7504-M002-0_R

GTB16EVO

INSTRUCTION MANUAL

GB TRANSLATION FROM THE ORIGINAL INSTRUCTIONS

For spare parts drawings refer to the section " LIST OF COMPONENTS" enclosed to this manual.

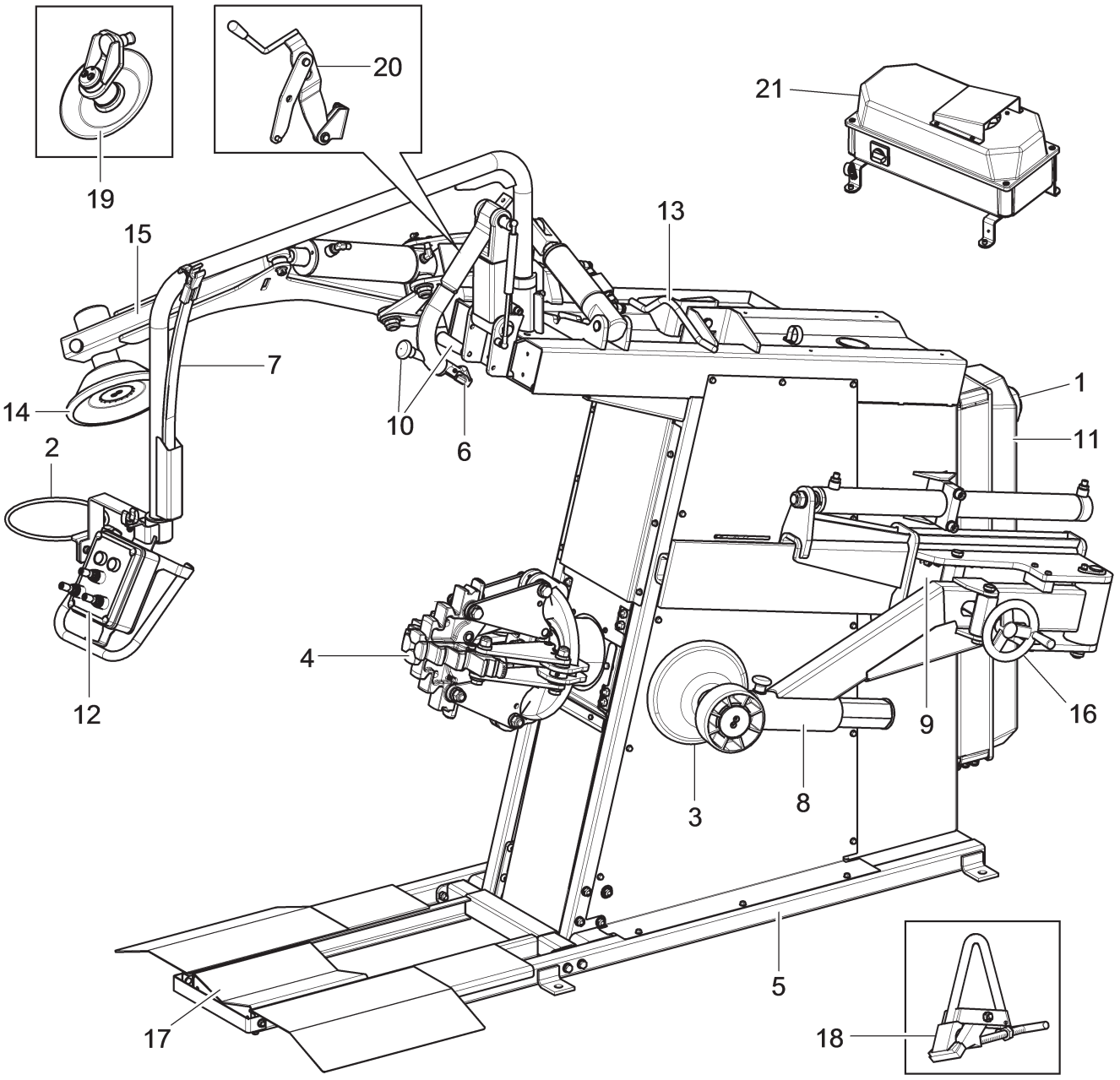
• For any further information please contact your local dealer or call:

Technical services: **RAVAGLIOLI S.p.A.** - Via 1° Maggio, 3 - 40037 Pontecchio Marconi - Bologna Italy
Phone (+39) 051 6781511 - Telex 510697 RAV I - Fax (+39) 051 846349 - e-mail: aftersales@ravaglioli.com

7504-M002-0_R - Rev. n. 0 (07/2019)

SUMMARY

FIG. 1 - GTB16EVO



KEY

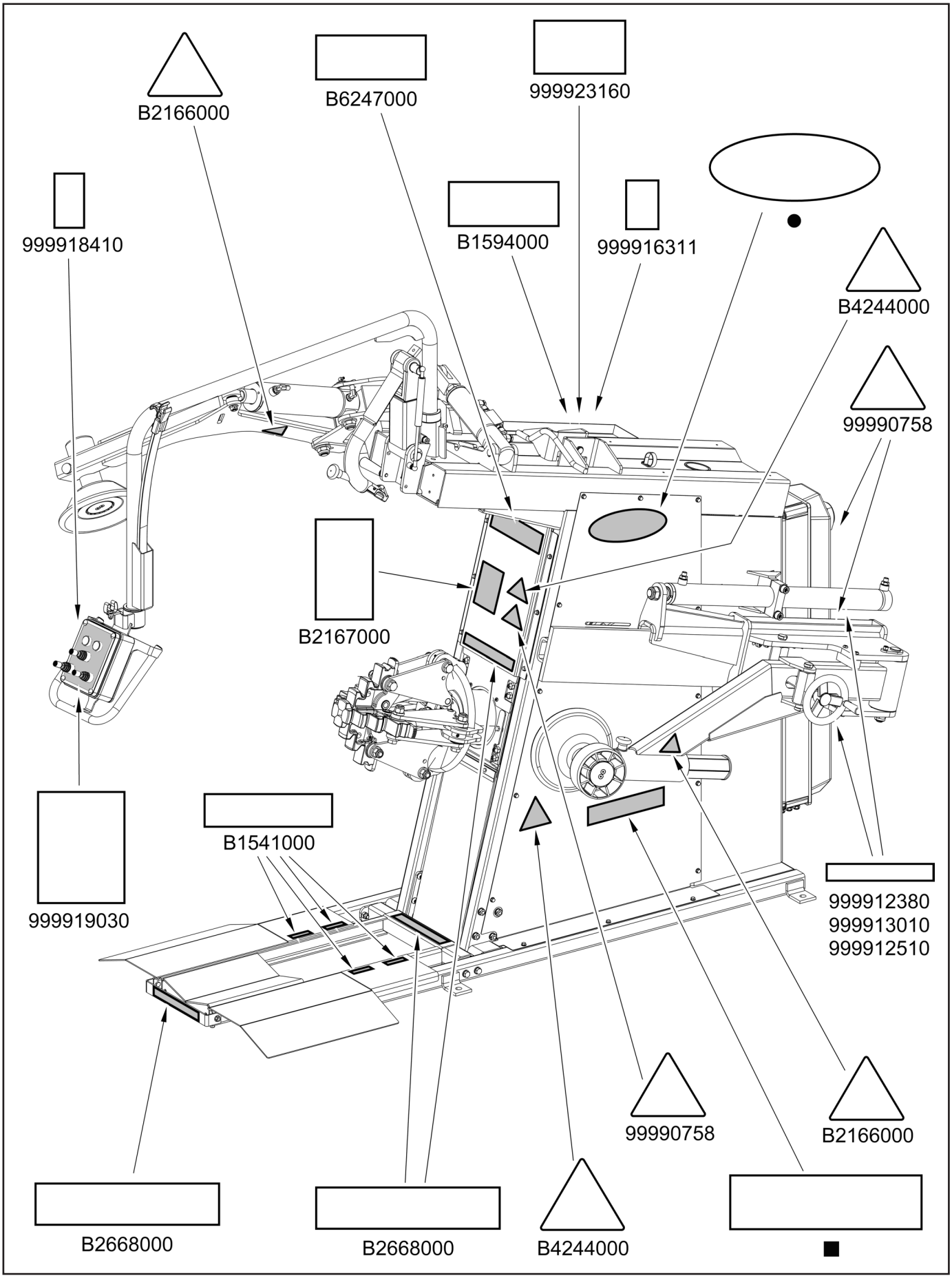
1 - Main switch
2 - Grease holder ring
3 - Rear bead breaker roll
4 - Self-centring chuck
5 - Frame
6 - Mounting/demounting tool
7 - Demounting/mounting lever
8 - Rear bead breaker roll holder arm
9 - Rear bead breaker roll translation carriage
10 - Tool positioning handle
11 - Electric panel
12 - Control unit
13 - Lifting hook
14 - Front bead breaker roll
15 - Front bead breaker roll holder arm
16 - Handwheel for adjustment of rear bead breaker roll working position
17 - Tyre loading platform
18 - G90A6 (optional) - Clamp for alloy rims
19 - G108A24 (optional) - Wheel beading disc with bead wire
20 - G108A42 (optional) - Arm positioning lever kit
21 - Inverter unit (VARGNAV101ND - version with inverter)

SYMBOLS USED IN THE MANUAL

Symbols	Description
	Read instruction manual.
	Wear work gloves.
	Wear work shoes.
	Wear safety goggles.
	Mandatory. Operations or jobs to be performed compulsorily.
	Warning. Be particularly careful (possible material damages).
	Note. Indication and/or useful information.

Symbols	Description
	Danger! Be particularly careful.
	Move with fork lift truck or pallet truck.
	Lift from above.
	Technical assistance necessary. Do not perform any intervention.
	Caution: hanging loads.
	Danger: tyres could drop.

PLATES LOCATION ON MACHINE INFORMATION TABLE



Code numbers of plates	
B1541000	*Danger plate*
B1594000	*Date indicating plate*
B2166000	*Bead breaker danger plate*
B2167000	*Obligation to wear protective clothing plate*
B2668000	*Wheel lifting device danger plate*
B4244000	*Rotating parts danger plate*
B6247000	*"Deflate tyre..." plate*
99990758	*Electricity danger plate*
999912380	*Voltage plate 400V 50Hz 3Ph*
999912510	*220/60/3 voltage plate (only for UE3127 - 220V 60Hz 1Ph version)*
999913010	*400V 50Hz 3Ph+N voltage plate (only for VARGNAV101ND - version with inverter)*
999916311	*Rubbish skip label*
999918410	*Self-centring chuck label*
999919030	*Plate for joysticks*
999923160	*Prop 65 Attention plate*
•	*Manufacturer logo nameplate*
■	*Machine nameplate*

IF ONE OR MORE PLATES DISAPPEAR FROM THE MACHINE OR BECOMES DIFFICULT TO READ, REPLACE IT AND QUOTE ITS/THEIR CODE NUMBER/S WHEN REORDERING.

SOME OF THE PICTURES PRESENT IN THIS MANUAL HAVE BEEN OBTAINED FROM PICTURES OF PROTOTYPES, THEREFORE THE STANDARD PRODUCTION MACHINES AND ACCESSORIES CAN BE DIFFERENT IN SOME COMPONENTS.

1.0 GENERAL INTRODUCTION

This manual is an integral part of the product and must be retained for the whole operating life of the machine.
Carefully study the warnings and instructions contained in this manual. It contains important instructions regarding **FUNCTIONING, SAFE USE and MAINTENANCE.**

KEEP THE MANUAL IN A KNOWN, EASILY ACCESSIBLE PLACE FOR ALL ACCESSORY OPERATORS TO CONSULT IT WHENEVER IN DOUBT.

THE MANUFACTURER DISCLAIMS ALL RESPONSIBILITY FOR ANY DAMAGE OCCURRED WHEN THE INDICATIONS GIVEN IN THIS MANUAL ARE NOT RESPECTED: AS A MATTER OF FACT, THE NON-COMPLIANCE WITH SUCH INDICATIONS MIGHT LEAD TO EVEN SERIOUS DANGERS.

1.1 Introduction

Thank you for preferring this tyre-changer. We feel sure you will not regret your decision.
The machine has been designed for use in professional workshops and in particular it stands out for its reliability, safe and rapid operation: with just a small degree of maintenance and care, this will give you many years of trouble-free service and lots of satisfaction.
This manual contains all operating instructions and details on how to service and use the machine correctly.

2.0 INTENDED USE

The machine described in this manual is a tyre changer with electro-hydraulic working, to be used only for the mounting and demounting of any type of wheel with whole rim (with groove and bead wire), with maximum dimensions of 1320 mm/52", maximum width of 540 mm/21.2" and maximum weight of 1200 Kg.
The machine is NOT to be used for tyre inflation.

THIS ACCESSORY MUST ONLY BE USED FOR THE PURPOSE FOR WHICH IT IS SPECIFICALLY DESIGNED.
ANY OTHER USE IS CONSIDERED IMPROPER AND THEREFORE UNACCEPTABLE.

THE MANUFACTURER CANNOT BE HELD RESPONSIBLE FOR ANY DAMAGE CAUSED BY IMPROPER, ERRONEOUS, OR UNACCEPTABLE USE.

2.1 Training of personnel

The machine may be operated only by suitably trained and authorized personnel.

Given the complexity of the operations necessary to manage the machine and to carry out the operations safely and efficiently, the personnel must be trained in such a way that they learn all the information necessary to operate the machine as intended by the manufacturer.

A CAREFUL READING OF THIS INSTRUCTION MANUAL FOR USE AND MAINTENANCE AND A SHORT PERIOD OF TRAINING WITH SKILLED PERSONNEL CAN BE AN ENOUGH PREVENTIVE PREPARATION.

3.0 SAFETY DEVICES

PERIODICALLY, AT LEAST MONTHLY, CHECK THE INTEGRITY AND THE FUNCTIONALITY OF THE SAFETY AND PROTECTION DEVICES ON THE MACHINE.

All the machines are equipped with:

- **"man-operated" controls** (immediate stop of operation when the control is released).
- **Control logic disposition**
  to prevent the operator from making dangerous mistakes;
- **thermal magnetic switch** on the supply line of the oil-pressure power unit motor: avoids the motor overheating in case of intensive use;

NO MODIFICATION OR CALIBRATION OF THE OPERATING PRESSURE OF THE MAXIMUM PRESSURE VALVE OR OF THE HYDRAULIC CIRCUIT PRESSURE LIMITER IS PERMITTED.

- **controlled check valves** on:
  - opening of self-centring unit jaws,
  - lifting of self-centring unit.

  These valves have been fit in order to avoid that accidental oil drippings cause unexpected movements of the jaws (and, as a consequence the wheel fall) and of wheel clamping self-centring unit.
- **Fuses** on the electric supply line of self-centring unit motor;
- automatic power supply disconnection with the opening of the electric panel.
- **Fixed guards and shelters**
  The machine is fitted with a number of fixed guards intended to prevent potential crushing, cutting and compression risks.
- **Motor protection devices**
  (VARGNAV101ND - version with inverter)
  The new "Invemotor" unit is equipped with electronic protection devices. They stop the motor if working defected conditions appear to avoid that the motor itself can be damaged and that the operator safety can be compromised (overvoltage, undervoltage, overload, overtemperature).
  For more details, see Chapt. 14 "Troubleshooting table".

3.1 Residual risks

The machine was subjected to a complete analysis of risks according to reference standard EN ISO 12100. Risks are as reduced as possible in relation with technology and product functionality.
This manual stresses possible residual risks, also highlighted in pictograms on the present manual and adhesive warning signals placed on the machine: their location is represented in "PLATE LOCATION ON MACHINE INFORMATION TABLE" on page 5.

4.0 GENERAL SAFETY RULES

- Any tampering with or modification to the machine not previously authorized by the manufacturer exempts the latter from all responsibility for damage caused by or derived from said actions.
- Removing of or tampering with the safety devices or with the warning signals placed on the machine leads to serious dangers and represents a transgression of European safety rules.
- The machine may be used only in areas free from the danger of explosion or fire.
- The use of only original accessories and spare parts is advised. Our machine is designed to function only with original accessories.
- Installation must be conducted only by qualified personnel exactly according to the instructions that are given below.
- Ensure that there are no dangerous situations during the machine operating manoeuvres. Immediately stop the machine if it miss-functions and contact the assistance service of an authorized dealer.
- In emergency situations and before carrying out any maintenance or repairs, disconnect all supplies to the machine by using the main switch.
- Ensure that the work area around the machine is free of potentially dangerous objects and that there is no oil since this could damage the tyre. Oil on the floor is also a potential danger for the operator.

THE MANUFACTURER DENIES ANY RESPONSIBILITY IN CASE OF DAMAGES CAUSED BY UNAUTHORIZED MODIFICATIONS OR BY THE USE OF NON ORIGINAL COMPONENTS OR EQUIPMENT.

OPERATORS MUST WEAR SUITABLE WORK CLOTHES, PROTECTIVE GLASSES AND GLOVES, AGAINST THE DANGER FROM THE SPRAYING OF DANGEROUS DUST, AND POSSIBLY LOWER BACK SUPPORTS FOR THE LIFTING OF HEAVY PARTS. DANGLING OBJECTS LIKE BRACELETS MUST NOT BE WORN, AND LONG HAIR MUST BE TIED UP. FOOTWEAR SHOULD BE ADEQUATE FOR THE TYPE OF OPERATIONS TO BE CARRIED OUT.

- The machine handles and operating grips must be kept clean and free from oil.
- The workshop must be kept clean, dry and not exposed to atmospheric agents. Make sure that the working premises are properly lit.
  The machine can be operated by a single operator. Unauthorised personnel must remain outside the working area, as shown in **Figure 4.**
  Avoid any hazardous situations. Do not use air-operated or electrical equipment when the shop is damp or the floor slippery and do not expose such tools to atmospheric agents.
- When operating and servicing this machine, carefully follow all applicable safety and accident-prevention precautions.
  The machine must not be operated by professionally unskilled persons.

THE MACHINE OPERATES WITH PRESSURIZED HYDRAULIC FLUID. MAKE SURE EVERY COMPONENT OF THE HYDRAULIC CIRCUIT IS ALWAYS PROPERLY LOCKED, ANY PRESSURIZED LEAKS MAY CAUSE SERIOUS INJURIES OR WOUNDS.

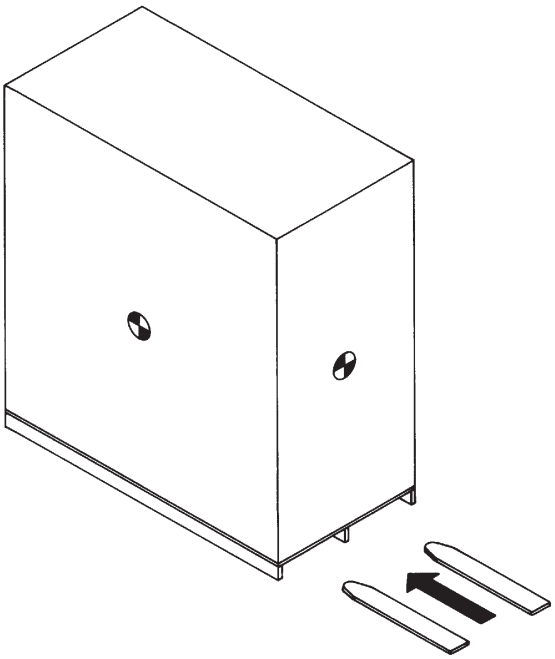
IN CASE OF A CHANCE SUPPLY FAILURE MOVE THE CONTROLS TO THE NEUTRAL POSITION.

5.0 PACKING AND MOBILIZATION FOR TRANSPORT

HAVE THE MACHINE HANDLED BY SKILLED PERSONNEL ONLY.
THE LIFTING EQUIPMENT MUST WITHSTAND A MINIMUM RATED LOAD EQUAL TO THE WEIGHT OF THE PACKED MACHINE (see paragraph "TECHNICAL SPECIFICATIONS").

The machine is supplied completely assembled, packed in a cardboard box.
Movement must be by pallet-lift or fork-lift trolley.
The fork lifting points are indicated on the packing.

Fig. 2



6.0 UNPACKING

DURING UNPACKING, ALWAYS WEAR GLOVES TO PREVENT ANY INJURY CAUSED BY CONTACT WITH PACKAGING MATERIAL (NAILS, ETC.).

The cardboard box is supported with plastic strapping. Cut the strapping with suitable scissors. Use a small knife to cut along the lateral axis of the box and open it like a fan.
It is also possible to unnail the cardboard box from the pallet it is fixed to. After removing the packing, and in the case of the machine packed fully assembled, check that the machine is complete and that there is no visible damage.

If in doubt **do not use the machine** and refer to professionally qualified personnel (to the seller).
The packing (plastic bags, expanded polystyrene, nails, screws, timber, etc.) should not be left within reach of children since it is potentially dangerous. These materials should be deposited in the relevant collection points if they are pollutants or non biodegradable.

THE BOX CONTAINING THE FIXTURES IS CONTAINED IN THE WRAPPING. DO NOT THROW IT AWAY WITH THE PACKING.

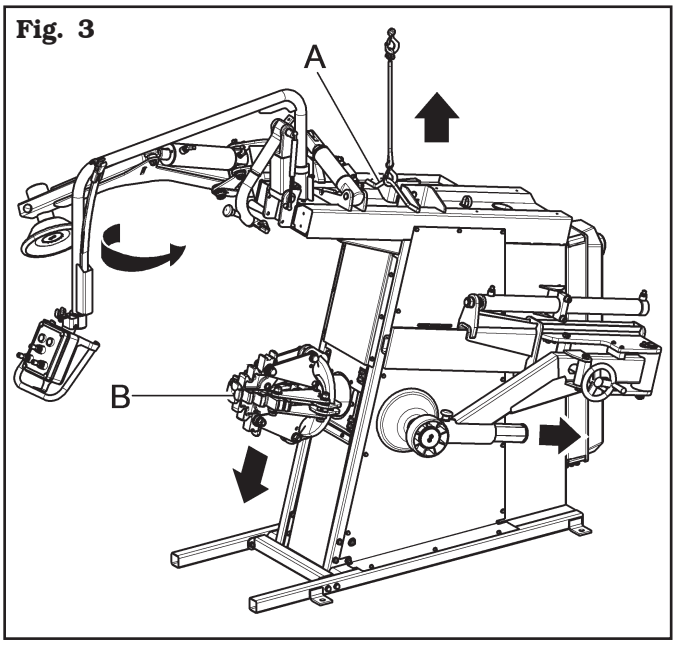
7.0 MOBILIZATION

THE LIFTING EQUIPMENT MUST WITHSTAND A MINIMUM RATED LOAD EQUAL TO THE WEIGHT OF THE MACHINE (SEE PARAGRAPH TECHNICAL SPECIFICATIONS). DO NOT ALLOW THE LIFTED MACHINE TO SWING.

If the machine has to be moved from its normal work post, the movement must be conducted following the instructions listed below.

- Protect the exposed corners with suitable material (Pluribol/cardboard).
- Do not use metallic cables for lifting.
- Make sure that the electricity supply is not connected.
- To perform lifting, use the bracket "**A**", pictured in **Fig. 3**, place the bead breaking arms as close as possible to the machine, and the self-centring unit (**Fig. 3 ref. B**) as low as possible to ensure a correct load balancing.

Fig. 3



8.0 WORKING ENVIRONMENT CONDITIONS

The machine must be operated under proper conditions as follows:

- temperature: 0° + 55° C
- relative humidity: 30 - 95% (dew-free)
- atmospheric pressure: 860 - 1060 hPa (mbar).

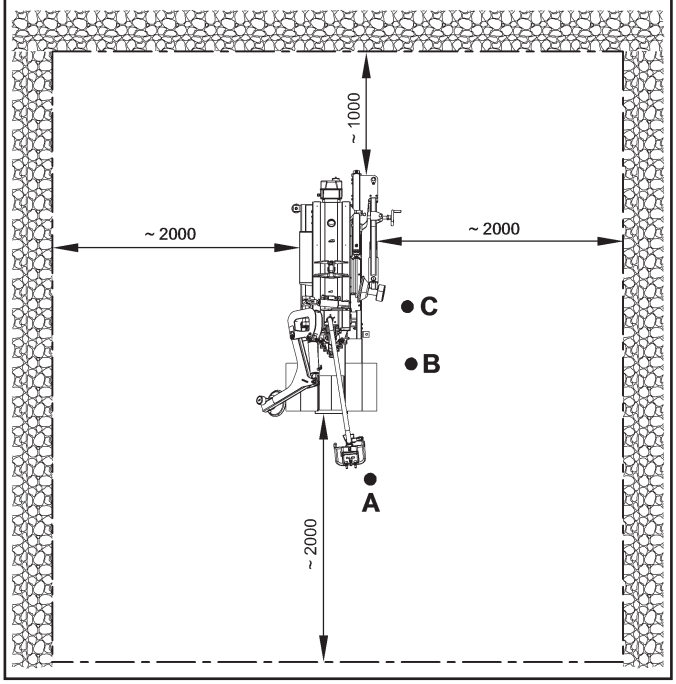
The use of the machine in ambient conditions other than those specified above is only allowed after prior agreement with and approval of the manufacturer.

8.1 Working position

In **Figure 4** it is possible to define working positions **A, B, C** which will be referred to in the description of machine operative phases.
Positions **A** and **B** must be considered as the main positions for tyre mounting and demounting and for wheel clamping on self-centring unit, while positions **A** and **C** are the best positions to follow tyre bead breaking and demounting operations.
Working in these positions allows better precision and speed during operating phases as well as greater safety for the operator.

8.2 Working area

Fig. 4



USE THE MACHINE IN A DRY AND ADEQUATELY LIT PLACE, POSSIBLY INDOORS OR ANYWAY IN A ROOFED AREA, THIS PLACE MUST BE IN COMPLIANCE WITH APPLICABLE SAFETY REGULATIONS.

The location of the machine requires a usable space as indicated in **Figure 4**. The positioning of the machine must be according to the distances shown. From the control position the operator is able to observe all the machine and surrounding area.
He must prevent unauthorized personnel or objects that could be dangerous from entering the area.
The machine must be fixed on a flat floor surface, preferably of cement or tiled. Avoid yielding or irregular surfaces.
The base floor must be able to support the loads transmitted during operation. This surface must have a capacity load of at least 500 kg/m^2.
The depth of the solid floor must be sufficient to guarantee that the anchoring bolts hold.

8.3 Lighting

The machine does not require its own lighting for normal working operations.
However, it must be placed in an adequately lit environment.
For correct lighting, use lamps having total power 800/1200 Watt as envisaged by UNI 10380.

9.0 ANCHORING SYSTEM

The packed machine is fixed to the support pallet through the holes prearranged on the frame. Such holes can be used also to fix the machine to the ground, through floor anchor small blocks (excluded from supply). Before carrying out the definitive fixing, check that all the anchor points are laid down flat and correctly in contact with the fixing surface itself. If not so, insert shimming profiles between the machine and the fixing lower surface, as indicated in **Fig. 5**.

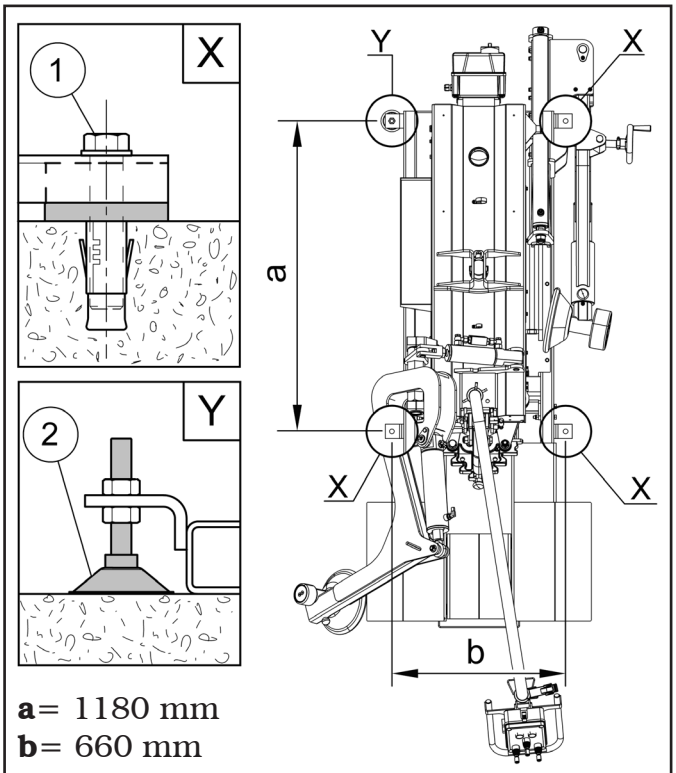


Fig. 5

- Execute 4 holes with 10 mm diameter on the floor by the holes on the bottom floor;
- insert the small blocks (excluded from supply) into the holes;
- fix the machine to the ground with 4 M8x80 mm screws (excluded from supply) (**Fig. 5 ref. 1**) (or with 4 8x80 mm stud bolts (excluded from supply)). Tighten the screws with an approximate tightening torque of 70 Nm.

BEFORE FIXING COMPLETELY THE MACHINE TO THE GROUND, FLUSH THE SAME BY ROTATING FOOT (FIG. 5 REF. 2).

10.0 MACHINE ASSEMBLY

After having freed the components from the packing check that they are complete, and that there are no anomalies, then comply with the following instructions for the assembly of the components making use of the attached series of illustrations.

10.1 Fixtures contained in the packing

The packing case contains also the fixtures box. Check that all the parts listed are there.

Code	Description	N.
G108A3	*Head with lever*	**1**
B0223000	*Grease holding ring*	**1**
203038	*TE M8x25 screw*	**2**
228011	*M8 self-locking nut*	**2**
B4845000	*Handwheel with handle*	**1**
206094	*TCEI M6x40 screw*	**1**
228010	*M6 self-locking nut*	**1**

10.2 Assembly procedures

Assemble the machine with the help of the illustrations represented and described hereafter.

1. Remove the packaging and free the machine from the wrapping, lift it and place it on the floor.
   The articulated end (**Fig. 6 ref. 1**) appears as illustrated in **Fig. 6**.

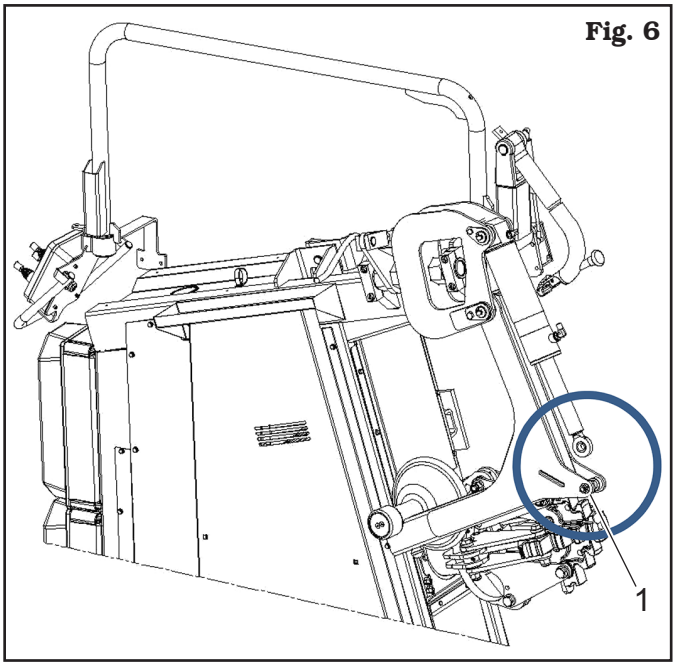
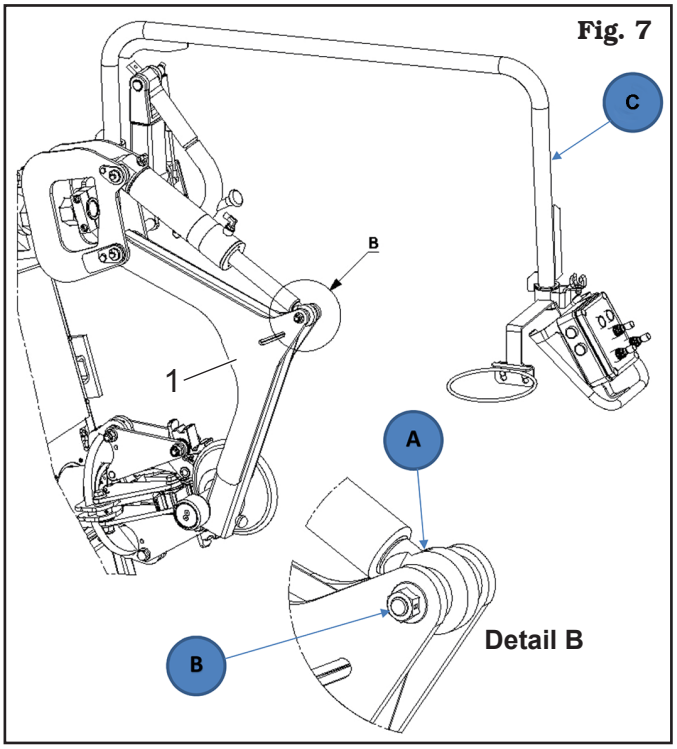


Fig. 6

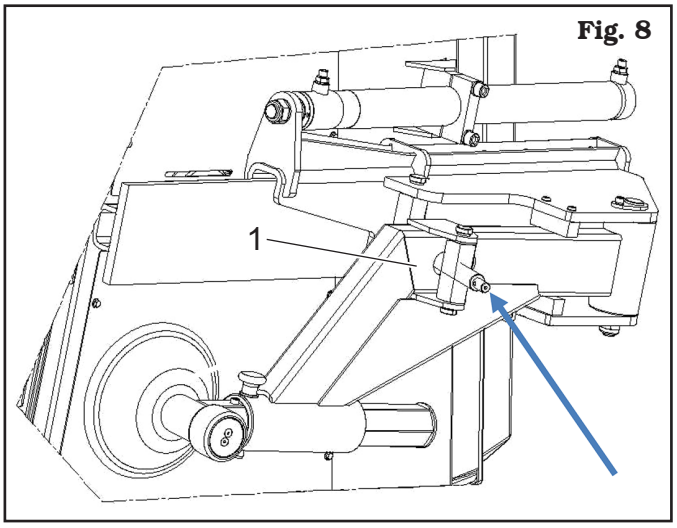
2. Hook the articulated end (**Fig. 7 ref. 1**) onto the cylinder **A** to pin **B**, as shown by **detail B**.
Turn the control unit **C**, as shown by **Fig. 7**. In order to perform such operation, lift the control unit along axis "**A**" at approximately 50 mm up to position "**2**", rotate through 90° towards machine front side and lower it always along axis "**A**" up to working position "**3**" (see **Fig. 10**).

Fig. 7



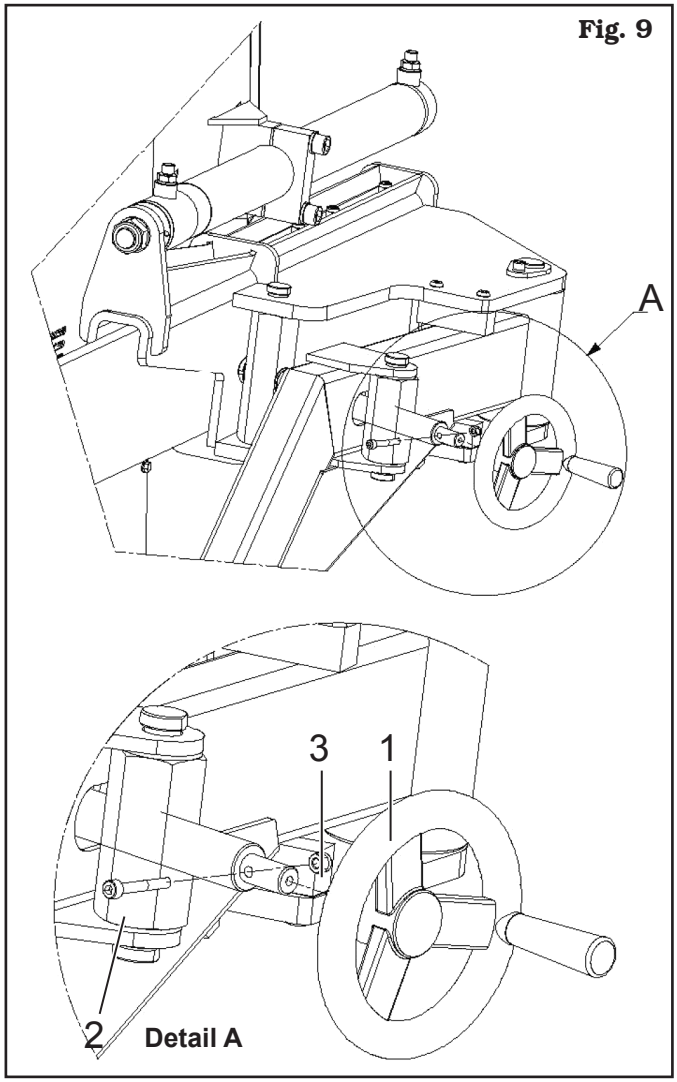
3. During the installation, the lower bead breaker arm (**Fig. 8 ref. 1**) appears without handwheel.

Fig. 8



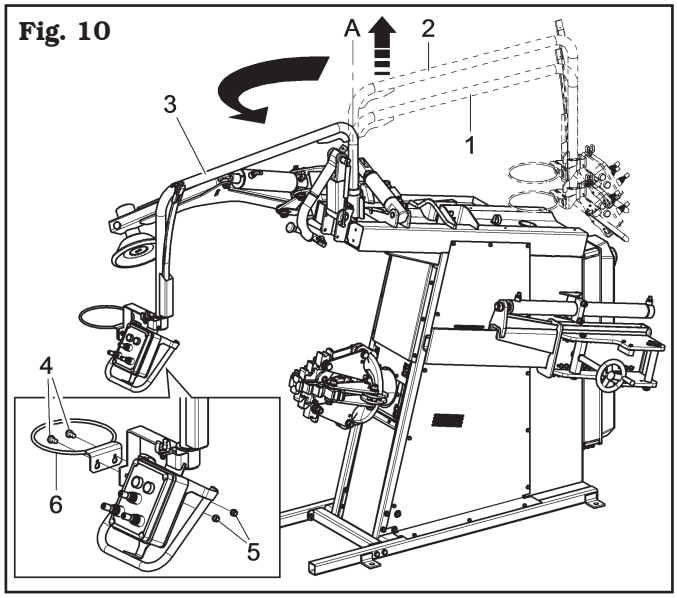
4. Mount the handwheel (**Fig. 9 ref. 1**)(# B4845000) using the supplied screw (**Fig. 9 ref. 2**) (#206094) and nut (**Fig. 9 ref. 3**) (#228010), (see **detail A**).

Fig. 9



5. Mount the grease holder ring (**Fig. 10 ref. 6**) (#B0223000) on the control unit, through screws (**Fig. 10 ref. 4**) (#203038) and nut (**Fig. 10 ref. 5**) (#228011), as shown in **Fig. 10**.

Fig. 10

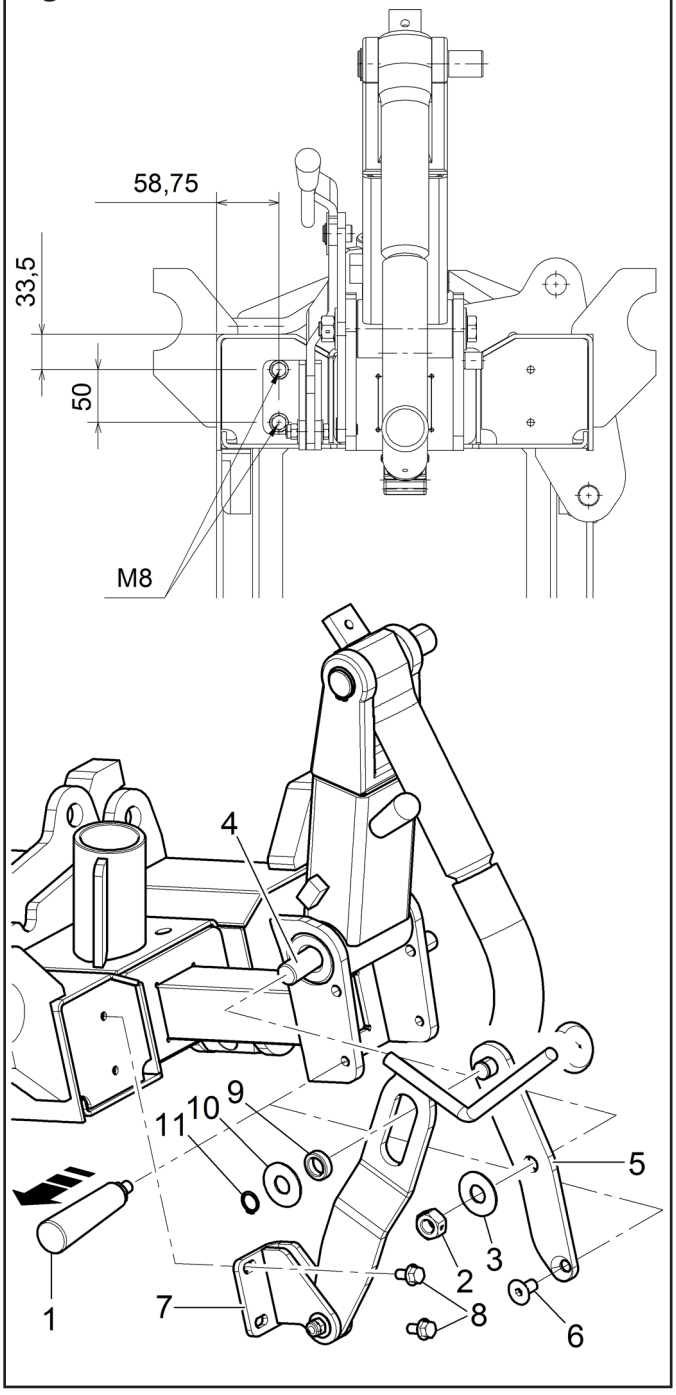


10.3 G108A42 mounting - Arm positioning lever kit (Optional)

The installation of the accessory in the machine requires the presence of the respective fixing holes on the frame. If they shouldn't be present, execute the drilling as shown in **Fig. 11** and thread the holes with a M8 screw tap.
Then, mount the kit by performing the operations described hereafter:

1. Unscrew and remove the knob (**Fig. 11 ref. 1**), unscrew nut (**Fig. 11 ref. 2**) and washer (**Fig. 11 ref. 3**) from screw (**Fig. 11 ref. 4**).
2. Mount tool support blade (**Fig. 11 ref. 5**) and fix it through screw (**Fig. 11 ref. 6**). Screw the previously unscrewed nut (**Fig. 11 ref. 2**) and washer (**Fig. 11 ref. 3**) again.
3. Mount lever fulcrum assembly (**Fig. 11 ref. 7**) to the frame using screws (**Fig. 11 ref. 8**). Fit roller (**Fig. 11 ref. 9**) and washer (**Fig. 11 ref. 10**) onto blade's pin (**Fig. 11 ref. 5**) and clamp everything with seeger (**Fig. 11 ref. 11**).

Fig. 11



10.4 Electrical connections

EVEN THE TINIEST PROCEDURE OF AN ELECTRICAL NATURE MUST BE CARRIED OUT BY PROFESSIONALLY QUALIFIED STAFF.

BEFORE CONNECTING THE MACHINE MAKE SURE THAT:
- **THE MAIN POWER RATING CORRESPONDS TO THE MACHINE RATING AS SHOWN ON THE MACHINE PLATE;**
- **ALL MAIN POWER COMPONENTS ARE IN GOOD CONDITION;**
- **THE ELECTRICAL SYSTEM IS PROPERLY GROUNDED (GROUND WIRE MUST BE THE SAME CROSS-SECTION AREA AS THE LARGEST POWER SUPPLY CABLES OR GREATER);**
- **MAKE SURE THAT THE ELECTRICAL SYSTEM FEATURES A CUTOUT WITH DIFFERENTIAL PROTECTION SET AT 30 MA.**

As envisaged by the regulations in force, the machine is not equipped with a master circuit breaker, but simply has a plug-socket connection to the electrical mains.
The machine is supplied with a cable. A plug corresponding to the following requirements must be connected to the cable:

- Conformity to Norm **IEC 309**
- **400 Volt – 16A**
- **3P + Ground**
- **IP 44**

Only for VARGNAV101ND - version with inverter

- Conformity to Norm **IEC 309**
- **230/400 Volt – 32A**
- **3P + N + Ground**
- **IP 44**

Only for UE3127 - 220V 60Hz 1Ph version

- Conformity to Norm **IEC 309**
- **220 Volt – 32A**
- **3P + N + Ground**
- **IP 44**

On delivery, the machine is pre-set to operate at a three-phase voltage of 400V - 50Hz.
For any other type of power supply, ask the manufacturer at the time of purchase: a machine functioning under the required voltage conditions will be prepared.

FIT A TYPE-APPROVED (AS REPORTED BEFORE) PLUG TO THE MACHINE CABLE (THE GROUND WIRE IS YELLOW/GREEN AND MUST NEVER BE CONNECTED TO ONE OF THE TWO PHASE LEADS).

MAKE SURE THAT THE ELECTRICAL SYSTEM IS COMPATIBLE WITH THE RATED POWER ABSORPTION SPECIFIED IN THIS MANUAL AND APT TO ENSURE THAT VOLTAGE DROP UNDER FULL LOAD WILL NOT EXCEED 4% OF RATED VOLTAGE (10% UPON START-UP).

FAILURE TO OBSERVE THE ABOVE INSTRUCTIONS WILL IMMEDIATELY INVALIDATE THE WARRANTY.

10.5 Oil check on oil-pressure power unit

THE OIL-PRESSURE POWER UNIT IS DELIVERED WITHOUT HYDRAULIC OIL, THEREFORE MAKE SURE THE TANK PROVIDED IS FILLED WITH AN APPROXIMATE AMOUNT OF OIL OF 2.5 LITRES, ALWAYS BEING CAREFUL NOT TO SPILL IT OUTSIDE THE TANK.
USE HYDRAULIC OIL WITH A VISCOSITY DEGREE APPROPRIATE TO THE AVERAGE TEMPERATURES IN THE INSTALLATION COUNTRY AND IN PARTICULAR:
- **VISCOSITY 32 (FOR COUNTRIES WITH ROOM TEMPERATURE FROM 0 TO 30 DEGREES);**
- **VISCOSITY 46 (FOR COUNTRIES WITH ROOM TEMPERATURE ABOVE 30 DEGREES).**

10.6 Check of motor rotation direction

Once the last electrical connection has been terminated, power the machine with the main switch.
Make sure the motor of the hydraulic unit rotates in the direction indicated by the arrow (**Fig. 12 ref. B**) visible on the electric motor cap.
If rotation should occur in the opposite direction, the machine must be immediately stopped and phase inversion must be executed inside the plug connection in order to reset the correct rotation direction.

FAILURE TO OBSERVE THE ABOVE INSTRUCTIONS WILL IMMEDIATELY INVALIDATE THE WARRANTY.

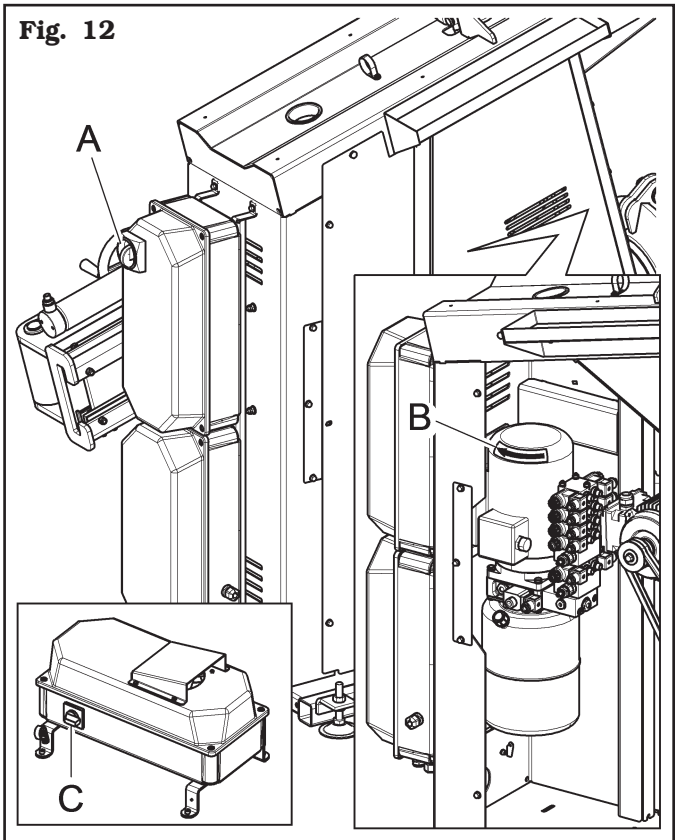
10.7 Electrical checks

BEFORE STARTING UP THE TYRE-CHANGER, BE SURE TO BECOME FAMILIAR WITH THE LOCATION AND OPERATION OF ALL CONTROLS AND CHECK THEIR PROPER OPERATION (SEE PAR. "CONTROLS").

CARRY OUT A DAILY CHECK OF MAINTAINED-TYPE CONTROLS CORRECT FUNCTIONING, BEFORE STARTING MACHINE OPERATION.

Once the plug/socket connection has been made, turn on the machine using the master switch (**Fig. 12 ref. A**).

Fig. 12



KEY
A - Main switch
B - Direction rotation of oil-pressure power unit motor
C - Selector 1-2-3 self-centring unit speed control (VARGNAV101ND - version with inverter)

ONCE THE ASSEMBLY OPERATIONS HAVE BEEN ENDED, CHECK ALL MACHINE FUNCTIONS.

11.0 CONTROLS

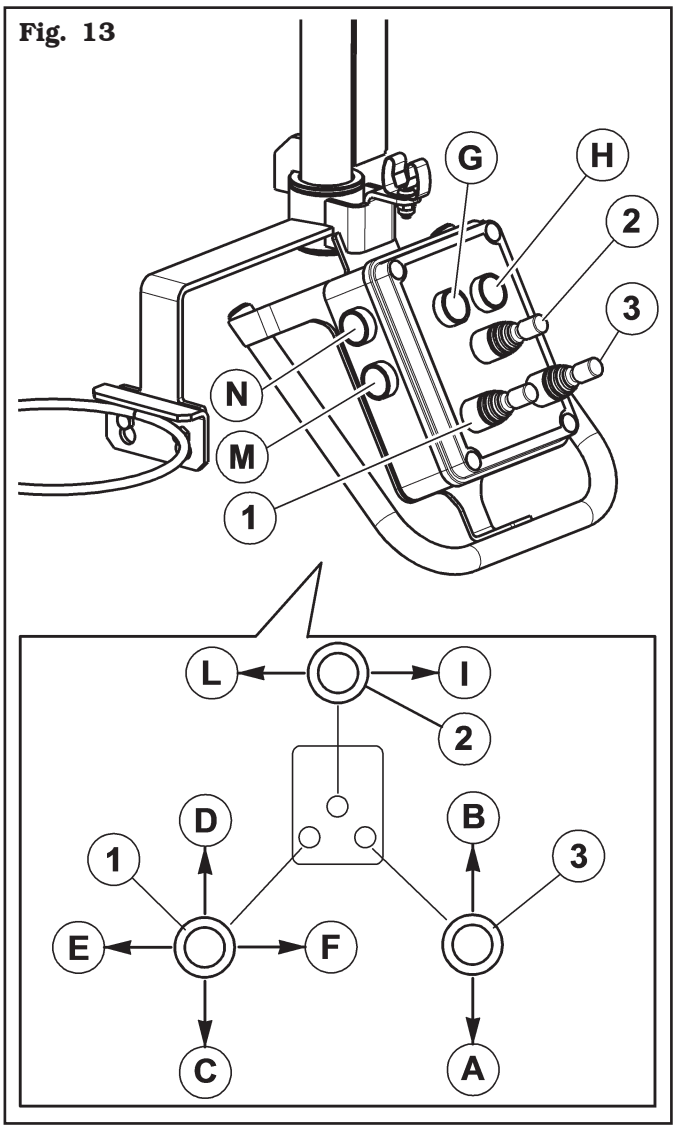
11.1 Control device

The control (handle control) can be moved according to the positioning necessities of the operator.

MAKE SURE THERE ARE NO PERSONS OR OBJECTS HIDDEN TO THE OPERATOR VISUAL FIELD BY THE WHEEL SIDE PLAY (ESPECIALLY IN CASE OF WHEELS WITH LARGE DIMENSIONS).

- When the lever (**Fig. 13 ref. 3**) is moved to **A** position, with a maintained action, the bead breaking of rear bead breaker roll is activated.
- When the lever (**Fig. 13 ref. 3**) is moved to **B** position, with a maintained action, the return action of rear bead breaker roll is activated.
- When the lever (**Fig. 13 ref. 1**) is moved to **C** position, with a maintained action, the return action of front bead breaker roll is activated.
- When the lever (**Fig. 13 ref. 1**) is moved to **D** position, with a maintained action, the bead breaking of rear bead breaker roll is activated.
- When the lever (**Fig. 13 ref. 1**) is moved to **F** position, with a maintained action, the front bead breaker arm is moved to working position.
- When the lever (**Fig. 13 ref. 1**) is moved to **E** position, with a maintained action, the front bead breaker arm is opened.
- Push button "**G**" has a maintained action operating position, and when pressed, it operates self-centring unit raising.
- Push button "**H**" has a maintained action operating position, and when pressed, it operates self-centring unit lowering.
- When the lever (**Fig. 13 ref. 2**) is moved to **L** position, with a maintained action, the self-centring unit is turned clockwise.
- When the lever (**Fig. 13 ref. 2**) is moved to **I** position, with a maintained action, the self-centring unit is turned counterclockwise.
- Push button "**M**" has one "hands-on" operating position, and when pressed, it opens the self-centring unit.
- Push button "**D**" has one "hands-on" operating position, and when pressed, it closes the self-centring unit.

Fig. 13



12.0 USING THE MACHINE

12.1 Precaution measures during tyre removal and fitting

Before fitting a tyre, observe the following safety rules:

- rim and tyre must be clean, dry and in good condition; if necessary, remove the balancing weights and clean the rim. Check that:
  - neither the bead nor the tread of the tyre are damaged;
  - the rim does not produce dents and/or deformation (especially for alloy rims, dents can cause internal micro-fractures, that pass unobserved at visual inspection, and can compromise the solidity of the rim and constitute danger even during inflation);
- adequately lubricate the contact surface of rim and tyre bead, using specific tyre lubricants only;
- replace the inner tube valve with a new valve, if the tyre tube has a metal valve, replace the grommet;
- make sure that the tyre is the right size for the rim; on the contrary, never fit a tyre unless you are sure it is of the right size (the rated size of the rim and tyre is usually printed directly on each of them);
- do not use compressed air or water jets to clean the wheels on the machine.

12.2 Preliminary operations

In view of the tyre changer structure and of its intended use, the operator must work with wheels with large diameter and with remarkable weight.
The utmost care while moving the wheels is recommended: make use of other operators, properly trained and with suitable clothes.

THE CAREFUL LUBRICATION OF THE TYRES BEADS IS RECOMMENDED, IN ORDER TO PROTECT THEM FROM POSSIBLE DAMAGES AND TO FACILITATE MOUNTING AND DEMOUNTING OPERATIONS.

12.3 Preparing the wheel

- Remove the wheel balancing weights from both sides of the wheel.

REMOVE THE VALVE STEM AND ALLOW THE TYRE TO COMPLETELY DEFLATE.

- Establish from which side the tyre should be demounted, checking the position of the groove.
- Find the rim locking type.

12.4 Wheel clamping

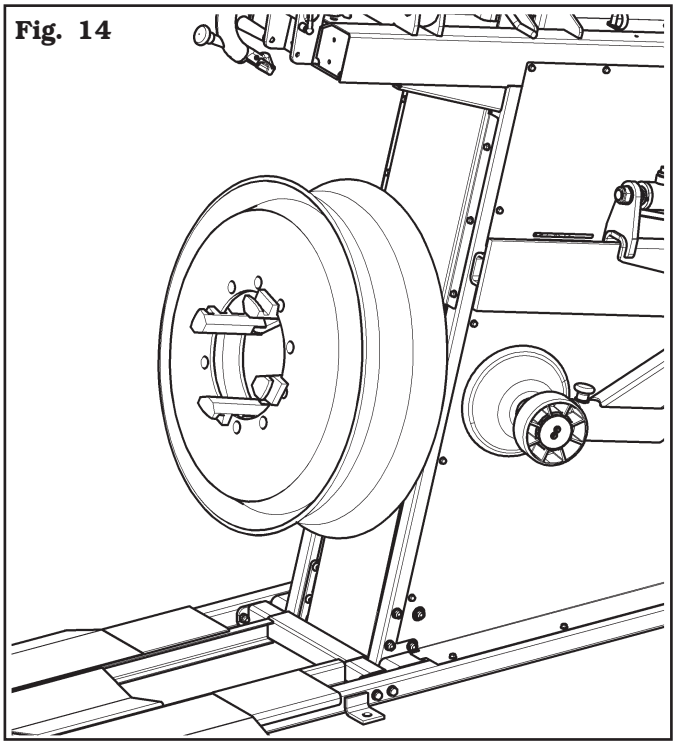
FOR WHAT CONCERNS THE DIMENSIONS AND WEIGHT OF THE WHEEL TO BE LOCKED, MAKE USE OF A SECOND OPERATOR WHO MUST HOLD THE WHEEL INTO VERTICAL POSITION, IN ORDER TO ENSURE SAFE OPERATIVE CONDITIONS.

WHEN HANDLING WHEELS WEIGHING MORE THAN 500 KG A FORK-LIFT TRUCK OR A CRANE SHOULD BE USED.

MAKE SURE THAT RIM CLAMPING IS DONE PROPERLY AND THAT THE GRIP IS SAFE, TO PREVENT THE WHEEL FROM FALLING DURING MOUNTING OR REMOVAL OPERATIONS.

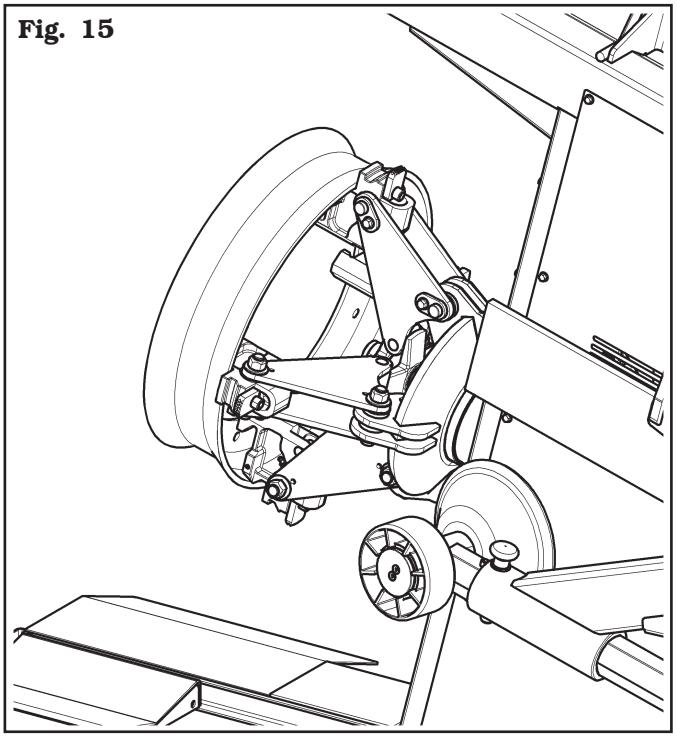
DO NOT CHANGE THE SET OPERATING PRESSURE VALUE BY MEANS OF THE MAXIMUM PRESSURE VALVES. THE MANUFACTURER SHALL NOT BE RESPONSIBLE FOR INJURY OR DAMAGE ARISING FROM UNAUTHORISED CHANGES.

Fig. 14



Clamping on the central hole

Fig. 15



Clamping on bead seat

OPENING/CLOSING MOVEMENT OF THE SELF CENTRING UNIT CAN GENERATE DANGER OF SQUASHING, CUTTING, COMPRESSING. DURING WHEEL LOCKING/UNLOCKING PHASE, AVOID THAT PARTS OF HUMAN BODY COME INTO CONTACT WITH MOVING PARTS OF THE MACHINE.

All wheels must be clamped from the inside.

CLAMPING ON THE CENTRAL FLANGE IS ALWAYS SAFEST.

FOR WHEELS WITH GROOVED RIMS SECURE THE WHEEL SO THAT THE GROOVE IS FACING OUTWARDS COMPARED TO THE SELF-CENTRING UNIT.

If it is not possible to clamp the rim in the hole of the disc, clamp on the bead seat close to the disc.

TO SECURE WHEELS WITH ALLOY RIMS ADDITIONAL PROTECTIVE JAWS ARE AVAILABLE. THEY ALLOW YOU TO WORK ON THE RIMS WITHOUT DAMAGING THEM. THE PROTECTIVE JAWS ARE FITTED ONTO SELF-CENTRING UNIT'S NORMAL JAWS BY MEANS OF A BAYONET CONNECTION.

To clamp the wheel proceed as follows:

- Make sure the front bead breaking arm is in open position (**Fig. 16 ref. 2**);
- Place the wheel in vertical position onto the platform;
- Move the wheel close, by keeping it in vertical position, until grazing self-centring unit's jaws;
- Use the corresponding control (**Fig. 13 ref. G-H**) to position the coaxial self-centring unit with the wheel centre, in order to make jaws' edges skim wheel's edge;
- Adjust the opening of the self-centring chuck through the corresponding control (**Fig. 13 ref. M-N**) according to the type of rim to be locked;
- Tilt the wheel at approximately 15° towards the self-centring unit;
- Operate the control (**Fig. 13 ref. M**) until the wheel is completely clamped;
- Check both that the rim is clamped and centred correctly, and that the wheel has been raised above from the floor (**Fig. 13 ref. G**), so that it does not slip during the following operations.

KEEP ON OPERATING RIM CLAMPING CONTROL, UNTIL REACHING THE MAXIMUM OPERATING PRESSURE (130 BAR).

THE CAREFUL LUBRICATION OF THE TYRES BEADS IS RECOMMENDED, IN ORDER TO PROTECT THEM FROM POSSIBLE DAMAGES AND TO FACILITATE MOUNTING AND DEMOUNTING OPERATIONS.

AFTER COMPLETION OF TYRE MOUNT/DEMOUNT OPERATIONS DO NOT LEAVE THE WHEEL CLAMPED ON THE SELF-CENTRING CHUCK AND NEVER LEAVE IT UNATTENDED ANYWAY.

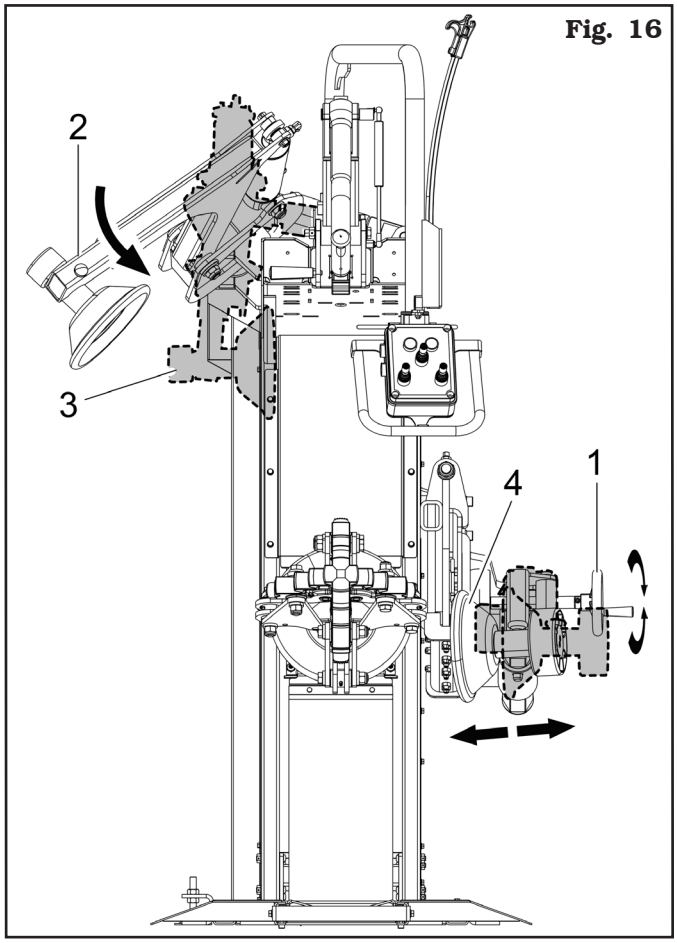
12.5 Bead breaker arms' functioning

During the working phases, the the front bead breaker arm (**Fig. 16 ref. 2**) can maintain two firm positions, that is:

1. "working" position (wheel front side) (**Fig. 16 ref. 3**);
2. "off-work" position (**Fig. 16 ref. 2**).

In "working" position" (**Fig. 16 ref. 3**) the front bead breaker arm is in front of the tyre, just next the rim. From this position it can perform the different tyre bead breaking and mounting-demounting operations. The adjustment of the correct "working" position of the rear bead breaking arm (**Fig. 16 ref. 4**) is performed through handle's rotation (**Fig. 16 ref. 1**).

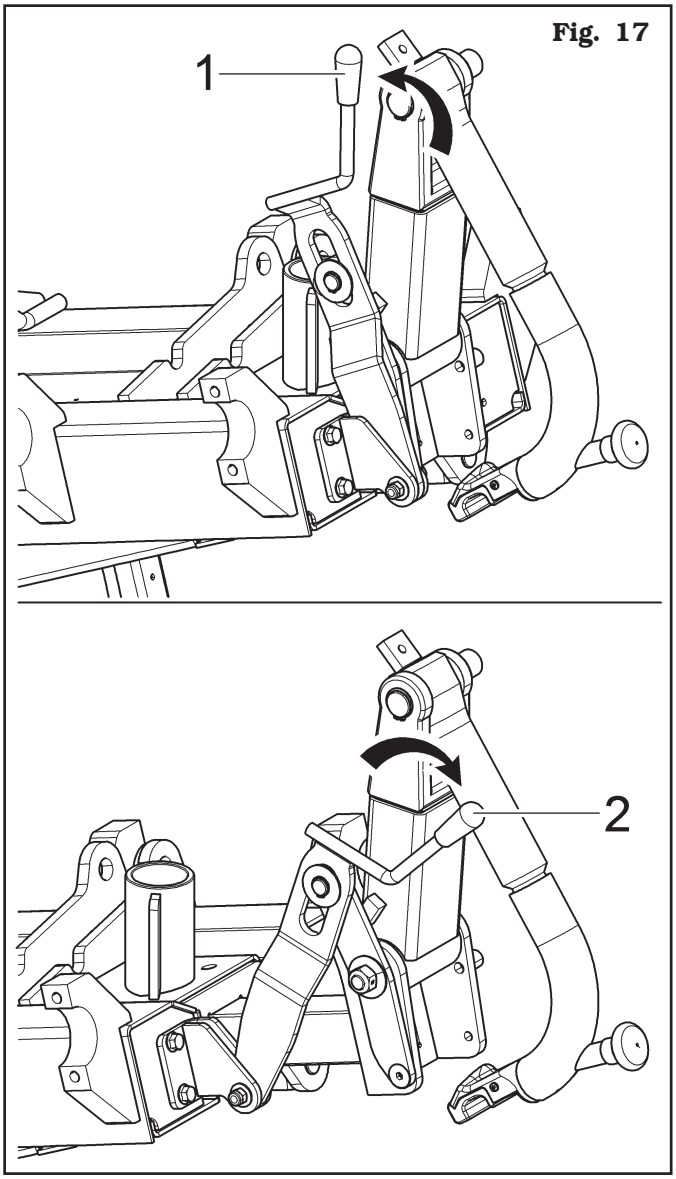
Fig. 16



12.6 Arm positioning lever kit (Optional)

The use of this accessory enhances tool's correct positioning on rim's edge, and, at the same time, implies a lower effort by the operator.
The lever has 2 working positions:
- Lever completely backwards (see **Fig. 17 ref. 1**) for normal wheels;
- lever completely forward (see **Fig. 17 ref. 2**) for reverse wheels;

Fig. 17



12.7 Tubeless tyres

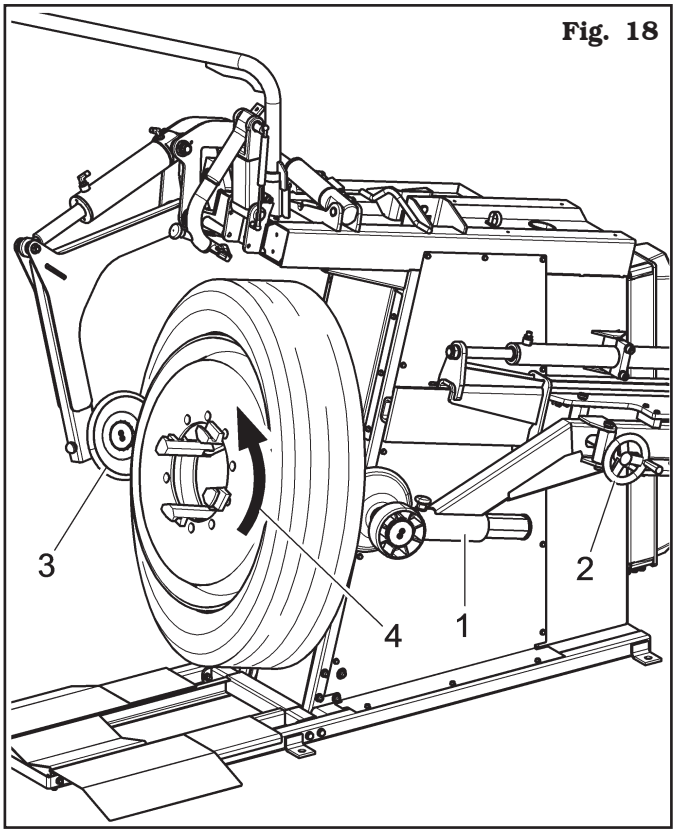
12.7.1 Bead breaking

NEVER PLACE ANY PART OF YOUR BODY BETWEEN THE BEAD BREAKER ROLL AND THE TYRE.

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING CHUCK CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR).

1. Clamp the wheel on the self-centring unit as described in "WHEEL CLAMPING" paragraph.
2. Move the self-centring unit to working position (rise fully home) (**Fig. 13 ref. G**).
3. Move to work position **A** (**Fig. 4**).
4. Move rear bead breaking arm (**Fig. 18 ref. 1**) to work position with the roll at approximately 5 mm form rim's edge, using the lateral handwheel (**Fig. 18 ref. 2**).
5. Move front bead breaking arm (**Fig. 18 ref. 3**) to work position, using lever (**Fig. 13 ref. 1-F**).
6. Carry out bead breaking of front bead first, then bead-break rear bead, by turning self-centring unit counter-clockwise (**Fig. 18 ref. 4**).

Fig. 18



7. Carry on turning self-centring unit while generously lubricating tyre's rim and bead with a suitable lubricant. The more the tyre adheres to the rim, the slower should bead breaking rolls advance.

THE BEAD BREAKING ROLLS MUST NOT EXERT PRESSURE ON THE RIM BUT ON TYRE BEAD.

USE ONLY TYRE LUBRICANTS. SUITABLE LUBRICANTS CONTAIN NO WATER, HYDROCARBONS, OR SILICON.

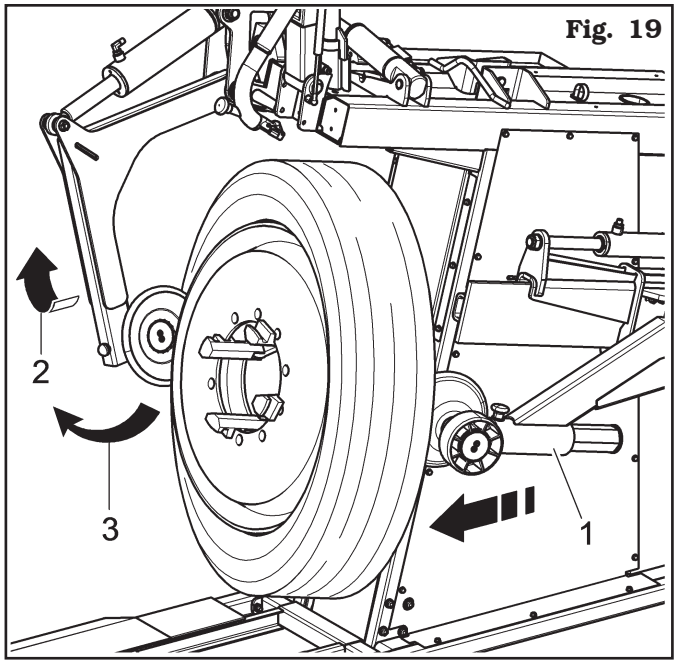
12.7.2 Demounting

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING CHUCK CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR).

Tubeless tyres can be removed in two ways:

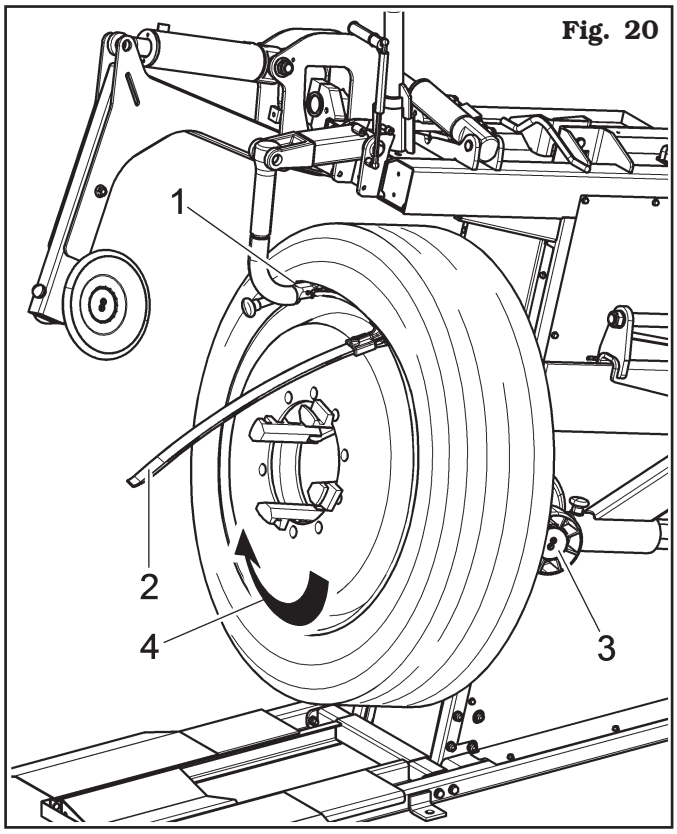
1. Lubricate both rim and tyre.
2. Move the lower bead into rim's groove and start pushing with rear bead breaking arm (**Fig. 19 ref. 1**), when the tyre is tilted activate front bead breaking arm's return movement (**Fig. 19 ref. 3**) and its shift to rest position (**Fig. 19 ref. 2**). Move the rear one forward (**Fig. 19 ref. 1**) until the tyre comes out.
3. Move rear bead breaking arm (**Fig. 19 ref. 1**) to rest position.

Fig. 19



When working with very hard and low-profile (supersingle) or with very wide tyres, after the bead breaking of the two beads and after rim's and tyre's lubrication, the first bead can be removed by using the tool (**Fig. 20 ref. 1**). After the bead has been loaded onto the tool (**Fig. 20 ref. 1**) through lever (**Fig. 20 ref. 2**), turn the self-centring unit CLOCKWISE (**Fig. 20 ref. 4**); the second bead is removed by using rear bead breaking arm (**Fig. 20 ref. 3**).

Fig. 20



THE REMOVAL OF THE BEADS FROM THE RIM CAUSES THE TYRE TO FALL. ALWAYS MAKE SURE THAT NO ONE IS STANDING BY ACCIDENT IN THE WORK AREA.

WHEN DEMOUNTING VERY HEAVY TYRES IT IS ADVISABLE TO PAY CAREFUL ATTENTION BEFORE COMPLETING THE OPERATION.

12.7.3 Mounting

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING CHUCK CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR).

Tubeless tyre fitting is normally done with front bead breaking roll; if the wheel is especially hard to fit, use the tool.

With bead breaker roll

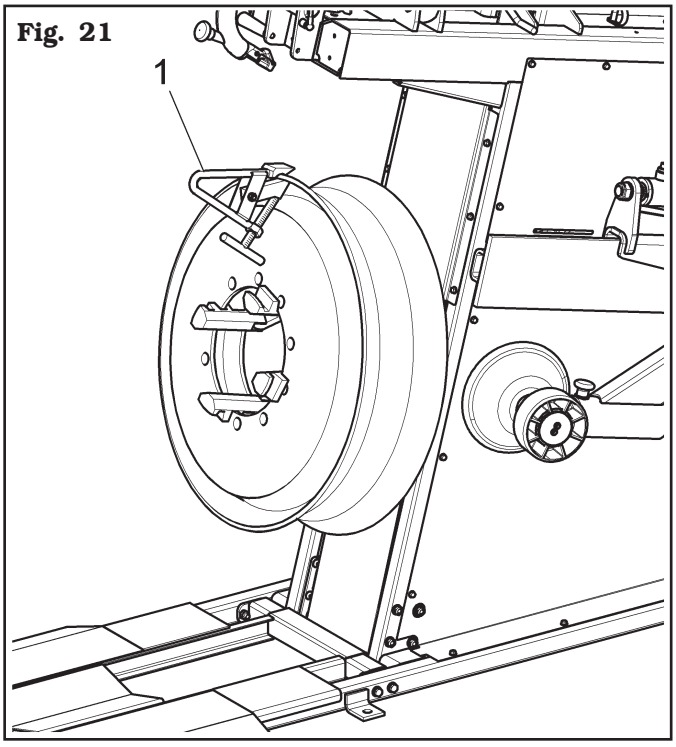
Proceed as follows:

1. Secure the rim to the self-centring unit according to the procedure described in "WHEEL CLAMPING" paragraph.
2. Adequately lubricate tyre's beads and rim's bead seats with a suitable lubricant using the provided brush.

USE ONLY TYRE LUBRICANTS. SUITABLE LUBRICANTS CONTAIN NO WATER, HYDROCARBONS, OR SILICON.

3. Mount clamp (**Fig. 21 ref. 1**) (optional) on the external edge of the rim in the highest point as shown in **Fig. 21**.

Fig. 21



THE CLAMP MUST BE TIGHTLY SECURED TO THE EDGE OF THE RIM.

4. Move to work position **B** (**Fig. 4**).
5. Completely lower self-centring unit. Roll the tyre on the platform and hook it to clamp (**Fig. 22 ref. 1**) (optional).
6. Lift self-centring unit with the tyre hooked and turn it clockwise by about 15-20 cm; the tyre will position itself sideways with respect to the rim (see **Fig. 22**).

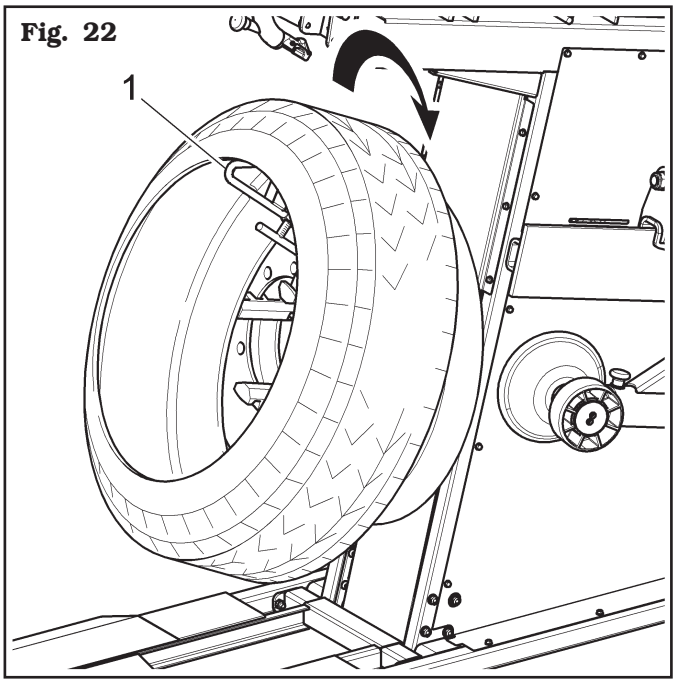


Fig. 22

7. Move front bead breaking roll to work position (**Fig. 16 ref. 3**).
8. Position front beading disc (**Fig. 23 ref. 2**) so that it is at approximately 1.5 cm (½") from the edge of the rim. The assembly clamp (optional) is in 12 o'clock position. Turn self-centring unit clockwise until bringing the clamp to the closest point to the front bead breaking roll (8 o'clock) (**Fig. 23 ref. 1**).

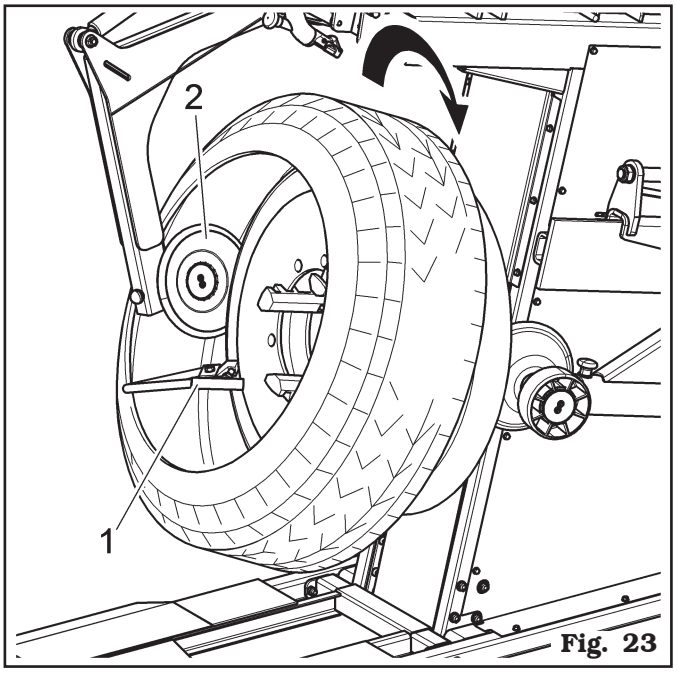


Fig. 23

9. Move bead breaker roll away from the wheel.
10. Remove the clamp (optional) and fit it in position (3 o'clock) outside the second bead.
11. Turn self-centring unit counterclockwise until clamp (optional) is at "12 o'clock".
12. Move bead breaking roll forward until it is inside the edge of the rim by about 1-2 cm, making sure it is approximately 5 mm from rim's edge. Start clockwise rotation making sure that, after a 90° turn, the second bead begins sliding in the rim groove.
13. Once insertion is completed, move the roll away from the wheel, move it to "out of work" position and remove clamp (optional).
14. Lower self-centring unit until the wheel rests on the floor.
15. Move to work position **A** (**Fig. 4**).
16. Close self-centring unit's jaws completely, making sure the wheel is held up to avoid dropping.

MAKE SURE THAT THE WHEEL'S HOLD IS SECURE TO AVOID IT FALLING DURING REMOVAL. FOR HEAVY AND/OR VERY LARGE WHEELS USE AN ADEQUATE LIFTING DEVICE.

17. Remove the wheel from the machine by making it roll. By using particularly soft tyres, it is possible to put on the rim both the beads at the same time, in order to operate only one time on the tyre.

With tool

Proceed as follows:

1. Secure the rim to the self-centring unit according to the procedure described in "WHEEL CLAMPING" paragraph.
2. Adequately lubricate tyre's beads and rim's bead seats with a suitable lubricant using the provided brush.

USE ONLY TYRE LUBRICANTS. SUITABLE LUBRICANTS CONTAIN NO WATER, HYDROCARBONS, OR SILICON.

3. Mount the clamp (**Fig. 21 ref. 1**) (optional) on the external edge of the rim in the highest point.

THE CLAMP MUST BE TIGHTLY SECURED TO THE EDGE OF THE RIM.

4. Move to work position **B** (**Fig. 4**).
5. Completely lower self-centring unit. Roll the tyre on the just next self-centring unit and hook it to clamp (**Fig. 22 ref. 1**) (optional).
6. Lift self-centring unit with the tyre hooked and turn it clockwise by about 15-20 cm; the tyre will position itself sideways with respect to the rim (see **Fig. 22**).
7. Close the front arm into working position (**Fig. 16 ref. 3**) and move the roll until it almost touches rim's edge (**Fig. 13 ref. 1-D**); after the entry of the first bead with roll (**Fig. 24 ref. 1**) and assembly lever or clamp for alloy rims (**Fig. 24 ref. 2**) there's space enough to lay the tool (**Fig. 24 ref. 3**) onto the rim by turning the self-centring unit CLOCKWISE (**Fig. 24 ref. 4**).
8. Lay the tool (**Fig. 24 ref. 3**) onto rim's edge.
9. Move the front roll (**Fig. 25 ref. 1**) at the same height of the groove (**Fig. 13 ref. 1-D**), place the assembly lever or clamp (**Fig. 25 ref. 2**) under the same roll and turn self-centring unit counter-clockwise until the second bead is applied.
10. Move the front arm to rest position (**Fig. 16 ref. 2**).

Fig. 24

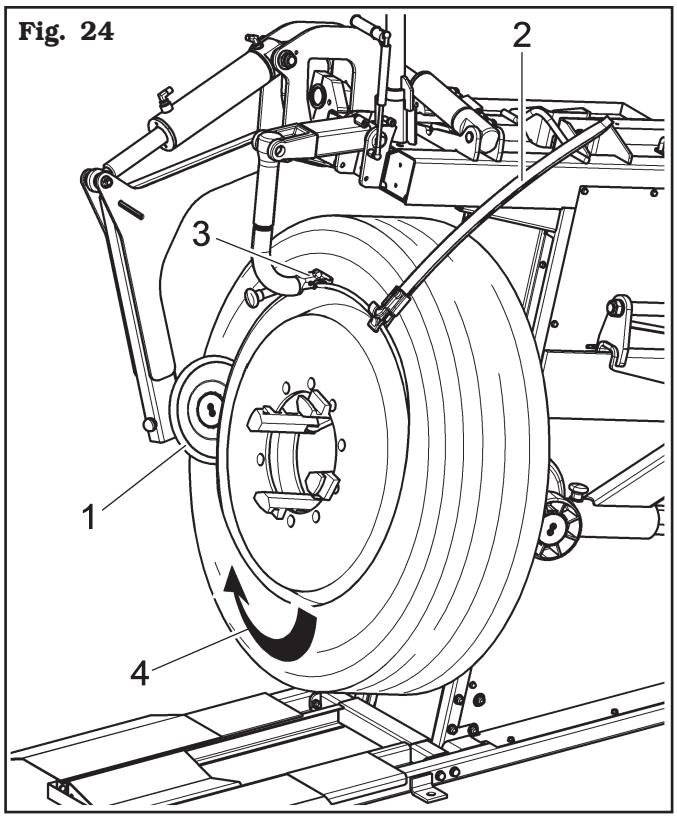
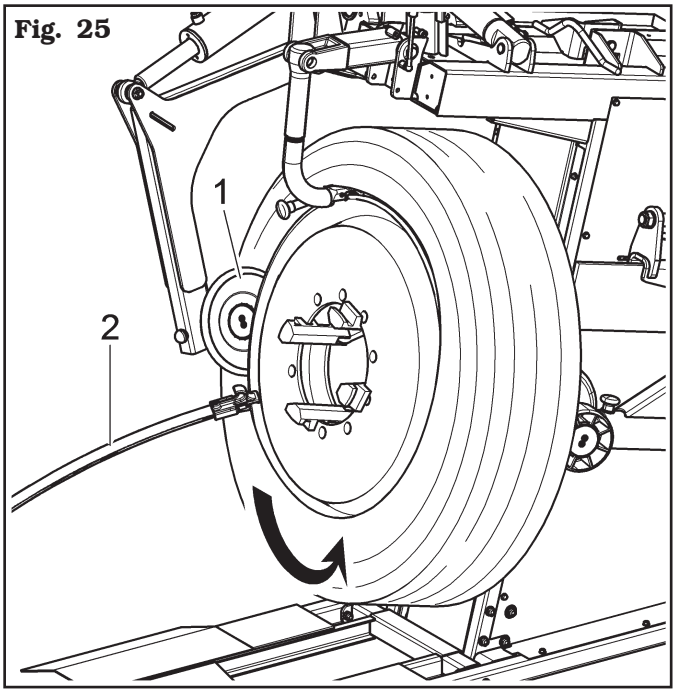


Fig. 25



11. Lower self-centring unit until the wheel rests on the floor.
12. Move to work position **A** (**Fig. 4**).
13. Close self-centring unit's jaws completely, making sure the wheel is held up to avoid dropping.

MAKE SURE THAT THE WHEEL'S HOLD IS SECURE TO AVOID IT FALLING DURING REMOVAL. FOR HEAVY AND/OR VERY LARGE WHEELS USE AN ADEQUATE LIFTING DEVICE.

14. Remove the wheel from the machine by making it roll.

12.8 Tyres with inner tube

12.8.1 Bead breaking

REMOVE THE LOCK NUT OF THE INNER TUBE VALVE TO ALLOW ITS EXTRACTION DURING TYRE REMOVAL PHASES; REMOVE THE NUT WHEN DEFLATING THE TYRE.

The beading procedure is the same one described for tubeless tyres.

WHEN BEADING WHEELS WITH INNER TUBES, INTERRUPT THE FORWARD MOVEMENT OF THE BEADING ROLL AS SOON AS THE BEADS HAVE BEEN DISLODGED TO AVOID DAMAGE TO THE INNER TUBE OR TO THE VALVE.

12.8.2 Demounting

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING CHUCK CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR).

1. Introduce the tool between rim's edge and tyre's bead.
2. Move to work position **A** (**Fig. 4**).
3. Insert lever (**Fig. 26 ref. 1**) between the rim and the bead on the right-hand side of the tool.

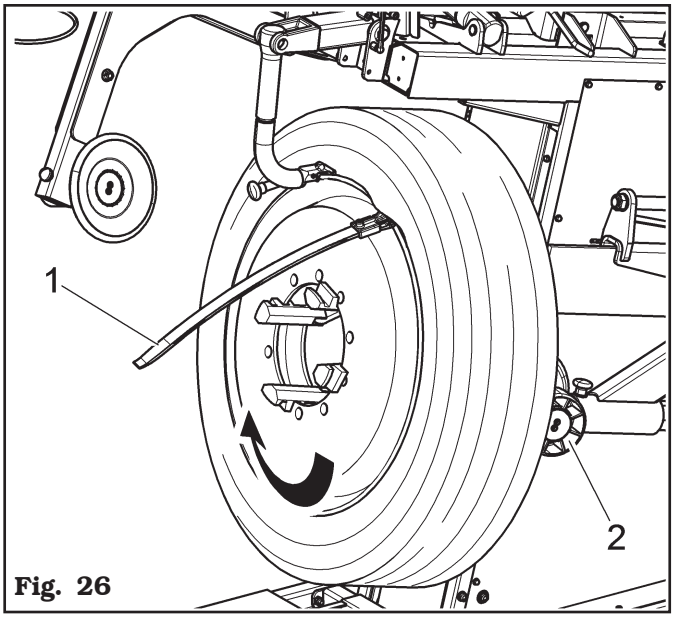


Fig. 26

4. Turn the wheel clockwise by keeping lever pressed until the bead has gone completely out.
5. Lower self-centring mandrel until the tyre rests on the floor; exert a certain pressure on it; this will create enough space to extract the inner tube.
6. Extract the inner tube and lift the wheel again.
7. The second bead is removed by using rear bead breaking arm (**Fig. 26 ref. 2**).

THE REMOVAL OF THE BEADS FROM THE RIM CAUSES THE TYRE TO FALL. ALWAYS MAKE SURE THAT NO ONE IS STANDING BY ACCIDENT IN THE WORK AREA.

WHEN DEMOUNTING VERY HEAVY TYRES IT IS ADVISABLE TO PAY CAREFUL ATTENTION BEFORE COMPLETING THE OPERATION.

12.8.3 Mounting

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING CHUCK CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR).

1. Secure the rim to the self-centring unit according to the procedure described in "WHEEL CLAMPING" paragraph.
2. Adequately lubricate tyre's beads and rim's bead seats with a suitable lubricant using the provided brush.

USE ONLY TYRE LUBRICANTS. SUITABLE LUBRICANTS CONTAIN NO WATER, HYDROCARBONS, OR SILICON.

3. Mount clamp (**Fig. 21 ref. 1**) (optional) on the external edge of the rim in the highest point as shown in **Fig. 21**.

THE CLAMP MUST BE TIGHTLY SECURED TO THE EDGE OF THE RIM.

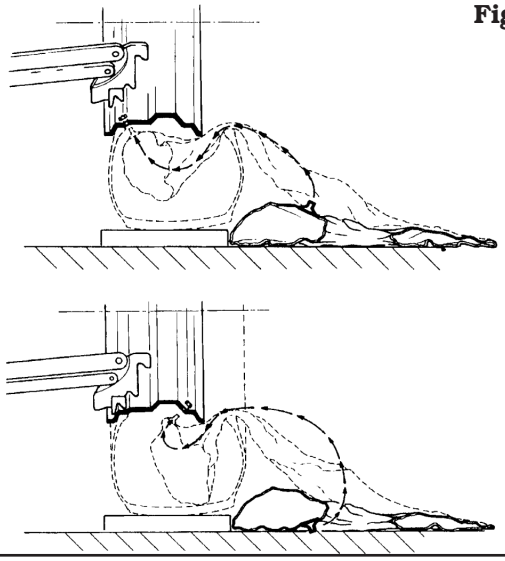
4. Move to work position **B** (**Fig. 4**).

5. Position the tyre near the machine and lower self-centring unit (make sure the clamp is in the highest point) to hook the first tyre bead (internal bead).
6. Lift the self-centring unit with the tyre hooked and turn it clockwise by about 15-20 cm; the tyre will position itself sideways with respect to the rim.
7. Move front bead breaking roll to work position (**Fig. 16 ref. 3**).
8. Position front beading disc (**Fig. 23 ref. 2**) so that it is at approximately 1.5 cm (½") from the edge of the rim. The assembly clamp is at 12 o'clock position. Turn self-centring unit clockwise until bringing the clamp (optional) to the closest point to the bead breaking roll (8 o'clock) (**Fig. 23 ref. 1**).
9. Move bead breaker roll away from the wheel.
10. Remove clamp (optional) from the rim.
11. Turn self-centring unit until the hole for valve introduction is downwards ("6 o'clock").
12. Lower self-centring unit until the wheel is laid down to the ground in order to create the space needed between tyre edge and rim for the air chamber introduction.

THE VALVE HOLE COULD BE IN AN ASYMMETRIC POSITION WITH RESPECT TO THE CENTRE OF THE RIM. IN THIS CASE IT IS NECESSARY TO POSITION AND INTRODUCE THE INNER TUBE AS SHOWN IN FIG. 27.

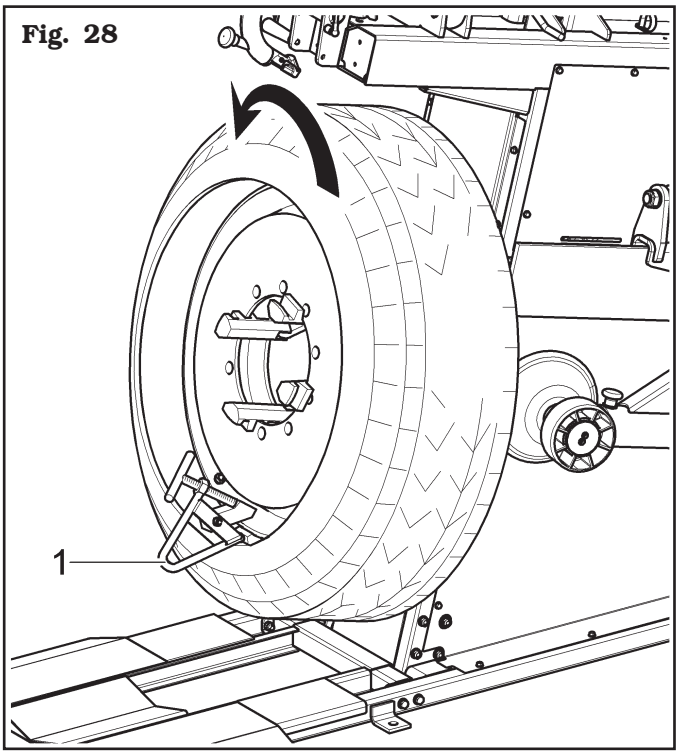
Introduce the valve in the hole and fix it with the provided ring nut. Introduce the inner tube in the central groove of the rim (to make this operation easier, it is advisable to simultaneously turn self-centring unit clockwise).

Fig. 27



13. Turn self-centring unit and position the valve downwards (6 o'clock).
14. To avoid damaging the inner tube, slightly inflate it when inserting the second bead.
15. To avoid damaging the valve when fitting the second bead, remove the fixing ring nut and mount an extension on the same valve.
16. Move to work position **B** (**Fig. 4**).
17. Lift the self-centring unit and mount the clamp (**Fig. 28 ref. 1**) (optional) on the rim outside the second bead at about 20 cm from the inflating valve on the right.
18. Turn self-centring unit counterclockwise until clamp is at "12 o'clock".

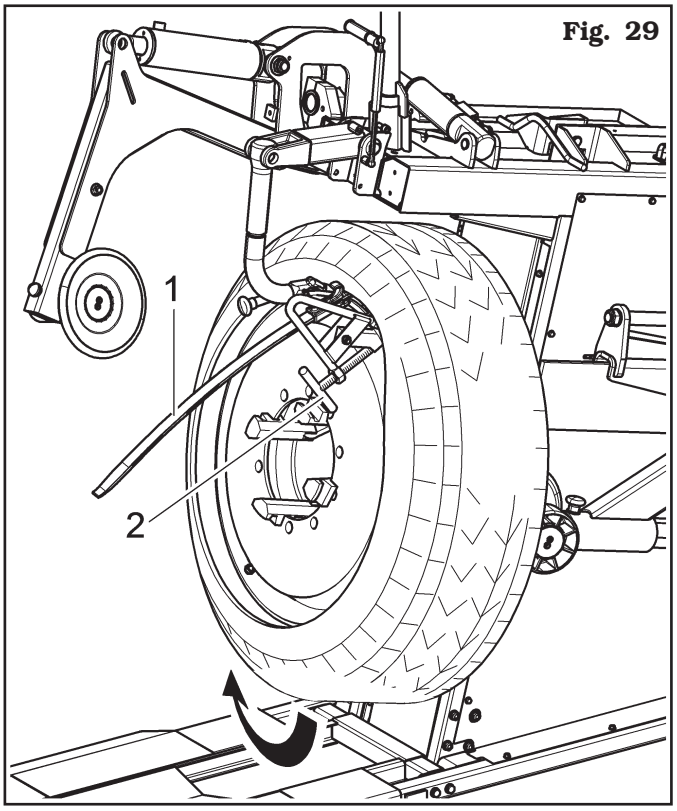
Fig. 28



19. Arrange tool in working position.

20. Turn self-centring unit clockwise until lever (**Fig. 29 ref. 1**) is introduced in the housing obtained on the tool.
21. Turn the self-centring unit clockwise with lever (**Fig. 29 ref. 1**) hooked until complete insertion of the tyre outer bead.
22. Remove lever (**Fig. 29 ref. 1**), clamp (optional) (**Fig. 29 ref. 2**) and extract the tool by turning the self-centring unit counterclockwise.

Fig. 29



23. Lower self-centring unit until the wheel rests on the floor.
24. Move to work position **A** (**Fig. 4**).
25. Check the state of the tyre valve and centre it, if necessary, in the rim hole by slightly turning self-centring unit; fix the valve with the supplied ring nut after having removed the protective extension.
26. Close self-centring unit's jaws completely, making sure the wheel is held up to avoid dropping.

MAKE SURE THAT THE WHEEL'S HOLD IS SECURE TO AVOID IT FALLING DURING REMOVAL. FOR HEAVY AND/OR VERY LARGE WHEELS USE AN ADEQUATE LIFTING DEVICE.

27. Remove the wheel from the machine by making it roll.

12.9 Wheels with bead wire

FOR WHAT CONCERNS THE BEAD BREAKING, DEMOUNTING AND MOUNTING OF WHEELS WITH BEAD WIRE, USE ACCESSORY G108A24 (OPTIONAL).

As an example **Fig. 30** and **31** illustrate sections and compositions of types of wheels with bead wire currently being sold.

Fig. 30

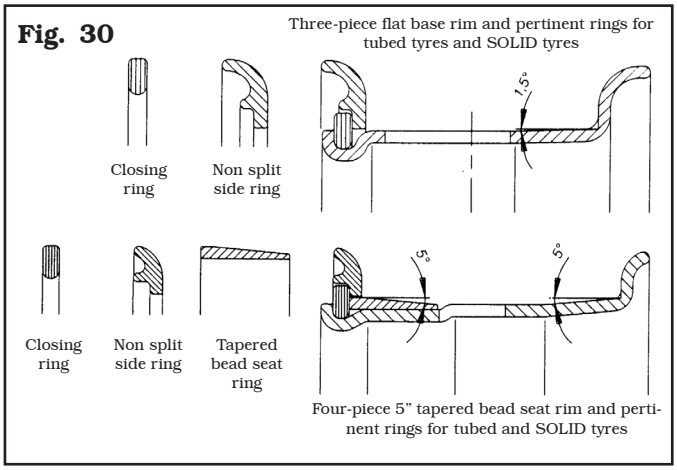
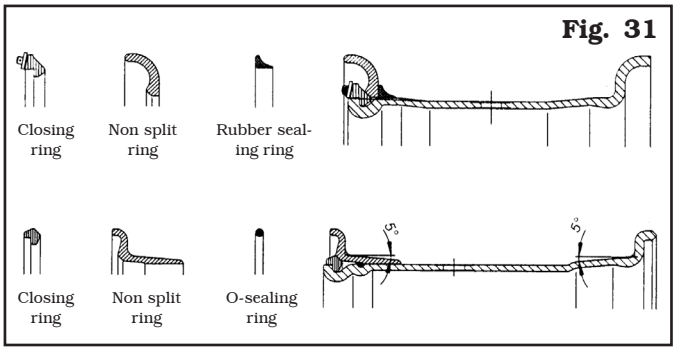


Fig. 31



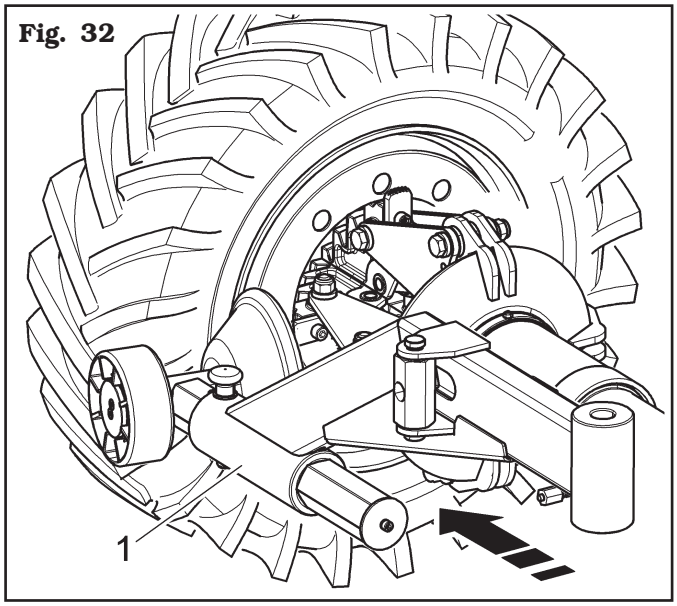
12.9.1 Beading and demounting

NEVER STAND IN FRONT OF THE WHEEL WHILE THE INFLATION RING IS BEING EXTRACTED FROM THE BEAD WIRE, SINCE IT MAY BE EJECTED VIOLENTLY, CAUSING SERIOUS INJURIES OR WOUNDS.

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING CHUCK CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR).

- Mount the wheel on the self-centring unit as described in "WHEEL CLAMPING" paragraph and make sure it is deflated.
- Position the rear beading disc on rim edge (**Fig. 32 ref. 1**).

Fig. 32



- Turn self-centring unit and smear the entire bead seat of the rim with lubricant. While doing this, jerk the beading disc forward until the bead is removed (as these wheels feature inner tubes, carry out the operation carefully, paying special attention to when the bead dislodges, trying to stop disc advancement immediately to avoid compromising the integrity of the inner tube and valve).
- Move to work position **A** (**Fig. 4**) with G108A24 accessory (optional) (**Fig. 33 ref. 1**) and mount it.
- Move roll holder arm to "work position" (**Fig. 16 ref. 3**).
- Make front beading disc come into contact with tyre's outer side (see **Fig. 33**).

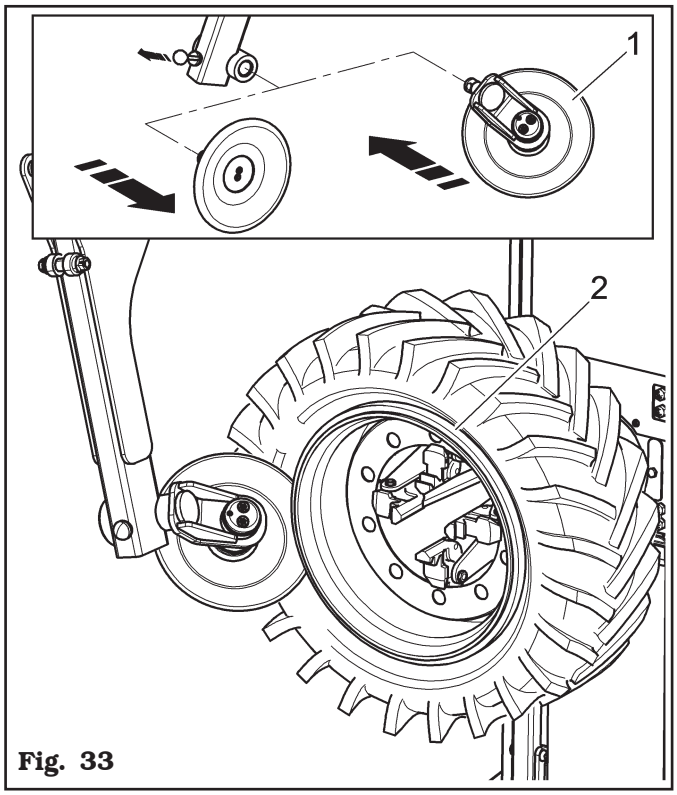


Fig. 33

- Turn self-centring unit and smear the entire bead seat of the rim with lubricant.
- While doing this, jerk front beading disc forward until bead is removed.
- Repeat the operation, making the front beading disc move forward against the bead wire (see **Fig. 34**) until the stop ring is released (**Fig. 34 ref. 1**). It will be then extracted through lever (**Fig. 34 ref. 2**).

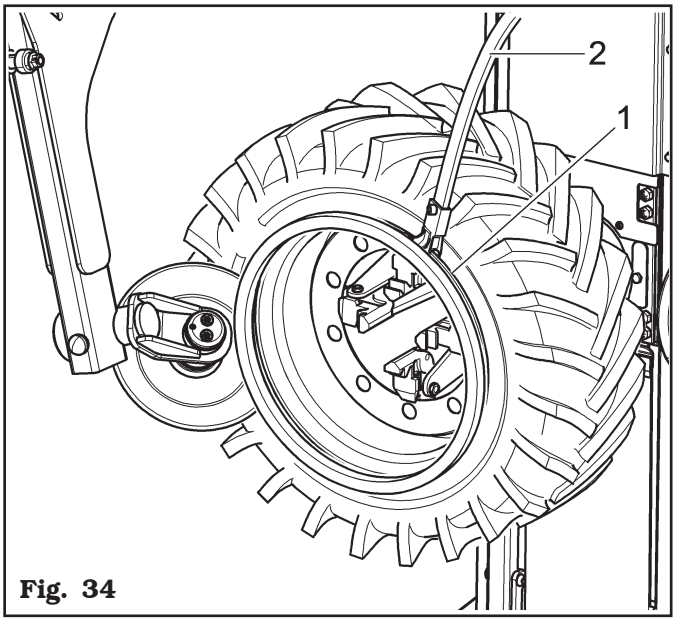


Fig. 34

- Remove the bead wire.
- Remove the O-Ring, when featured.
- Move front roll holder arm to "off-work" position.
- Move to work position **A** (**Fig. 4**).
- Move rear beading disc forward until the tyre is completely dislodged from the rim (in case of tyres with inner tube, make sure that the valve hasn't been damaged during removal).

THE REMOVAL OF THE BEADS FROM THE RIM CAUSES THE TYRE TO FALL. ALWAYS MAKE SURE THAT NO ONE IS STANDING BY ACCIDENT IN THE WORK AREA.

WHEN DEMOUNTING VERY HEAVY TYRES IT IS ADVISABLE TO PAY CAREFUL ATTENTION BEFORE COMPLETING THE OPERATION.

12.9.2 Mounting

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING CHUCK CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR).

- If it has been removed, fix the rim to self-centring unit as described in "WHEEL CLAMPING" unit. If the wheel features an inner tube, position the rim with the valve slot facing downwards (at "6 o'clock").
- Lubricate the entire bead seat of the rim and the tyre beads.
- Move to work position **A** (**Fig. 4**).
- Place self-centring unit in order to centre the rim on the tyre.
- Put manually the tyre into the rim (in case of tyres with inner tube, make the valve re-enter not to damage it) until the complete introduction of the tyre has been reached.
- Insert the bead wire on the rim with the stop ring fitted (if the rim and bead wire feature fixing slits, they must be in phase with each other).
- Move to work position **B** (**Fig. 4**).
- Move front bead breaker roll holder arm to "work position" (**Fig. 16 ref. 3**). Mount G108A24 accessory (**Fig. 35 ref. 1**) (optional) with the beading disc facing the wheel. If the outer edge ring is not sufficiently fitted on the rim, position self-centring unit until the bead wire is near the beading disc. Move the front beading disc forward and then turn self-centring unit until the housing of the O-Ring (if featured) is found.
- Lubricated the O-Ring and place it in its housing.
- Move to work position **A** (**Fig. 4**).
- Position the bead wire (**Fig. 35 ref. 2**) on the rim, fit the stop ring with the help of the beading disc (**Fig. 35 ref. 1**) (optional) as shown in **Fig. 35**.

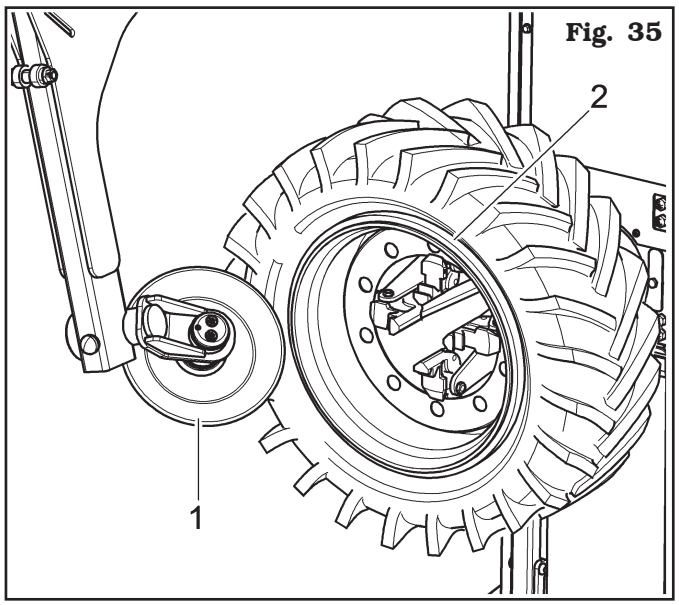


Fig. 35

- Move front roll holder arm to "off-work" position (**Fig. 16 ref. 2**).
- Lower self-centring unit until the wheel rests on the floor.
- Close self-centring unit's jaws completely, making sure the wheel is held up to avoid dropping.
  Remove the wheel from the machine by making it roll.

CLOSING SELF-CENTRING UNIT CAUSES WHEEL'S FALL. ALWAYS MAKE SURE THAT NO ONE IS STANDING BY ACCIDENT IN THE WORK AREA.

13.0 ROUTINE MAINTENANCE

BEFORE CARRYING OUT ANY ROUTINE MAINTENANCE PROCEDURE, DISCONNECT THE MACHINE FROM ITS POWER SUPPLY SOURCES, TAKING SPECIAL CARE OF THE ELECTRICAL PLUG/SOCKET CONNECTION.

BEFORE CARRYING OUT ANY MAINTENANCE OPERATIONS, MAKE SURE THERE ARE NO WHEELS CLAMPED ON THE MANDREL AND THAT ALL SUPPLIES TO THE MACHINE HAVE BEEN DISCONNECTED.

BEFORE REMOVING HYDRAULIC CIRCUIT UNIONS OR PIPES, MAKE SURE THAT THERE ARE NO PRESSURISED FLUIDS PRESENT. PRESSURISED OIL SPILLS MAY CAUSE SERIOUS WOUNDS OR INJURIES.

BEFORE CARRYING OUT ANY MAINTENANCE WORK ON THE HYDRAULIC CIRCUIT, SET THE MACHINE IN THE REST CONDITION.

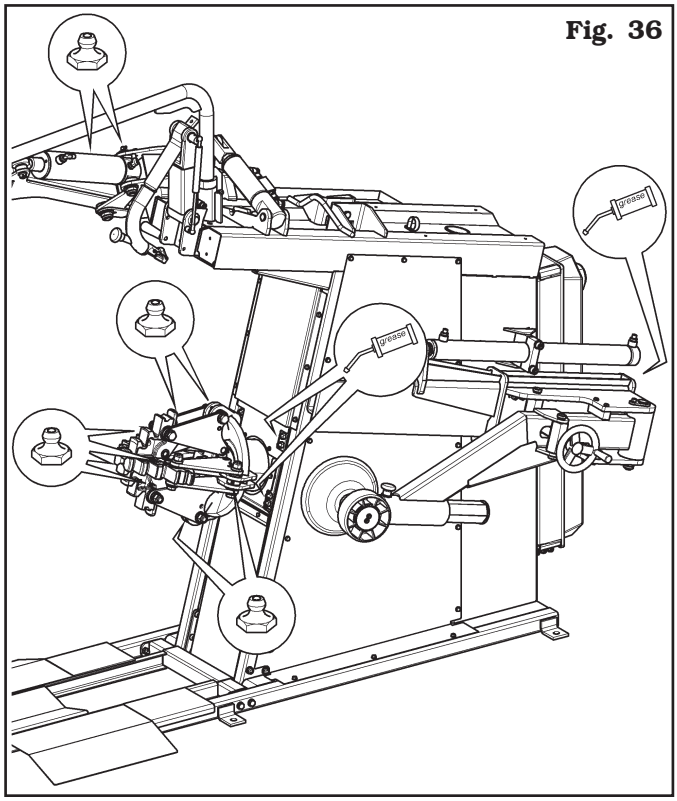
To guarantee the efficiency and correct functioning of the machine, it is essential to carry out daily or weekly cleaning and weekly routine maintenance, as described below.
Cleaning and routine maintenance must be conducted by authorized personnel and according to the instructions given below.

- Disconnect the mains power supply before starting any cleaning or routine maintenance operations.
- Remove deposits of tyre powder and other waste materials with a vacuum cleaner.

DO NOT BLOW IT WITH COMPRESSED AIR.

- Periodically (preferably once a month) make a complete check on the controls, ensuring that they provide the specified actions.
- Every 100 working hours lubricate the sliding guides (self-centring unit and tool holder arm).
- Periodically (preferably once a month), grease all moving parts of the machine (see **Fig. 36**).

Fig. 36



- Check periodically the oil level of the oil-pressure unit and, in case, carry out the filling up with hydraulic oil having a viscosity degree suitable for the average temperatures of the country where the machine is installed and in particular:
  - viscosity 32 (for countries with room temperature from 0 to 30 degrees);
  - viscosity 46 (for countries with room temperature above 30 degrees).

  At least once a year it is advisable to proceed anyway to the complete replacement of the hydraulic oil of the same oil-pressure unit.

CARRY OUT THIS CONTROL WIT THE MACHINE COMPLETELY CLOSED (WITH HYDRAULIC PISTONS IN).

- Periodically (approximately each 100 hours), check the oil level of the reduction gear (**Fig. 37 ref. 1**); the level indicator window (**Fig. 37 ref. 2**)must be covered with lubricant, otherwise, remove the plug provided and top up using appropriate lubricants until the level is reset.
- Check operation of the safety devices every week.

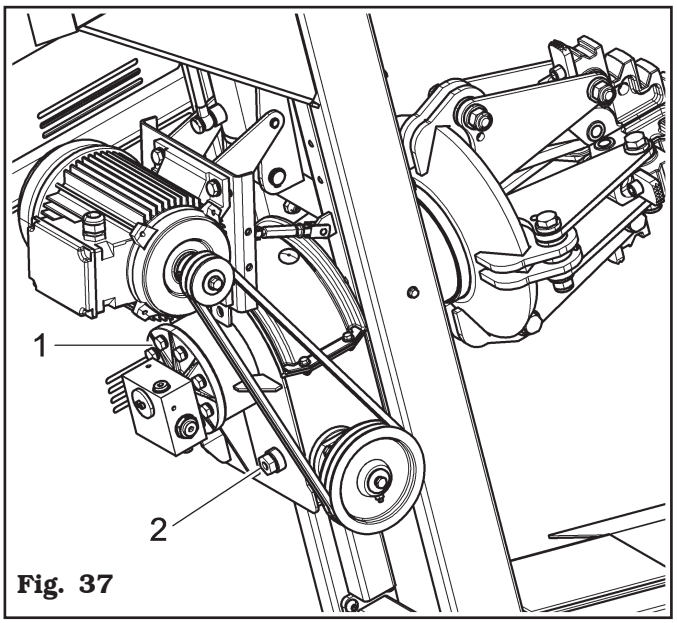


Fig. 37

- Check belt tensioning (**Fig. 38 ref. 1**):
  - Remove protection guard (**Fig. 38 ref. 2**) unscrewing the corresponding screws.
  - Tension up the belt (**Fig. 38 ref. 1**) turning the screw coupler (**Fig. 38 ref. 3**).
  - At the end, mount protection guard (**Fig. 38 ref. 2**) again.

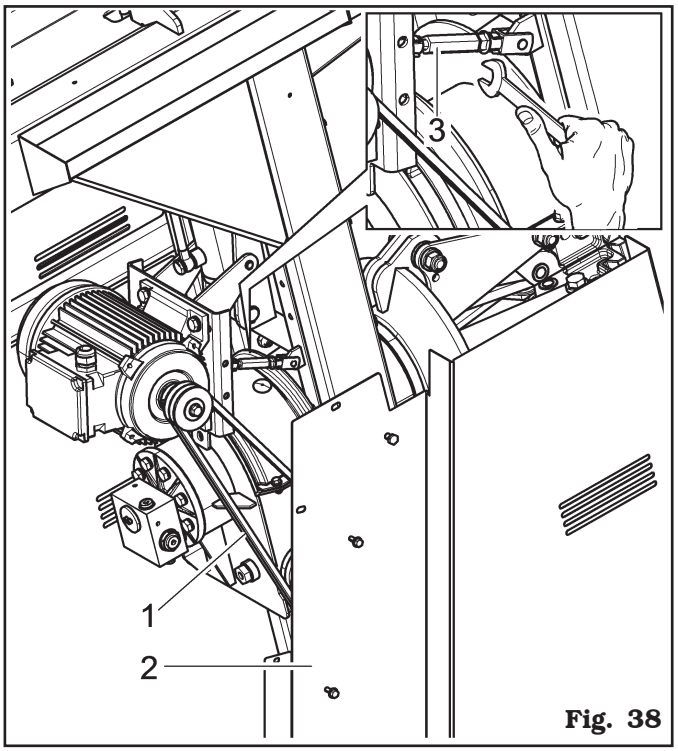
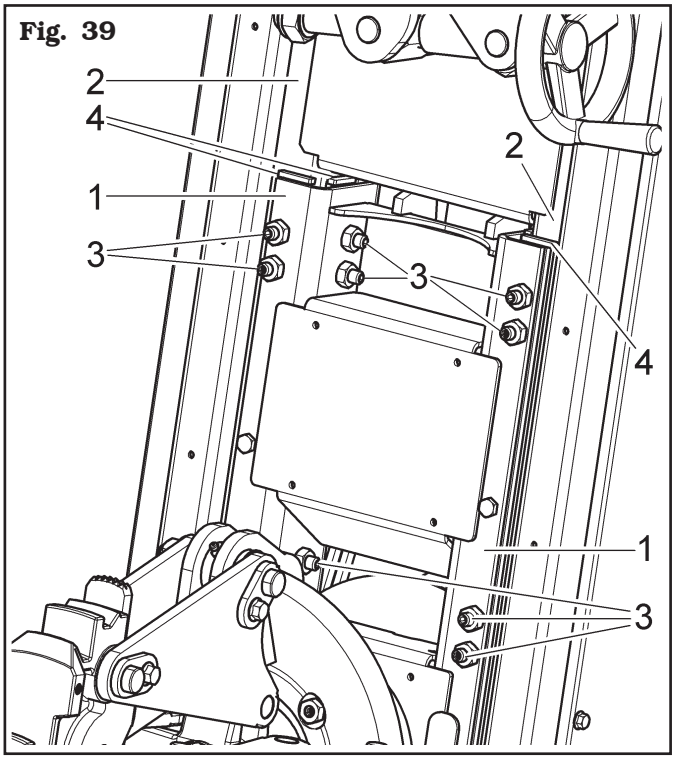


Fig. 38

OPERATION TO BE CARRIED OUT JUST IN CASE THE TOOL HOLDER ARM AND SELF-CENTRING UNIT'S CARRIAGE ARE MOVING IN A NOT LINEAR WAY (STICK-SLIP MOTION).

- Check periodically and, if necessary, adjust the play of slide (**Fig. 39 ref. 1**) on guide plates (**Fig. 39 ref. 2**) by means of the adjustment screws (**Fig. 39 ref. 3**) of sliding blocks (**Fig. 39 ref. 4**).

Fig. 39



- Periodically, every 50 working hours approximately, clean the (inner and outer) guides of self-centring unit and of tool support arm.

ANY DAMAGE TO THE MACHINE DEVICES RESULTING FROM THE USE OF LUBRICANTS OTHER THAN THOSE RECOMMENDED IN THIS MANUAL WILL RELEASE THE MANUFACTURER FROM ANY LIABILITY!!

ANY EXTRAORDINARY MAINTENANCE OPERATION MUST ONLY BE CARRIED OUT BY PROFESSIONALLY QUALIFIED STAFF.

14.0 TROUBLESHOOTING TABLE

Possible troubles which might occur to the tyre-changer are listed below. The manufacturer disclaims all responsibility for damages to people, animals or objects due to improper operation by non-unauthorised personnel. In case of trouble, call Technical Service Department for instructions on how to service and/or adjust the machine in full safety to avoid any risk of damage to people, animals or objects.

In an emergency and before maintenance on tyre-changer, set the main switch to "0" and lock it in this position.

CONTACT AUTHORIZED TECHNICAL SERVICE

do not try and service alone

Problem	Possible cause	Remedy
Pump motor does not work but wheel holder self-centring unit motor works perfectly.	Hydraulic control unit damaged.	Call Technical Service Dept.
When main switch is turned on, wheel holder self-centring unit does not turn whereas pump motor works.	Gearbox change-over switch damaged.	Call Technical Service Dept.
Power drop during wheel holder self-centring unit rotation.	Timing belt too loose.	Tension up the belt.
No pressure in the hydraulic system.	Pump damaged.	Replace pump.
The machine does not start.	**a)** No electricity supply. **b)** Overload cutouts not set. **c)** Transformer fuse blown.	**a)** Connect the electricity supply. **b)** Set the overload cutouts. **c)** Change the fuse.
Fluid leaks from union or pipeline.	**a)** Union not tightened correctly. **b)** Pipeline cracked.	**a)** Tighten the union. **b)** Call the after-sales service.
A control device is remaining on.	**a)** The switch has broken. **b)** A solenoid valve has jammed.	**a)** Call the after-sales service. **b)** Call the after-sales service.
The self-centring chuck cylinder is losing pressure.	**a)** The directional control valve is leaking. **b)** The gaskets are worn.	**a)** Call the after-sales service. **b)** Call the after-sales service.
The motor stops during operation.	Overload cutout tripped.	Open the electrical panel and reset the overload cutout tripped.
When a control device is operated the machine does not move at all.	**a)** Solenoid valve not receiving power. **b)** Solenoid valve jammed. **c)** Transformer fuse blown. **d)** Control unit not set correctly.	**a)** Call the after-sales service. **b)** Call the after-sales service. **c)** Change the fuse. **d)** Call the after-sales service.

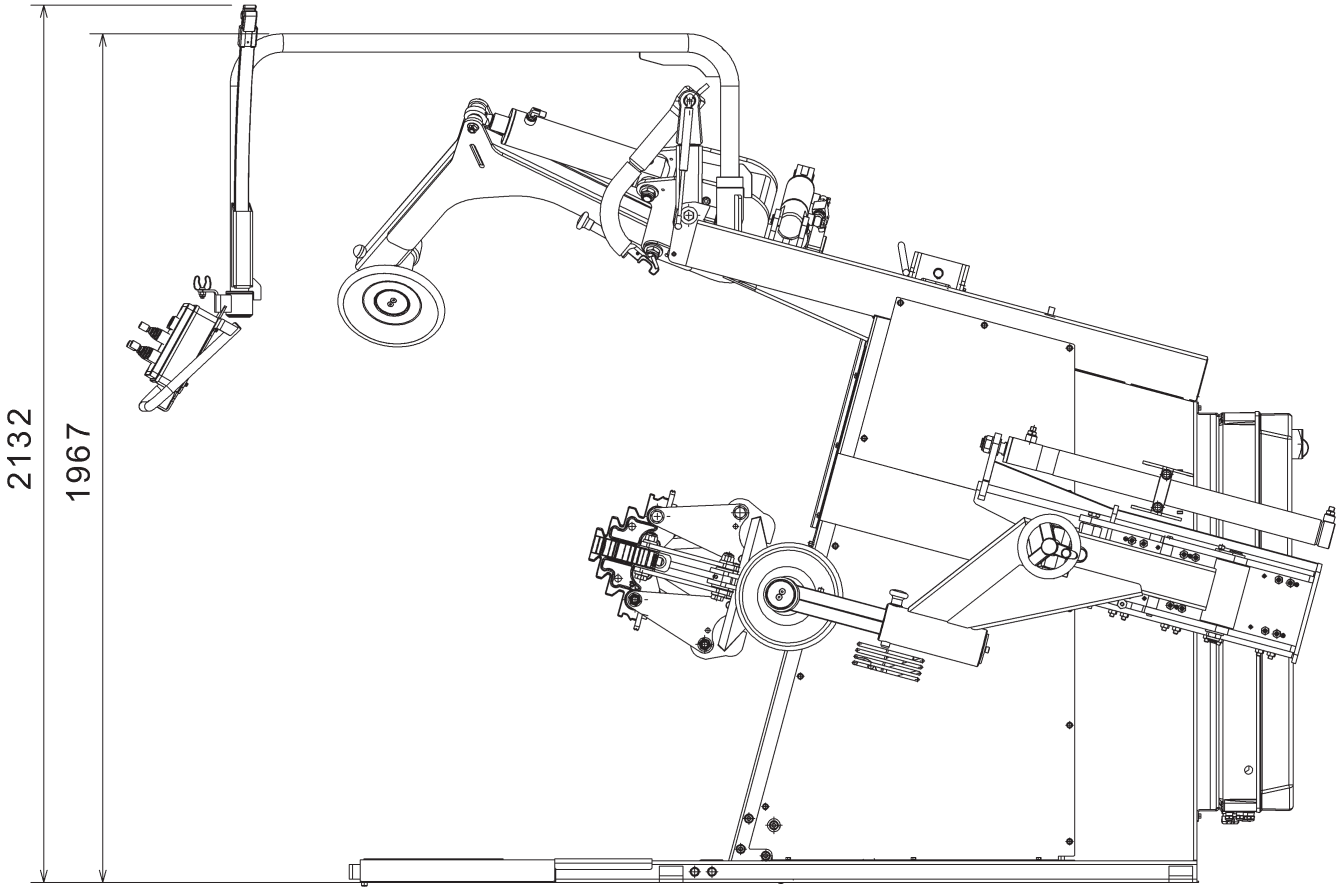
Problem	Possible cause	Remedy
No pressure in hydraulic circuit.	**a)** Oil-pressure power unit motor turning in wrong direction. **b)** Oil-pressure power unit pump is broken. **c)** No oil in oil-pressure power unit tank	**a)** Restore correct rotation direction by changing socket connection. **b)** Call the after-sales service. **c)** Fill oil-pressure power unit tank with oil. 
The mandrel doesn't rotate (VARGNAV101ND - version with inverter).	**a)** The first current threshold has been exceeded. **b)** The second current threshold has been exceeded. **c)** Lack of supply. **d)** Insufficient net voltage. **e)** Net voltage too high. **f)** Sudden and short drop of net voltage. **g)** The second temperature threshold has been exceeded.	**a)** Wait for the automatic reset releasing the control. **b)** Disconnect the machine from the net for 30 seconds at least, then reconnect. If the problem persists, check the harness. **c)** Connect the supply. **d)** Shorten the length of possible extension cable to the machine or raise the leads section (disconnect and reconnect). **e)** Disconnect the machine from the net for 30 seconds at least, then reconnect. **f)** Disconnect the machine from the net for 30 seconds at least, then reconnect. **g)** The machine does not start until the temperature does not lower under the safety limit.
The mandrel does not reach the maximum speed (VARGNAV101ND - version with inverter)	**a)** The first temperature threshold has been exceeded. **b)** Raised mechanical resistance.	**a)** Let the motor body cool. **b)** Make the mandrel rotate loadless for some minutes. If it does not accelerate, call the after-sales service. 
Machine operates in jerks.	**a)** Not enough fluid in oil-pressure power unit tank. **b)** Control unit switch has failed.	**a)** Top up with oil. **b)** Call the after-sales service. 

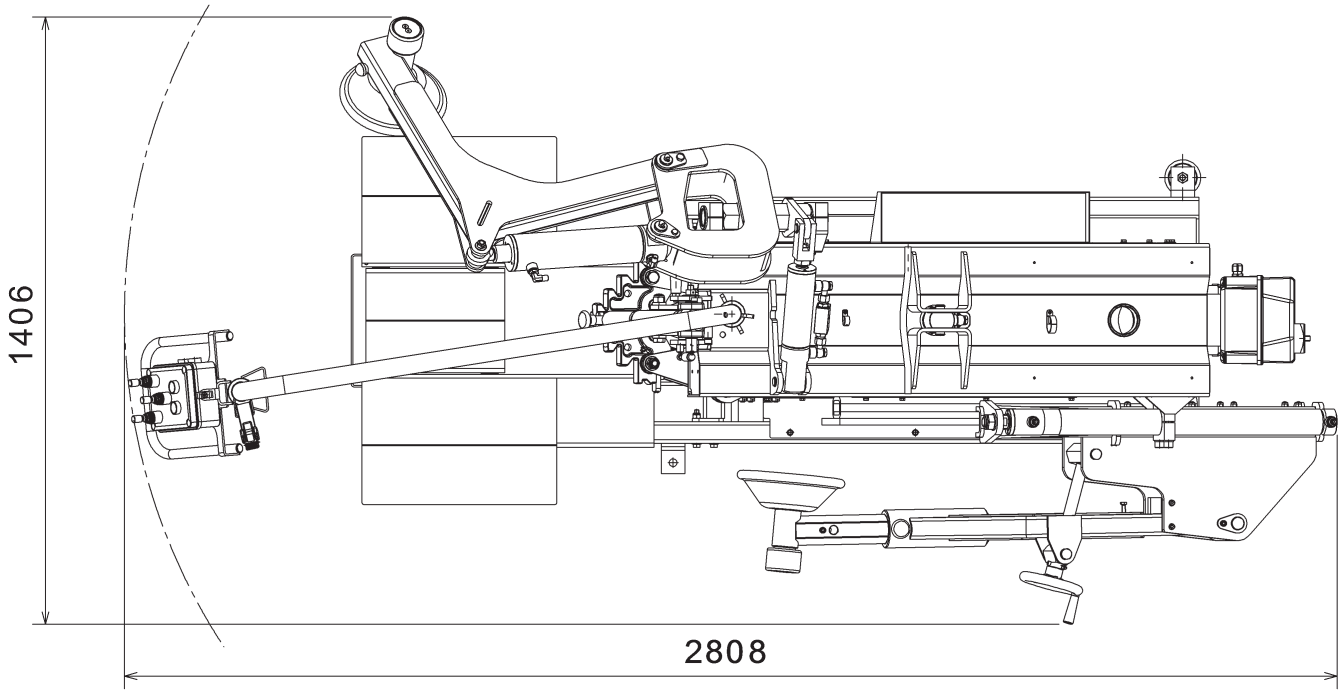
15.0 TECHNICAL DATA

Electric supply: ..... three-phase **400V - 50Hz**
Electric supply (UE3127 - 220V 60Hz 1Ph version): ..... single-phase **220V - 60Hz**
Self-centring unit motor: ..... power **2 kW** three-phase power supply
Self-centring unit rotation maximum speed: ..... **8 rpm**
Self-centring unit rotation maximum speed (VARGNAV101ND - version with inverter): ..... **1-5-10 rpm**
Max. rotation torque: ..... **2600 Nm**
Tyre maximum diameter: ..... **1320 mm / 52"**
Wheel maximum width: ..... **540 mm / 21.2"**
Wheel maximum weight: ..... **1200 kg**
Self-centring unit locking ..... **11"-27"**
Minimum locking hole: ..... **90 mm**
Self-centring unit minimum height from the ground: ..... **340 mm**
Rear bead-breaking force: ..... **12500 N**
Front bead-breaking force: ..... **12500 N**
Power unit motor: ..... power **1,5 kW** three-phase power supply **400V- 50Hz**
Operating pressure: ..... **130 bar**
Weight: ..... **650 kg**
Noise level: ..... **< 80 dB (A)**

15.1 Dimensions

Fig. 40





16.0 STORING

If storing for long periods disconnect the main power supply and take measures to protect the machine from dust build-up. Lubricate parts that could be damaged from drying out. When putting the machine back into operation replace the rubber pads and the mounting tool.

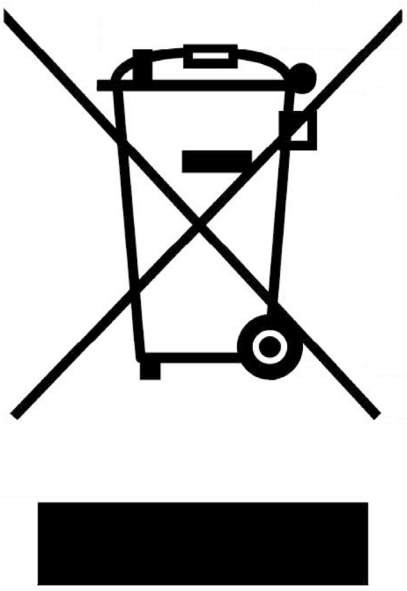
17.0 SCRAPPING

When the decision is taken not to make further use of the machine, it is advisable to make it inoperative by removing the connection pressure hoses. The machine is to be considered as special waste and should be dismantled into homogeneous parts. Dispose of it in accordance with current legislation.

Instructions for the correct management of waste from electric and electronic equipment (WEEE) according to the Italian legislative decree 49/14 and subsequent amendments.

In order to inform the users on the correct way to dispose the product (as required by the article 26, paragraph 1 of the Italian legislative decree 49/14 and subsequent amendments), we communicate what follows: the meaning of the crossed dustbin symbol reported on the equipment indicates that the product must not be thrown among the undifferentiated rubbish (that is to say together with the "mixed urban waste"), but it has to be managed separately, to let the WEEE go through special operations for their reuse or treatment, in order to remove and dispose safely the waste that could be dangerous for the environment and to extract and recycle the raw materials to be reused.

Fig. 41



18.0 REGISTRATION PLATE DATA

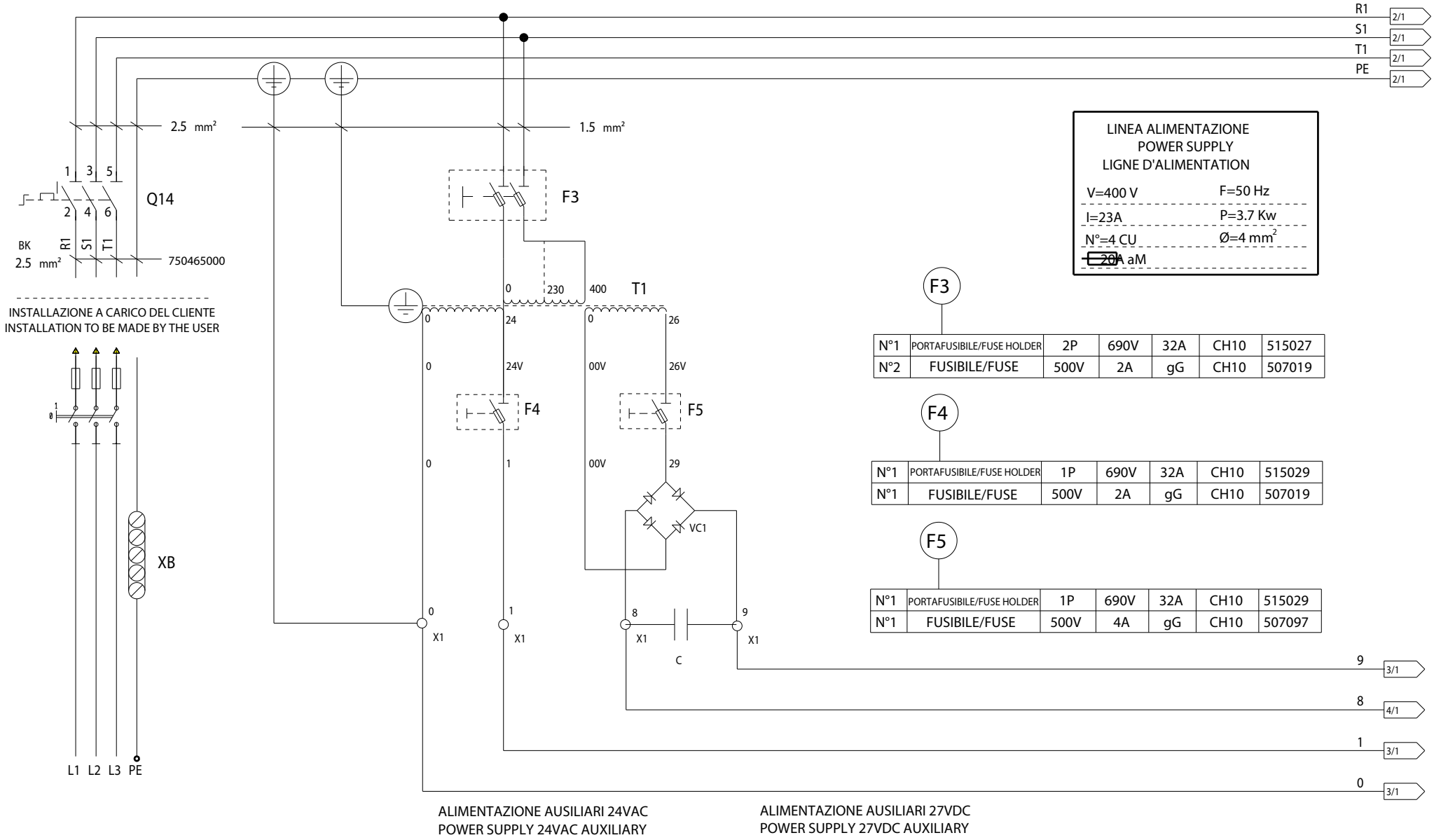
The validity of the Conformity Declaration enclosed to this manual is also extended to products and/or devices the machine model object of the Conformity Declaration can be equipped with.
Said plate must always be kept clean from grease residues or filth generally.

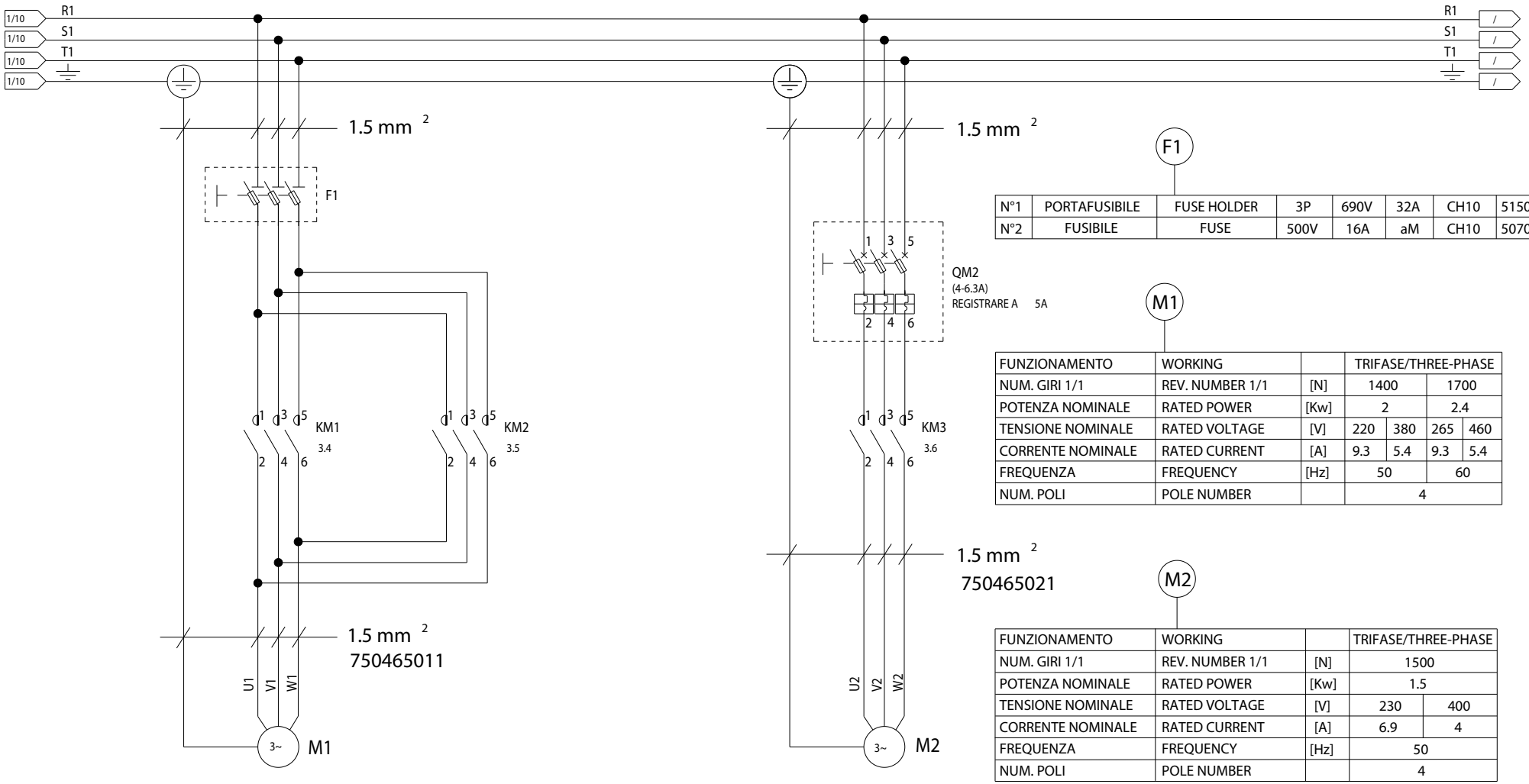
ATTENTION: TAMPERING WITH, CARVING, CHANGING ANYHOW OR EVEN REMOVING MACHINE IDENTIFICATION PLATE IS ABSOLUTELY FORBIDDEN; DO NOT COVER IT WITH TEMPORARY PANELS, ETC., SINCE IT MUST ALWAYS BE VISIBLE.

WARNING: Should the plate be accidentally damaged (removed from the machine, damaged or even partially illegible) inform immediately the manufacturer.

19.0 FUNCTIONAL DIAGRAMS

Here follows a list of the machine functional diagrams.


R1
S1
T1
PE
2/1
2.5 mm²
1.5 mm²
1 3 5
2 4 6
Q14
BK
2.5 mm²
R1
S1
T1
750465000
INSTALLAZIONE A CARICO DEL CLIENTE
INSTALLATION TO BE MADE BY THE USER
XB
L1 L2 L3 PE
F3
0
230
400
T1
0
24
0
26
0
24V
00V
26V
F4
F5
0
1
00V
29
VC1
0
1
8
9
X1
C
9
8
1
0
3/1
4/1
LINEA ALIMENTAZIONE
POWER SUPPLY
LIGNE D'ALIMENTATION
V=400 V
F=50 Hz
I=23A
P=3.7 Kw
N°=4 CU
Ø=4 mm²
20A aM
F3
N°1 PORTAFUSIBILE/FUSE HOLDER 2P 690V 32A CH10 515027
N°2 FUSIBILE/FUSE 500V 2A gG CH10 507019
F4
N°1 PORTAFUSIBILE/FUSE HOLDER 1P 690V 32A CH10 515029
N°1 FUSIBILE/FUSE 500V 2A gG CH10 507019
F5
N°1 PORTAFUSIBILE/FUSE HOLDER 1P 690V 32A CH10 515029
N°1 FUSIBILE/FUSE 500V 4A gG CH10 507097
ALIMENTAZIONE AUSILIARI 24VAC
POWER SUPPLY 24VAC AUXILIARY
ALIMENTAZIONE AUSILIARI 27VDC
POWER SUPPLY 27VDC AUXILIARY



F1

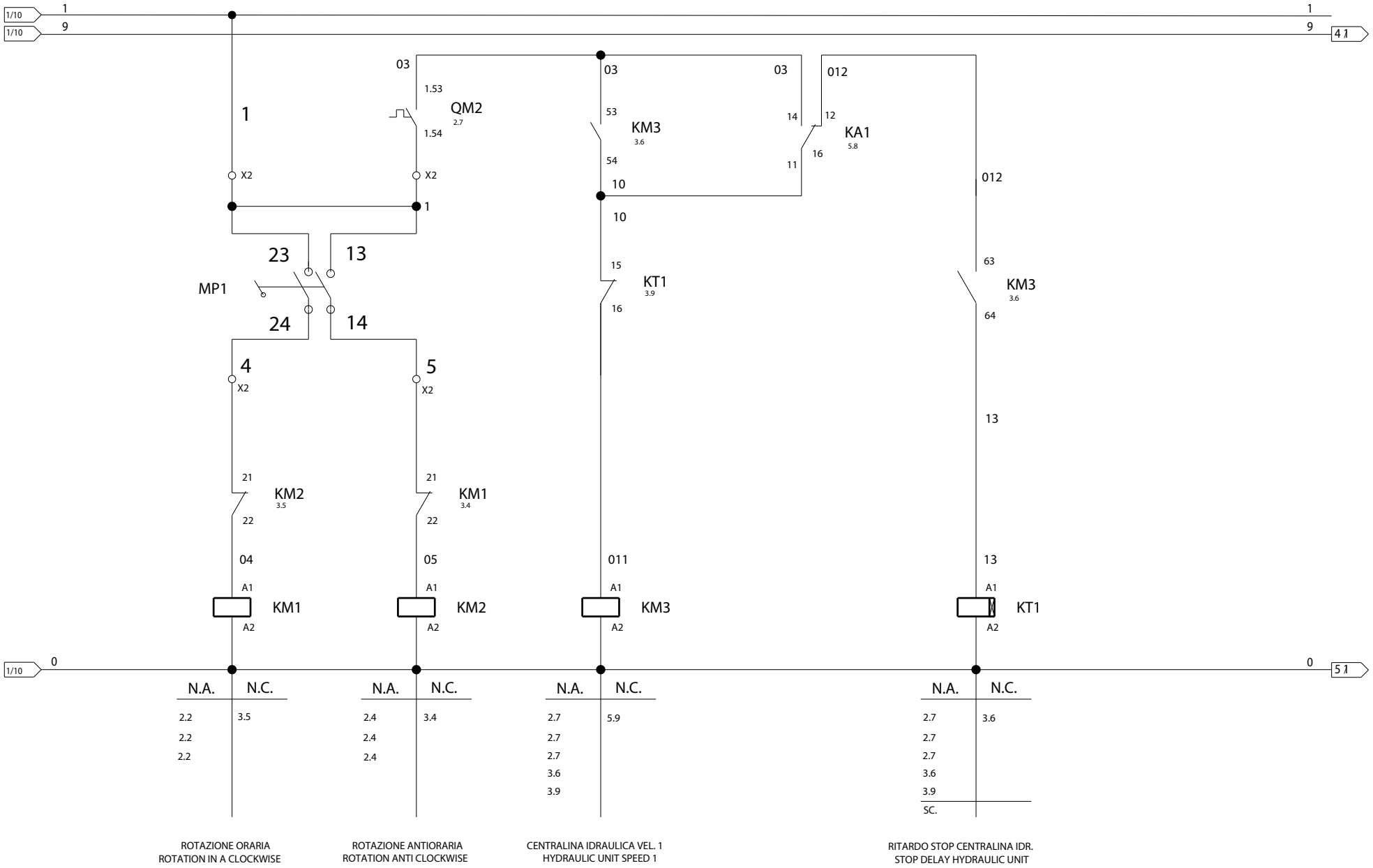
N°1	PORTAFUSIBILE	FUSE HOLDER	3P	690V	32A	CH10	515029
N°2	FUSIBILE	FUSE	500V	16A	aM	CH10	507045

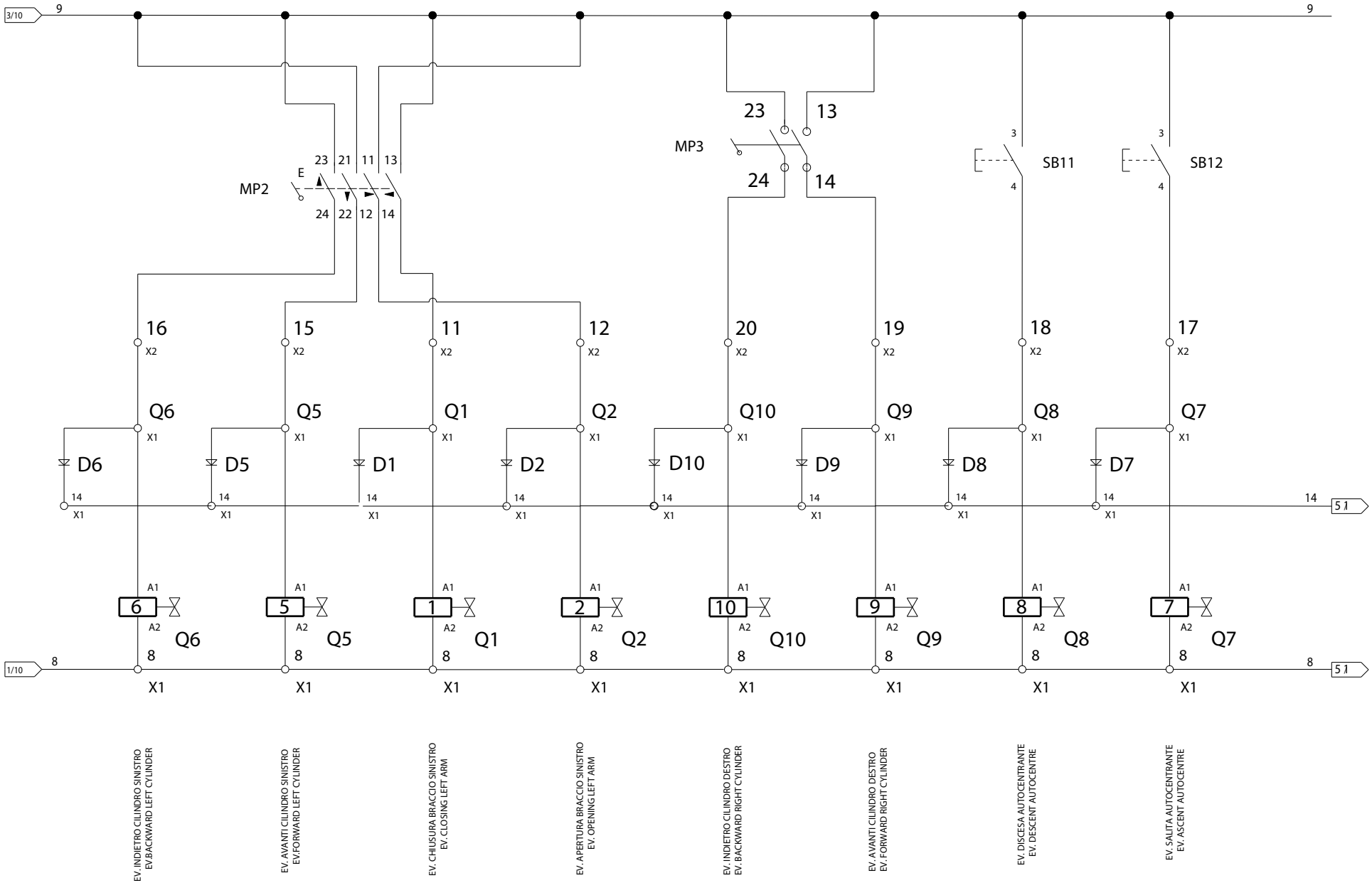
M1

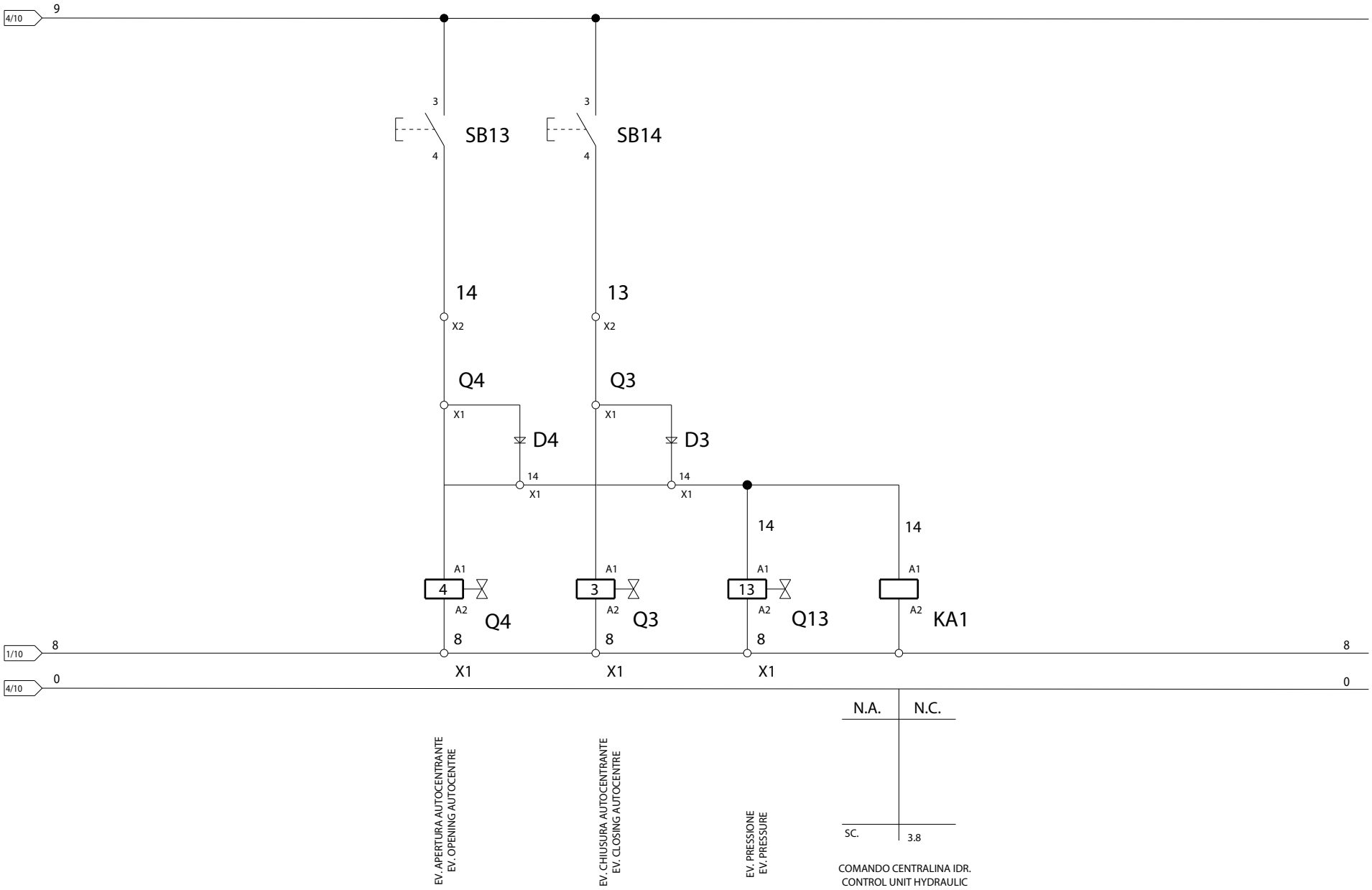
FUNZIONAMENTO	WORKING		TRIFASE/THREE-PHASE			
NUM. GIRI 1/1	REV. NUMBER 1/1	[N]	1400		1700	
POTENZA NOMINALE	RATED POWER	[Kw]	2		2.4	
TENSIONE NOMINALE	RATED VOLTAGE	[V]	220	380	265	460
CORRENTE NOMINALE	RATED CURRENT	[A]	9.3	5.4	9.3	5.4
FREQUENZA	FREQUENCY	[Hz]	50		60	
NUM. POLI	POLE NUMBER		4			

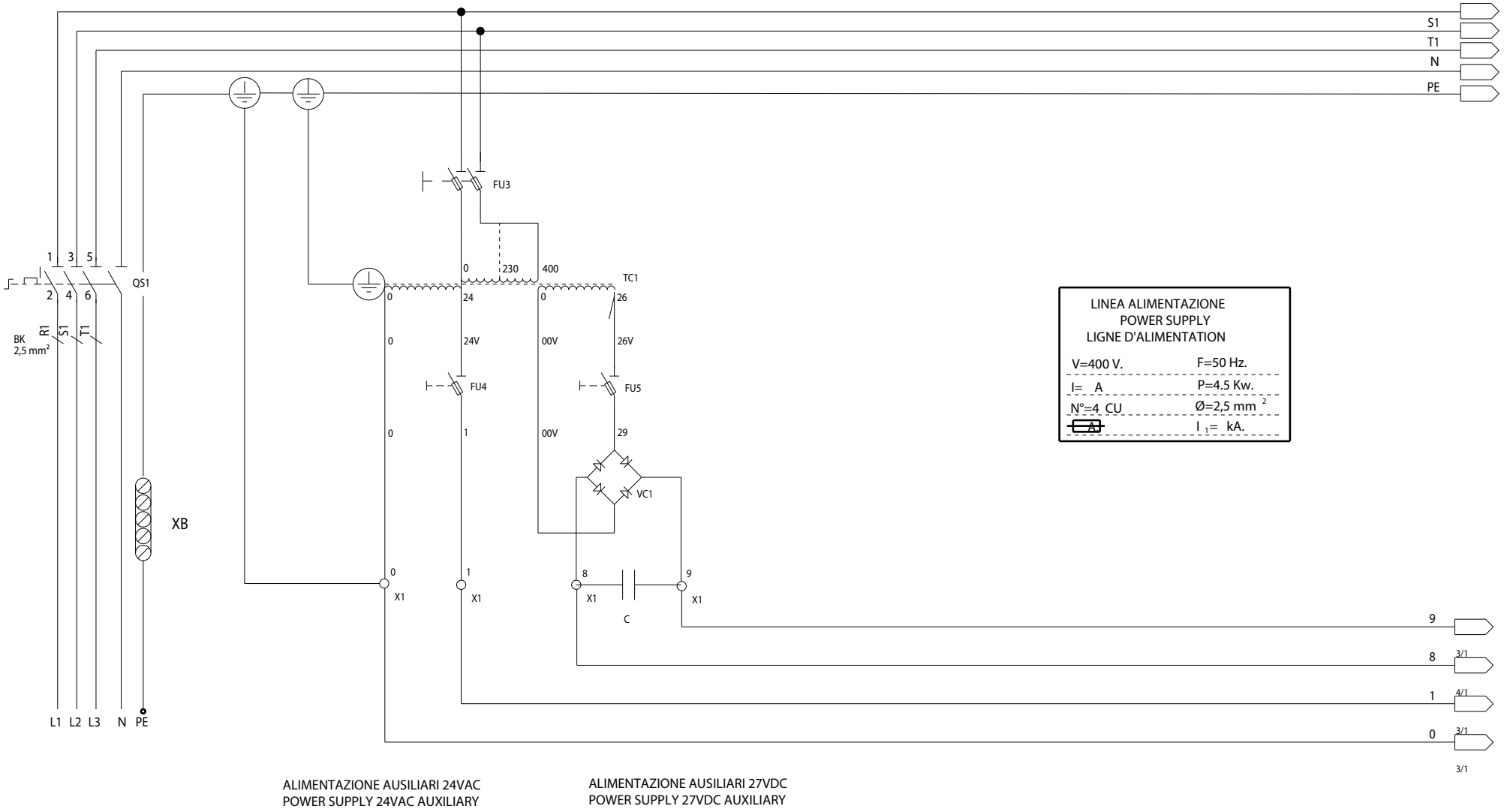
M2

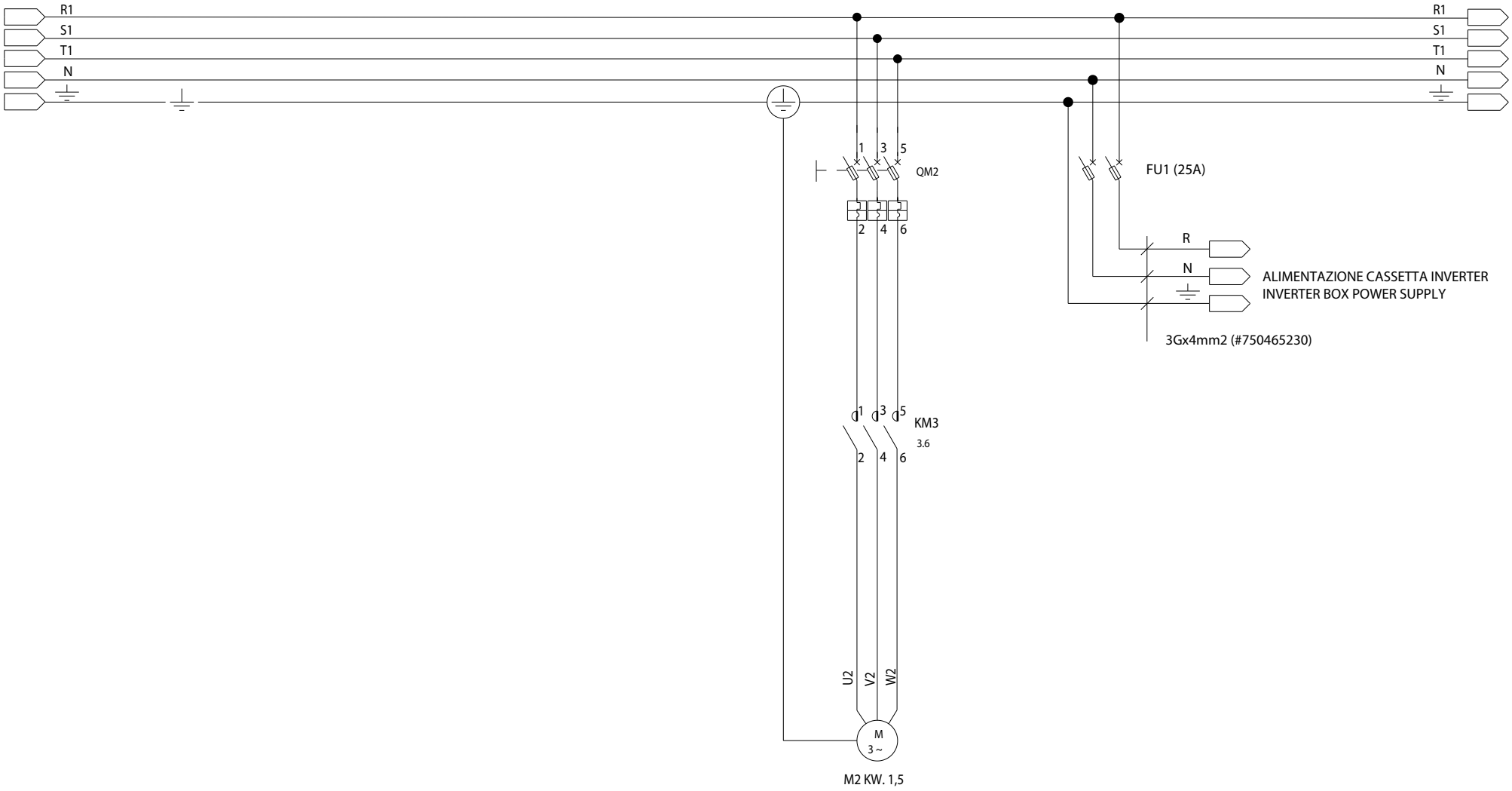
FUNZIONAMENTO	WORKING		TRIFASE/THREE-PHASE	
NUM. GIRI 1/1	REV. NUMBER 1/1	[N]	1500	
POTENZA NOMINALE	RATED POWER	[Kw]	1.5	
TENSIONE NOMINALE	RATED VOLTAGE	[V]	230	400
CORRENTE NOMINALE	RATED CURRENT	[A]	6.9	4
FREQUENZA	FREQUENCY	[Hz]	50	
NUM. POLI	POLE NUMBER		4	


1/10
1
9
1
9
4 1
03
1.53
QM2
2.7
1.54
X2
X2
1
23
13
MP1
24
14
4
X2
5
X2
21
KM2
3.5
22
21
KM1
3.4
22
04
05
A1
A2
KM1
KM2
03
53
KM3
3.6
54
10
10
15
KT1
3.9
16
03
012
14
12
KA1
5.8
11
16
012
63
KM3
3.6
64
13
13
011
A1
A2
KM3
A1
A2
KT1
0
1/10
0
5 1
N.A.
N.C.
2.2
2.2
2.2
3.5
N.A.
N.C.
2.4
2.4
2.4
3.4
N.A.
N.C.
2.7
2.7
2.7
3.6
3.9
5.9
N.A.
N.C.
2.7
2.7
2.7
3.6
3.9
SC.
3.6
ROTAZIONE ORARIA
ROTATION IN A CLOCKWISE
ROTAZIONE ANTIORARIA
ROTATION ANTI CLOCKWISE
CENTRALINA IDRAULICA VEL. 1
HYDRAULIC UNIT SPEED 1
RITARDO STOP CENTRALINA IDR.
STOP DELAY HYDRAULIC UNIT

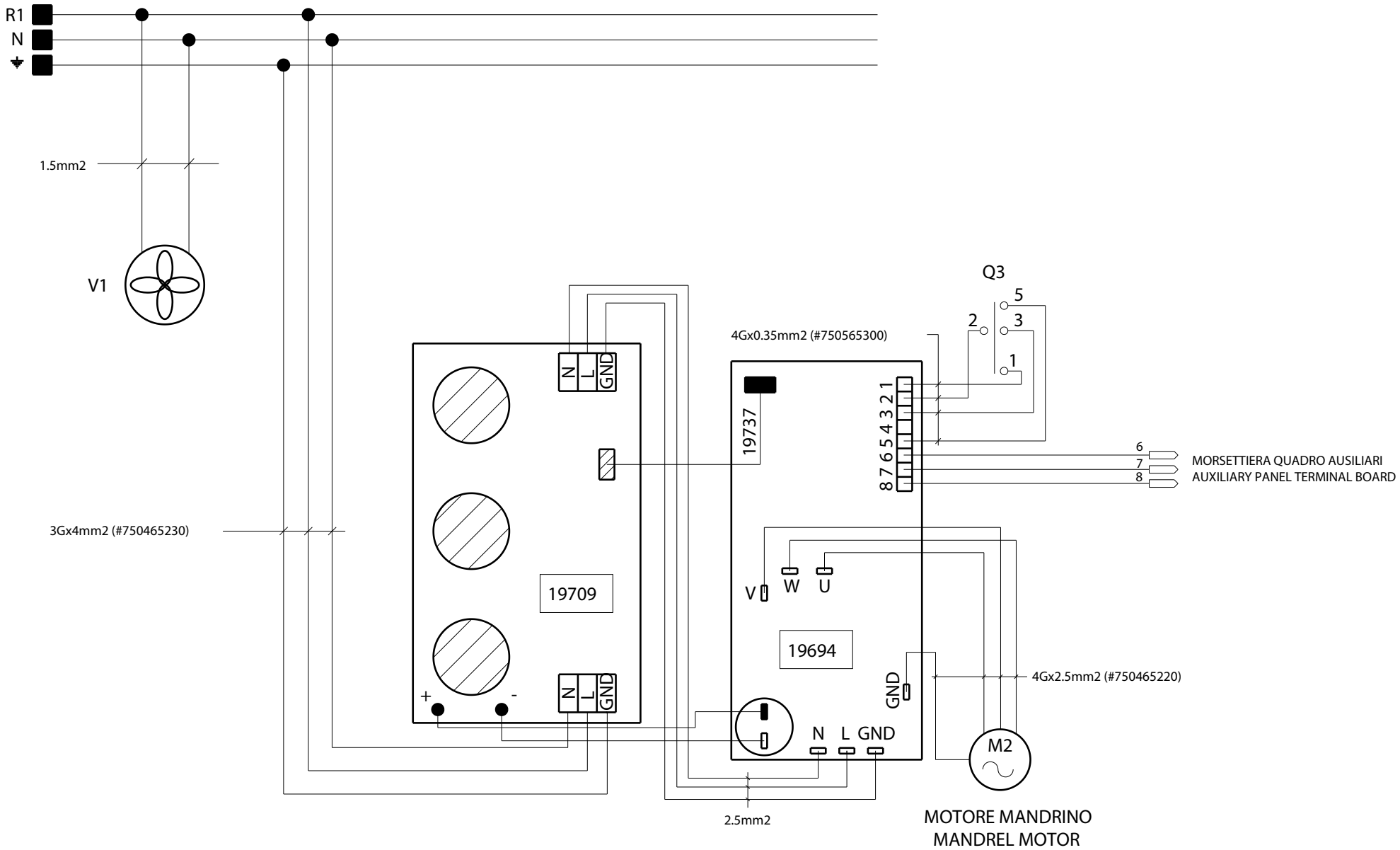

3/10
9
MP2
E
23 21 11 13
24 22 12 14
MP3
23 13
24 14
SB11
SB12
3
4
16 15 11 12 20 19 18 17
X2
Q6 Q5 Q1 Q2 Q10 Q9 Q8 Q7
X1
D6 D5 D1 D2 D10 D9 D8 D7
14
5 1
A1
A2
6 5 1 2 10 9 8 7
Q6 Q5 Q1 Q2 Q10 Q9 Q8 Q7
8
1/10
EV. INDIETRO CILINDRO SINISTRO
EV.BACKWARD LEFT CYLINDER
EV. AVANTI CILINDRO SINISTRO
EV.FORWARD LEFT CYLINDER
EV. CHIUSURA BRACCIO SINISTRO
EV. CLOSING LEFT ARM
EV. APERTURA BRACCIO SINISTRO
EV. OPENING LEFT ARM
EV. INDIETRO CILINDRO DESTRO
EV. BACKWARD RIGHT CYLINDER
EV. AVANTI CILINDRO DESTRO
EV. FORWARD RIGHT CYLINDER
EV. DISCESA AUTOCENTRANTE
EV. DESCENT AUTOCENTRE
EV. SALITA AUTOCENTRANTE
EV. ASCENT AUTOCENTRE


9
4/10
3
SB13
4
3
SB14
4
14
X2
13
X2
Q4
X1
Q3
X1
D4
D3
14
X1
14
X1
14
14
A1
A1
A1
A1
4
3
13
A2
A2
A2
A2
Q4
Q3
Q13
KA1
8
8
8
8
1/10
X1
X1
X1
8
0
4/10
0
N.A.
N.C.
SC.
3.8
EV. APERTURA AUTOCENTRANTE
EV. OPENING AUTOCENTRE
EV. CHIUSURA AUTOCENTRANTE
EV. CLOSING AUTOCENTRE
EV. PRESSIONE
EV. PRESSURE
COMANDO CENTRALINA IDR.
CONTROL UNIT HYDRAULIC

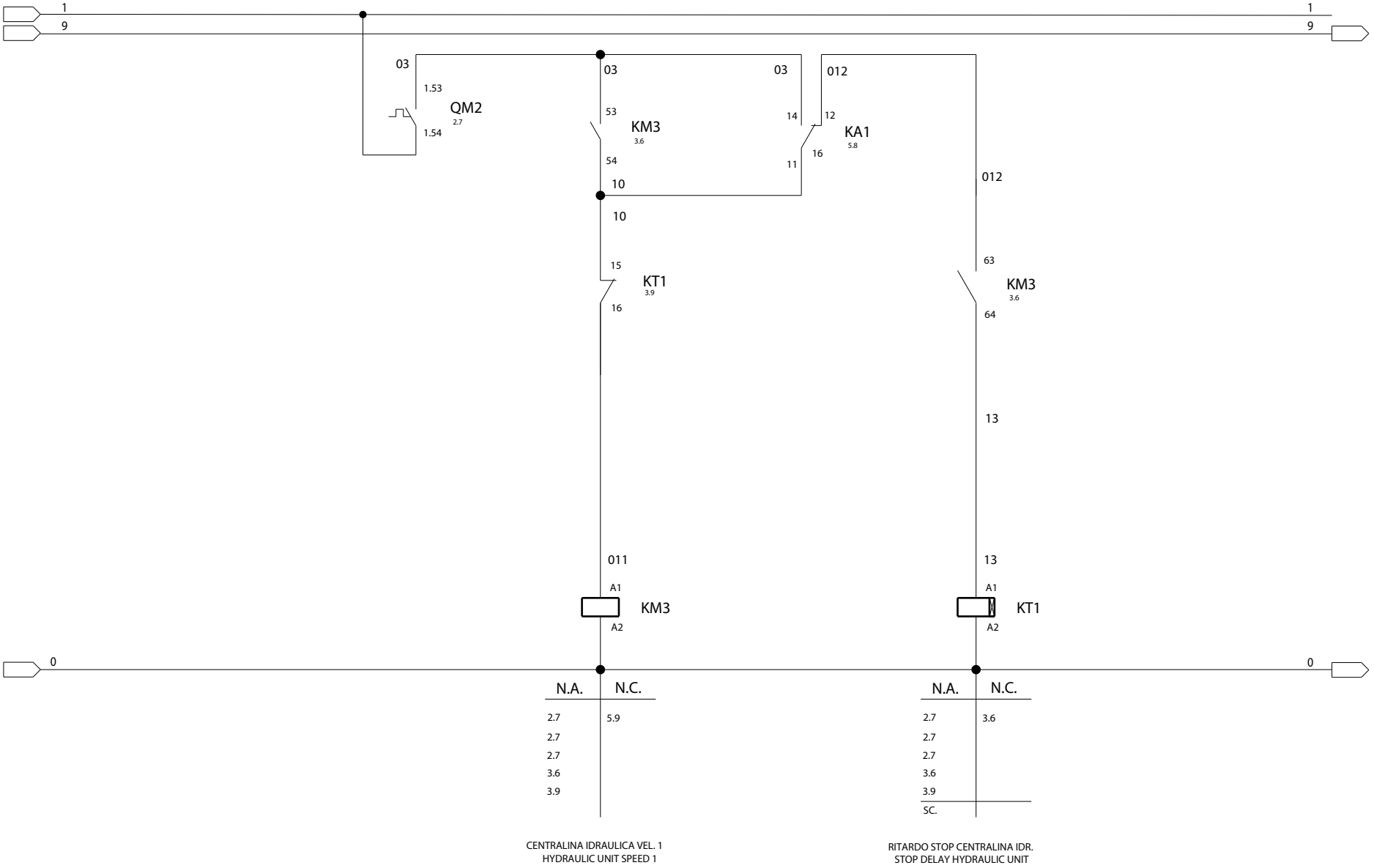

S1
T1
N
PE
FU3
1 3 5
2 4 6
QS1
BK
2,5 mm²
R1
S1
T1
XB
L1 L2 L3 N PE
0 230 400
TC1
0 24 0 26
0 24V 00V 26V
FU4
FU5
0 1 00V 29
VC1
0 1 8 9
X1 X1 X1 X1
C
9
8 3/1
1 4/1
0 3/1
3/1
LINEA ALIMENTAZIONE
POWER SUPPLY
LIGNE D'ALIMENTATION
V=400 V.
F=50 Hz.
I= A
P=4.5 Kw.
N°=4 CU
Ø=2,5 mm 2
I 1= kA.
ALIMENTAZIONE AUSILIARI 24VAC
POWER SUPPLY 24VAC AUXILIARY
ALIMENTAZIONE AUSILIARI 27VDC
POWER SUPPLY 27VDC AUXILIARY

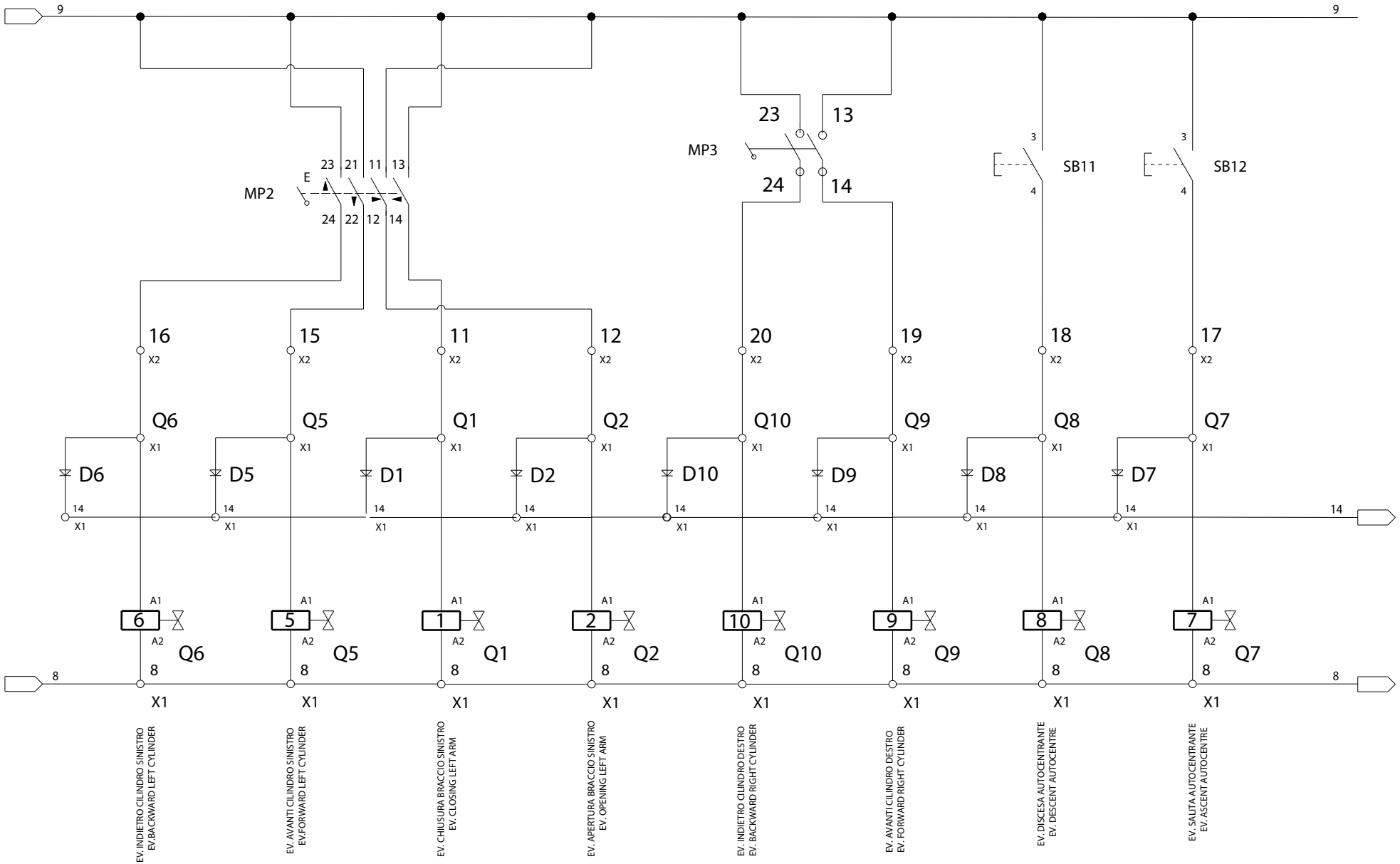


MOTORE CENTRALINA IDRAULICA
HYDRAULIC UNIT MOTOR

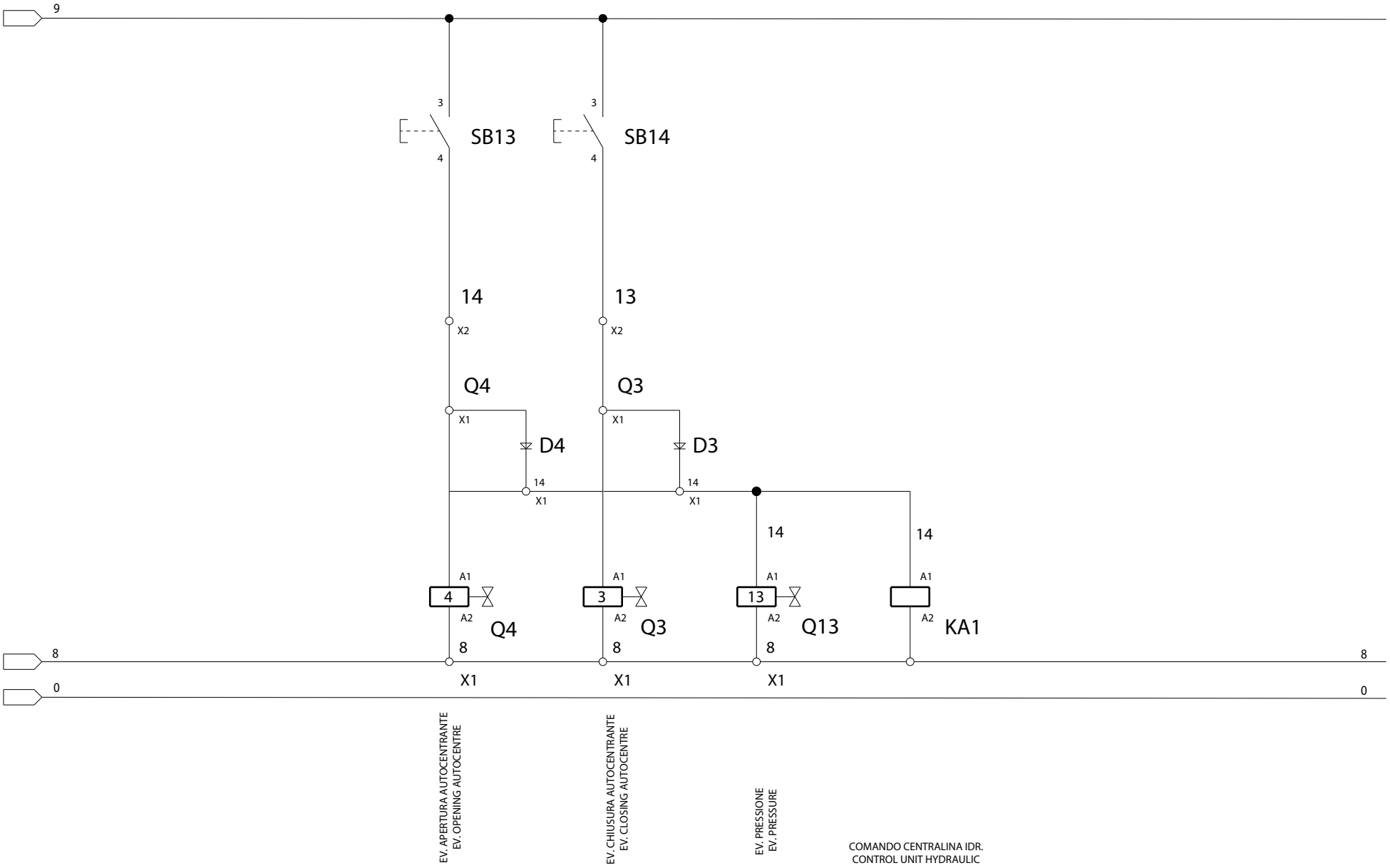


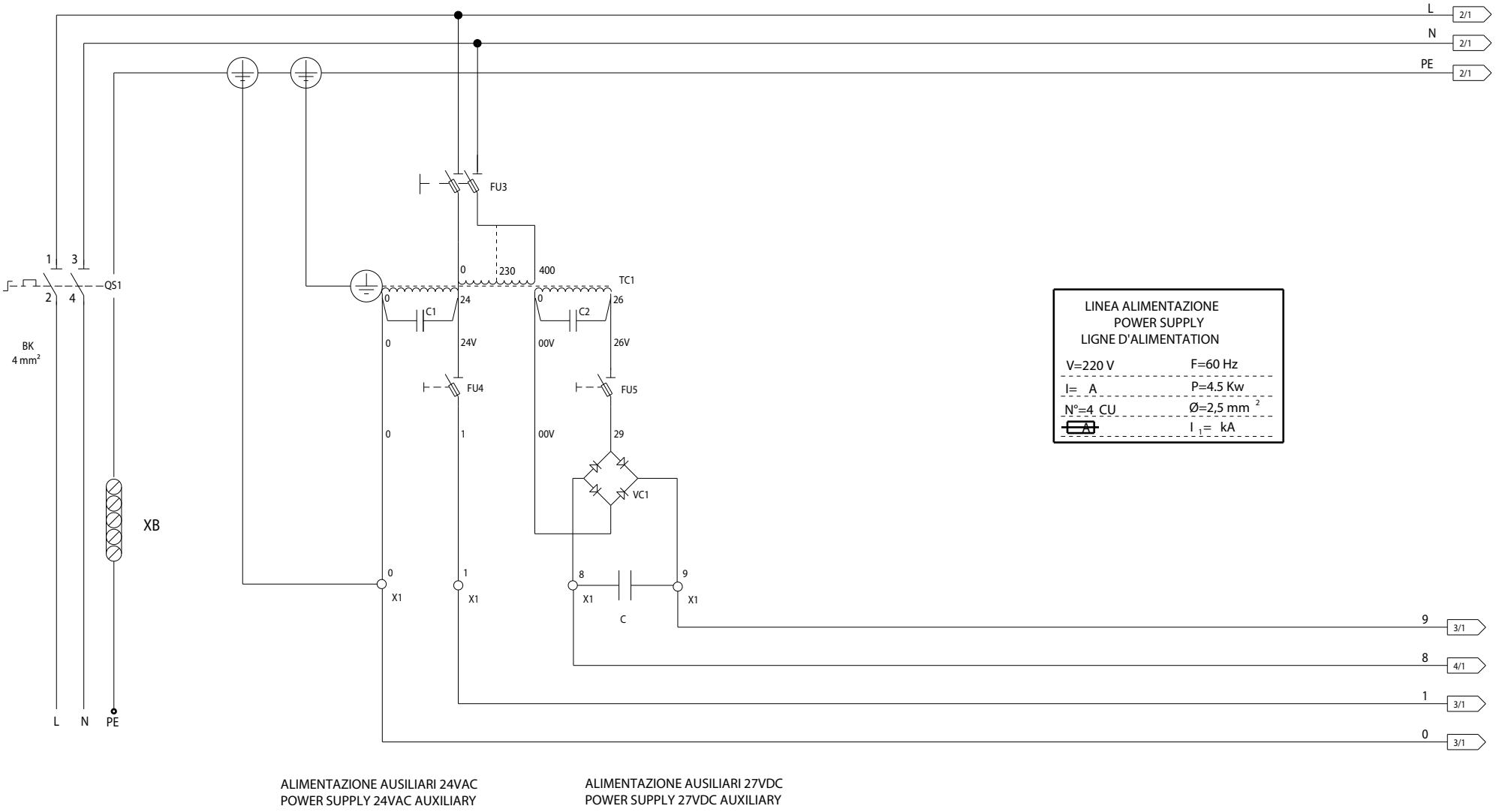
RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*SCHEMA ELETTRICO 3/6* *ELECTRICAL SCHEME 3/6* *SCHALTPLAN 3/6* *SCHEMA ELECTRIQUE 3/6* *ESQUEMA ELECTRICO 3/6* *(VARGNAV01ND)*	***Pag. 44 di 53***
	Tavola N°B - Rev. 0	**750405521**		**GTB16EVO**

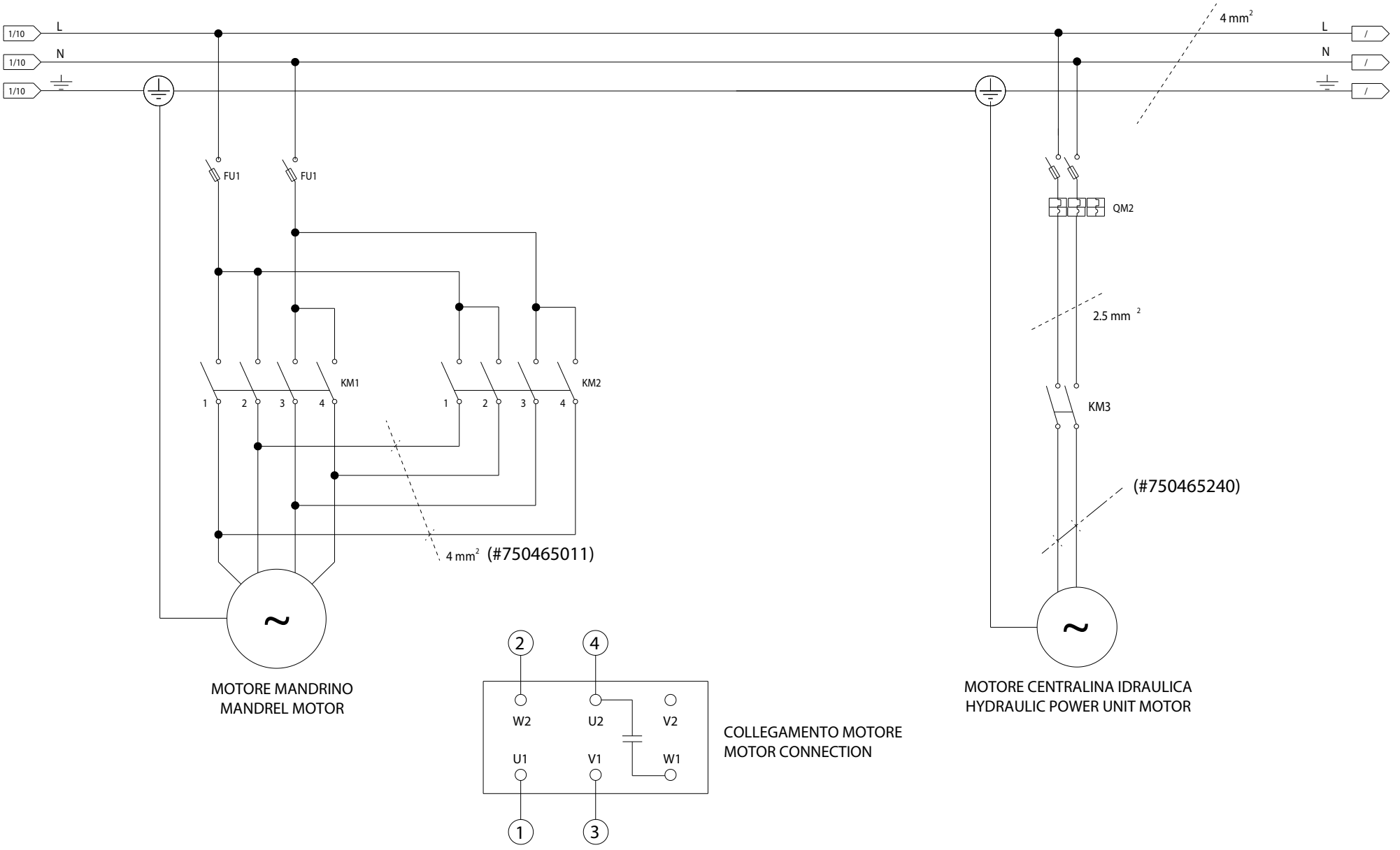

1
9
1
9
03
1.53
QM2
2.7
1.54
03
53
KM3
3.6
54
03
012
14
12
KA1
5.8
16
11
10
10
012
15
KT1
3.9
16
63
KM3
3.6
64
13
011
A1
KM3
A2
13
A1
KT1
A2
0
0
N.A.
N.C.
2.7
5.9
2.7
2.7
3.6
3.9
N.A.
N.C.
2.7
3.6
2.7
2.7
3.6
3.9
SC.
CENTRALINA IDRAULICA VEL. 1
HYDRAULIC UNIT SPEED 1
RITARDO STOP CENTRALINA IDR.
STOP DELAY HYDRAULIC UNIT

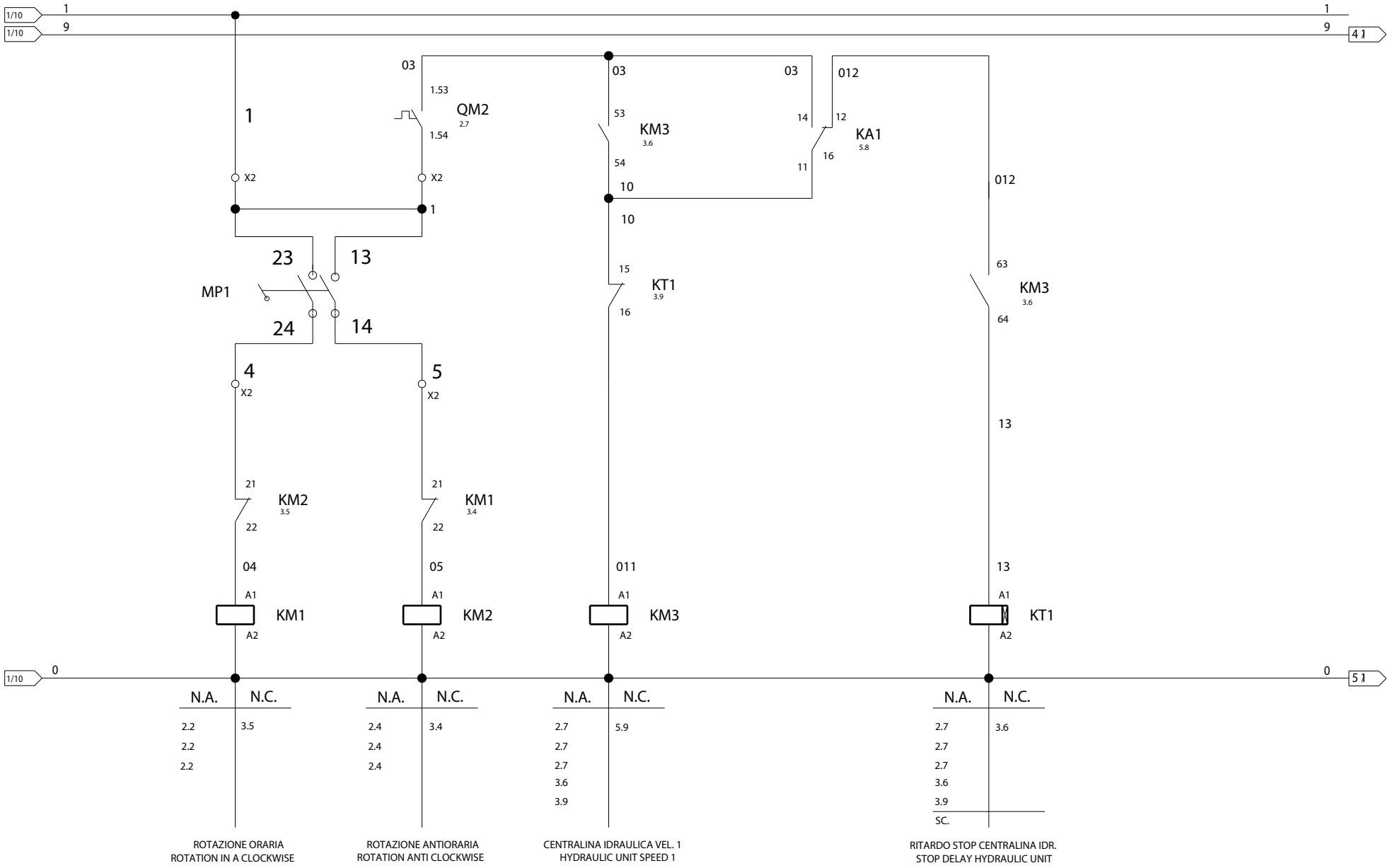


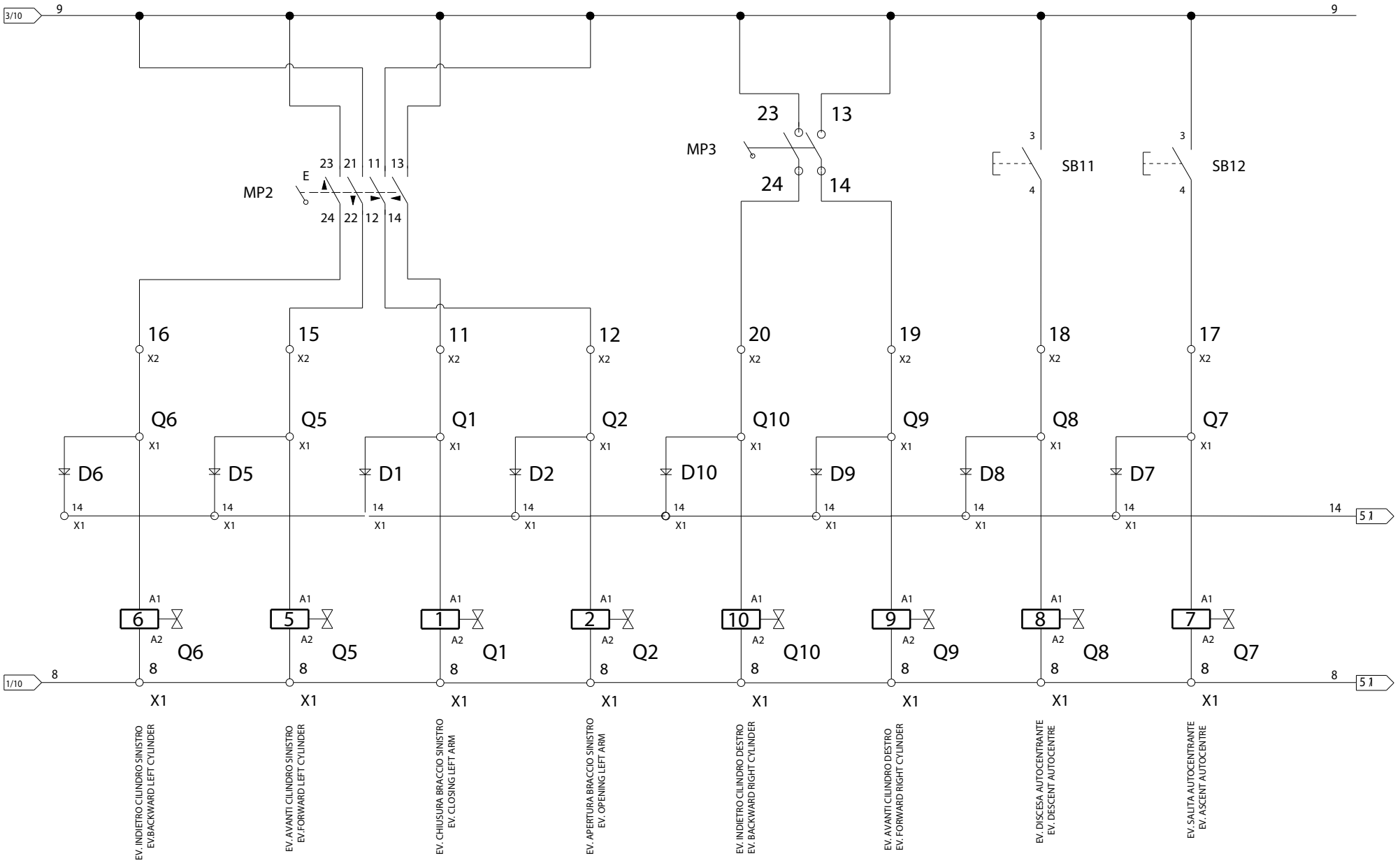
RAVAGLIOLI S.p.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*SCHEMA ELETTRICO 5/6 ELECTRICAL SCHEME 5/6 SCHALTPLAN 5/6 SCHEMA ELECTRIQUE 5/6 ESQUEMA ELECTRICO 5/6 (VARGNAV01ND)*	***Pag. 46 di 53***
	Tavola N°B - Rev. 0	**750405521**		**GTB16EVO**

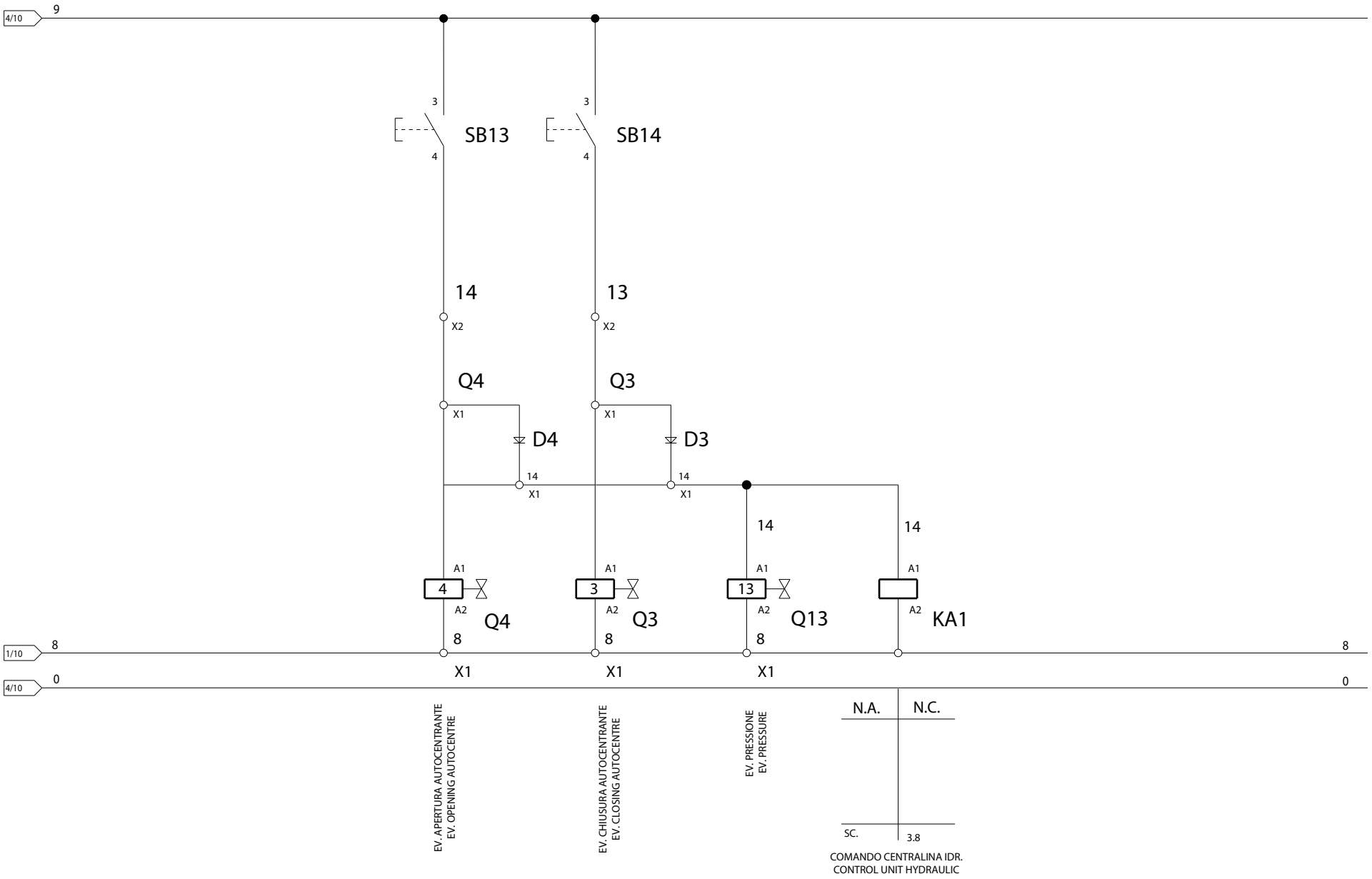

9
3
SB13
4
3
SB14
4
14
X2
13
X2
Q4
Q3
X1
X1
D4
D3
14
X1
14
X1
14
14
A1
A1
A1
A1
4
3
13
A2
A2
A2
A2
Q4
Q3
Q13
KA1
8
8
8
8
X1
X1
X1
8
0
0
EV. APERTURA AUTOCENTRANTE
EV. OPENING AUTOCENTRE
EV. CHIUSURA AUTOCENTRANTE
EV. CLOSING AUTOCENTRE
EV. PRESSIONE
EV. PRESSURE
COMANDO CENTRALINA IDR.
CONTROL UNIT HYDRAULIC

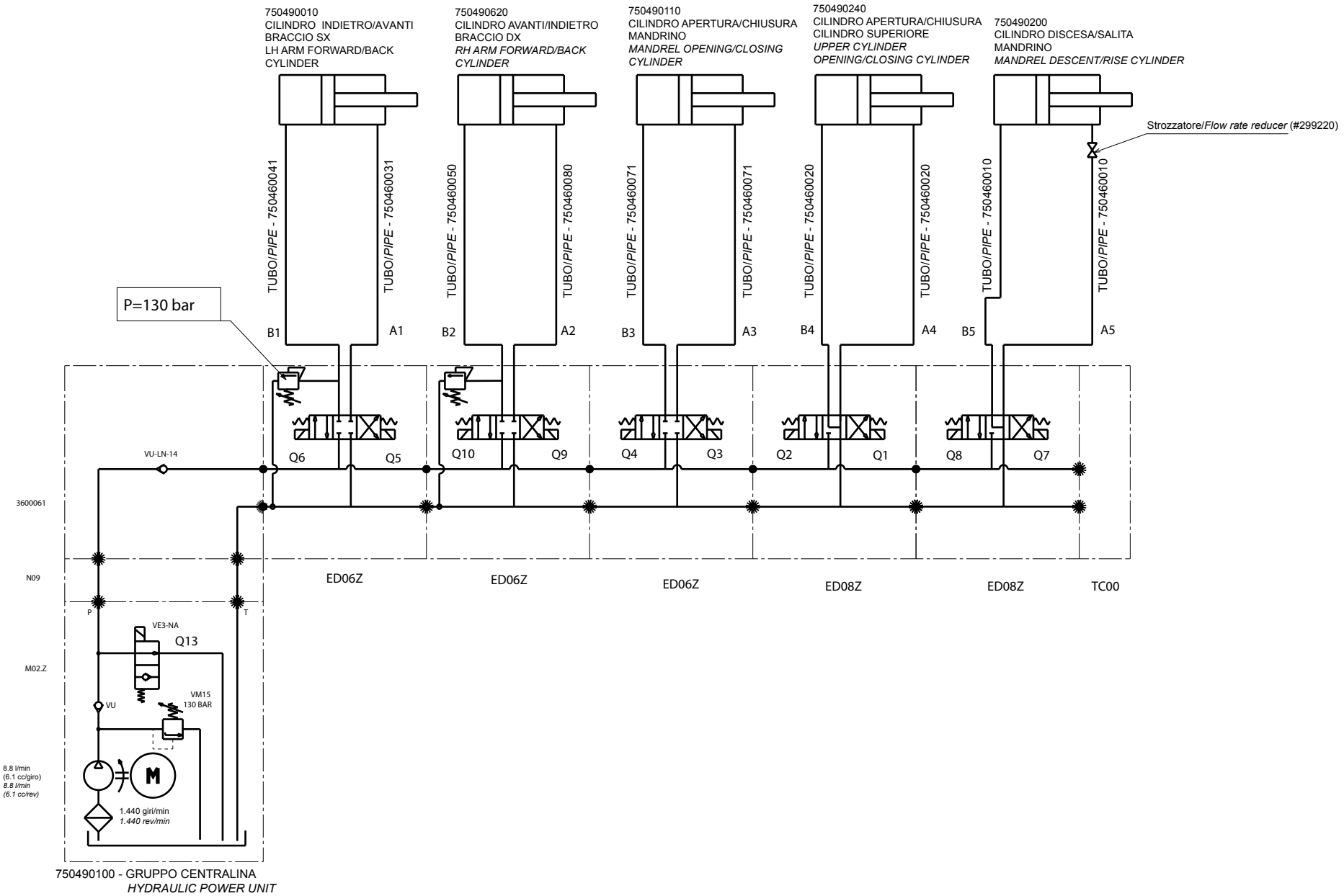

L
N
PE
2/1
FU3
1
3
2
4
QS1
BK
4 mm²
0
230
400
TC1
C1
C2
24
26
24V
26V
FU4
FU5
1
29
VC1
XB
X1
8
9
C
3/1
4/1
LINEA ALIMENTAZIONE
POWER SUPPLY
LIGNE D'ALIMENTATION
V=220 V
F=60 Hz
I= A
P=4.5 Kw
N°=4 CU
Ø=2,5 mm ²
I ₁= kA
ALIMENTAZIONE AUSILIARI 24VAC
POWER SUPPLY 24VAC AUXILIARY
ALIMENTAZIONE AUSILIARI 27VDC
POWER SUPPLY 27VDC AUXILIARY


1/10 L
1/10 N
1/10
FU1
FU1
KM1
KM2
1 2 3 4
1 2 3 4
4 mm² (#750465011)
MOTORE MANDRINO
MANDREL MOTOR
2 4
W2 U2 V2
U1 V1 W1
1 3
COLLEGAMENTO MOTORE
MOTOR CONNECTION
4 mm²
L
N
/
QM2
2.5 mm ²
KM3
(#750465240)
MOTORE CENTRALINA IDRAULICA
HYDRAULIC POWER UNIT MOTOR


1/10
1
9
41
03
1.53
QM2
2.7
1.54
X2
1
23
13
MP1
24
14
4
5
21
KM2
3.5
22
04
A1
KM1
A2
KM1
3.4
05
KM2
KM3
3.6
53
54
10
15
KT1
3.9
16
011
KM3
012
14
12
KA1
5.8
11
63
64
KT1
0
51
N.A.
N.C.
2.2
3.5
2.4
3.4
2.7
5.9
3.6
3.9
SC.
ROTAZIONE ORARIA
ROTATION IN A CLOCKWISE
ROTAZIONE ANTIORARIA
ROTATION ANTI CLOCKWISE
CENTRALINA IDRAULICA VEL. 1
HYDRAULIC UNIT SPEED 1
RITARDO STOP CENTRALINA IDR.
STOP DELAY HYDRAULIC UNIT


3/10
9
MP2
E
23 21 11 13
24 22 12 14
MP3
23 13
24 14
SB11
SB12
3
4
16 15 11 12 20 19 18 17
X2
Q6 Q5 Q1 Q2 Q10 Q9 Q8 Q7
X1
D6 D5 D1 D2 D10 D9 D8 D7
14
5 1
A1
A2
6 5 1 2 10 9 8 7
8
1/10
EV. INDIETRO CILINDRO SINISTRO
EV.BACKWARD LEFT CYLINDER
EV. AVANTI CILINDRO SINISTRO
EV.FORWARD LEFT CYLINDER
EV. CHIUSURA BRACCIO SINISTRO
EV. CLOSING LEFT ARM
EV. APERTURA BRACCIO SINISTRO
EV. OPENING LEFT ARM
EV. INDIETRO CILINDRO DESTRO
EV. BACKWARD RIGHT CYLINDER
EV. AVANTI CILINDRO DESTRO
EV. FORWARD RIGHT CYLINDER
EV. DISCESA AUTOCENTRANTE
EV. DESCENT AUTOCENTRE
EV. SALITA AUTOCENTRANTE
EV. ASCENT AUTOCENTRE


4/10
9
3
SB13
4
3
SB14
4
14
X2
13
X2
Q4
X1
Q3
X1
D4
D3
14
X1
14
X1
14
14
A1
4
A2
Q4
A1
3
A2
Q3
A1
13
A2
Q13
A1
A2
KA1
1/10
8
8
8
8
4/10
0
0
X1
X1
X1
EV. APERTURA AUTOCENTRANTE
EV. OPENING AUTOCENTRE
EV. CHIUSURA AUTOCENTRANTE
EV. CLOSING AUTOCENTRE
EV. PRESSIONE
EV. PRESSURE
N.A.
N.C.
SC.
3.8
COMANDO CENTRALINA IDR.
CONTROL UNIT HYDRAULIC



RAVAGLIOLI S.p.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*SCHEMA OLEODINAMICO HYDRAULIC SCHEME ÖLDYNAMISCHPLAN SCHEMA HYDRAULIQUE ESQUEMA OLEODINÁMICO*	***Pag. 53 di 53***
	Tavola N°D - Rev. 0	**750405011**		**GTB16EVO**

7504-R002-0_R

GTB16EVO

I	20.0 LISTA DEI COMPONENTI
GB	20.0 LIST OF COMPONENTS
D	20.0 TEILELISTE
F	20.0 LISTE DES PIECES DETACHEES
E	20.0 LISTA DE PIEZAS

GLI ESPLOSI SERVONO SOLO PER L'IDENTIFICAZIONE DELLE PARTI DA SOSTITUIRE. LA SOSTITUZIONE DEVE ESSERE EFFETTUATA DA PERSONALE PROFESSIONALMENTE QUALIFICATO.

THE DIAGRAMS SERVE ONLY FOR THE IDENTIFICATION OF PARTS TO BE REPLACED. THE REPLACEMENT MUST BE CARRIED OUT PROFESSIONALLY QUALIFIED PERSONNEL.

DIE ZEICHNUNGEN DIENEN NUR ZUR IDENTIFIZIERUNG DER ERSATZTEILE. DIE ERSETZUNG MUSS DURCH QUALIFIZIERTES PERSONAL ERFOLGEN.

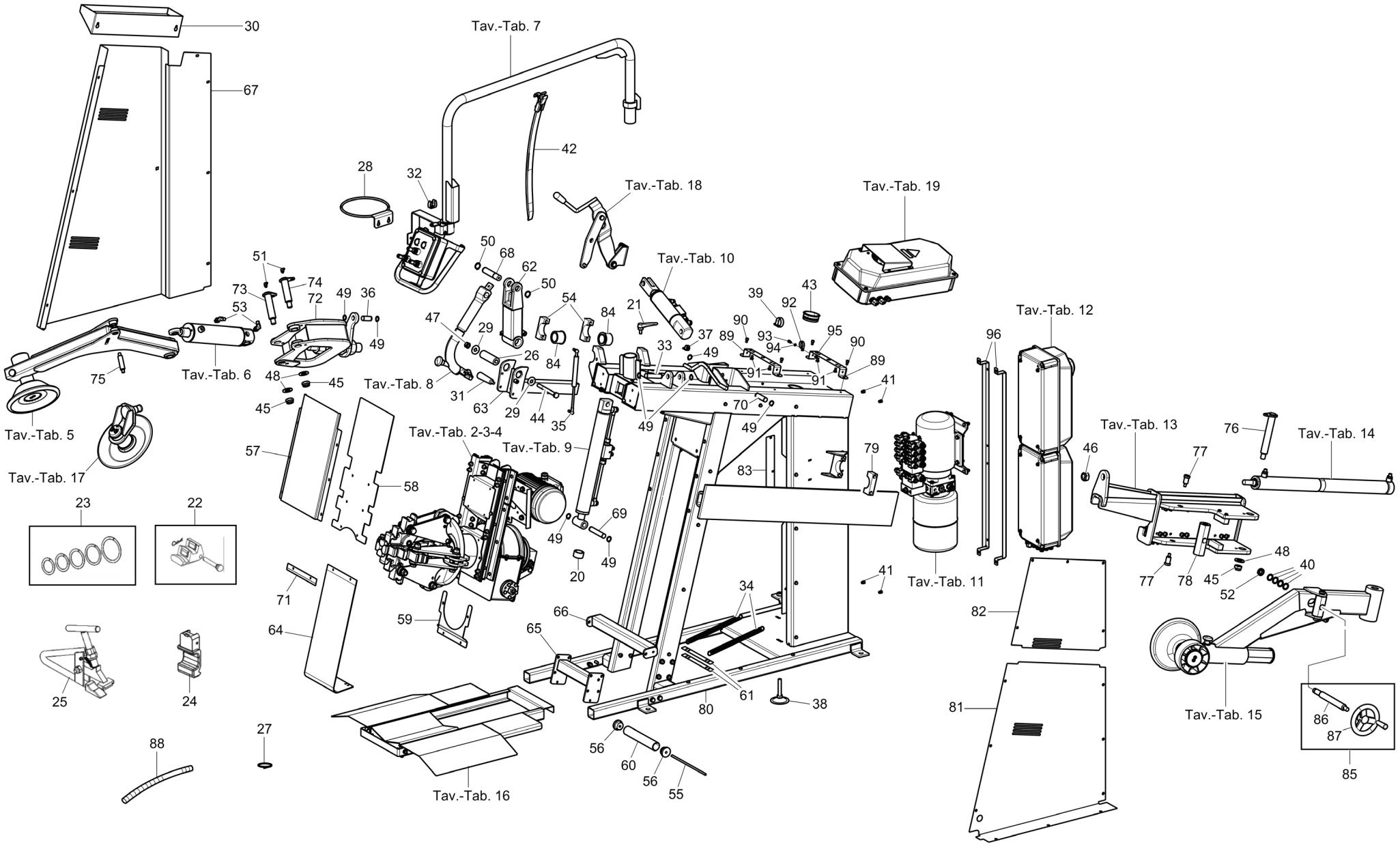
LES DESSINS NE SERVENT QU'À L'IDENTIFICATION DES PIÈCES À REMPLACER. LE REMPLACEMENT DOIT ÊTRE EFFECTUÉ PAR UN PERSONNE PROFESSIONNELLEMENT QUALIFIÉ.

LOS DIBUJOS EN DESPIECE SIRVEN ÚNICAMENTE PARA IDENTIFICAR LAS PIEZAS QUE DEBEN SUSTITUIRSE. LA SUSTITUCIÓN DE PIEZAS DEBE EFECTUARLA EXCLUSIVAMENTE PERSONAL PROFESIONALMENTE CUALIFICADO.

- Per eventuali chiarimenti interpellare il più vicino rivenditore oppure rivolgersi direttamente a:
- For any further information please contact your local dealer or call:
- Im Zweifelsfall ober bei Rückfragen wenden Sie sich bitte an den nächsten Wiederverkäufer oder direkt an:
- Pour tout renseignement complémentaire s'adresser au revendeur le Plus proche ou directement à:
- En caso de dudas, para eventuales aclaraciones, póngase en contacto con el distribudor más próximo ó diríjasie directamente a:

Technical services: **RAVAGLIOLI S.p.A.** - Via 1° Maggio, 3 - 40037 Pontecchio Marconi - Bologna Italy
Phone (+39) 051 6781511 - Telex 510697 RAV I - Fax (+39) 051 846349 - e-mail: aftersales@ravaglioli.com

SOMMARIO - SUMMARY - INHALT SOMMAIRE - SUMARIO



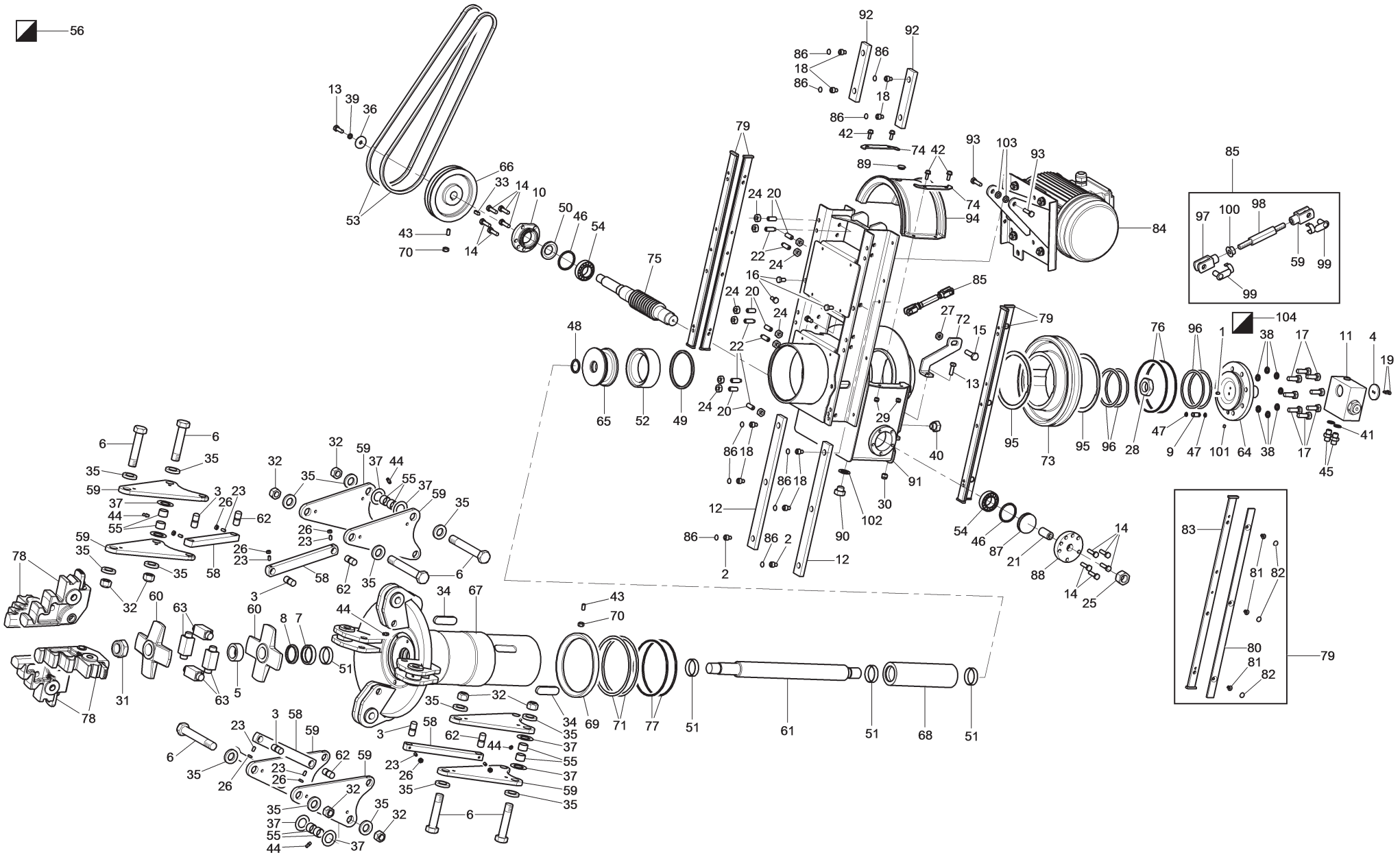
RAVAGLIOLI S.p.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*ASSIEME GENERALE MAIN ASSEMBLY GENERALSATZ ASSEMBLAGE GENERAL JUNTO GENERAL*	***Pag. 3 di 27***
	Tavola N°1 - Rev. 0			**GTB16EVO**

Tav.	Cod.	Pos.	Descrizione	Description	Beschreibung	Description	Descripción
2	750490111		*Gruppo riduttore autocentrante*	*Selfcentering reduction unit*	*Untersetzensatz Autozentriert*	*Groupe reducteur autocentreur*	*Grupo reductor autocentrante*
3	750390641		*Gruppo griffa autocentrante*	*Self-centering jaw unit*	*Selbstzentrierendes Klauesatz*	*Groupe griffe autocentreure*	*Grupo gancho autocentrante*
4	750490221		*Gruppo sella con motore*	*Saddle unit with motor*	*Sattelsatz mit Motor*	*Groupe selle avec moteur*	*Grupo montura con motor*
5	750490560		*Gruppo braccio stallonatore anteriore*	*Front bead breaker arm unit*	*Hinterer Abdrückarmsatz*	*Groupe bras décolle talons antérieur*	*Grupo brazo destalonador anterior*
6	750490011		*Cilindro braccio superiore*	*Upper arm cylinder*	*Zylinder des Oberarms*	*Cylindre bras supérieur*	*Cilindro brazo superior*
7	750490650		*Gruppo tubo con comandi*	*Pipe with controls unit*	*Schlauchsatz mit Steuerungen*	*Groupe tuyau avec commandes*	*Grupo tubo con mandos*
8	750490270		*Braccio con utensile*	*Arm with tool*	*Arm mit Werkzeug*	*Bras avec outil*	*Brazo con utensilio*
9	750490200		*Cilindro idraulico 50 30 400*	*50 30 400 hydraulic cylinder*	*Hydraulikzylinder 50 30 400*	*Cylindre hydraulique 50 30 400*	*Cilindro hidráulico 50 30 400*
10	750490240		*Cilindro idraulico 55 101 25*	*55 101 25 hydraulic cylinder*	*Hydraulikzylinder 55 101 25*	*Cylindre hydraulique 55 101 25*	*Cilindro hidráulico 55 101 25*
11	750490660		*Gruppo unità oleodinamica*	*Hydraulic unit*	*Öldynamische Einheit Satz*	*Groupe unité oléohydraulique*	*Grupo unidad oleodinámica*
12A	750403001		*Quadro elettrico*	*Electric cabinet*	*Schalttafel*	*Tableau électrique*	*Cuadro eléctrico*
12B	750403051		*Quadro elettrico (variante 220V 60Hz 1Ph)*	*Electric cabinet (220V 60Hz 1Ph version)*	*Schalttafel (220V 60Hz 1Ph Version)*	*Tableau électrique (version 220V 60Hz 1Ph)*	*Cuadro eléctrico (versión 220V 60Hz 1Ph)*
12C	750403041		*Quadro elettrico inverter (variante con inverter)*	*Inverter electrical panel (version with inverter)*	*Schalttafel des Frequenzumformers (Version mit Inverter)*	*Tableau électrique variateur (version avec inverseur)*	*Tablero eléctrico inversor (versión con inversor)*
13	750490570		*Gruppo carro con pattini*	*Carriage with sliding blocks unit*	*Wagensatz mit Schlittenen*	*Groupe chariot avec patines*	*Grupo carro con patines*
14	750490620		*Cilindro idraulico con raccordi*	*Hydraulic cylinders with fittings*	*Hydraulikzylinder mit Anschlussen*	*Cylindre hydraulique avec raccords*	*Cilindro hidráulico con conectores*
15	750490610		*Gruppo braccio stallonatore*	*Bead breaker arm unit*	*Abdrückarmsatz*	*Groupe bras décolle talons*	*Grupo brazo destalonador*
16	750490160		*Gruppo pedana mobile*	*Mobile footboard unit*	*Beweglicher Trittbrettsatz*	*Groupe marchepied mobile*	*Grupo taburete móvil*
17	G108A24		*Gruppo disco cerchietti (optional)*	*Bead wires disk unit (optional)*	*Wulstkernen Scheibesatz (optional)*	*Groupe disque tringles de talon (option)*	*Grupo disco alambres de talón (opción)*
18	G108A42		*Kit leva posizionamento bracci (optional)*	*Arm positioning lever kit (optional)*	*Hebelset für Armsstellung (optional)*	*Kit levier positionnement bras (option)*	*Kit palanca posicionamiento brazos (opción)*
19	750490340		*Insieme MTG cassetta elettrica con inverter (variante con inverter)*	*Electrical box MTG assembly with inverter (version with inverter)*	*Satz MTG Elektrischekiste mit Inverter (Version mit Inverter)*	*Assemblage MTG boitier électrique avec inverseur (version avec inverseur)*	*Conjunto MTG cajita electrica con inversor (versión con inversor)*
	750413140	**20**	*Distanziale (variante con inverter)*	*Spacer (version with inverter)*	*Abstandsstück (Version mit Inverter)*	*Entretoise (version avec inverseur)*	*Distanciador (versión con inversor)*
	G108A40	**21**	*Bloccaggio albero (optional)*	*Shaft clamping (optional)*	*Wellensperrung (optional)*	*Blocage arbre (option)*	*Bloqueo árbol (opción)*
	GTB14A1	**22**	*Kit protezione con anelli (optional)*	*Protection kit with rings (optional)*	*Schutzset mit Ringen (optional)*	*Kit protection avec anneaux (option)*	*Kit protección con anillos (opción)*
	G108A8	**23**	*Kit anelli plastificati (optional)*	*Plasticized rings kit (optional)*	*Set von kunststoffbeschichtete Ringen (optional)*	*Kit anneaux plastifiés (option)*	*Kit anillos plastificados (opción)*
	G108A9	**24**	*Protezione utensile (optional)*	*Tool guard (optional)*	*Werkzeugschutz (optional)*	*Protection outil (option)*	*Protección utensillo (opción)*
	G90A6	**25**	*Morsetto (optional)*	*Clamp (optional)*	*Klemme (optional)*	*Borne (option)*	*Abrazadera (opción)*
	B0078000	**26**	*Perno Ø 35*	*Ø 35 pin*	*Zapfen Ø 35*	*Pivot Ø 35*	*Perno Ø 35*
	B0178000	**27**	*Fascetta 3,6x142*	*3,6x142 hose clamp*	*Klemme 3,6x142*	*Collier 3,6x142*	*Abrazadera 3,6x142*
	B0223000	**28**	*Anello contenitore grasso*	*Grease holding ring*	*Fettführungsring*	*Anneau cuve porte-graisse*	*Anillo porta grasa*

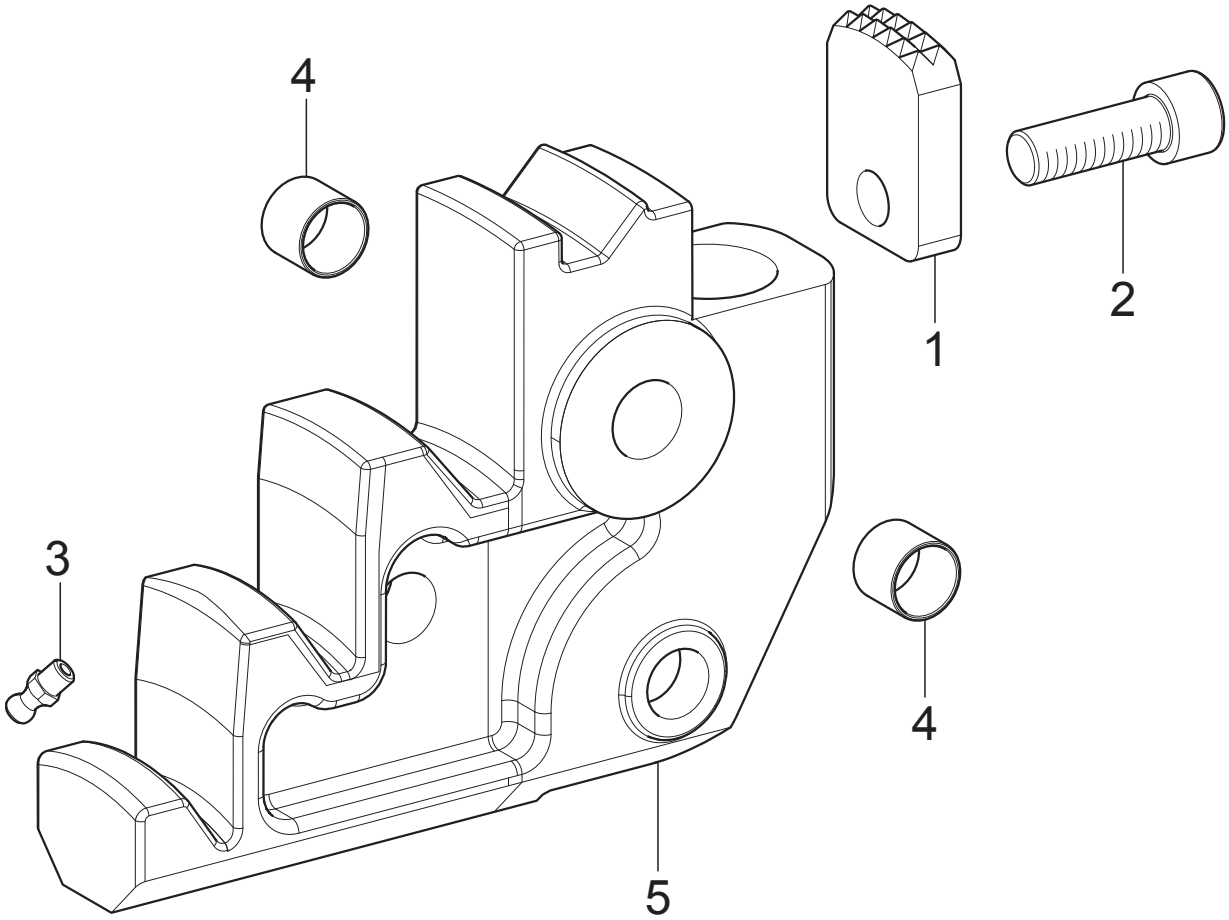
Tav.	Cod.	Pos.	Descrizione	Description	Beschreibung	Description	Descripción
	B0251000	**29**	*Molla a tazza 14.2x40x2*	*14.2x40x2 belleville washer*	*Becherfeder 14.2x40x2*	*Ressort à godet 14.2x40x2*	*Resorte a taza 14.2x40x2*
	B0897000	**30**	*Vaschetta "C"*	*"C" Bowl*	*Wanne 2C2*	*Cuvette "C"*	*Tina "C"*
	B1416700	**31**	*Impugnatura con perno*	*Handle with pin*	*Handgriff mit Zapfen*	*Manche avec pivot*	*Empuñadura con perno*
	B3745000	**32**	*Molla per pennello*	*Spring for brush*	*Feder für Pinsel*	*Ressort pour brosse*	*Resorte para pincel*
	B4430000	**33**	*Perno per leva dentata*	*Pin for toothed lever*	*Zapfen für gezahnten Hebel*	*Pivot pour levier dentée*	*Perno para leva dentada*
	B4442000	**34**	*Molla per gomma*	*Spring for guard rubber*	*Feder für Reifen*	*Ressort pour caoutchouc*	*Resorte para goma*
	B4444000	**35**	*Molla a gas 40 Kg (L=300)*	*Gas spring 40 Kg (L=300)*	*Gasfeder 40 Kg (L=300)*	*Ressort à gaz 40 Kg (L=300)*	*Resorte a gas 40 Kg (L=300)*
	B4451000	**36**	*Perno Ø 20*	*Ø 20 pin*	*Zapfen Ø 20*	*Pivot Ø 20*	*Perno Ø 20*
	B5717000	**37**	*Fascetta stringitubo*	*Hose clamp*	*Rohrhalterklemme*	*Collier serre-tuyau*	*Abrazadera ajustatubo*
	B5818000	**38**	*Piede registrabile*	*Adjustable foot*	*Verstellbarer Fuß*	*Pied réglable*	*Pié regulable*
	B5871000	**39**	*Clips serie CX 35*	*Clips series CX 35*	*Clips der Serie CX 35*	*Clips sèrie CX 35*	*Clips serie CX 35*
	B6117000	**40**	*Anello di rasamento 22x30x0,5*	*22x30x0,5 shim adjusting ring*	*Zwischenlegring 22x30x0,5*	*Anneau de rasage 22x30x0,5*	*Anillo di rasamento 22x30x0,5*
	B9308000	**41**	*Inserto filettato M6*	*M6 threaded insert*	*Gewindeinsatz M6*	*Renfort fileté M6*	*Inserción fileteado M6*
	G108A3	**42**	*Leva con testina*	*Lever with head*	*Hebel mit Kopf*	*Levier avec tête*	*Palanca con cabeza*
	146525090	**43**	*Boccola*	*Bushing*	*Büchse*	*Douille*	*Casquillo*
	201459	**44**	*VTE M14x140*	*TE M14x140 screw*	*Schraube TE M14x140*	*Vis TE M14x140*	*Tornillo TE M14x140*
	228031	**45**	*Dado autobloccante basso M20*	*M20 low self-locking nut*	*Untere Selbstmutter M20*	*Écrou auto-bloquant bas M20*	*Tuerca autoblocante bajo M20*
	228041	**46**	*Dado autobloccante M22x1,5*	*M22x1,5 self-locking nut*	*Mutter selbstsperrend M22x1,5*	*Écrou auto-bloquant M22x1,5*	*Tuerca autoblocante M22x1,5*
	228305	**47**	*Dado biblock M14*	*M14 biblock nut*	*Biblock Mutter M14*	*Écrou biblock M14*	*Tuerca biblock M14*
	237064	**48**	*Rosetta tranciante*	*21x43x4 shear washer*	*Schneiderrosette 21x43x4*	*Rondelle tronçonneuse 21x43x4*	*Roseta cizalla 21x43x4*
	243010	**49**	*Seeger esterno 20*	*External seeger 20*	*Seeger aussen 20*	*Anneau de retenue extérieur 20*	*Seeger esterno 20*
	243013	**50**	*Seeger esterno 25*	*External seeger 25*	*Seeger aussen 25*	*Anneau de retenue extérieur 25*	*Seeger esterno 25*
	299030	**51**	*Ingrassatore 90° M6*	*90° M6 lubricator*	*Schmierer 90° M6*	*Graisseur 90° M6*	*Engrasador 90° M6*
	299123	**52**	*Ghiera*	*Ring nut*	*Nutmutter*	*Collier*	*Virola*
	305066	**53**	*Raccordo idraulico 1/4'*	*1/4' hydraulic union*	*Hydraulikanschluss 1/4'*	*Raccord hydraulique 1/4'*	*Conector hidráulico 1/4'*
	750410480	**54**	*Blocco supporto braccio*	*Arm support block*	*Block für Armshalterung*	*Bloc support bras*	*Bloqueo soporte brazo*
	750410830	**55**	*Perno*	*Pin*	*Zapfen*	*Pivot*	*Perno*
	750410840	**56**	*Guida per tubo*	*Guide for tube*	*Führung für Rohr*	*Guide pour touyaux*	*Guía para tubo*
	750410940	**57**	*Carter anteriore*	*Front guard*	*Vorderes Gehäuse*	*Carter antérieur*	*Cárter anterior*
	750410961	**58**	*Carter mobile*	*Mobile guard*	*Bewegliches Gehäuse*	*Carter mobile*	*Cárter móvil*
	750410970	**59**	*Lamiera*	*Plate*	*Blech*	*Tôle*	*Chapa*
	750410980	**60**	*Tubo*	*Pipe*	*Schlauch*	*Tuyau*	*Tubo*
	750411010	**61**	*Lamiera blocco gomma*	*Rubber block plate*	*Blech für Reifensblockierung*	*Tôle blocage pneu*	*Chapa bloqueo goma*
	750411030	**62**	*Insieme braccio intermedio*	*Intermediate arm assembly*	*Mittlerer Armsatz*	*Ensamblage bras intermédiaire*	*Ensamblado brazo intermedio*
	750411130	**63**	*Insieme braccio orizzontale*	*Horizontal arm assembly*	*Horizontalarmsatz*	*Ensamblage bras horizontal*	*Ensamblado brazo horizontal*

Tav.	Cod.	Pos.	Descrizione	Description	Beschreibung	Description	Descripción
	750411220	64	Gomma protezione	Protection rubber	Schutzgummi	Caoutchouc protection	Goma protección
	750411700	65	Insieme chiusura inferiore	Lower closing assembly	Unterer Verschlusssatz	Assemblage fermeture inférieur	Ensamblado cerrado inferior
	750411730	66	Insieme tubo pedana	Footboard tube assembly	Tritbrett Schlauchsatz	Assemblage tuyau marchepied	Ensamblado tubo taburete
	750411801	67	Insieme carter laterale	Lateral carter assembly	Seitlicher Gehäusesatz	Assemblage carter latéral	Ensamblado carter lateral
	750411910	68	Perno	Pin	Zapfen	Pivot	Perno
	750412190	69	Perno	Pin	Zapfen	Pivot	Perno
	750412250	70	Perno	Pin	Zapfen	Pivot	Perno
	750412750	71	Lamiera blocco gomma	Rubber block plate	Blech für Reifensblockierung	Tôle blocage pneu	Chapa bloqueo goma
	750414760	72	Insieme supporto braccio	Arm support assembly	Armträgersatz	Assemblage support bras	Conjunto soporte brazo
	750414810	73	Insieme perno braccio	Arm pin assembly	Satz von Armzapfen	Assemblage pivot bras	Conjunto perno brazo
	750414830	74	Insieme perno cilindro	Cylinder pin assembly	Zylinderszapfensatz	Ensemble pivot cylindre	Conjunto perno cilindro
	750414850	75	Perno filettato	Threaded pin	Gewindezapfen	Pivot fileté	Perno fileteado
	750414880	76	Perno di fulcro	Fulcrum pin	Zapfenfulcrum	Pivot point d'appui	Perno fulcro
	750414900	77	Perno di centraggio	Centring pin	Zentrierstift	Goujon de centrage	Perno de centraje
	750414910	78	Esagono per vite registro	Hex-nut for adjustment screw	Sechskant für Einstellsschraube	Hexagone pour vis de réglage	Hexágono para tornillo de ajuste
	750414970	79	Mezzaluna superiore	Upper semicircular block	Oberer halbkreisförmiger Block	Bloc semi-circulaire supérieur	Bloque semicircular superior
	750414990	80	Telaio	Frame	Rahmen	Châssis	Estructura
	750415060	81	Carter inferiore	Lower guard	Unteres Gehäuse	Carter inférieur	Cárter inferior
	750415070	82	Carter superiore	Upper guard	Oberes Gehäuse	Carter supérieur	Cárter superior
	750415080	83	Carter intermedio	Intermediate carter	Mittlere Gehäuse	Carter intermédiaire	Cárter intermedio
	750490040	84	Gruppo boccola	Bushing unit	Buchsesatz	Groupe douille	Grupo casquillo
	750490580	85	Barra filettata con volantino	Threaded bar with handwheel	Gewindestange mit Handrad	Barre filetée avec volant	Barra roscada con volante
	750414920	86	Barra filettata	Threaded bar	Gewindestange	Barre filetée	Barra fileteada
	B4845000	87	Volantino con maniglia	Handwheel with handle	Handrad mit Griff	Volant à main avec poignée	Volantín con manija
	599465	88	Spiralite	Spiral wire containment cable	Spiralenleitung für Kabeleindämmung	Spirale porte-câble	Porta-cable de espiral
	750412760	89	Supporto inverter (variante con inverter)	Inverter support (version with inverter)	Frequenumformer Halterung	Support variateur	Soporte inversor (versión con inversor)
	206012	90	VTCEI M6x10 (variante con inverter)	TCEI M6x10 screw (version with inverter)	Schraube TCEI M6x10 (Version mit Inverter)	Vis TCEI M6x10 (version avec inverseur)	Tornillo TCEI M6x10 (versión con inversor)
	220072	91	Vite autofilettante 6,3x16 (variante con inverter)	6,3x16 screw (version with inverter)	Schraube 6,3x16 (Version mit Inverter)	Vis 6,3x16 (version avec inverseur)	Tornillo 6,3x16 (versión con inversor)
	B6131000	92	Clips serie cx 21 (variante con inverter)	Clips series cx 21 (version with inverter)	Clips der Serie cx 21 (Version mit Inverter)	Clips sèrie cx 21 (version avec inverseur)	Clips serie cx 21 (versión con inversor)
	206194	93	VTCEI m4x16 (variante con inverter)	TCEI M4x16 screw (version with inverter)	Schraube TCEI M4x16 (Version mit Inverter)	Vis TCEI M4x16 (version avec inverseur)	Tornillo TCEI M4x16 (versión con inversor)

Tav.	*Cod.*	*Pos.*	*Descrizione*	*Description*	*Beschreibung*	*Description*	*Descripción*
	236025	**94**	*Rosetta d. 4,3x9x0,8 (variante con inverter)*	*D. 4,3x9x0,8 washer (version with inverter)*	*Rosette d. 4,3x9x0,8 (Version mit Inverter)*	*Rondelle d. 4,3x9x0,8 (version avec inverseur)*	*Roseta d. 4,3x9x0,8 (versión con inversor)*
	228023	**95**	*Dado autobloccante M4 (variante con inverter)*	*M4 self-locking nut (version with inverter)*	*Mutter selbstsperrend M4 (Version mit Inverter)*	*Écrou auto-bloquant M4 (version avec inverseur)*	*Tuerca autoblocante M4 (versión con inversor)*
	750415050	**96**	*Supporto scatole elettriche*	*Electric boxes support*	*Halterung für Schaltkästen*	*Support boites électriques*	*Soporte cajas eléctricas*

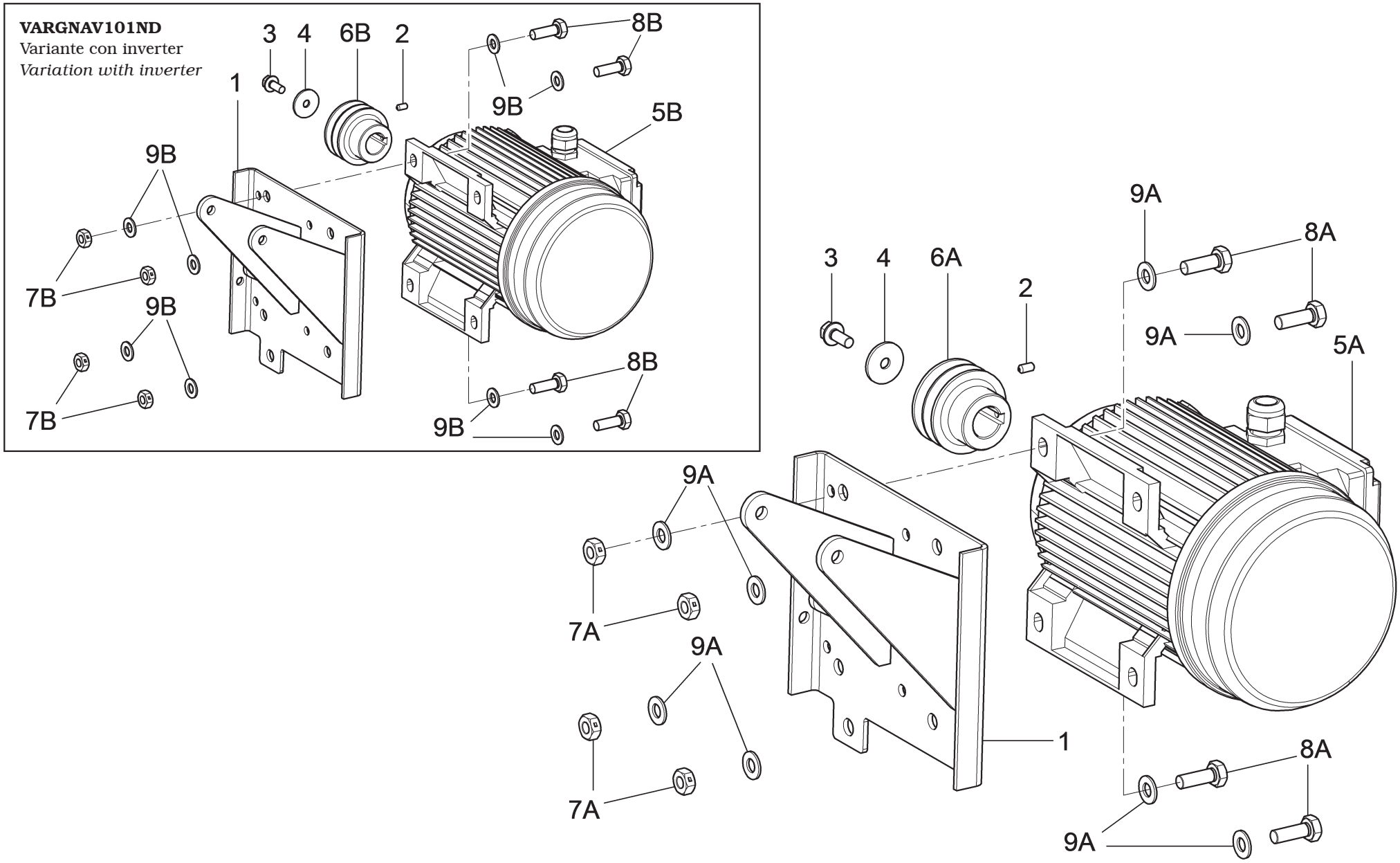


RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		GRUPPO RIDUTTORE AUTOCENTRANTE SELFCENTERING REDUCTION UNIT UNTERSETZENSATZ AUTOZENTRIERT GROUPE REDUCTEUR AUTOCENTREUR GRUPO REDUCTOR AUTOCENTRANTE	Pag. 8 di 27
	Tavola N°2 - Rev. 0	750490111		GTB16EVO

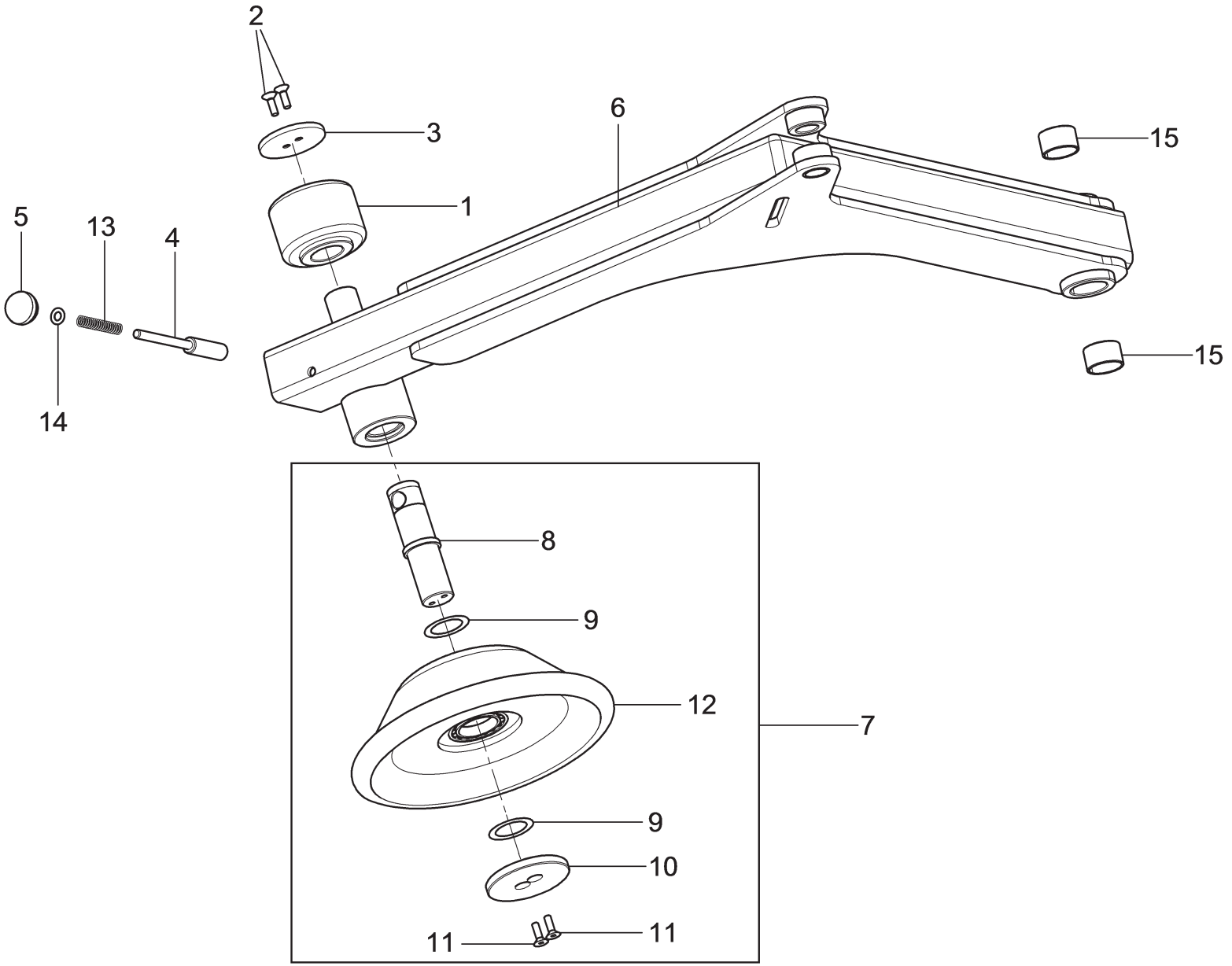


RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*GRUPPO GRIFFA AUTOCENTRANTE* *SELF-CENTERING JAW UNIT* *SELBSTZENTRIERENDES KLAUESATZ* *GROUPE GRIFFE AUTOCENTREURE* *GRUPO GANCHO AUTOCENTRANTE*	***Pag. 9 di 27***
	Tavola N°3 - Rev. 0	**750390641**		**GTB16EVO**

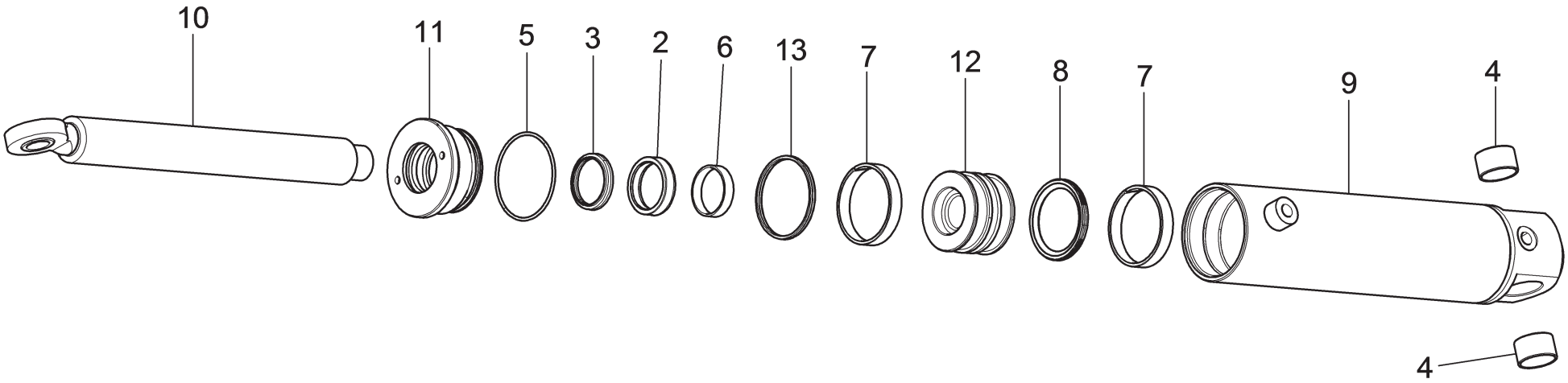
VARGNAV101ND
Variante con inverter
Variation with inverter



RAVAGLIOLI S.p.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*GRUPPO SELLA CON MOTORE SADDLE UNIT WITH MOTOR SATTELSATZ MIT MOTOR GROUPE SELLE AVEC MOTEUR GRUPO MONTURA CON MOTOR*	***Pag. 10 di 27***
	Tavola N°4 - Rev. 0	**750490221**		**GTB16EVO**

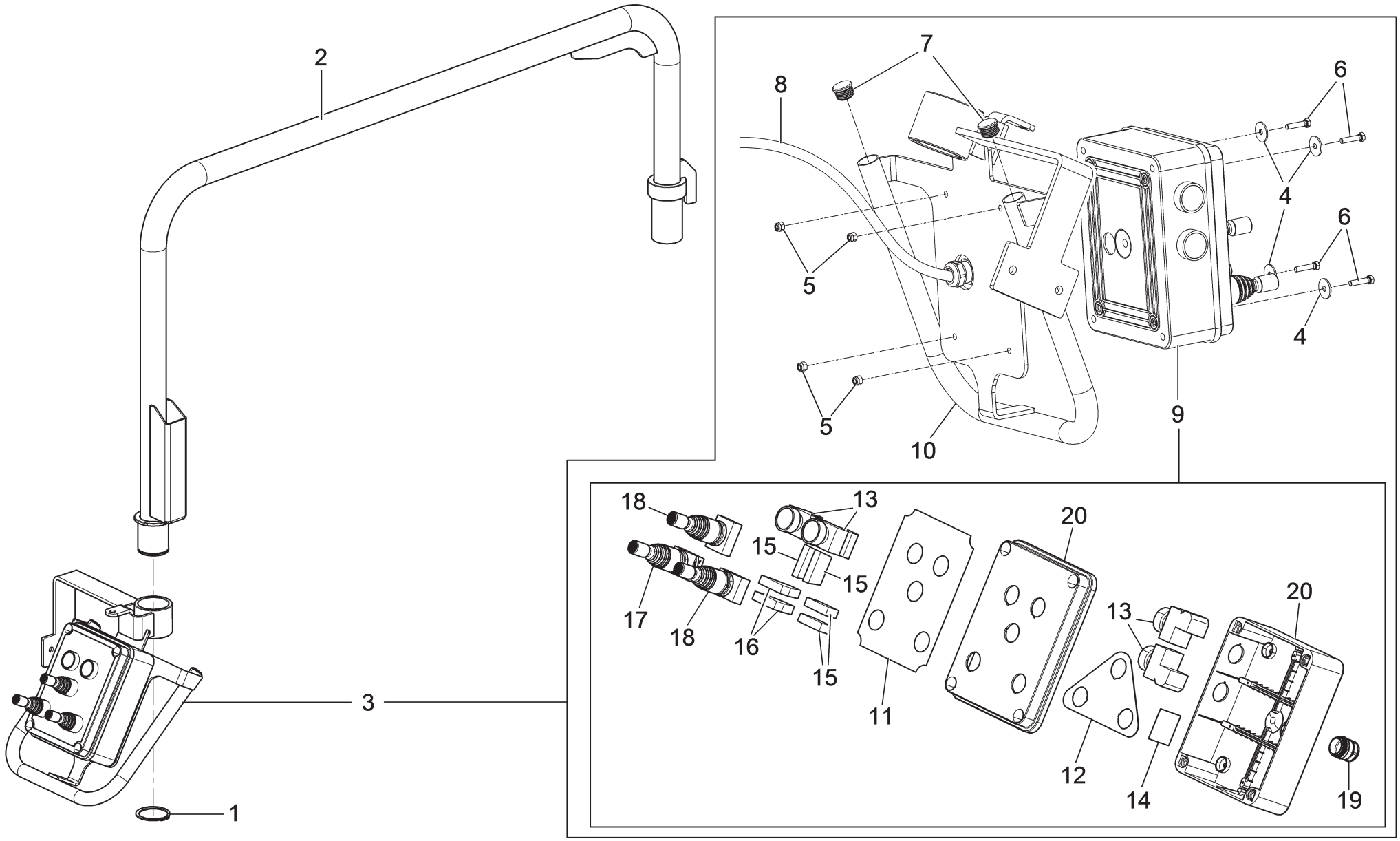


RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*GRUPPO BRACCIO STALLONATORE ANTERIORE* *FRONT BEAD BREAKER ARM UNIT* *HINTERER ABDRÜCKARMSATZ* *GROUPE BRAS DÉCOLLE TALONS ANTÉRIEUR* *GRUPO BRAZO DESTALONADOR ANTERIOR*	***Pag. 11 di 27***
	Tavola N°5 - Rev. 0	**750490560**		**GTB16EVO**

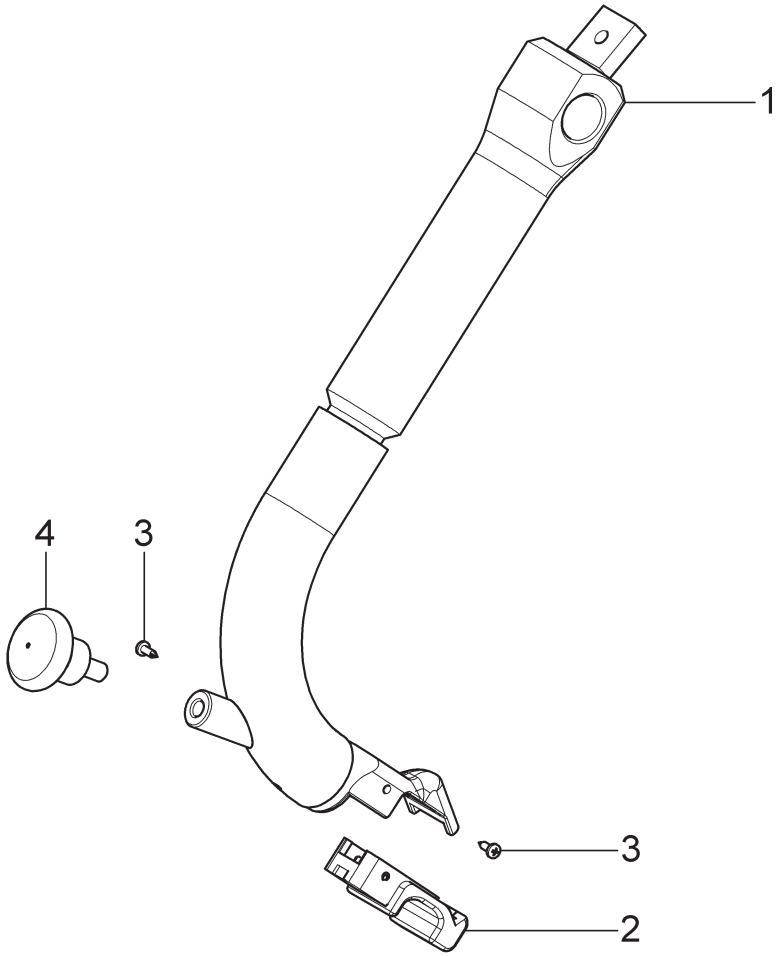


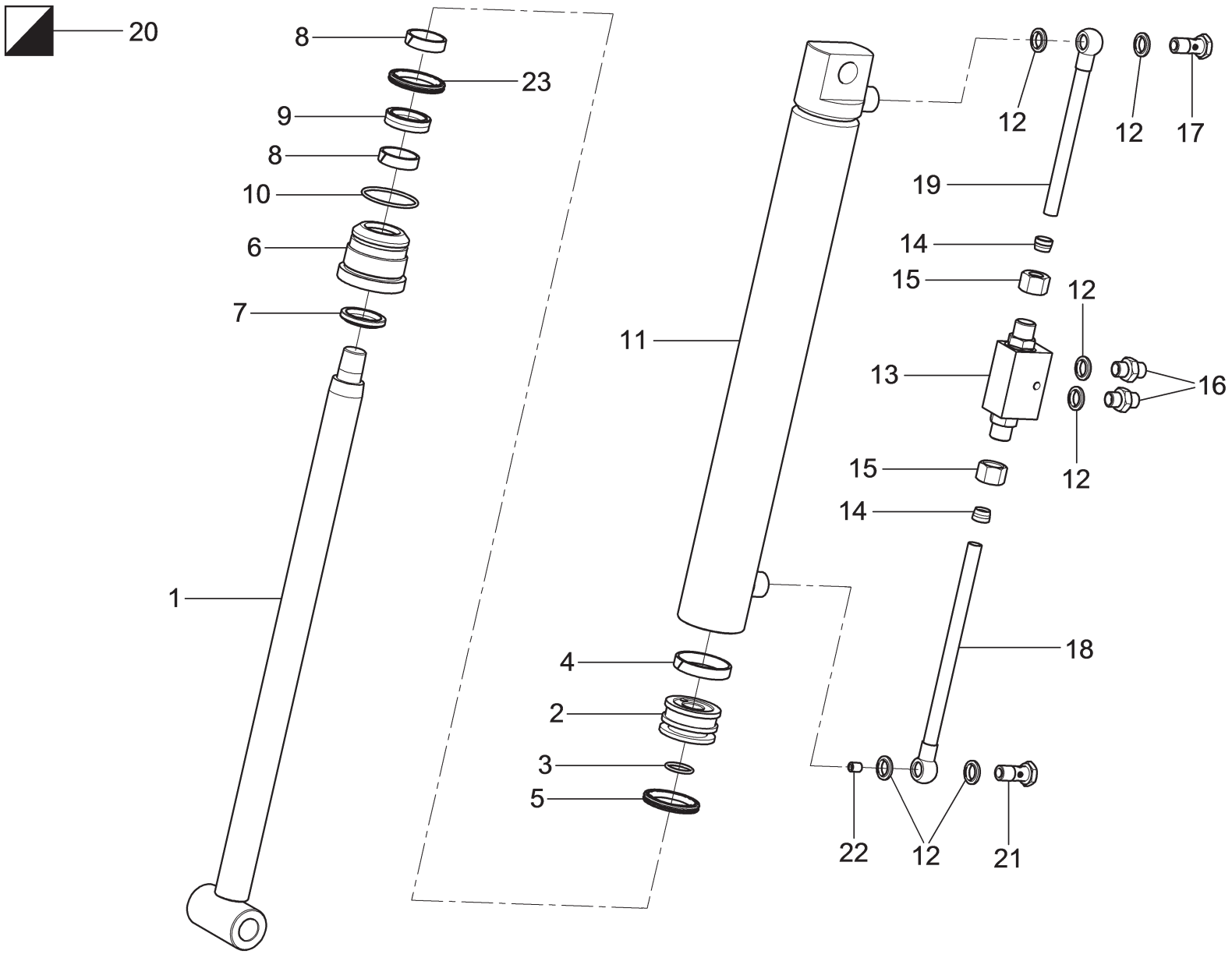
1

RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*CILINDRO BRACCIO SUPERIORE* *UPPER ARM CYLINDER* *ZYLINDER DES OBERARMS* *CYLINDRE BRAS SUPÉRIEUR* *CILINDRO BRAZO SUPERIOR*	***Pag. 12 di 27***
	Tavola N°6 - Rev. 0	**750490011**		**GTB16EVO**

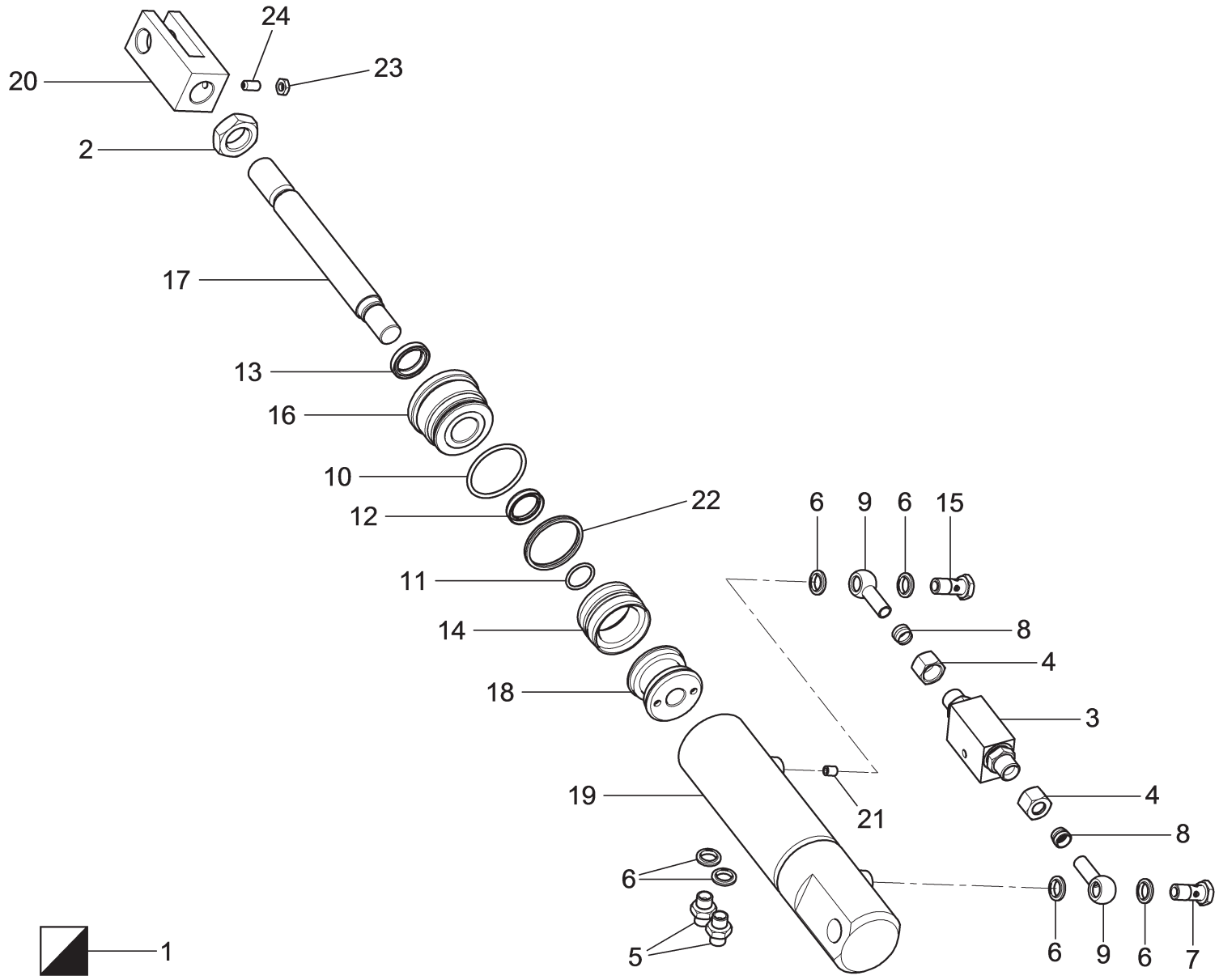


RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*GRUPPO TUBO CON COMANDI* *PIPE WITH CONTROLS UNIT* *SCHLAUCHSATZ MIT STEUERUNGEN* *GROUPE TUYAU AVEC COMMANDES* *GRUPO TUBO CON MANDOS*	***Pag. 13 di 27***
	Tavola N°7 - Rev. 0	**750490650**		**GTB16EVO**

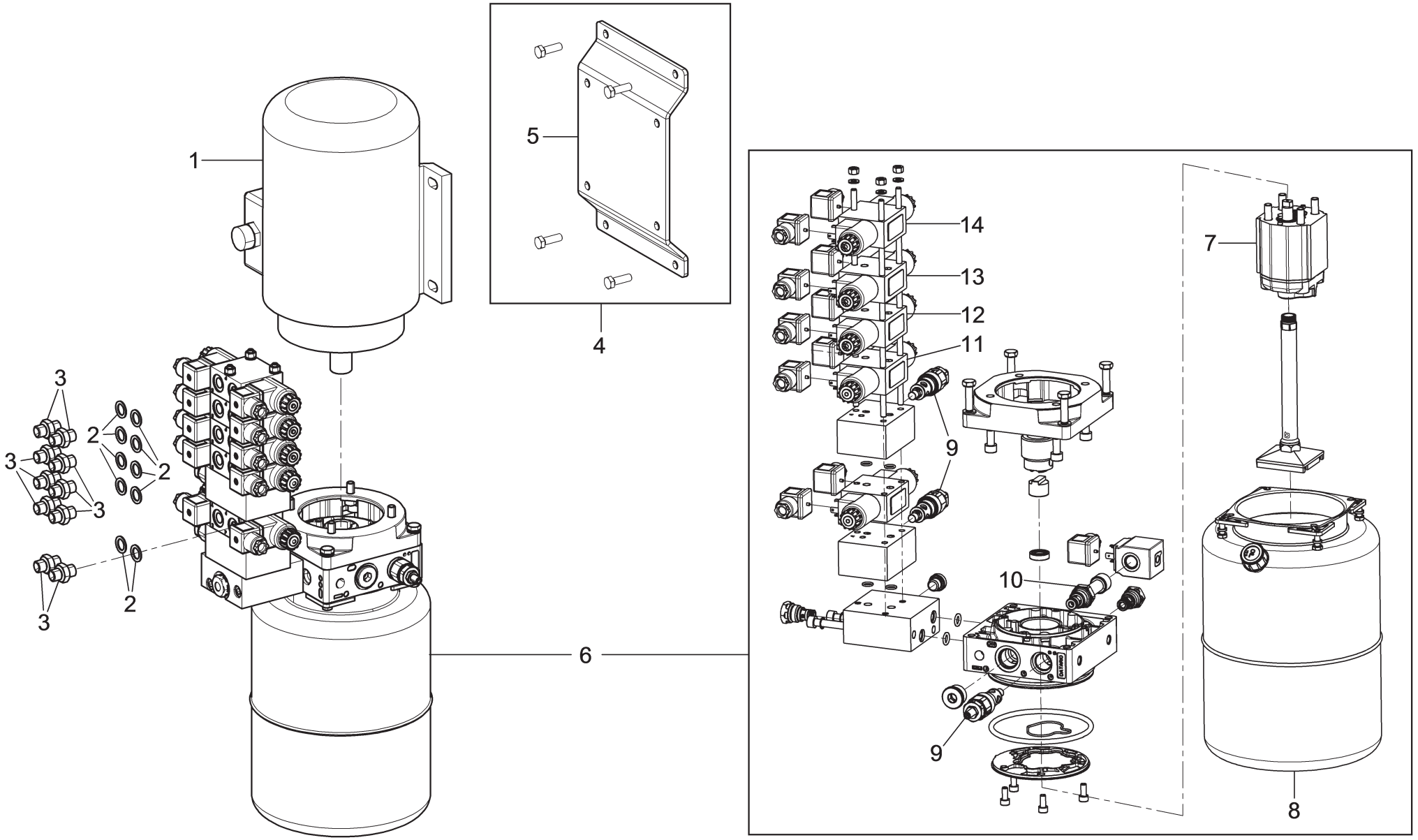

1
4
3
3
2



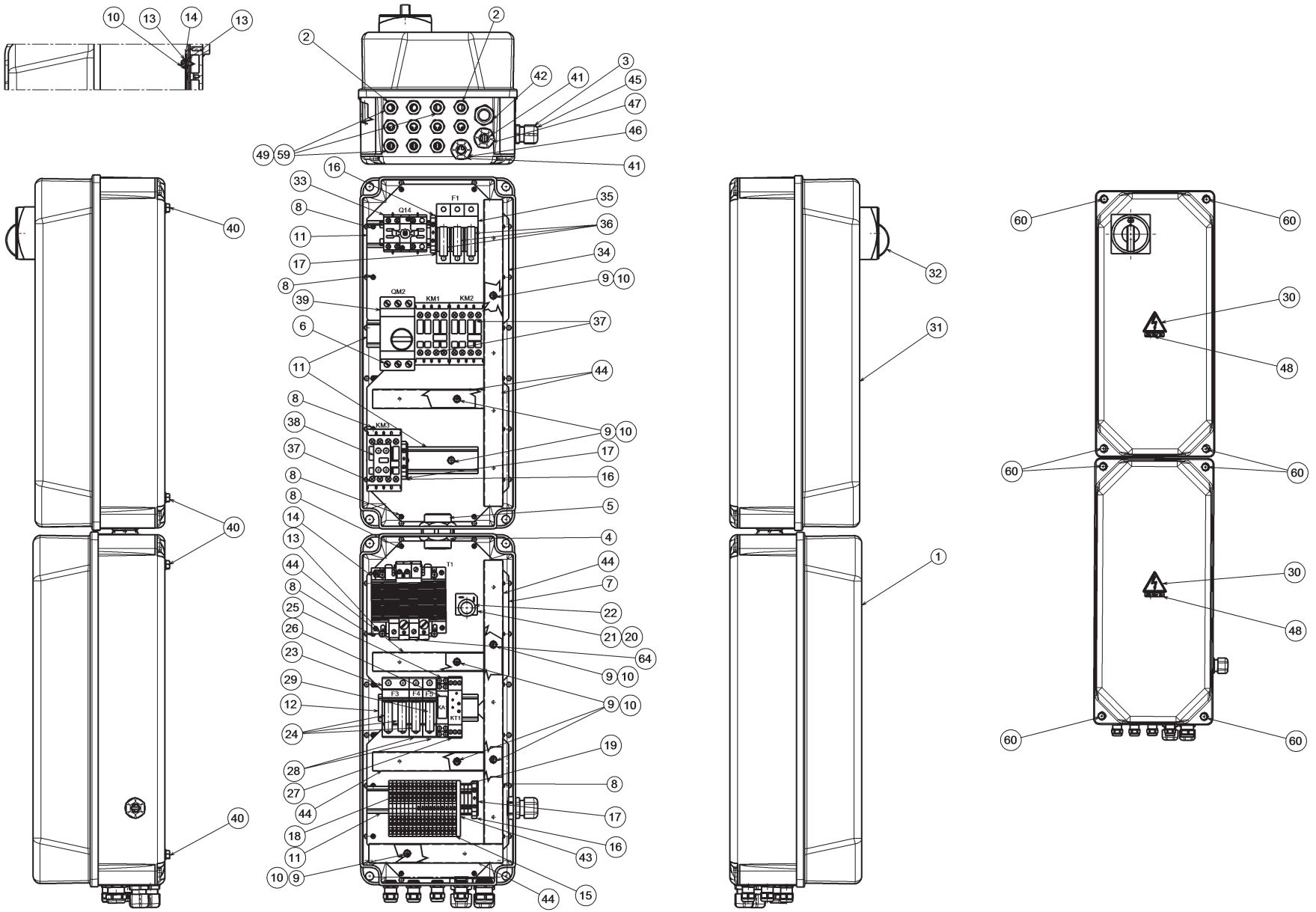
RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		CILINDRO IDRAULICO 50 30 400 50 30 400 HYDRAULIC CYLINDER HYDRAULIKZYLINDER 50 30 400 CYLINDRE HYDRAULIQUE 50 30 400 CILINDRO HIDRÁULICO 50 30 400	Pag. 15 di 27
	Tavola N°9 - Rev. 0	750490200		GTB16EVO



RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		CILINDRO IDRAULICO 55 101 25 55 101 25 HYDRAULIC CYLINDER HYDRAULIKZYLINDER 55 101 25 CYLINDRE HYDRAULIQUE 55 101 25 CILINDRO HIDRÁULICO 55 101 25	Pag. 16 di 27
	Tavola N°10 - Rev. 0	750490240		GTB16EVO

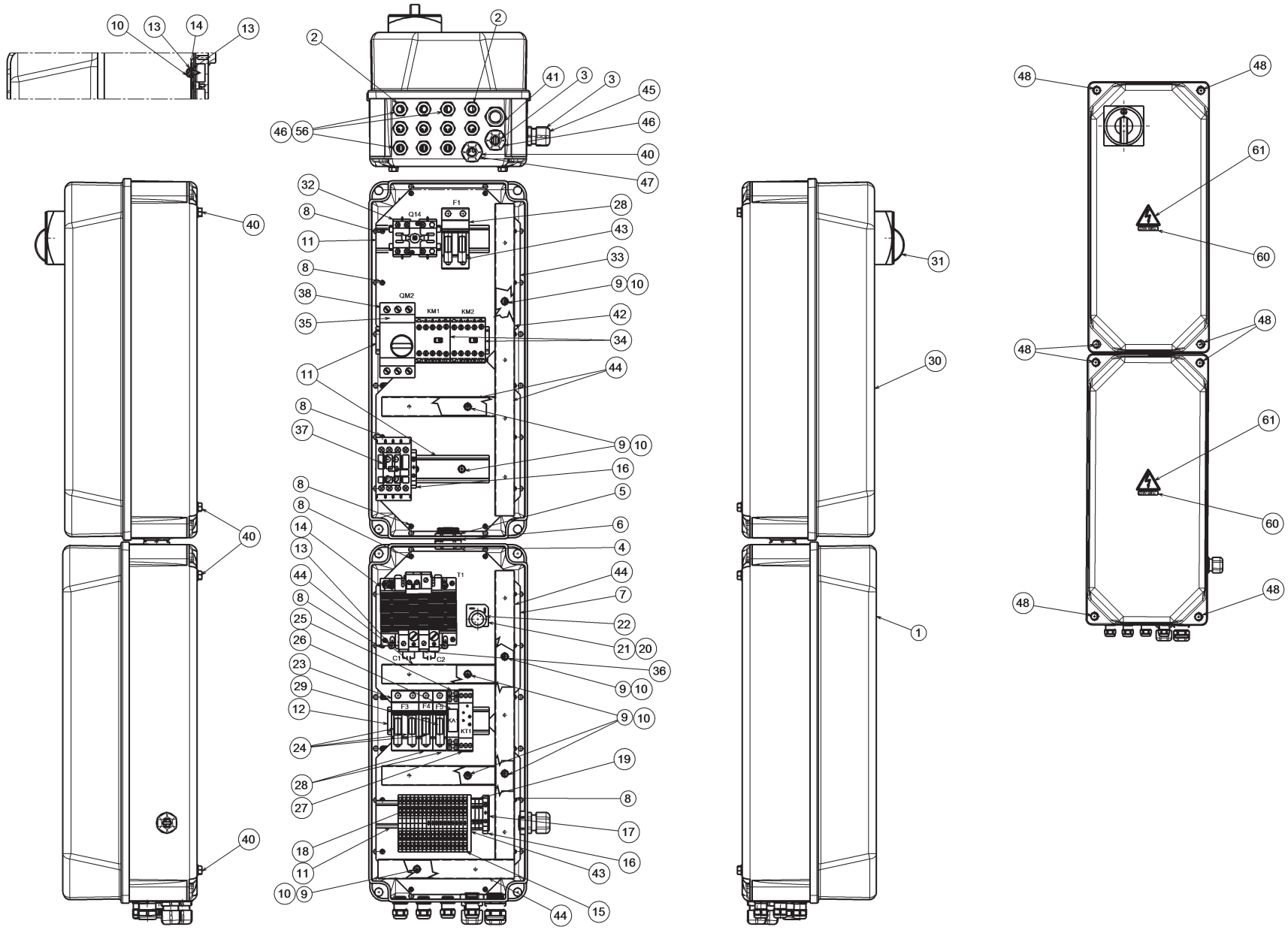


RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*GRUPPO UNITÀ OLEODINAMICA* *HYDRAULIC UNIT* *ÖLDYNAMISCHE EINHEIT SATZ* *GROUPE UNITÉ OLÉOHYDRAULIQUE* *GRUPO UNIDAD OLEODINÁMICA*	***Pag. 17 di 27***
	Tavola N°11 - Rev. 0	**750490660**		**GTB16EVO**

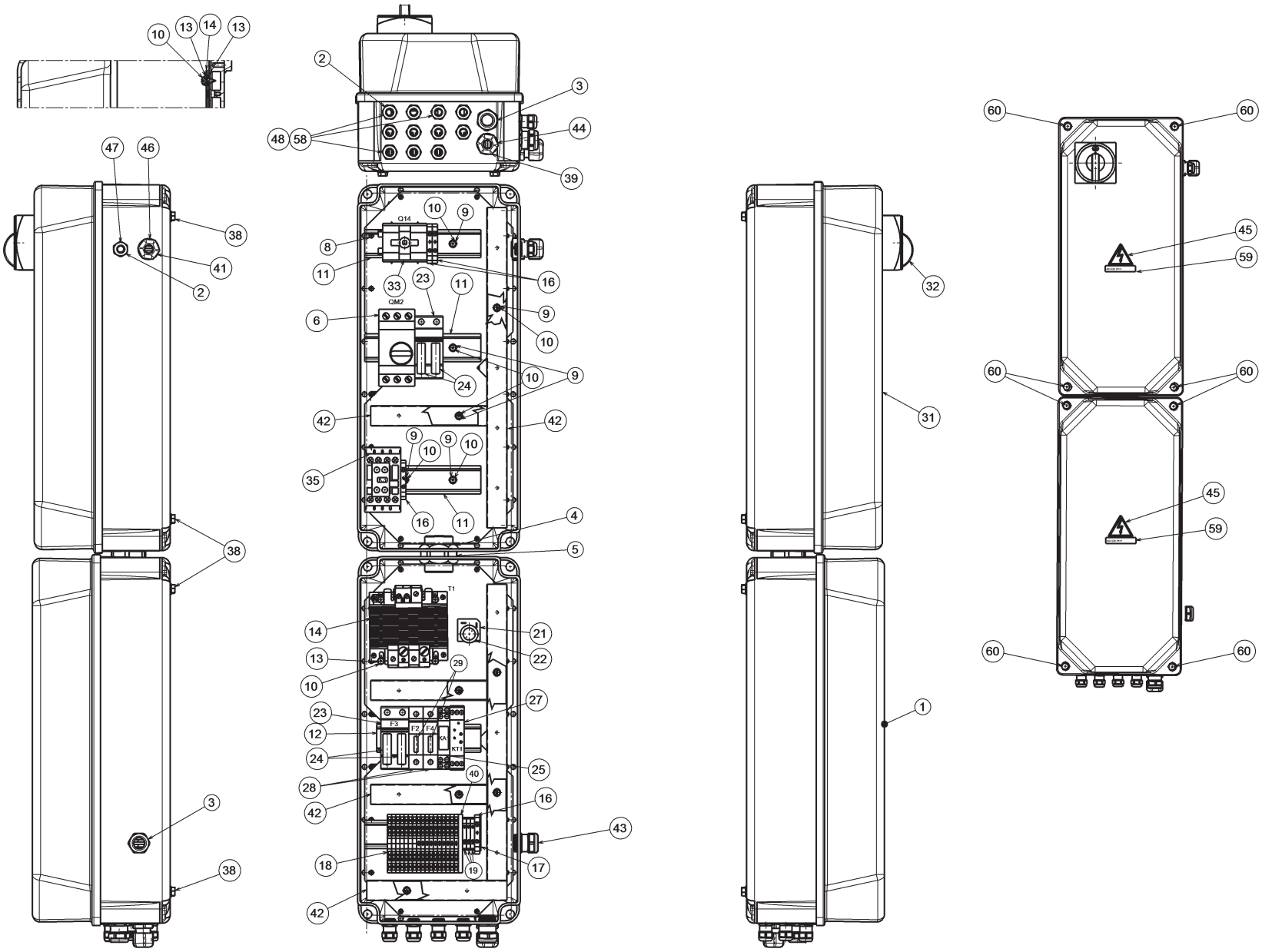


RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*QUADRO ELETTRICO* *ELECTRIC CABINET* *SCHALTPULT* *TABLEAU ÉLECTRIQUE* *CUADRO ELÉCTRICO*	***Pag. 18 di 27***
	Tavola N°12A - Rev. 0	**750403001**		**GTB16EVO**

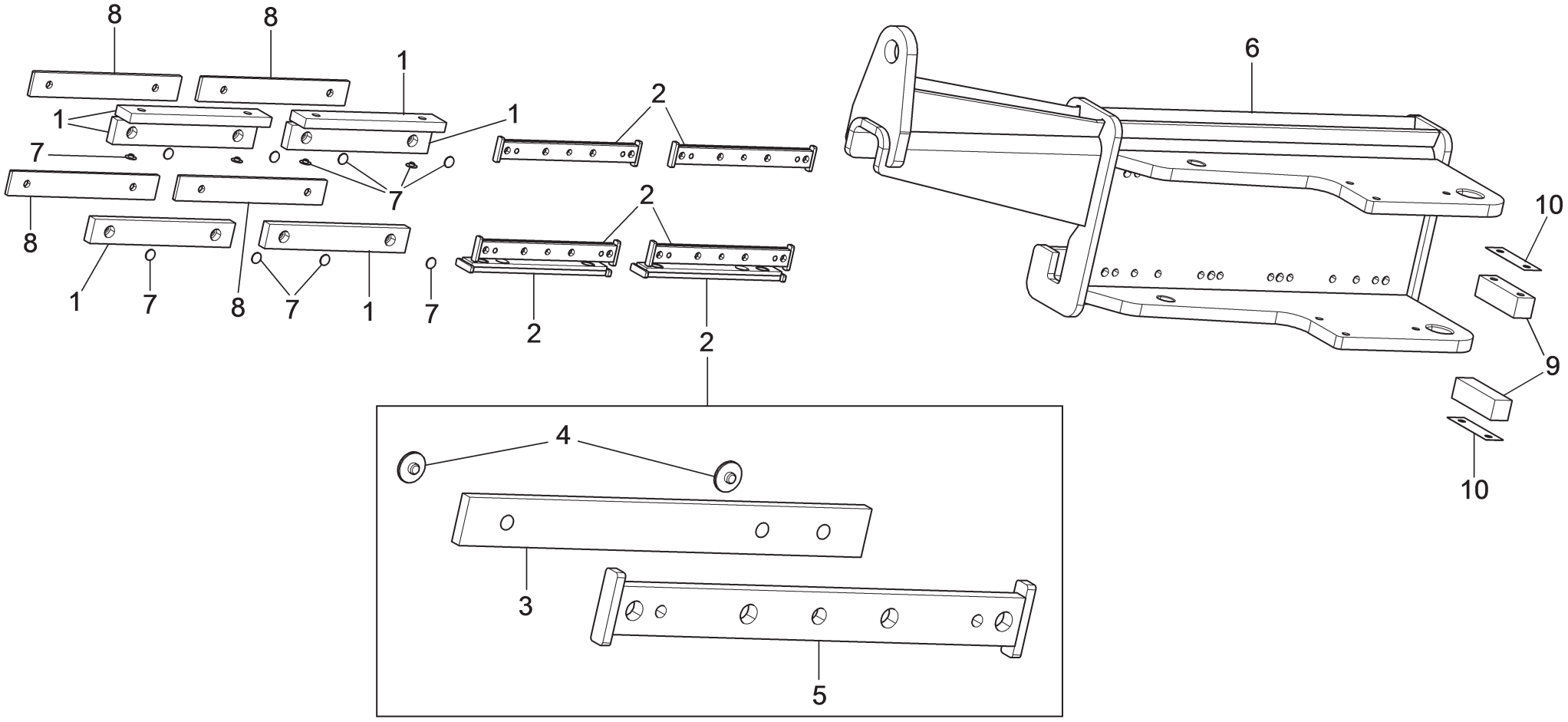
7504-R002-0_R



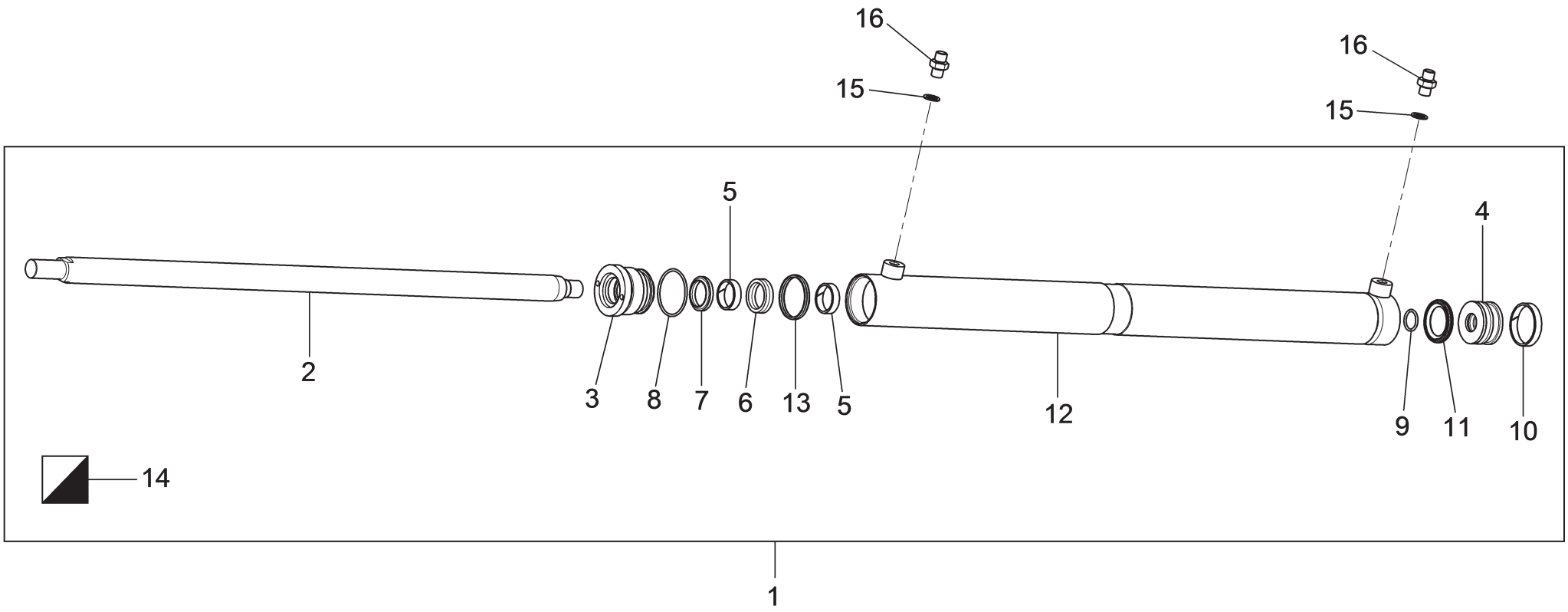
RAVAGLIOLI S.p.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*QUADRO ELETTRICO (VARIANTE 220V 60HZ 1PH) ELECTRIC CABINET (220V 60HZ 1PH VERSION) SCHALTPULT (220V 60HZ 1PH VERSION) TABLEAU ÉLECTRIQUE (VERSION 220V 60HZ 1PH) CUADRO ELÉCTRICO (VERSIÓN CON INVERSOR)*	***Pag. 19 di 27***
	Tavola N°12B - Rev. 0	**750403051**		**GTB16EVO**



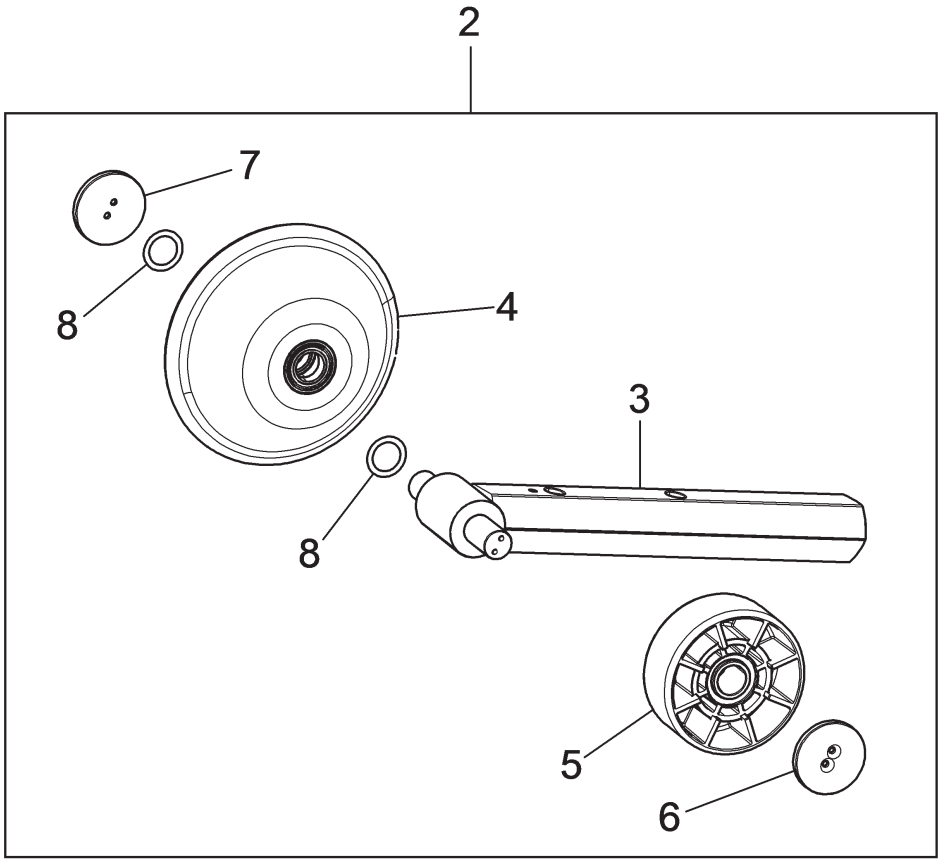
RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*QUADRO ELETTRICO INVERTER (VARIANTE CON INVERTER)* *INVERTER ELECTRICAL PANEL (VARIATION WITH INVERTER)* *SCHALTTAFEL DES FREQUENZUMFORMERS (ABART MIT INVERTER)* *TABLEAU ÉLECTRIQUE VARIATEUR (VARIANTE AVEC VARIATEUR)* *TABLERO ELÉCTRICO INVERSOR (VARIANTE CON INVERSOR)*	***Pag. 20 di 27***
	Tavola N°12C - Rev. 0	**750403041**		**GTB16EVO**

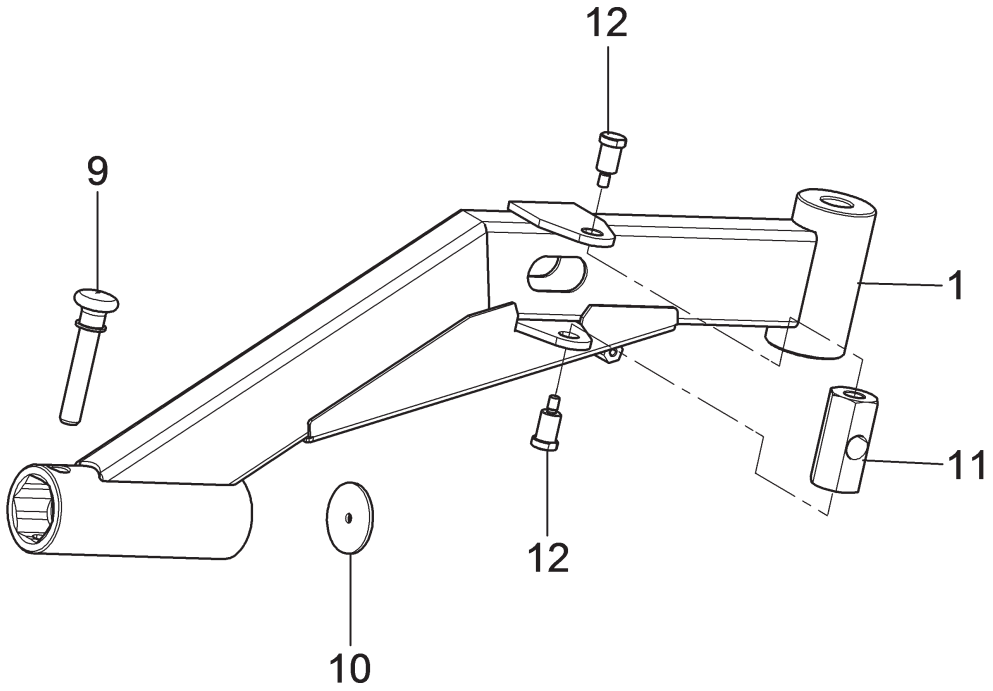


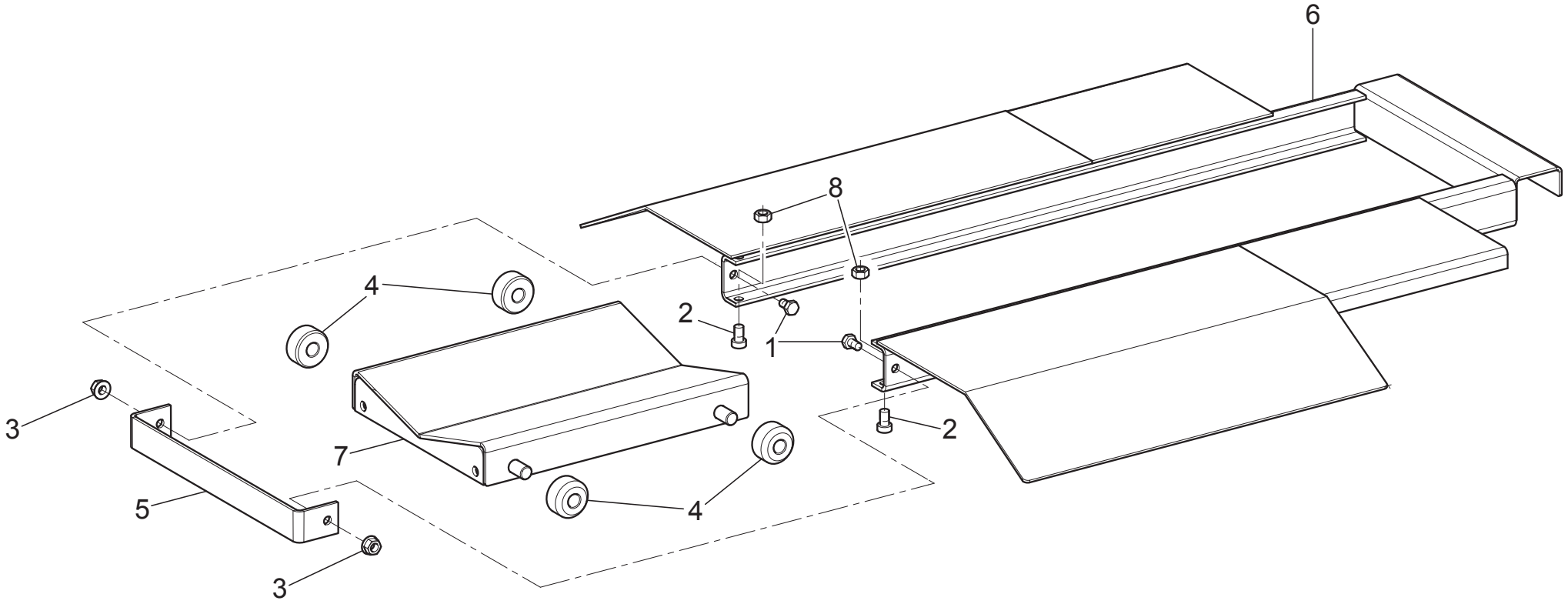
RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*GRUPPO CARRO CON PATTINI* *CARRIAGE WITH SLIDING BLOCKS UNIT* *WAGENSATZ MIT SCHLITTENEN* *GROUPE CHARIOT AVEC PATINES* *GRUPO CARRO CON PATINES*	***Pag. 21 di 27***
	Tavola N°13 - Rev. 0	**750490570**		**GTB16EVO**



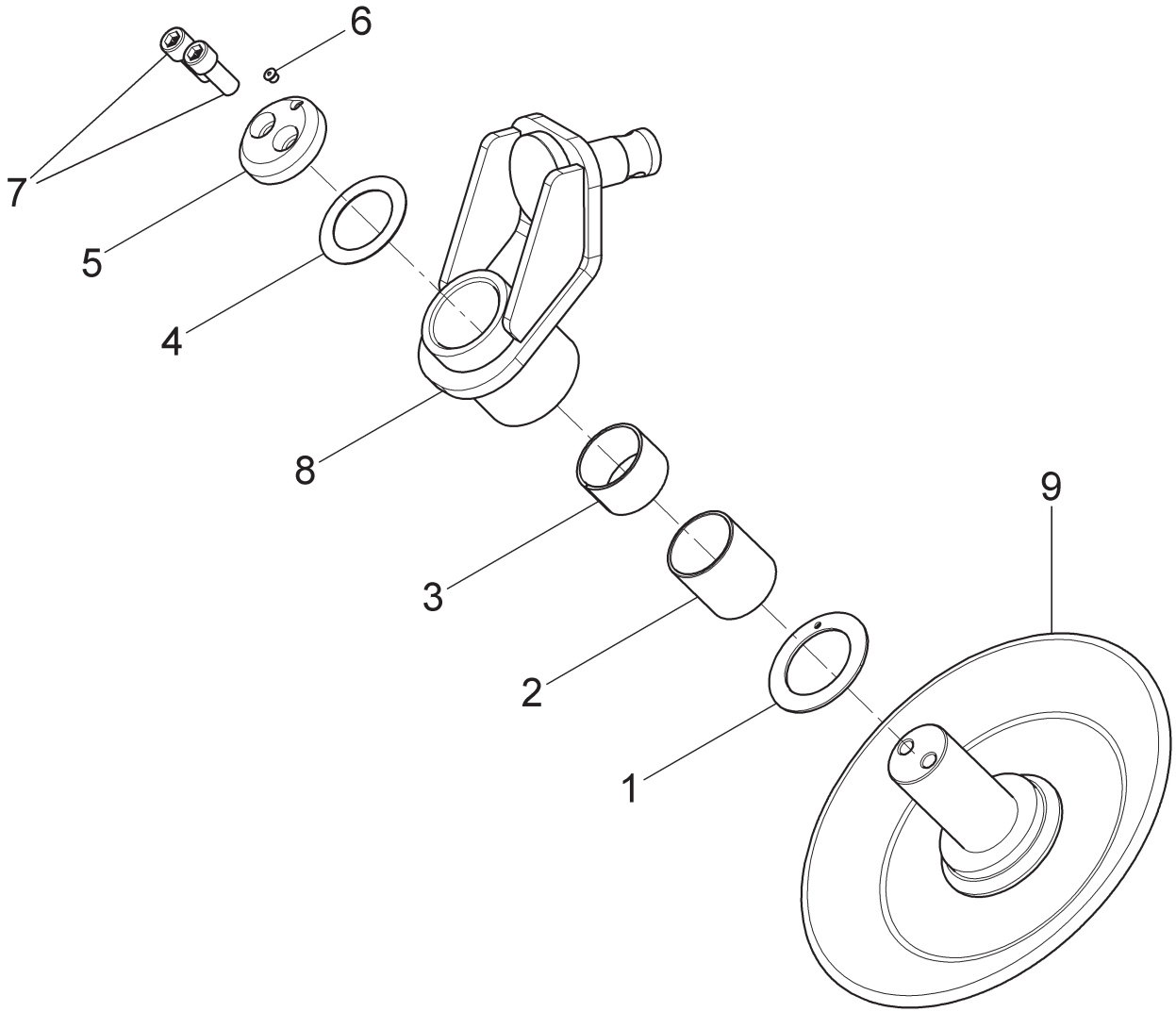
RAVAGLIOLI S.p.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*CILINDRO IDRAULICO CON RACCORDI HYDRAULIC CYLINDERS WITH FITTINGS HYDRAULIKZYLINDER MIT ANSCHLUSSEN CYLINDRE HYDRAULIQUE AVEC RACCORDS CILINDRO HIDRÁULICO CON CONECTORES*	***Pag. 22 di 27***
	Tavola N°14 - Rev. 0	**750490620**		**GTB16EVO**


2
7
8
4
3
8
5
6

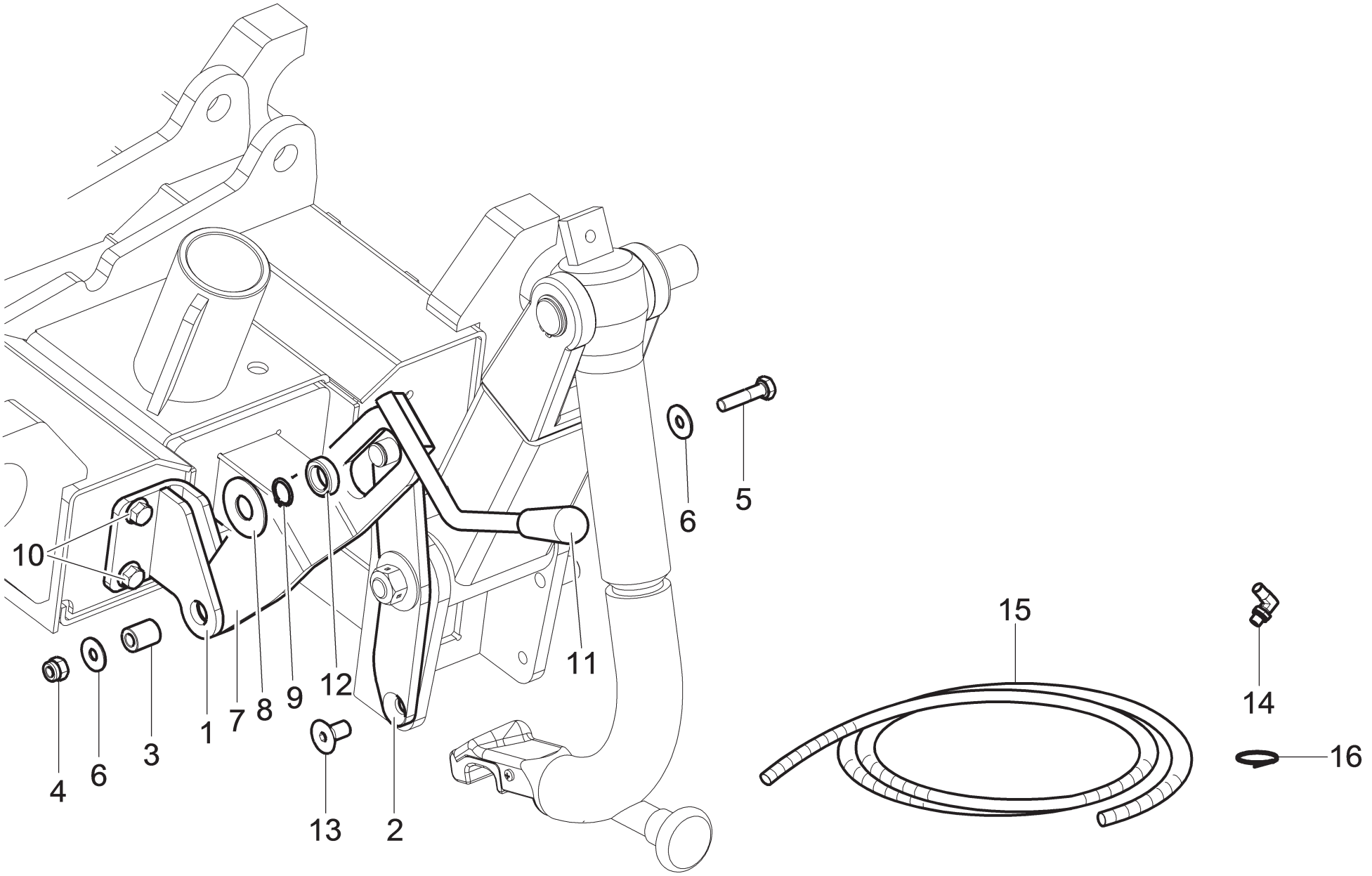

12
9
1
11
12
10



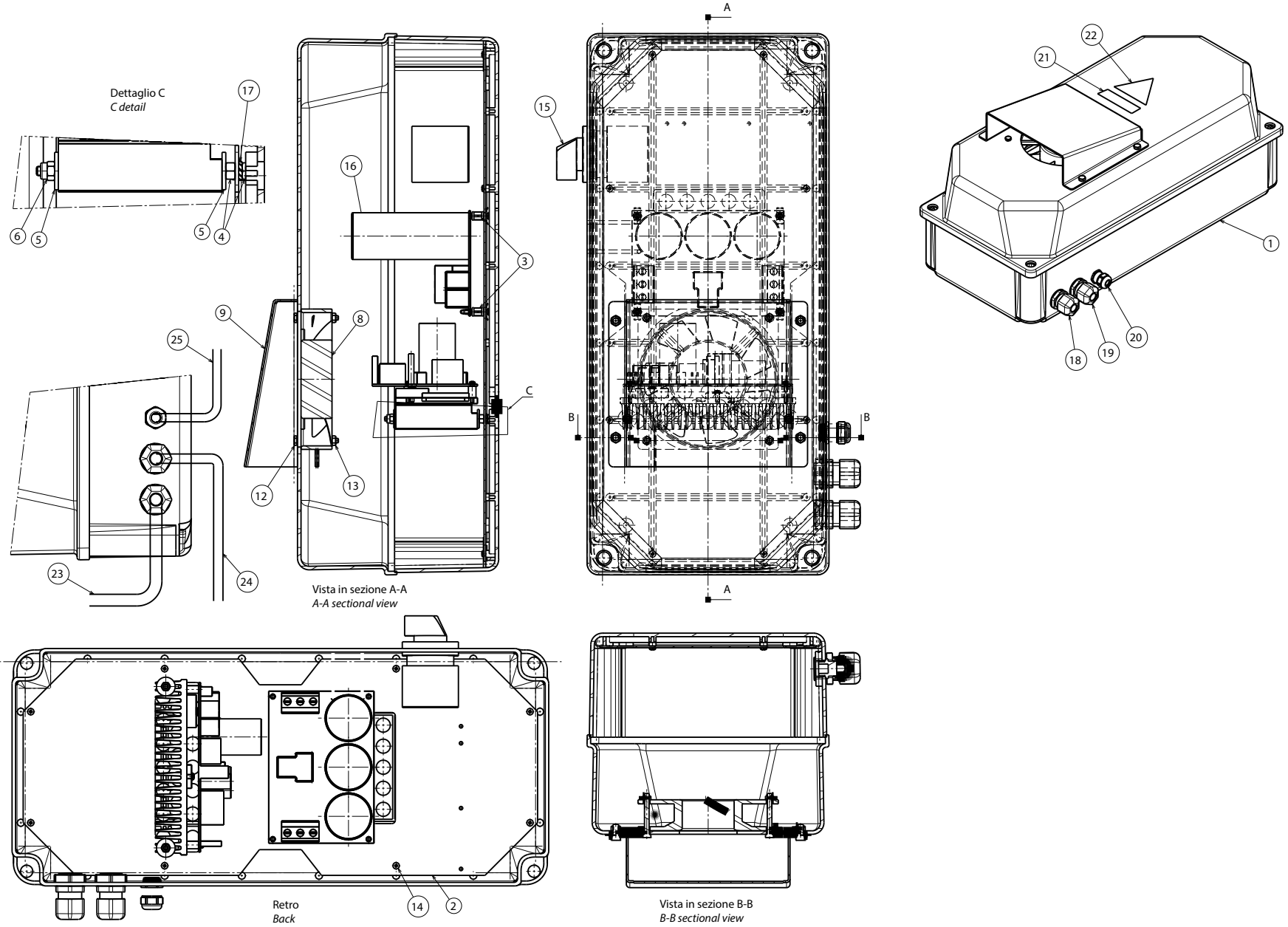
RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*GRUPPO PEDANA MOBILE* *MOBILE FOOTBOARD UNIT* *BEWEGLICHER TRITTBRETTSATZ* *GROUPE MARCHEPIED MOBILE* *GRUPO TABURETE MÓVIL*	***Pag. 24 di 27***
	Tavola N°16 - Rev. 0	**750490160**		**GTB16EVO**



RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*GRUPPO DISCO CERCHIETTI (OPTIONAL)* *BEAD WIRES DISK UNIT (OPTIONAL)* *WULSTKERNEN SCHEIBESATZ (OPTIONAL)* *GROUPE DISQUE TRINGLES DE TALON (OPTION)* *GRUPO DISCO ALAMBRES DE TALÓN (OPCIÓN)*	***Pag. 25 di 27***
	Tavola N°17 - Rev. 0	**G108A24**		**GTB16EVO**



RAVAGLIOLI S.p.A.	LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS		*KIT LEVA POSIZIONAMENTO BRACCI (OPTIONAL)* *ARM POSITIONING LEVER KIT (OPTIONAL)* *HEBELSET FÜR ARMSSTELLUNG (OPTIONAL)* *KIT LEVIER POSITIONNEMENT BRAS (OPTION)* *KIT PALANCA POSICIONAMIENTO BRAZOS (OPCIÓN)*	***Pag. 26 di 27***
	Tavola N°18 - Rev. 0	**G108A42**		**GTB16EVO**



RAVAGLIOLI S.p.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*INSIEME MTG CASSETTA ELETTRICA CON INVERTER (VARIANTE CON INVERTER) ELECTRICAL BOX MTG ASSEMBLY WITH INVERTER (VARIATION WITH INVERTER) SATZ MTG ELEKTRISCHEKISTE MIT INVERTER (ABART MIT INVERTER) ASSEMBLAGE MTG BOITIER ÉLECTRIQUE AVEC INVERSEUR (VARIANTE AVEC VARIATEUR) CONJUNTO MTG CAJITA ELECTRICA CON INVERSOR (VARIANTE CON INVERSOR)*	***Pag. 27 di 27***
	Tavola N°19 - Rev. 0	**750490340**		**GTB16EVO**

7504-R002-0_R