4, pos. 22) towards left .
c) Move the selectors (table 4, pos. 38, 39) towards left
d) Move the selector (table 4, pos. 35) towards position (BLOCKED).
e) Move the selectors (table 4, pos. 13,17) towards left (BLOCKED) or towards right (FREE) to select the work circuit
f) Move the selectors (table 4, pos. 35) towards position (FREE). Now the bull-wheels can rotate freely

g) Use the potentiometers (table 4, pos. 12,16) to separately brake right and left bull-wheels. The circuits' pressure, proportional to the pull, can be read on the manometers (table 4, pos. 14,18). A suitably graduated ring nut mounted outside them can read the conductors tension.

PROHIBITION: is not possible to low or lift the joystick (table 4, pos. 11) from central neutral position and move the selectors (table 4, pos. 38, 39) rightwards, in this phase . Can damage seriously the machine.

5.5 MACHINE USE FOR THE SIMULTANEOUS BRAKING OF RIGHT AND LEFT BULL-WHEELS

a) Connect right and left bull-wheels by the suitable pin (table 6).
b) Move the selector (table 4, pos. 22) towards left.
c) Move the selectors (table 4, pos. 38,39) towards left.
d) Move the selectors (table 4, pos. 13, 17) towards  position (BLOCKED).
e) Move the selector (table 4, pos. 35) towards  position (BLOCKED).
f) Move the selector (table 4, pos. 17) towards  position (FREE).The selector (table 4, pos. 3) is disabled.
g) Move the selector (table 4, pos. 17) towards  position (FREE).

Now the bull-wheels can rotate freely.

h) Use the potentiometer (table 4, pos. 16) to brake right and left bull-wheels.

This potentiometer controls the two circuits while the other potentiometer (table 4, pos. 12) is not connected.
The circuits' pressure, proportional to the pull, can be read on the manometers (table 4, pos. 14,18).
The cables tension can be read by a suitably graduated ring nut mounted outside them.

PROHIBITION: is not possible to low or lift the joystick (table 4, pos. 11) from central neutral position and move the selectors (table 4, pos. 38, 39) rightwards, in this phase . Can damage seriously the machine.

5.6 MACHINE USE FOR SIMULTANEOUS BRAKING OF SIX BUNDLED CONDUCTORS

Stringing operations for six bundled conductors can be carried out using two machines with coupled capstans:

⇒ Load three conductors on bull-wheel 1 and 2 on the Master machine; and load three conductors on the capstans 1 and 2 on the Slave machine (see tab. 9.1) .
⇒ Proceed as per point 5.5 making care to set with capstan 1 and 2 a braking value a triple pull respect to a single one.
⇒ In this configuration, it is necessary to use a balancing head board, suitable for stringing operations, with balance on conductors 1-3 and 4-6 (2 and 3 fixed).

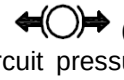
5.7 MACHINE STOP

To stop the machine after the use as tensioner and after the stop of the puller, act as follows:

a. turn the potentiometers (table 4, pos. 12,16) in clockwise direction till the bull-wheels stop.
b. move the selectors (table 4, pos. 35) towards  position (BLOCKED) to lock the bull-wheels. Before carrying out this manoeuvre it is better to wait to the bull-wheels stop if it is not an emergency intervention; in this way the vacuum brakes damage is avoid.

NOTE: if the Diesel engine stops for unknown reasons, the vacuum brakes automatically lock. Before restarting the Diesel engine, move the selectors towards  position (BLOCKED) (table 4, pos. 35).

5.8 MACHINE USE AS PULLER (RECOVERY FUNCTION) FOR THE CONDUCTORS SAGGING REGULATION

a) Increase the Diesel rpm till the max. value (2600 rpm) acting on the accelerator (table 4, pos. 3).
b) Move the selectors (table 4, pos. 38, 39) towards right.
c) Turn the potentiometers (table 4, pos. 12,16) till the max. value (10).
d) Move the joystick (table 4, pos. 11) towards  (recovery - downwards).
e) Move the selectors (table 4, pos. 13,17) towards left  (BLOCKED) or towards right  (FREE) to select the work circuits.
f) At this point we can turn the capstans with the selector (table 4, pos. 35) in position  (FREE)
g) Turn slightly the potentiometers (table 4, pos. 12,16) is possible to adjust the circuit pressure. The pressure can be read in the dynamometers (table 4, pos. 14,18) “puller” scale.
h) To stop the machine, turn slightly the potentiometers (table 4, pos. 12,16) in counter-clockwise direction till the bull-wheels rotation can be interrupted.
i) Move the joystick (table 4, pos. 11) on central neutral position.
j) Move the selectors (table 4, pos. 35) towards  position (BLOCKED).

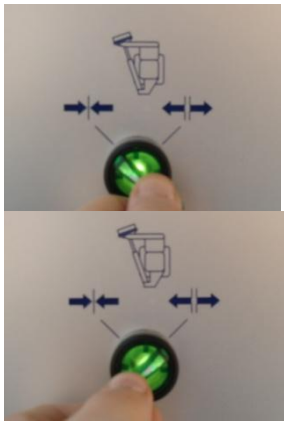
⚠ **NOTE: if the bull-wheels are mechanically or hydraulically connected (selector table 4, pos. 22 placed rightwards), the vacuum brakes can be controlled only by the selector (table 4, pos. 35), the brake by the potentiometer (table 4, pos. 16).**

5.9 ROPE LOCKING CLAMP (OPTIONAL)

The rope locking clamp allows blocking the rope end towards the reel winder and therefore the operations for removing the reel are speed up.

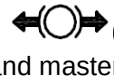
To engage the rope locking clamp, turn the selector (table 4, pos.31-32) on  position (leftwards - blocked – no light) and keep them in position for a few second to allow the complete closing of the clamp.

To dis-engage the rope locking clamp, turn the selector (table 1, pos.21-22) on  position (rightwards – free – green light) and keep them in position for a few second to allow the complete opening of the clamp.



5.10 CONNECTED MACHINES USE WITH SYNCHRONIZER FOR A SIMULTANEOUS BRAKING OF ALL INDEPENDENT CIRCUITS

It is possible take over the running and control all connected machines circuits between them through the circuit controls with the master machine higher ID. To control the gap created between the various rolled conductors on independent circuits shall be used the pull synchronizer. Prepare machines panels as follows:

a. keep the cable connection between the machines
b. insert on the machine/s the slave selector (tab.4, pos.36) rightwards  (FREE)
c. put the selector (tab.4, pos.22) rightwards on every machine (slave and master)

To program the same pull value simultaneously on all circuits:

1. Move the joystick downwards (tab.4, pos.11) on recovery position
2. Turn the potentiometer (tab. 4, pos. 12) until read on the dynamometer (tab. 4, pos. 14) the desired pull value (puller scale)
3. Move to center the joystick (tab. 4, pos. 11).

⚠ **NOTE: to visualize the set pull on the slave machines dynamometers move the selector rightwards (tab.4, pos.39). Although not be displayed, the pull value is set.**

To use the machine for an independent braking:

a. Verify that the bull-wheels coupling pin (tab. 5) is out ⇐◯⇒ (FREE).
   Otherwise, proceed to draw.
b. Move the selector (tab.4, pos.17) rightwards on the master machine to select all the circuits for the negative brake opening
c. Control that the joystick (tab. 4, pos. 11) is in neutral position.
d. To unlocked the negative brakes on all circuits move the selector (tab.4, pos.35) rightwards on the master machine. Now the bull-wheels can turn up.
e. Perform the bull-wheels braking using the potentiometer (tab. 4, pos. 16).
   That potentiometer controls both circuits entre the other potentiometer (tab. 4, pos.12) is disabled. The pressure on the circuits, provided to the pull, is indicated on the manometers (tab. 4, pos. 14,18). A lock ring promptly graduated mounted on the exterior of them allows to detect the conductor's tension.

⊘ **PROHIBITION: is not possible move down or up the joystick (tab. 4, pos. 11) of the central position and put the selectors (tab. 4, pos. 38, 39) on the right, during this phase. It can cause serious damage to the machine.**

In case is passed to independent configuration, disconnect the machines after make sure that the negative brakes are blocked. Remember that the circuits potentiometers might not have the same value of the circuit potentiometer with the higher ID on the master machine.

f. Insert the pull synchronism positioning the selector (tab.4, pos.37) on the right of the master machine

⚠ **ATTENTION: before insert the synchronizer make sure that the head boards, arrive to aprox. 50m from the brakes, is on the correct work position and no twisted or rotated. That is equivalent to having all the heads of the conductors lined up in a single share. If it were otherwise recover or drop one or more conductors to obtain such a result because initial gap of one conductors bundle not lined synchronizer is not recovered if not maintained.**

⚠ **ATTENTION: The synchronizer fails to maintain lined the conductors in line sections where have been accentuated directional variations. In this situation disconnect the machines and line the conductors one at a time as described on the paragraphs from the los cap. 4 and 5.**

⚠ **DANGER: To avoid turn off one of the connected machines if before not been closed negative brakes moving leftwards the selectors (tab.4, pos.13,17) of all machines. Run the risk to lose the pull.**

⚠ **DANGER: To avoid disconnect the connection cable between the machines if before not been closed negative brakes moving leftwards the selectors (tab.4, pos.13,17) of all machines. Run the risk to lose the pull.**

DANGER: Always remember to move the selectors (tab.4, pos.13,17) leftwards (BLOCKED) before execute the following operations:

1. **Disconnect the cable that maintains united the machine.**
2. **Interrupt the feeding on one control panel.**
   Worth the loss of the conductors pull in case the selectors (tab.4, pos.13,17) were not positioned to the left (BLOCKED).

5.11 CONNECTED MACHINES USE CON SINCRONIZADOR Y ENCHUFE MECÁNICO PARA FOR A SIMULTANEOUS BRAKING OF ALL INDEPENDENTS CIRCUITS 2 BY 2

To use the connected machines with synchronizer having connected mechanically the circuits of every machine, operate as follows:

a. Prepare the machines according to the modality described in the paragraph 4.8
b. For the functioning make reference to the paragraph 5.9

5.12 ALARM CONDITION WHEN USING CONNECTED MACHINES

When using connected machines some situation generate alarm condition with switch on of the alarm light on the main control panel of the machine where the alarm is generated.

5.12.1 STRINGING LENGTH ERROR

When the electronic speed synchronizer system is active, an eventual difference of stringing length on the independent ropes larger than a default value programmed (generally 6 m) generate an error and the stringing operations stops on all the connected machines.
To reset the alarm move the joy-stick to neutral on the master machine and dis-engaged the speed synchronized selector; check the cause of the alarm on the line (ex. Operation of the pull programming system and arrest of one rope line) before to re-start.

5.12.2 SWITCH ON THE MACHINE WITH CONTROL NOT IN NEUTRAL

When the machine is switched on with joy-stick not in neutral position, an alarm is generated and the capstans don't move.

5.12.3 EMERGENCY STOP

Pressing the emergency stop in one of the connected machines generate the stop of the engine of the single machine where the stop has been activated and the stop of the movement of all the remaining connected machines, where the diesel engine remain switched on.
To reset the alarm move the joy-stick to neutral on the master machine before to dis-engaged the emergency stop on the machine in emergency situation.

5.12.4 CAN-BUS DIS-CONNECTION BETWEEN THE MACHINES

In case the connection cables between the machine may disconnect (ex. removing plugs, accidental cutting of one cable, …), the stringing operations stops on all the connected machines.
To reset the alarm move the joy-stick to neutral on the master machine and check the cause of the fault.

6. SAFETY CONDITIONS

6.1 SAFETY DEVICES

Machine has been equipped with the following safety devices:
1. load-limiting device with endothermic engine stop in case of exceeding of the max. pre-set load
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.

PROHIBITION: 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-use the machine.

PROHIBITION: is not allowed to install on board radio equipments if not authorized by Tesmec. These could create electronic equipment malfunctions, putting the personnel at serious risk.

6.2 EMERGENCY STOP DEVICE

The machine is equipped with an emergency stop device (table 4, pos. 10) that directly acts on the Diesel engine.
The power generator locking causes the intervention of the vacuum brakes and, consequently, the complete machine stop.

ATTENTION: use the emergency stop device **ONLY** in danger situations for the operators' safety.

The emergency stop device for stopping the machine while working must only be used in emergencies.

6.3 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.

6.4 RESIDUAL RISKS

In the machine there are still the following residual risks:

1. **Sudden break of the conductor.** The break of the conductor causes sudden movements of the machine and of the 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 conductor 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-conductors system.

7. MAINTENANCE

7.1 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.

7.2 LEVELS CONTROL

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

	Quantity
a. Hydraulic oil level (table 1, pos. 6)	*260 l*
b. Diesel engine oil level (see enclosed booklet)	
c. Fuel level	*50 l*
d. Gears grease (table 1, pos. 1, 2)	*2 kg*
e. Negative safety brake oil level (table 2, pos. 9)	*0,3 l*
f. Reduction gear oil level (table 2, pos. 7)	*2.6 l*

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

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

7.3 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.

7.4 SUGGESTED LUBRICANTS

The manufacturer tests the machine with the following oils and lubricants:
a. hydraulic circuit, negative safety brake and reduction gear: IP HYDRUS OIL 46 (ISO VG 46)
b. coupling gear: IP MELLANA 220 (ISO CKC 220).

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.

7.5 HYDRAULIC CIRCUIT MAINTENANCE

Suitable filters protect the hydraulic circuit.
The filters have to be replaced after the first 500 working hours and every time that the warning lights (table 4, pos. 29, 30, 31) light with hot oil.
To replace the filter is necessary to:

a. empty the oil tank by opening the cock (table 1, pos. 5).

⚠ **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.

b. remove the cover from the tank.
c. remove the filters mounted inside the tank (table 1, pos. 4, 9).

⚠ **ATTENTION:** the filters sunk in the tank have to be replaced and not washed with detergent products. The dirty inside the pleats of the filtering element cannot be removed with the washing.

d. replace the filter cartridges

⚠ **ATTENTION:** the new filter cartridges have to be stocked in dry places, without moisture in order to avoid the performances decay of the filtering element.

⚠ **ATTENTION:** before screwing the new filter, oil it with hydraulic oil or grease the packing ring mounted on the coupling section of the filter.

e. verify the conditions of the hydraulic oil drained by the tank.
   It has to be limpid, without impurities or suspended material and has not to give off a bad smell.
f. check the tank bottom by removing possible sediments of impurity.
g. after carrying out the controls of points e. and f., fill the tank with hydraulic oil.

⚠ **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.

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

⚠ **ATTENTION:** when using the machine after long stopping periods, replace the hydraulic filter and verify the hydraulic oil conditions.

7.6 RADIATOR'S 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.

7.7 GREASING

Grease 2-3 times per day the crown gear of the bull-wheels using the suitable greasing pump (table 2, pos. 2).

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.

7.8 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).

7.9 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**	
Hydraulic circuit	Hydraulic oil	**CL**			**ST1**	**ST(*)**
	Filter	**VF**			**ST1**	**ST(*)**
Negative safety brakes	Oil	**CL**	**ST1**		**ST(*)**	
	Disc	**(**)**				
Reduction gear	Oil	**CL**	**ST1**		**ST(*)**	
Bull-wheels greasing circuit	Grease pump	**CL**				
	Gears	**GR**				
Front jack	Sliding shaft		**GR**			
Axle	Tyres pressure		**VF**			
	Negative brake		**GR**			

Legend:
CL Check the level (and possible filling up)
GR Grease
ST Replace
ST1 Replace (only for the first time)
VF Check
(*) Or in any case every year
(**) Check every emergency brake intervention
(***) See engine booklet enclosed

8. HOW TO DISABLE THE MACHINE

8.1 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).

8.2 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.

8.3 STRIPPING

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

All the stripping 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.

9. ENCLOSED DOCUMENTS

9.1 TABLES

Table 1.1 Machine in working position – Lateral view
Table 2.1 Machine set for pulling one conductor with nylon bull-wheels – Upper view
Table 3.1 Machine set for pulling two conductors with nylon bull-wheels – Upper view
Table 4.1 Control panel
Table 5.1 Bull-wheels connections
Table 6.1 Quick release- Hydraulic heads connection
Table 7.1 Compressor connection (optional)
Table 8.1 Machines connection (optional)
Table 9.1 Machine set for pulling six conductors – Upper view
Comparative table for suggested oils

9.2 DRAWINGS

A10-00029 Frame assembly drawing
A11-00012 Bull-wheels assembly drawing
A12-00013 Reduction gear assembly drawing
A13-00010 Engine covers assembly drawing
A14-00037 Feeding system assembly drawing
A15-00035 Control panel assembly drawing
A17-00013 Nylon standard roll assembly drawing
S01-00019 Electric system
S02-00018 Hydraulic system

9.3 OTHER DOCUMENTS

Instructions and maintenance manual for CUMMINS engine mod. B3.3 NA 24V


TESMEC

TENSIONER MOD. FRB616

TABLES

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E-mail: info@tesmec.it

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Tel. 0039 / 035 / 825024
Fax 0039 / 035 / 826375
E-mail: info@tesmec.it

TABLE 1.1

1) Air suction filter for diesel engine.
2) Machine lifting point.
3) Inlet rollers.
4) Hydraulic oil return filter.
5) Hydraulic oil filling cap.
6) Hydraulic oil level.
7) Hydraulic oil draining plug.
8) Rapid couplers (see table 5).
9) Hydraulic oil suction filter.
10) Axle hand-wheel.
11) Rear stabilizer.
12) Towing hook.
13) Safety pin.
14) Plough.
15) Battery box.
16) Pin inspection door (see table 4).
17) Fuel filling cap.
18) Battery dis-connection.
19) Mechanical transmission lever for bull-wheel 1 (see table 3, pos. 8).
20) Mechanical transmission lever for bull-wheel 2 (see table 3, pos. 8 – optional).
21) Warning alarm blinker (optional).
22) Rope clamp quick connections (optional).
23) Ground cable storage drum (optional).
24) Ground stakes (optional).
25) Pneumatic brake valve (optional).

FRENO – TENSIONER – FREINEUSE – Mod. FRB 616

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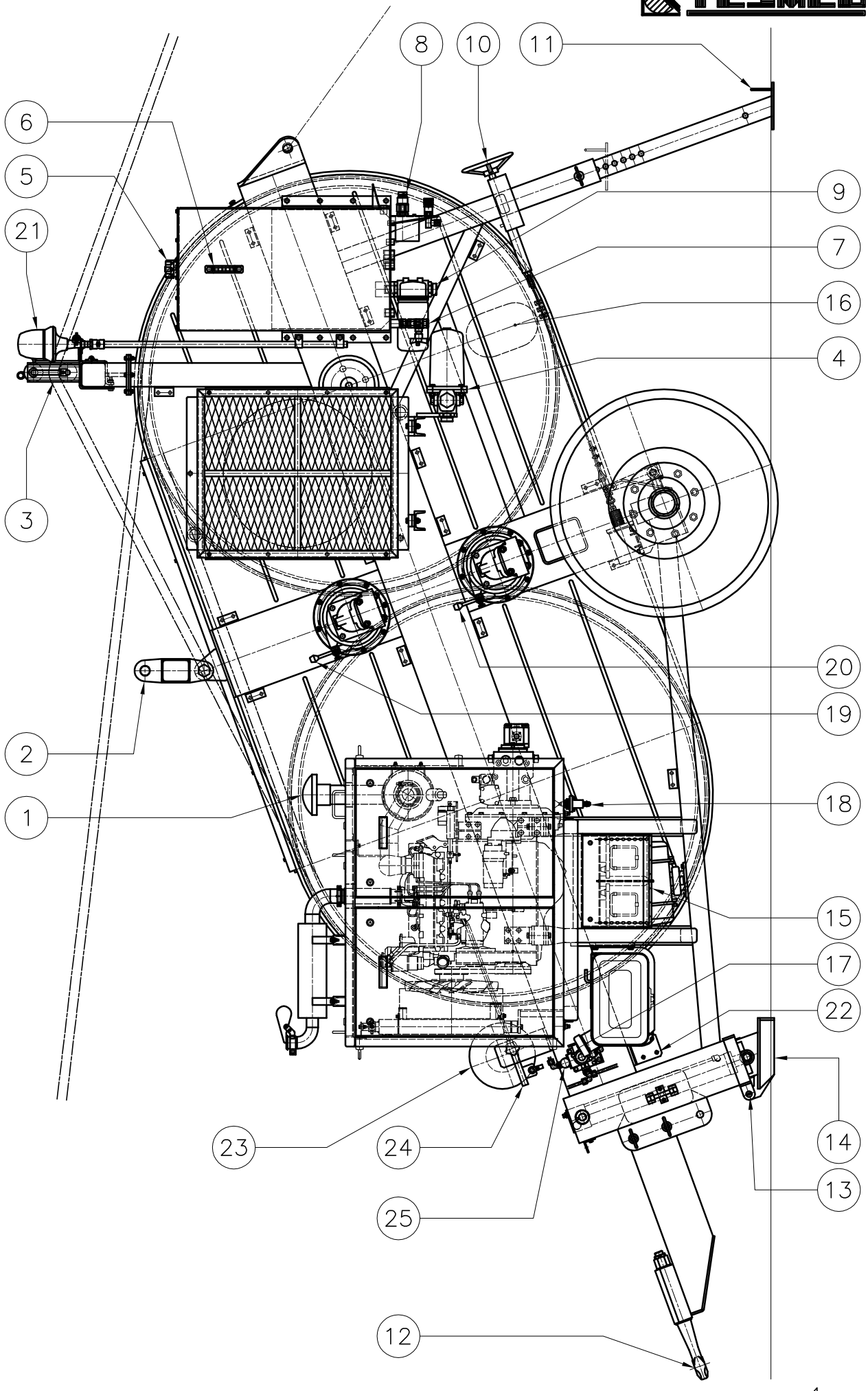

TAV.–TBL.–TAB. 1.1

TABLE 2.1

1) Inspection doors for crowns lubrication.
2) Manual greasing pump.
3) Control panel (see table 4).
4) Machine anchoring.
5) Reduction gear oil filling cap.
6) Reduction gear oil draining plug.
7) Reduction gear oil level.
8) Mechanical transmission lever: A= high pull, B= neutral, C= low pull.
9) Negative brake oil level.
10) Negative brake oil filling cap.
11) Negative brake oil draining plug.
12) Diesel engine cooling liquid filling cap.
13) Diesel engine oil filling cap.
14) Rope clamp devices (optional).

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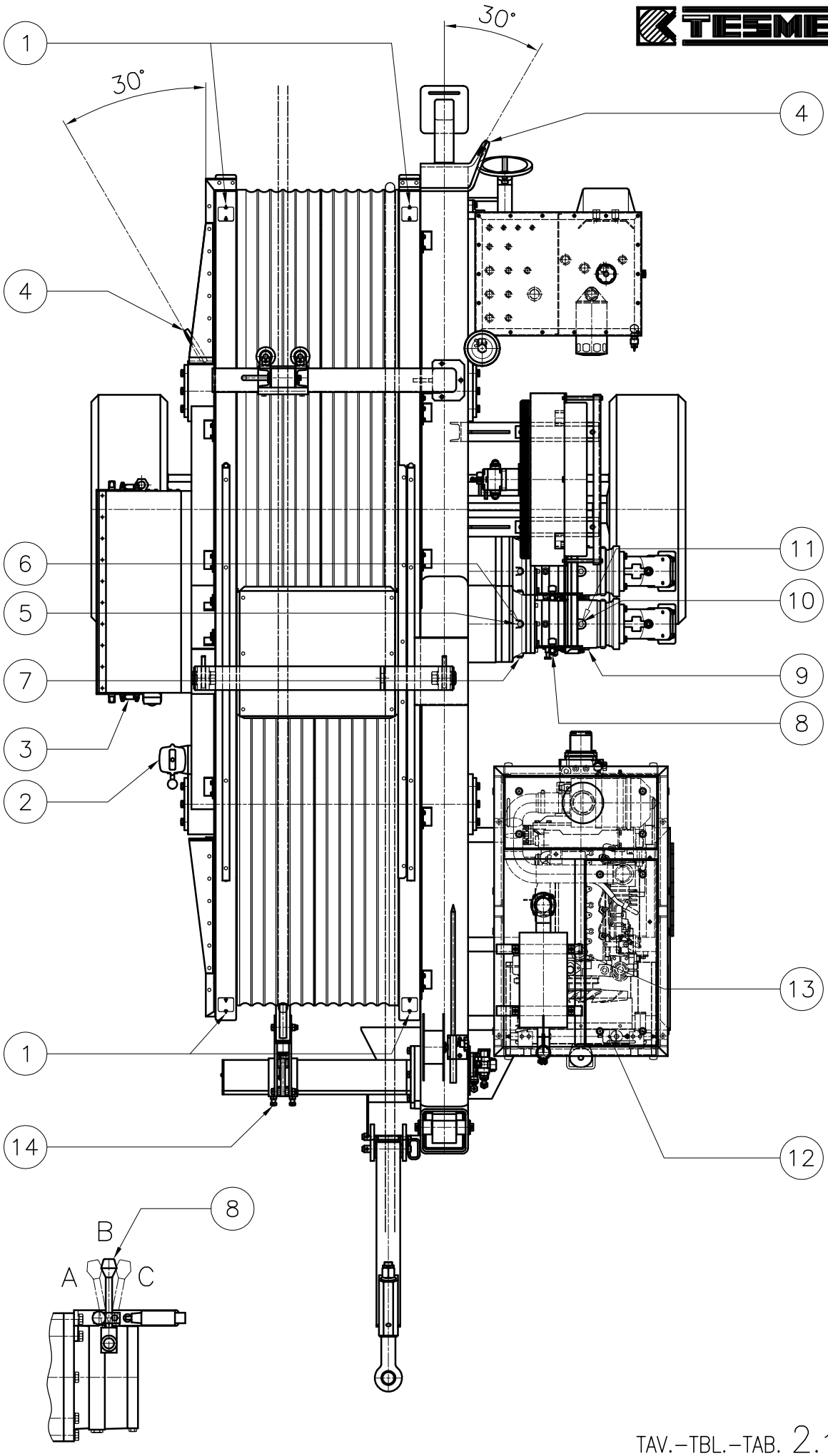
FRENO – TENSIONER – FREINEUSE – Mod. FRB 616



TAV.–TBL.–TAB. 2.1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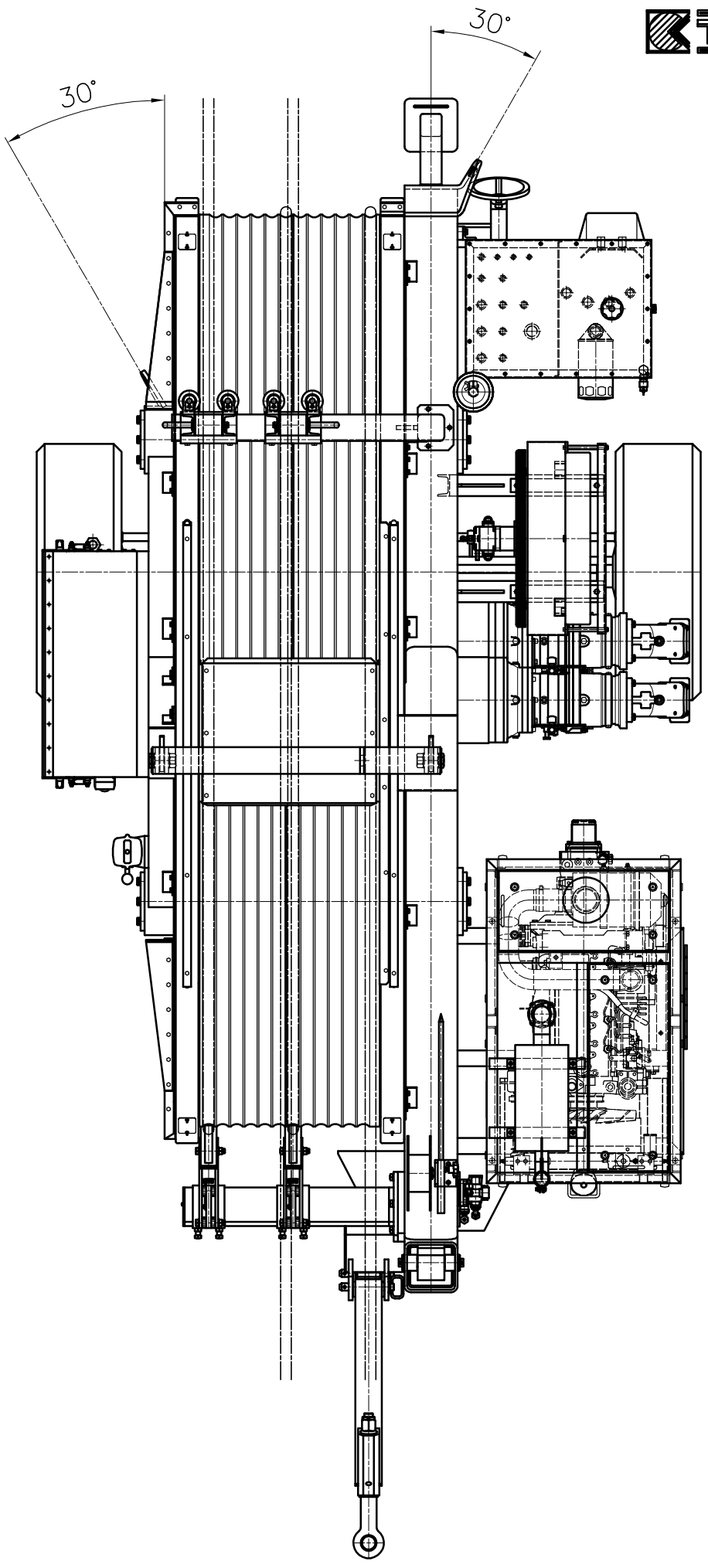
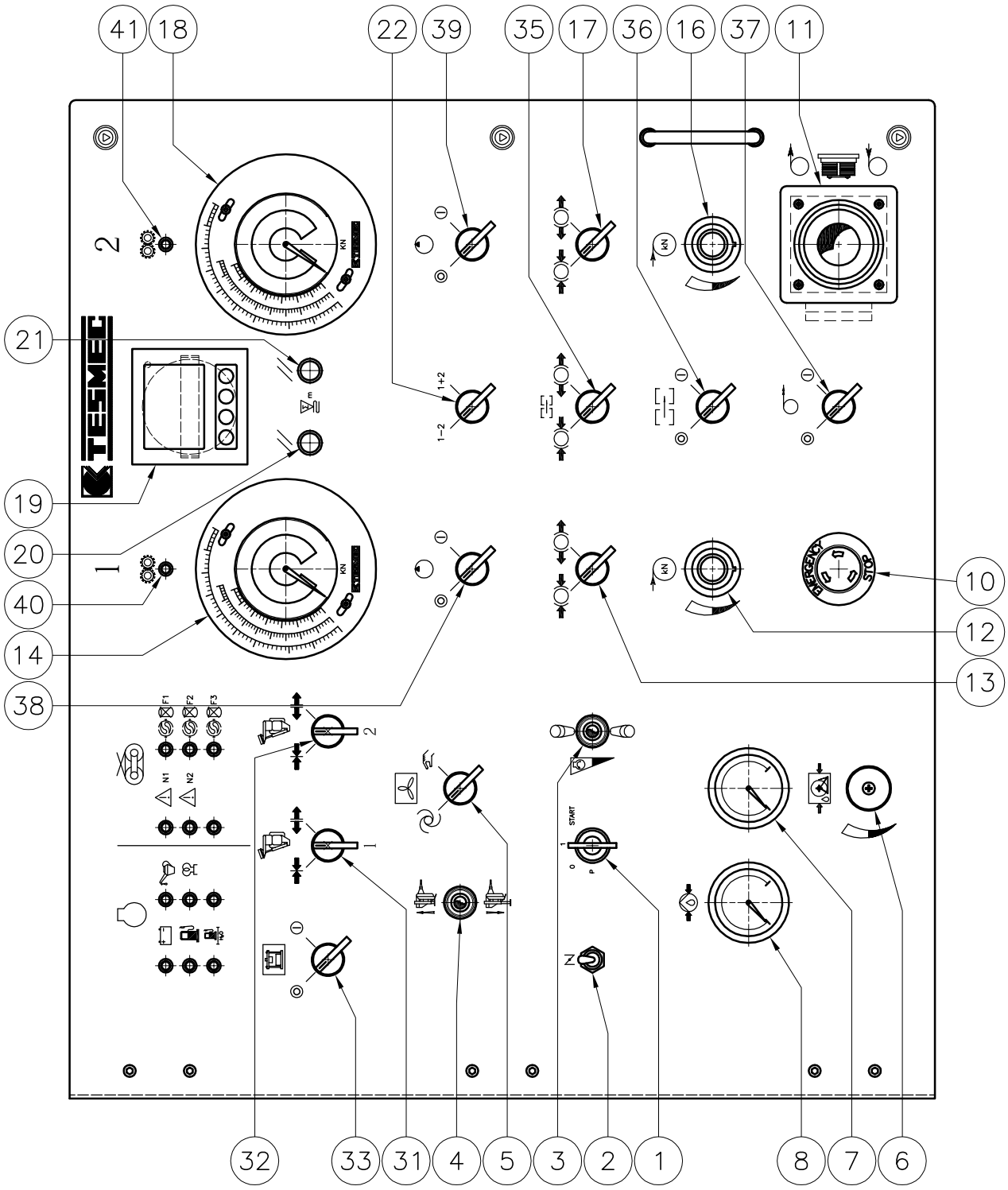
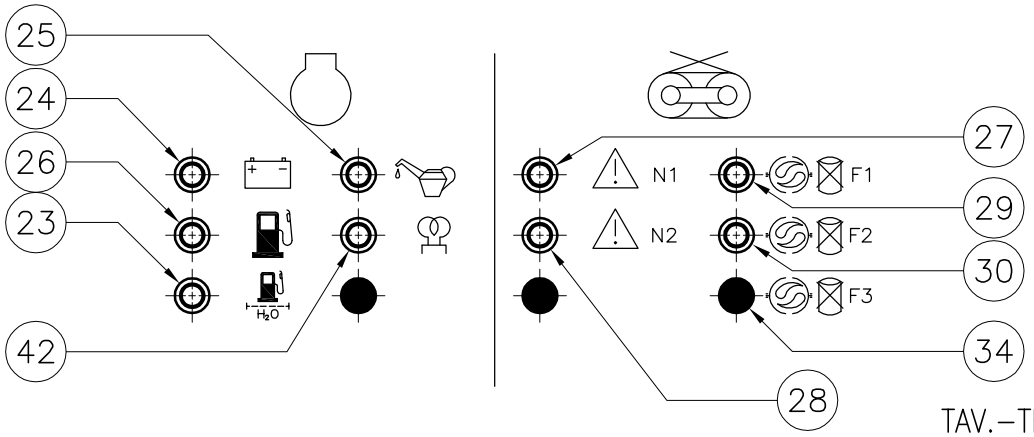

30°
30°

TAVOLA 4.1

1) Diesel engine ignition key.
2) IPO push button.
3) Diesel engine accelerator
4) Lifting plough control lever.
5) Selector for automatic/manual fan functioning.
6) Valve for pressure adjusting reel wheel.
7) Manometer for pressure reel wheel.
8) Overfeed manometer.
9)
10) Stop emergency push button.
11) Control lever for functioning bull-wheel .
12) Potentiometer for braking adjusting for bull-wheel n°1.
13) Negative brake control selector of bull-wheel n°1.
14) Manometer with graduated ring nut of bull-wheel n°1.
15) Control lever for functioning bull-wheel n.2.
16)
17) Negative brake control selector of bull-wheel n°2.
18) Manometer with graduated ring nut of bull-wheel n°2.
19) Machine parameters + engine alarms display.
20) Meter-counter reset push button of bull-wheel n°1.
21) Meter-counter reset push button of bull-wheel n°2.
22) Selector for connection for bull-wheels n°1+2.
23) Warning pilot lamp for water presence in the gas oil filter.
24) Generator pilot lamp.
25) Diesel engine oil pressure pilot lamp.
26) Fuel reserve pilot lamp.
27) Electronic card n°1 pre alarm pilot lamp.
28) Electronic card n°2 pre alarm pilot lamp.
29) Clogging pilot lamp filter F1.
30) Clogging pilot lamp filter F2.
31) Rope clamp selector bull-wheel n. 1 (optional).
32) Rope clamp selector bull-wheel n. 2 (optional).
33) Selector for press control (optional).
34) Clogging pilot lamp filter F3 (optional).
35) Negative brake general control selector (optional).
36) Selector for machines connection (optional).
37) Pull synchronism selector.
38) Puller selector capstan n.1
39) Puller selector capstan n.2
40) Low pull capstan n.1 pilot lamp.
41) Low pull capstan n.2 pilot lamp.
42) Sparking-plug pilot lamp.





TAV.–TBL.–TAB. 4 .1

TABLE 5.1

1) Pin.
2) Referring point.
3) Referring point.
4) Nylon sector.
5) Fixing key for sectors.
6) Keys fixing screw.

FRENO – TENSIONER – FREINEUSE – Mod. FRB 616

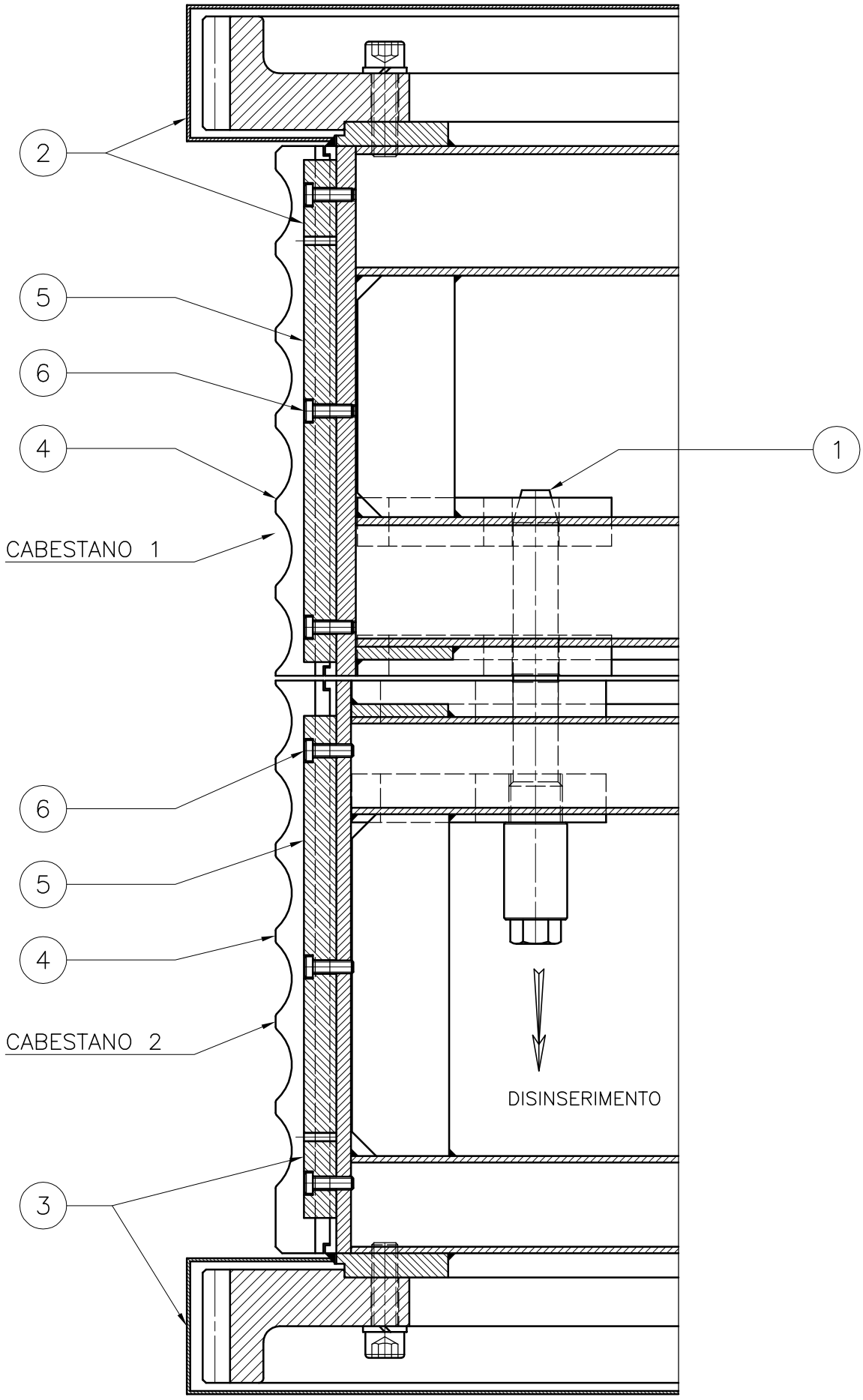


TABLE 6.1

1) Rapid coupler for return hose connection of hydraulic head no. 1.
2) Rapid coupler for return hose connection of hydraulic head no. 2.
3) Rapid coupler for delivery hose connection of hydraulic head no. 1.
4) Rapid coupler for delivery hose connection of hydraulic head no. 1.
5) Adjusting cocks for hydraulic head capacity.
6) Adjusting cocks for hydraulic head capacity.
7) Draining connection for hydraulic head no. 1 (optional).
8) Draining connection for hydraulic head no. 2 (optional).

FRENO – TENSIONER – FREINEUSE Mod. FRB 616

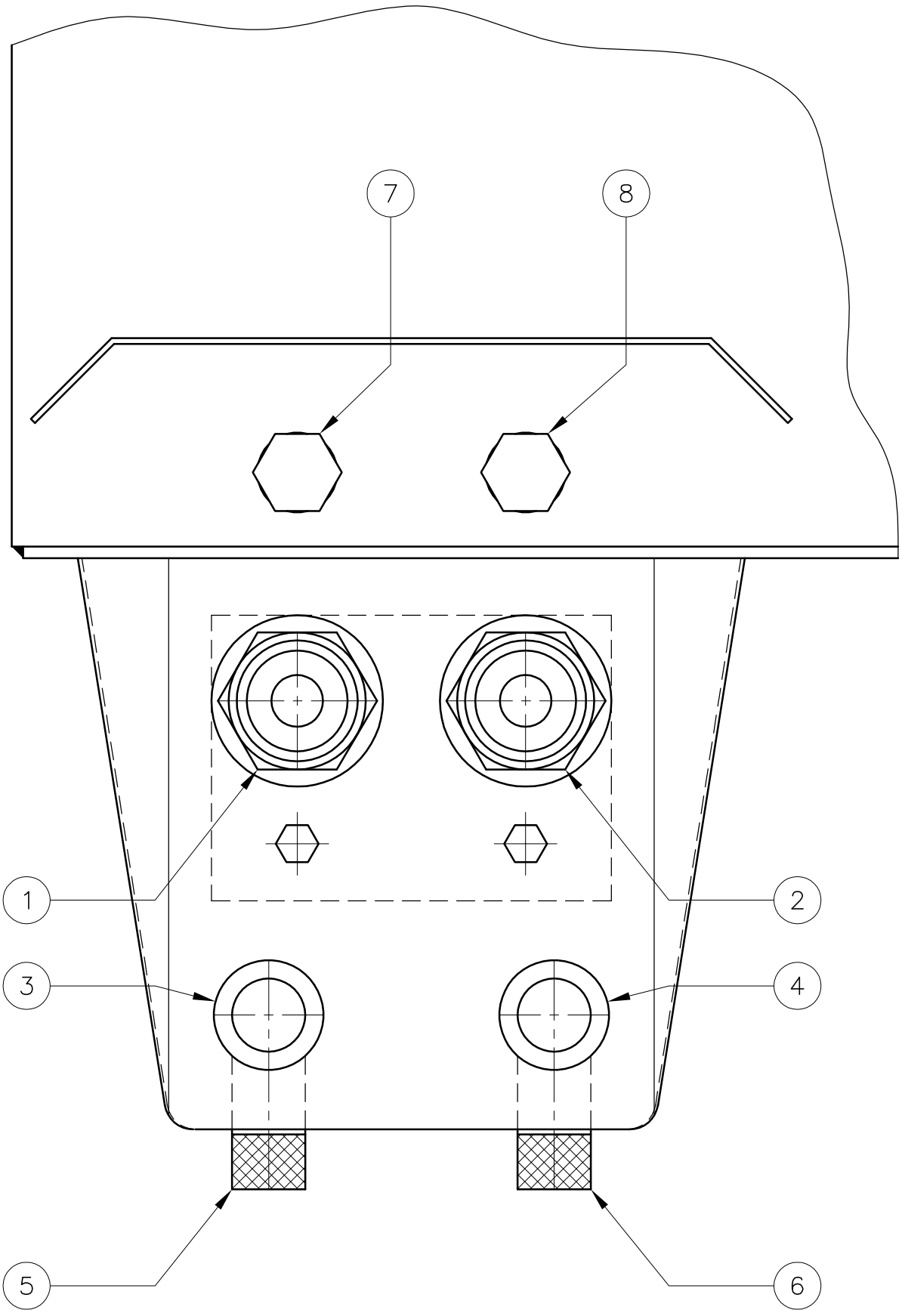


TABLE 7.1 (OPTIONAL)

1) Pressure adjusting valve.
2) Manometer.
3) Valve block.
4) Opening/closing lever for compressor feeding (pos. A: compressor connection, pos. B: compressor release).
5) Rapid coupler for high pressure.
6) Rapid coupler for low pressure.

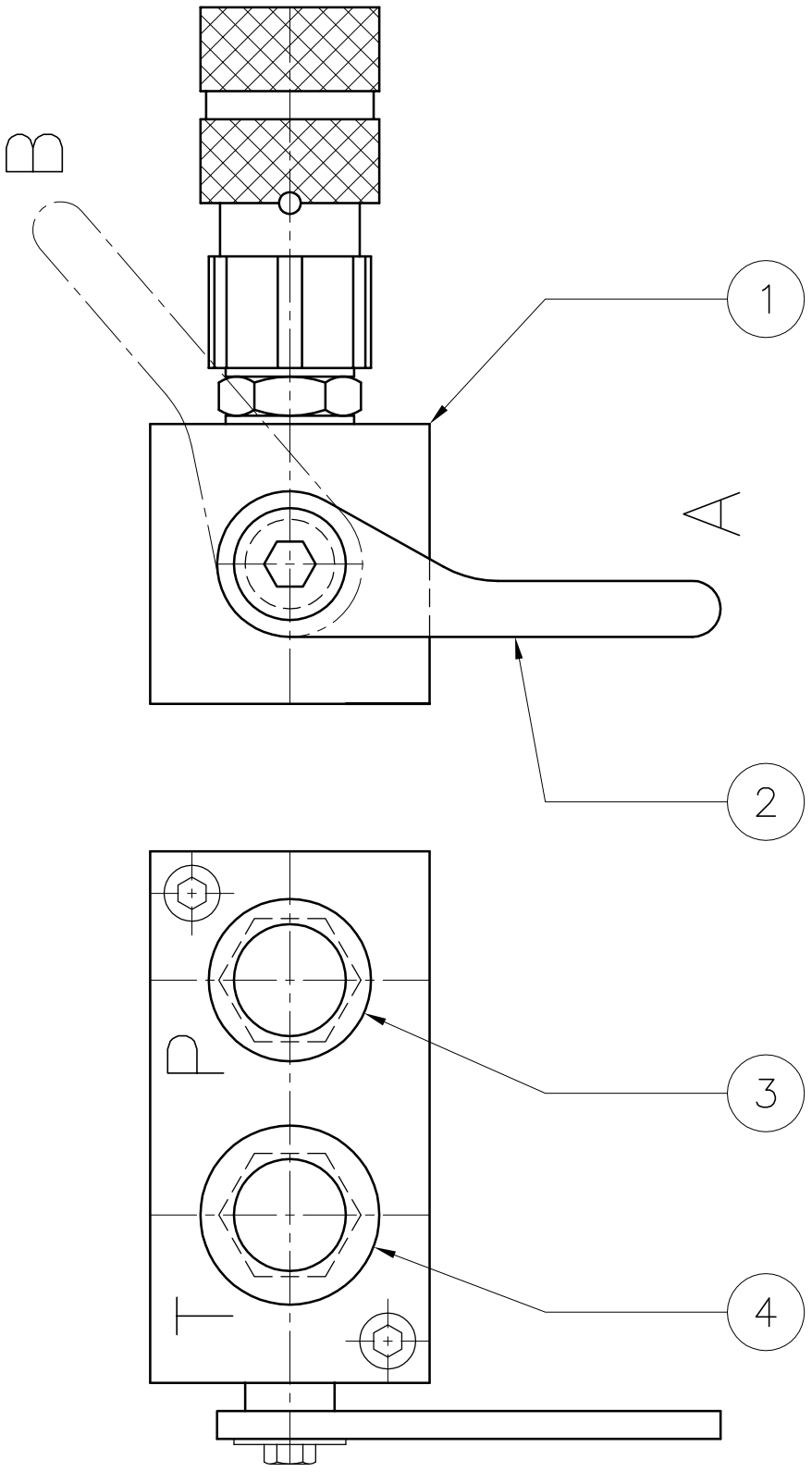

B
A
1
2
P
3
T
4

TABLE 8.1 (OPTIONAL)

1) Machine connection cable.
2) Machine ground cable.

FRENO – TENSIONER – FREINEUSE – Mod. FRB 616

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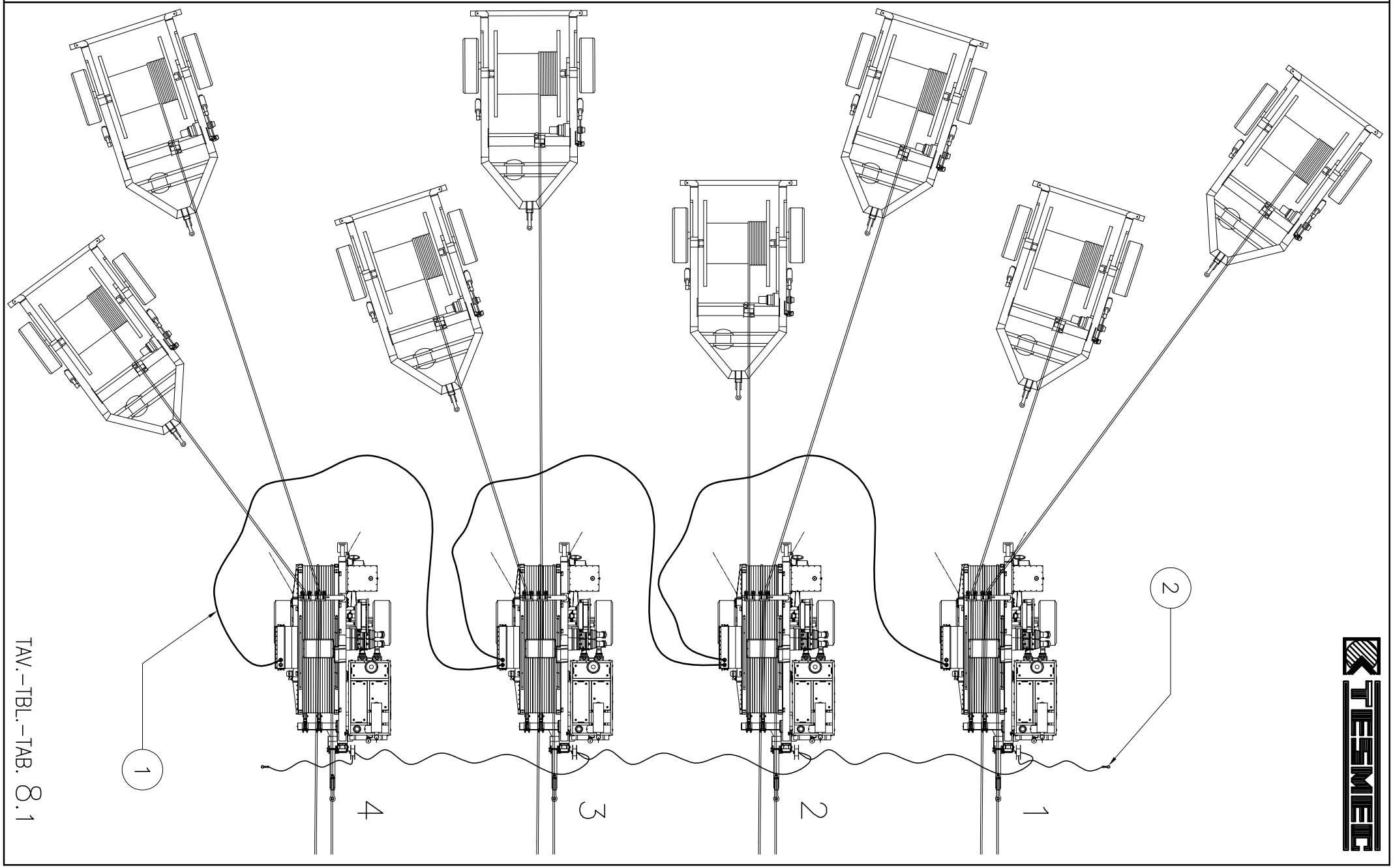

TAV.-TBL.-TAB. 8.1

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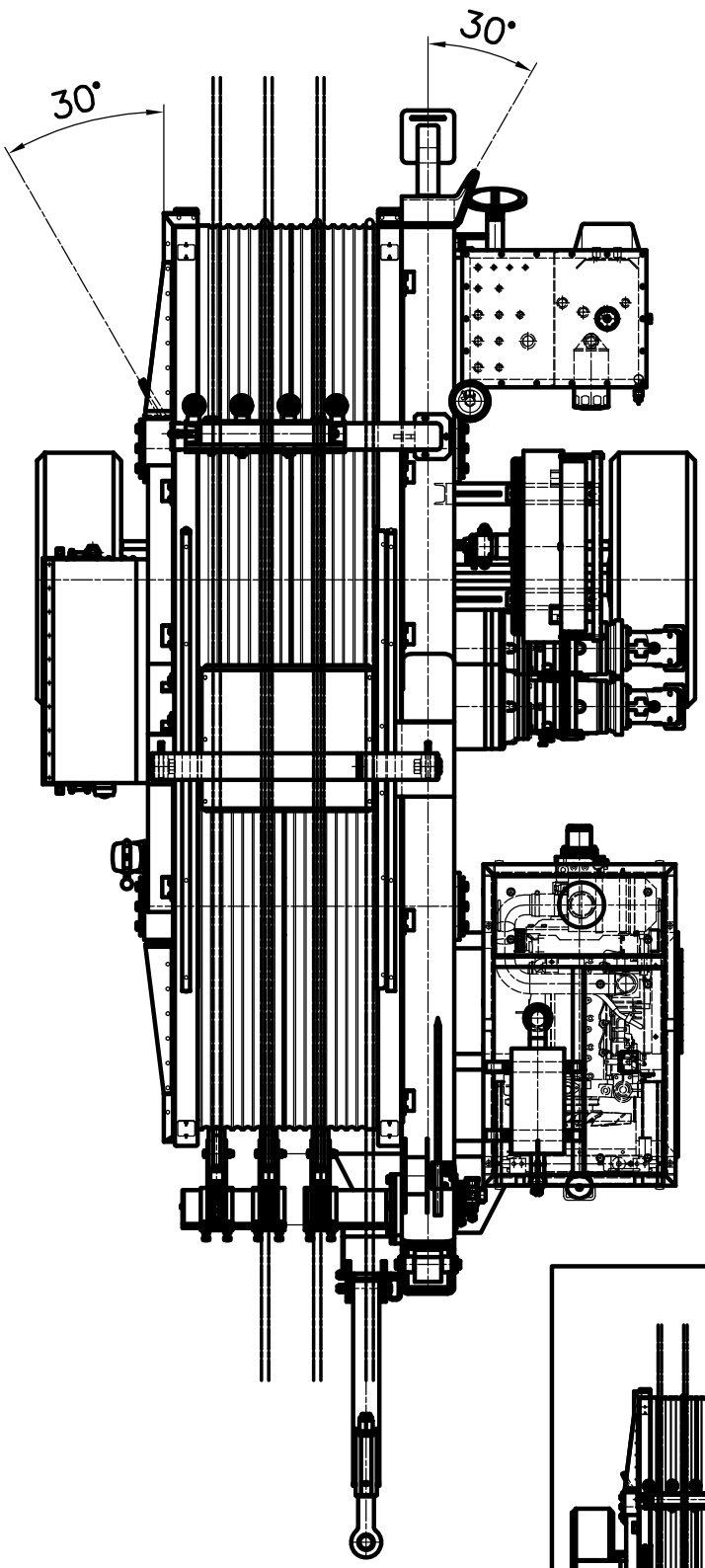
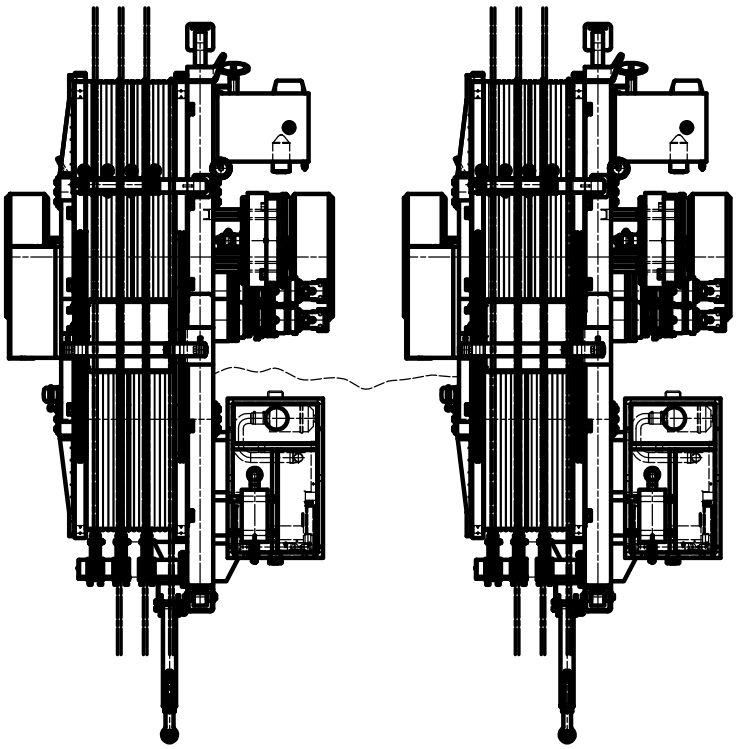
FRENO – TENSIONER – FREINEUSE – Mod. FRB 616





TAV.–TBL.–TAB. 9.1

Comparative table of suggested oils and greases

TYPE	HYDRAULIC CIRCUIT OIL FOR ENVIROMENTAL CONDITION:				REDUCTION UNIT - COUPLERS				GREASING
					REDUCTION UNIT OIL FOR ENVIROMENTAL CONDITION:				GREASE FOR EACH AMBIENT
	ARTIC	WINTER	SUMMER	TROPICAL	ARTIC	WINTER	SUMMER	TROPICAL	
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	HYSPIN AWS 22	HYSPIN AWS 32	HYSPIN AWS 46	HYSPIN 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

TENSIONER MOD. FRB616

ENCLOSED DOCUMENTS

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Tel. 0039 / 035 / 4232911
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- 24060 Endine Gaiano (Bg) via Pertegalli, 2
Tel. 0039 / 035 / 825024
Fax 0039 / 035 / 826375
E-mail: info@tesmec.it

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 Spannens, und es wurde auch nicht versucht, dem Verwender Anleitungen über die Methoden des Spannens 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.

- 24050 Grassobbio (Bg) via Zanica, 17/O
Tel. 0039 / 035 / 4232911
Telefax 0039 / 035 / 4522445
E-mail: info@tesmec.it

- 24060 Endine Gaiano (Bg) via Pertegalli, 2
Tel. 0039 / 035 / 825024
Telefax 0039 / 035 / 826375
E-mail: info@tesmec.it

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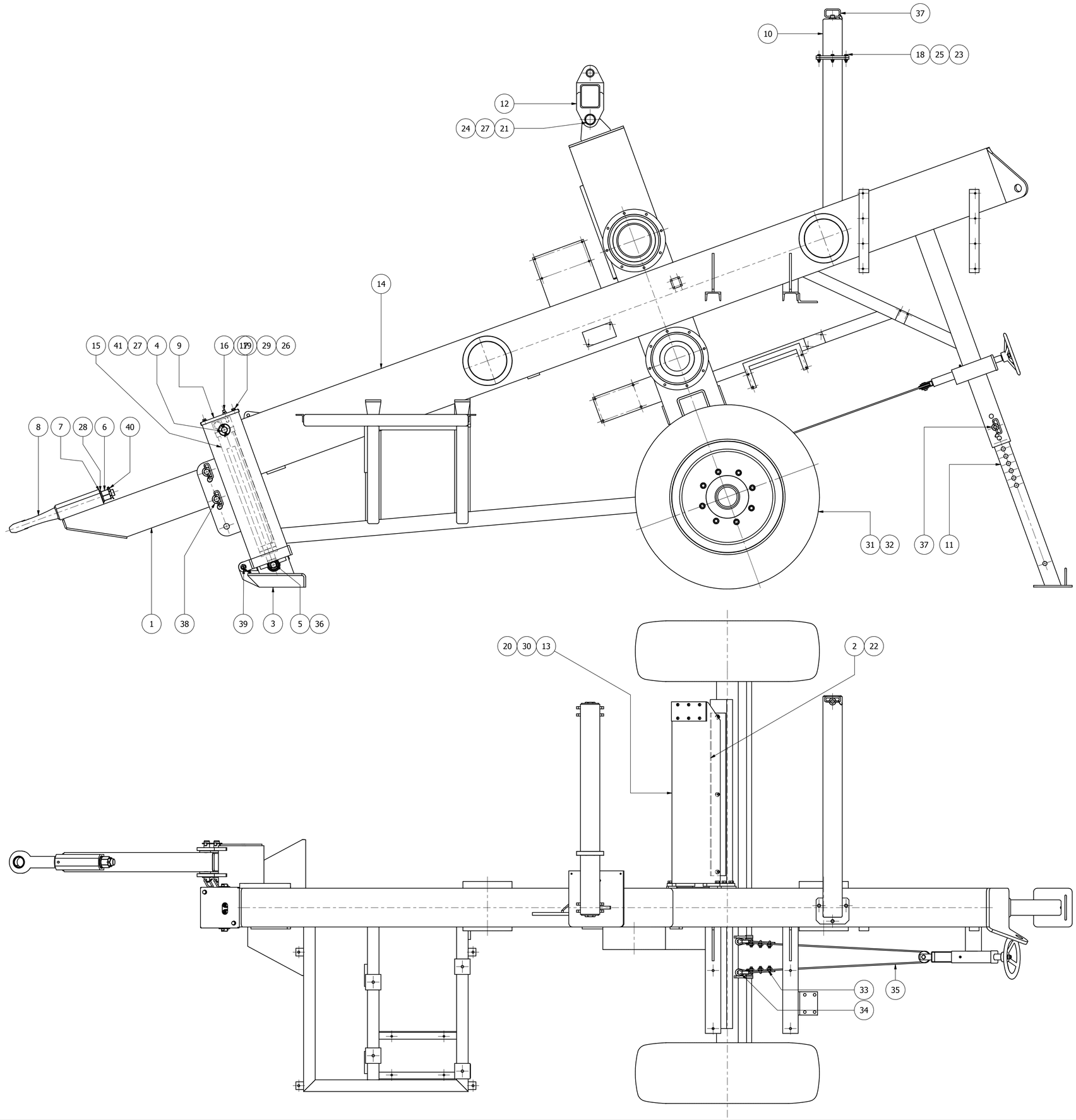

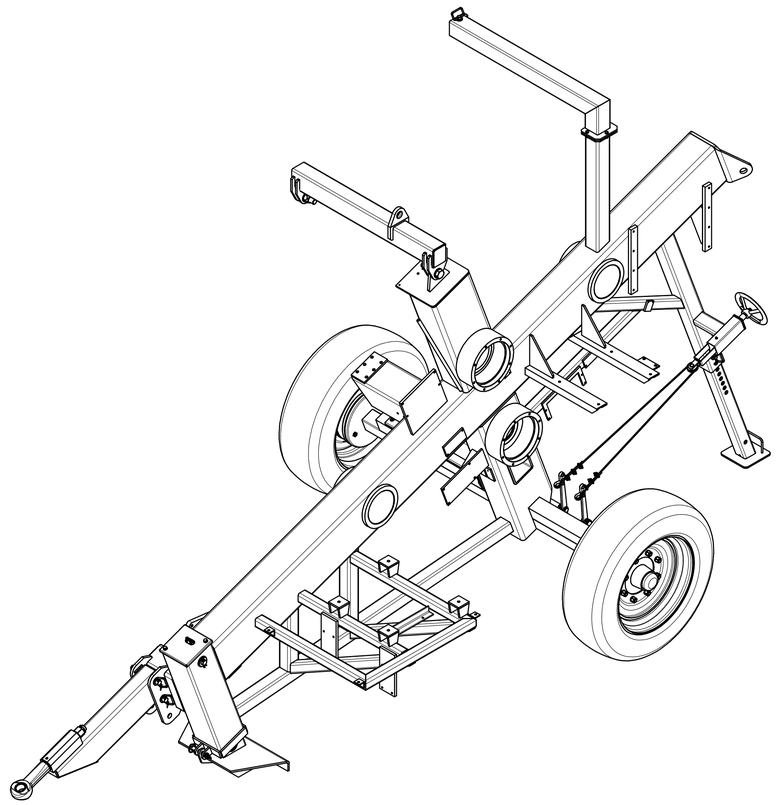

ITEM	CODE	DESCRIPTION	QTY	WEIGHT
41	V00-9030-024	COPIGLIA - ISO 1234 D. 8 x 45 - St [] COTTER PIN	2	0 kg
40	V00-9030-022	COPIGLIA - ISO 1234 D. 6.3 x 50 - St [] COTTER PIN	1	0 kg
39	V00-9020-010	PERNO x TERZO PUNTO - AMA : Art.178 D. 19 x lg. 120 - CATENELLA E SPINA A SCATTO [] PIN	1	0.4 kg
38	V00-9020-004	SPINOTTO - AMA : Art.9 D. 28 x lg. 165 - CON CATENELLA E SPINA A SCATTO [] PIN	2	0.1 kg
37	V00-9020-001	SPINOTTO - AMA : Art.1 D. 19 x lg. 110 - CON CATENELLA E SPINA A SCATTO [] PIN	2	0.4 kg
36	V00-9010-016	ANELLO - UNI 7435 - 30 - E (SEEGER) [] RING	2	0 kg
35	V00-9000-029	FUNE ACCIAIO ZINCATO 114 FILI - D. 6 mm CR= 21.92 kN [] CABLE	1	0.6 kg
34	V00-9000-015	REDANCIA PER FUNE - DIN 6899B X FUNE D. 7 [] THIMBLE	2	0 kg
33	V00-9000-014	MORSETTO A CAVALLOTTO D. 5-6 - AMA : Art.564 [] CLAMP	6	0 kg
32	V00-2160-011	CERCHIONE - Nº 8 Fori - 40 Km/h - 9.00x22.5 - SPOSTAMENTO: 0 - FAD : M22S0244 [] TIRE RIM	2	42.2 kg
31	V00-2130-004	PNEUMATICO - 120 Km/h - 315/60-22.5 - PORTATA: 3550 Kg - 9.00 bar [] TYRE + AIR TUBE	2	46.2 kg
30	H88-1014-003	ROSETTA - UNI 1751 - A - 14 - Z [] WASHER	6	0 kg
29	H88-1010-002	ROSETTA - UNI 1751 - A - 10 - Z [] WASHER	2	0 kg
28	H81-1033-005	ROSETTA - ISO 7089 - TE - 33 - 100 HV - Z [] WASHER	1	0.1 kg
27	H81-1030-004	ROSETTA - ISO 7089 - TE - 30 - 100 HV - Z [] WASHER	6	0.1 kg
26	H81-1010-002	ROSETTA - ISO 7089 - TE - 10 100 HV - Z [] WASHER	2	0 kg
25	H81-1008-002	ROSETTA - ISO 7089 - TE - 8 - 100 HV - Z [] WASHER	6	0 kg
24	H77-1030-033	DADO - UNI 7473 - M 30 - GR. 8 - Z - AUTOB. [] LOCKNUT	2	0.3 kg
23	H77-1008-011	DADO - UNI 7473 - M 8 - GR. 8 - Z - AUTOB. [] LOCKNUT	3	0 kg
22	H58-1010-025	VITE - M 10 x 25 - ISO 10642 - 10.9 - Z - TSEI [] BOLT	3	0 kg
21	H53-1030-120	VITE - M 30 x 120 - ISO 4014 - 8.8 - Z [] BOLT	2	0.9 kg
20	H50-1014-030	VITE - M 14 x 30 - ISO 4017 - 8.8 - Z [] BOLT	6	0.1 kg
19	H50-1010-016	VITE - M 10 x 16 - ISO 4017 - 8.8 - Z [] BOLT	2	0 kg
18	H50-1008-035	VITE - M 8 x 35 - ISO 4017 - 8.8 - Z [] BOLT	3	0 kg
17	F11-0003-003	RONDELLA RAME D. 1/4" x 3 [] WASHER	2	0 kg
16	F01-0059-016	RIDUZIONE PROLUNGA - 1/4" GAS M - 1/4" GAS M - L. 51 - CH: 19 x lg. 25 [] FITTING	2	0.1 kg
15	D99-19904	CILINDRO A: 80 S: 45 C: 500 DIM. CHIUSO: 742.5 DIM. APERTO: 1242.5 [] CILYNDER	1	20 kg
14	D00-01685	TELAIO COMPLETAMENTO - FRB 616 020 [] FRAME	1	1335 kg
13	D00-01607	STAFFA PASSAGGIO TUBI 290 x 300 x 953.5 [] MOUNTING	1	58 kg
12	D00-01606	TRAVERSA SOLLEVAMENTO 140 x 320 x 1095 [] CROSSMEMBER	1	34.3 kg
11	D00-01605	STABILIZZATORE POSTERIORE - Tubo Quadro 80 - 1=20° 200 x 200 x 965 [] STABILIZER	1	18.7 kg
10	D00-01604	SUPPORTO RULLI 170 x 500 x 1180 [] SUPPORT	1	29 kg
9	D00-01603	COPERCHIO VOMERE 15 x 210 x 210 [] COVER	1	0.8 kg
8	D00-00069	OCCHIONE ISO/T40-EURVO/2 ø50 - Comm 70 x 115 x 515 [] LUNETTE	1	8.7 kg
7	D00-00068	RONDELLA CONICA x OCCHIONE D. 65 / 34 x Sp. 10 [] WASHER	1	0.1 kg
6	D00-00067	DADO x OCCHIONE Ch.50 x 56 [] NUT	1	0.5 kg
5	D00-00066	PERNO D. 30 x lg. 167 - (157 SEDI SEEGER) [] PIN	1	0.9 kg
4	D00-00065	PERNO D. 30 x lg. 244 - (228 - FORO COPIGLIE) [] PIN	1	1.3 kg
3	D00-00064	STABILIZZATORE ANTERIORE 300 x 700 x 948 [] CRUMBSHOE	1	52.6 kg
2	D00-00061	PROTEZIONE ASSALE 15 x 80 x 840 [] GUARD	1	1.1 kg
1	D00-00055	TIMONE 116 x 287 x 845 [] RUDDER	1	37.2 kg

TESMEC
GRASSOBBIO (BG) Tel.035/4232911 – Fax 035/4522445
ENDINE G. (BG) Tel.035/4250024 – Fax 035/4526375

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE.

SALDATURE IN ACCORDO CON – WPS 1÷9

GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE
LAV.MECCANICHE UNI EN 22768-f H
CARPENTERIA UNI EN 22768-c K

DIS. VISTO	
DATA	27/06/2011
PESO	1781,09 kg
SCALA	1:10

DENOMINAZIONE
FRENO BINATO
FRB 616 020
ASSIEME TELAIO .

FOGLIO 1 / 1

NUMERO DISEGNO
A10-00029

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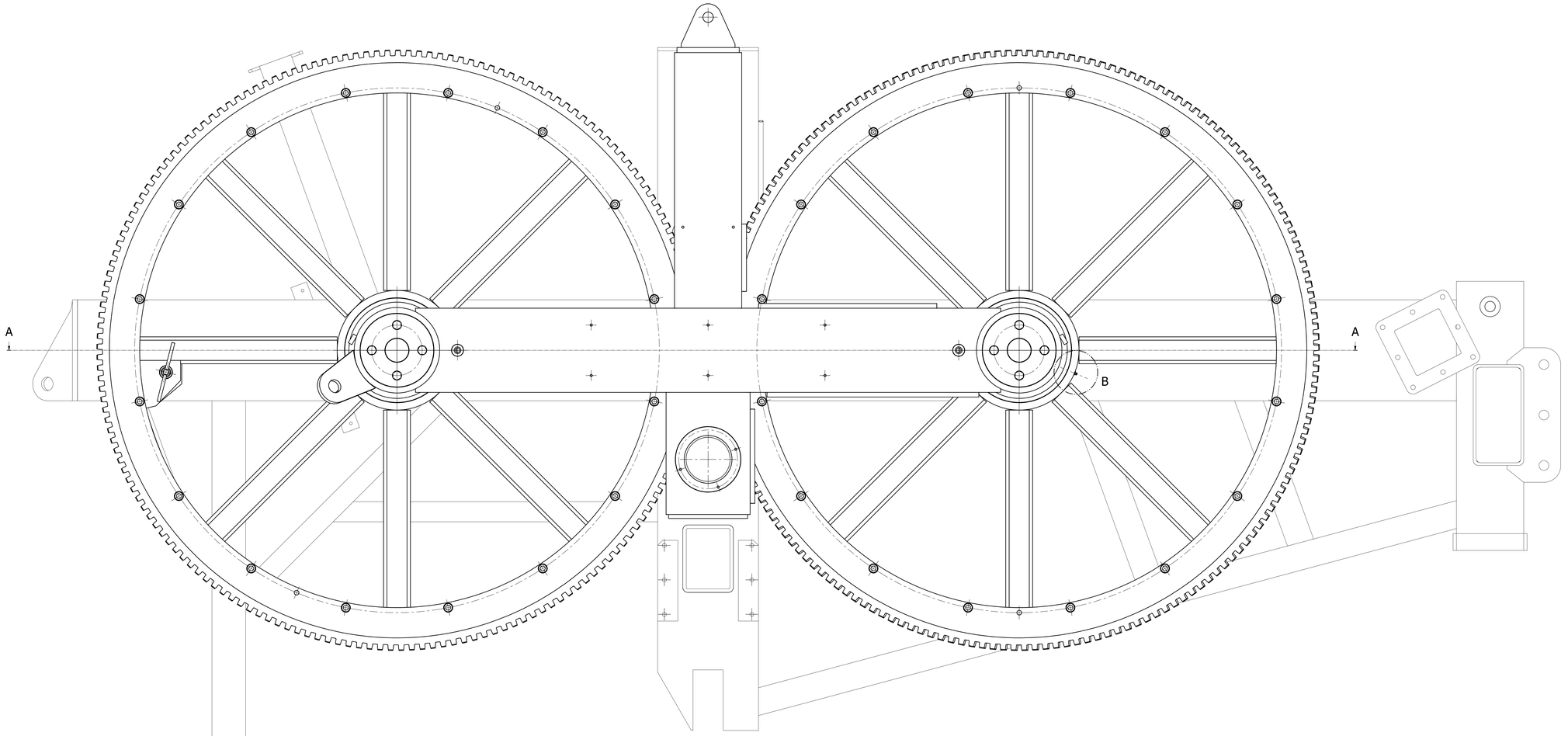
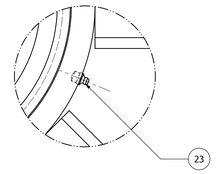
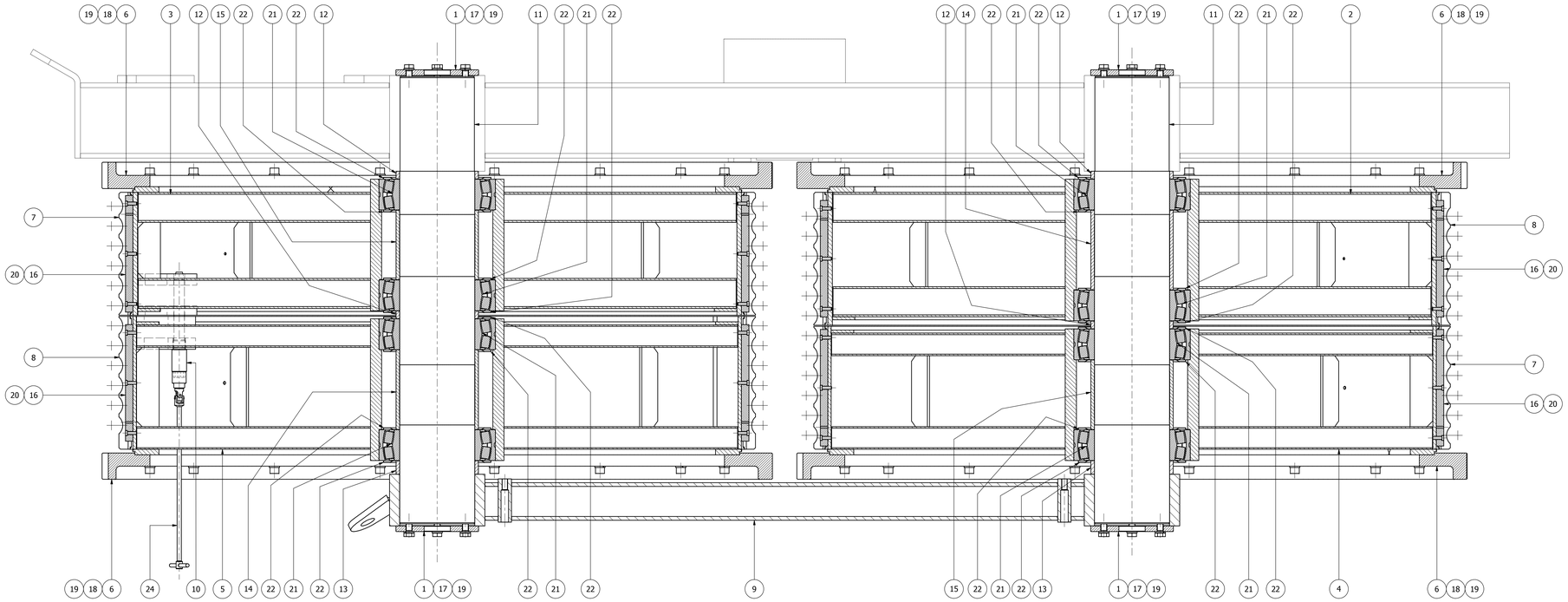
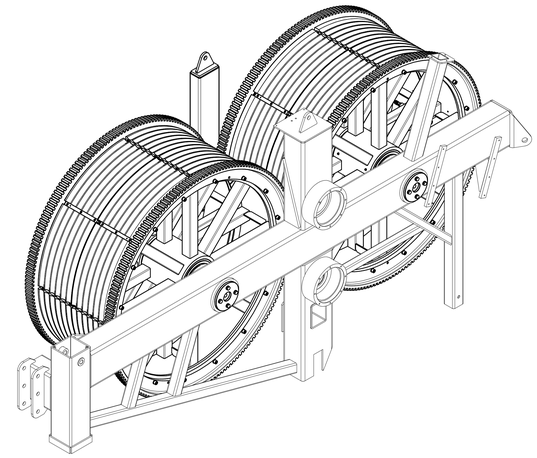


DETTAGLIO B (1 : 2)



SEZIONE A-A (1 : 5)





ITEM	CODE	DESCRIPTION	QTY	WEIGHT
24	V00-6800-048	CHIAVE A T A SNODO CON BUSSOLA - CH: 27 [] KEY	1	0.7 kg
23	V00-5303-002	INGRASSATORE UNI 7663 - A - DIRITTO M 10x1 [] GREASE FITTING	8	0 kg
22	V00-5300-025	ANELLO NILOS - 6040 - 16040 - 23040 AV [] RING	16	0.1 kg
21	V00-5101-068	CUSCINETTO - SKF : 23040 CC/W33 - ORIENTABILE A RULLI - d 200 / D 310 x B 82 [] BEARING	8	23.3 kg
20	H99-8900-117	VITE - M 8 x 25 - DIN 7984 - 10.9 - Z [] BOLT	96	0 kg
19	H88-1016-004	ROSETTA - UNI 1751 - A - 16 - Z [] WASHER	80	0 kg
18	H56-1016-055	VITE - M 16 x 55 - ISO 4762 - 8.8 - Z [] BOLT	64	0.1 kg
17	H50-1016-040	VITE - M 16 x 40 - ISO 4017 - 8.8 - Z [] BOLT	16	0.1 kg
16	D00-01619	CHIAVETTA PER SETTORI 20 x 25 x 310 [] FEATHER KEY	32	0.8 kg
15	D00-01617	DISTANZIALE D. 219.1 / 200 x lg. 185 [] SPACER	2	8.8 kg
14	D00-01616	DISTANZIALE D. 219.1 / 200 x lg. 212 [] SPACER	2	10.1 kg
13	D00-01615	DISTANZIALE D. 219.1 / 200 x lg. 36 [] SPACER	2	1.8 kg
12	D00-01614	DISTANZIALE D. 219.1 / 200 x lg. 20.5 [] SPACER	4	1 kg
11	D00-01613	ALBERO CABESTANO D. 200 x lg. 1190 [] SHAFT	2	291.4 kg
10	D00-01556	SPINOTTO CABESTANI D. 39 x lg. 280 [] PIN	1	1.6 kg
9	D00-01555	TRAVERSA CABESTANI 137.5 x 1530 x 2104 - Int. 1850 - d 200 [] CROSS CAPSTANS	1	190.5 kg
8	D00-01551	SETTORE D. 1695 / 1628 x lg. 353.5 - N° 6 Gole R. 30 - Dfg. 1675 [] SECTOR	16	7 kg
7	D00-01550	SETTORE D. 1695 / 1628 x lg. 327 - N° 6 Gole R. 30 - Dfg. 1675 [] SECTOR	16	6.4 kg
6	D00-01549	CORONA D. 1785 x 70 - Z= 177 - M= 10 / 7.5 [] GEAR	4	205.1 kg
5	D00-01548	CABESTANO POSTERIORE ESTERNO D. 1634 x lg. 383.5 - FRB 616 020 [] BULL-WHEEL	1	402.4 kg
4	D00-01546	CABESTANO ANTERIORE ESTERNO D. 1634 x lg. 357 - FRB 616 020 [] BULL-WHEEL	1	374.4 kg
3	D00-01545	CABESTANO POSTERIORE INTERNO D. 1634 x lg. 362 - FRB 616 020 [] BULL-WHEEL	1	464 kg
2	D00-01544	CABESTANO ANTERIORE INTERNO D. 1634 x lg. 388.5 - FRB 616 020 [] BULL-WHEEL	1	481.4 kg
1	D00-01543	RONDELLA CHIUSURA D. 220 x Sp. 15 - FRB 614 001 [] WASHER	4	3.9 kg

TESMEC
SARONNO(MI) (RG) Tel.035/4233911 – Fax 035/4522445
EVERE (BG) Tel.035/957014 – Fax 035/953475

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE

SALDATURE IN ACCORDO CON – WPS 1÷9

GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE
LAV.MECCANICHE UNI EN 22768-f H
CARPENTERIA UNI EN 22768-c K

DISEGNATO	Locatelli G.
DATA	30/06/2011
PESO	3819,95 kg
SCALA	1:5

FRENO BINATO

FRB 616 020

ASSIEME CABESTANI

FOGLIO 1 / 1

NUMERO DISEGNO A11-00012

A0

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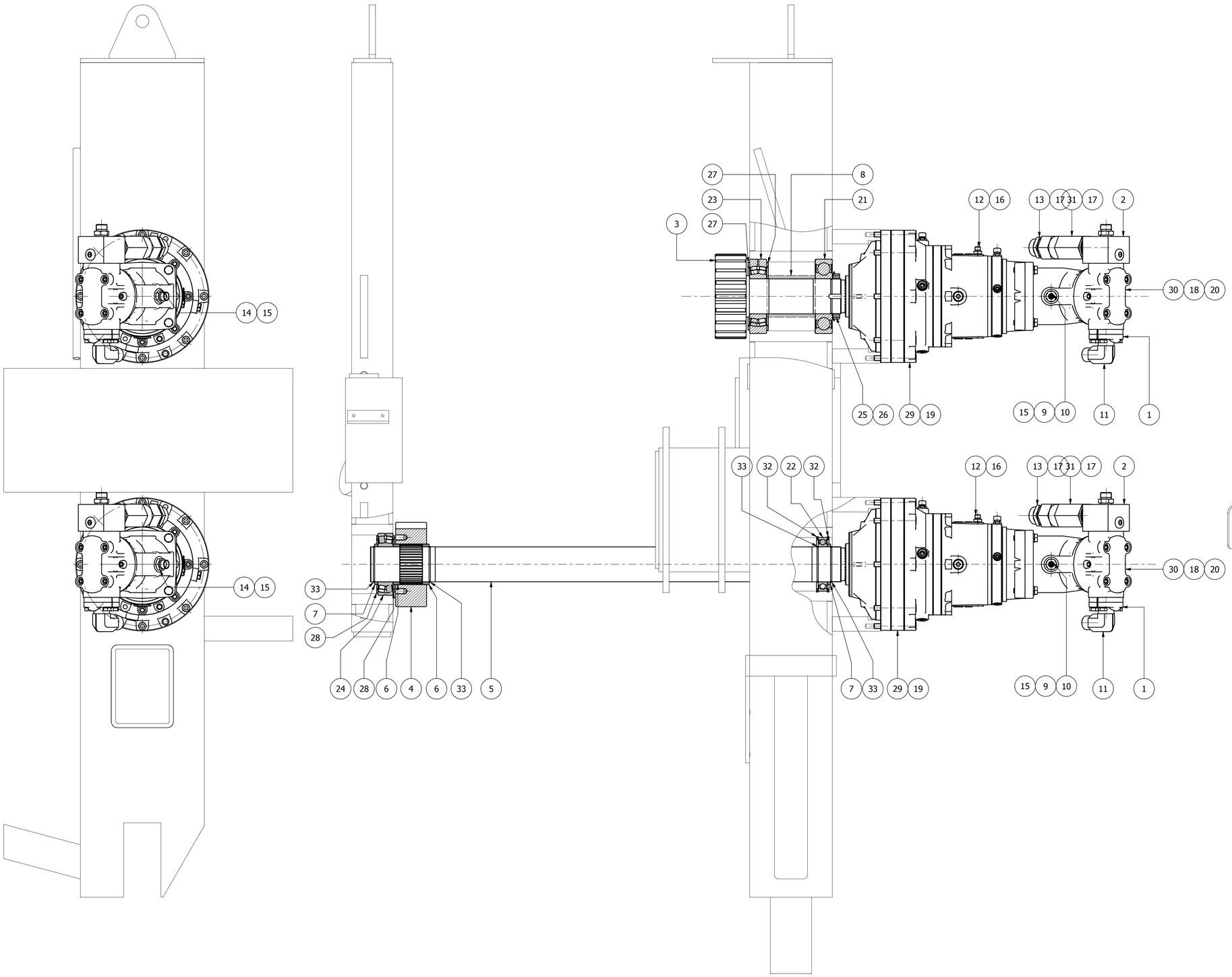

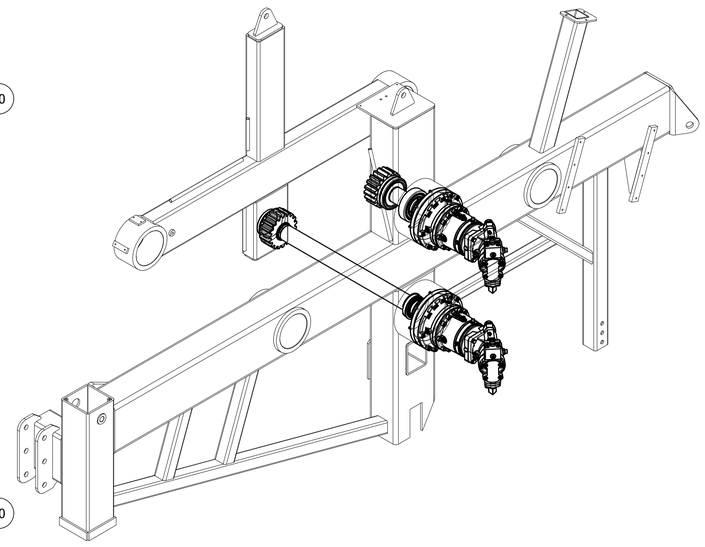

ITEM	CODE	DESCRIPTION	QTY	WEIGHT
33	V00-9010-058	ANELLO - UNI 7435 - 85 - E (SEEGER) [] RING	4	0 kg
32	V00-9010-045	ANELLO - UNI 7437 - 130 - I (SEEGER) [] RING	2	0.1 kg
31	V00-6204-007	VALVOLA DI RITEGNO ADR 32 TAR.0.5 bar - ATOS [] VALVE	2	2.5 kg
30	V00-6050-025	MOTORE IDRAULICO - A2FM 80 61W PAB 020 - REXROTH [] MOTOR	2	17.5 kg
29	V00-5702-040	RIDUTTORE RR 1010D FS - R: 20 - RF5/65 - A2FM80 [] GEARBOX	2	98 kg
28	V00-5300-027	ANELLO NILOS - 6217 - 22217 AV [] RING	2	0 kg
27	V00-5300-012	ANELLO NILOS - 6317 - 21317 AV [] RING	2	0.1 kg
26	V00-5106-002	ROSETTA DI SICUREZZA - SKF : MB-17 [] WASHER	1	0.1 kg
25	V00-5105-002	GHIERA - SKF : KM-17 - M85x2 [] NUT	1	0.5 kg
24	V00-5101-070	CUSCINETTO - SKF : 22217 E - ORIENTABILE A RULLI - d 85 / D 150 x B 36 [] BEARING	1	2.6 kg
23	V00-5101-022	CUSCINETTO - SKF : 21317 E - ORIENTABILE A RULLI - d 85 / D 180 x B 41 [] BEARING	1	5.4 kg
22	V00-5100-041	CUSCINETTO - SKF : 6017-2RS1 - RADIALE A SFERE - d 85 / D 130 x B 22 [] BEARING	1	0.9 kg
21	V00-5100-011	CUSCINETTO - SKF : 6317-2RS1 - RADIALE A SFERE - d 85 / D 180 x B 41 [] BEARING	1	4.2 kg
20	H88-1012-003	ROSETTA - UNI 1751 - A - 12 - Z [] WASHER	8	0 kg
19	H56-1012-090	VITE - M 12 x 90 - ISO 4762 - 8.8 - Z [] BOLT	16	0.1 kg
18	H50-1012-050	VITE - M 12 x 50 - ISO 4017 - 8.8 - Z [] BOLT	8	0.1 kg
17	F11-0003-011	RONDELLA RAME D. 1" 1/4 x 3 [] WASHER	4	0 kg
16	F11-0003-003	RONDELLA RAME D. 1/4" x 3 [] WASHER	2	0 kg
15	F11-0002-021	RONDELLA RAME D. 18 / 24 x 1.5 [] WASHER	4	0 kg
14	F04-0006-025	NIPPLO - 1/2" GAS - M18x1.5 [] NIPPLE	2	0.1 kg
13	F04-0001-011	NIPPLO - 1 "1/4 GAS - 1 "1/4 GAS [] NIPPLE	2	0.3 kg
12	F04-0001-003	NIPPLO - 1/4" GAS - 1/4" GAS [] NIPPLE	2	0 kg
11	F02-0049-010	RIDUZIONE 90° 1" SAE 6000 FL - 1" GAS [] FITTING	2	0.8 kg
10	D99-10019	NIPPLO FORATO - 1/4" Gas - M18x1.5 - FORO M8 [] NIPPLE	2	0.1 kg
9	D99-10005	GRANO FORATO - 8x12 - FORO ø2 [] DOWL	2	0 kg
8	D00-01628	DISTANZIALE D. 101.6 / 85 x lg. 117.5 [] SPACER	1	2.2 kg
7	D00-01627	DISTANZIALE D. 98 / 85 x lg. 8 [] SPACER	2	0.1 kg
6	D00-01626	DISTANZIALE D. 98 f6 / 85 F7 x lg. 16 [] SPACER	2	0.2 kg
5	D00-01625	ALBERO PIGNONE D. 98 x lg. 1225 - DIN 98x92 - DIN 80x74 [] SHAFT	1	53.9 kg
4	D00-01624	PIGNONE D. 205 x lg. 75 - Z= 19 - M= 10 / 7.5 [] SPROKET	1	12.3 kg
3	D00-01623	PIGNONE D. 205 x lg. 390.5 - Z= 19 - M= 10 / 7.5 [] SPROKET	1	29.9 kg
2	A99-10132	ASSIEME BLOCCHETTO PREDISPOSIZIONE - D99-10089 [] ASSEMBLY	2	3.2 kg
1	A99-10062	ASSIEME SEMIFLANGIE SAE 6000 1" [] ASSEMBLY	2	0.7 kg

TESMEC
GRASSOBBIO (BG) Tel.035/4232911 – Fax 035/4522445
EDINE G (BG) Tel.035/825024 – Fax 035/826375

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE.

SALDATURE IN ACCORDO CON – WPS 1-9

GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE

LAV.MECCANICHE UNI EN 22768-f H

CARPENTERIA UNI EN 22768-c K

DIS. VISTO	
DATA	Locatelli G.
PESO	21/12/2011
SCALA	361,63 kg
	1:5

DENOMINAZIONE: FRENO BINATO

FRB 616 020

ASSIEME RIDUTTORI

FOGLIO 1 / 1

NUMERO DISEGNO A12-00013

A1

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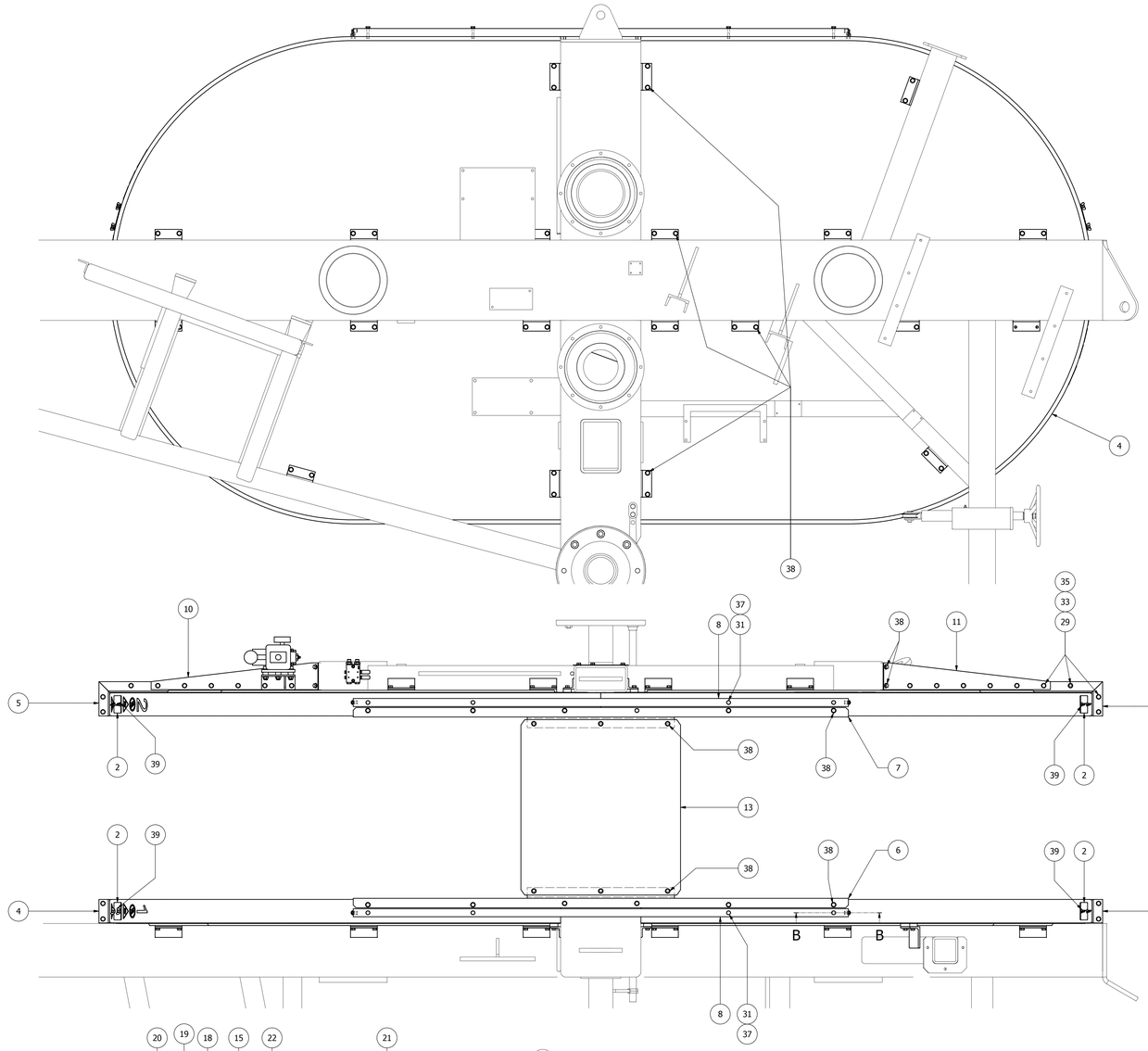
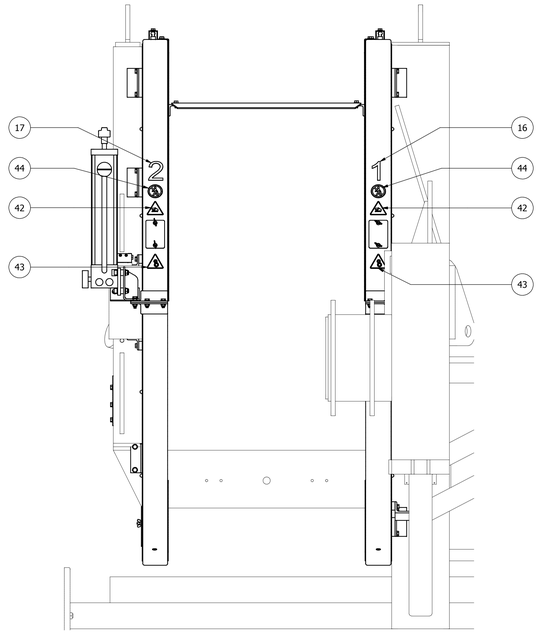
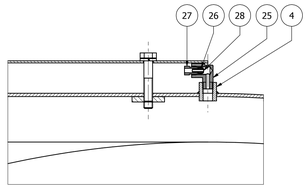
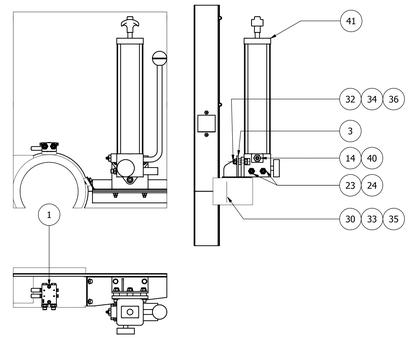


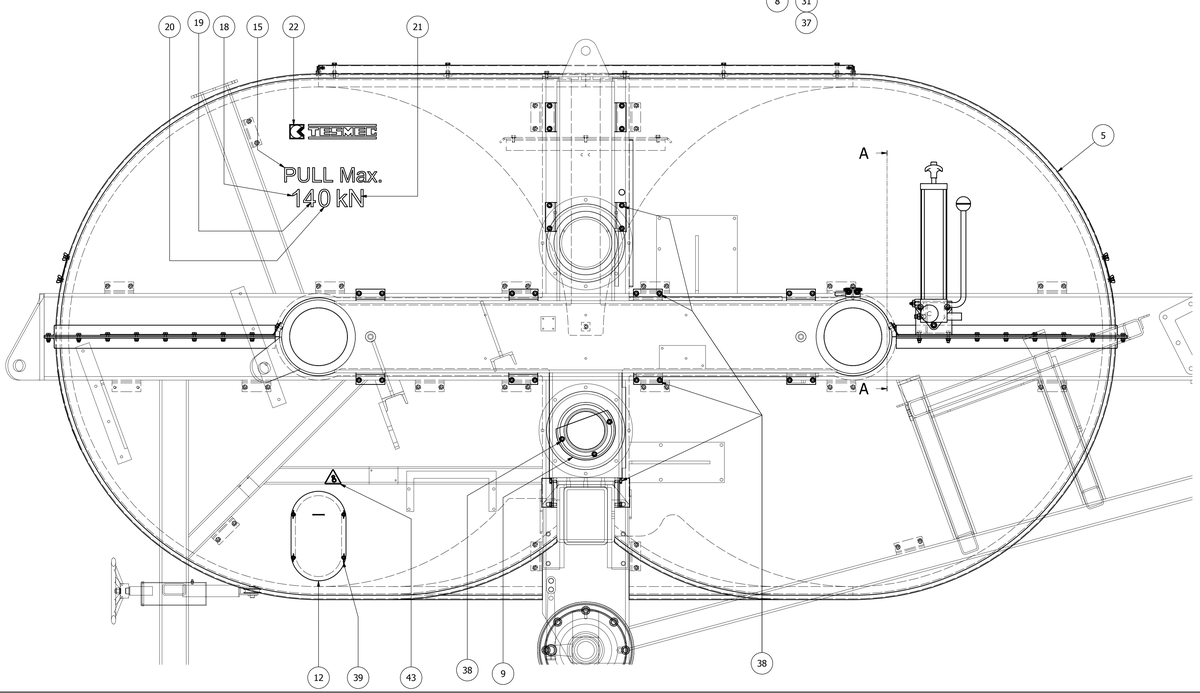


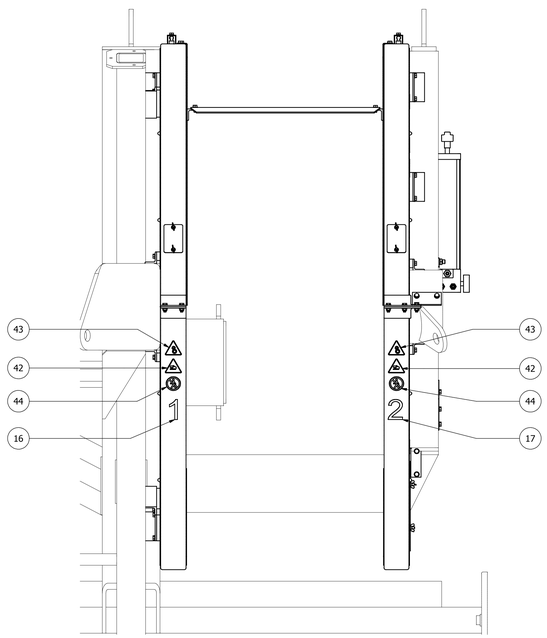


Sezione "B-B"
(1 : 2)

A-A (1 : 7.5)







ITEM	CODE	DESCRIPTION	QTY	WEIGHT
44	V00-9800-021	ADESIVO D. 50 DIVIETO DI PASSAGGIO [] STICKER	4	0 kg
43	V00-9800-011	ADESIVO T. 60 ORGANI IN MOTO [] STICKER	5	0 kg
42	V00-9800-008	ADESIVO T. 60 ATTENZIONE SCHIACCIAMENTO [] STICKER	4	0 kg
41	V00-6002-002	POMPA A MANO GRASSO 2 Kg. - DROPSA : 156070 [] PUMP	1	0 kg
40	V00-5303-005	INGRASSATORE UNI 7662 - A - DIRITTO M 10x1 [] GREASE FITTING	1	0 kg
39	H99-8900-072	DADO - UNI 5448 - AM 6 4A - AD ALETTE [] NUT	12	0 kg
38	H99-8900-004	VITE 0274 08 16 - M 8 x 16 - 8 - Z - WURTH [] BOLT	91	0 kg
37	H88-1008-002	ROSETTA - UNI 1751 - A - 8 - Z [] WASHER	8	0 kg
36	H81-1010-002	ROSETTA - ISO 7089 - TE - 10 100 HV - Z [] WASHER	6	0 kg
35	H81-1008-002	ROSETTA - ISO 7089 - TE - 8 - 100 HV - Z [] WASHER	44	0 kg
34	H77-1010-012	DADO - UNI 7473 - M 10 - GR. 8 - Z - AUTOB. [] LOCKNUT	3	0 kg
33	H77-1008-011	DADO - UNI 7473 - M 8 - GR. 8 - Z - AUTOB. [] LOCKNUT	22	0 kg
32	H56-1010-045	VITE - M 10 x 45 - ISO 4762 - 8.8 - Z [] BOLT	3	0 kg
31	H53-1008-040	VITE - M 8 x 40 - ISO 4014 - 8.8 - Z [] BOLT	8	0 kg
30	H53-1008-035	VITE - M 8 x 35 - ISO 4014 - 8.8 - Z - TE - PG - P.FIL [] BOLT	2	0 kg
29	H53-1008-025	VITE - M 8 x 25 - ISO 4014 - 8.8 - Z - TE - PG - P.FIL [] BOLT	20	0 kg
28	F99-0003-006	BOCCOLA RINFORZO x TUBO (AP) D. 4x2.5 - DROPSA : 201359 [] BUSHING	4	0 kg
27	F99-0003-005	RACCORDO TUBO - D.4 - 5/16"-24 NF - DROPSA : 92004 [] FITTING	4	0 kg
26	F99-0003-004	DOPPIOCONO D. 4 ESTERNO - DROPSA : 93004 [] DOUBLE CONE	4	0 kg
25	F99-0003-003	TERMINALE 90 ° - D.4 - 1/4" GAS CONICO M. - 5/16-24 NF F. - DROPSA : 911005 [] TERMINAL	4	0 kg
24	F11-0003-003	RONDELLA RAME D. 1/4" x 3 [] WASHER	2	0 kg
23	F04-0001-003	NIPPLO - 1/4" GAS - 1/4" GAS [] NIPPLE	2	0 kg
22	E10-9800-106	TARGA ADESIVA CANTAMESSA TESMEC 1.300 [] PLATE	1	0 kg
21	D99-90190	LETTERA ADESIVA (NUMERO) - kN - H. 60 [] ADHESIVE LETTER	1	0 kg
20	D99-90189	LETTERA ADESIVA (NUMERO) - 0 - H. 60 [] ADHESIVE LETTER	1	0 kg
19	D99-90158	LETTERA ADESIVA (NUMERO) - 1 - H. 60 [] ADHESIVE LETTER	1	0 kg
18	D99-90155	LETTERA ADESIVA (NUMERO) - 1 - H. 60 [] ADHESIVE LETTER	1	0 kg
17	D99-90152	LETTERA ADESIVA (NUMERO) - 2 - H. 75 [] ADHESIVE LETTER	2	0 kg
16	D99-90151	LETTERA ADESIVA (NUMERO) - 1 - H. 75 [] ADHESIVE LETTER	2	0 kg
15	D99-90002	LETTERA ADESIVA - TIRO Max. - H. 50 x 244 [] ADHESIVE LETTER	1	0 kg
14	D99-10032	TAPPO FORATO 3/8" Gas - FORO M10x1 [] PLUG	1	0 kg
13	D00-01637	LAMIERA PIANO CALPESTIO 5 x 560 x 655 [] PLATE	1	5.3 kg
12	D00-01636	COPERCHIO 22 x 190 x 310 - CHIUSURA / ISPEZIONE [] COVER	1	1.2 kg
11	D00-01634	STAFFA CARTER TRAVERSA 5 x 100 x 600 [] MOUNTING	1	1 kg
10	D00-01633	STAFFA CARTER TRAVERSA 5 x 100 x 600 [] MOUNTING	1	1 kg
9	D00-01572	CARTER CHIUSURA PIGNONE 2 x 142.5 x 205 [] CASE	1	0.4 kg
8	D00-01571	PROTEZIONE TUBI IMP.GRASSO 30 x 30 x 1850 [] GUARD	2	2.5 kg
7	D00-01570	CARTER PIGNONE 35 x 909 x 1850 [] CASE	1	10.7 kg
6	D00-01569	CARTER PIGNONE 35 x 909 x 1850 [] CASE	1	10.7 kg
5	D00-01568	CARTER CORONE TRAVERSA 88 x 1820 x 3750 [] CASE	1	131.8 kg
4	D00-01565	CARTER CORONE TELAIO 90 x 1820 x 3750 [] CASE	1	123.1 kg
3	D00-00149	STAFFA POMPA GRASSO 55 x 115 x 125 [] MOUNTING	1	0.9 kg
2	D00-00097	COPERCHIO SPIA ISPEZIONE 2 x 65 x 100 [] COVER	4	0 kg
1	A99-10118	ASSIEME VALVOLA DOSATRICE DROPSA - 623200 - V00-7200-022 [] ASSEMBLY	1	0.4 kg

TESMEC
GRASSOBBIO (BG) Tel.035/4332911 - Fax 035/4522445
ENNE (PZ) Tel.0971/925124 - Fax 0971/926173

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE.

SALDATURE IN ACCORDO CON — WPS 1-9

GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE

LAV.MECCANICHE UNI EN 22768-f H

CARPENTERIA UNI EN 22768-c K

DISEGNATO	Locatelli G.
DATA	11/10/2011
PESO	294,29 kg
SCALA	1:7.5

FRENO BINATO

FRB 616 020

ASSIEME MONTAGGIO COPERTURE

FOGLIO 1 / 1

NUMERO DISEGNO A13-00010

A0

DATE	SYM	REVISION RECORD	DR	CK
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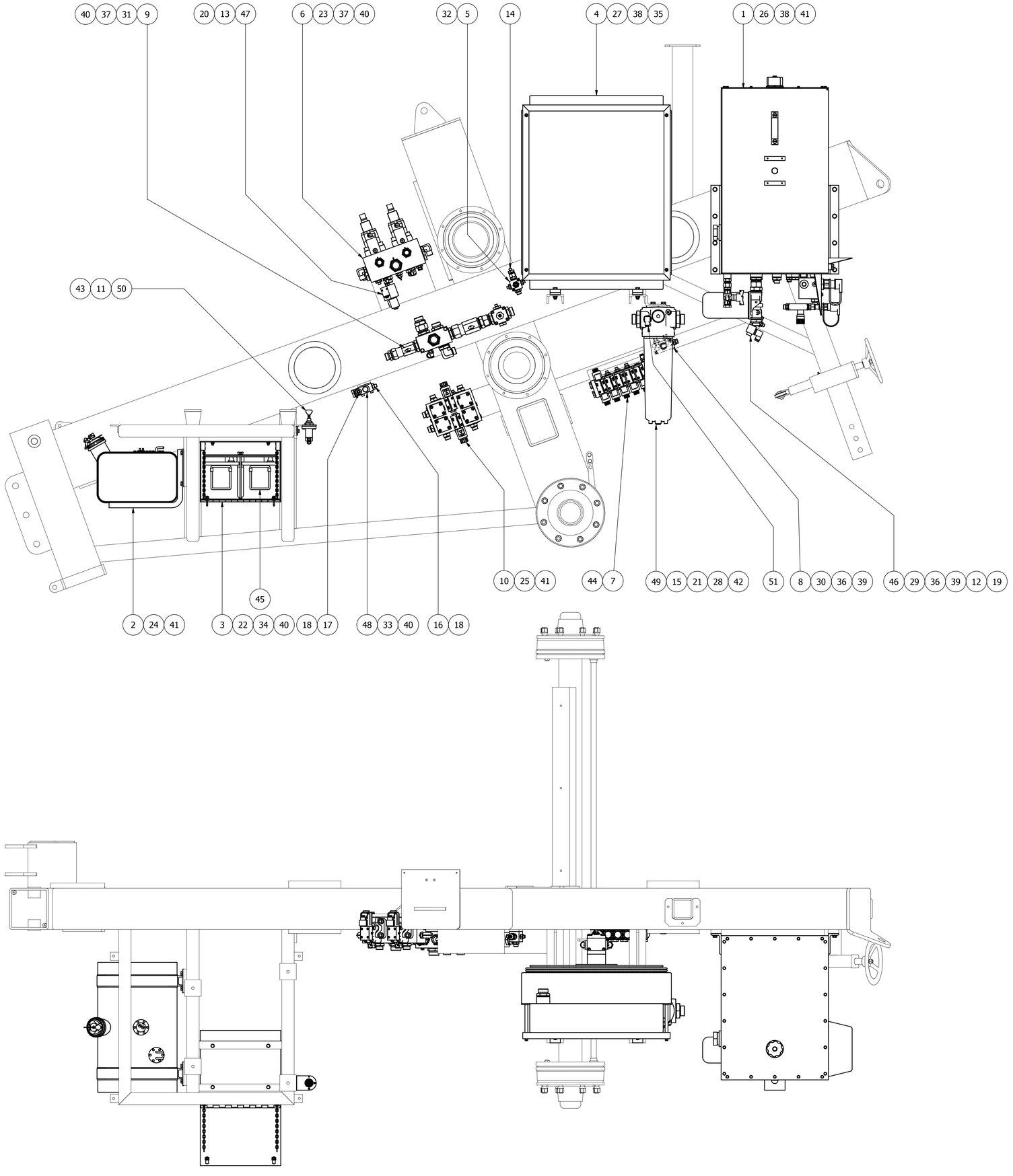
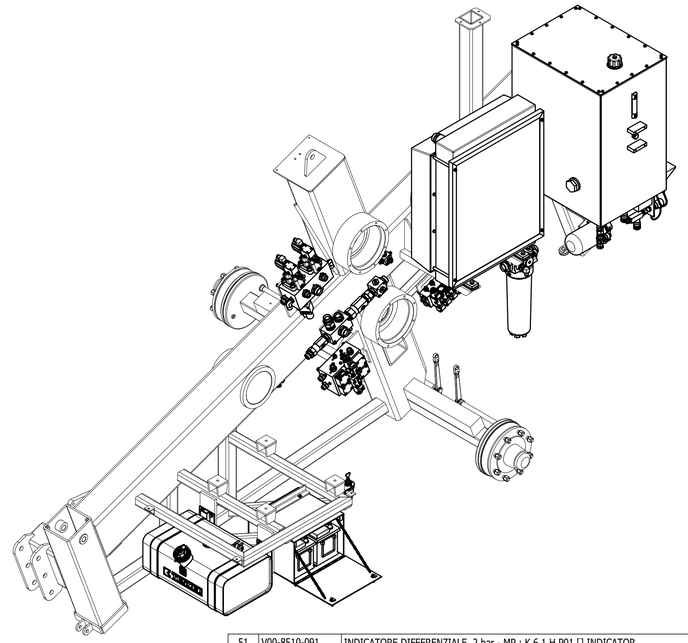




ITEM	CODE	DESCRIPTION	QTY	WEIGHT
51	V00-8510-091	INDICATORE DIFFERENZIALE 2 bar - MP : K 6 1 H P01 [] INDICATOR	1	0.2 kg
50	V00-8401-038	INTERRUTTORE STACCABATTERIA 12-24 V - 250 A - IP 65 - COBO : 13.007.005 [] SWITCH	1	0.3 kg
49	V00-6600-056	FILTRO - MP : LMP 400 4 B A G2 P25 N P01 [] FILTER	1	8.4 kg
48	V00-6200-006	VALVOLA RICAMBIO OLIO [] VALVE	1	0 kg
47	V00-6100-034	ELETTROVALVOLA SBV11-10-C-S-3G-24DGH - EATON : 02-184416 [] SOLENOID VALVE	1	1.6 kg
46	V00-6100-019	ELETTROVALVOLA - OLEOSTAR : EC-08-A/1-0-N-B/B-1-1 [] SOLENOID VALVE	1	0.5 kg
45	V00-1500-003	BATTERIA 100 Ah 12 V - EN 760 A -B.325-L.175-H POLI 205-EXIDE:600/0 [] BATTERY	2	9.7 kg
44	H99-8900-006	VITE 0274 08 25 - M 8 x 25 - 8 - Z - WURTH [] BOLT	4	0 kg
43	H99-8900-004	VITE 0274 08 16 - M 8 x 16 - 8 - Z - WURTH [] BOLT	2	0 kg
42	H88-1012-003	ROSETTA - UNI 1751 - A - 12 - Z [] WASHER	4	0 kg
41	H88-1010-002	ROSETTA - UNI 1751 - A - 10 - Z [] WASHER	20	0 kg
40	H88-1008-002	ROSETTA - UNI 1751 - A - 8 - Z [] WASHER	9	0 kg
39	H88-1006-002	ROSETTA - UNI 1751 - A - 6 - Z [] WASHER	4	0 kg
38	H81-1010-002	ROSETTA - ISO 7089 - TE - 10 100 HV - Z [] WASHER	16	0 kg
37	H81-1008-002	ROSETTA - ISO 7089 - TE - 8 - 100 HV - Z [] WASHER	14	0 kg
36	H81-1006-002	ROSETTA - ISO 7089 - TE - 6 100 HV - Z [] WASHER	4	0 kg
35	H77-1010-012	DADO - UNI 7473 - M 10 - GR. 8 - Z - AUTOB. [] LOCKNUT	4	0 kg
34	H77-1008-011	DADO - UNI 7473 - M 8 - GR. 8 - Z - AUTOB. [] LOCKNUT	4	0 kg
33	H56-1008-050	VITE - M 8 x 50 - ISO 4762 - 8.8 - Z [] BOLT	3	0 kg
32	H56-1006-050	VITE - M 6 x 50 - ISO 4762 - 8.8 - Z [] BOLT	2	0 kg
31	H53-1008-090	VITE - M 8 x 90 - ISO 4014 - 8.8 - Z - TE - PG - P.FIL [] BOLT	2	0 kg
30	H53-1006-060	VITE - M 6 x 60 - ISO 4014 - 8.8 - Z [] BOLT	2	0 kg
29	H53-1006-040	VITE - M 6 x 40 - ISO 4014 - 8.8 - Z [] BOLT	2	0 kg
28	H50-1012-025	VITE - ISO 4017 - M 12 x 25 - 8.8 - Z - TE - PG - I.FIL [] BOLT	4	0 kg
27	H50-1010-050	VITE - M 10 x 50 - ISO 4017 - 8.8 - Z [] BOLT	4	0 kg
26	H50-1010-030	VITE - M 10 x 30 - ISO 4017 - 8.8 - Z [] BOLT	8	0 kg
25	H50-1010-025	VITE - M 10 x 25 - ISO 4017 - 8.8 - Z [] BOLT	4	0 kg
24	H50-1010-020	VITE - M 10 x 20 - ISO 4017 - 8.8 - Z [] BOLT	8	0 kg
23	H50-1008-030	VITE - M 8 x 30 - ISO 4017 - 8.8 - Z [] BOLT	4	0 kg
22	H50-1008-025	VITE - M 8 x 25 - ISO 4017 - 8.8 - Z [] BOLT	4	0 kg
21	F11-0003-013	RONDELLA RAME D. 2" x 3 [] WASHER	2	0 kg
20	F11-0003-005	RONDELLA RAME D. 3/8" x 3 [] WASHER	2	0 kg
19	F11-0003-003	RONDELLA RAME D. 1/4" x 3 [] WASHER	2	0 kg
18	F11-0002-022	RONDELLA RAME D. 22 / 28 x 1.5 [] WASHER	3	0 kg
17	F04-0006-030	NIPPLO - 3/8" GAS - M22x1.5 [] NIPPLE	1	0.1 kg
16	F04-0006-026	NIPPLO - 1/4" GAS - M22x1.5 [] NIPPLE	2	0 kg
15	F04-0001-027	NIPPLO - 2" GAS - 1" 1/2 GAS [] NIPPLE	2	0.8 kg
14	F04-0001-016	NIPPLO 1/2 " GAS - 1/4 " GAS [] NIPPLE	1	0.1 kg
13	F04-0001-005	NIPPLO - 3/8 " GAS - 3/8 " GAS [] NIPPLE	2	0 kg
12	F04-0001-003	NIPPLO - 1/4" GAS - 1/4" GAS [] NIPPLE	2	0 kg
11	D00-00129	SUPPORTO STACCABATTERIE 50 x 70 x 95 [] SUPPORT	1	0.1 kg
10	A99-10141	ASSIEME BLOCCO ELETTROVALVOLE ABILITAZIONE ARGANO [] ASSEMBLY	1	20.9 kg
9	A99-10135	ASSIEME BLOCCHETTI IN - OUT RADIATORE OLIO - Blocchetti D99-10008 - D99-10002 [] ASSEMBLY	1	11.8 kg
8	A99-10134	ASSIEME BLOCCHETTO - D99-10001 - N°3 NIPPLI 1/2" - N°1 NIPPLO 3/4" [] ASSEMBLY	1	0.9 kg
7	A99-10133	ASSIEME BASE MULTIPLA CETOP 03 (5) - N°1 VALVOLA V00-6100-016 - N°4 VALVOLE V00-6100-017 [] ASSEMBLY	1	11.3 kg
6	A99-10117	ASSIEME BLOCCO - D99-10082 - N°2 VALVOLE V00-6209-003 [] ASSEMBLY	1	35.3 kg
5	A99-10112	ASSIEME BLOCCHETTO - D99-10073 [] ASSEMBLY	1	0.7 kg
4	A99-10067	ASSIEME RADIATORE OLIO x FRS 615 001 [] ASSEMBLY	1	21 kg
3	A26-00002	ASSIEME CASSETTA 2 BATTERIE - Larg.390 - Prof.360 - Alt.283 [] ASSEMBLY	1	17.4 kg
2	A14-00039	ASSIEME SERBATOIO CARBURANTE 50 L x FRB 616 020 [] ASSEMBLY	1	11.7 kg
1	A14-00038	ASSIEME SERBATOIO OLIO x FRB 616 020 [] ASSEMBLY	1	137.8 kg

TESMEC
GRASSOBBIO (BG) Tel.035/4232911 – Fax 035/4522445
ENDINE G. (BG) Tel.035/825024 – Fax 035/826375

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE.

SALDATURE IN ACCORDO CON – WPS 1÷9

GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE

LAV.MECCANICHE UNI EN 22768-f H

CARPENTERIA UNI EN 22768-c K

DIS. VISTO	
DATA	Locatelli G.
PESO	07/03/2012
SCALA	302,39 kg
	1:10

DENOMINAZIONE: FRENO BINATO

FRB 616 020

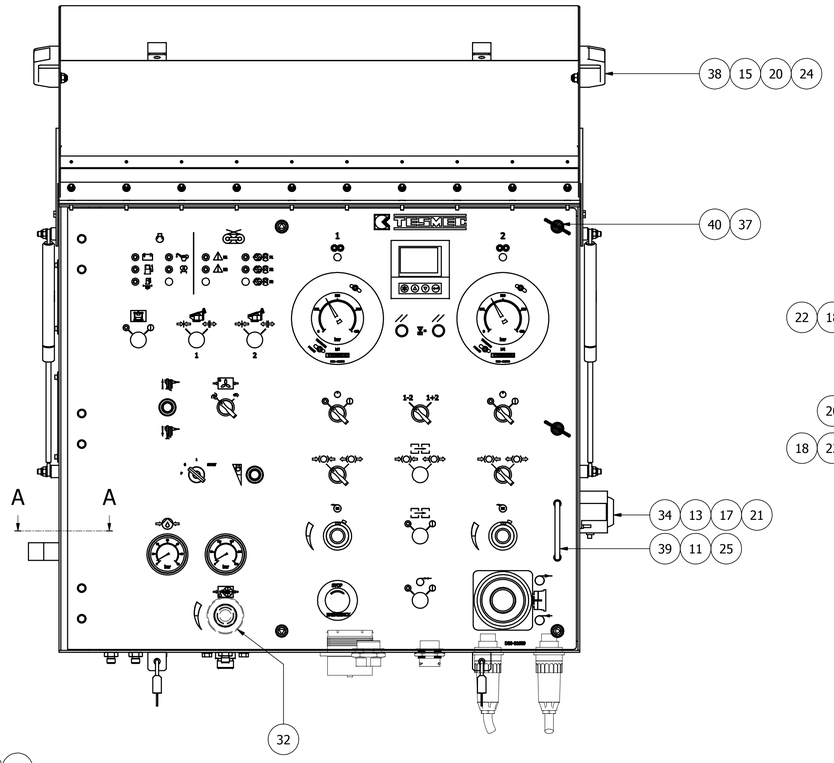
ASSIEME ALIMENTAZIONE

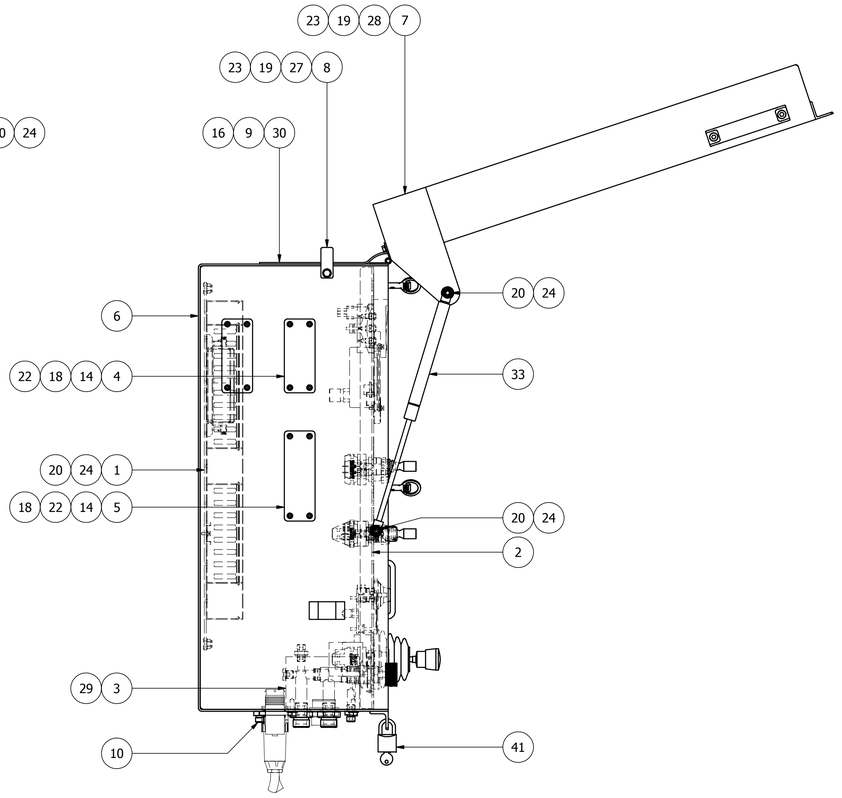
FOGLIO 1 / 1

NUMERO DISEGNO A14-00037

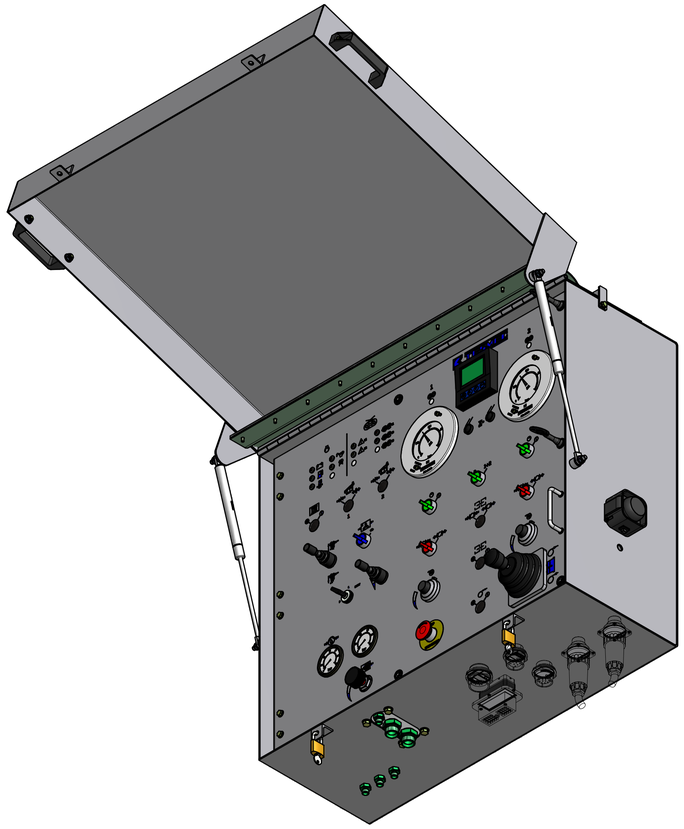
A1

DATE	SYM	REVISION RECORD	DR	CK





SEZIONE A-A (1 : 2)



ITEM	CODE	DESCRIPTION	QTY	WEIGHT
41	V00-9040-052	LUCCHETTO + CHIAVE - CISA 21010-30 KA D. 5 [] PADLOCK	2	0.1 kg
40	V00-9040-045	CHIUSURA CROMATA - EMKA - D.20 - GH=13.5 - H=13.5 - CH. TRIANG. 6.5 [] LOCKING	5	0 kg
39	V00-9040-023	MANIGLIA - ELESA : GN425-10-88-CR [] HANDLE	1	0.1 kg
38	V00-9040-022	MANIGLIA - ELESA : M.443/140-8-CH [] HANDLE	2	0 kg
37	V00-9040-016	CHIAVE A TRIANGOLO 6.5 mm - EMKA - 1004-21 [] KEY	2	0 kg
36	V00-9010-053	ANELLO - DIN 7434 - 4 - E [] RING	3	0 kg
35	V00-9000-007	CERNIERA 120 NERA - EMKA : 1110-U86 [] HINGE	3	0.1 kg
34	V00-8401-042	AVVISATORE ACUSTICO 12 V 129 dB - IP 54 [] HORN	1	0.2 kg
33	V00-6520-003	MOLLA A GAS STABILUS LIFT-O-MAT 094781 - 35 Kg - Corsa: 160 L. aperta: 405 [] SPRING	2	0.1 kg
32	V00-5305-004	GALLEGGIANTE x INFILZADORA - FERRAMENTA MONTANARI : Art.954 Cod.34037 [] FLOAT	1	0 kg
31	V00-5305-003	GUARNIZIONE AUTOBLOCCANTE - EMKA : 1011-06 [] SEAL	1	0.2 kg
30	V00-1630-001	RIVESTIMENTO DI GOMMA (BELTING) sp. 2,6 - IMAS U21 [] COATING	1	0.8 kg
29	H99-8900-004	VITE 0274 08 16 - M 8 x 16 - 8 - Z - WURTH [] BOLT	4	0 kg
28	H99-8900-003	VITE 0274 06 20 - M 6 x 20 - 8 - Z - WURTH [] BOLT	16	0 kg
27	H99-8900-002	VITE 0274 06 16 - M 6 x 16 - 8 - Z - WURTH [] BOLT	2	0 kg
26	H88-1006-002	ROSETTA - UNI 1751 - A - 6 - Z [] WASHER	6	0 kg
25	H88-1005-001	ROSETTA - UNI 1751 - A - 5 - Z [] WASHER	2	0 kg
24	H81-1008-002	ROSETTA - ISO 7089 - TE - 8 - 100 HV - Z [] WASHER	20	0 kg
23	H81-1006-002	ROSETTA - ISO 7089 - TE - 6 100 HV - Z [] WASHER	18	0 kg
22	H81-1004-001	ROSETTA - ISO 7089 - TE - 4 100 HV - Z [] WASHER	24	0 kg
21	H81-1003-001	ROSETTA - ISO 7089 - TE - 3 100 HV - Z [] WASHER	2	0 kg
20	H77-1008-011	DADO - UNI 7473 - M 8 - GR. 8 - Z - AUTOB. [] LOCKNUT	12	0 kg
19	H77-1006-008	DADO - UNI 7473 - M 6 - GR. 8 - Z - AUTOB. [] LOCKNUT	18	0 kg
18	H77-1004-006	DADO - UNI 7473 - M 4 - GR. 8 - Z - AUTOB. [] LOCKNUT	12	0 kg
17	H77-1003-004	DADO - UNI 7473 - M 3 - GR. 8 - Z - AUTOB. [] LOCKNUT	2	0 kg
16	H58-1005-016	VITE - ISO 10642 - M 5 x 16 - 10.9 - Z - TSEI [] BOLT	10	0 kg
15	H56-1008-020	VITE - ISO 4762 - M 8 x 20 - 8.8 - Z - TCEI - PG [] BOLT	4	0 kg
14	H56-1004-012	VITE - M 4 x 12 - ISO 4762 - 8.8 - Z [] BOLT	12	0 kg
13	H56-1003-010	VITE - ISO 4762 - M 3 x 10 - 8.8 - Z - TCEI - PG [] BOLT	2	0 kg
12	H50-1006-010	VITE-ISO 4017-M6x10-8.8-Z [] BOLT	6	0 kg
11	H50-1005-012	VITE-ISO 4017-M5x12-8.8-Z [] BOLT	2	0 kg
10	F14-0001-003	PASSAPARETE DIRITTO 1/4" GAS - 1/4" GAS [] BULKHEAD CLASS	3	0 kg
9	D00-01647	FERMO PROTEZIONE BELTING - Allum. 5 x 30 x 850 [] RETAINER	1	0.3 kg
8	D00-01646	FERMO CERATA BELTING 20 x 50 x 856.5 [] RETAINER	1	0.6 kg
7	D00-01645	COPERCHIO CRUSCOTTO 195 x 730 x 850 [] COVER	1	16.7 kg
6	D00-01573	CRUSCOTTO 310 x 730 x 850 [] PANEL	1	40.5 kg
5	D00-01396	PIASTRA CHIUSURA 2 x 50 x 147 [] PLATE	1	0.1 kg
4	D00-00114	PIASTRA CHIUSURA 2 x 50 x 120 [] PLATE	2	0.1 kg
3	A99-10136	ASSIEME BLOCCHETTO - D99-10003 [] ASSEMBLY	1	2.9 kg
2	A15-00039	ASSIEME PANNELLO STRUMENTI x FRB 616 020 [] ASSEMBLY	1	11.5 kg
1	A15-00033	ASSIEME PIASTRA P/COMPONENTI x FRB 616 001 [] ASSEMBLY	1	12.8 kg

TESMEC
GRASSOBBIO (BG) Tel.035/4232911 – Fax 035/4522445
EDONE G (BG) Tel.035/825024 – Fax 035/826375

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE.

SALDATURE IN ACCORDO CON – WPS 1-9

GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE

LAV.MECCANICHE UNI EN 22768-f H

CARPENTERIA UNI EN 22768-c K

DIS. / VISTO	
DATA	Locatelli G.
PESO	27/07/2011
SCALA	88,30 kg
	1:5

DENOMINAZIONE: FRENO BINATO

FRB 616 020

ASSIEME CRUSCOTTO

FOGLIO 1 / 1

NUMERO DISEGNO A15-00035

DATE	SYM	REVISION RECORD	DR	CK
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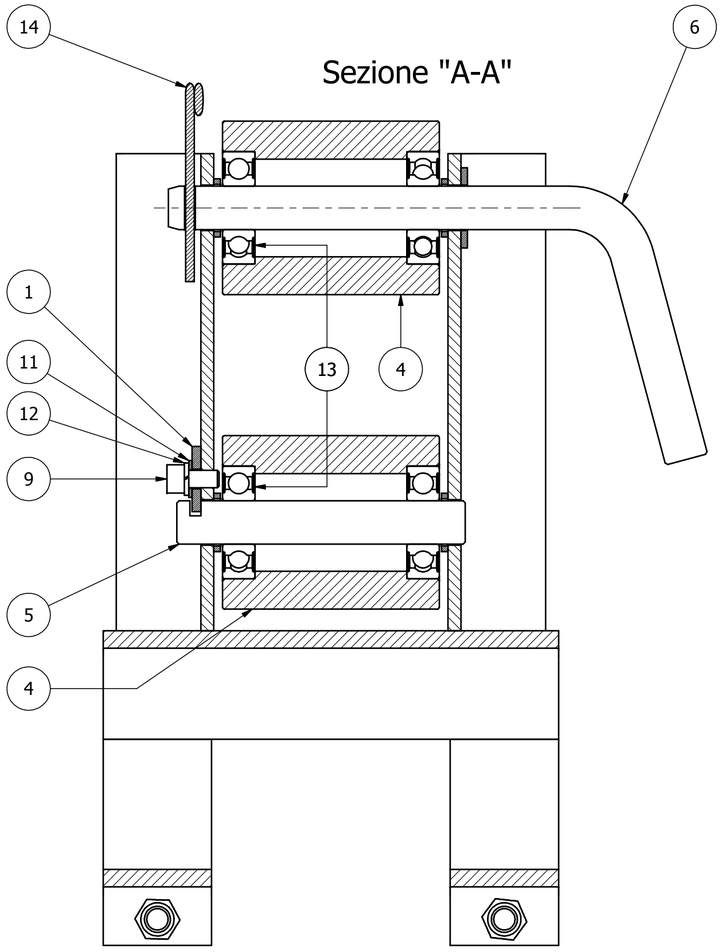
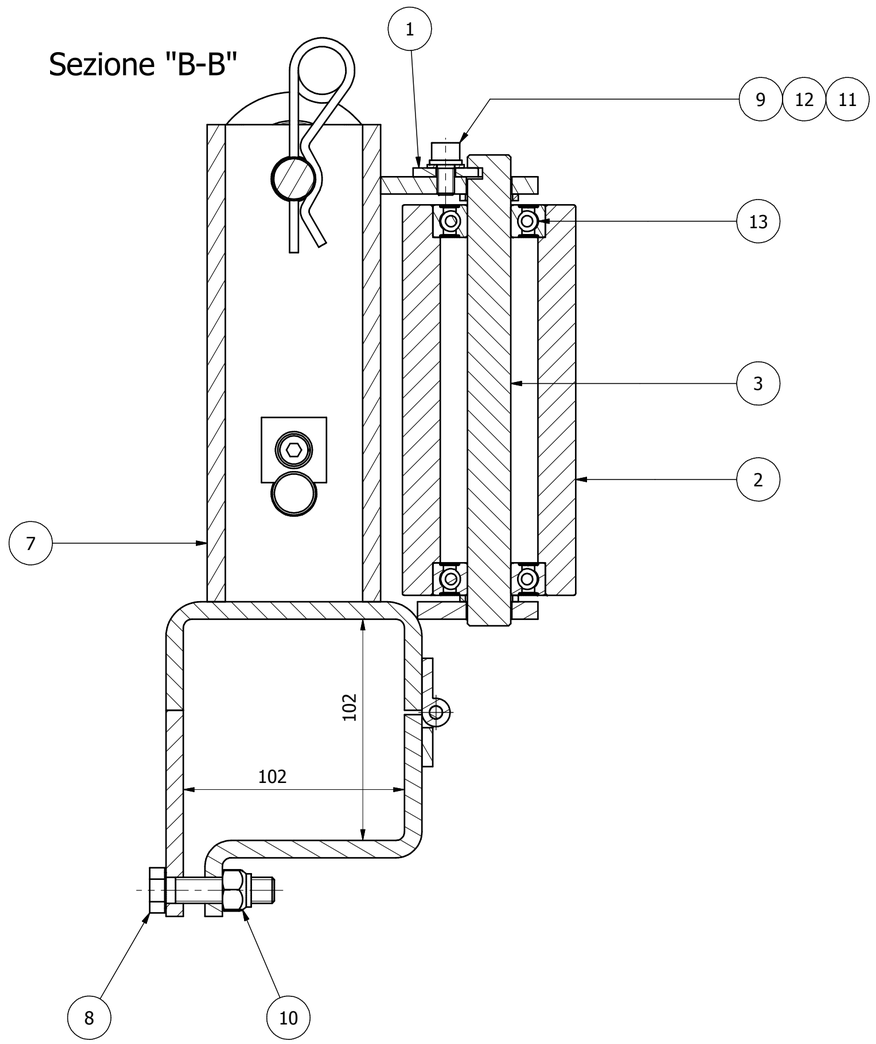
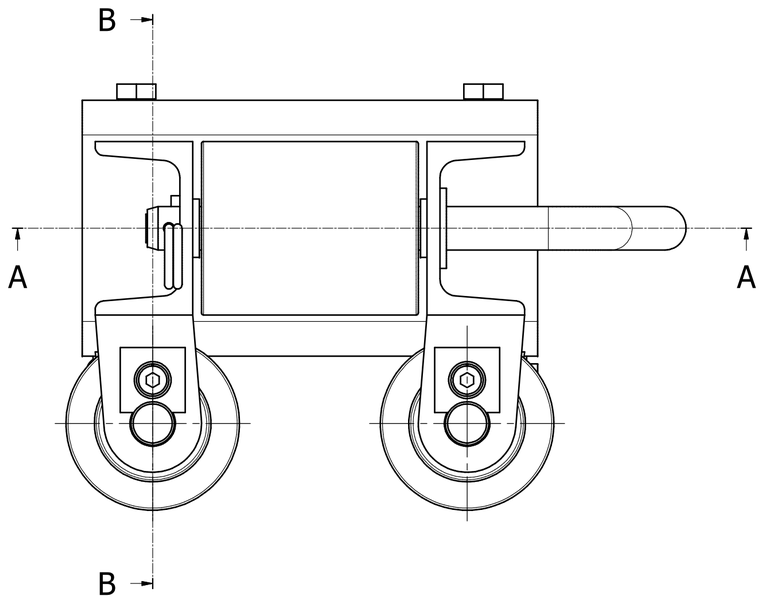
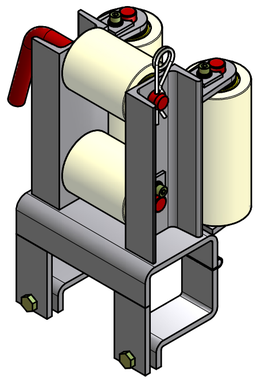








ITEM	CODE	DESCRIPTION	QTY	WEIGHT
14	V00-9030-044	COPIGLIA A MOLLA - DOPPIO GIRO D. 4 - AMA : ART. 469 [] COTTER PIN	1	0 kg
13	V00-5100-010	CUSCINETTO 6304-RSH - RADIALE A SFERE - d 20 / D 52 x B 15 [] BEARING	8	0.1 kg
12	H88-1008-002	ROSETTA - UNI 1751 - A - 8 - Z [] WASHER	3	0 kg
11	H81-1008-002	ROSETTA - ISO 7089 - TE - 8 - 100 HV - Z [] WASHER	3	0 kg
10	H77-1012-015	DADO - UNI 7473 - M 12 - GR. 8 - Z - AUTOB. [] LOCKNUT	2	0 kg
9	H56-1008-016	VITE - ISO 4762 - M 8 x 16 - 8.8 - Z - TCEI - PG [] BOLT	3	0 kg
8	H50-1012-050	VITE - M 12 x 50 - ISO 4017 - 8.8 - Z [] BOLT	2	0.1 kg
7	D00-01320	SUPPORTO RULLI 180 x 210 x 365 [] SUPPORT	1	8.7 kg
6	D00-00555	PERNO D. 20 - A MANIGLIA [] PIN	1	0.8 kg
5	D00-00554	PERNO S275JR D. 20 x lg. 133 - ZINCATO - SEDE PIASTRINA [] PIN	1	0.3 kg
4	D00-00551	RULLO Zellamid PA 6 G D. 80 / 45 x lg. 100 [] ROLLER	2	0.4 kg
3	D00-00537	PERNO D. 20 x lg. 217 - ZINCATO - SEDE PIASTRINA [] PIN	2	0.5 kg
2	D00-00072	RULLO D. 80 / 45 x lg. 180 [] ROLLER	2	0.7 kg
1	D00-00071	PIASTRA - S 235 JR - 4 x 30 x 30 [] PLATE	3	0 kg

TESMEC
GRASSOBBIO (BG) Tel.035/4232911 – Fax 035/4522445
ENDINE G (BG) Tel.035/825024 – Fax 035/826375

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE.

SALDATURE IN ACCORDO CON – WPS 1÷9

GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE

LAV.MECCANICHE UNI EN 22768-f H

CARPENTERIA UNI EN 22768-c K

VISTO

DIS. Foresti P.

DATA 10/02/2011

PESO 14,48 kg

SCALA 1:2

DENOMINAZIONE

ARGANI FRENI - FRENI

VARI

ASSIEME MONTAGGIO RULLIERA

FOGLIO 1 / 1

NUMERO DISEGNO A17-00013

A2

Table Of the board

Nominal Tension : Vn =

Frequency : f =

Powers, Currents, Protections And Type Lines Feeding :

Reference Line	*Origin Protection Line*	*Powers And Currents Line*	*Notes*
+1	-F1		
+2	-F2		
+3	-F3		
+4	-F4		
+5	-F5		
+6	-F6		
+7	-F7		
+8	-F8		
+9	-F9		
+10	-F10		
+11	-F11		
+12	-F12		

Structure oF the Board :

Minimal Degree oF the Protection :

Notes:

10			
09			
08			
07			
06			
05			
04			
03			
02			
01			
REV	REVIEW	DATE	SIGN

SERIES :

WORKING ORDER : S01-00019

CUSTOMER : FRB 616 020

	DATE	SIGNATURE
DRAFTSMAN	08/07/2011	*Facoetti*
VERIFIED		
APPROVED		*Ing. Oscar*
LOG. PROD.		

TESMEC

FRB 616 020

PRESETTINGS :

☐ ... ...
☐ ... ...
☐ ... ...
☐ ... ...
☐ ... ...
☐ ... ...

EQUIPMENT :

☐ ... ...
☐ ... ...
☐ ... ...
☐ ... ...
☐ ... ...
☐ ... ...

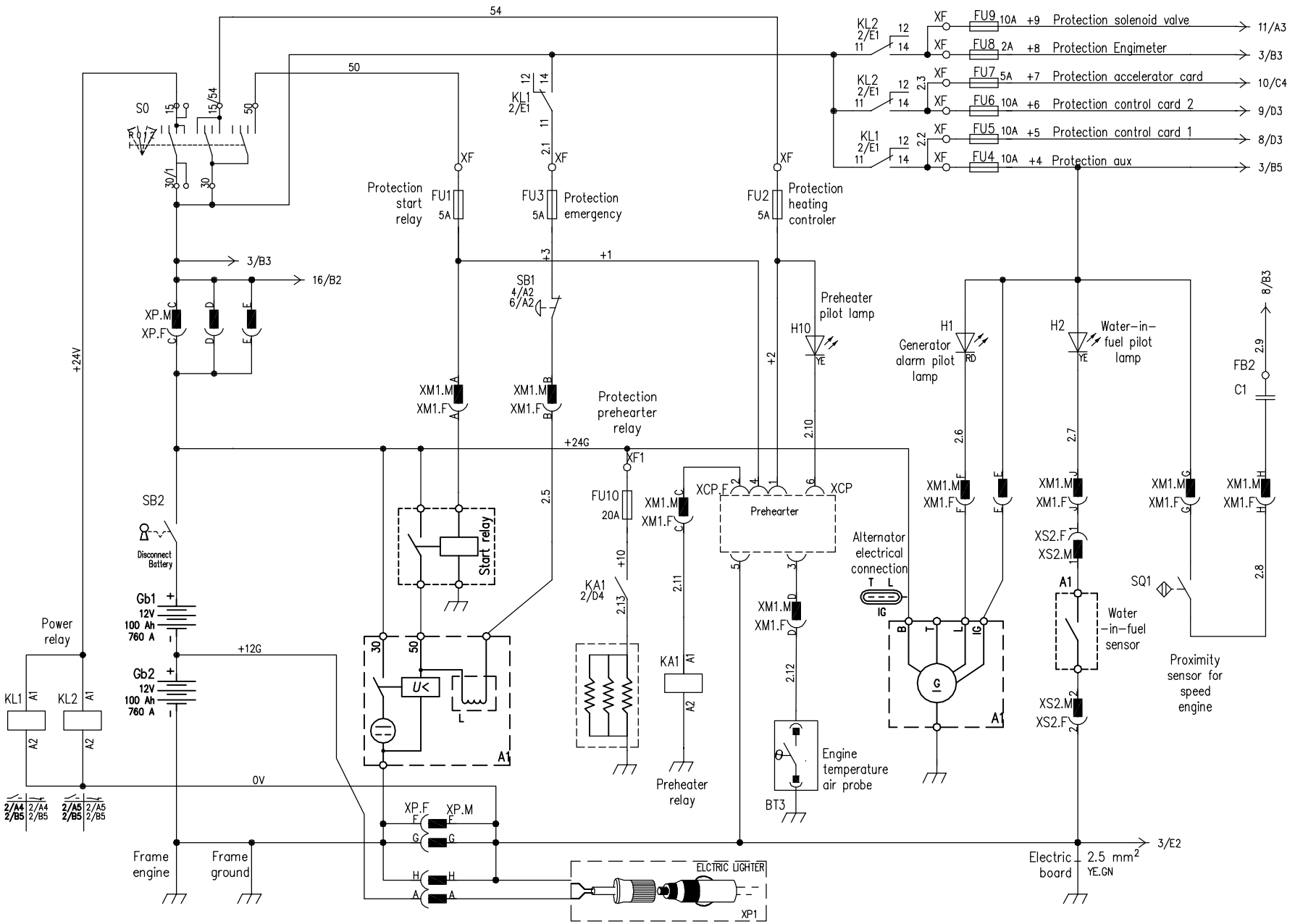
ARCHIVES FILES:

\\ TESMEC5 \ EGPSchemiElettrici \
\\ TESMEC5 \ TES.PLOT \ 40000 \

S01-00019.DWG

SHEET 1

TOTAL SHEET 36



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

Electric scheme

ENGINE INTERFACE

Design : FRB 616 020

Drawn: Facoetti

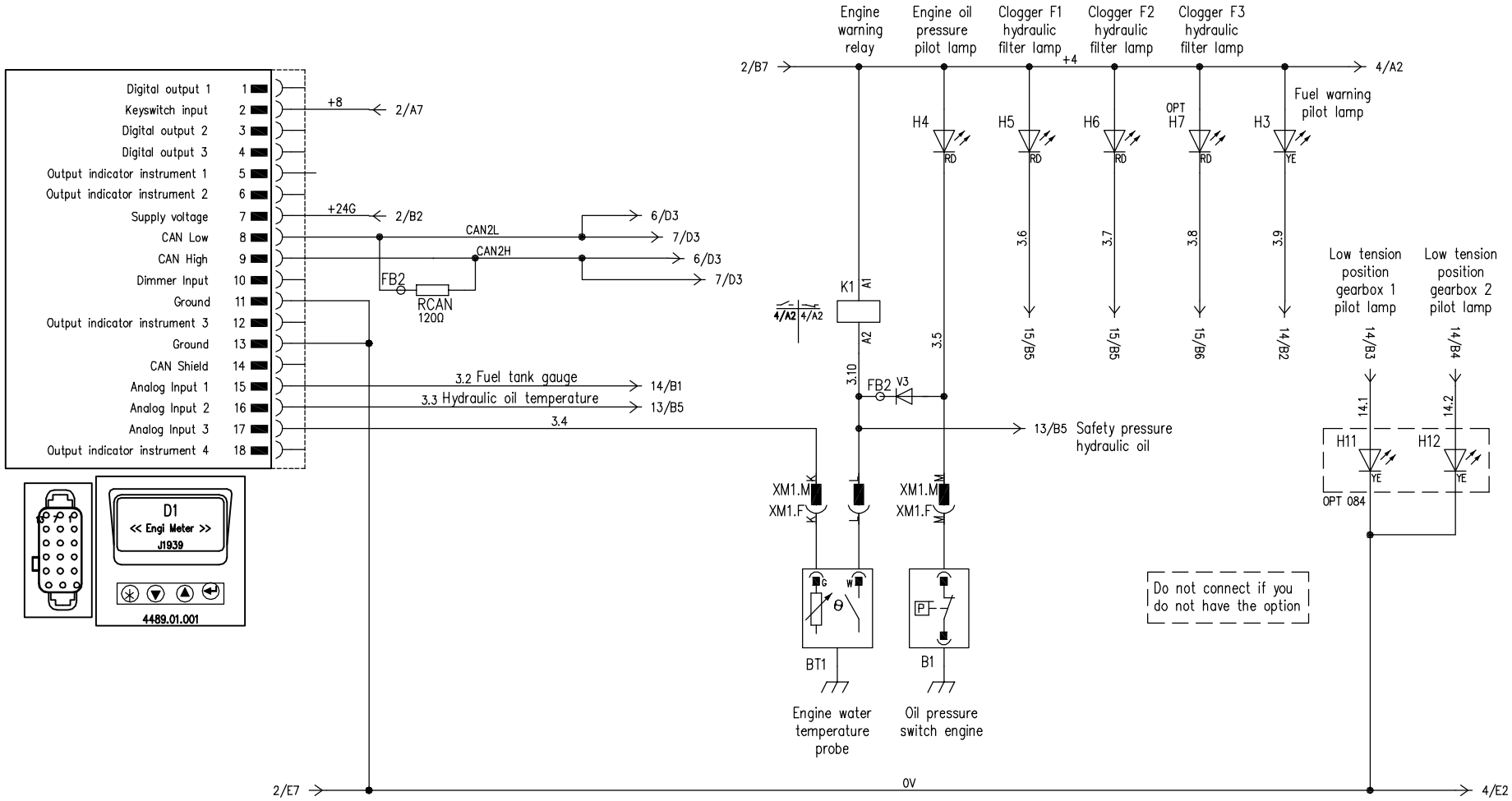
Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

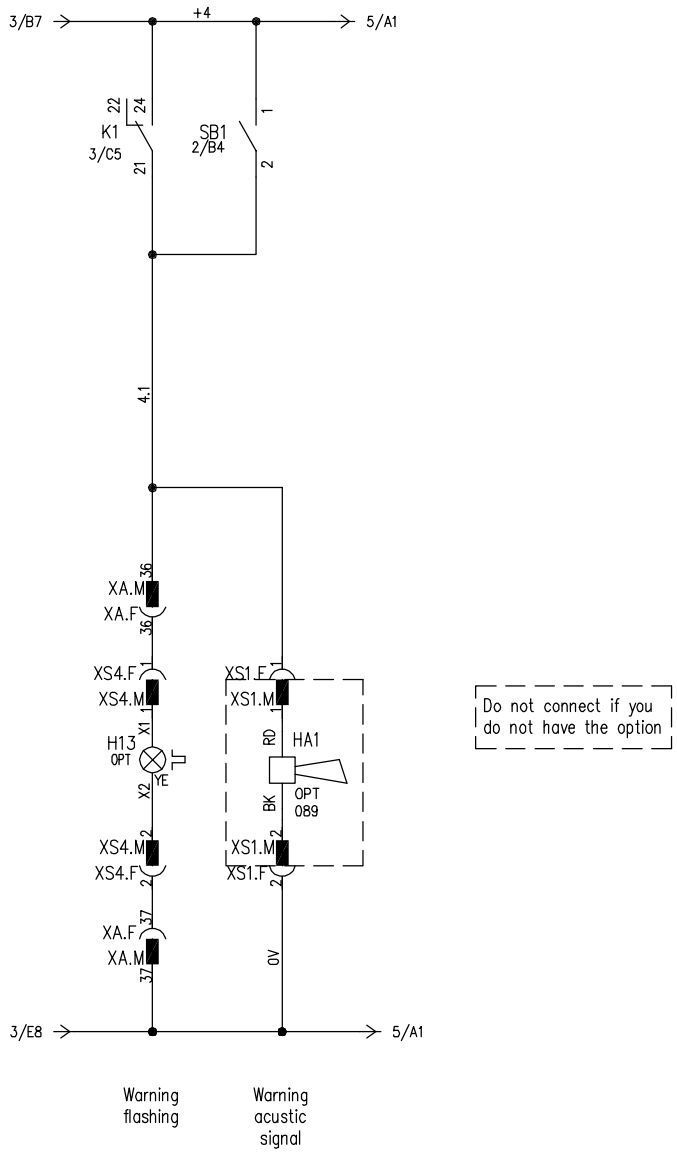
Sheet 2 of 36

Following 3



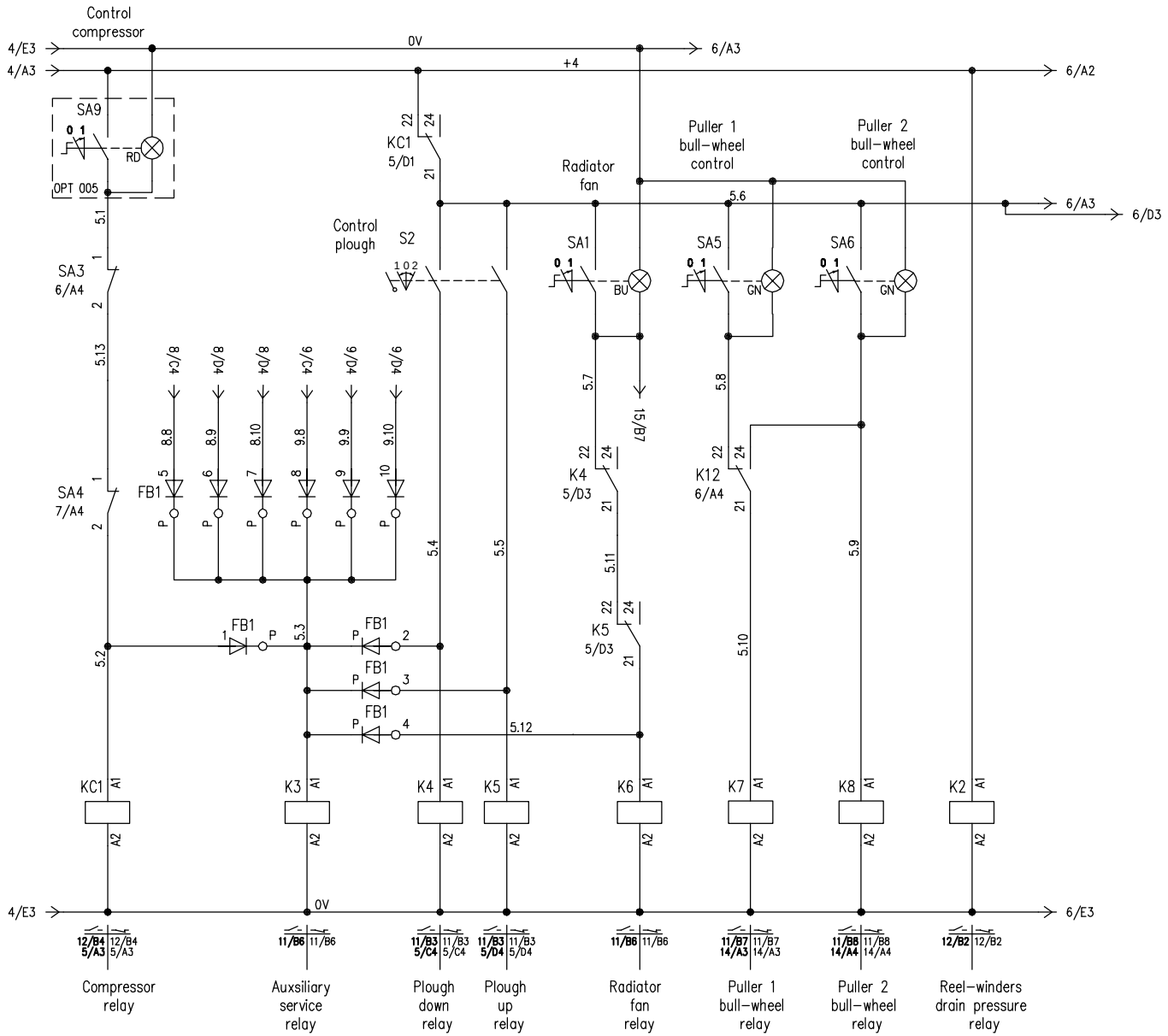
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme	ENGINE INTERFACE	Drawn: Facoetti	Drawing Nr. S01-00019 Archive Nr. S01	Sheet 3 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 4



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

Electric scheme	ALARM	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 4 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 5



Do not connect if you do not have the option

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

Electric scheme

AUXILIARY CONTROL

Design : FRB 616 020

Drawn: Facoetti

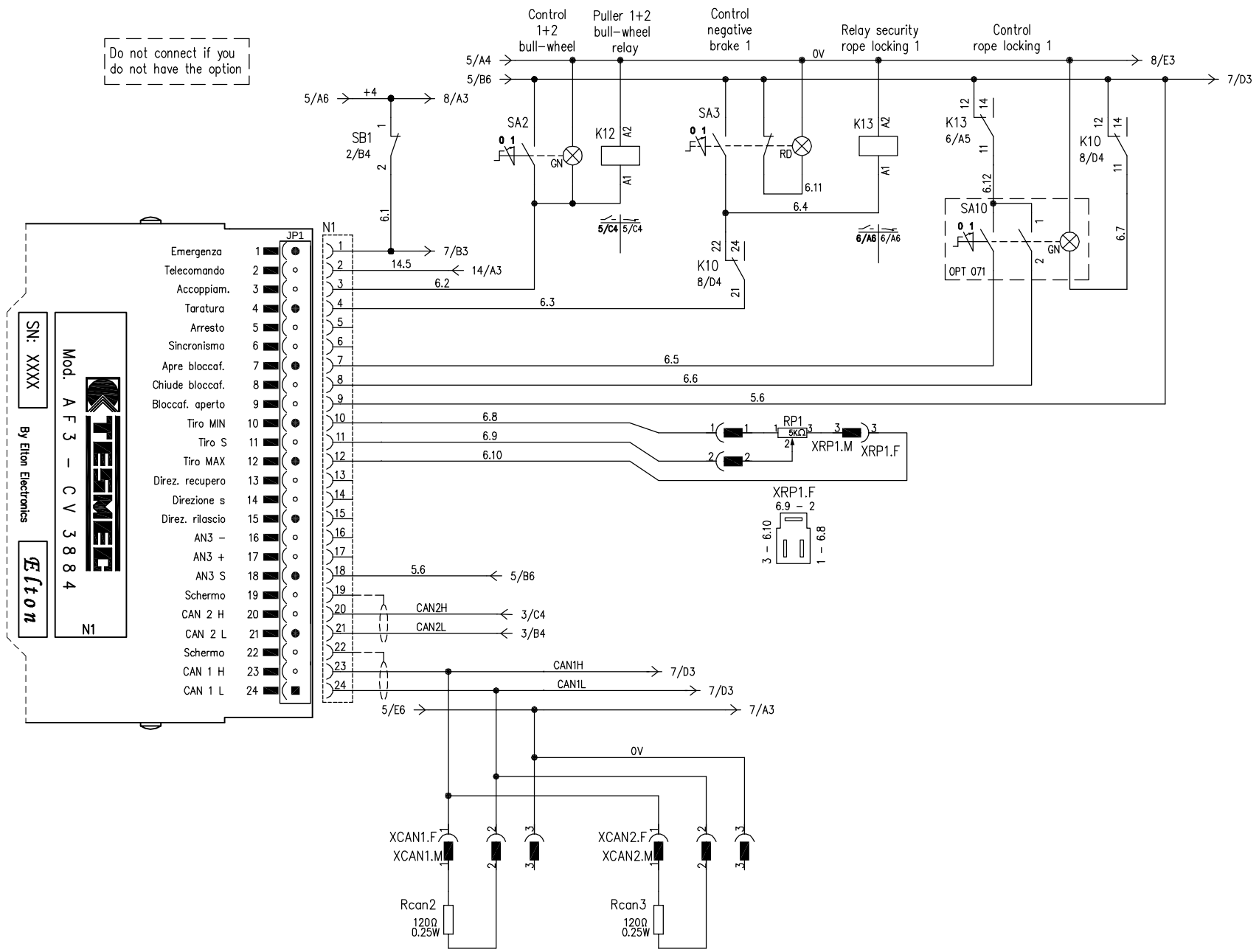
Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

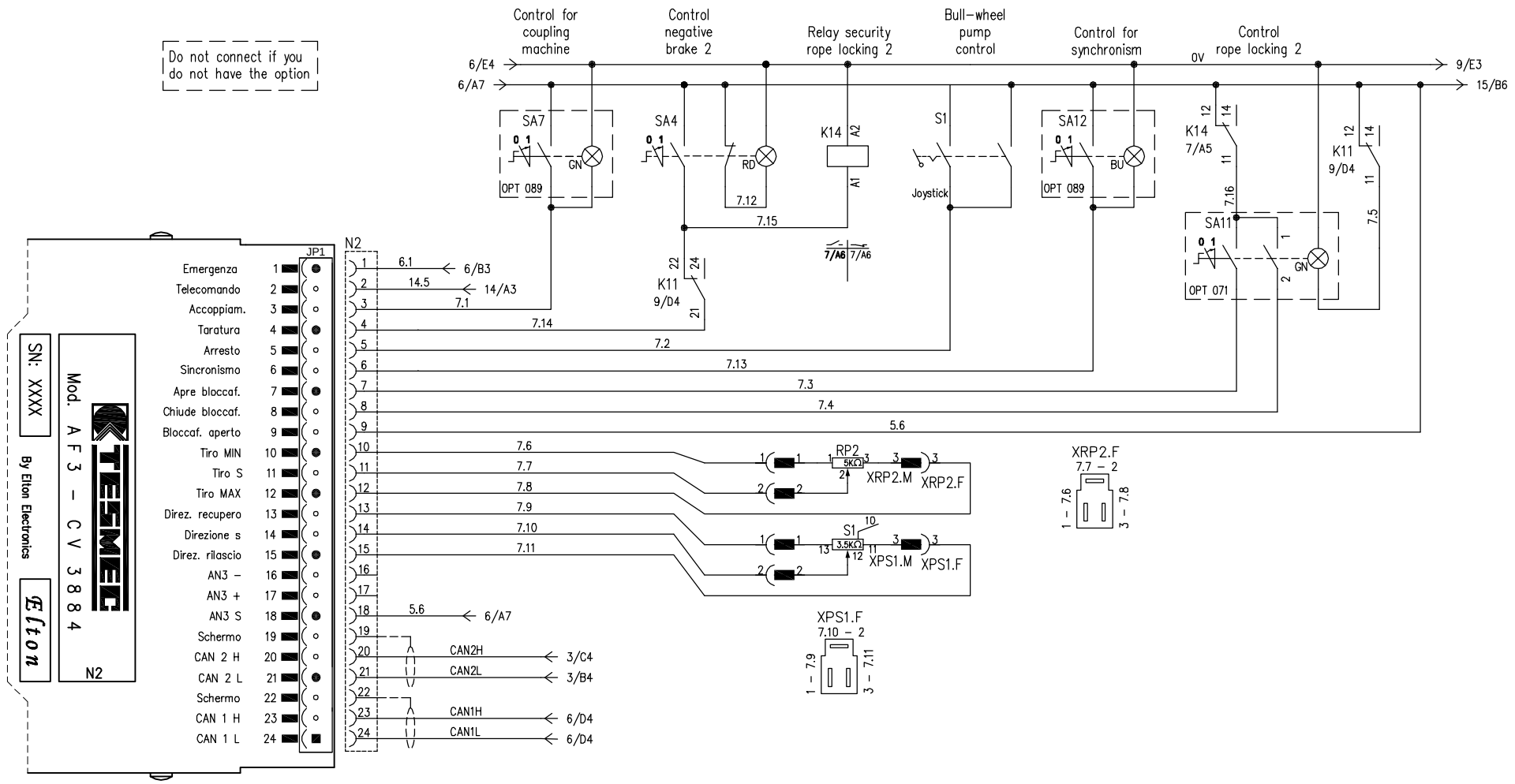
Sheet 5 of 36

Following 6



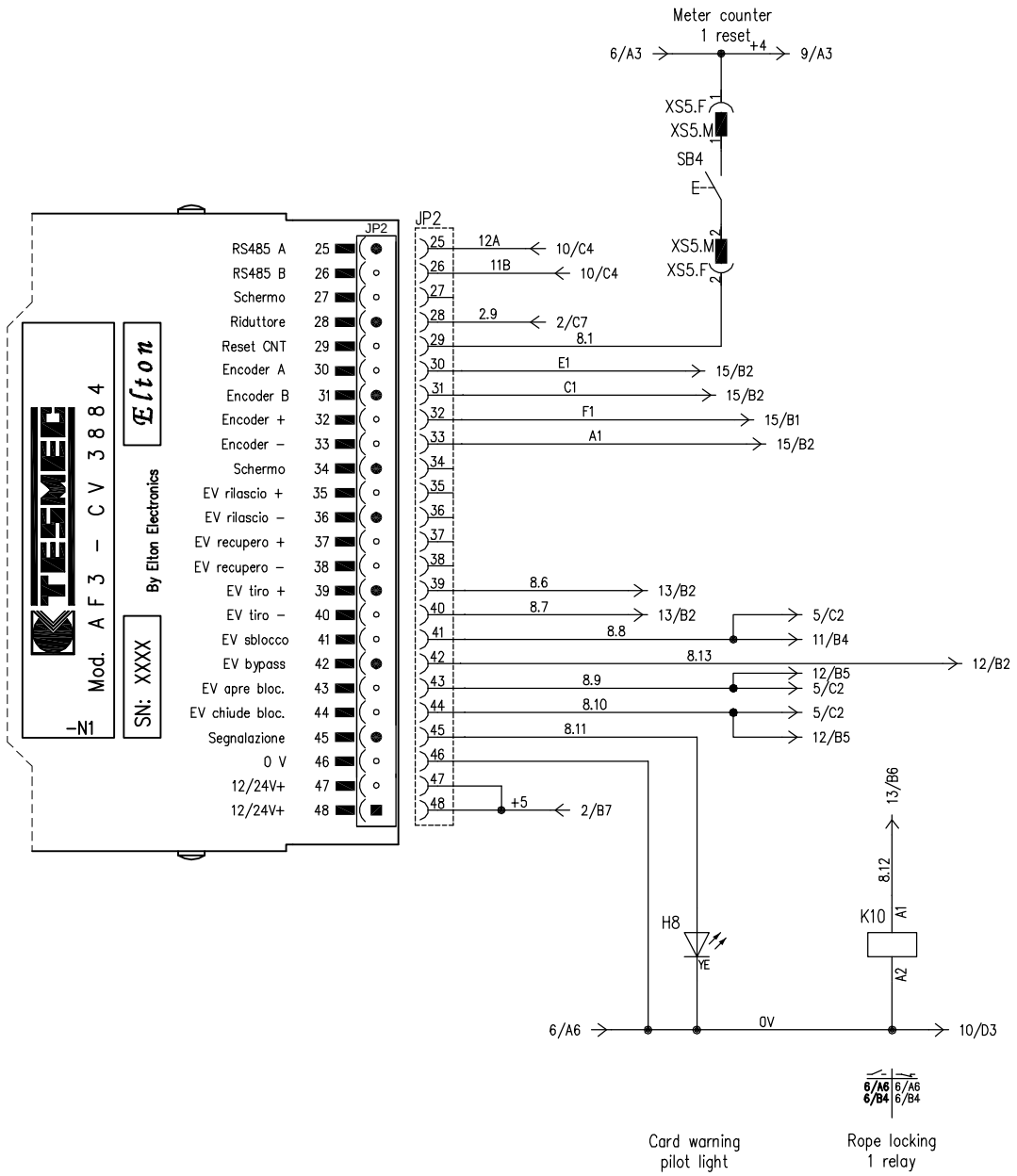
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme	ELECTRONIC CONTROL 1: INPUT	Drawn: Facoetti	Drawing Nr. S01-00019 Archive Nr. S01	Sheet 6 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 7



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

Electric scheme	ELECTRONIC CONTROL 2: INPUT	Drawn: Facoetti	Drawing Nr. S01-00019 Archive Nr. S01	Sheet 7 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 8



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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

Electric scheme

ELECTRONIC CONTROL 1: OUTPUT

Design : FRB 616 020

Drawn: Facoetti

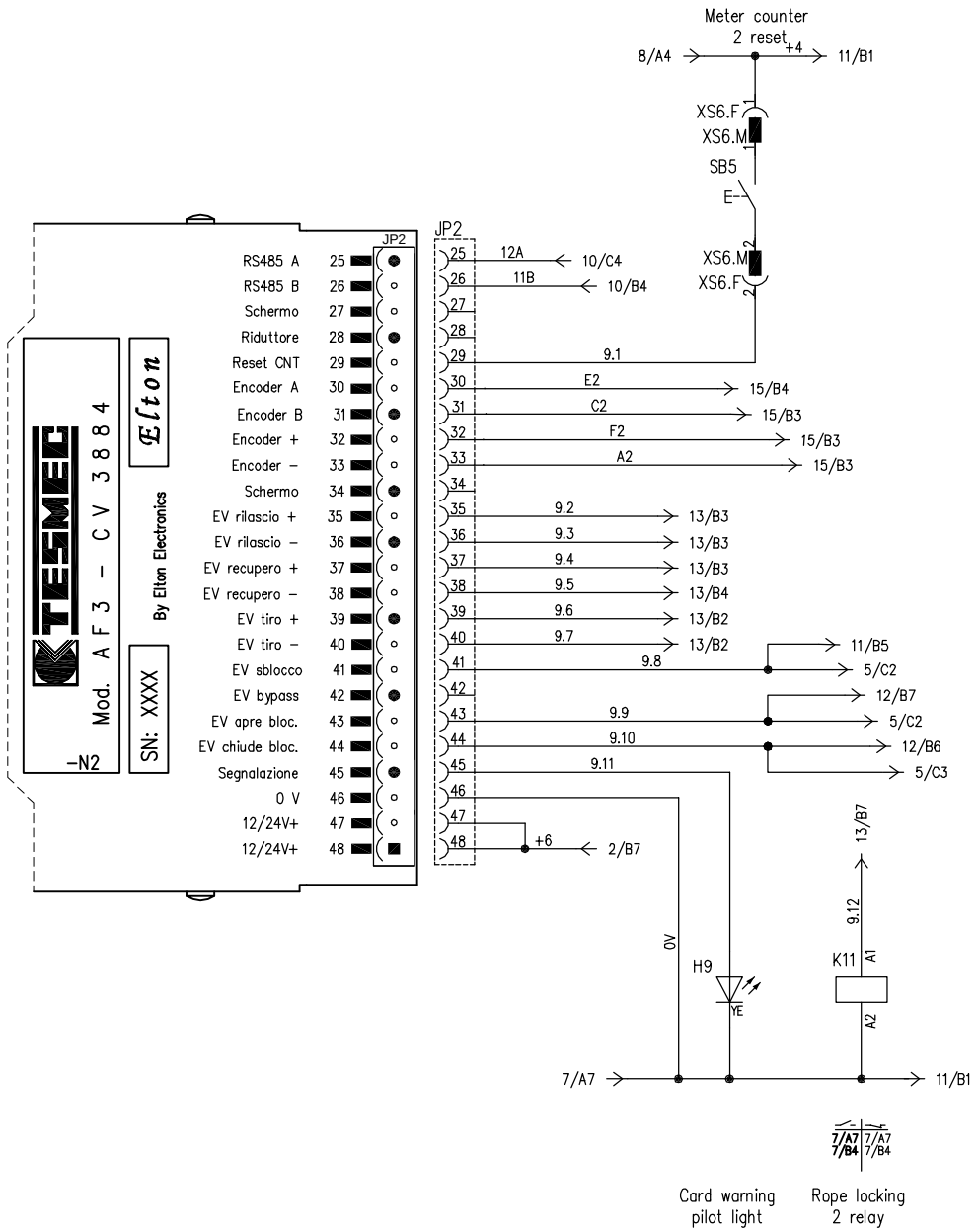
Checked : Ing. Oscar

Drawing Nr. S01–00019
Archive Nr. S01

Date: 08/07/2011

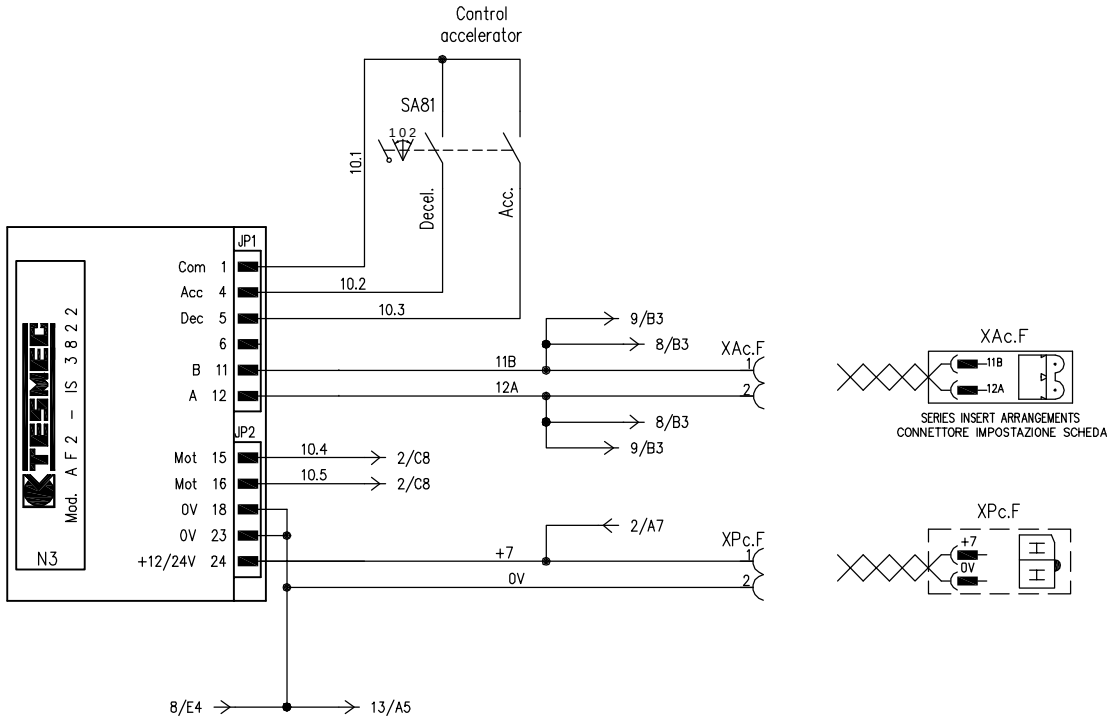
Sheet 8 of 36

Following 9



TESMEC
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

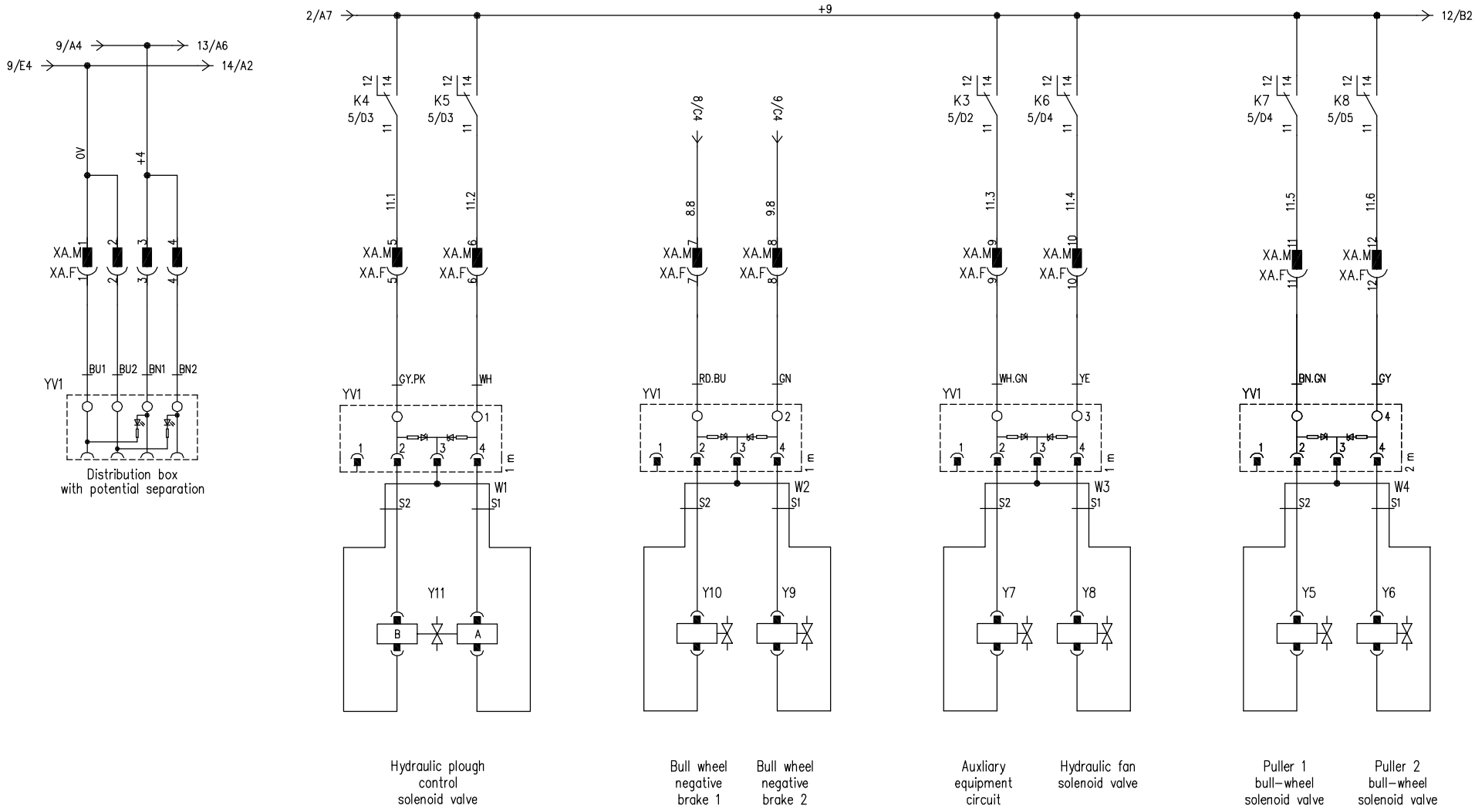
Electric scheme	ELECTRONIC CONTROL 2: OUTPUT	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 9 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 10



SERIES INSERT ARRANGEMENTS
CONNETTORE IMPOSTAZIONE SCHEDA

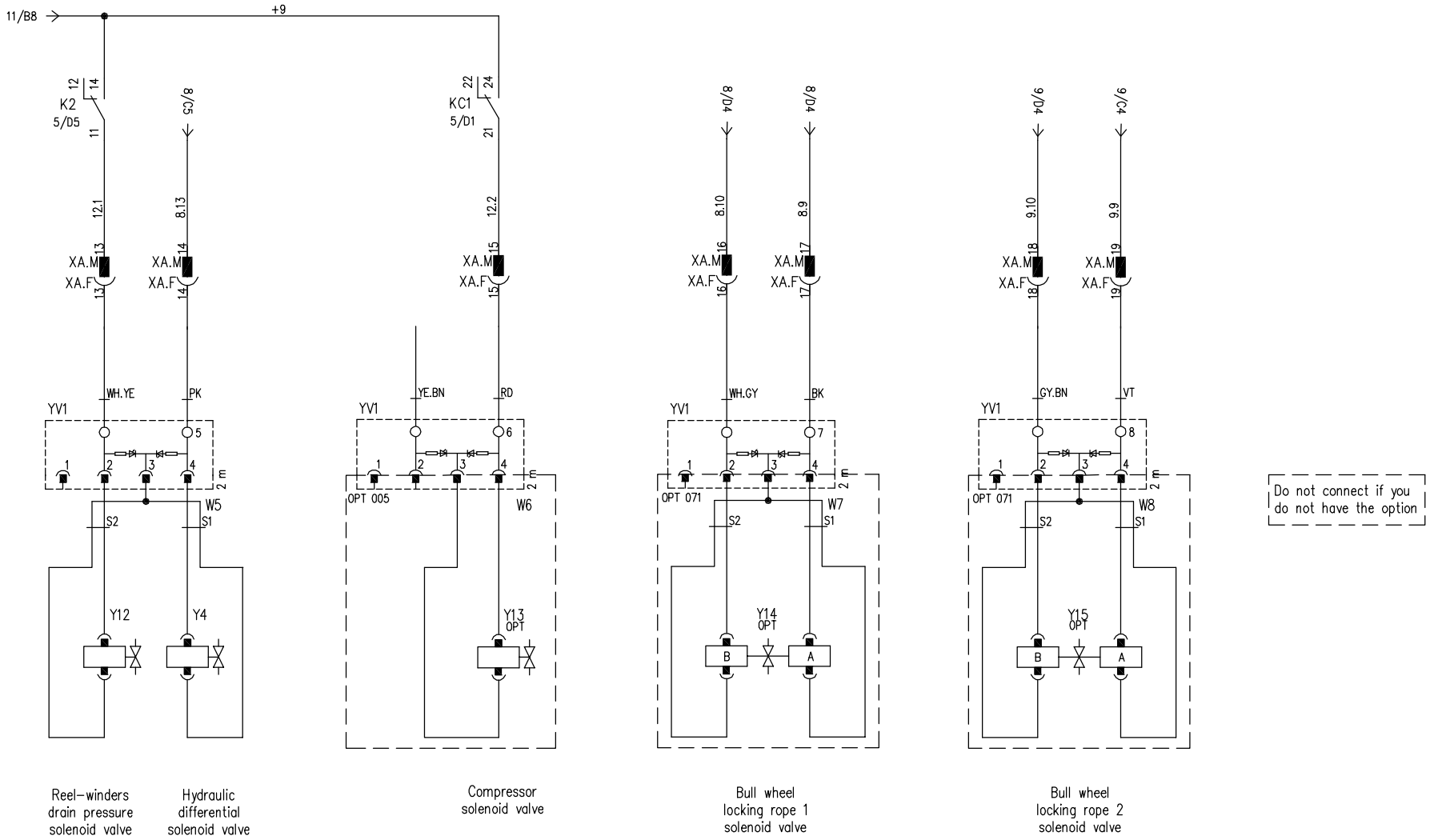
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme	ELCTRONIC ACELERATOR	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 10 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 11



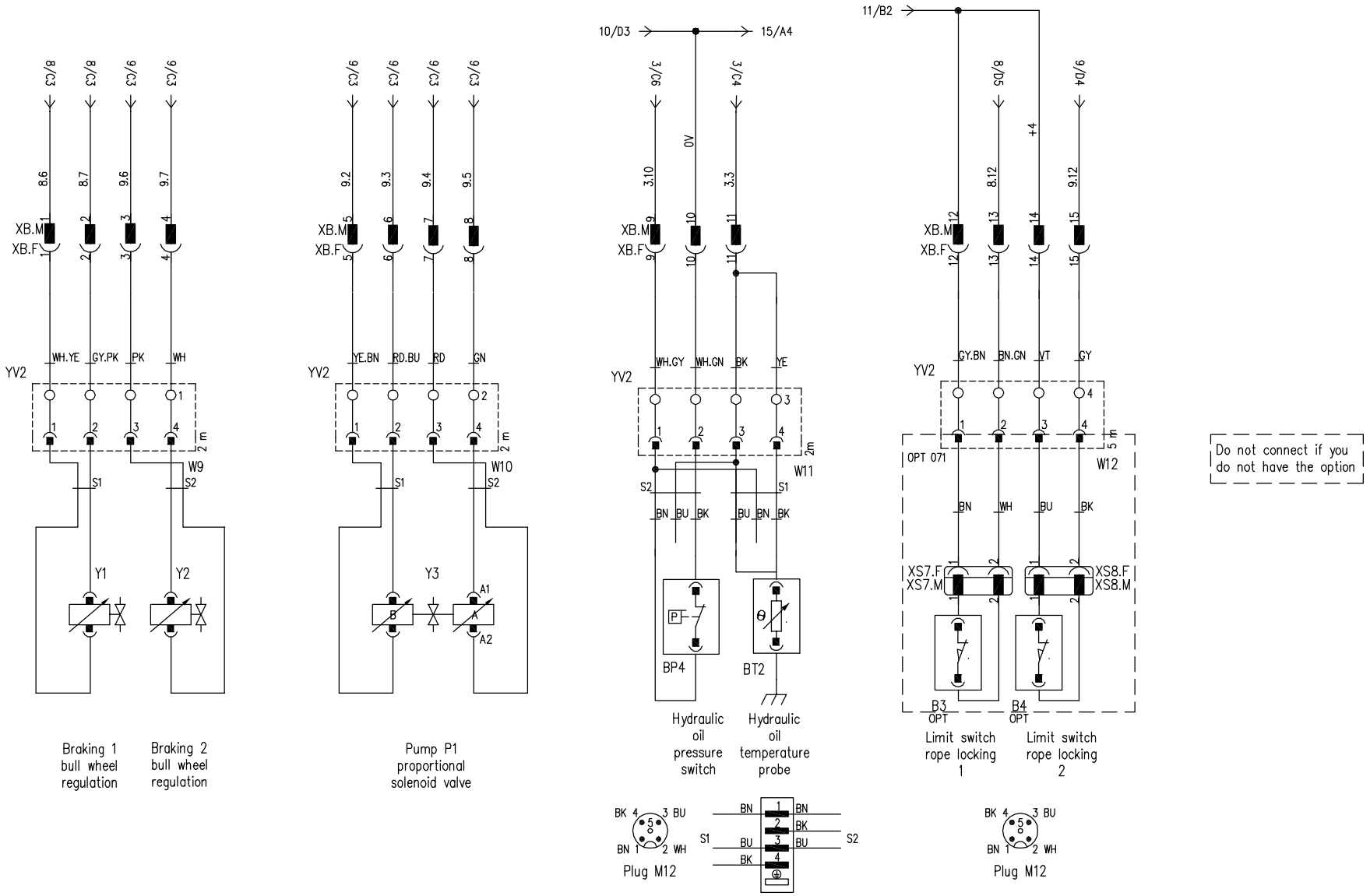
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme	SOCKET 1	Drawn: Facoetti	Drawing Nr. S01-00019 Archive Nr. S01	Sheet 11 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 12



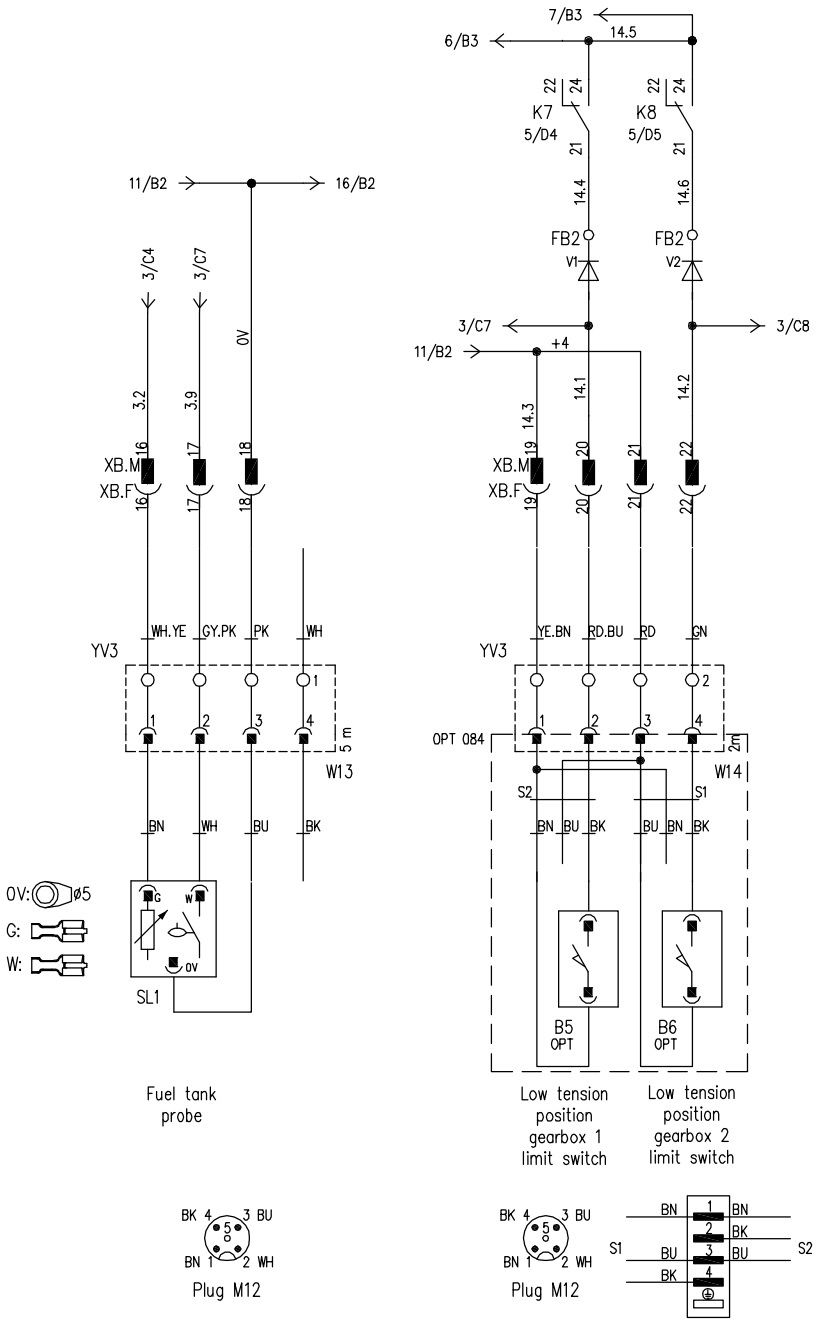
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme	SOCKET 1	Drawn: Facoetti	Drawing Nr. S01-00019 Archive Nr. S01	Sheet 12 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 13



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

Electric scheme	SOCKET 2	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 13 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 14



Do not connect if you do not have the option

TESMEC
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

Electric scheme

SOCKET 3

Design : FRB 616 020

Drawn: Facoetti

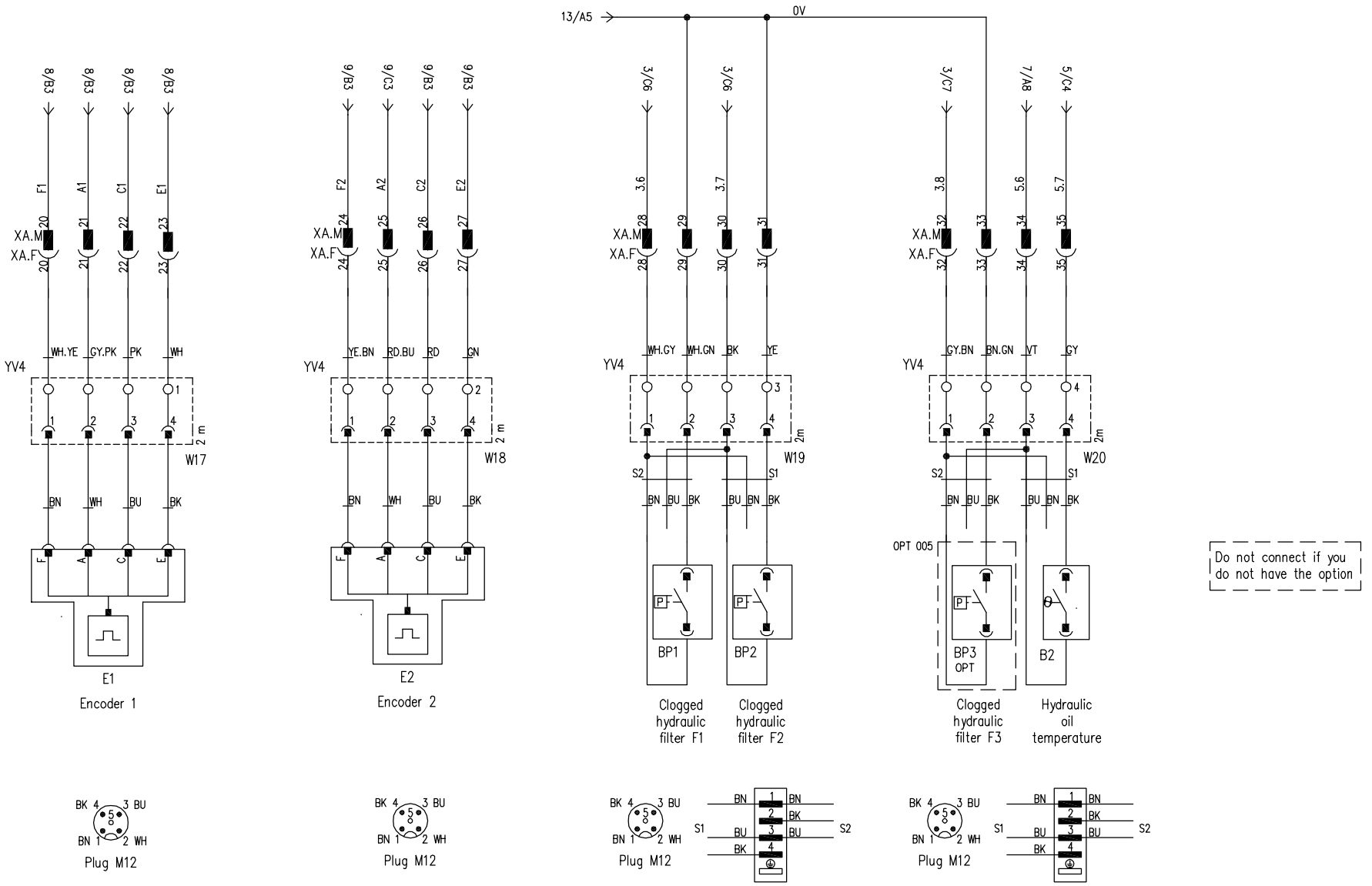
Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

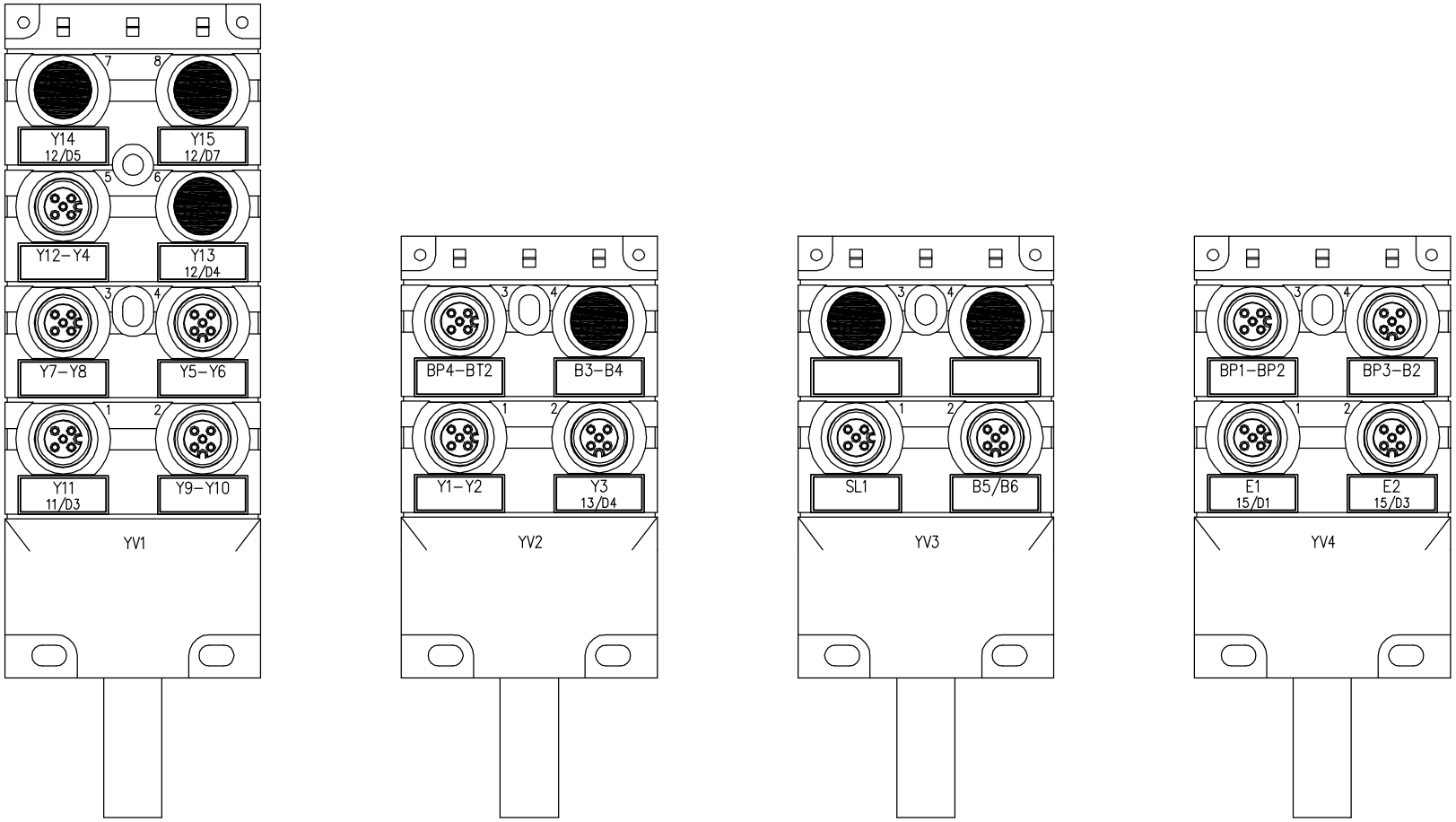
Sheet 14 of 36

Following 15



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

Electric scheme	SOCKET 4	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011

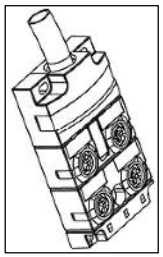


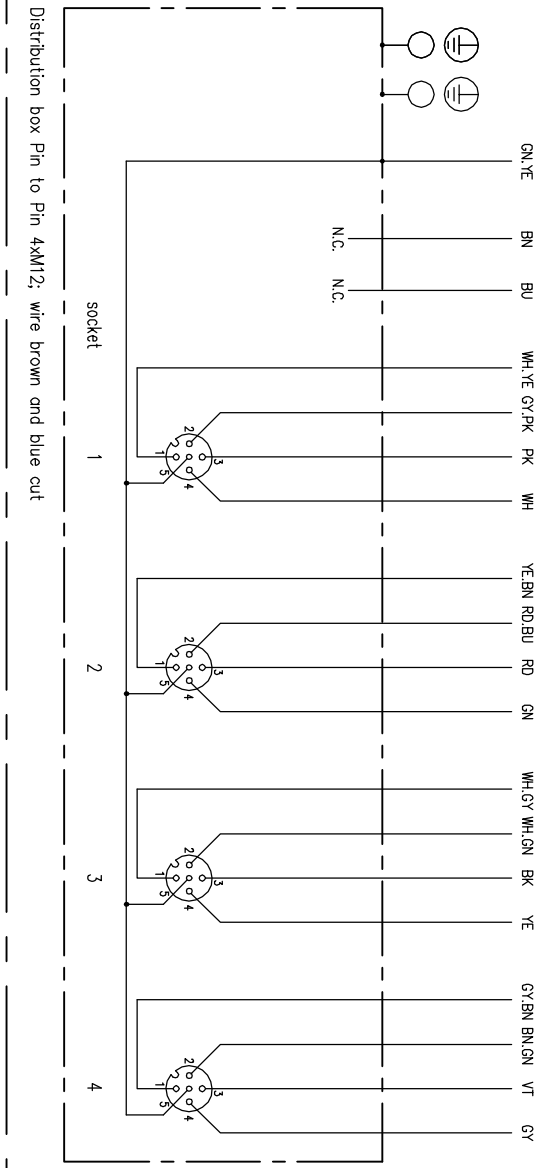
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme	SOCKET: OUT	Drawn: Facoetti	Drawing Nr. S01-00019 Archive Nr. S01	Sheet 16 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 17

Distribution box Pin to Pin 4xM12; wire brown and blue cut

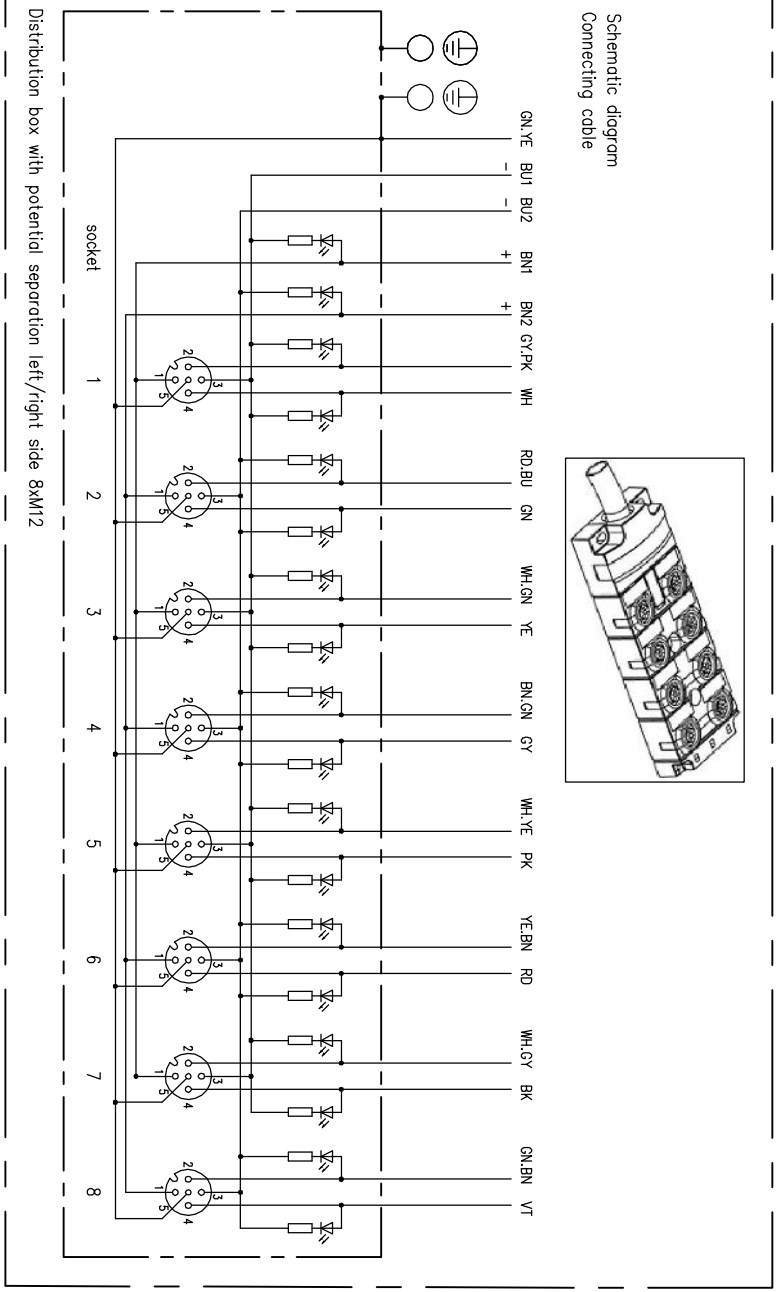
Schematic diagram
Connecting cable





Distribution box with potential separation left/right side 8xM12

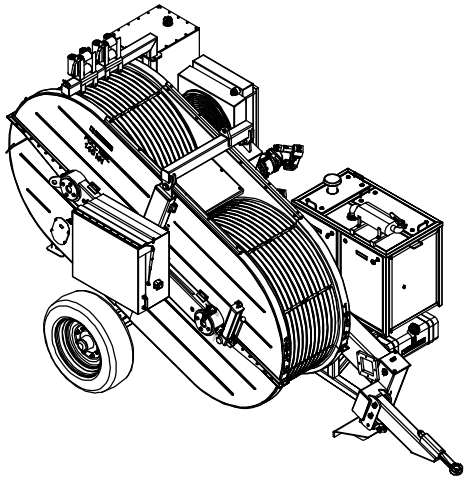
Schematic diagram
Connecting cable

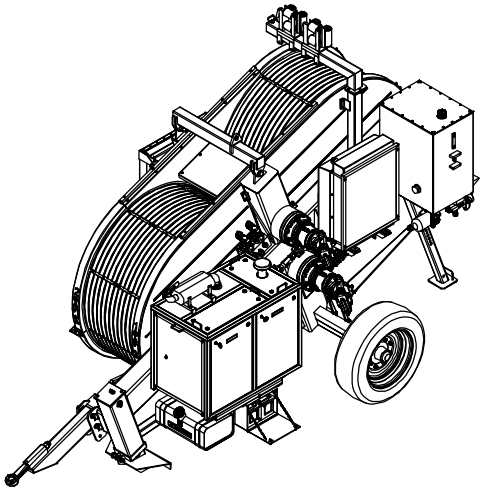


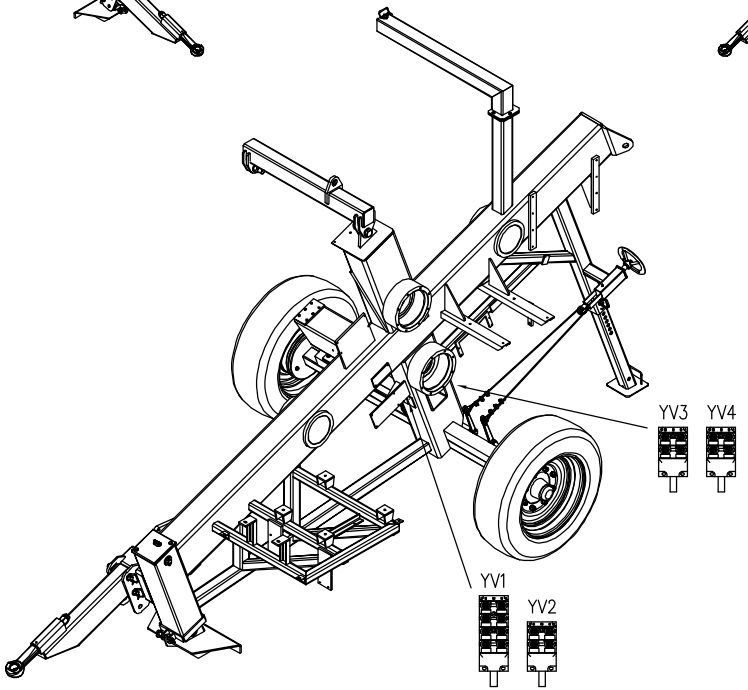
TESMEC
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme

SOCKET: WIRING	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 17 of 36
Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 18







TESMEC
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

Electric scheme

DISPOSITION SOCKET

Design : FRB 616 020

Drawn: Facoetti

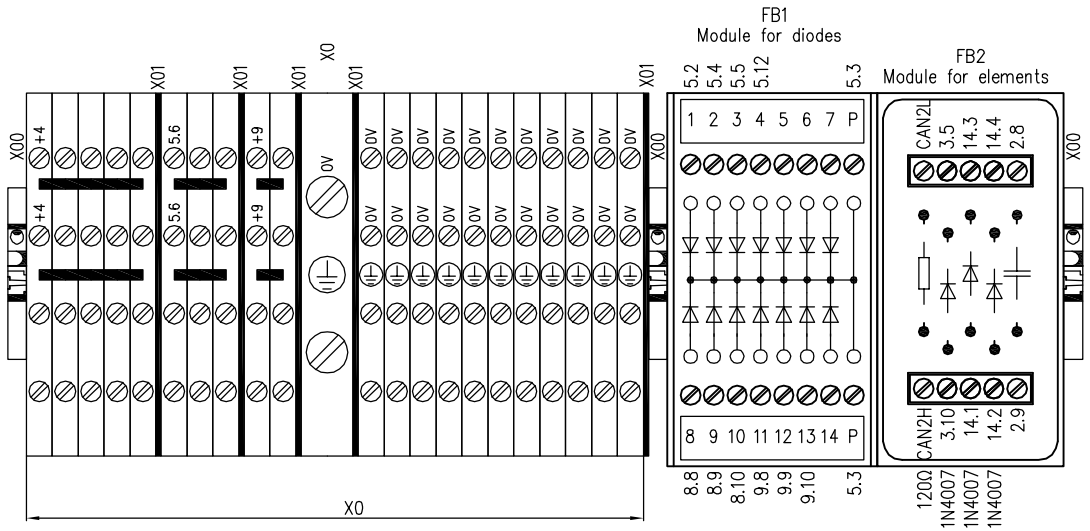
Checked : Ing. Oscar

Drawing Nr. S01–00019
Archive Nr. S01

Date: 08/07/2011

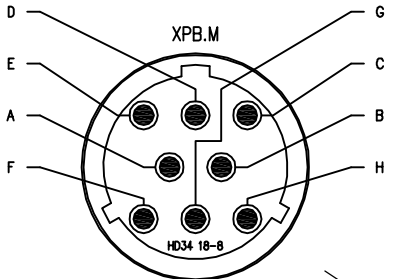
Sheet 18 of 36

Following 19

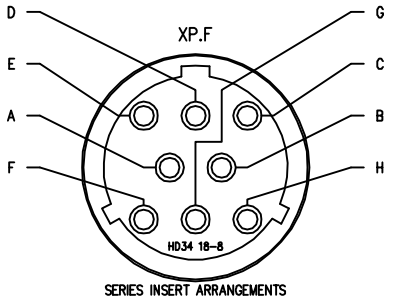


TESMEC
Grassobbio BG via Zanica, 17/o – Italy – Email: info@tesmec.it tel: +39 035 4232911 fax: +39 035 4522445
Sede di Endine Gaiano BG via Pertegalli – Italy – tel: +39 035 825024 fax: +39 035 826375

Electric scheme	TERMINALS AND MODULES	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 19 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 20



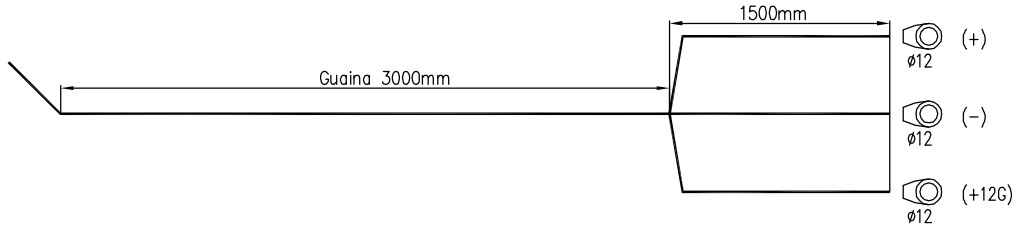
SERIES INSERT ARRANGEMENTS
Polarità Vista Lato Contatti
CONNETTORE POTENZA MACCHINA
MALES-HOLDER JOINT 8-WAYS



SERIES INSERT ARRANGEMENTS
Polarità Vista Lato Contatti
CONNETTORE POTENZA MACCHINA
FEMALES-HOLDER JOINT 8-WAYS

XP.F
Connettore potenza macchina
Females holder joint 8-ways

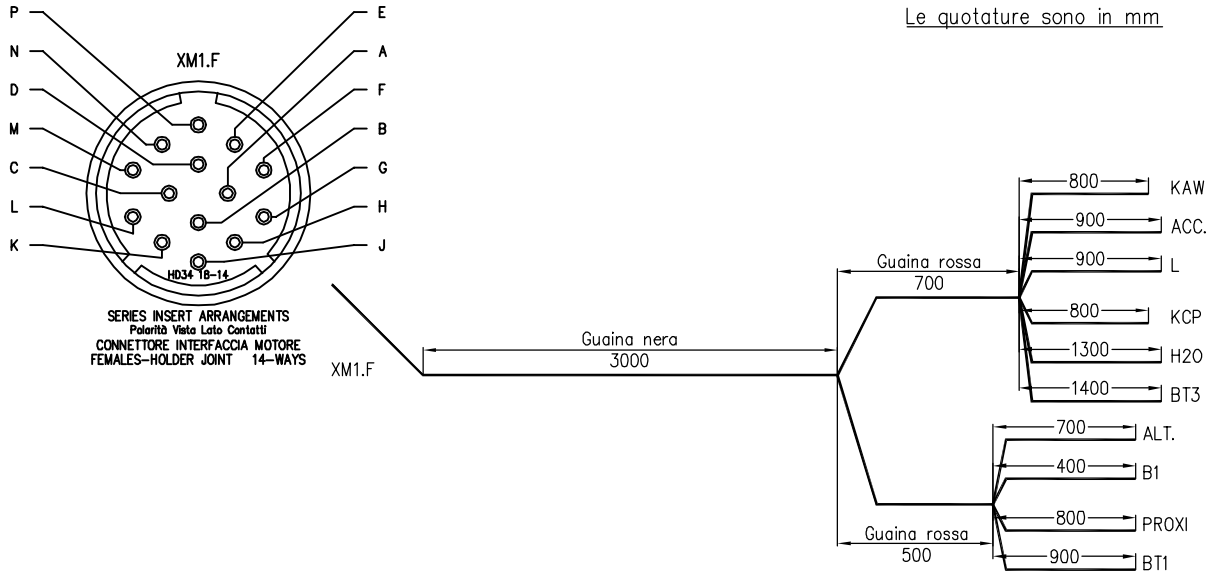
Pin	Wire	Position	Cable
A	+12G	2/F3	① 2x1
B			
C	+24G	2/C2	② 3x2.5
D	+24G	2/C2	② 3x2.5
E	+24G	2/C2	② 3x2.5
F	0V	2/E3	③ 3x2.5
G	0V	2/E3	③ 3x2.5
H	0V	2/F3	③ 3x2.5



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

Electric scheme	CONNECTOR: XP	Drawn: Facoetti	Drawing Nr. S01-00019 Archive Nr. S01	Sheet 20 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 21

The dimensions are in mm
Le quotature sono in mm



XM1.F
CONNETTORE INTERFACCIA MOTORE
FEMALES-HOLDER JOINT 14-WAIS
Tpo HD36 18-14SN

Pin	Wire	Position	Cable	Number	Designation
A	+1	2/C3	16x1	1	KAVV
B	2.5	2/C4	–	2	L
C	2.11	2/D4	–	3	KCP
D	2.12	2/D5	–	4	BT3
E	+4	2/D6	–	5	ALT-Pin2
F	2.6	2/D6	–	6	ALT-Pin1
G	+4	2/D7	–	7	PROXI
8	2.8	3/D5	–	8	PROXI
J	2.7	2/D6	–	9	H2O
K	3.4	3/D5	–	10	BT1-Faston grande G
L	3.10	3/D5	–	11	BT1-Faston medio W
M	3.5	3/D5	–	12	B1-Occhiello W
N	10.4	2/D8	–	13	ACC.
P	10.5	2/D8	–	14	ACC.

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Electric scheme

CONNECTOR: XM1
Design : FRB 616 020
Drawn: Facoetti
Checked : Ing. Oscar
Drawing Nr. S01-00019
Archive Nr. S01
Date: 08/07/2011

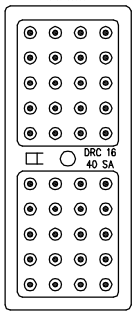
XA.F
PRESA INTERFACCIA ELETTROVALVOLE
FEMALES-HOLDER JOINT 40-WAIS
Tipo DRC 12 40P

Pin	Wire	Position	Socket	Color	Designation	
1	0V	11/C1	YV1	BU1	Power	
2	0V	11/C1	YV1	BU2	Power	
3	+4	11/C2	YV1	BN1	Power	
4	+4	11/C2	YV1	BN2	Power	
5	11.1	11/C3	YV1	GY.PK	Y11-A	
6	11.2	11/C3	YV1	WH	Y11-B	
7	8.8	11/C4	YV1	RD.BU	Y10	
8	9.8	11/C5	YV1	GN	Y9	
9	11.3	11/C6	YV1	WH.GN	Y7	
10	11.4	11/C6	YV1	YE	Y8	
11	11.5	11/C7	YV1	BN.GN	Y5	
12	11.6	11/C8	YV1	GY	Y6	
13	12.1	12/C2	YV1	WH.YE	Y12	
14	8.13	12/C2	YV1	PK	Y4	
15	12.2	12/C4	YV1	RD	Y13	OPT
16	8.10	12/C5	YV1	WH.GY	Y14	OPT
17	8.9	12/C5	YV1	BK	Y14-A	OPT
18	9.10	12/C6	YV1	GY.BN	Y15-B	OPT
19	9.9	12/C7	YV1	VT	Y15-A	OPT
20	F1	15/B1	YV4	WH.YE	E1	
21	A1	15/B2	YV4	GY.PK	E1	
22	C1	15/B2	YV4	PK	E1	
23	E1	15/B2	YV4	WH	E1	
24	F2	15/B3	YV4	YE.BN	E2	
25	A2	15/B3	YV4	RD.BU	E2	
26	C2	15/B3	YV4	RD	E2	
27	E2	15/B4	YV4	GN	E2	
28	3.6	15/B5	YV4	WH.GY	BP1	
29	0V	15/B5	YV4	WH.GN	BP1	
30	3.7	15/B5	YV4	BK	BP2	
31	0V	15/B5	YV4	YE	BP2	
32	3.8	15/B6	YV4	GY.BN	BP3	OPT
33	0V	15/B6	YV4	BN.GN	BP3	OPT
34	5.7	15/B6	YV4	VT	B2	
35	5.6	15/B7	YV4	GY	B2	
36	4.1	4/D2	–	①Cab 2x1	Flashing	OPT
37	0V	4/E2	–	①Cab 2x1	Flashing	OPT
38						
39						
40						

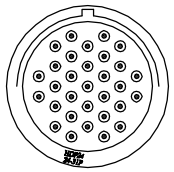
XB.F
PRESA INTERFACCIA ELETTROVALVOLE
FEMALES-HOLDER JOINT 31-WAIS
Tipo DEUTSCH HD24-31S

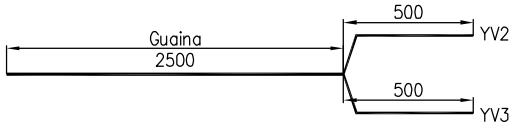
Pin	Wire	Position	Socket	Color	Designation	
1	8.6	13/B2	YV2	WH.YE	Y1	
2	8.7	13/B2	YV2	GY.PK	Y1	
3	9.6	13/B2	YV2	PK	Y2	
4	9.7	13/B2	YV2	WH	Y2	
5	9.2	13/B3	YV2	YE.BN	Y3-B	
6	9.3	13/B3	YV2	RD.BU	Y3-B	
7	9.4	13/B3	YV2	RD	Y3-A	
8	9.5	13/B4	YV2	GN	Y3-A	
9	3.10	13/B5	YV2	WH.GY	BP4	
10	0V	13/B5	YV2	WH.GN	BP4	
11	3.3	13/B5	YV2	BK+YE	BT2	
12	+4	13/B6	YV2	GY.BN	B3	OPT
13	8.12	13/B6	YV2	BN.GN	B3	OPT
14	+4	13/B6	YV2	VT	B4	OPT
15	9.12	13/B7	YV2	GY	B4	OPT
16	3.2	14/C1	YV3	WH.YE	SL1	
17	3.9	14/C2	YV3	GY.PK	SL1	
18	0V	14/C2	YV3	PK	SL1	
19	+4	14/C3	YV3	YE.BN	B5	OPT
20	14.1	14/C3	YV3	RD.BU	B5	OPT
21	+4	14/C3	YV3	RD	B6	OPT
22	14.2	14/C4	YV3	GN	B6	OPT
23						
24						
25						
26						
27						
28						
29						
30						
31						

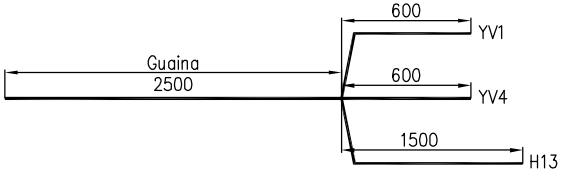
XA.M



XB.M







The dimensions are in mm
Le quotature sono in mm

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Electric scheme

CONNECTORS: XA – XB

Design : FRB 616 020

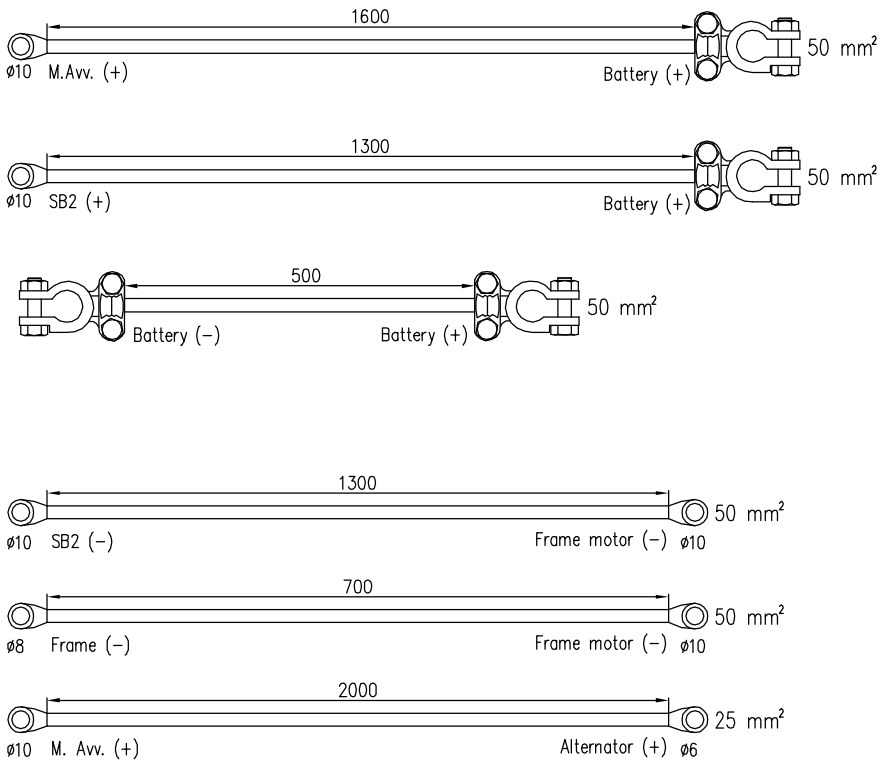
Drawn: Facoetti

Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

The dimensions are in mm
Le quotature sono in mm



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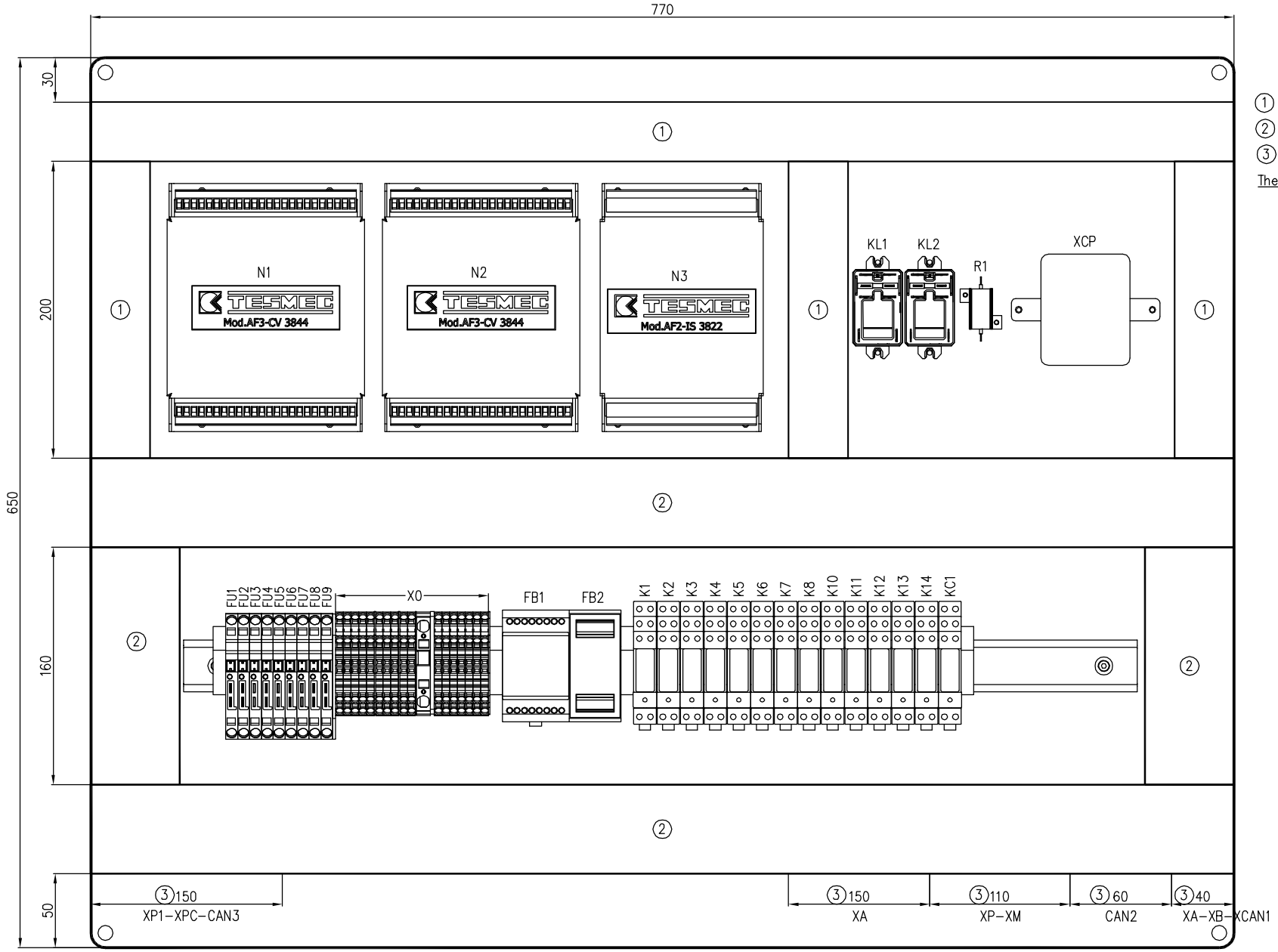
Electric scheme	CONNECTING CABLES	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 23 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 24



① Raceway 40x60 mm
② Raceway 60x60 mm
③ Out wires for connectors
The dimensions are in mm

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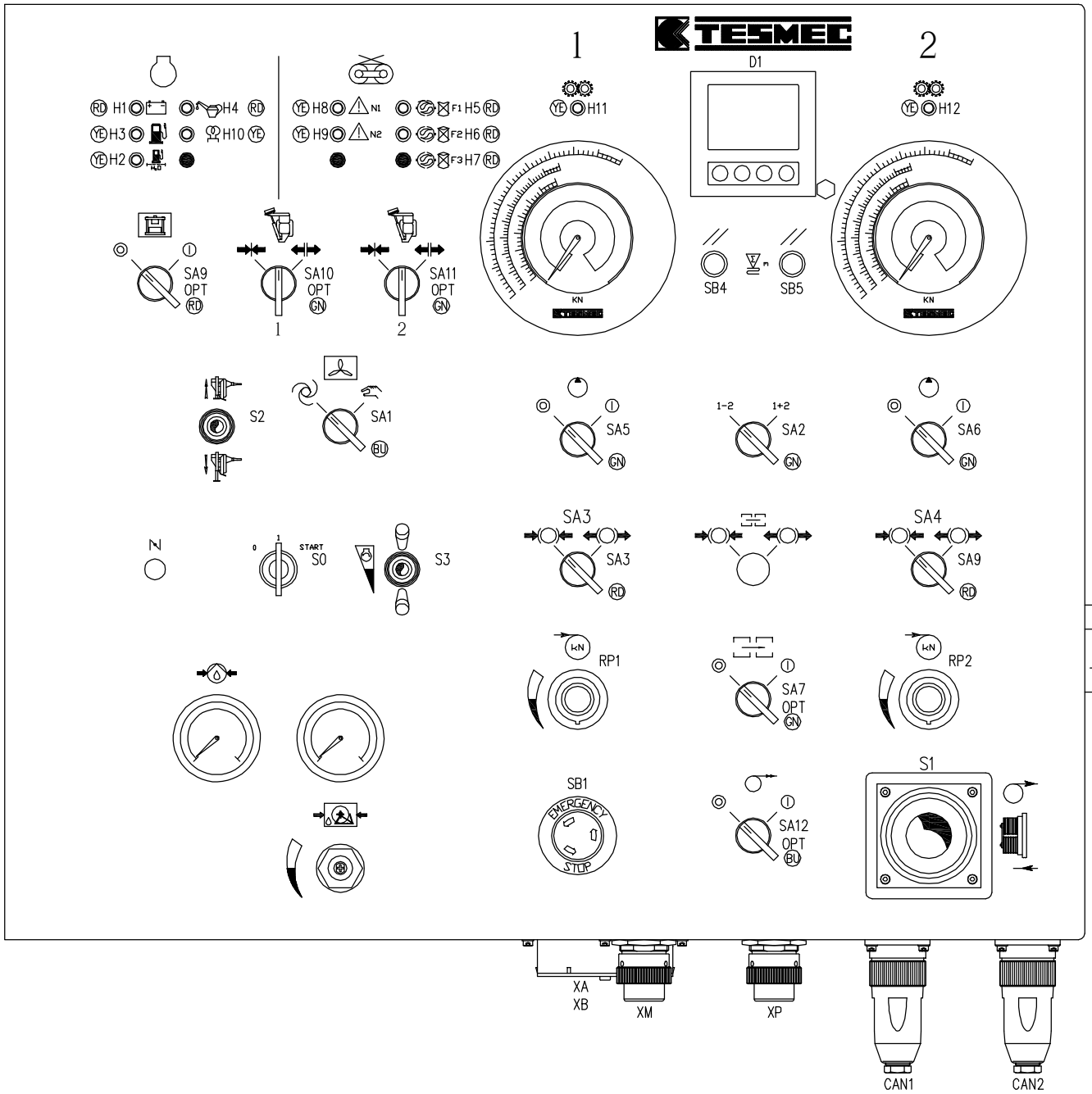
Electric scheme	ELECTRIC BOARD	Drawn: Facoetti	Drawing Nr. S01–00019 Archive Nr. S01	Sheet 24 of 36
	Design : FRB 616 020	Checked : Ing. Oscar	Date: 08/07/2011	Following 25



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Electric scheme

CONTROL PANEL

Design : FRB 616 020

Drawn: Facoetti

Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

Sheet 25 of 36

Following 26

Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
A1	00000000	2/D3	ENGINE.PART.....(CODICI MOTORE)	ASSIEME MONTAGGIO MOTORE "CUMMINS F2"	
B1	00000000	3/D5	ENGINE.PART.....(CODICI MOTORE)	CONTATTO PRESSIONE OLIO MOTORE	
B2	V00-8510-073	15/D7	TERMOSTATO - CON CONNETTORE DIN 43650 -	CONTATTO TEMPERATURA OLIO IDRAULICO	
B5	V00-8510-036	14/D3	FINECORSA A PULSANTE CON ROTELLA - CONTA	FINECORSA 1 RIDUTTORE FRENATURA RIDOTTA	
B6	V00-8510-036	14/D4	FINECORSA A PULSANTE CON ROTELLA - CONTA	FINECORSA 2 RIDUTTORE FRENATURA RIDOTTA	
BP1	99999999	15/D5	IDRAULIC.PART.....(CODICE IDRAULICO)	FILTRO IDRAULICO F1 INTASATO	
BP2	99999999	15/D5	IDRAULIC.PART.....(CODICE IDRAULICO)	FILTRO IDRAULICO F2 INTASATO	
BP3	99999999	15/D6	IDRAULIC.PART.....(CODICE IDRAULICO)	FILTRO IDRAULICO F3 INTASATO	
BP4	99999999	13/D5	IDRAULIC.PART.....(CODICE IDRAULICO)	CONTATTO PRESSOSTATO DI SICUREZZA	
BT1	V00-8510-057	3/D5	TRASMETTITORE TEMPERATURA 12 / 24 V - FA	SONDA TEMPERATURA ACQUA MOTORE	
BT2	99999999	13/D5	IDRAULIC.PART.....(CODICE IDRAULICO)	SENSORE TEMPERATURA OLIO IDRAULICO	
BT3	99999999	2/E5	IDRAULIC.PART.....(CODICE IDRAULICO)	SONDA TEMPERATURA ARIA PER PRERISCALDO MOTORE	
C1	09103625	2/C7	CONDENSATORE POLIESTERE 2,2MF 250V	CONDENSATORE	
D1	V00-8600-008	3/D2	DISPLAY GRAFICO 9 - 32 V - DSF : J1939 E	DISPLAY MULTIFUNZIONE "ENGI METER"	
	- V00-2225-045	3/D2	CONNETTORE + PIN - X ENGIMETER - DSF : D		
E1	V00-8510-046	15/D1	ENCODER ASSOLUTO - D.ALBERO 8 MM - FLANG	ENCODER 1	
E2	V00-8510-046	15/D3	ENCODER ASSOLUTO - D.ALBERO 8 MM - FLANG	ENCODER 2	
FB1	V00-8400-045	5/C2	MODULO PORTADIODI 14 - PHOENIX CONTACT :	MODULO PORTA DIODI	
FB2	V00-8400-018	2/C7	MODULO PORTACOMPONENTI 5 - WEIDMULLER :	MODULO PORTA ELEMENTI	
FU1	V00-8401-036	2/B3	FUSIBILE A LAME 5 A BEIGE - INTERASSE LA	FUSIBILE	
FU2	V00-8401-036	2/B5	FUSIBILE A LAME 5 A BEIGE - INTERASSE LA	FUSIBILE	
FU3	V00-8401-036	2/B4	FUSIBILE A LAME 5 A BEIGE - INTERASSE LA	FUSIBILE	
FU4	V00-8401-020	2/B6	FUSIBILE A LAME 10 A ROSSO - INTERASSE L	FUSIBILE	
FU5	V00-8401-020	2/B6	FUSIBILE A LAME 10 A ROSSO - INTERASSE L	FUSIBILE	
FU6	V00-8401-020	2/B6	FUSIBILE A LAME 10 A ROSSO - INTERASSE L	FUSIBILE	
FU7	V00-8401-036	2/A6	FUSIBILE A LAME 5 A BEIGE - INTERASSE LA	FUSIBILE	
FU8	09104210	2/A6	FUSIBILE A LAME....2A.....UNIVAL	FUSIBILE	
FU9	V00-8401-020	2/A6	FUSIBILE A LAME 10 A ROSSO - INTERASSE L	FUSIBILE	

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Electric scheme

COMPONENTS LIST

Design : FRB 616 020

Drawn: Facoetti

Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

Sheet 26 of 36

Following 27

Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
FU10	V00-8401-027	2/C4	FUSIBILE A LAME 20 A GIALLO - INTERASSE	FUSIBILE	
Gb1	V00-1500-003	2/D2	BATTERIA 100 AH 12 V - EN 760 A - LUNGH.	BATTERIA DI AVVIAMENTO	
	- V00-2229-003	2/D2	MORSETTO BATTERIA POLO POSITIVO CAVO SEZ		
	- V00-2229-004	2/D2	COPRIMORSETTO POLO POSITIVO BATTERIA ROS		
	- V00-2229-005	2/D2	MORSETTO BATTERIA POLO NEGATIVO CAVO SEZ		
	- V00-2229-006	2/D2	COPRIMORSETTO POLO NEGATIVO BATTERIA NER		
Gb2	V00-1500-003	2/E2	BATTERIA 100 AH 12 V - EN 760 A - LUNGH.	BATTERIA DI AVVIAMENTO	
	- V00-2229-003	2/E2	MORSETTO BATTERIA POLO POSITIVO CAVO SEZ		
	- V00-2229-004	2/E2	COPRIMORSETTO POLO POSITIVO BATTERIA ROS		
	- V00-2229-005	2/E2	MORSETTO BATTERIA POLO NEGATIVO CAVO SEZ		
	- V00-2229-006	2/E2	COPRIMORSETTO POLO NEGATIVO BATTERIA NER		
H1	V00-8400-030	2/C6	DIODO A LED - ROSSO 24 V DC - 7 MM - IP	LED ALLARME GENERATORE (24V)	
H2	V00-8400-031	2/C6	DIODO A LED - GIALLO 24 V DC - 7 MM - IP	LED PRESENZA ACQUA CARBURANTE	
H3	V00-8400-031	3/B7	DIODO A LED - GIALLO 24 V DC - 7 MM - IP	LED RISERVA CARBURANTE (24V)	
H4	V00-8400-030	3/B5	DIODO A LED - ROSSO 24 V DC - 7 MM - IP	LED PRESSIONE OLIO MOTORE (24V)	
H5	V00-8400-030	3/B6	DIODO A LED - ROSSO 24 V DC - 7 MM - IP	LED FILTRO IDRAULICO F1 INTASATO (24V)	
H6	V00-8400-030	3/B6	DIODO A LED - ROSSO 24 V DC - 7 MM - IP	LED FILTRO IDRAULICO F2 INTASATO (24V)	
H7	V00-8400-030	3/B7	DIODO A LED - ROSSO 24 V DC - 7 MM - IP	LED FILTRO IDRAULICO F3 INTASATO	
H8	V00-8400-031	8/D3	DIODO A LED - GIALLO 24 V DC - 7 MM - IP	LED ALLARME SCHEDA (24V)	
H9	V00-8400-031	9/D3	DIODO A LED - GIALLO 24 V DC - 7 MM - IP	LED ALLARME SCHEDA (24V)	
H10	V00-8400-031	2/C5	DIODO A LED - GIALLO 24 V DC - 7 MM - IP	LED PRERISCALDO MOTORE (24V)	
H11	V00-8400-031	3/C7	DIODO A LED - GIALLO 24 V DC - 7 MM - IP	SPIA RIDUTTORE FRENATURA RIDOTTA 1	
H12	V00-8400-031	3/C8	DIODO A LED - GIALLO 24 V DC - 7 MM - IP	SPIA RIDUTTORE FRENATURA RIDOTTA 2	
H13	V00-2200-029	4/D2	LAMPADA ROTANTE 9/32 V - XENON REVOLUX :	LAMPEGGIATORE	
HA1	V00-8401-023	4/D2	AVVISATORE ACUSTICO 24 V 112 DB - AMA :	SEGNALAZIONE ACUSTICA	
K1	V00-8402-028	3/C5	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE ALLARME MOTORE	
	- V00-8402-020	3/C5	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	3/C5	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		

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Electric scheme

COMPONENTS LIST

Design : FRB 616 020

Drawn: Facoetti

Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
K2	V00-8402-028	5/D5	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE SCARICO PRESSIONE RIAVVOLGITORI	
	- V00-8402-020	5/D5	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	5/D5	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K3	V00-8402-028	5/D2	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE SERVIZI AUSILIARI	
	- V00-8402-020	5/D2	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	5/D2	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K4	V00-8402-028	5/D3	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE COMANDO VOMERE - DISCESA	
	- V00-8402-020	5/D3	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	5/D3	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K5	V00-8402-028	5/D3	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE COMANDO VOMERE - SALITA	
	- V00-8402-020	5/D3	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	5/D3	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K6	V00-8402-028	5/D4	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE ABILITAZIONE VENTILATORE-VOMERE	
	- V00-8402-020	5/D4	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	5/D4	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K7	V00-8402-028	5/D4	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE ABILITAZIONE ARGANO CABESTANO 1	
	- V00-8402-020	5/D4	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	5/D4	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K8	V00-8402-028	5/D5	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE ABILITAZIONE ARGANO CABESTANO 2	
	- V00-8402-020	5/D5	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	5/D5	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K10	V00-8402-028	8/D4	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE BLOCCAFUNE 1 ATTIVO	
	- V00-8402-020	8/D4	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	8/D4	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K11	V00-8402-028	9/D4	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE BLOCCAFUNE 2 ATTIVO	
	- V00-8402-020	9/D4	MODULO DIODO + LED 6-24 V DC/AC - FINDER		
	- V00-8402-039	9/D4	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K12	V00-8402-028	6/A4	RELE 24 V 2 SC - 8 A - FINDER : 46.52.9.	RELE ABILITAZIONE ARGANO CABESTANO 1+2	

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Electric scheme

COMPONENTS LIST

Design : FRB 616 020

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Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
	– V00-8402-020	6/A4	MODULO DIODO + LED 6-24 V DC/AC – FINDER		
	– V00-8402-039	6/A4	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K13	V00-8402-028	6/A5	RELE 24 V 2 SC – 8 A – FINDER : 46.52.9.	RELE SICUREZZA BLOCCAFUNE 1	
	– V00-8402-020	6/A5	MODULO DIODO + LED 6-24 V DC/AC – FINDER		
	– V00-8402-039	6/A5	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
K14	V00-8402-028	7/A5	RELE 24 V 2 SC – 8 A – FINDER : 46.52.9.	RELE SICUREZZA BLOCCAFUNE 2	
	– V00-8402-020	7/A5	MODULO DIODO + LED 6-24 V DC/AC – FINDER		
	– V00-8402-039	7/A5	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
KA1	V00-8402-012	2/D4	RELE 24 V 1 SC – 10/20 A – SIPEA : 60011	RELE PRERISCALDO	
	– V00-8402-003	2/D4	ZOCCOLO RELE 9 POLI MONTAGGIO A STAFFA E		
KC1	V00-8402-028	5/D1	RELE 24 V 2 SC – 8 A – FINDER : 46.52.9.	RELE PRESSA	
	– V00-8402-020	5/D1	MODULO DIODO + LED 6-24 V DC/AC – FINDER		
	– V00-8402-039	5/D1	ZOCCOLO RELE 2SC MORSETTO A MOLLA MONTAG		
KL1	V00-8402-022	2/E1	RELE 24 V 2 SC – 30 A – FINDER : 66.82.9	RELE ALIMENTAZIONE	
KL2	V00-8402-022	2/E1	RELE 24 V 2 SC – 30 A – FINDER : 66.82.9	RELE ALIMENTAZIONE	
N1	V00-8500-025	6/B2	SCHEDA CONTROLLO TIRO AF3-CV – ELTON : 3	SCHEDA COMANDO POMPA CABESTANO 1	
	– V00-2227-046	6/B2	CONNETTORE MSTB 2.5/24-ST5-5.08 – Nø 24		
N2	V00-8500-025	7/B2	SCHEDA CONTROLLO TIRO AF3-CV – ELTON : 3	SCHEDA COMANDO POMPA CABESTANO 2	
	– V00-2227-046	7/B2	CONNETTORE MSTB 2.5/24-ST5-5.08 – Nø 24		
N3	V00-8500-041	10/B3	SCHEDA CONTROLLO VELOCITA CON INTERFACCI	SCHEDA ACCELERATORE	
RCAN	V00-8400-034	3/C3	RESISTENZA 120 OHM 1/4 W – RS : 135-780	RESISTENZA CANBUS	
Rcan2	V00-8400-034	6/E3	RESISTENZA 120 OHM 1/4 W – RS : 135-780	RESISTENZA CANBUS	
Rcan3	V00-8400-034	6/E4	RESISTENZA 120 OHM 1/4 W – RS : 135-780	RESISTENZA CANBUS	
RP1	V00-8500-016	6/C4	POTENZIOMETRO ROTATIVO – Nø 3 GIRI 5 KOH	POTENZIOMETRO CONTROLLO TIRO 1	
	– V00-8500-012	6/C4	MANOPOLA GRADUATA POTENZIOMETRO D. 46 –		
RP2	V00-8500-016	7/C4	POTENZIOMETRO ROTATIVO – Nø 3 GIRI 5 KOH	POTENZIOMETRO CONTROLLO TIRO 2	
	– V00-8500-012	7/C4	MANOPOLA GRADUATA POTENZIOMETRO D. 46 –		
S0	V00-8401-016	2/A1	CHIAVE AVVIAMENTO MOTORE + PRERISCALDO –	INTERRUTTORE AVVIAMENTO MOTORE	

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Electric scheme

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Following 30

Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
S1	V00-8500-040	7/A5	MANIPOLATORE PROPORZIONALE FRIZIONATO -	COMANDO POMPA CABESTANO	
S2	V00-8410-011	5/B3	MANIPOLATORE Nø 3 POS. TEMPORANEE NERO -	MANIPOLATORE COMANDO VOMERE	
	- V00-8410-006	5/B3	CONTATTO NA - CEMA : P9B10VN		
SA1	V00-8410-015	5/B4	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE VENTOLA RADIATORE MANUALE	
	- V00-8410-005	5/B4	ALIMENTAZIONE - CEMA : P9PDNV0		
	- V00-8410-006	5/B4	CONTATTO NA - CEMA : P9B10VN		
SA2	V00-8410-009	6/A3	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE CABESTANO 1+2	
	- V00-8410-005	6/A3	ALIMENTAZIONE - CEMA : P9PDNV0		
	- V00-8410-006	6/A3	CONTATTO NA - CEMA : P9B10VN		
SA3	V00-8410-004	6/A4	CONTATTO NC - CEMA : P9B01VN		
SA3	V00-8410-008	6/A4	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE IMPOSTAZIONE TIRO CABESTANO 1	
	- V00-8410-005	6/A4	ALIMENTAZIONE - CEMA : P9PDNV0		
	- V00-8410-006	6/A4	CONTATTO NA - CEMA : P9B10VN		
SA4	V00-8410-008	7/A4	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE IMPOSTAZIONE TIRO CABESTANO 2	
	- V00-8410-005	7/A4	ALIMENTAZIONE - CEMA : P9PDNV0		
	- V00-8410-006	7/A4	CONTATTO NA - CEMA : P9B10VN		
SA5	V00-8410-009	5/B4	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE ABILITAZIONE ARGANO CABESTANO 1	
	- V00-8410-005	5/B4	ALIMENTAZIONE - CEMA : P9PDNV0		
	- V00-8410-006	5/B4	CONTATTO NA - CEMA : P9B10VN		
SA6	V00-8410-009	5/B5	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE ABILITAZIONE ARGANO CABESTANO 2	
	- V00-8410-005	5/B5	ALIMENTAZIONE - CEMA : P9PDNV0		
	- V00-8410-006	5/B5	CONTATTO NA - CEMA : P9B10VN		
SA7	V00-8410-006	6/B6	CONTATTO NA - CEMA : P9B10VN		
SA7	V00-8410-009	7/A3	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE ACCOPPIAMENTO MACCHINE	
	- V00-8410-005	7/A3	ALIMENTAZIONE - CEMA : P9PDNV0		
	- V00-8410-006	7/A3	CONTATTO NA - CEMA : P9B10VN		
SA9	V00-8410-008	5/A1	SELETTORE A LEVA LUNGA - Nø 2 POS.FISSE	SELETTORE COMANDO PRESSA	
	- V00-8410-005	5/A1	ALIMENTAZIONE - CEMA : P9PDNV0		

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	– V00-8410-006	5/A1	CONTATTO NA – CEMA : P9B10VN		
SA10	V00-8410-021	6/B6	SELETTORE A LEVA LUNGA – Nø 3 POS. CON R	SELETTORE COMANDO BLOCCAFUNE 1	
	– V00-8410-005	6/B6	ALIMENTAZIONE – CEMA : P9PDNV0		
SA11	V00-8410-021	7/B7	SELETTORE A LEVA LUNGA – Nø 3 POS. CON R	SELETTORE COMANDO BLOCCAFUNE 2	
	– V00-8410-005	7/B7	ALIMENTAZIONE – CEMA : P9PDNV0		
SA12	V00-8410-015	7/A6	SELETTORE A LEVA LUNGA – Nø 2 POS.FISSE	SELETTORE SINCRONISMO	
	– V00-8410-005	7/A6	ALIMENTAZIONE – CEMA : P9PDNV0		
	– V00-8410-006	7/A6	CONTATTO NA – CEMA : P9B10VN		
SA81	V00-8410-011	10/B3	MANIPOLATORE Nø 3 POS. TEMPORANEE NERO –	MANIPOLATORE COMANDO ACCELERATORE	
	– V00-8410-006	10/B3	CONTATTO NA – CEMA : P9B10VN		
SB1	V00-8410-001	2/B4	PULSANTE EMERGENZA – D. FUNGO: 40 ROSSO	PULSANTE ARRESTO EMERGENZA	
	– V00-8410-003	2/B4	TARGHETTA STOP – D 22 – D. TARGHETTA 59		
	– V00-8410-004	2/B4	CONTATTO NC – CEMA : P9B01VN		
SB1	V00-8410-004	6/A3	CONTATTO NC – CEMA : P9B01VN		
SB1	V00-8410-006	4/B2	CONTATTO NA – CEMA : P9B10VN		
SB2	V00-8401-038	2/D1	INTERRUTTORE STACCABATTERIA 12-24 V – 25	STACCABATTERIA	
	– V00-8401-039	2/D1	CHIAVE PER INTERRUTTORE STACCABATTERIA :		
SB4	V00-8430-006	8/A4	PULSANTE ROTONDO D. 16 NERO – IP 67	PULSANTE DI RESET SCHEDA 1	
SB5	V00-8430-006	9/A4	PULSANTE ROTONDO D. 16 NERO – IP 67	PULSANTE DI RESET SCHEDA 1	
SL1	V00-8510-043	14/D1	GALLEGGIANTE A LEVA – L. 200ö600 MM – 6	GALLEGGIANTE RISERVA CARBURANTE	
SQ1	V00-8510-048	2/D7	SENSORE MAGNETICO M16X1,5 – DSF : DYNT-1	SENSORE DI PROSSIMITA'	
V1	V00-8400-011	14/B3	DIODO 1N4007	DIODO	
V2	V00-8400-011	14/B4	DIODO 1N4007	DIODO	
V3	V00-8400-011	3/C5	DIODO 1N4007	DIODO	
W1	V00-2232-053	11/D3	CAVO M12 DIRITTO – L. 1 M – A Y – 2 CONN	CONNETTORE ELETTROVALVOLE	
W2	V00-2232-053	11/D5	CAVO M12 DIRITTO – L. 1 M – A Y – 2 CONN	CONNETTORE ELETTROVALVOLE	
W3	V00-2232-053	11/D6	CAVO M12 DIRITTO – L. 1 M – A Y – 2 CONN	CONNETTORE ELETTROVALVOLE	
W4	V00-2232-006	11/D8	CAVO M12 DIRITTO – L. 2 M – A Y – 2 CONN	CONNETTORE ELETTROVALVOLE	

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Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
W5	V00-2232-006	12/D2	CAVO M12 DIRITTO - L. 2 M - A Y - 2 CONN	CONNETTORE ELETTROVALVOLE	
W6	V00-2232-004	12/D4	CAVO M12 DIRITTO - L. 2 M - CONNETTORE A	CONNETTORE ELETTROVALVOLE	
W7	V00-2232-006	12/D5	CAVO M12 DIRITTO - L. 2 M - A Y - 2 CONN	CONNETTORE ELETTROVALVOLE	
W8	V00-2232-006	12/D7	CAVO M12 DIRITTO - L. 2 M - A Y - 2 CONN	CONNETTORE ELETTROVALVOLE	
W9	V00-2232-003	13/C2	CAVO M12 DIRITTO - L. 2 M - A Y PIN TO P	CONNETTORE M12 1:1 2SOLEN+LED L=2,0 MURR	
W10	V00-2232-003	13/C4	CAVO M12 DIRITTO - L. 2 M - A Y PIN TO P	CONNETTORE M12 1:1 2SOLEN+LED L=2,0 MURR	
W11	V00-2232-002	13/C5	CAVO M12 DIRITTO - L. 2 M - A Y - 3+3 FI	CONNETTORE M12 A 'Y'	
W12	V00-2232-019	13/C7	CAVO M12 DIRITTO - L. 5 M - 4 FILI PVC -	CONNETTORE M12 + 4 FILI	
W13	V00-2232-019	14/D2	CAVO M12 DIRITTO - L. 5 M - 4 FILI PVC -	CONNETTORE M12 + 4 FILI	
W14	V00-2232-002	14/D4	CAVO M12 DIRITTO - L. 2 M - A Y - 3+3 FI	CONNETTORE M12 A 'Y'	
W17	V00-2232-005	15/C2	CAVO M12 DIRITTO - L. 5 M - 4 FILI + SCH	CONNETTORE M12 + 4 FILI	
W18	V00-2232-005	15/C4	CAVO M12 DIRITTO - L. 5 M - 4 FILI + SCH	CONNETTORE M12 + 4 FILI	
W19	V00-2232-002	15/C5	CAVO M12 DIRITTO - L. 2 M - A Y - 3+3 FI	CONNETTORE M12 A 'Y'	
W20	V00-2232-002	15/C7	CAVO M12 DIRITTO - L. 2 M - A Y - 3+3 FI	CONNETTORE M12 A 'Y'	
X0	V00-2229-044	20/C2	MORSETTO PASSANTE A MOLLA ZDK 2.5 SEZION	MORSETTO	
X0	V00-2229-062	20/C4	MORSETTO DI TERRA PASSANTE A MOLLA ZDK 2	MORSETTO	
X0	V00-2229-064	20/C4	MORSETTO DI TERRA PASSANTE A MOLLA ZPE 1	MORSETTO	
X00	V00-2229-065	20/C5	TERMINALE DI FISSAGGIO EW 35 - WEIDMULLE	TERMINALE DI FISSAGGIO MORSETTIERA	
X01	V00-2229-042	20/C4	PIASTRA TERMINALE ZAP/TW ZDU10 10 MMQ -	PIASTRA TERMINALE MORSETTO	
X01	V00-2229-045	20/C5	PIASTRA TERMINALE ZAP/TW ZDK2.5 2,5 MMQ	PIASTRA TERMINALE MORSETTO	
XA.F	V00-2225-009	4/D2	CONNETTORE - Nø 40 POLI - FEMMINA SIZE 1	PRESA INTERFACCIA ELETTROVALVOLE	
	- V00-2225-010	4/D2	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	- V00-2225-011	4/D2	COPERTURA POSTERIORE - DEUTSCH : DRC 40-		
XA.M	V00-2225-001	4/C2	CONNETTORE - Nø 40 POLI - MASCHIO FISSAG	PRESA INTERFACCIA ELETTROVALVOLE	
	- V00-2225-002	4/C2	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
XAc.F	V00-2227-058	10/C5	CONNETTORE MSTB 2.5/2-ST5-5.08 - Nø 2 PO	CONNETTORE IMPOSTAZIONE SCHEDA	
XB.F	V00-2225-048	13/B2	CONNETTORE - Nø 31 POLI - FEMMINA VOLANT	PRESA INTERFACCIA ELETTROVALVOLE	
	- V00-2225-010	13/B2	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		

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Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
	– V00-2225-046	13/B2	ADATTATORE PER CONNETTORI – MATERIALE PA		
XB.M	V00-2225-049	13/B2	CONNETTORE – Nø 31 POLI – MASCHIO FISSAG	PRESA INTERFACCIA ELETTROVALVOLE	
	– V00-2225-002	13/B2	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	– V00-2225-050	13/B2	RONDELLA IN PLASTICA – PER HDP20 SHELL S		
	– V00-2225-051	13/B2	DADO IN PLASTICA – PER HDP20 SHELL SIZE		
XCAN1.F	V00-2227-061	6/E3	CONNETTORE – Nø 5 + PE POLI – FEMMINA FI	CONNETTORE CAN 1	
XCAN1.M	V00-2227-062	6/E3	CONNETTORE – Nø 5 + PE POLI – MASCHIO VO	CONNETTORE CAN 3	
XCAN2.F	V00-2227-061	6/E4	CONNETTORE – Nø 5 + PE POLI – FEMMINA FI	CONNETTORE CAN 1	
XCAN2.M	V00-2227-062	6/E4	CONNETTORE – Nø 5 + PE POLI – MASCHIO VO	CONNETTORE CAN 1	
XCP	00000000	2/D4	ENGINE.PART.....(CODICI MOTORE)	SCHEDA PRERISCALDO MOTORE	
XCP.F	09102731	2/D5	CONNETTORE PORTAFEMMINE 6P DT SERIES	CONNETTORE CONTROLLO PRERISCALDO	
XF	V00-2229-038	2/A6	MORSETTO PORTAFUSIBILE A LAME ZSI 6-2/FC	MORSETTO PORTA FUSIBILE	
XF1	V00-8401-063	2/C4	Codice non valido	MORSETTO PORTA FUSIBILE	
XM1.F	V00-2225-020	3/D5	CONNETTORE – Nø 14 POLI – FEMMINA SIZE 1	CONNETTORE INTERFACCIA MOTORE	
	– V00-2225-010	3/D5	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	– V00-2225-046	3/D5	ADATTATORE PER CONNETTORI – MATERIALE PA		
XM1.M	V00-2225-006	3/D5	CONNETTORE – Nø 14 POLI – MASCHIO SIZE 1	CONNETTORE INTERFACCIA MOTORE	
	– V00-2225-002	3/D5	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	– V00-2225-005	3/D5	RONDELLA PER CONNETTORI HD 30 / HDP 20 S		
	– V00-2225-007	3/D5	DADO PER CONNETTORI HD 34 SIZE 18 – DEUT		
XP1	D.B.	2/F4	PRESA ACCENDISIGARI VOLANTE	ACCENDISIGARI	
	– V00-8401-075	2/F4	CAPPUCCIO PER CHIAVE AVVIAMENTO – PVC MO		
XP.F	V00-2225-025	2/E3	CONNETTORE – Nø 8 POLI – FEMMINA SIZE 12	CONNETTORE POTENZA MACCHINA	
	– V00-2225-026	2/E3	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	– V00-2225-046	2/E3	ADATTATORE PER CONNETTORI – MATERIALE PA		
XP.M	V00-2225-003	2/E3	CONNETTORE – Nø 8 POLI – MASCHIO SIZE 12	CONNETTORE POTENZA MACCHINA	
	– V00-2225-004	2/E3	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	– V00-2225-005	2/E3	RONDELLA PER CONNETTORI HD 30 / HDP 20 S		

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	– V00-2225-007	2/E3	DADO PER CONNETTORI HD 34 SIZE 18 – DEUT		
XPc.F	V00-2227-021	10/C5	CONNETTORE PORTAFEMMINA – Nø 2 POLI – MO	CONNETTORE ALIMENTAZIONE PC	
XPS1.F	V00-2227-022	7/C4	CONNETTORE PORTAFEMMINA – Nø 3 POLI – MO	CONNETTORE POTENZIOMETRO JOYSTICK	
XPS1.M	V00-2227-023	7/C4	CONNETTORE PORTAMASCHIO – Nø 3 POLI – MO	CONNETTORE POTENZIOMETRO JOYSTICK	
XRP1.F	V00-2227-022	6/C4	CONNETTORE PORTAFEMMINA – Nø 3 POLI – MO	CONNETTORE POTENZIOMETRO	
XRP1.M	V00-2227-023	6/C4	CONNETTORE PORTAMASCHIO – Nø 3 POLI – MO	CONNETTORE POTENZIOMETRO	
XRP2.F	V00-2227-022	7/C4	CONNETTORE PORTAFEMMINA – Nø 3 POLI – MO	CONNETTORE POTENZIOMETRO	
XRP2.M	V00-2227-023	7/C4	CONNETTORE PORTAMASCHIO – Nø 3 POLI – MO	CONNETTORE POTENZIOMETRO	
XS1.F	V00-2227-021	4/D2	CONNETTORE PORTAFEMMINA – Nø 2 POLI – MO	CONNETTORE SIRENA	
XS1.M	V00-2227-001	4/D2	CONNETTORE – Nø 2 POLI – M – MTA : 44101	CONNETTORE SIRENA	
XS2.F	V00-2225-012	2/D6	CONNETTORE – Nø 2 POLI – FEMMINA – GRIGI	CONNETTORE SEGNALI MOTORE	
	– V00-2225-010	2/D6	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	– V00-2225-013	2/D6	BLOCCACONTATTI FEMMINE ARANCIO – DEUTSCH		
XS2.M	V00-2225-027	2/D6	CONNETTORE – Nø 2 POLI – MASCHIO – GRIGI	CONNETTORE SEGNALI MOTORE	
	– V00-2225-002	2/D6	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	– V00-2225-028	2/D6	BLOCCACONTATTI MASCHIO VERDE – Nø 2 POLI		
XS3.F	V00-2225-012	2/D8	CONNETTORE – Nø 2 POLI – FEMMINA – GRIGI	CONNETTORE SEGNALI MOTORE	
	– V00-2225-010	2/D8	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	– V00-2225-013	2/D8	BLOCCACONTATTI FEMMINE ARANCIO – DEUTSCH		
XS3.M	V00-2225-027	2/D8	CONNETTORE – Nø 2 POLI – MASCHIO – GRIGI	CONNETTORE SEGNALI MOTORE	
	– V00-2225-002	2/D8	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	– V00-2225-028	2/D8	BLOCCACONTATTI MASCHIO VERDE – Nø 2 POLI		
XS4.F	V00-2225-027	4/D2	CONNETTORE – Nø 2 POLI – MASCHIO – GRIGI	CONNETTORE LAMPEGGIANTE	
	– V00-2225-002	4/D2	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	– V00-2225-028	4/D2	BLOCCACONTATTI MASCHIO VERDE – Nø 2 POLI		
XS4.M	V00-2225-012	4/D2	CONNETTORE – Nø 2 POLI – FEMMINA – GRIGI	CONNETTORE LAMPEGGIANTE	
	– V00-2225-010	4/D2	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	– V00-2225-013	4/D2	BLOCCACONTATTI FEMMINE ARANCIO – DEUTSCH		

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XS5.F	V00-2227-021	8/A4	CONNETTORE PORTAFEMMINA - Nø 2 POLI - MO	CONNETTORE PULSANTE RESET	
XS5.M	V00-2227-001	8/A4	CONNETTORE - Nø 2 POLI - M - MTA : 44101	CONNETTORE PULSANTE RESET	
XS6.F	V00-2227-021	9/A4	CONNETTORE PORTAFEMMINA - Nø 2 POLI - MO	CONNETTORE PULSANTE RESET	
XS6.M	V00-2227-001	9/A4	CONNETTORE - Nø 2 POLI - M - MTA : 44101	CONNETTORE PULSANTE RESET	
XS7.F	V00-2225-012	13/D6	CONNETTORE - Nø 2 POLI - FEMMINA - GRIGI	CONNETTORE BLOCCAFUNE 1	
	- V00-2225-010	13/D6	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	- V00-2225-013	13/D6	BLOCCACONTATTI FEMMINE ARANCIO - DEUTSCH		
XS7.M	V00-2225-027	13/D6	CONNETTORE - Nø 2 POLI - MASCHIO - GRIGI	CONNETTORE BLOCCAFUNE 1	
	- V00-2225-002	13/D6	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	- V00-2225-028	13/D6	BLOCCACONTATTI MASCHIO VERDE - Nø 2 POLI		
XS8.F	V00-2225-012	13/D6	CONNETTORE - Nø 2 POLI - FEMMINA - GRIGI	CONNETTORE BLOCCAFUNE 1	
	- V00-2225-010	13/D6	CONTATTO FEMMINA TORNITO SEZIONE FILO: 1		
	- V00-2225-013	13/D6	BLOCCACONTATTI FEMMINE ARANCIO - DEUTSCH		
XS8.M	V00-2225-027	13/D6	CONNETTORE - Nø 2 POLI - MASCHIO - GRIGI	CONNETTORE BLOCCAFUNE 1	
	- V00-2225-002	13/D6	CONTATTO MASCHIO TORNITO SEZIONE FILO: 1		
	- V00-2225-028	13/D6	BLOCCACONTATTI MASCHIO VERDE - Nø 2 POLI		
XT	V00-2232-012	17/B2	TAPPO DI CHIUSURA M12 - X MULTIPRESE - M		
Y0	V00-8500-019	2/D8	ATTUATORE LINEARE LA1 24 V - 3 A - FORZA	MOTORE ATTUATORE	
Y1	99999999	13/D2	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA PROPORZIONALE REGOLAZIONE FRENATURA CABESTANO 1	
Y2	99999999	13/D2	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA PROPORZIONALE REGOLAZIONE FRENATURA CABESTANO 2	
Y3	99999999	13/D4	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA PROPORZIONALE COMANDO POMPA P1	
Y4	99999999	12/D2	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA DIFFERENZIALE IDRAULICO	
Y5	99999999	11/D7	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA ABILITAZIONE ARGANO CABESTANO 1	
Y6	99999999	11/D8	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA ABILITAZIONE ARGANO CABESTANO 2	
Y7	99999999	11/D6	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA ABILITAZIONE SERVIZI	
Y8	99999999	11/D6	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA VENTOLA RADIATORE	
Y9	99999999	11/D5	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA FRENO NEGATIVO CABESTANO 2	
Y10	99999999	11/D4	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA FRENO NEGATIVO CABESTANO 1	

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

Electric scheme

COMPONENTS LIST

Design : FRB 616 020

Drawn: Facoetti

Checked : Ing. Oscar

Drawing Nr. S01-00019
Archive Nr. S01

Date: 08/07/2011

Sigla	Codice	Pos.	Descrizione da Archivio Materiali	Funzione Componente	Function Component
Y11	99999999	11/D3	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA COMANDO VOMERE	
Y12	99999999	12/D2	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA SCARICO PRESSIONE RIAVVOLGITORE	
Y13	99999999	12/D4	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA COMANDO PRESSA	
Y14	99999999	12/D5	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA CILINDRO BLOCCAFUNE 1	
Y15	99999999	12/D7	IDRAULIC.PART.....(CODICE IDRAULICO)	ELETTROVALVOLA CILINDRO BLOCCAFUNE 2	
YV1	V00-2232-015	11/C1	MULTICONNETTORE CON CAVO FISSO - 8 X M12	MULTIPRESA X8 ELETTROV. 2 SOL. L=5M MURR	
YV2	V00-2232-014	13/C2	MULTICONNETTORE CON CAVO FISSO - PIN TO	MULTIPRESA X4 ELETTROV. 1:1 MURR	
YV3	V00-2232-014	14/D2	MULTICONNETTORE CON CAVO FISSO - PIN TO	MULTIPRESA X4 ELETTROV. 1:1 MURR	
YV4	V00-2232-014	15/C2	MULTICONNETTORE CON CAVO FISSO - PIN TO	MULTIPRESA X4 ELETTROV. 1:1 MURR	

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Electric scheme

COMPONENTS LIST

Design : FRB 616 020

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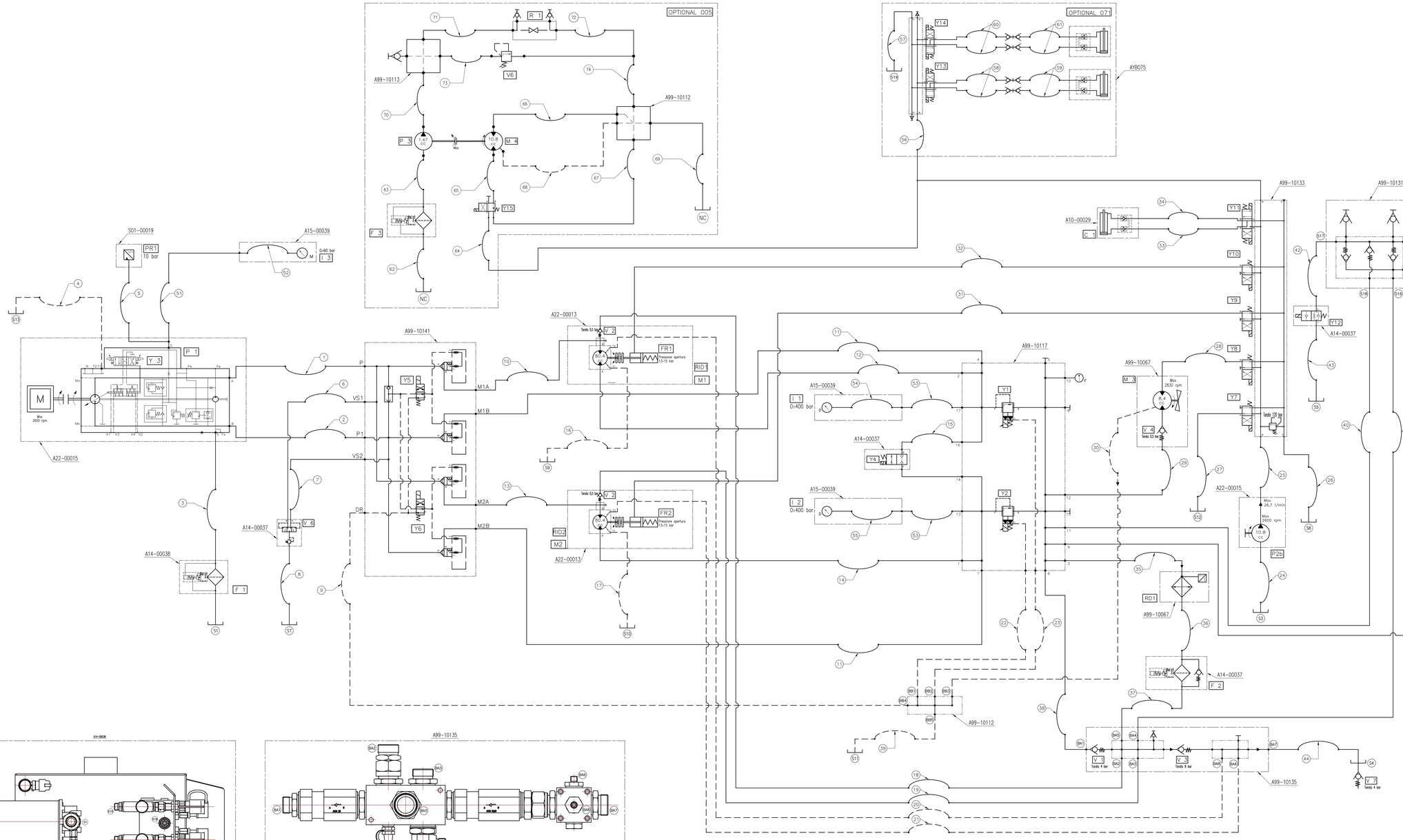
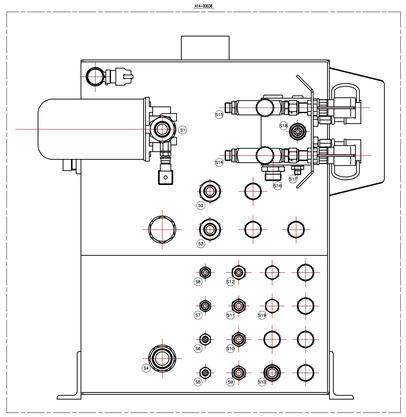
Checked : Ing. Oscar

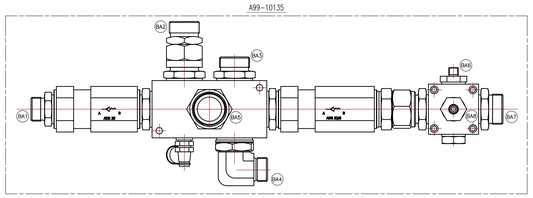
Drawing Nr. S01-00019
Archive Nr. S01

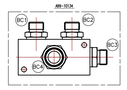
Date: 08/07/2011

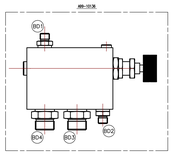
Following

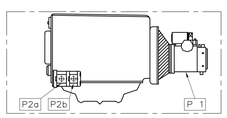


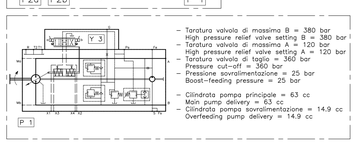


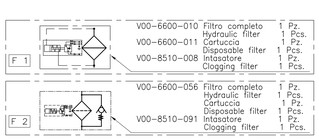












POS	CODE	DESCRIPTION	QTY
		OPTIONAL 005	
74	.	TUBO FLEX – R1 6x – 1/4" GAS – 1/4" GAS [] FLEX TUBE	1
73	.	TUBO FLEX – 352 6x – 1/4" GAS – 1/4" GAS [] FLEX TUBE	1
72	.	TUBO FLEX – R1 6x – 1/4" GAS – 1/4" GAS [] FLEX TUBE	1
71	.	TUBO FLEX – 352 6x – 1/4" GAS – 1/4" GAS [] FLEX TUBE	1
70	.	TUBO FLEX – 352 6x – 1/4" GAS – 1/4" GAS [] FLEX TUBE	1
69	.	TUBO FLEX – R1 13x – 1/2" GAS – 1/2" GAS [] FLEX TUBE	1
68	.	TUBO FLEX – R1 6x – 1/4" GAS – 1/4" [] FLEX TUBE	1
67	.	TUBO FLEX – R1 10x – 3/8" GAS – 3/8" GAS [] FLEX TUBE	1
66	.	TUBO FLEX – R1 13x – 1/2" GAS – 1/2" GAS [] FLEX TUBE	1
65	.	TUBO FLEX – R2 13x – 1/2" GAS – 1/2" GAS [] FLEX TUBE	1
64	.	TUBO FLEX – R2 13x – 1/2" GAS – 1/2" GAS [] FLEX TUBE	1
63	.	TUBO FLEX – R1 19x – 3/4" GAS – 3/4" GAS [] FLEX TUBE	1
62	.	TUBO FLEX – R1 19x – 3/4" GAS – 3/4" GAS [] FLEX TUBE	1
61	L02–1104–007	TUBO FLEX – R2 6 x 700 – A 1/4" GAS – K 1/4" GAS CALZA TELATA	2
60	L02–0004–005	TUBO FLEX – R2 6 x 1100 – A 1/4" GAS – K 1/4" GAS	2
59	L02–1104–006	TUBO FLEX – R2 6 x 1200 – A 1/4" GAS – K 1/4" GAS CALZA TELATA	2
58	L02–0004–011	TUBO FLEX – R2 6 x 1050 – A 1/4" GAS – K 1/4" GAS	2
57	L01–0006–063	TUBO FLEX – R1 10 x 3500 – K 3/8" GAS – K 3/8" GAS – I.180°	1
56	L02–0006–007	TUBO FLEX – R2 10 x 1750 – K 3/8" GAS – K45 3/8" GAS – I.180°	1
POS	CODE	DESCRIPTION	QTY
		OPTIONAL 071	
55	L07–0000–008	TUBO MCS 6400 – 50.208 – 60.204 – 1500	1
54	L07–0000–003	TUBO MCS 6400 – 50.208 – 60.204 – 1000	1
53	L07–0000–005	TUBO MCS 6400 – 60.204 – 60.204 – 3000	2
52	L07–0000–001	TUBO MCS 6400 – 50.204 – 60.204 – 500	2
51	L07–0000–006	TUBO MCS 6400 – 60.204 – 60.204 – 3500	1
50	L01–0004–122	TUBO FLEX – R1 06 x 4000 – K 1/4" GAS – K45 1/4" GAS – 1.90°	1
49	L01–0012–032	TUBO FLEX – R1 19 x 2950 – K 3/4" GAS – K45 3/4" GAS – 1.0°	1
48	L02–0012–004	TUBO FLEX – R2 19 x 2400 – K 3/4" GAS – K45 3/4" GAS – 1.0°	1
47	L02–0008–023	TUBO FLEX – R2 13 x 1100 – K 1/2" GAS – K 1/2" GAS – 1.270°	2
46	L02–0008–022	TUBO FLEX – R2 13 x 3100 – K 1/2" GAS – K 1/2" GAS – 1.0°	1
45	L01–0012–031	TUBO FLEX – R1 19 x 3800 – A 3/4" GAS – K 3/4" GAS	1
44	L01–0020–016	TUBO FLEX – R1 32 x 1300 – K 1" 1/4 GAS – K45 1" 1/4 GAS – 1.0°	1
43	L01–0004–058	TUBO FLEX – R1 06 x 400 – A 1/4" GAS – K 1/4" GAS	1
42	L01–0004–057	TUBO FLEX – R1 06 x 700 – K 1/4" GAS – K45 1/4" GAS – I.180°	1
41	L01–0016–027	TUBO FLEX – R1 25 x 2250 – A 1" GAS – A 1" GAS	1
POS	CODE	DESCRIPTION	QTY

POS	CODE	DESCRIPTION	QTY
40	L01–0012–030	TUBO FLEX – R1 19 x 2450 – K 3/4" GAS – K 3/4" GAS – 1.0°	1
39	L01–0008–039	TUBO FLEX – R1 13 x 1700 – K 1/2" GAS – K 1/2" GAS – 1.270°	1
38	L01–0016–026	TUBO FLEX – R1 25 x 450 – K 1" GAS – K 1" GAS – 1.0°	1
37	L01–0024–024	TUBO FLEX – R1 38 x 1000 – A 1" 1/2 GAS – K 1" 1/2 GAS	1
36	L01–0024–023	TUBO FLEX – R1 38 x 1650 – K 1" 1/2 GAS – K 1" 1/2 GAS – 1.90°	1
35	L01–0024–007	TUBO FLEX – R1 38 x 1300 – K 1" 1/2 GAS – K 1" 1/2 GAS – I.180°	1
34	L02–0004–015	TUBO FLEX – R2 6 x 3100 – A 1/4" GAS – K 1/4" GAS	1
33	L02–0004–022	TUBO FLEX – R2 6 x 3300 – K 1/4" GAS – K 1/4" GAS – I.180°	1
32	L02–0004–021	TUBO FLEX – R2 6 x 1350 – A 1/4" GAS – K 1/4" GAS	1
31	L02–0004–014	TUBO FLEX – R2 6 x 1000 – A 1/4" GAS – K 1/4" GAS	1
30	L01–0004–056	TUBO FLEX – R1 06 x 850 – K 1/4" GAS – K 1/4" GAS – 1.90°	1
29	L01–0008–038	TUBO FLEX – R1 13 x 1250 – A 1/2" GAS – K 1/2" GAS	1
28	L02–0006–006	TUBO FLEX – R2 10 x 850 – A 3/8" GAS – A 3/8" GAS	1
27	L01–0006–061	TUBO FLEX – R1 10 x 1200 – K 3/8" GAS – K 3/8" GAS – 1.0°	1
26	L01–0006–060	TUBO FLEX – R1 10 x 1000 – A 3/8" GAS – K 3/8" GAS	1
25	L02–0006–005	TUBO FLEX – R2 10 x 2900 – K 3/8" GAS – K 3/8" GAS – 1.0°	1
24	L01–0012–029	TUBO FLEX – R1 19 x 3900 – A 3/4" GAS – K 3/4" GAS	1
23	L01–0004–055	TUBO FLEX – R1 06 x 700 – A 1/4" GAS – K 1/4" GAS	1
22	L01–0004–054	TUBO FLEX – R1 06 x 800 – A 1/4" GAS – A 1/4" GAS	1
21	L01–0004–053	TUBO FLEX – R1 06 x 800 – K 1/4" GAS – K 1/4" GAS – 1.90°	1
20	L01–0004–052	TUBO FLEX – R1 06 x 800 – K 1/4" GAS – K 1/4" GAS – 1.270°	1
19	L01–0020–015	TUBO FLEX – R1 32 x 1100 – A 1" 1/4 GAS – K 1" 1/4 GAS	1
18	L01–0020–014	TUBO FLEX – R1 32 x 1150 – A 1" 1/4 GAS – K 1" 1/4 GAS	1
17	L01–0008–037	TUBO FLEX – R1 13 x 1900 – K 1/2" GAS – K 1/2" GAS – 1.270°	1
16	L01–0008–036	TUBO FLEX – R1 13 x 2100 – K 1/2" GAS – K 1/2" GAS – 1.270°	1
15	L04–1106–001	TUBO FLEX – 45P 10 x 500 – A 3/8" GAS – K 3/8" GAS CALZA TELATA	1
14	L03–1116–005	TUBO FLEX – 45H 25 x 1200 – A 1" GAS – K 1" GAS CALZA TELATA	1
13	L03–1112–015	TUBO FLEX – 45H 19 x 1050 – K 3/4" GAS – K 3/4" GAS – I.180° CALZA TELATA	1
12	L03–1116–004	TUBO FLEX – 45H 25 x 1000 – A 1" GAS – K 1" GAS CALZA TELATA	1
11	L03–1112–014	TUBO FLEX – 45H 19 x 800 – A 3/4" GAS – K45 3/4" GAS CALZA TELATA	2
10	L03–1112–024	TUBO FLEX – 45H 19 x 1800 – K 3/4" GAS – K 3/4" GAS – I.180° CALZA TELATA	1
9	L01–0008–066	TUBO FLEX – R1 13 x 1050 – K 1/2" GAS – K 1/2" GAS – 1.90°	1
8	L01–0006–062	TUBO FLEX – R1 10 x 3000 – K 3/8" GAS – K 3/8" GAS – 1.0°	1
7	L04–1104–010	TUBO FLEX – 45P 6 x 450 – A 1/4" GAS – A 1/4" GAS CALZA TELATA	1
6	L04–1104–009	TUBO FLEX – 45P 6 x 600 – A 1/4" GAS – K 1/4" GAS CALZA TELATA	1
5	L01–0004–051	TUBO FLEX – R1 06 x 600 – A 1/4" GAS – A 1/4" GAS	1
4	L01–0012–028	TUBO FLEX – R1 19 x 2600 – K 3/4" GAS – K 3/4" GAS – 1.90°	1
3	L01–0016–025	TUBO FLEX – R1 25 x 2800 – K 1" GAS – K 1" GAS – 1.0°	1
2	L03–1112–012	TUBO FLEX – 45H 19 x 1050 – A 3/4" GAS – K 3/4" GAS CALZA TELATA	1
1	L03–1112–011	TUBO FLEX – 45H 19 x 950 – A 3/4" GAS – K 3/4" GAS CALZA TELATA	1
POS	CODE	DESCRIPTION	QTY

POS	CODE	DESCRIPTION
		OPTIONAL 071
Y14	V00–6100–016	ROPE LOCKING CYLINDER SOLENOID VALVE CONTROL
Y13	V00–6100–016	ROPE LOCKING CYLINDER SOLENOID VALVE CONTROL
		OPTIONAL 005
Y15	V00–6100–017	COMPRESSOR SOLENOID VALVE CONTROL
V6	V00–6203–016	COMPRESSOR REGULATION VALVE
R1	A99–10115	COMPRESSOR HYDRAULIC OIL DRAIN PLUG VALVE
P3	V00–6007–001	COMPRESSOR FEED PUMP
M4	V00–6052–008	COMPRESSOR HYDRAULIC MOTOR
F3	V00–6600–053	P3 PUMP SUCTION FILTER

POS	CODE	DESCRIPTION
Y12	V00–6100–019	REELWINDERS DRAIN PRESSURE CONTROL SOLENOID VALVE
Y11	V00–6100–016	FRONT STABILIZER CYLINDER CONTROL SOLENOID VALVE
Y10	V00–6100–017	VACUUM–BRAKE BULLWHEEL 2 OPENING CONTROL SOLENOID VALVE
Y9	V00–6100–017	VACUUM–BRAKE BULLWHEEL 1 OPENING CONTROL SOLENOID VALVE
Y8	V00–6100–017	HYDRAULIC FAN SOLENOID VALVE CONTROL
Y7	V00–6100–017	AUXILIARY EQUIPMENT CIRCUIT CONTROL SOLENOID VALVE
Y6	V00–6100–110	PULLER 2 BULLWHEEL CONTROL SOLENOID VALVE
Y5	V00–6100–110	PULLER 1 BULLWHEEL CONTROL SOLENOID VALVE
Y4	V00–6100–034	HYDRAULIC DIFFERENTIAL SOLENOID VALVE
Y3	V00–6001–011	P1 PUMP PROPORTIONAL SOLENOID VALVE CONTROL
Y2	V00–6209–003	BRAKING 2 BULLWHEEL REGULATION PROPORTIONAL SOLENOID VALVE
Y1	V00–6209–003	BRAKING 1 BULLWHEEL REGULATION PROPORTIONAL SOLENOID VALVE
V7	V00–6204–013	CHECK VALVE
V6	V00–6200–006	FLUSHING VALVE
V5	V00–6209–001	REELWINDERS REGULATION PRESSURE VALVE
V4	V00–6204–011	CHECK VALVE
V3	V00–6204–024	CHECK VALVE
V2	V00–6204–007	CHECK VALVE
V1	V00–6204–003	RADIATOR BY–PASS CHECK VALVE
RID2	V00–5702–040	REDUCTION GEAR MOTOR 2 BULL WHEEL
RID1	V00–5702–040	REDUCTION GEAR MOTOR 1 BULL WHEEL
RD1	V00–6610–002	HYDRAULIC OIL RADIATOR
PR1	V00–8510–037	PRESSURE SWITCH
P2b	V00–6004–033	FAN RADIATOR MOTOR AND AUXILIARY EQUIPMENT FEEDING PUMP
P2a	V00–6004–033	REELWINDERS EQUIPMENT FEED PUMP
P1	V00–6001–011	M1 M2 FEED PUMP
M3	V00–6052–006	FAN RADIATOR MOTOR
M2	V00–6050–027	BULLWHEEL MOTOR 2
M1	V00–6050–027	BULLWHEEL MOTOR 1
I4	V00–6300–010	REELWINDERS WORKING PRESSURE MANOMETER
I3	V00–6300–006	P1 PUMP BOOST FEEDING PRESSURE MANOMETER
I2	V00–6300–016	M2 WORKING PRESSURE MANOMETER
I1	V00–6300–016	M1 WORKING PRESSURE MANOMETER
FR2	V00–5702–040	VACUUM–BRAKE BULL WHEEL
FR1	V00–5702–040	VACUUM–BRAKE BULL WHEEL
F2	V00–6600–056 + V00–8510–091	RETURN FILTER
F1	V00–6600–010	P1 PUMP SUCTION FILTER
C1	D99–19904	FRONT STABILIZER CYLINDER

POS	CODE	DESCRIPTION
F 1	V00–6600–010	Filtro completo Hydraulic filter 1 Pcs.
	V00–6600–011	Cartuccia Disposable filter 1 Pcs.
	V00–8510–008	Intasatore Clogging filter 1 Pcs.
F 2	V00–6600–056	Filtro completo Hydraulic filter 1 Pcs.
	V00–8510–091	Cartuccia Disposable filter 1 Pcs.
		Intasatore Clogging filter 1 Pcs.

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Via Arturo Maffei, 3 – 23826 Mandello del Lario (LC) Italy – Tel. 0341/735111 – Fax 0341/735200
Via Arturo Maffei, 3 – 23826 Mandello del Lario (LC) Italy – Tel. 0341/735111 – Fax 0341/735200

DISEGNATO	Ing. Oscar
MODELLO	Locatelli
DATA	21–05–2012
PESO	~000.0 Kg.
SCALA	–:–
MACCHINA	FRENO BINATO
MODELLO	FRB 616 020
GRUPPO	IMPIANTO OLEODINAMICO
OGGETTO	SCHEMA IDRAULICO
NUMERO DISEGNO	S02–00018

TUTTE LE NORME RICHIAMATE SI INTENDONO NELLA LORO ULTIMA EDIZIONE
SALDATURE: IN ACCORDO CON – WPS 1 ÷ 9
GRADO DI PRECISIONE PER QUOTE LINEARI, ANGOLARI, GEOMETRICHE NON TOLLERATE
LAV.MECCANICHE: UNI EN 22768–f H
CARPENTERIA: UNI EN 22768–c K

A0 – 1189×841