ENGINEERING and MARKETING S.P.A.

7503-M002-7_B

NAV26HW
NAV26HW.S
NAV26HW.ST

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:

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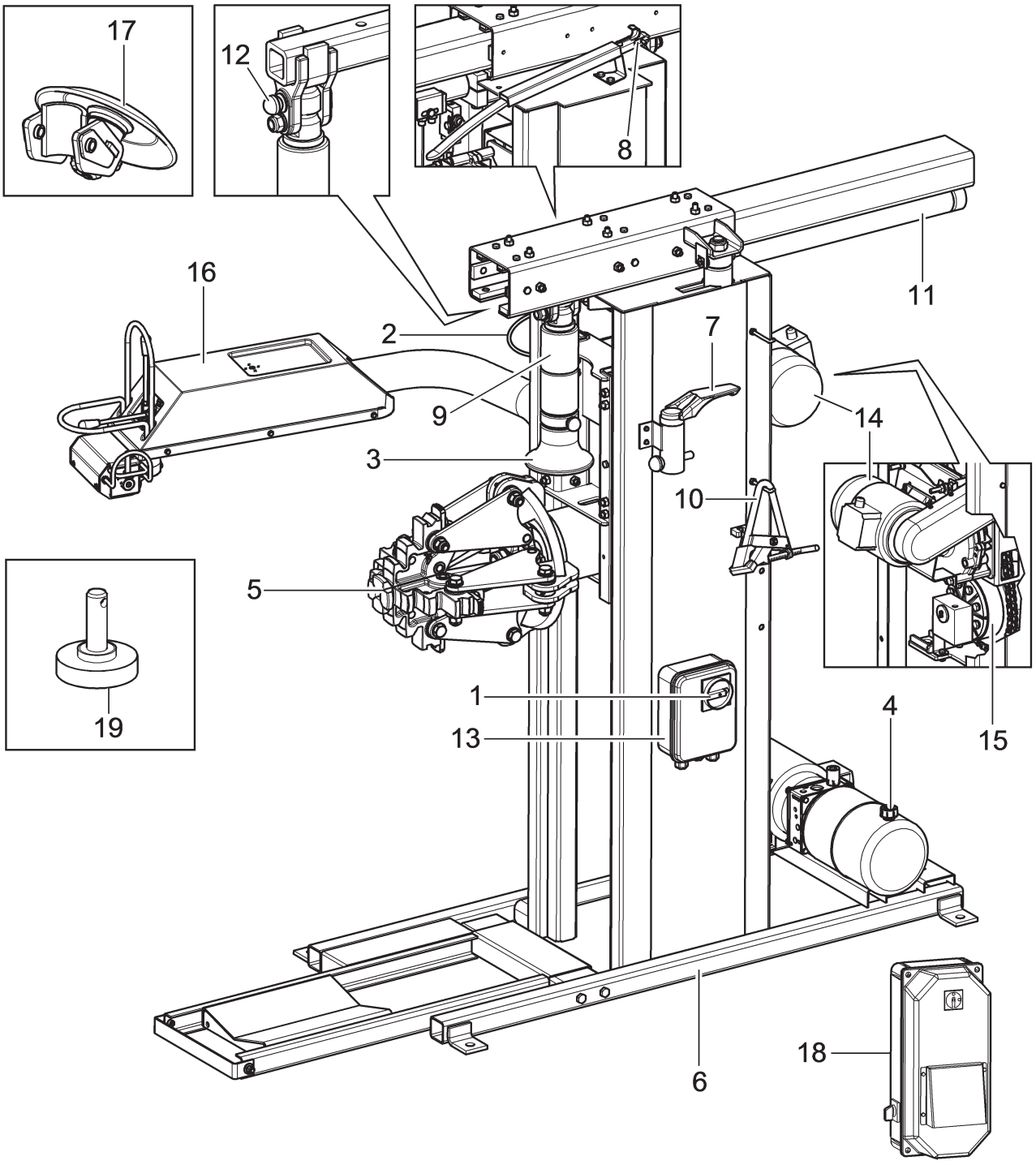
7503-M002-7_B - Rev. n. 7 (01/2017)

SUMMARY

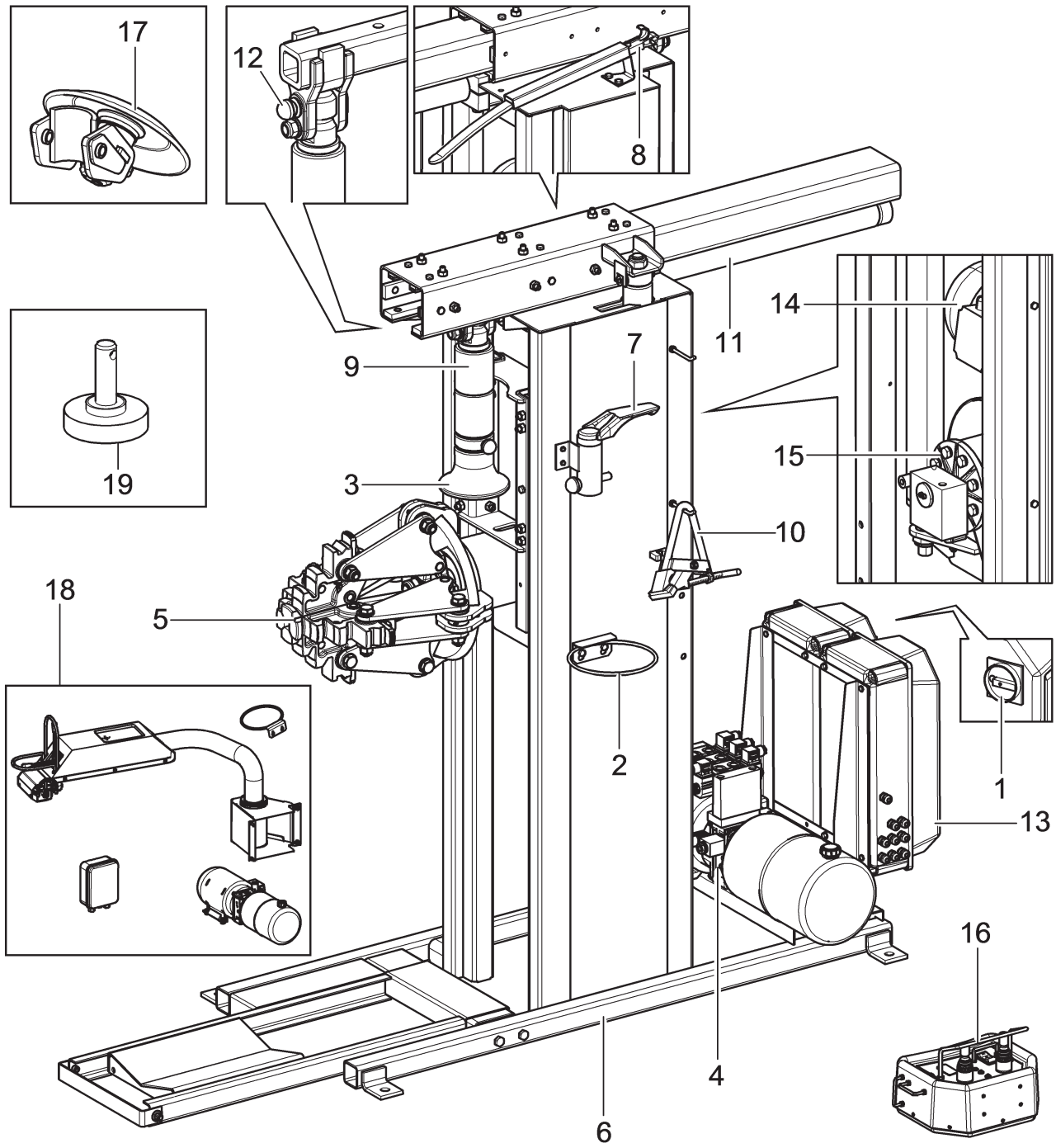
FIG. 1 - NAV26HW



KEY

1 - Main switch
2 - Grease holder ring
3 - Bead breaker roll
4 - Oil-pressure power unit
5 - Self-centring chuck
6 - Frame
7 - Bead breaker hook tool
8 - Demounting/mounting lever
9 - Bead breaker roll holder arm
10 - Grippers for alloy rims (on demand)
11 - Bead breaker tool/roll translation cylinder
12 - Tool holder arm locking pin
13 - Electric panel
14 - Mandrel rotation motor
15 - Mandrel opening/closing cylinder
16 - Control unit
17 - Bead breaker disc (G108A22, on demand)
18 - Assembly electrical box with inverter (version with inverter)
19 - Roll unit with bead wires

FIG. 2 - NAV26HW.S



KEY

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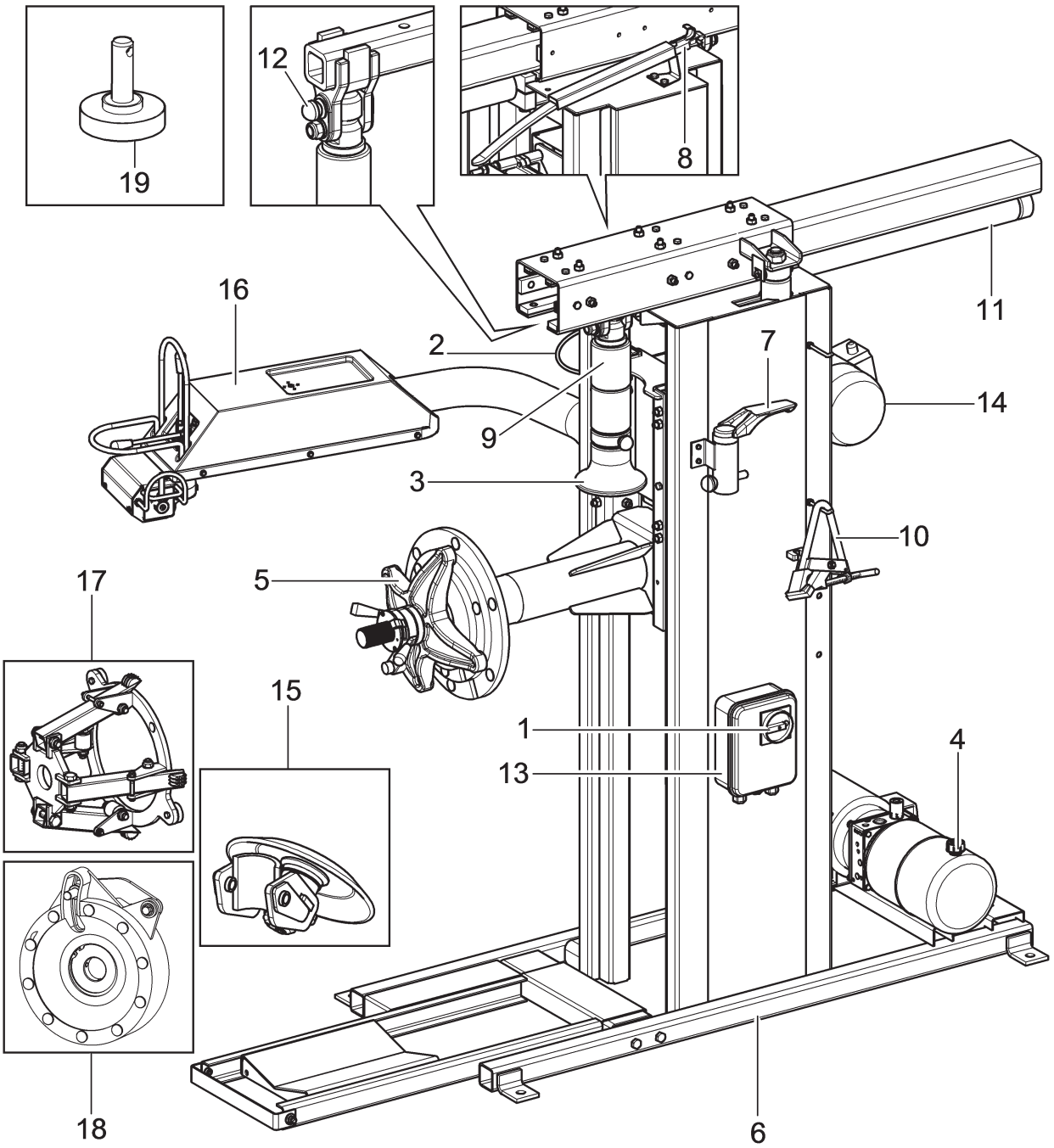
9 - Bead breaker roll holder arm
10 - Grippers for alloy rims (on demand)
11 - Bead breaker tool/roll translation cylinder
12 - Tool holder arm locking pin
13 - Electric panel
14 - Mandrel rotation motor
15 - Mandrel opening/closing cylinder
16 - Control unit
17 - Bead breaker disc (G108A22, on demand)
18 - Hydraulic controls version
19 - Roll unit with bead wires

FIG. 3 - NAV26HW.ST



KEY

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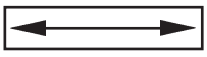
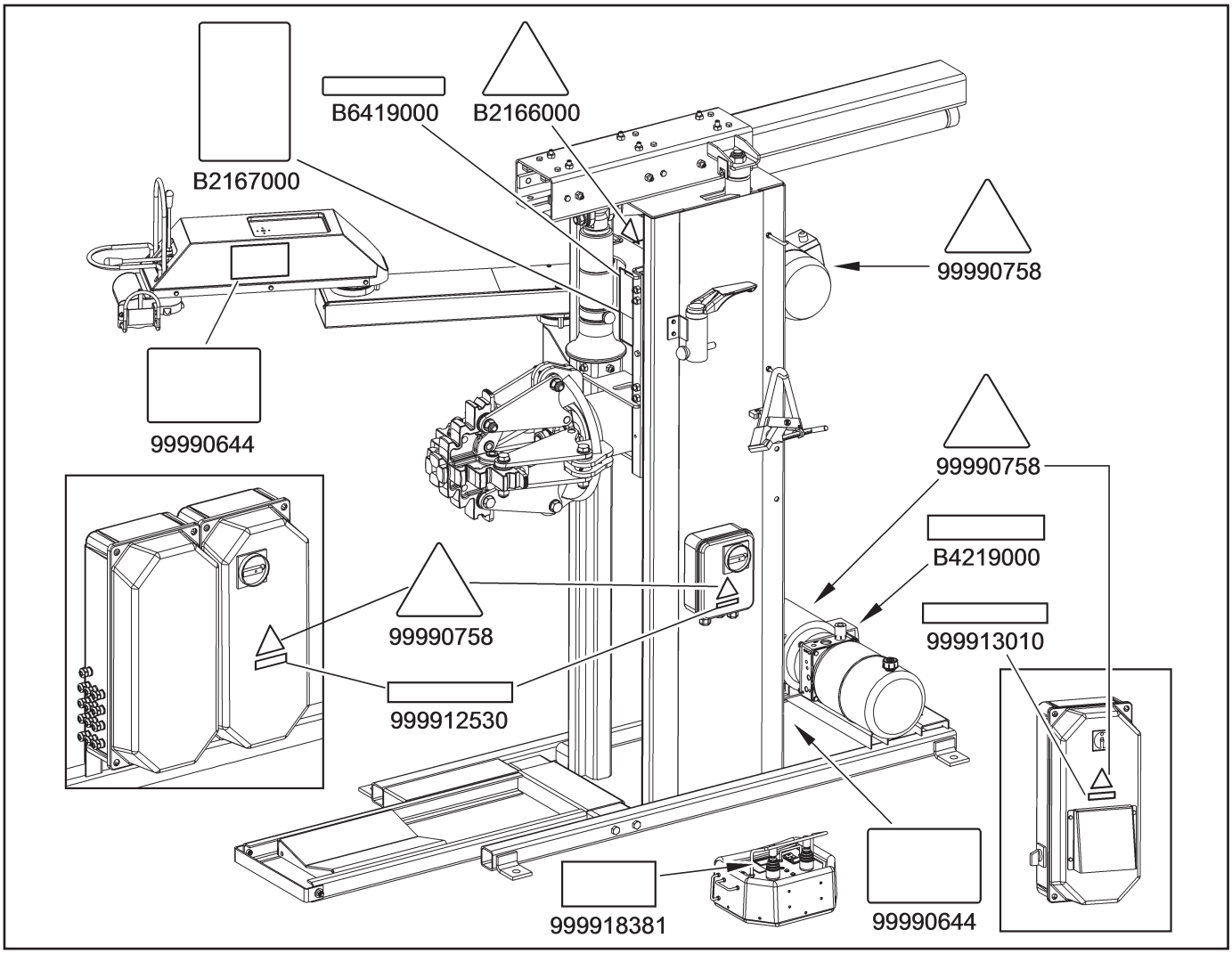
4 - Oil-pressure power unit
5 - Self-centring chuck
6 - Frame
7 - Bead breaker hook tool
8 - Demounting/mounting lever
9 - Bead breaker roll holder arm
10 - Grippers for alloy rims (on demand)
11 - Bead breaker tool/roll translation cylinder
12 - Tool holder arm locking pin
13 - Electric panel
14 - Mandrel rotation motor
15 - Bead breaker disc (G108A22, on demand)
16 - Control unit
17 - Adapter for Dayton wheels (G108A21, on demand)
18 - Cone kit for universal locking (G108A20, on demand)
19 - Roll unit with bead wires

SYMBOLS USED IN THE MANUAL AND ON THE MACHINE

Symbols	Description
	Read instruction manual.
	FORBIDDEN!
 B2167000	Wear work gloves.
	Wear work shoes.
 B2167000	Wear safety goggles.
	Wear safety earcaps.
 99990758	Shock hazard.
 999911770	Danger! Moving mechanical parts.
	Caution: hanging loads.
	Mandatory. Operations or jobs to be performed compulsorily.
	Warning. Be particularly careful (possible material damages).

Symbols	Description
	Danger! Be particularly careful.
	Move with fork lift truck or pallet truck.
	Lift from above.
 B1541000	General danger.
	Technical assistance necessary. Do not perform any intervention.
 999912860	Risk of limb crushing.
 B2166000	Risk of hands crushing.
 999912090	Danger: tyres could drop.
 B6419000	Mandrel rotation index plate.
 999912840	Risk of crushing and collisions.
	Note. Indication and/or useful information.

INFORMATION PLATE LOCATION TABLE



Code numbers of plates	
B2166000	*Hands crushing danger plate*
B2167000	*Obligation to wear protective clothing plate*
B2668000	*Wheel lifting device danger plate*
B4219000	*Rotation direction plate (NAV26HW - NAV26HW.ST)*
B6419000	*Rotation plate*
99990644	*Mandrel rotation index plate (NAV26HW - NAV26HW.ST)*
99990758	*Electricity danger plate*
999912530	*Single-phase voltage plate (NAV26HW - NAV26HW.ST)*
999913010	*Voltage plate 400V 50Hz 3Ph+N (version with inverter)(NAV26HW)*
999916311	*Rubbish skip label*
999918381	*Radio control label (NAV26HW.S)*
*	*Machine nameplate*
♦	*Manufacturer name plate*

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 electro-hydraulic tyre changer. We feel sure you will not regret your decision. This machine has been designed for use in professional workshops and in particular it stands out for its reliability and easy, safe and rapid operation: with just a small degree of maintenance and care, this tyre changer will give you many years of trouble-free service and lots of satisfaction.

2.0 INTENDED USE

The machines model "**NAV26HW, NAV26HW.S** and **NAV26HW.ST**", with relevant versions, are tyre changers 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 1300 mm and maximum weight of 1200 Kg.
The machines model "**NAV26HW, NAV26HW.S** and **NAV26HW.ST**", with relevant versions, are NOT to be used for tyres inflation.

DANGER: THIS MACHINE MUST BE USED STRICTLY FOR THE INTENDED PURPOSE IT WAS DESIGNED FOR (AS INDICATED IN THIS MANUAL). ANY OTHER USE WILL BE CONSIDERED IMPROPER USE. IN PARTICULAR BEAD FITTING AND INFLATING MUST BE CARRIED OUT IN A SPECIALLY APPROVED INFLATION CAGE.

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

AN INTENSIVE USE OF THE EQUIPMENT IN INDUSTRIAL ENVIRONMENT IS NOT RECOMMENDED.

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:

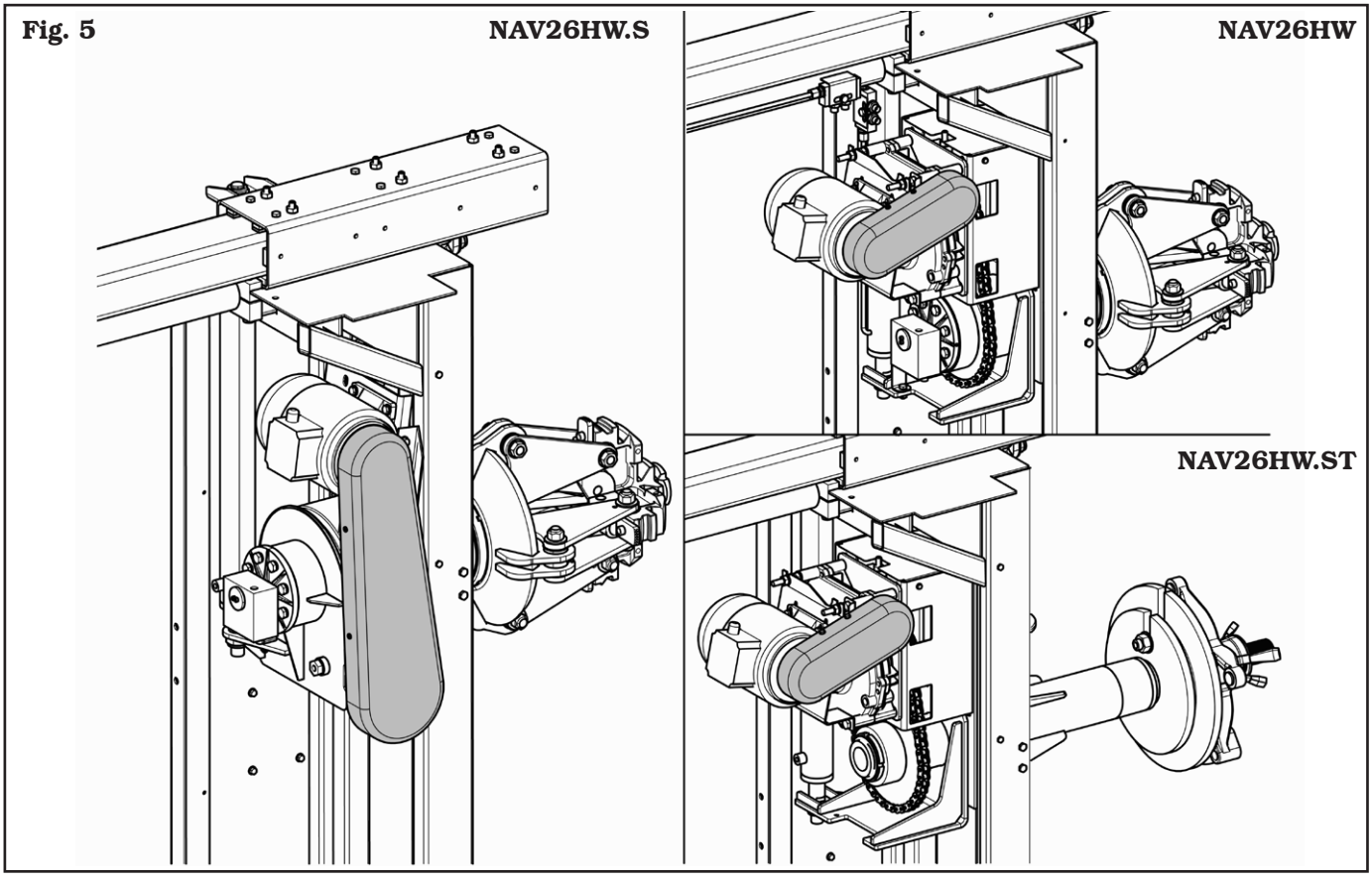
- "man-operated" controls (immediate stop of operation when the control is released).
- **Controls logic disposition**
  To prevent the operator from making dangerous mistakes;
- thermal magnetic switch on the supply line of the oil-pressure power unit motor: it avoids motor overheating in case of intensive use (only for NAV26HW.S);

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 mandrel jaws (NAV26HW and NAV26HW.S),
  - mandrel lifting,
  - tool roll translation,

  These valves have been fit in order to avoid unexpected movements of the jaws (and, as a consequence, the wheel fall) (NAV26HW and NAV26HW.S), of the tool roll and locking mandrel, caused by accidental oil drippings;
- fuses on the electric supply line of the mandrel motor;
- automatic power supply disconnection with the opening of the electric panel (only for NAV26HW.S).
- **Fixed guards and shelters**
  The machine is fitted with a number of fixed guards intended to prevent potential crushing, cutting and compression risks.
  These protections can be located in the figure below.

Fig. 5



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 7.

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.
- Use of the machine is only permitted in places free from **explosion** or **fire** hazard and in **dry places under cover**.
- Original spare parts and accessories should be used.

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

- 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.
- The machine electrical supply system must be equipped with an appropriate earthing, to which the yellow-green machine protection wire must be connected.
- 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.

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 and dry. 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 **Fig. 11**.
  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.

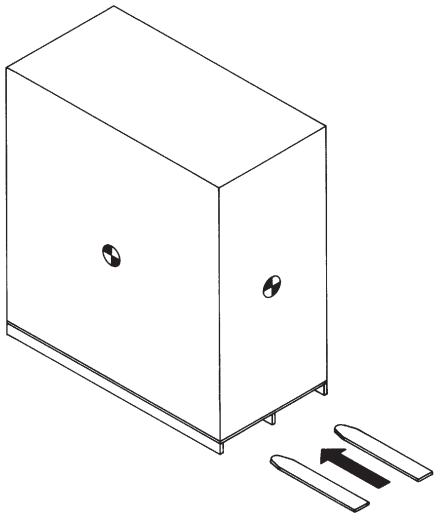
IN CASE OF A CHANCE SUPPLY FAILURE MOVE THE CONTROLS TO THE NEUTRAL POSITION.

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 packed completely assembled.
The cardboard box containing it is fastened to a pallet and has dimensions of mm 1600x950x1780 (for NAV26HW - NAV26HW.S versions) and of mm 1950x950x1300 (for NAV26HW.ST version).
The displacement must be performed through adequate lifting device (fork lift truck). Lift the packaging as indicated in **Fig. 6** (forks introduced in the middle to ensure a correct loads distribution).

Fig. 6



6.0 UNPACKING

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

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 packaging components (plastic bags, expanded polystyrene, nails, screws, pieces of wood, etc.) must be collected up and disposed of through according to the in force laws.

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

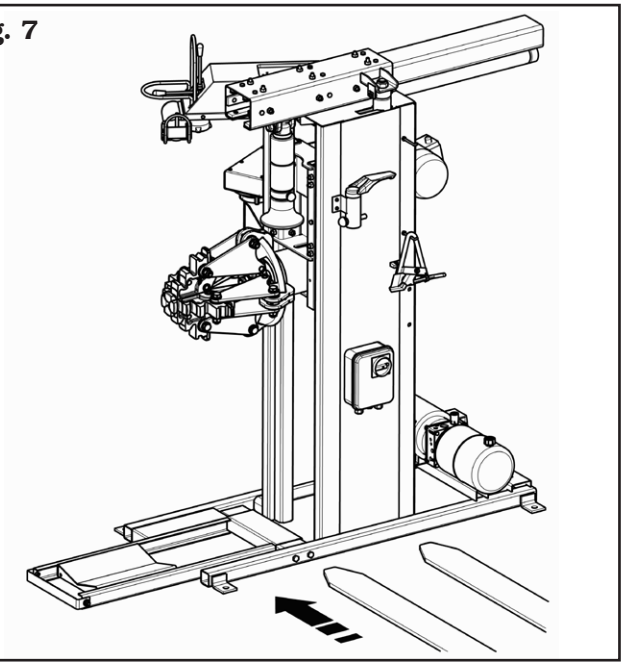
7.0 MOBILIZATION

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.

During the machine handling from the unpacking position to the installation one, follow 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.
- Lift and transport with suitable device as indicated in **Fig. 7** (forks introduced in the middle to ensure a correct loads distribution).

Fig. 7

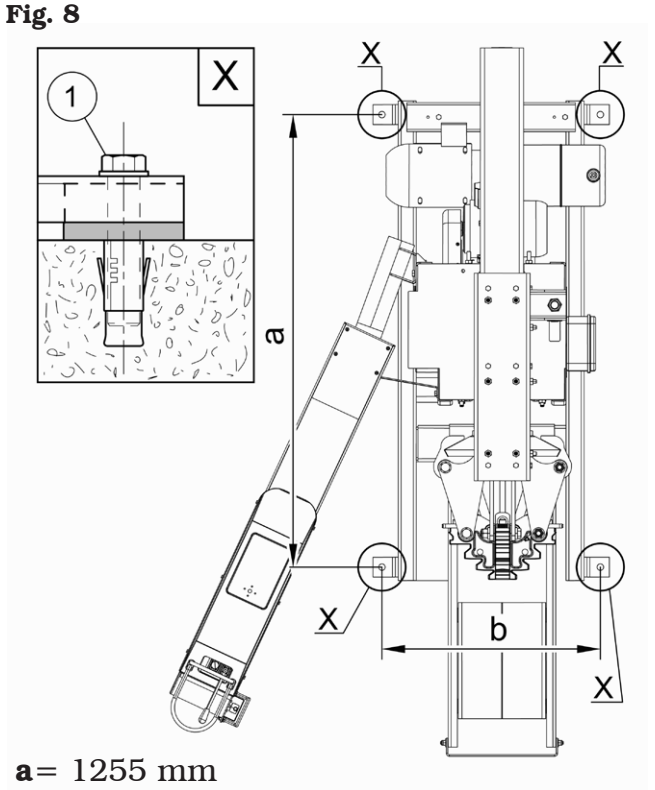


8.0 MACHINE ASSEMBLY

8.1 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. 8**.

Fig. 8



a= 1255 mm
b= 600 mm

- Execute 4 holes with 12 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 M12x120 mm screws (excluded from supply) (**Fig. 8 ref. 1**) (or with 4 12x80 mm stud bolts (excluded from supply)). Tighten the screws with an approximate tightening torque of 70 Nm.

8.2 Fixtures contained in the packing

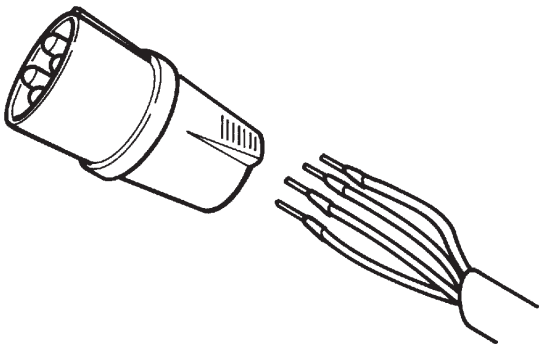
The packing case contains also the fixtures box. Check that all the parts listed are there.

Code	Description	N.
G108A3	*Head with lever*	**1**
G108A41	*Unit roll with bead wire*	**1**

9.0 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.**



The machines (NAV26HW and NAV26HW.ST) are supplied with free cable of mt. **1,8** while the machine (NAV26HW.S) is supplied with free cable of mt. **5,8**. A plug corresponding to the following requirements must be connected to the cable:

- Conformity to Norm **IEC 309**
- **230 Volt – 16A**
- **2P + Ground**
- **IP 44**

Only for VARGNAV26HWD - version with inverter

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

Only for 230V 60Hz 1Ph version

- Conformity to Norm **IEC 309**
- **230 Volt - 60Hz – 32A**
- **1P + N + Ground**
- **IP 44**

FIT A TYPE-APPROVED PLUG TO THE MACHINE CABLE (THE GROUND WIRE IS YELLOW/GREEN AND MUST NEVER BE CONNECTED TO THE 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.

9.1 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 OIL WITH 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).

9.2 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 power unit rotates in the direction indicated by the arrow (**Fig. 9 and 10 pos. 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.

9.3 Electrical checks

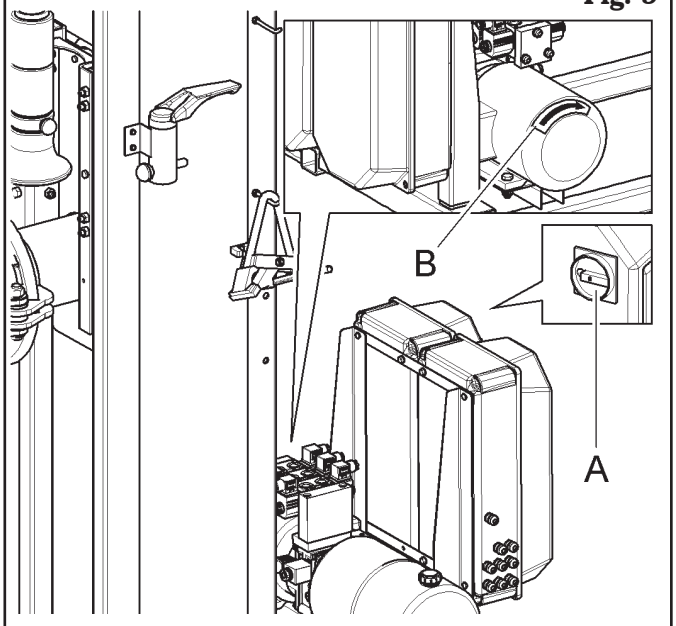
BEFORE STARTING UP THE TYRE-CHANGER, BE SURE TO BECOME FAMILIAR WITH THE LOCATION AND OPERATION OF ALL CONTROLS AND CHECK THEIR PROPER OPERATION (SEE PAR. "CONTROLS").

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. 9 and 10 pos. A**).

NAV26HW.S

Fig. 9



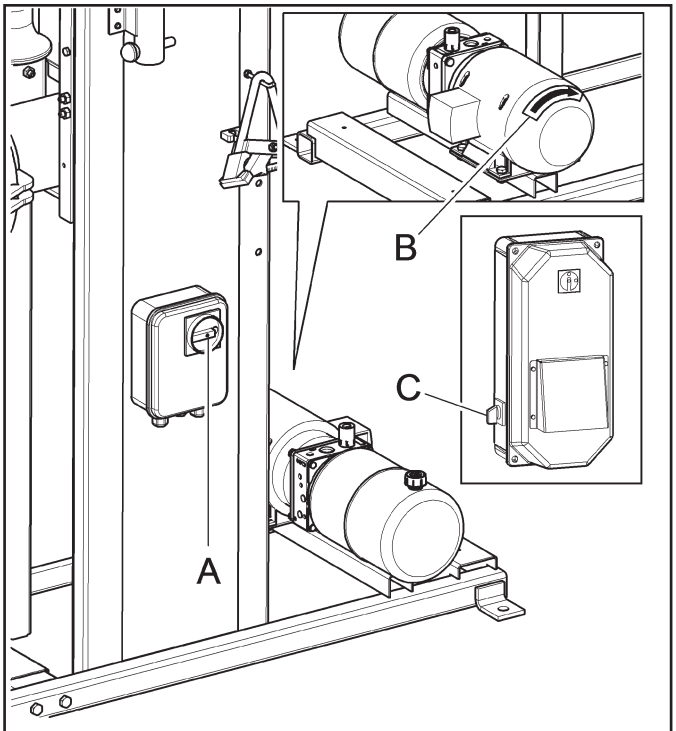
KEY
A - Main switch
B - Direction rotation of oil-pressure power unit motor

Then horizontally or vertically move the lever (**Fig. 13 pos. E**): the red LED (**Fig. 13 pos. B**) will flash.
Wait a few seconds for the green LED to turn on (**Fig. 13 pos. A**) and then release the lever (**Fig. 13 pos. H**).
In the end, the green LED (**Fig. 13 pos. A**) flashes to indicate that the machine is ready for operation.

WHEN A CONTROL IS OPERATED, THE GREEN LED (FIG. 13 POS. A) LIGHT IS FIXED: IT FLASHES AGAIN WHEN IT IS RELEASED.

If during the operations the red LED (**Fig. 13 pos. B**) and the green LED (**Fig. 13 pos. A**) turn on at the same time, charge the control batteries with the provided socket for battery charger, located on the control side (**Fig. 13 pos. G**).
The machine is equipped with a device for the interruption of the communication between the control and the electrical panel, when more than 6 hours have passed after the last executed control. In this case, just repeat the turning on operations described in the "Electrical checks" chapter.

NAV26HW - NAV26HW.ST



KEY
A - Main switch
B - Direction rotation of oil-pressure power unit motor
C - Selector 1-0-2 self-centring chuck speed control (only for VARGNAV26HWD - version with inverter)

Fig. 10

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

10.0 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).

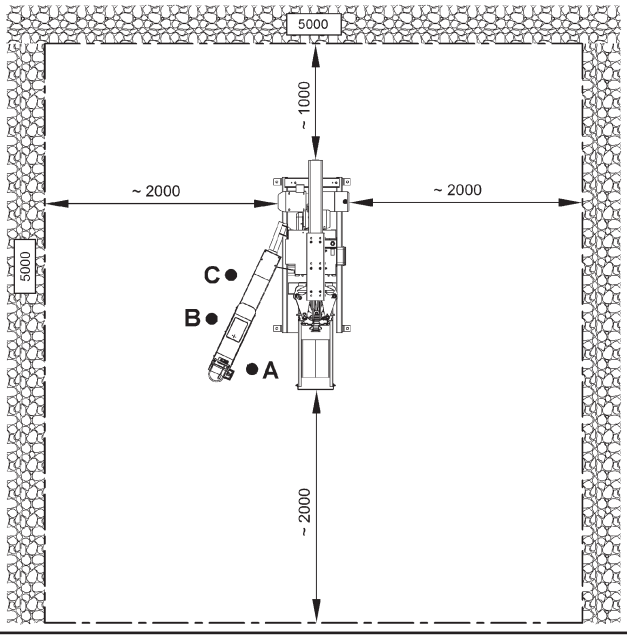
The use of the machine in ambient conditions other than those specified above is only allowed after prior agreement with and approval of the manufacturer.

10.1 Working position

In **Fig. 11** it's 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 main positions for tyre mounting and demounting and for wheel clamping on the mandrel, 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.

10.2 Working area

Fig. 11



INSTALL THE MACHINE INDOORS OR IN A ROOFED AREA. PLACE OF INSTALLATION MUST BE DRY, ADEQUATELY LIT AND IN COMPLIANCE WITH APPLICABLE SAFETY REGULATIONS.

The use of the machine requires a usable space of mm 5000x5000, (as indicated in **Fig. 11**). The use of the machine must respect the shown distances. 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 preferably used on an horizontal floor. 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 support feet rest safely.

10.3 Lighting

The machine does not require its own lighting for normal working operations. However, it must be used in an adequately lit environment.
In case of poor lighting use lamps having total power of 800/1200 Watt.

11.0 CONTROLS

11.1 Control device (NAV26HW - NAV26HW.ST)

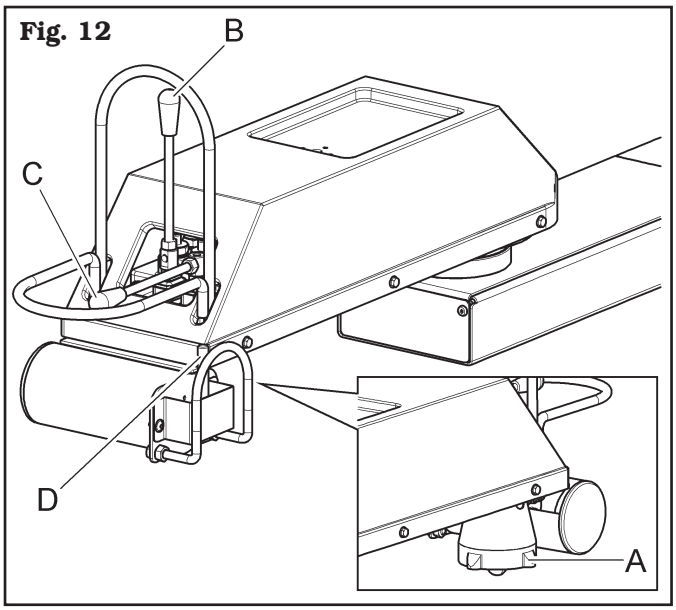
The control (handle control) can be moved according to the positioning necessities of the operator.

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).

The control (**Fig. 12**) consists of:

- **"A" lower selector** (with guard) for wheel holder mandrel open/close control with three positions: one central position "stable" to stop mandrel open/close movement and two positions "with maintained control" to open/close mandrel jaws (NAV26HW);
- **"B" lever** for tool holder tool/bead breaking roll translation control with three-positions: one central position "stable" to stop translation and two positions "with maintained control" for tool/bead breaking roll support translation rightwards or leftwards (from working position "C" **Fig. 11**);
- **"C" lever** three-positions control for vertical translation of mandrel arm: central "firm" position for movement stop and two "hold activation" positions for arm up and down translation;
- **"D" lever** control mandrel anticlockwise/clockwise rotation.

Fig. 12



11.2 Control device (NAV26HW.S)

The control unit (handle control), thanks to special belts, can be fixed to the operator's body, so that it follows him and stays within reach during all the production phases.
It is advisable for the operator to place himself in a zone free from obstacles in order to have a clear and complete vision of the working area.

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).

The flashing green led "**A**", indicates the machine stand-by position. When any control is operated, the machine is started and it is ready for operation. During functioning, the green led "**A**" is turned on with a fixed light.
The simultaneously turned on and flashing led "**B**" and led "**A**" indicate that the manipulator batteries are exhausted: in order to carry on the functioning, they must be charged.

IN ORDER TO ACTIVATE THE COMMUNICATION BETWEEN HANDLE CONTROL AND MACHINE, ON MACHINE SWITCHING AND AFTER EACH POSITIONING IN STAND-BY MODE, IT'S NECESSARY TO OPERATE ANY JOYSTICK (LEVER "H" OR LEVER "I") FOR 5 SECONDS AT LEAST.

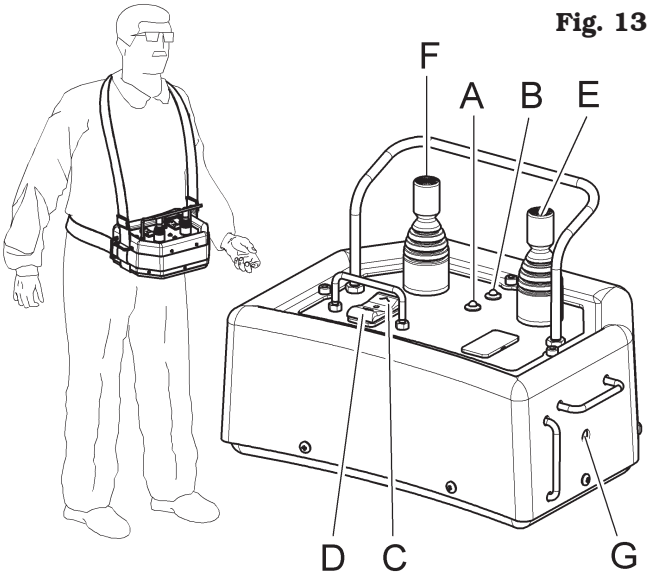
When the red led"**B**" lights up indicates that there is a fault in the bluetooth connection with the machine.
"Push-button **C**" has one "hands-on" operating position, and when pressed, it opens the self-centring chuck.
"Push-button **D**" has one "hands-on" operating position, and when pressed, it closes the self-centring chuck.
"Lever **E**" has four "hands-on" positions:
- Lever to the right or left: it starts the travel of the bead breaking roll/tool to the right or left respectively (from "B" working position, **Fig. 11**).
- Upwards or downwards lever: it respectively lifts or lowers the mandrel.

"Lever **F**" has two "hands-on" positions:
- Lever to the right or left, operates the clockwise or counterclosckwise rotation of the mandrel (from working position "A" **Fig. 11**).

When any control is operated, the machine is started again, ready for operation: led "**A**" flashes.

THE HANDLE CONTROL MUST NOT BE PLACED WHERE WATER STAGNATES.

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:
- always use clean, dry and in good condition rims and tyres; in particular, if necessary, clean the rims after all the balancing weights (as well as the adhesive weights on the inner side) have been removed, and make sure 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 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 (up to 2550 mm) and with remarkable weight (up to 2300 kg).
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 with self-centring mandrel (NAV26HW - NAV26HW.S)

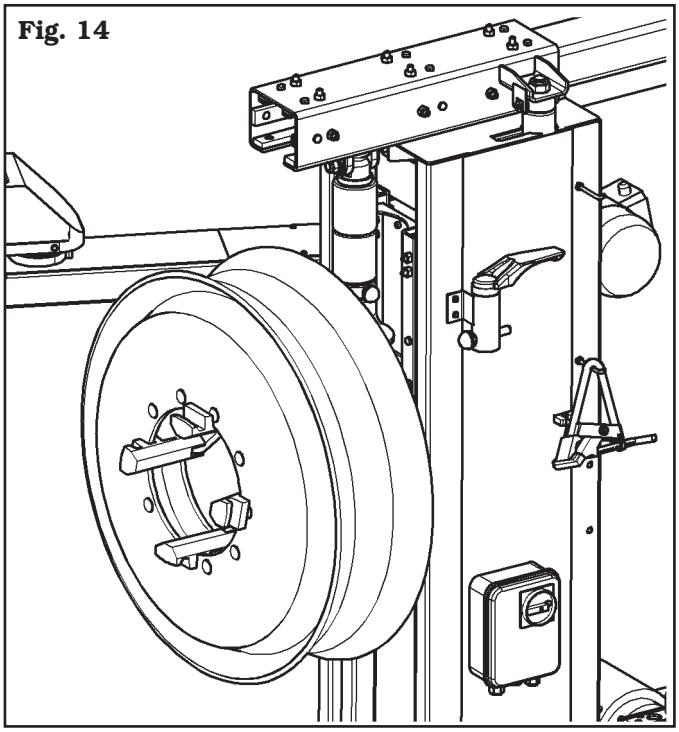
FOR WHAT CONCERNS THE DIMENSIONS AND WEIGHT OF THE WHEEL TO BE LOCKED, MAKE USE OF A SECOND OPERATOR WHO MUST HOLD THE WHEEL INTO VERTICAL POSITION, IN ORDER TO ENSURE SAFE OPERATIVE CONDITIONS.

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.

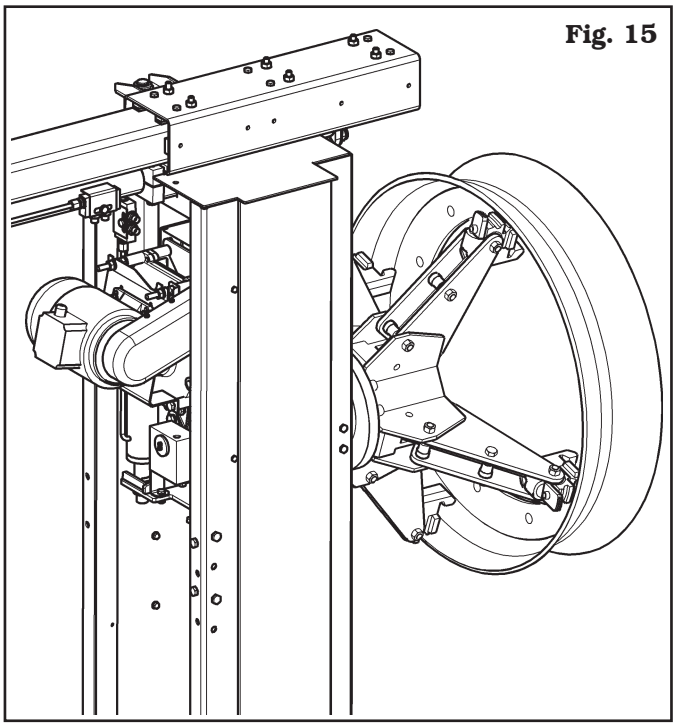
DO NOT CHANGE THE SET OPERATING PRESSURE VALUE BY MEANS OF THE MAXIMUM PRESSURE VALVES. THE MANUFACTURER SHALL NOT BE RESPONSIBLE FOR INJURY OR DAMAGE ARISING FROM UNAUTHORISED CHANGES.

Fig. 14



Clamping on the central hole

Fig. 15



Clamping on bead seat

OPENING/CLOSING MOVEMENT OF THE SELF-CENTRING MANDREL 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. NOTE: for wheels with grooved rims secure the wheel so the groove is facing outward compared to the mandrel.
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 THE MANDREL'S NORMAL JAWS BY MEANS OF A BAYONET CONNECTION.

To clamp the wheel proceed as follows:
- Place the wheel in vertical position not far from the mandrel;
- Use the lever (**Fig. 12 pos. C**) or (**Fig. 13 pos. E**) to position the coaxial mandrel with the wheel centre, in order to make the jaws edges skim the wheel edge;
- Adjust the opening of the self-centring mandrel through the corresponding control (**Fig. 12 pos. A**) or (**Fig. 13 pos. C**) according to the type of rim to be locked;
- Operate the control (**Fig. 12 pos. A**) or (**Fig. 13 pos. C**) 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, so that it does not slip during the operations which follow.

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.

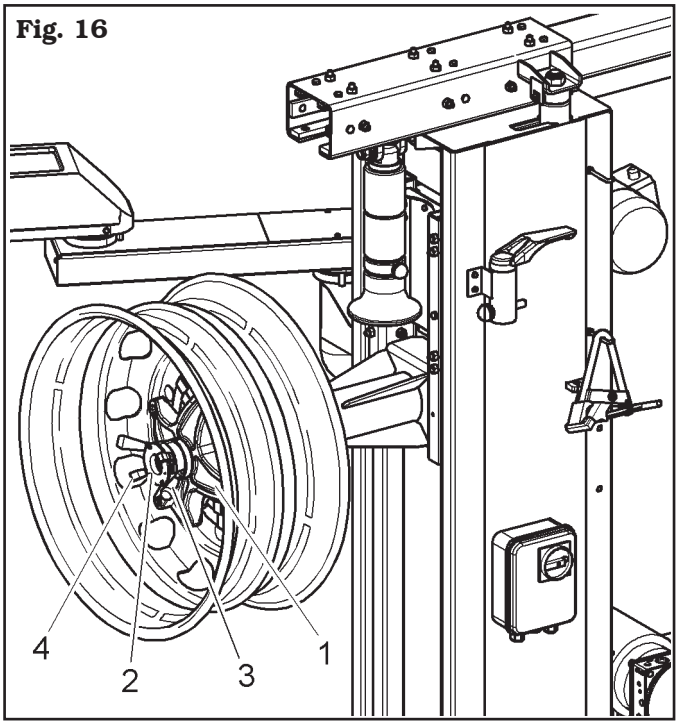
12.5 Wheel clamping with locking ring nut (NAV26HW.ST)

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.

Fig. 16



To clamp the wheel proceed as follows:
- Place the wheel in vertical position not far from the mandrel;

Use the lever (**Fig. 12 pos. C**) to position the coaxial mandrel with the wheel centre, so that the threaded pin is placed at the same height of the central hole of the rim;
- Insert the rim on the threaded pin (and the well placed outwards);
- Lock the rim on the mandrel by using the star flange (**Fig. 16 pos. 1**) and make sure that drive pin goes into the right hole for the tyre;

- Lock the wheel on the centring flange using the ring nut (**Fig. 16 pos. 2**). Through the special small and inner levers (**Fig. 16 pos. 4**) unlock the ring nut and move it close to the star flange (**Fig. 16 pos. 1**), therefore rotate the ring nut (**Fig. 16 pos. 2**) through the external levers (**Fig. 16 pos. 3**) until the complete flange clamping (**Fig. 16 pos. 1**) on the tyre;
- Check both that the rim is clamped and centred correctly, and that the wheel has been raised above from the floor, so that it does not slip during the operations which follow.

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.

12.6 Functioning of roll holder arm

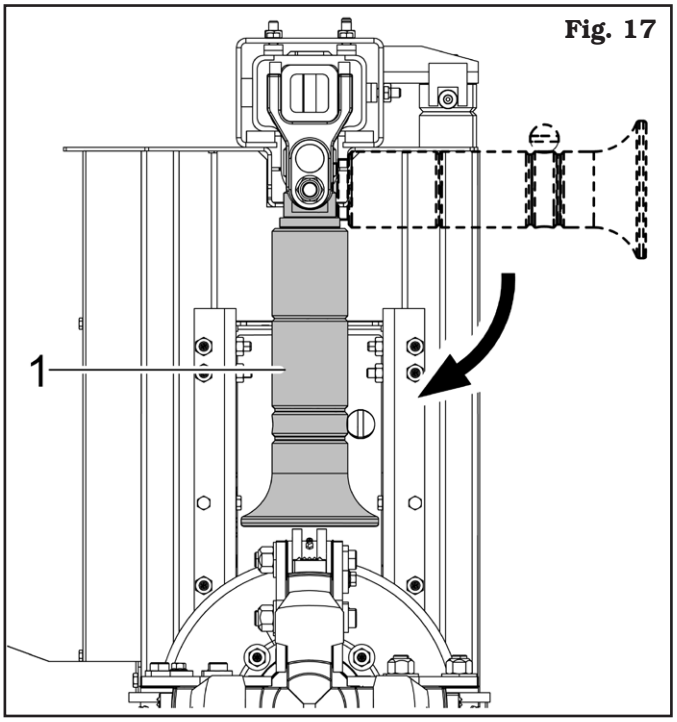
During the working phases, the roll holder arm can maintain two firm positions, that is:

1) "Working" position;

2) "Out of work" position.

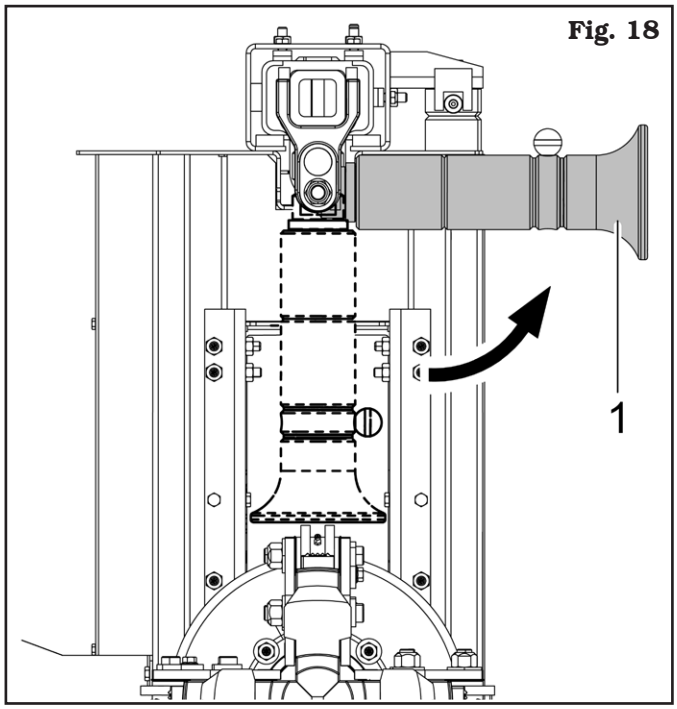
In "working" position (**Fig. 17 pos. 1**) the tool holder arm is lowered towards the mandrel and from this position it executes the various tyre bead breaking, demounting and mounting operations.

Fig. 17



In "out of work" position (**Fig. 18 pos. 1**) the roll holder arm is in horizontal position and has to be brought in this position every time it is not in use and in order to be shifted from one tyre bead side to another, during working phases.

Fig. 18



The roll holder arm, shifts from "off-work" position to "working" position and vice versa manually.

IN "WORKING POSITION" OR "OUT OF WORK POSITION", THE SAFETY PIN (FIG. 1 POS. 12) HAS TO BE INSERTED INTO THE APPROPRIATE HOUSING.

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 MANDREL CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR) (NAV26HW - NAV26HW.S).

A. Lock the wheel on the mandrel as described in the previous paragraph.

B. Remove all balancing weights from the rim. Extract the valve and let air out of tyre.

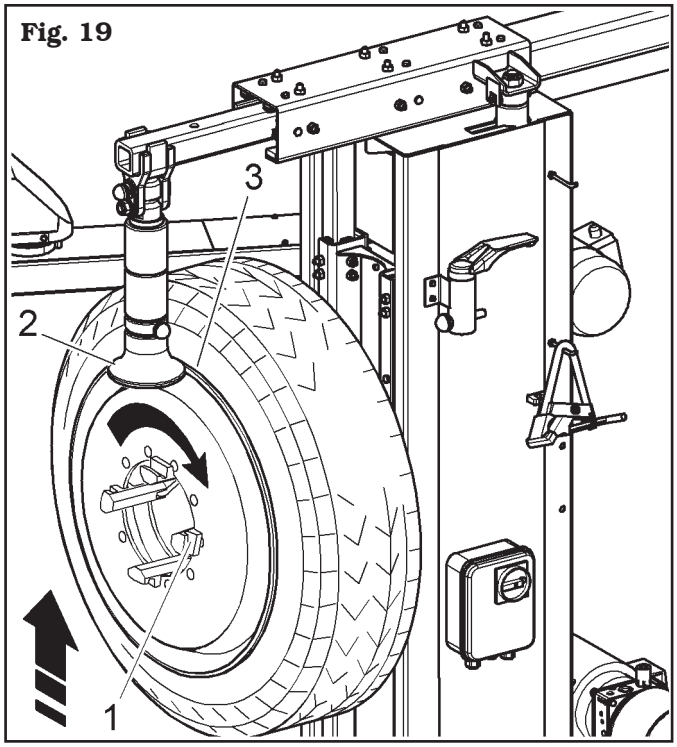
C. Move to work position **A** (**Fig. 11**).

D. Position the beading disc on the external side of the tyre.

ALWAYS VERIFY THAT THE ARM IS CORRECTLY LOCKED TO THE SHIFTING BEAM.

E. Lift the mandrel (**Fig. 19 pos. 1**) by using the appropriate handle control, until bringing the beading disc (**Fig. 19 pos. 2**) next to the tyre brim (**Fig. 19 pos. 3**), in contact with the external bead.

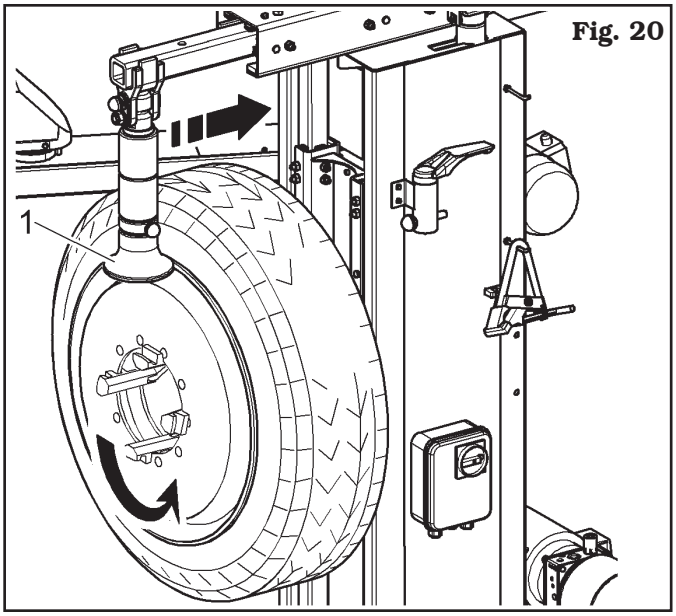
Fig. 19



THE BEADING ROLL MUST NOT EXERT PRESSURE ON THE RIM BUT ON THE TYRE BEAD

F. Turn the mandrel counterclockwise and, at the same time, gradually move the roll (**Fig. 20 pos. 1**) inwards to bead the tyre. Continue to turn the mandrel while generously lubricating the tyre rim and bead with a suitable lubricant.
The more the wheel adheres to the rim, the slower should the beading roll advance.

Fig. 20



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

G. Once external beading has been carried out, unhook and lift the roll holder arm placing it in "off-work" position (**Fig. 18 pos. 1**); use the handle control to position the roll holder arm on the inner side of the wheel, then place it in "work position" (**Fig. 17 pos. 1**) and secure it with the special safety pin.

FOR WHEELS WITH MAX. DIAMETER LOWER THAN 1100 MM, IT IS POSSIBLE TO SHIFT THE BEADING ROLL INTO THE SAME REAR BEADING POSITION BY LOWERING THE WHEEL (SEE FIG. 21) IN ORDER TO BRING IT BACK TO BEADING POSITION (SEE FIG. 22).

Fig. 21

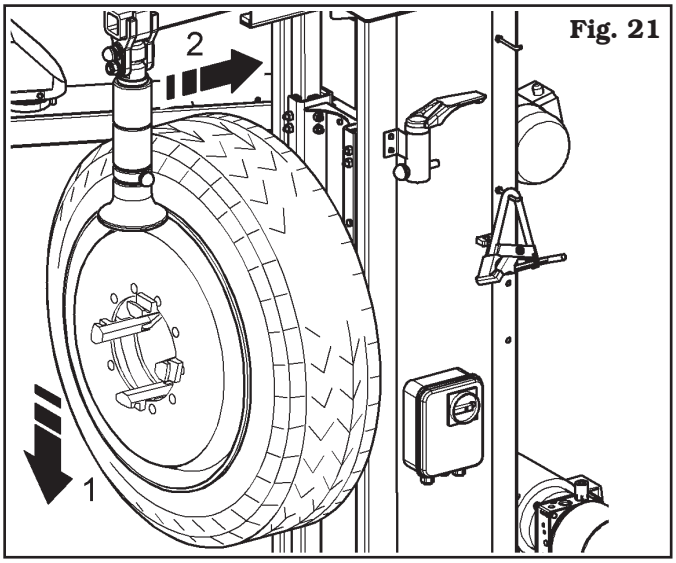
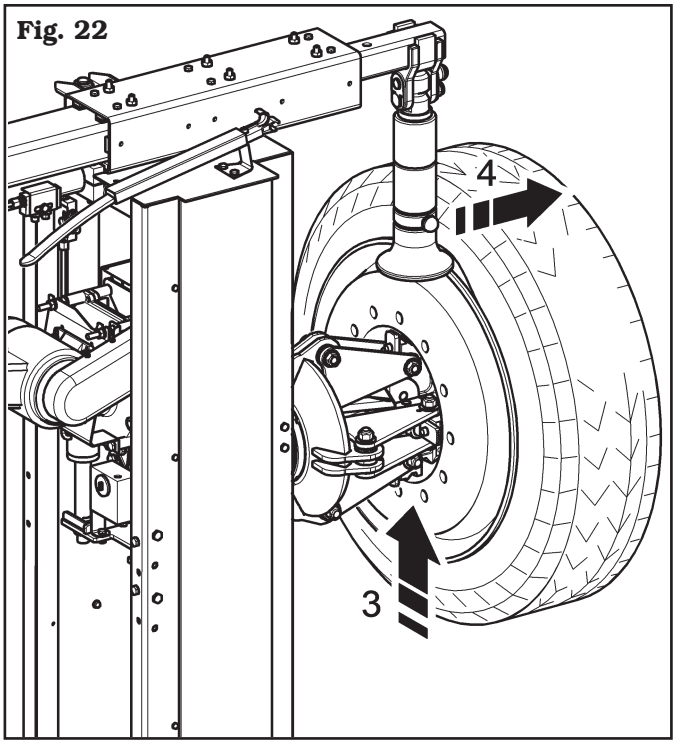


Fig. 22



PAY ATTENTION WHEN REPOSITIONING THE ROLL HOLDER ARM TO AVOID HAND CRUSHING.

H. Move to work position **C** (**Fig. 11**) and repeat the operations described in points **F** until the tyre has been completely beaded.

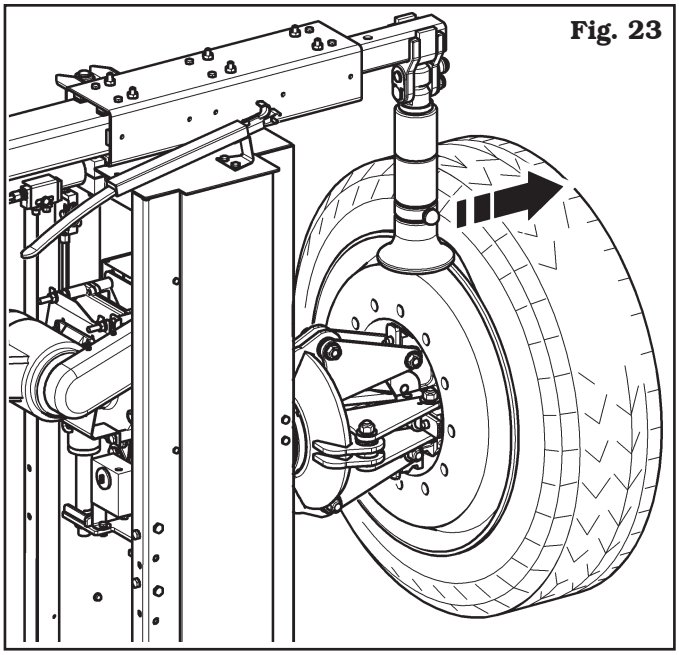
12.7.2 Demounting

THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING MANDREL CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR) (NAV26HW - NAV26HW.S).

Tubeless tyres can be removed in two ways:

A. If the wheel does not present particular problems, continuing beading operation will completely dislodge the beads from the rim. The inner bead, pushed by the roll, presses against the outer one till it has been completely removed (see **Figure 23**).

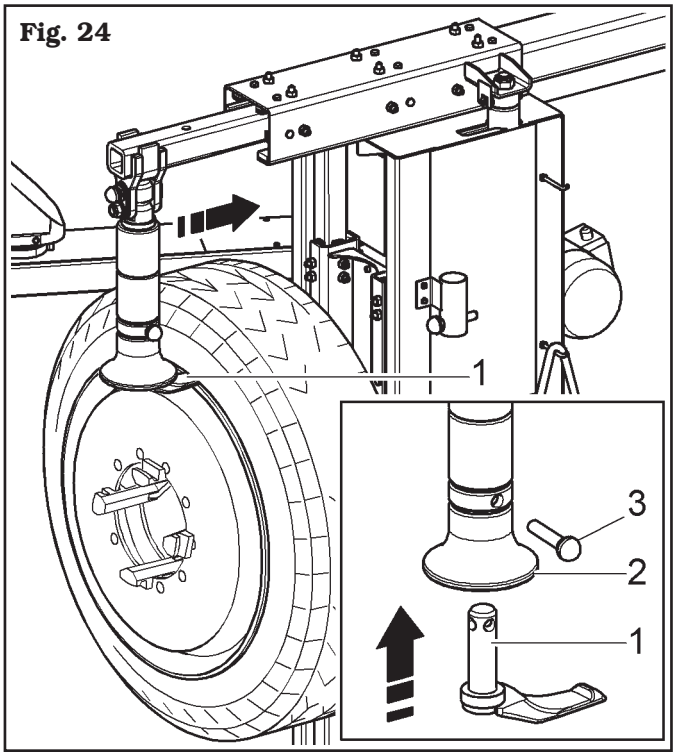
Fig. 23



B. If the wheel is especially hard, it is not possible to carry out the procedure described in point **A**. A different procedure will be necessary: use the hook tool and follow this sequence of operations:

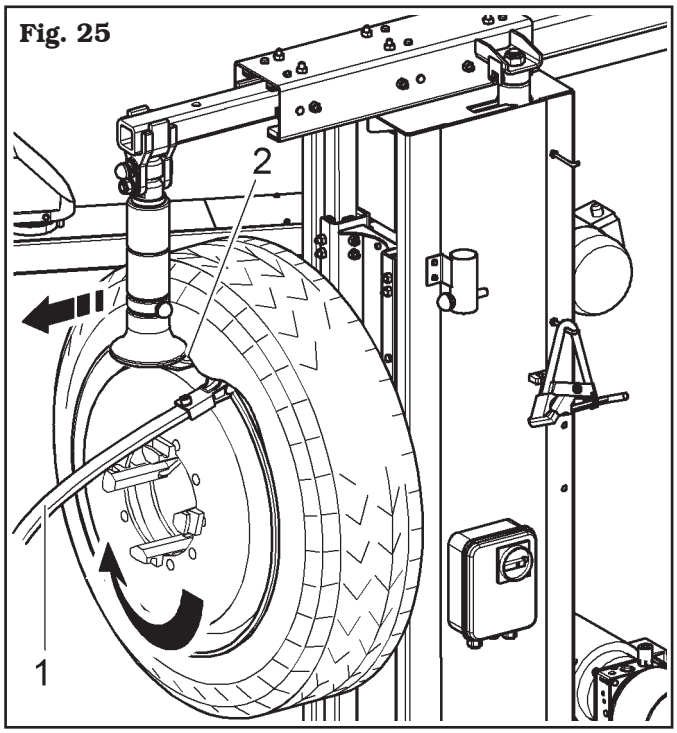
- Move to working station **A** (**Fig. 11**).
- Position the roll holder arm on the outer side of the wheel.
- Put the hook (**Fig. 24 pos. 1**) into the roll (**Fig. 24 pos. 2**), as shown in **Figure 24**, and block it in position by inserting the pin (**Fig. 24 pos. 3**).
- Bring forward the hook, inserting it between the rim and the bead until it is secured to the bead itself (see **Fig. 24**).

Fig. 24



- Move the rim away downwards from the tool by about 4-5 cm to avoid possible unhooking of the bead from the same tool.
- Translate the tool outwards (**Fig. 25 pos. 2**) to allow easy insertion of lever (**Fig. 25 pos. 1**) between the rim and the bead; insert lever (**Fig. 25 pos. 1**) between the rim and the bead on the right-hand side of the tool (**Fig. 25 pos. 2**).

Fig. 25



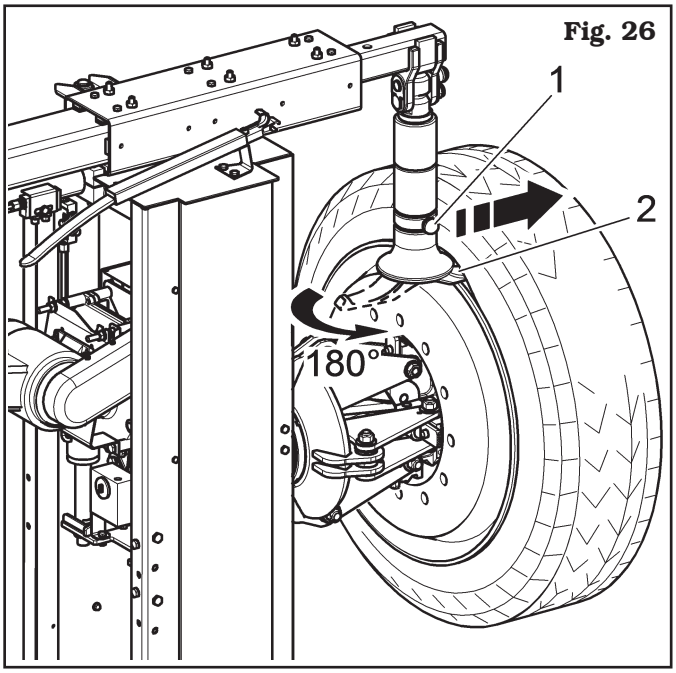
- Keeping the lever pressed, lift the wheel until the edge of the rim is 5 mm distant from the hook tool.
- Rotate the wheel clockwise until the bead has completely gone out.
- Once the external bead has been removed, move roll holder arm away from the wheel, unhook it and lift it bringing it in "off-work" position (**Fig. 18 pos. 1**); use the handle control to position the tool holder arm on the inner side of the wheel then place it in "work position" again (**Fig. 17 pos. 1**) and secure with the safety pin provided.

PAY ATTENTION WHEN REPOSITIONING THE ROLL HOLDER ARM TO AVOID HAND CRUSHING.

ALWAYS MAKE SURE THAT THE ARM IS CORRECTLY LOCKED TO THE SHIFTING BEAM.

- Move to work position **C** (**Fig. 11**).
- Take off the pin (**Fig. 26 pos. 1**), turn the tool (**Fig. 26 pos. 2**) of 180° and block it again with the pin (**Fig. 26 pos. 1**) in order to be able to insert the tool itself (**Fig. 26 pos. 2**) between the rim edge and the bead of the tyre.

Fig. 26



- Move the rim away downwards from the tool by about 4-5 cm to avoid possible unhooking of the bead of the same tool.
- Move to work position **B** (**Fig. 11**).
- Translate the hook outwards towards the external rim edge, then turn the mandrel clockwise until the tyre has been completely removed.

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 MANDREL CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR) (NAV26HW - NAV26HW.S).

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

With bead breaker roll

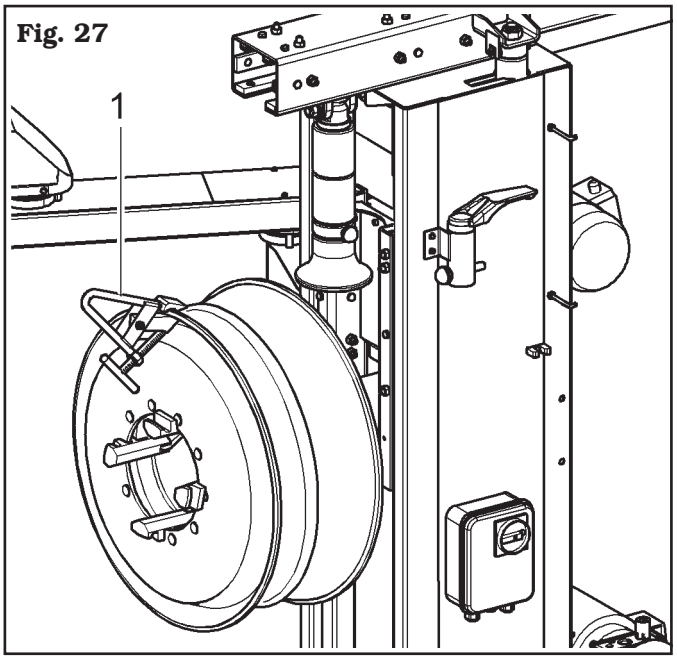
Proceed as follows:

- Secure the rim to the mandrel according to the procedure described in paragraph "WHEEL CLAMPING".
- Adequately lubricate the tyre beads and the rim bead seat with a suitable lubricant using the provided brush.

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

- Mount the grippers (on demand) (**Fig. 27 pos. 1**) on the external edge of the rim in the highest point as shown in **Fig. 27**.

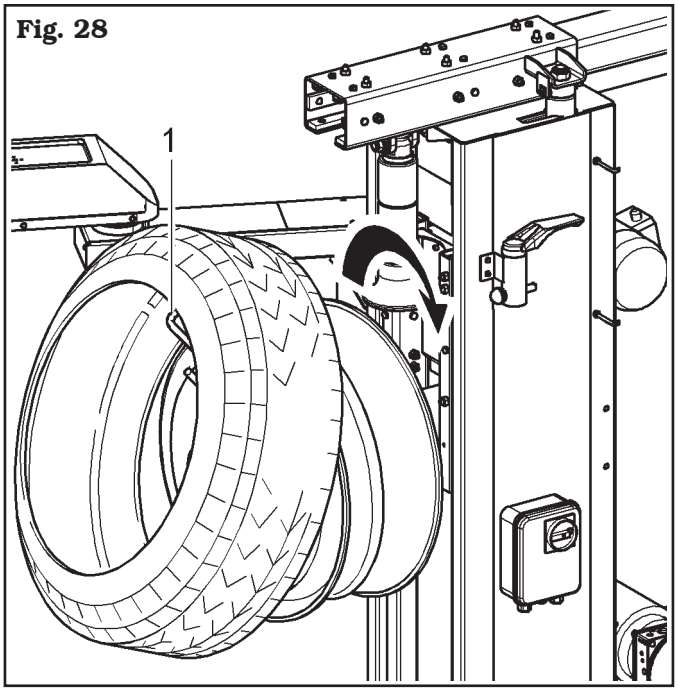
Fig. 27



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

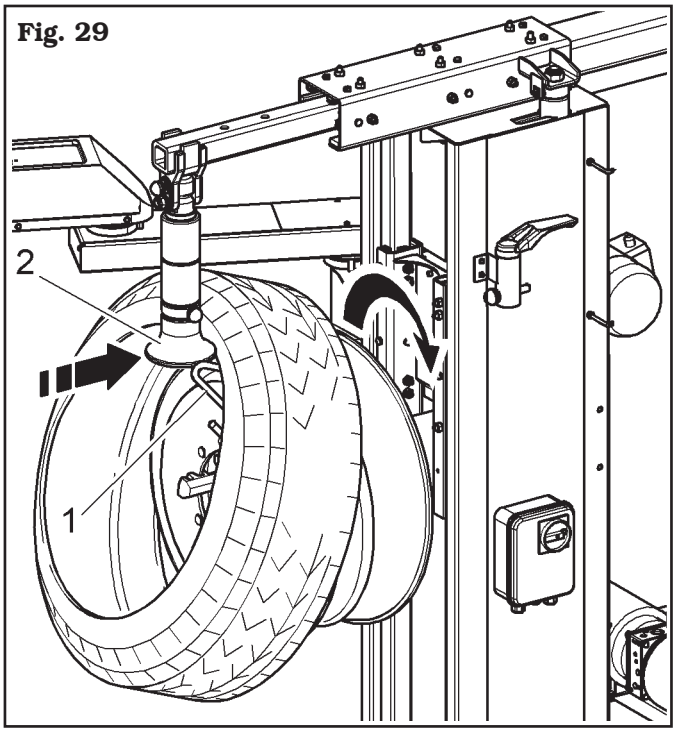
- Move to work position **B** (**Fig. 11**).
- Lower the mandrel completely. Roll the tyre on the floor and hook it to clamp (**Fig. 28 pos. 1**).
- Lift the mandrel with the tyre hooked and turn it clockwise by about 15-20 cm; the tyre will position itself sideways with respect to the rim (see **Fig. 28**).

Fig. 28



- Position beading roll (**Fig. 29 pos. 2**) so that it is at approximately 1.5 cm (½") from the edge of the rim. Fitting clamp (**Fig. 29 pos. 1**) is at 1 o'clock. Turn the mandrel clockwise until bringing the grippers to the closest point to the beading roll (11 o'clock).

Fig. 29



- Move the beading roll away from the wheel.
- Remove the grippers and fit them in position (6 o'clock) outside the second bead.
- Turn the mandrel counterclockwise until the grippers are at 1 o'clock.
- Move the beading roll forward until it is inside the edge of the rim by about 1-2 cm, making sure it is approximately 5 mm from the rim. Begin clockwise rotation making sure that, after a 90° turn, the second bead begins to slide in the rim groove.
- Once insertion is completed, move the roll away from the wheel, turn it over into "out of work" position and remove the grippers.
- Lower the mandrel until the wheel rests on the floor.
- Move to work position **A** (**Fig. 11**).
- Close the mandrel jaws completely (NAV26HW - NAV26HW.S) or remove the locking ring nut (NAV26HW.ST) 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.

- 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 hook tool

Proceed as follows:

- Secure the rim to the mandrel according to the procedure described in paragraph "WHEEL CLAMPING".
- Adequately lubricate the tyre beads and the rim bead seat with a suitable lubricant using the provided brush.

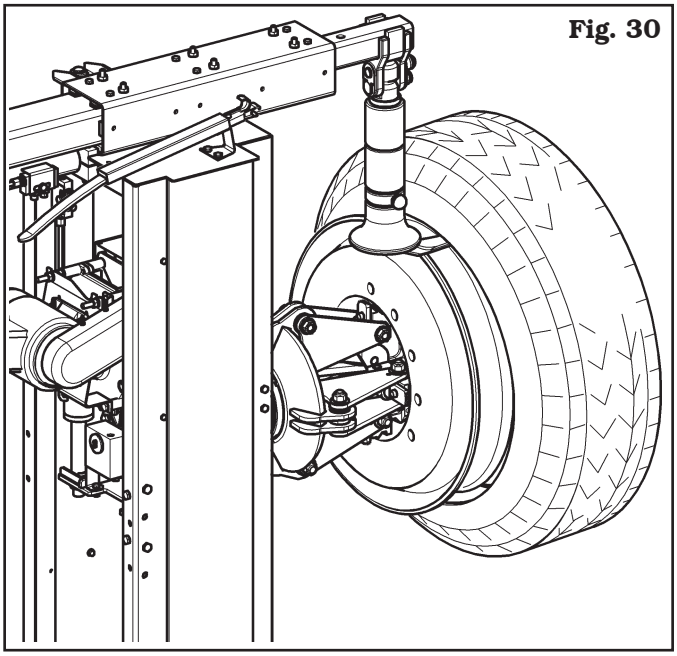
USE ONLY TYRE LUBRICANTS. SUITABLE LUBRICANTS CONTAIN NO WATER, HYDROCARBONS, OR SILICON.

- Mount grippers (**Fig. 27 Pos. 1**) on the external edge of the rim in the highest point..

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

- Move to work position **B** (**Fig. 11**).
- Lower the mandrel completely. Roll the tyre next to the mandrel and hook it to clamp (**Fig. 28 pos. 1**).
- Lift the mandrel 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. 28**).
- Place the roll holder arm in "off-work" position (**Fig. 18 pos. 1**); translate it to the inner side of the tyre and hook it again into "work position" (**Fig. 17 pos. 1**).
- Mount the hook tool on the roll, by positioning it on the side of the tyre (see **Fig. 30**).

Fig. 30



- Move to work position **C** (**Fig. 11**).
- Move the tool forward until the reference notch matches the external edge of the rim coincide at about 5 mm from the rim itself.
- Move to work position **B** (**Fig. 11**).
- From the external side of the wheel, check the exact position of the tool and, if necessary, correct it. Then, turn the mandrel clockwise until the grippers reach in the closest point to the tool (11 o'clock). The first bead should now be inserted in the rim.
- Remove the grippers.
- Move to work position **C** (**Fig. 11**).
- Extract the tool from the tyre.
- Place the roll holder arm in "off-work" position (**Fig. 18 pos. 1**); translate it to the outer side of the tyre and hook it again into "work position" (**Fig. 17 pos. 1**).
- Remount the tool holder head at 180° until the hook tool is moved onto the tyre side (see **Fig. 24**).

- Mount the grippers in the lowest point (6 o'clock) outside the second bead.
- Move to work position **B** (**Fig. 11**).
- Turn the mandrel counterclockwise placing the grippers at 1 o'clock.
- Move the tool forward until the the axis of the reference notch matches the external edge of the rim coincide at about 5 mm from the rim itself (**Fig. 24**). Begin clockwise rotation making sure that, after a 90° turn, the second bead begins to slide in the rim groove. Turn until the grippers reach in the closest point to the tool (11 o'clock). The second bead should now be inserted in the rim.
- Move the tool away from the wheel, turn it over into "out of work" position and remove the grippers.
- Lower the mandrel until the wheel rests on the floor.
- Move to work position **A** (**Fig. 11**).
- Close the mandrel jaws completely (NAV26HW - NAV26HW.S) or remove the locking ring nut (NAV26HW.ST) 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.

- 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 MANDREL CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR) (NAV26HW - NAV26HW.S).

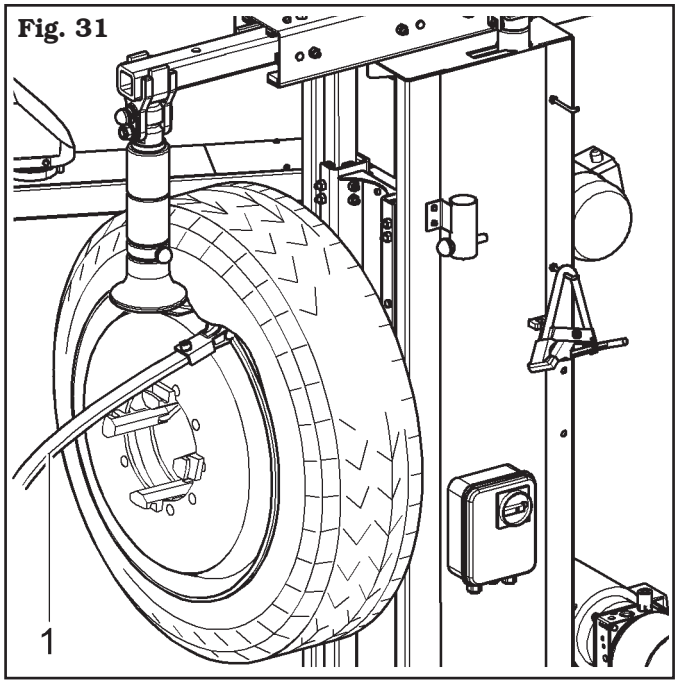
- Bring the roll holder arm in the "out of work" position (**Fig. 18 pos. 1**); by operating on the handle control position the roll holder arm on the external side of the wheel then bring it back into "working" position (**Fig. 17 pos. 1**) and lock it with the special safety pin (**Fig. 1, 2** and **3 pos. 12**).

PAY ATTENTION WHEN REPOSITIONING THE ROLL HOLDER ARM TO AVOID HAND CRUSHING.

ALWAYS MAKE SURE THAT THE ARM IS CORRECTLY LOCKED TO THE SHIFTING BEAM.

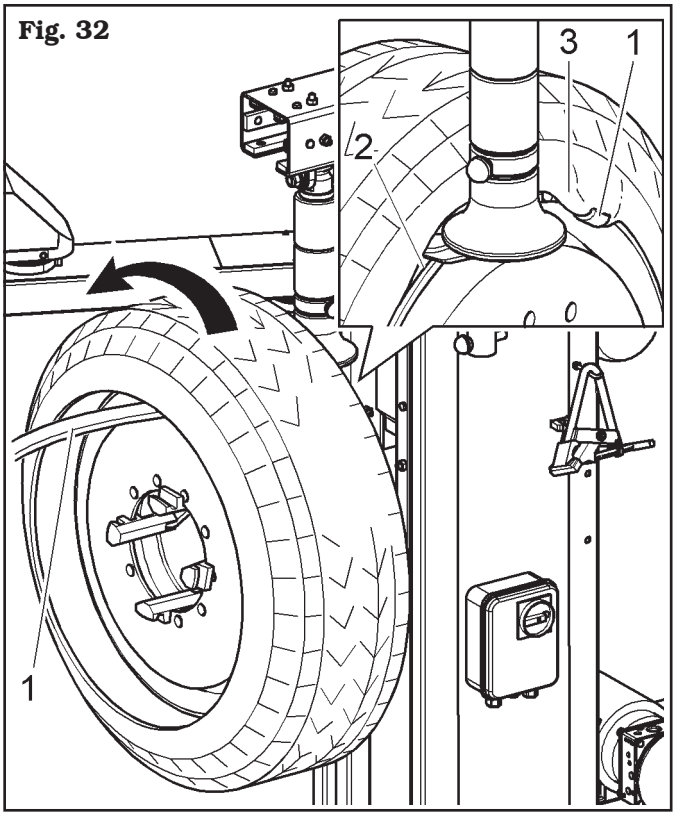
- Mount the hook tool turned towards the tyre in order to insert the same hook between the rim edge and the tyre bead; the operation must be carried out during the mandrel rotation.
- Move the rim away downwards from the tool by about 4-5 cm to avoid possible unhooking of the bead of the same tool.
- Translate the hook tool outwards until the reference notch matches the external edge of the rim.
- Move to work position **A** (**Fig. 11**).
- Insert lever (**Fig. 31 pos. 1**) between the rim and the bead on the right-hand side of the tool.

Fig. 31



- Keeping the lever pressed, lift the wheel until the edge of the rim is approximately 5 mm distant from the hook tool.
- Turn the wheel clockwise keeping lever pressed until the bead has gone completely out.
- Move away the roll holder arm in "off-work" position (**Fig. 18 pos. 1**); lower the mandrel until the tyre rests on the floor; exert a certain pressure on it; this will create enough space to extract the inner tube.
- Extract the inner tube and lift the wheel.
- Move to work position **C** (**Fig. 11**).
- Unhook the roll holder arm and place it in "out of work" (**Fig. 18 pos. 1**); use the handle control to position the roll holder arm on the inner side of the wheel; place it in "work position" (**Fig. 17 pos. 1**) and secure with the safety pin provided (**Fig. 1 2** and **3 pos. 12**).
- Remount the hook tool with 180° rotation, according to the descriptions in the relevant paragraph, in order to insert the hook between the rim edge and the tyre bead; the operation must be carried out during the mandrel rotation.
- Move the rim away downwards from the tool by about 4-5 cm to avoid possible unhooking of the bead of the same tool.
- Move to work position **A** (**Fig. 11**).
- Translate the hook tool outwards until the reference notch is 3 cm inside the rim.
- Insert lever (**Fig. 32 pos. 1**) between the rim (**Fig. 32 pos. 2**) and the bead (**Fig. 32 pos. 3**) on the left-hand side of the tool.

Fig. 32



- Keeping the lever pressed, lift the wheel until the edge of the rim is approximately 5 mm distant from the hook tool then turn the mandrel counterclockwise keeping the lever (**Fig. 32 pos. 1**) pressed until the tyre has been completely dislodged from the rim.

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 MANDREL CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR) (NAV26HW - NAV26HW.S).

- Secure the rim to the mandrel according to the procedure described in paragraph "WHEEL CLAMPING".
- Adequately lubricate the tyre beads and the rim bead seat with a suitable lubricant using the provided brush.

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

- Mount the grippers (on demand) (**Fig. 27 pos. 1**) on the external edge of the rim in the highest point as shown in **Fig. 27**.

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

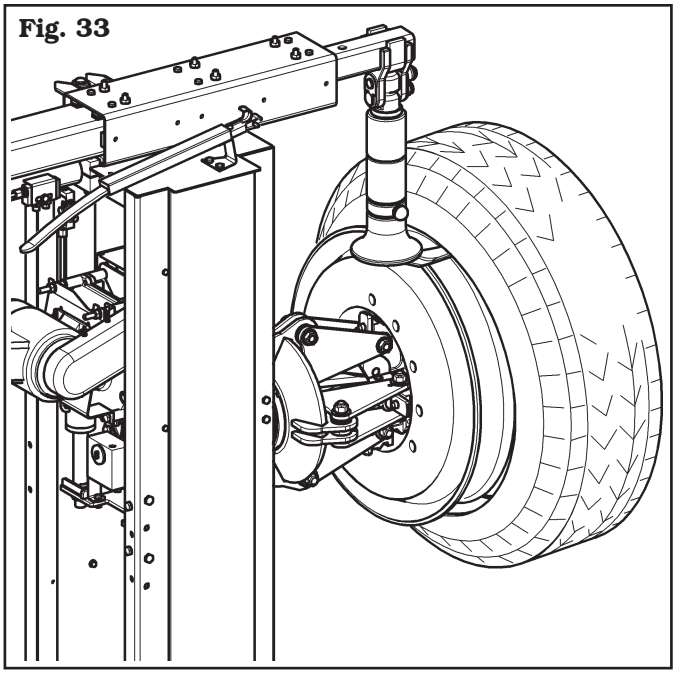
- Move to work position **B** (**Fig. 11**).
- Position the tyre near the machine and lower the mandrel (make sure that the grippers are in the highest point) to hook the first tyre bead (internal bead).
- Lift the mandrel with the tyre hooked and turn it clockwise by about 15-20 cm; the tyre will position itself sideways with respect to the rim.
- Bring the roll holder arm in the "out of work" position (**Fig. 18 pos. 1**); by operating on the handle control position the roll holder arm on the internal side of the wheel then bring it back into "working" position (**Fig. 17 pos. 1**) and lock it with the special safety pin.

PAY ATTENTION WHEN REPOSITIONING THE ROLL HOLDER ARM TO AVOID HAND CRUSHING.

ALWAYS MAKE SURE THAT THE ARM IS CORRECTLY LOCKED TO THE SHIFTING BEAM.

- Mount the hook tool turned towards the tyre in order to insert the same hook between the rim edge and the tyre bead; the operation must be carried out during the mandrel rotation.
- Move to work position **C** (**Fig. 11**).
- Move the tool forward until the axis of the reference notch matches that of the external edge of the rim at about 5 mm from the rim itself (see **Fig. 33**).

Fig. 33



- Move to work position **B** (**Fig. 11**).
- From the external side of the wheel, check the exact position of the tool and, if necessary, correct it. Then, turn the mandrel clockwise until the grippers reach in the closest point to the tool (11 o'clock). The first bead should now be inserted in the rim, therefore remove the grippers.
- Move to work position **C** (**Fig. 11**).
- Extract the tool hook from the tyre.
- Place the roll holder arm in "out of work" position (**Fig. 18 pos. 1**) and translate it to the outer side of the tyre.
- Remount the hook tool with a 180° rotation, according to the descriptions in the relevant paragraph.
- Move to work position **A** (**Fig. 11**).
- Turn the mandrel to position the hole to insert the valve downward (6 o'clock).
- Lower the mandrel 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 FIGURE 34.

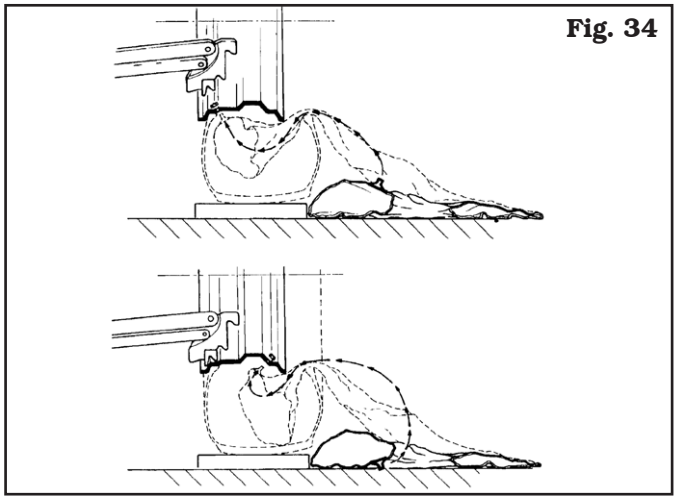


Fig. 34

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 the mandrel clockwise).

- Turn the mandrel and position the valve downwards (6 o'clock).
- To avoid damaging the inner tube, slightly inflate it when inserting the second bead.
- To avoid damaging the valve when fitting the second bead, remove the fixing ring nut and mount an extension on the same valve.
- Move to work position **B** (**Fig. 11**).
- Lift the mandrel and mount the grippers (**Fig. 35 pos. 1**) on the rim outside the second bead at about 20 cm from the inflating valve on the right.
- Turn the mandrel counterclockwise until grippers (**Fig. 35 pos. 1**) are positioned at 1 o'clock.

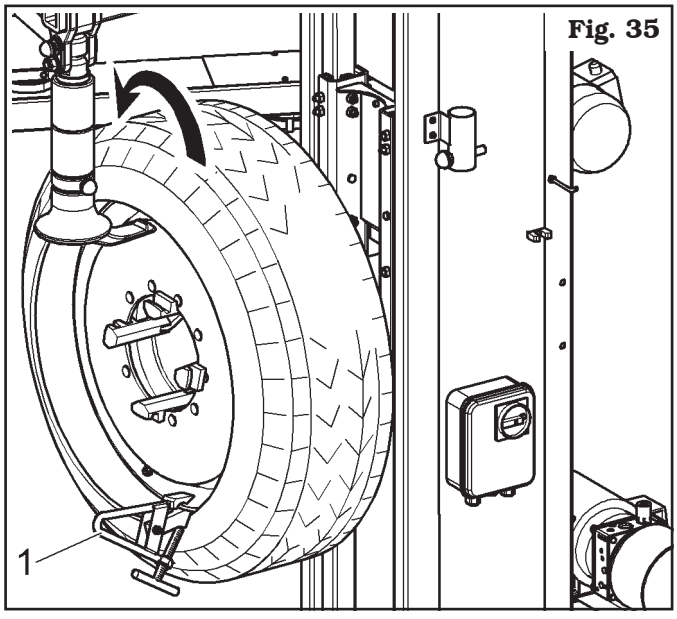


Fig. 35

- Place the roll holder arm in "working position" (**Fig. 17 pos. 1**) to the outer side of the tyre.
- Place the hook tool in work position and bring the roll holder arm forward until the axis of the reference notch matches that of the outer edge of the rim at a distance of 5 mm.
- Turn the mandrel clockwise until lever (**Fig. 36 pos. 1**) is introduced in the housing obtained on the hook tool.
- Turn the mandrel clockwise with lever (**Fig. 36 pos. 1**) hooked until complete insertion of the tyre outer bead.
- Remove lever (**Fig. 36 pos. 1**), grippers (**Fig. 36 pos. 2**) and extract the hook tool by turning the mandrel counterclockwise and translating it outwards.

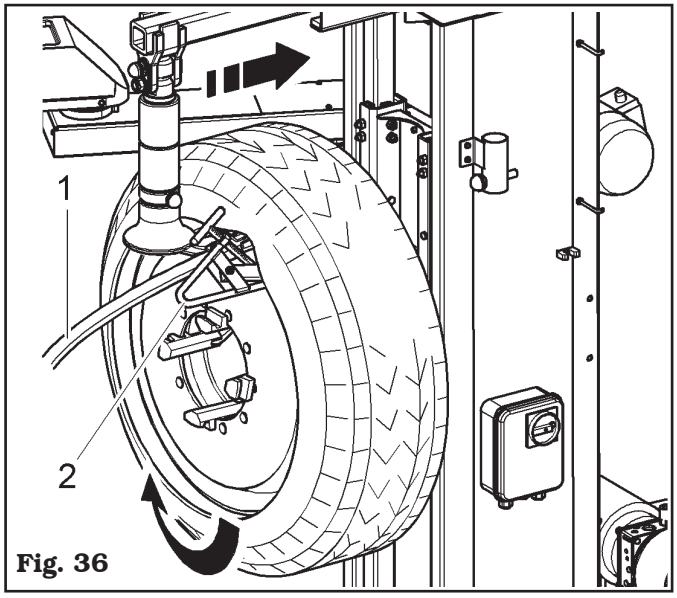


Fig. 36

- Place the roll holder arm in "out of work" position (**Fig. 18 pos. 1**) after having unhooked it.
- Lower the mandrel until the wheel rests on the floor.
- Move to work position **A** (**Fig. 11**).
- Check the state of the tyre valve and centre it, if necessary, in the rim hole by slightly turning the mandrel; fix the valve with the supplied ring nut after having removed the protective extension.
- Close the mandrel jaws completely (NAV26HW - NAV26HW.S) or remove the locking ring nut (NAV26HW.ST) 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.

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

12.9 Wheels with bead wire

As an example **Fig. 37** and **38** illustrate sections and compositions of types of wheels with bead wire currently being sold.

Fig. 37

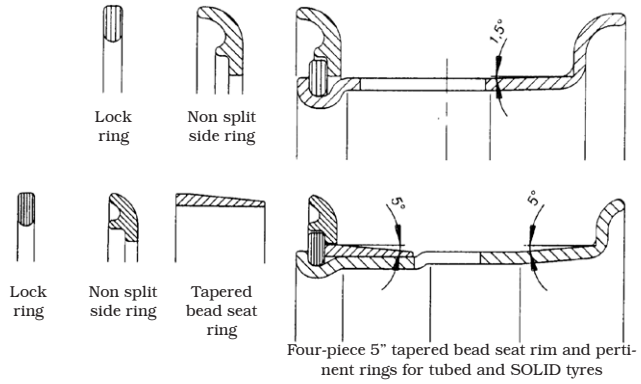
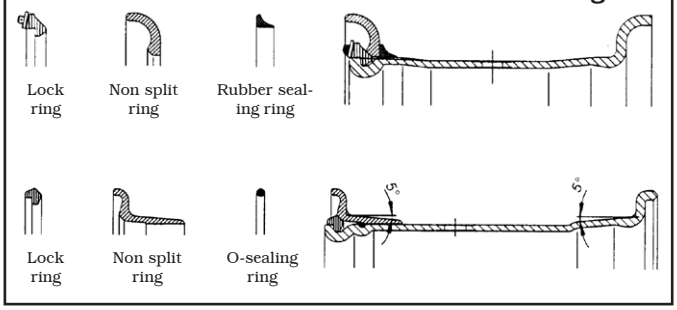


Fig. 38



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 MANDREL CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR) (NAV26HW - NAV26HW.S).

- Mount the wheel on the mandrel as described in "WHEEL CLAMPING" and make sure it is deflated.
- Move to work position **C** (**Fig. 11**) with G108A22 fixture (optional).
- Place the roll holder arm in "working position" (**Fig. 17 pos. 1**) in the tyre inner side, and make sure it is locked by the provided safety stop (**Fig. 1, 2** and **3 pos. 12**).
- Mount the accessory (as shown in **Fig. 39**) and position the beading disc on rim edge (see **Fig. 39**).

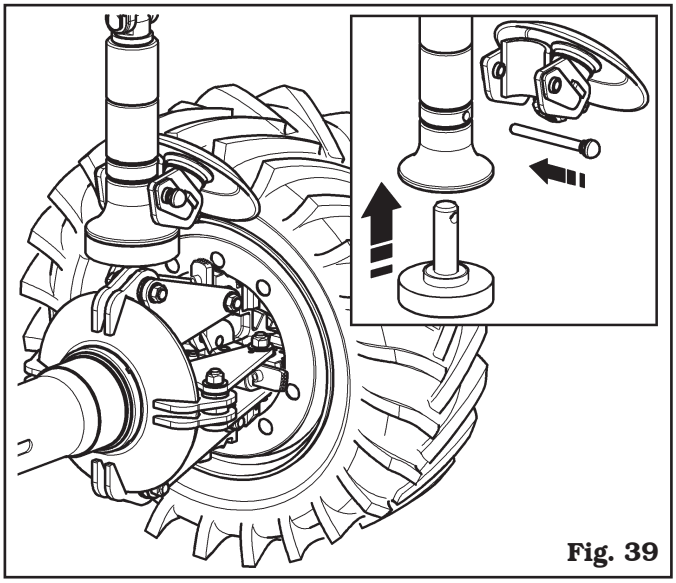
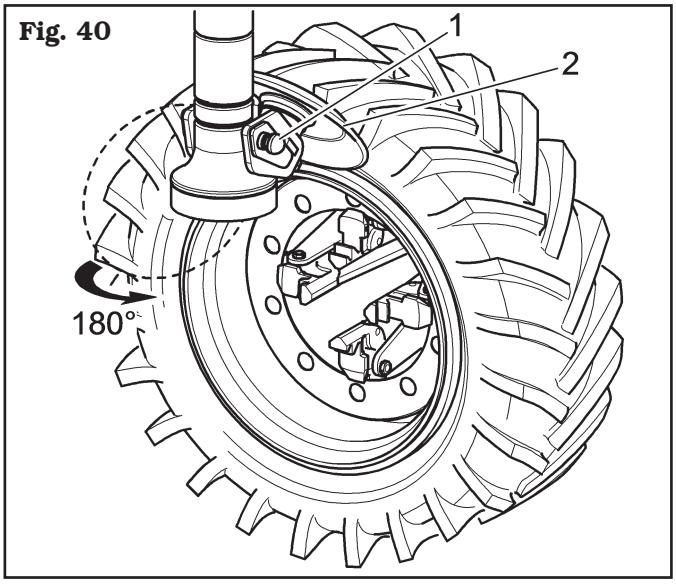


Fig. 39

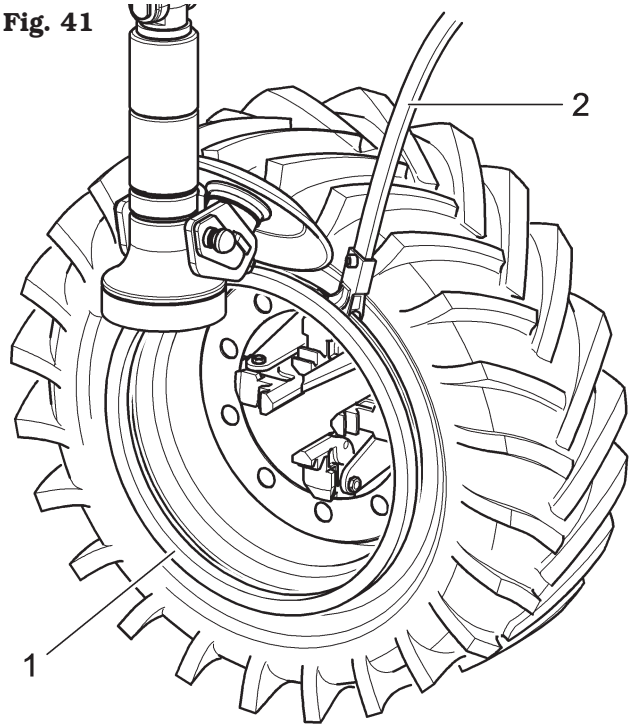
- Turn the mandrel and smear the entire bead seat of the rim with lubricant. While doing this, jerk the beading disc forward until the first bead is removed (as these wheels feature inner tubes, carry out the operation carefully, paying special attention to when the bead dislodges, trying to stop disc advancement immediately to avoid compromising the integrity of the inner tube and valve).
- Bring the roll holder arm in "out of work" position (**Fig. 18 pos. 1**); by operating on the handle control position the roll holder arm on the external side of the wheel then bring it back into "working" position (**Fig. 17 pos. 1**) and lock it with the special safety pin.
- Remove the pin (**Fig. 40 pos. 1**), turn the beading disc (**Fig. 40 pos. 2**) with 180° rotation and lock it again with the pin (**Fig. 40 pos. 1**) in order to be able to bring the beading disc itself in contact with the external side of the tyre (see **Fig. 40**).

Fig. 40



- Turn the mandrel and smear the entire bead seat of the rim with lubricant.
- While doing this, jerk the beading disc forward until the first bead is removed.
- Repeat the operation, making the beading disc move forward (see **Fig. 41**) until the stop ring is released (**Fig. 41 pos. 1**). It will be then extracted through lever (**Fig. 41 pos. 2**).

Fig. 41



- Remove the bead wire.
- Remove the O-Ring, when featured.
- Place the roll holder arm in "out of work" position (**Fig. 18 pos. 1**) after having unhooked it.
- Move to work position **A** (**Fig. 11**).
- Bring back the roll holder arm inside the tyre in "work position" (**Fig. 17 pos. 1**). Remove the pin, turn the beading disc with a 180° rotation and lock it again with the pin.
- Move forward the bead breaking disc 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.

PAY ATTENTION WHEN REPOSITIONING THE ROLL HOLDER ARM TO AVOID HAND CRUSHING.

ALWAYS MAKE SURE THAT THE ARM IS CORRECTLY LOCKED TO THE SHIFTING BEAM.

12.9.2 Mounting

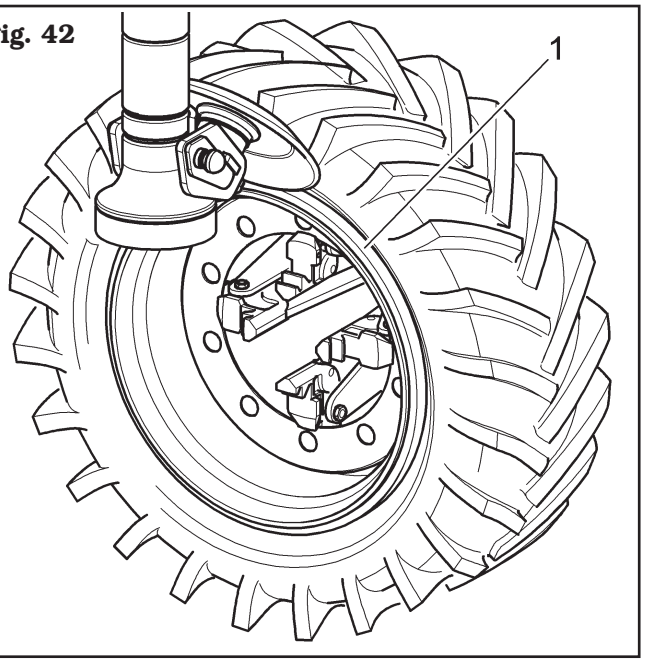
THROUGHOUT TYRE MOUNTING/DEMOUNTING OPERATIONS, CHECK THAT THE SELF-CENTRING MANDREL CLAMPING PRESSURE IS CLOSE TO THE MAXIMUM OPERATING VALUE (130 BAR) (NAV26HW - NAV26HW.S).

- Place the roll holder arm in "out of work" position (**Fig. 18 pos. 1**); if it has been removed, fix the rim to the mandrel as described in "WHEEL CLAMPING" paragraph. 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. 11**).
- Place the mandrel 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. 11**).
- Place the roll holder arm on the external side then lower it into "work position" (**Fig. 17 pos. 1**). Mount the accessory G108A22 with the beading disc facing the wheel. If the outer edge ring is not sufficiently fitted on the rim, position the mandrel until the bead wire is near the beading disc.

Move the beading disc forward and then turn the mandrel until the housing of the O-Ring (if featured) is uncovered.

- Lubricated the O-Ring and place it in its housing.
- Move to work position **A** (**Fig. 11**).
- Position the bead wire (**Fig. 42 pos. 1**) on the rim, fit the stop ring with the help of the beading disc as shown in **Fig. 42**.

Fig. 42



- Place the roll holder arm in "out of work" position (**Fig. 18 pos. 1**) after having unhooked it.
- Lower the mandrel until the wheel rests on the floor.
- Close the mandrel jaws completely (NAV26HW - NAV26HW.S) or remove the locking ring nut (NAV26HW.ST) making sure the wheel is held up to avoid dropping.
  Remove the wheel from the machine by making it roll.

CLOSING THE MANDREL CAUSES THE WHEEL TO 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 OR ADJUSTMENT PROCEDURE, DISCONNECT THE MACHINE FROM THE ELECTRICITY SUPPLY USING THE SOCKET/PLUG COMBINATION AND CHECK THAT ALL MOBILE PARTS ARE AT A STANDSTILL.

BEFORE EXECUTING ANY MAINTENANCE OPERATION, MAKE SURE THERE ARE NO WHEELS LOCKED ONTO THE SELF-CENTRER.

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.
- **NEVER BLOW 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 (mandrel and roll holder arm).
- Periodically (preferably once a month), grease all moving parts of the machine (see **Fig. 43**).

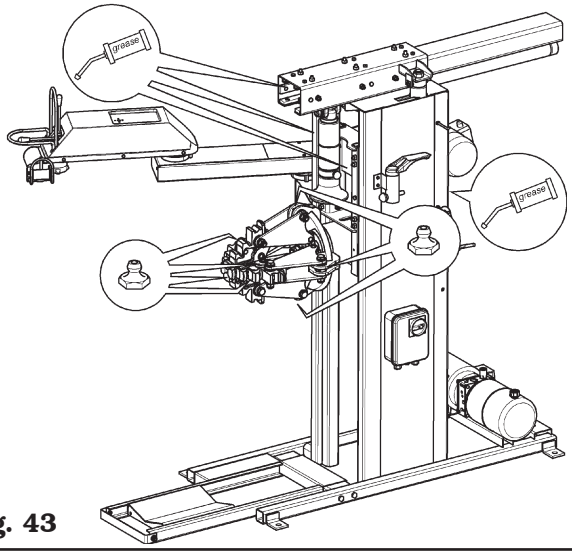


Fig. 43

- 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 hydraulic unit itself.

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

- Periodically (about every 100 hours), check the oil level of the reduction gear and eventually reset the level.
- Check operation of the safety devices every week.

ONLY FOR NAV26HW.S

A. Check the reduction gear oil level (**Fig. 44 pos. 1**); the level indicator window (**Fig. 44 pos. 2**) must be covered with lubricant, otherwise, remove the plug provided and top up using appropriate lubricants until the level is reset.

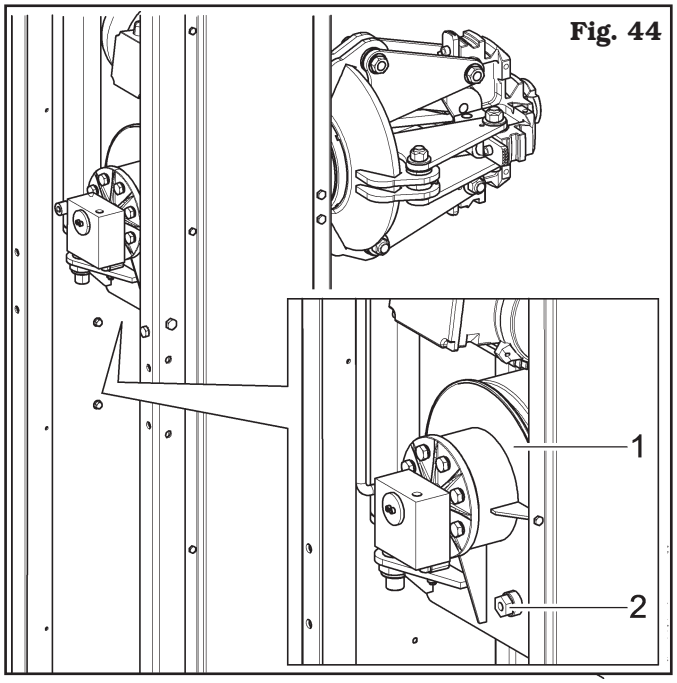


Fig. 44

B. Check the belt tensioning (**Fig. 45-46 pos. 1**):

- Remove protection guard (**Fig. 45-46 pos. 2**) with a screwdriver.
- Stretch the belt (**Fig. 45-46 pos. 1**) using the screw (**Fig. 45-46 pos. 3**) after the nuts (**Fig. 45-46 pos. 4**) have been slackened.
- Tighten the fixing nuts (**Fig. 45-46 pos. 4**) after the adjustment operations, then assemble the protection guard (**Fig. 45-46 pos. 2**).

ONLY FOR NAV26HW.S

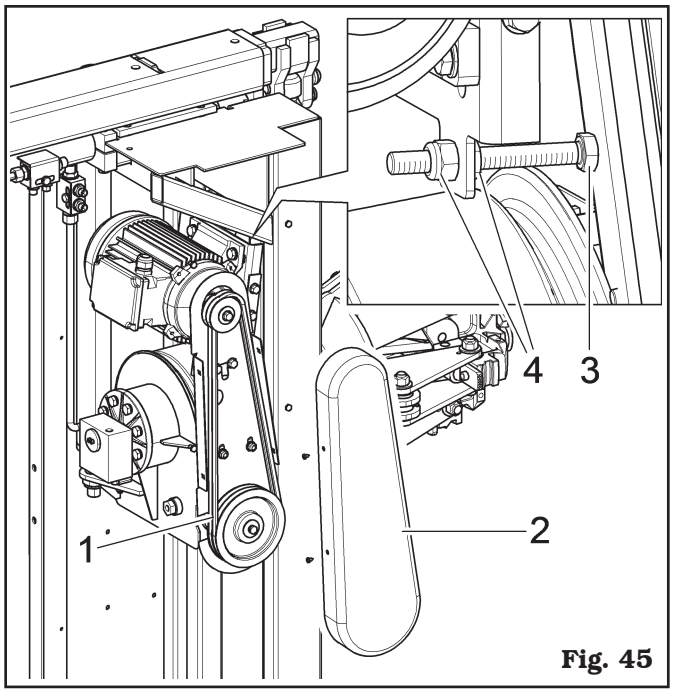


Fig. 45

ONLY FOR NAV26HW - NAV26HW.ST

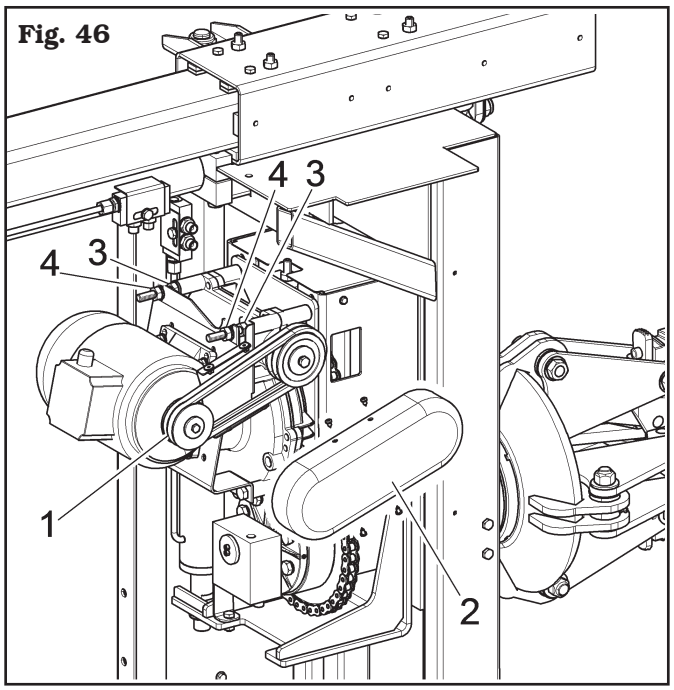


Fig. 46

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

C. Check periodically and, if necessary, adjust the play of slide (**Fig. 47 pos. 1**) on guide plate (**Fig. 47 pos. 2**) by means of the adjustment screws (**Fig. 47 pos. 3**) of sliding blocks (**Fig. 47 pos. 4**).

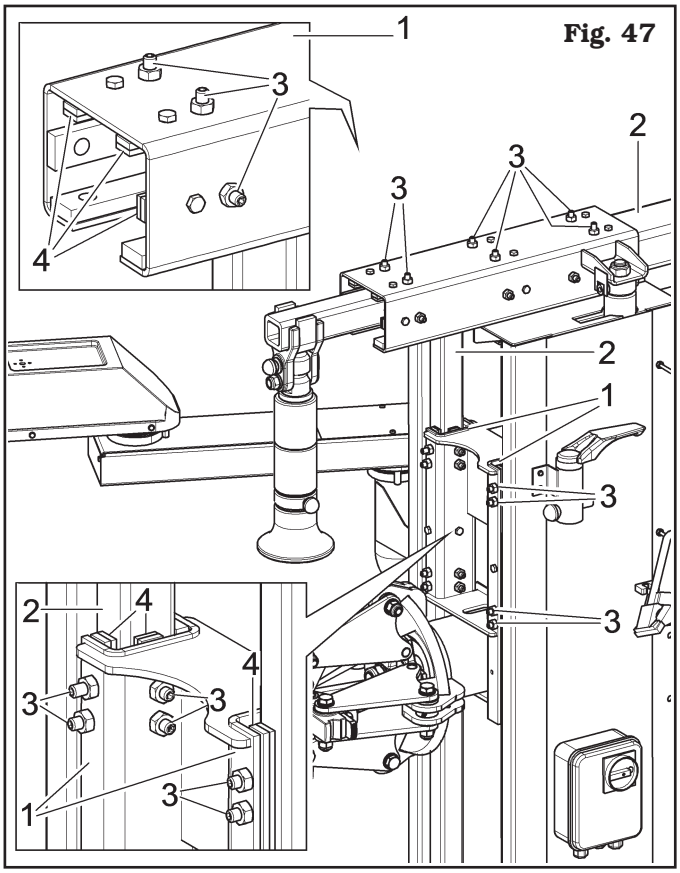


Fig. 47

- Periodically, every 50 working hours approximately, clean the (inner and outer) guides of the mandrel and of roll 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 mandrel motor works perfectly.	**a)** Hydraulic control unit damaged.	**a)** Call Technical Service Dept. 
When main switch is turned on, wheel holder mandrel does not turn whereas the pump motor works.	**a)** Gearbox change-over switch damaged.	**a)** Call Technical Service Dept. 
Power drop during wheel holder mandrel rotation.	**a)** Timing belt too loose.	**a)** Tension up the belt.
No pressure in the hydraulic system.	**a)** Pump damaged.	**a)** Replace pump. 
The mandrel opening pressure does not go down (NAV26HW - NAV26HW.S).	**a)** Pressure limiting valve jammed.	**a)** Download mandrel (remove wheel), completely undo adjusting handle. Perform many opening and closing cycles until jam release. 
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 cylinder is losing pressure (NAV26HW - NAV26HW.S).	**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.

Problem	Possible cause	Remedy
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. 
No pressure in hydraulic circuit.	**a)** Power unit motor turning in wrong direction. **b)** Power unit pump is broken. **c)** No oil in power unit tank	**a)** Restore correct rotation direction by changing socket connection. **b)** Call the after-sales service. **c)** Fill power unit tank with oil 
Machine operates in jerks.	**a)** Not enough fluid in power unit tank. **b)** Control unit switch has failed.	**a)** Top up with oil. **b)** Call the after-sales service. 

15.0 TECHNICAL DATA

15.1 NAV26HW technical data

Mandrel motor: ..... power **1,1 kW** three-phase power supply **400V (50 Hz)**
Mandrel rotation maximum speed: ..... **6,5 rpm**
Mandrel rotation maximum speed (VARGNAV26HWD - version with inverter): ..... **1-5-10 rpm**
Maximum wheel diameter: ..... **1300 mm**
Wheel maximum width: ..... **950 mm / 37"**
Wheel maximum weight: ..... **1200 kg**
Minimum locking hole: ..... **90 mm**
Oil-pressure unit motor: ..... power **0,75 kW** three-phase power supply **400V (50 Hz)**
Operating pressure: ..... **130 bar**
Weight: ..... **396 kg**
Noise level: ..... **< 80 dB (A)**

15.2 NAV26HW.S technical data

Mandrel motor: ..... power **2 kW** three-phase power supply **400V (50 Hz)**
Mandrel rotation maximum speed: ..... **8 rpm**
Maximum wheel diameter: ..... **1300 mm / 51"**
Wheel maximum width: ..... **950 mm / 37"**
Wheel maximum weight: ..... **1200 kg**
Minimum locking hole: ..... **90 mm**
Oil-pressure unit motor: ..... power **2,2 kW** three-phase power supply **400V (50 Hz)**
Operating pressure: ..... **130 bar**
Weight: ..... **385 kg**
Noise level: ..... **< 80 dB (A)**

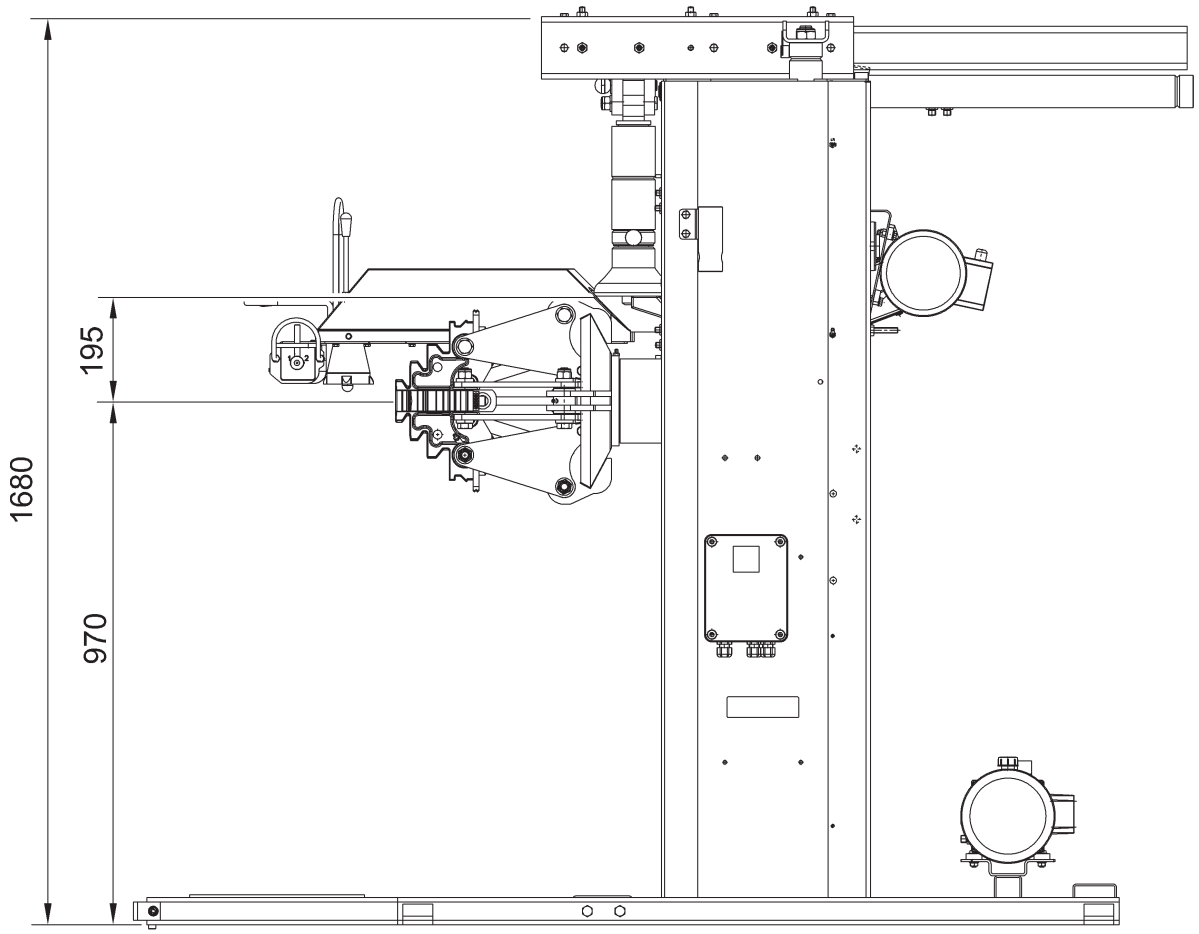
15.3 NAV26HW.ST technical data

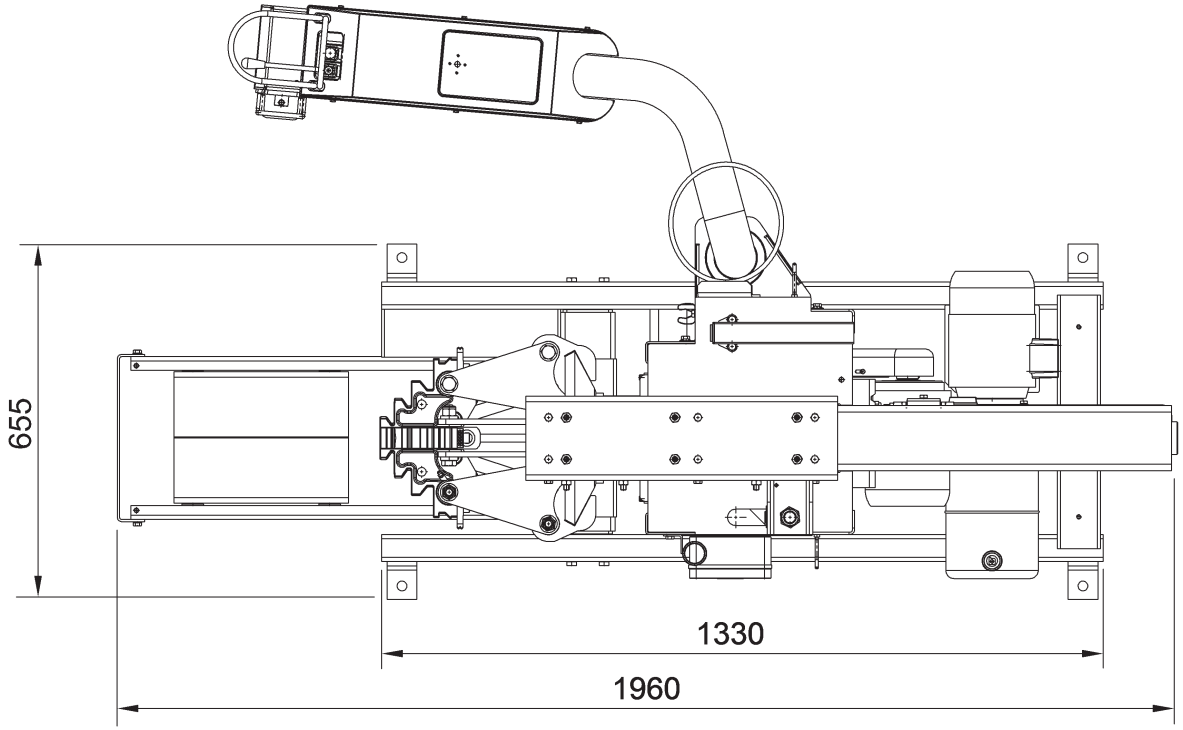
Mandrel motor: ..... power **1,1 kW** three-phase power supply **400V (50 Hz)**
Mandrel rotation maximum speed: ..... **6,5 rpm**
Maximum wheel diameter: ..... **1300 mm / 51"**
Wheel maximum width: ..... **950 mm / 37"**
Wheel maximum weight: ..... **1200 kg**
Oil-pressure unit motor: ..... power **0,75 kW** three-phase power supply **400V (50 Hz)**
Operating pressure: ..... **130 bar**
Weight: ..... **357 kg**
Noise level: ..... **< 80 dB (A)**

15.4 Dimensions

NAV26HW

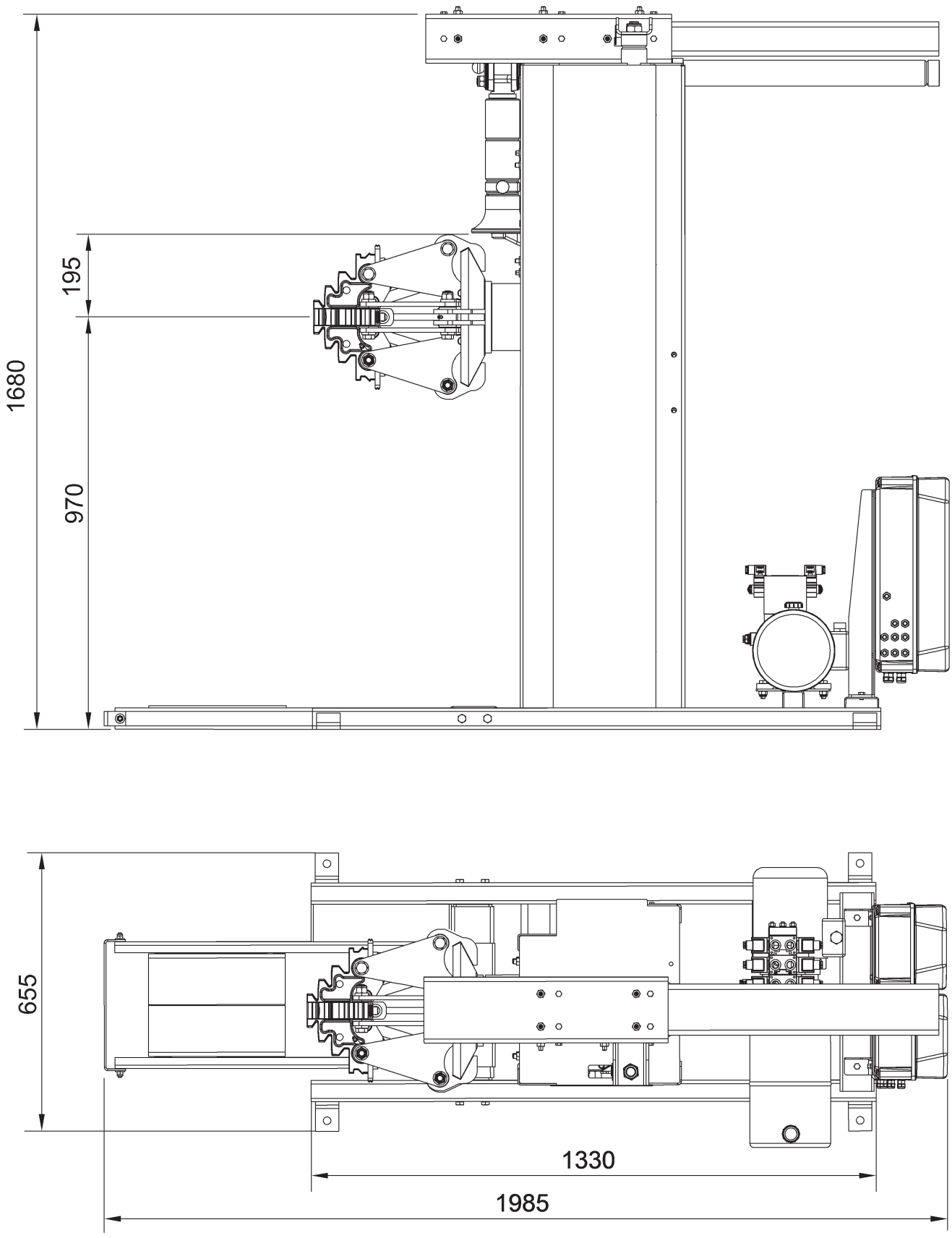
Fig. 48





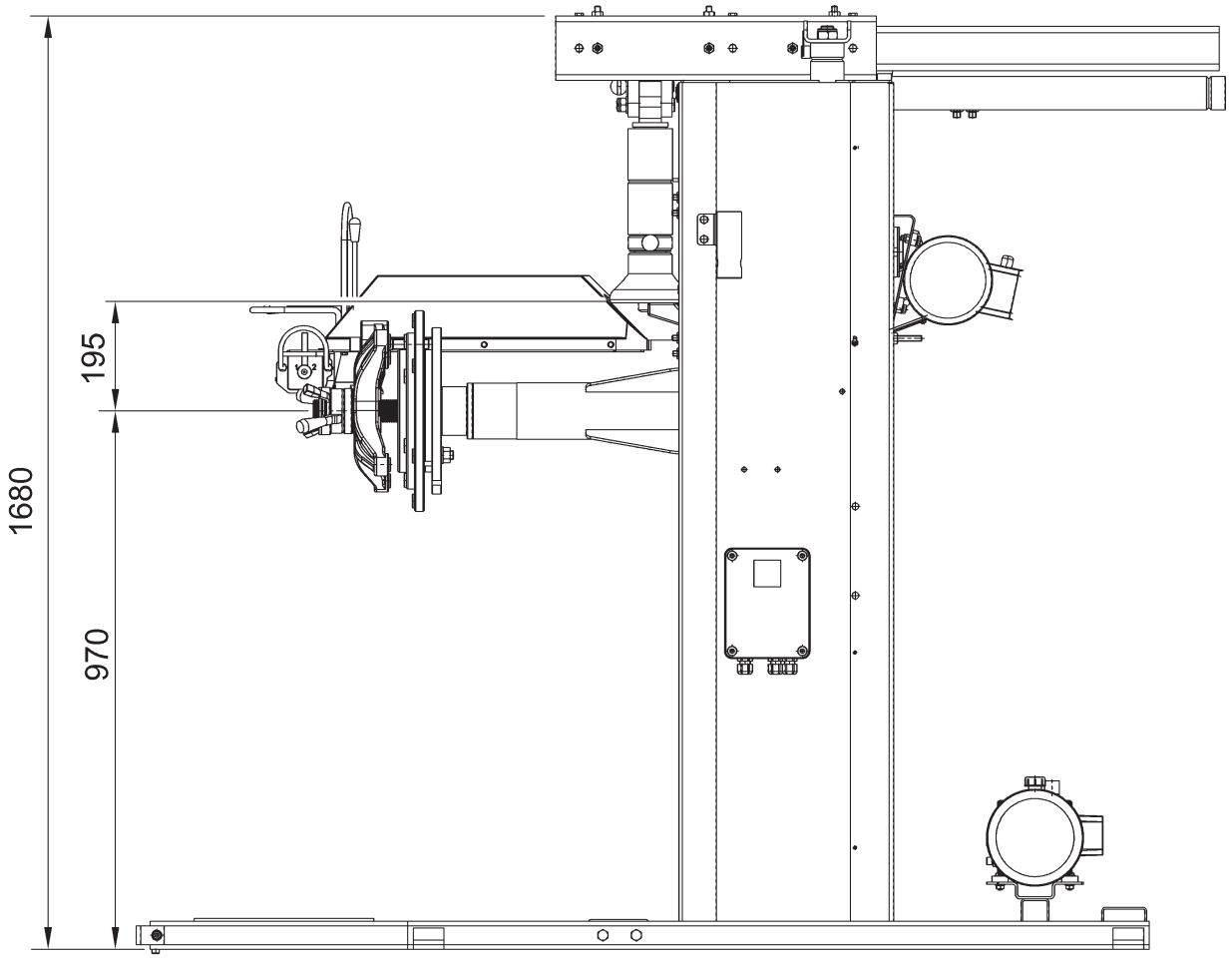
NAV26HW.S

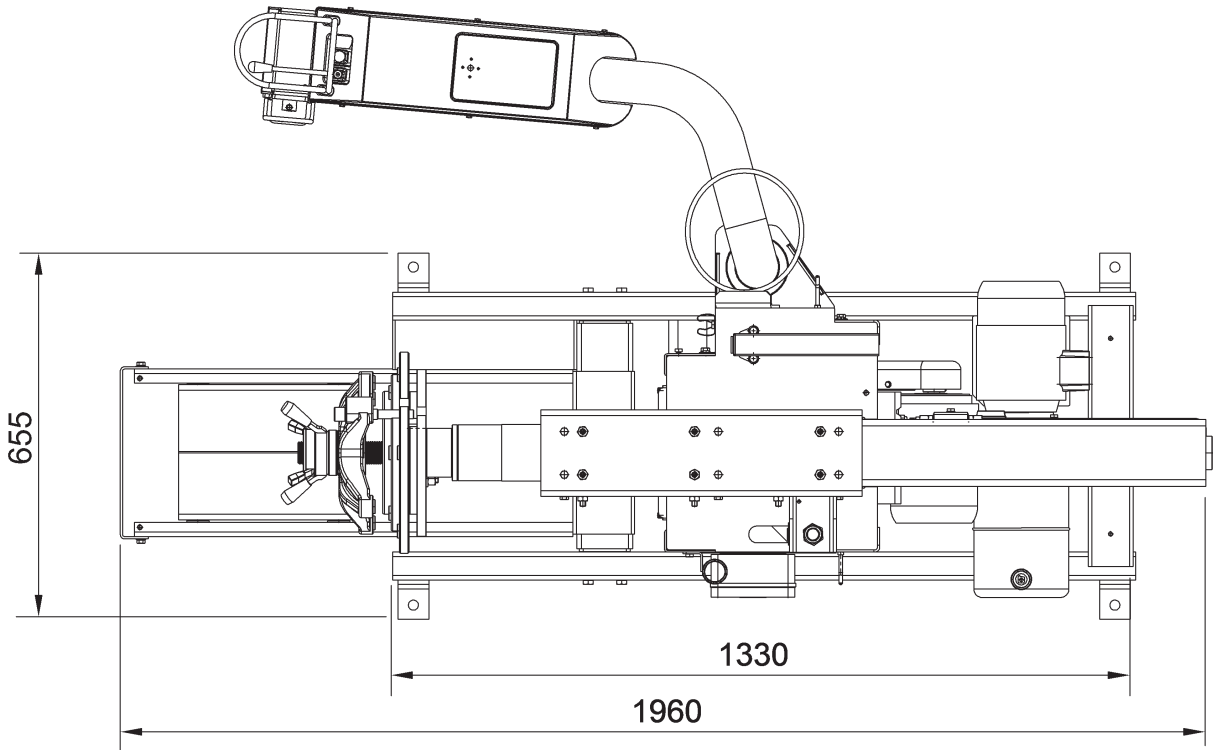
Fig. 49



NAV26HW.ST

Fig. 50





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.

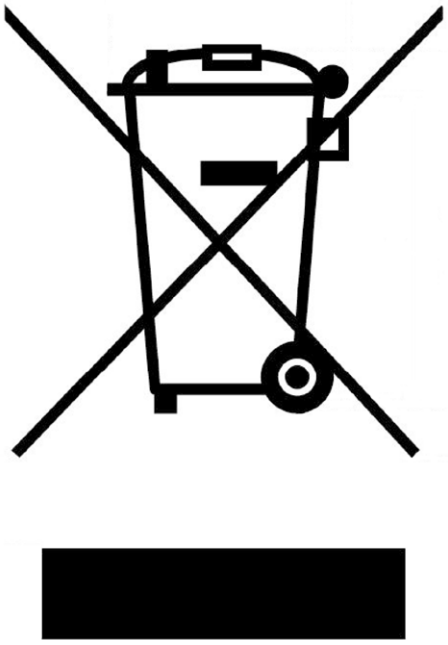
17.0 SCRAPPING

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. 51



18.0 REGISTRATION PLATE DATA

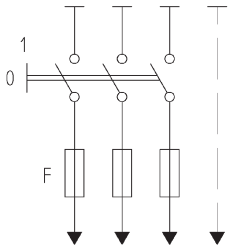
The validity of the Conformity Declaration enclosed to this manual is also extended to products and/or devices the machine model object of the Conformity Declaration can be equipped with.
Said plate must always be kept clean from grease residues or filth generally.

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

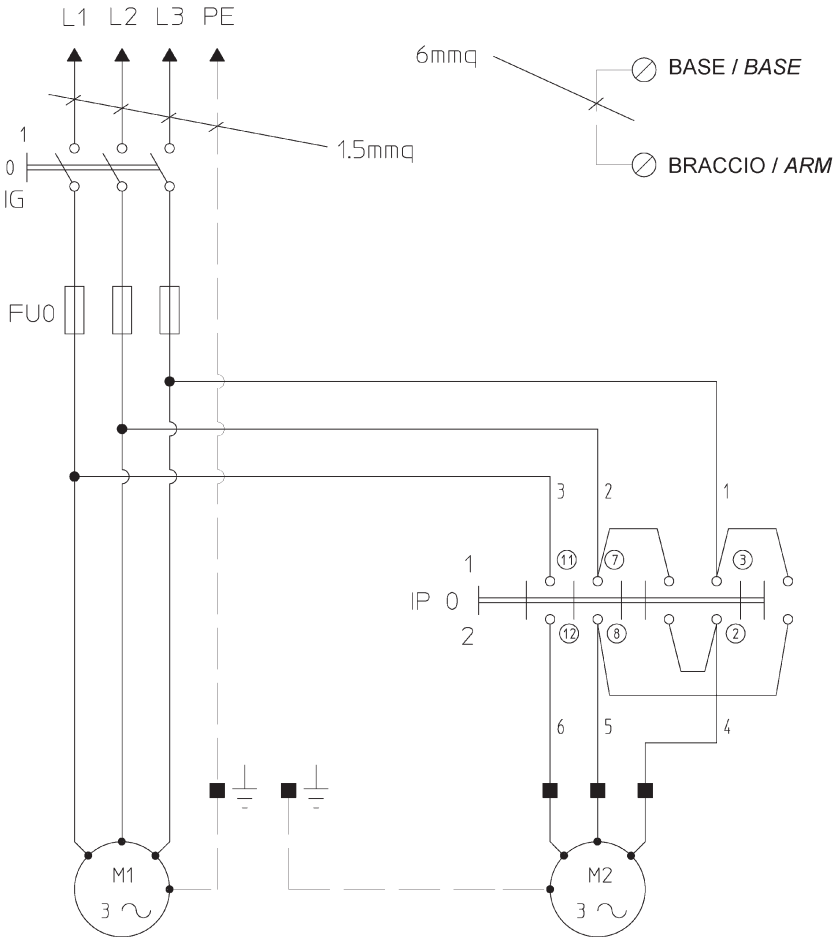
Here follows a list of the machine functional diagrams.



INSTALLAZIONE A CARICO DEL CLIENTE
INSTALLATION TO BE MADE BY THE USER

HZ \ V	230	400
F 50	16A aM	10A aM
60	16A aM	10A aM

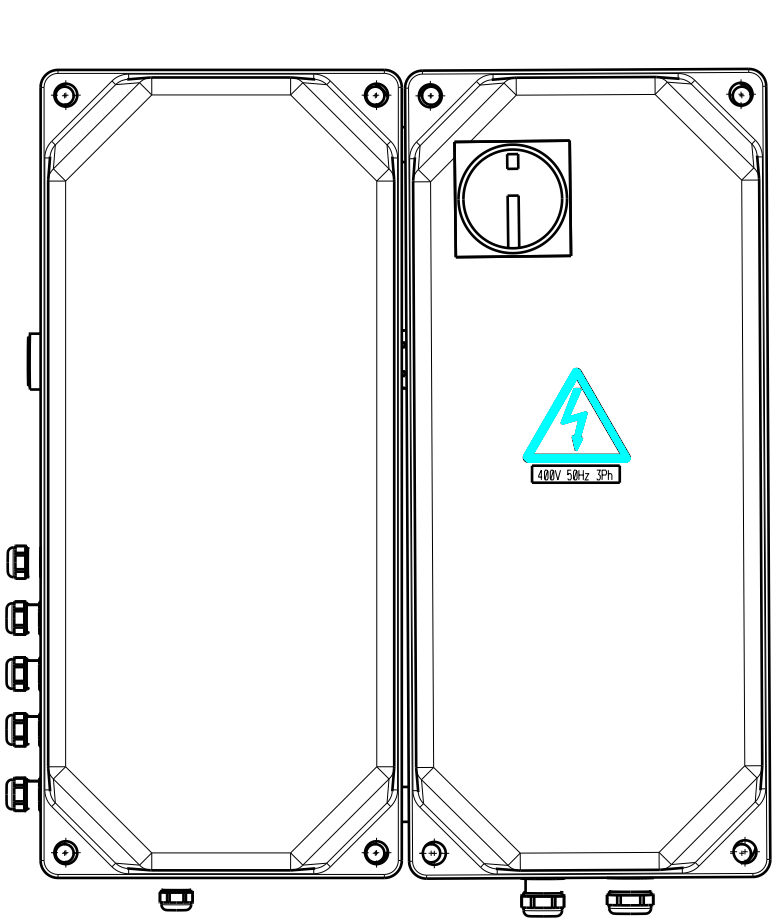
CAVO ALIMENTAZIONE 3P+TERRA x 1,5 mmq
SUPPLY CABLE 3P+GROUND x 1,5 mmq

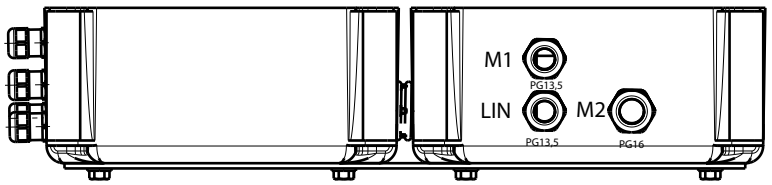


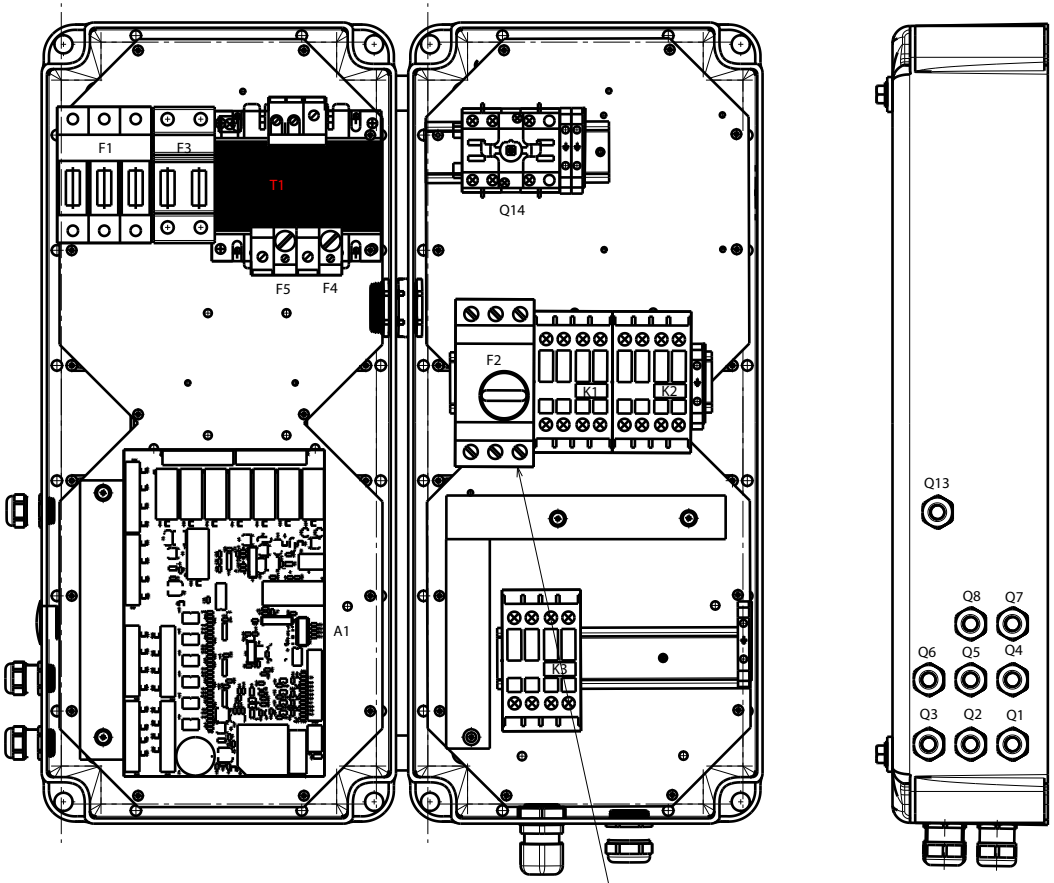
MORSETTI IP / *IP CLAMPS*

11 = T/L3
7 = S/L2
3 = R/L1
12 = W
8 = V
2 = U

N°	Cod.	Descrizione	Description	Beschreibung	Description	Descripción
	■	*Morsetto*	*Clamp*	*Klemme*	*Borne*	*Abrazadera*
	M2	*Motore mandrino*	*Chuck motor*	*Spiendel Motor*	*Moteur mandrin*	*Motor mandril*
	M1	*Motore centralina*	*Hydraulic power unit motor*	*Steuerung Motor*	*Moteur distributeur*	*Motor centralita*
	IP	*Invertitore pedaliera*	*Pedalboard inverter*	*Pedalleiste Frequenumformer*	*Variateur pédales de direction*	*Inversor pedalera*
	IG	*Interruttore generale*	*Main switch*	*Schalter general*	*Interrupteur general*	*Interruptor general*
	FU0	*Fusibile protezione linea*	*Line guard fuse*	*Linieschmelzsicherung*	*Fusible protection ligne*	*Fusible protección linea*



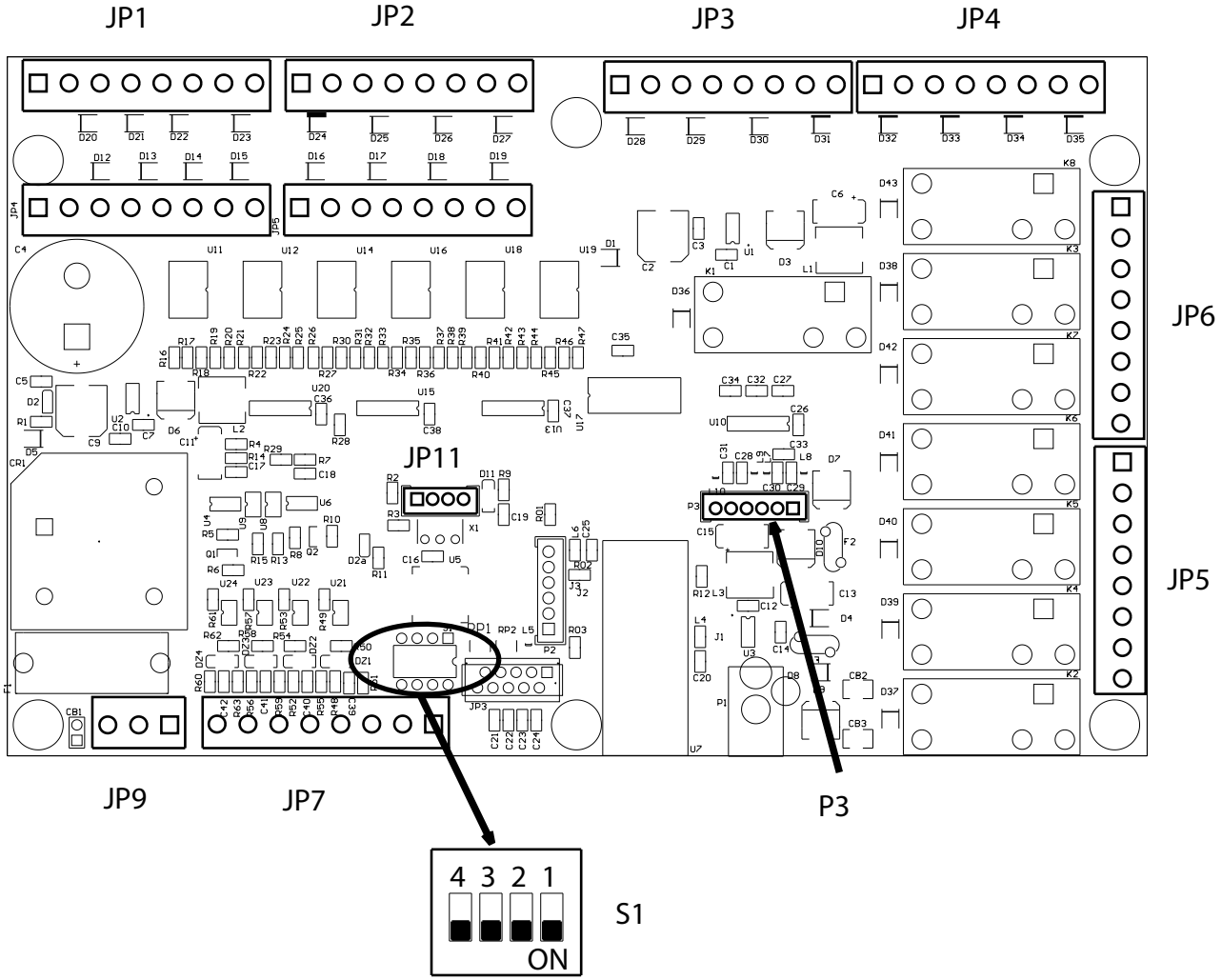




Tarare il salvamotore a 8A

Set the overload cut-out at 8A

TOPOGRAFICO SCHEDA RICEVENTE 18962
RECEIVING CARD 18962 TOPOGRAPHIC VIEW



IN/OUT SCHEDA RICEVENTE 18962

PIN JP1	NUMERO	FUNZIONE
1	JP1-1	Q1 MANDRINO GIU'
2	JP1-2	0V per Q1
3	JP1-3	Q2 MANDRINO SU
4	JP1-4	0V per Q2

PIN JP2	NUMERO	FUNZIONE
1	JP2-1	Q5 CHIUSURA MANDRINO
2	JP2-2	0V per Q5
3	JP2-3	Q6 APERTURA MANDRINO
4	JP2-4	N.U.
5	JP2-5	N.U.
6	JP2-6	N.U.
7	JP2-7	N.U.
8	JP2-8	N.U.

PIN JP3	NUMERO	FUNZIONE
1	JP3-1	N.U.
2	JP3-2	N.U.
3	JP3-3	N.U.
4	JP3-4	N.U.
5	JP3-5	Q3 AVANTI BRACCIO
6	JP3-6	0V per Q3
7	JP3-7	Q4 INDIETRO BRACCIO
8	JP3-8	0V pe Q4

PIN JP4	NUMERO	FUNZIONE
1	JP4-1	Q13 RICIRCOLO OLIO
2	JP4-2	0V per Q13
3	JP4-3	N.U.
4	JP4-4	N.U.
5	JP4-5	N.U.
6	JP4-6	N.U.
7	JP4-7	N.U.
8	JP4-8	N.U.

PIN JP5	NUMERO	FUNZIONE
1	JP5-1	N.U.
2	JP5-2	N.U.
3	JP5-3	0 Vac
4	JP5-4	N.U.
5	JP5-5	N.U.
6	JP5-6	KM3 COMANDO ROTAZ. CENTRALINA
7	JP5-7	KM2 COMANDO ROTAZ. ORARIA MANDRINO
8	JP5-8	KM1 COMANDO ROTAZ. ANTIORARIA MANDRINO

PIN JP7	NUMERO	FUNZIONE
1	JP7-1	COLLEGATO A JP7-2
2	JP7-2	COLLEGATO A JP7-1
3	JP7-3	N.U.
4	JP7-4	N.U.
5	JP7-5	N.U.
6	JP7-6	N.U.
7	JP7-7	N.U.
8	JP7-8	N.U.

PIN JP9	NUMERO	FUNZIONE
1	JP9-1	0 Vac
2	JP9-2	N.U.
3	JP9-3	19 Vac

RECEIVING CARD 18962 IN/OUT

PIN JP1	NUMBER	FUNCTION
1	JP1-1	Q1 MANDREL DOWN
2	JP1-2	OV for Q1
3	JP1-3	Q1 MANDREL UP
4	JP1-4	OV for Q2

PIN JP2	NUMBER	FUNCTION
1	JP2-1	Q5 MANDREL CLOSING
2	JP2-2	OV for Q5
3	JP2-3	Q6 MANDREL OPENING
4	JP2-4	N.U.
5	JP2-5	N.U.
6	JP2-6	N.U.
7	JP2-7	N.U.
8	JP2-8	N.U.

PIN JP3	NUMBER	FUNCTION
1	JP3-1	N.U.
2	JP3-2	N.U.
3	JP3-3	N.U.
4	JP3-4	N.U.
5	JP3-5	Q3 ARM FORWARD
6	JP3-6	OV for Q3
7	JP3-7	Q4 ARM BACKWARD
8	JP3-8	OV for Q4

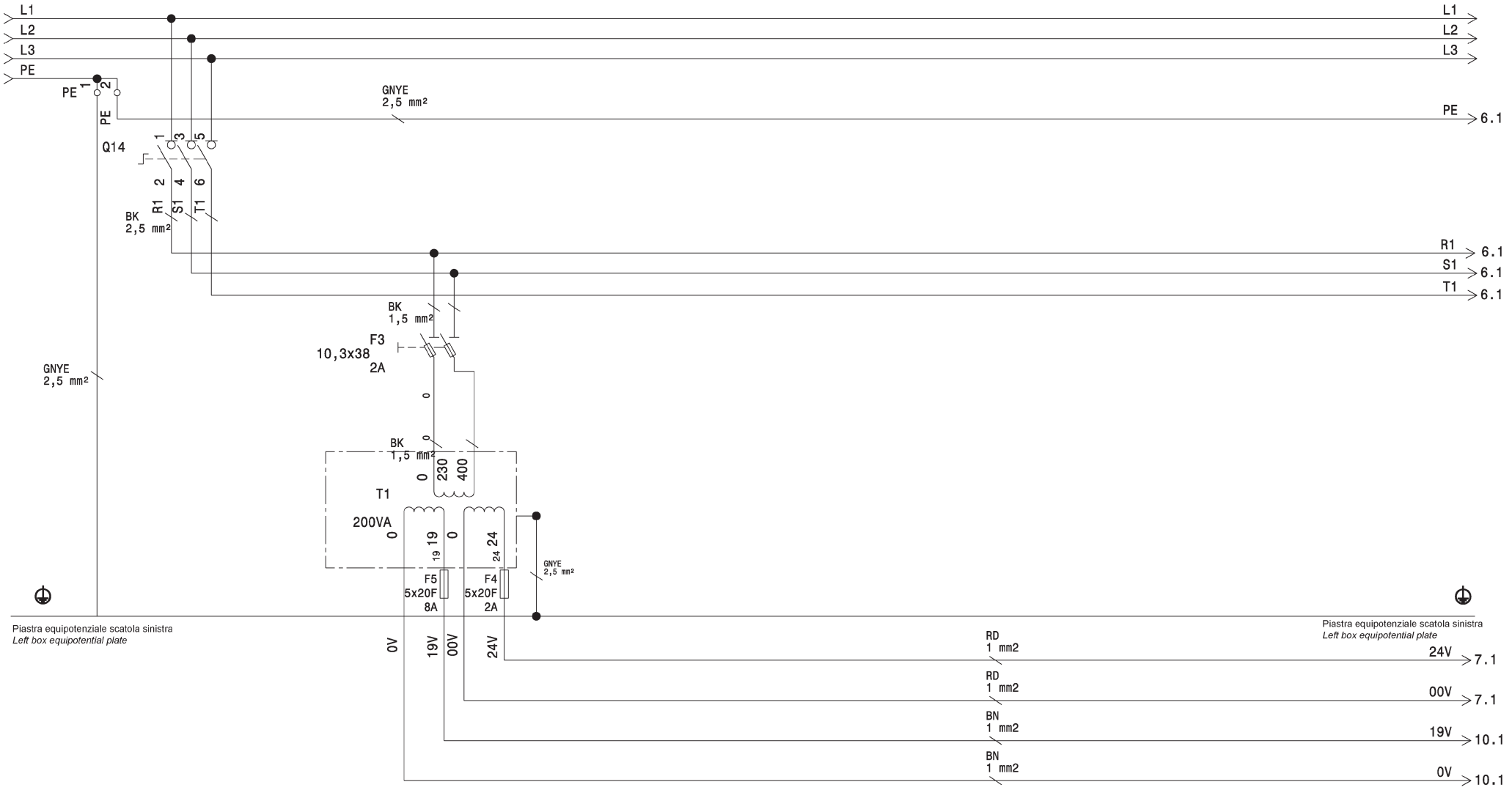
PIN JP4	NUMBER	FUNCTION
1	JP4-1	Q13 OIL RECIRCULATION
2	JP4-2	OV for Q13
3	JP4-3	N.U.
4	JP4-4	N.U.
5	JP4-5	N.U.
6	JP4-6	N.U.
7	JP4-7	N.U.
8	JP4-8	N.U.

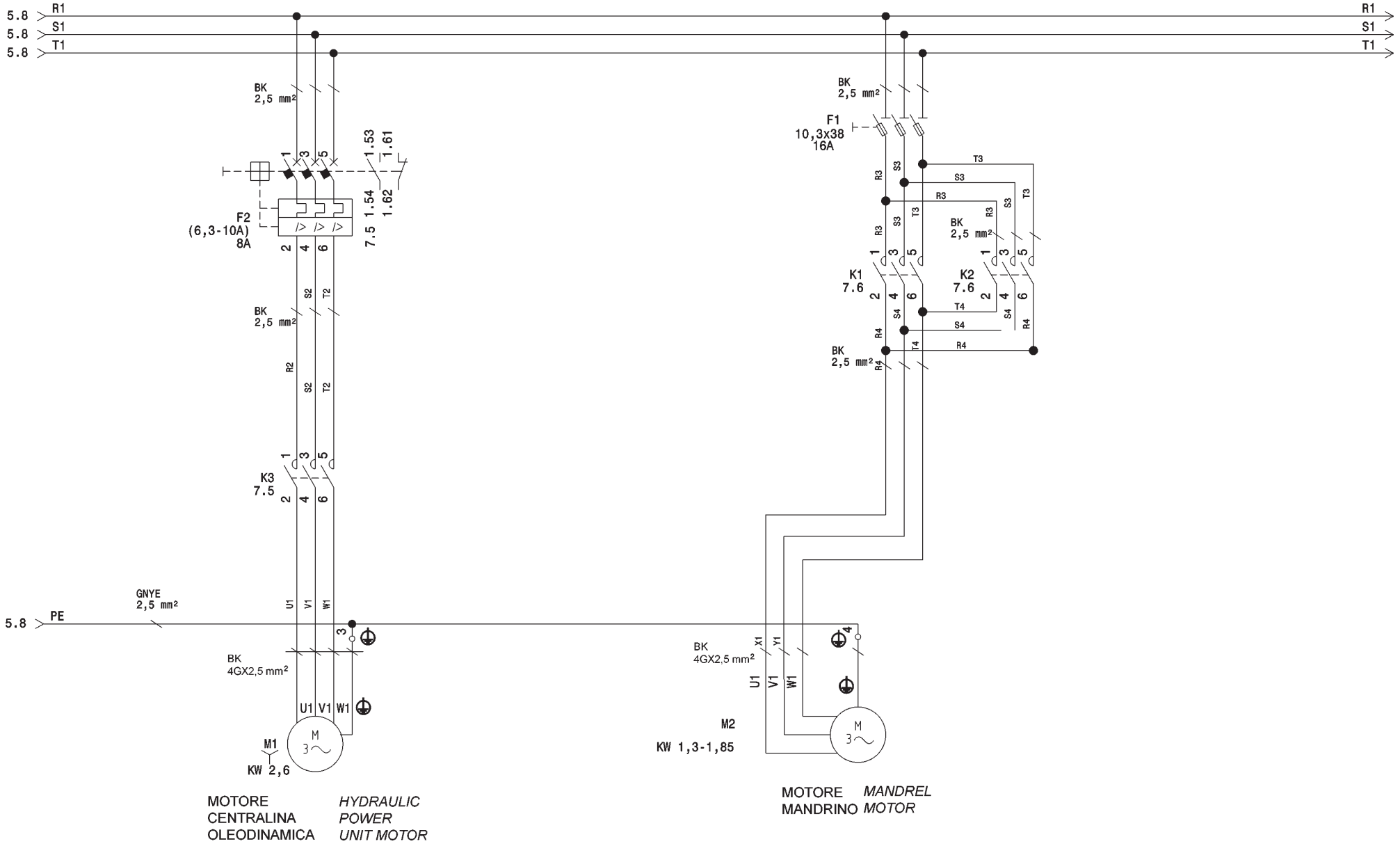
PIN JP5	NUMBER	FUNCTION
1	JP5-1	N.U.
2	JP5-2	N.U.
3	JP5-3	0 Vac
4	JP5-4	N.U.
5	JP5-5	N.U.
6	JP5-6	KM3 POWER UNIT ROTATION CONTROL
7	JP5-7	KM2 MANDREL CLOCKWISE ROTATION CONTROL
8	JP5-8	KM1 MANDREL COUNTERCLOCKWISE ROT. CONTROL

PIN JP7	NUMBER	FUNCTION
1	JP7-1	CONNECTED TO JP7-2
2	JP7-2	CONNECTED TO JP7-1
3	JP7-3	N.U.
4	JP7-4	N.U.
5	JP7-5	N.U.
6	JP7-6	N.U.
7	JP7-7	N.U.
8	JP7-8	N.U.

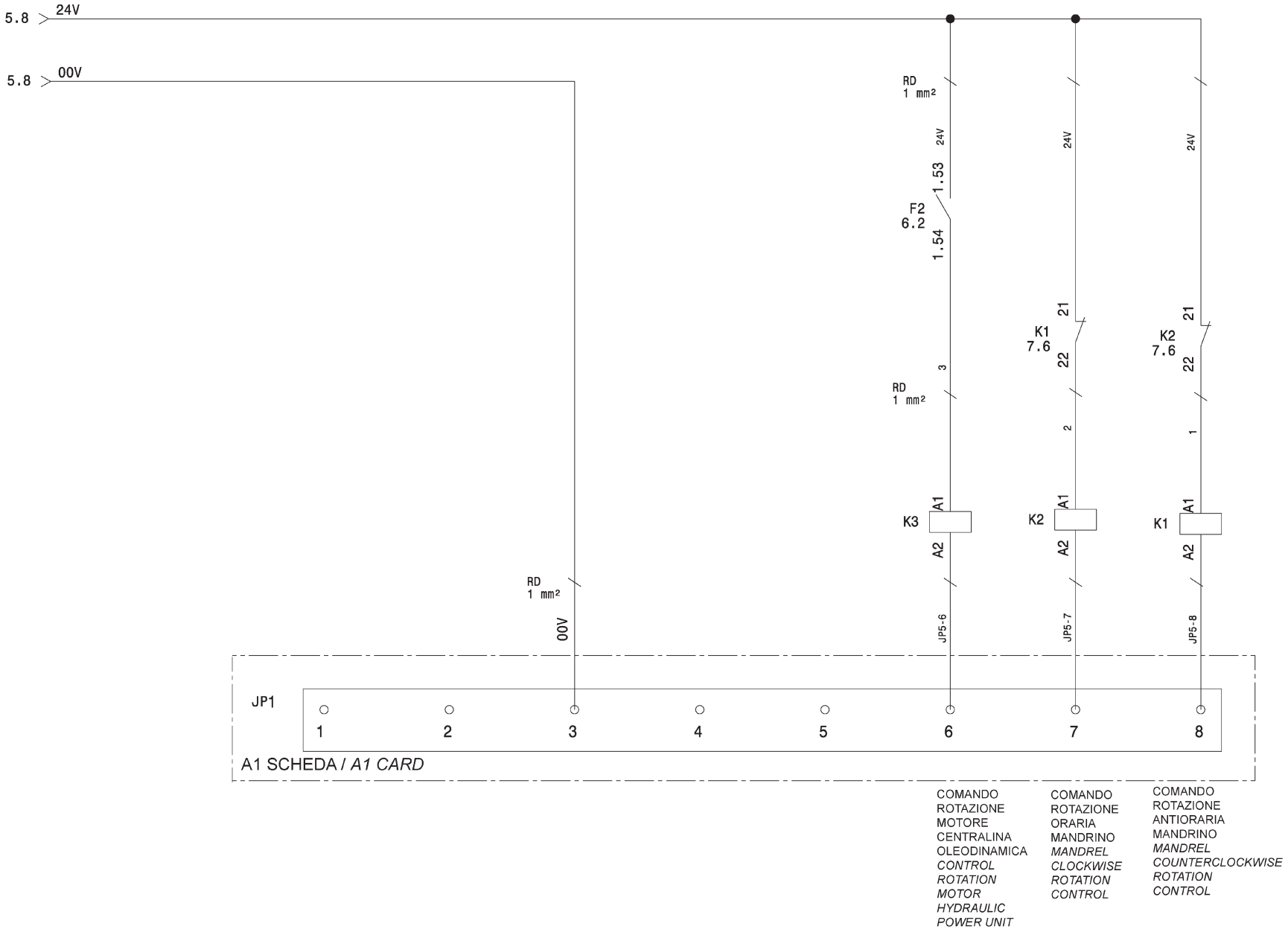
PIN JP9	NUMBER	FUNCTION
1	JP9-1	0 Vac
2	JP9-2	N.U.
3	JP9-3	19 Vac

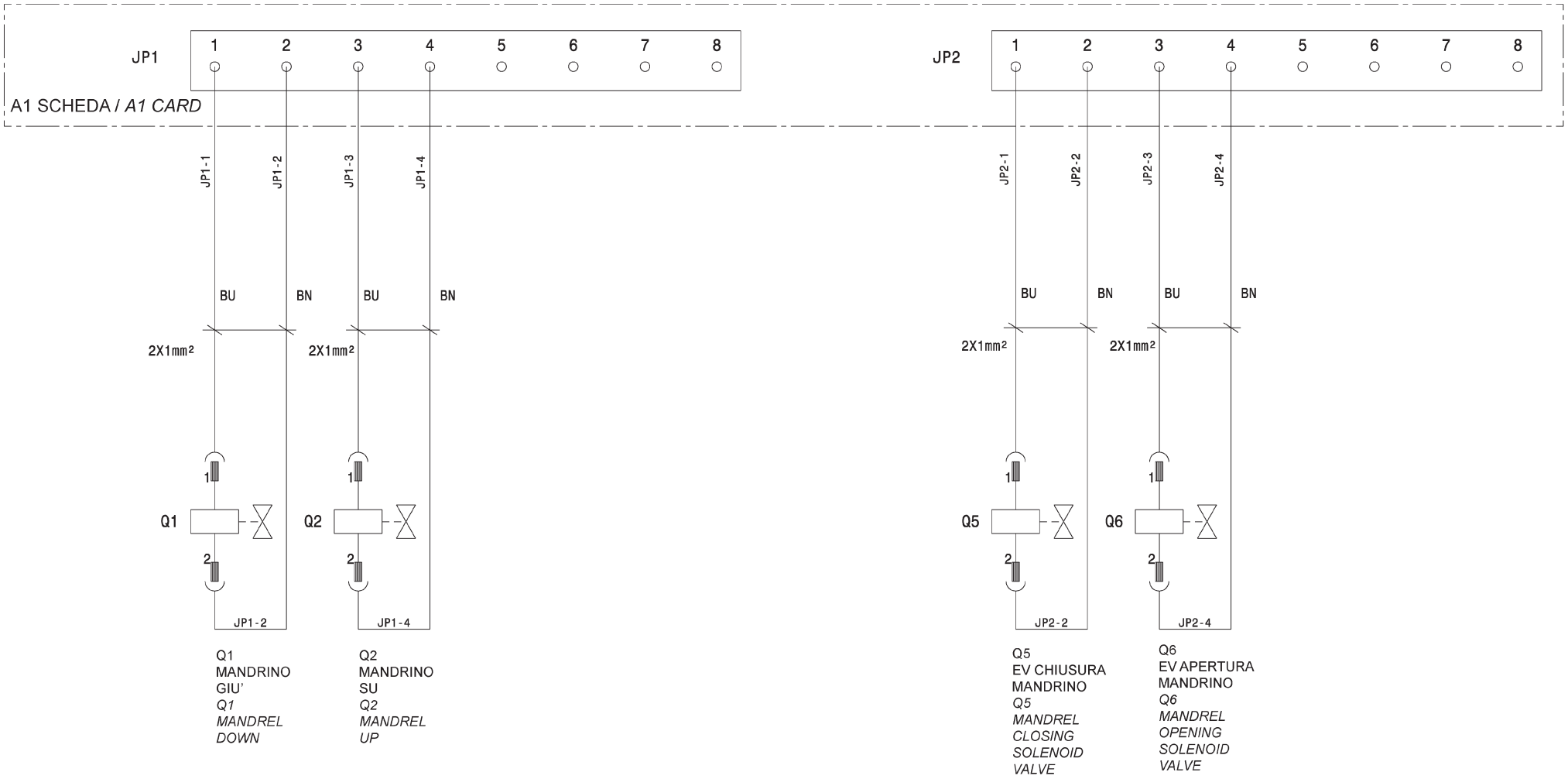
SCHEMA CIRCUITI QUADRO ELETTRICO (RICEVITORE)
ELECTRICAL PANEL (RECEIVER) CIRCUITS DIAGRAM

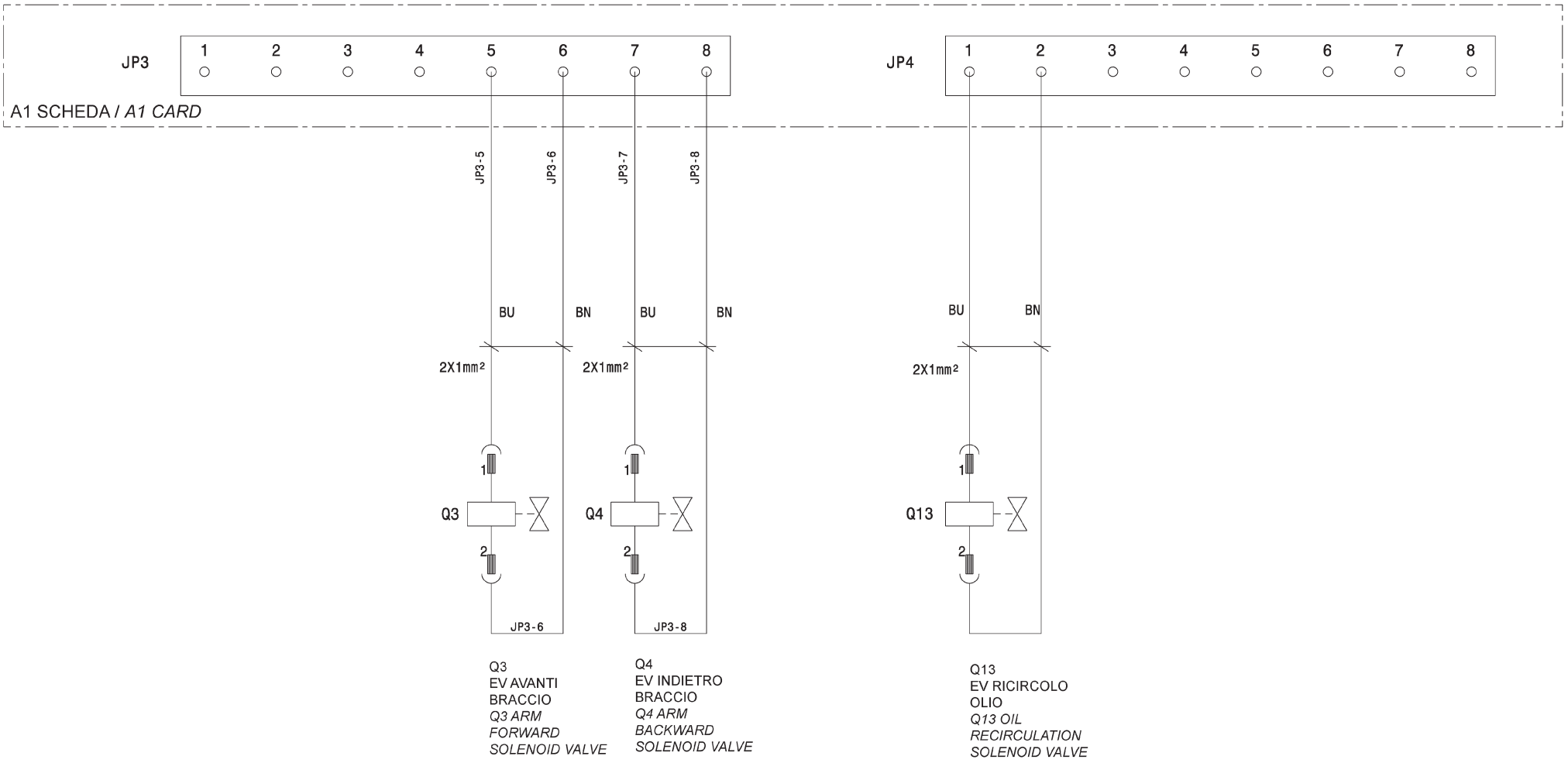




Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*SCHEMA ELETTRICO (NAV26HW.S) 6/17 ELECTRICAL SCHEME (NAV26HW.S) 6/17 SCHALTPLAN (NAV26HW.S) 6/17 SCHEMA ELECTRIQUE (NAV26HW.S) 6/17 ESQUEMA ELECTRICO (NAV26HW.S) 6/17*	***Pag. 48 di 68***
	Tavola N°B - Rev. 2	**750305021**		**NAV26HW - NAV26HW.S - NAV26HW.ST**


5.8 24V
5.8 00V
RD 1 mm²
24V
1.53
F2 6.2
1.54
3
RD 1 mm²
00V
RD 1 mm²
K1 7.6
21
22
2
K2 7.6
21
22
1
A1
K3
A2
JP5-6
A1
K2
A2
JP5-7
A1
K1
A2
JP5-8
JP1
1 2 3 4 5 6 7 8
A1 SCHEDA / A1 CARD
COMANDO ROTAZIONE MOTORE CENTRALINA OLEODINAMICA
CONTROL ROTATION MOTOR HYDRAULIC POWER UNIT
COMANDO ROTAZIONE ORARIA MANDRINO
MANDREL CLOCKWISE ROTATION CONTROL
COMANDO ROTAZIONE ANTIORARIA MANDRINO
MANDREL COUNTERCLOCKWISE ROTATION CONTROL

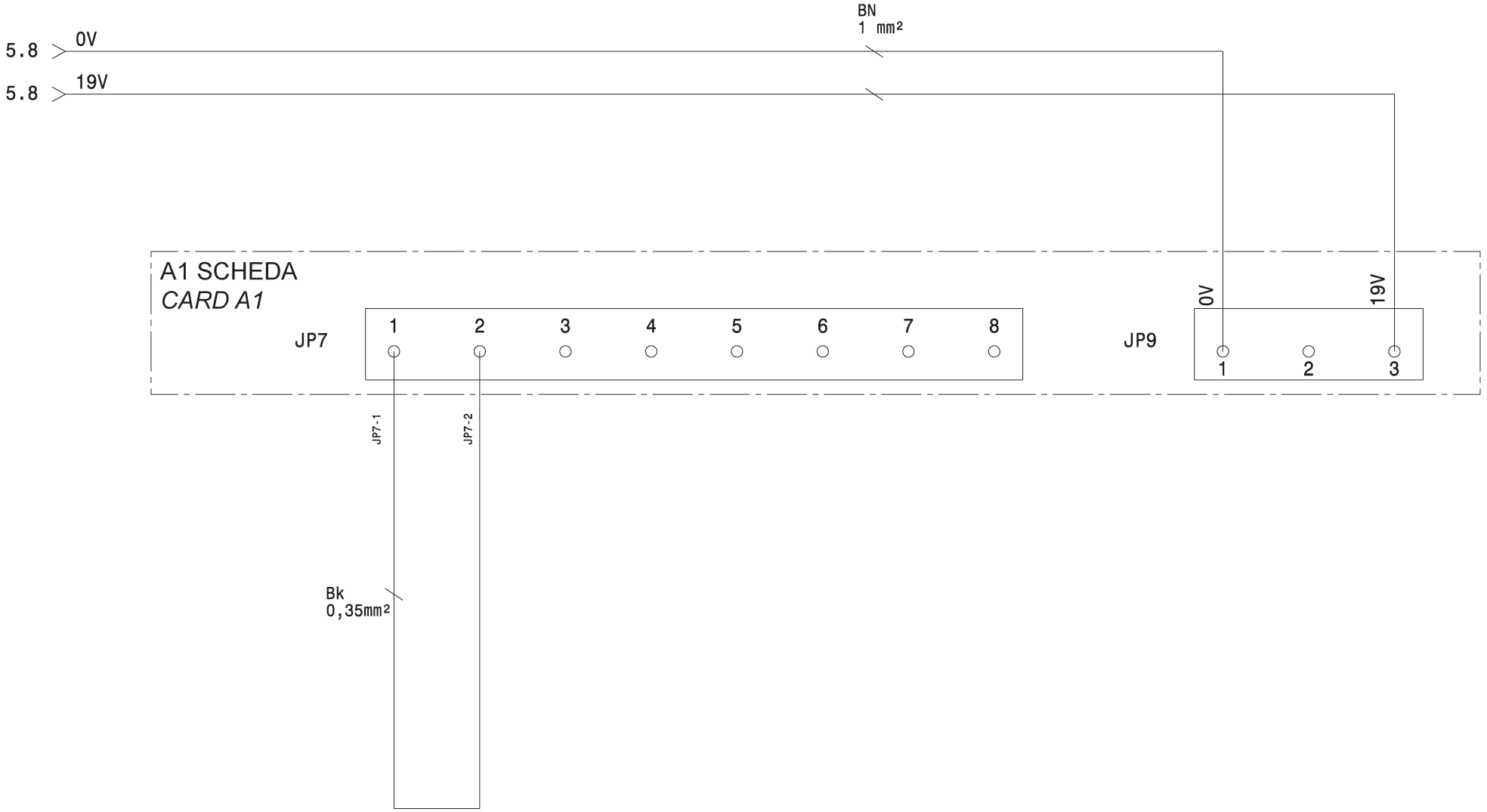

JP1
1 2 3 4 5 6 7 8
A1 SCHEDA / A1 CARD
JP2
1 2 3 4 5 6 7 8
JP1-1
JP1-2
JP1-3
JP1-4
JP2-1
JP2-2
JP2-3
JP2-4
BU
BN
2X1mm²
Q1
Q2
Q5
Q6
JP1-2
JP1-4
JP2-2
JP2-4
Q1 MANDRINO GIU' Q1 MANDREL DOWN
Q2 MANDRINO SU Q2 MANDREL UP
Q5 EV CHIUSURA MANDRINO Q5 MANDREL CLOSING SOLENOID VALVE
Q6 EV APERTURA MANDRINO Q6 MANDREL OPENING SOLENOID VALVE



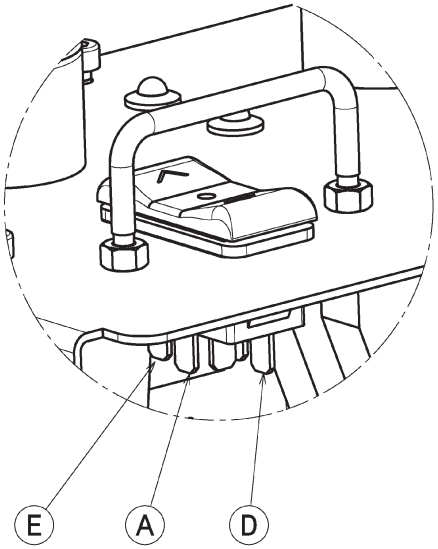
Q3
EV AVANTI
BRACCIO
Q3 ARM
FORWARD
SOLENOID VALVE

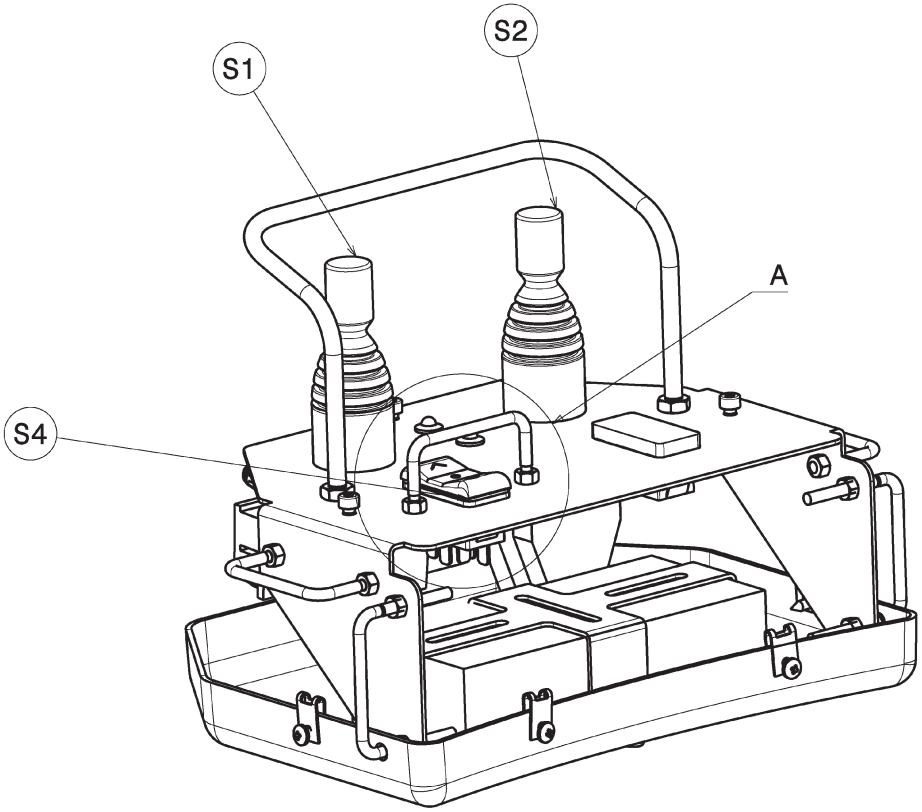
Q4
EV INDIETRO
BRACCIO
Q4 ARM
BACKWARD
SOLENOID VALVE

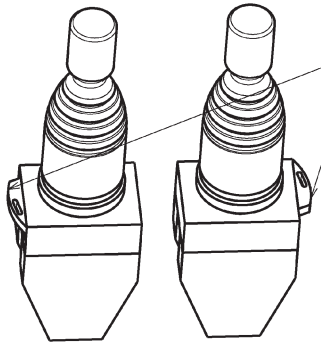
Q13
EV RICIRCOLO
OLIO
Q13 OIL
RECIRCULATION
SOLENOID VALVE


BN
1 mm²
5.8
0V
5.8
19V
A1 SCHEDA
CARD A1
JP7
1
2
3
4
5
6
7
8
JP9
0V
19V
1
2
3
JP7-1
JP7-2
Bk
0,35mm²

Dettaglio A
Detail A
Scala: 1:1
Scale: 1:1

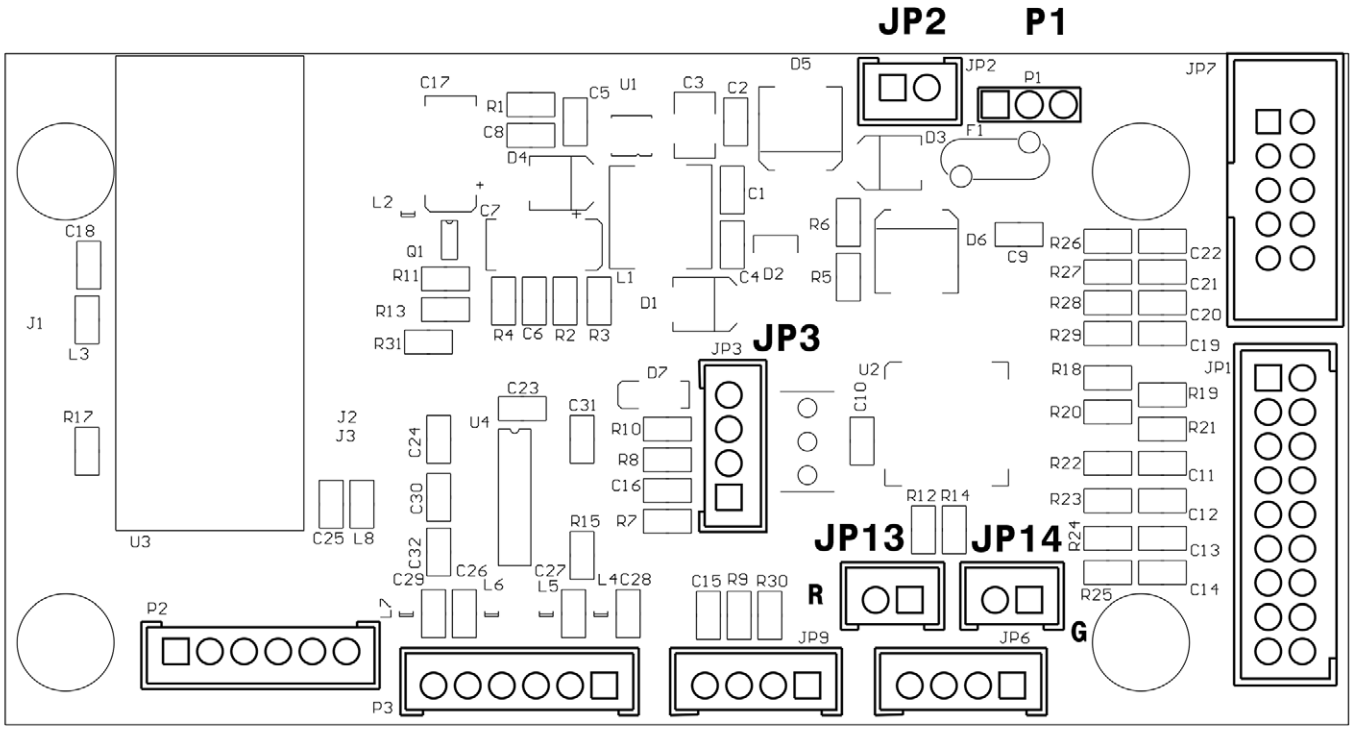






Molle per liberare i contatti verso lati opposti
Springs for contacts release towards opposite sides

TOPOGRAFICO SCHEDA TRASMITTENTE 18961
TRASMITTING CARD 18961 TOPOGRAPHIC VIEW



IN / OUT SCHEDA TRASMITTENTE 18961

TRANSMITTING CARD 18961 IN / OUT

PIN JP1	NUMERO	FUNZIONE
2	JP1-2	S2 DISCESA MANDRINO
4	JP1-4	S2 SALITA MANDRINO
5	JP1-5	N.U.
6	JP1-6	S2 AVANTI BRACCIO UTENSILE
7	JP1-7	N.U.
8	JP1-8	S2 INDIETRO BRACCIO UTENSILE
10	JP1-10	S2 (COMUNE)
11	JP1-11	S4 (COMUNE)
12	JP1-12	N.U.
13	JP1-13	S4 APERTURA MANDRINO
14	JP1-14	N.U.
15	JP1-15	S4 CHIUSURA MANDRINO
16	JP1-16	N.U.
17	JP1-17	N.U.
18	JP1-18	N.U.

PIN JP1	NUMBER	FUNCTION
2	JP1-2	S2 MANDREL DESCENT
4	JP1-4	S2 MANDREL RISE
5	JP1-5	N.U.
6	JP1-6	S2 TOOL ARM FORWARD
7	JP1-7	N.U.
8	JP1-8	S2 TOOL ARM BACKWARD
10	JP1-10	S2 (COMMON)
11	JP1-11	S4 (COMMON)
12	JP1-12	N.U.
13	JP1-13	S4 MANDREL OPENING
14	JP1-14	N.U.
15	JP1-15	S4 MANDREL CLOSING
16	JP1-16	N.U.
17	JP1-17	N.U.
18	JP1-18	N.U.

PIN JP6	NUMERO	FUNZIONE
1	JP6-1	S1 ROTAZ.ANTIOR. MANDRINO
2	JP6-2	S1 ROTAZ.ORARIA MANDRINO
3	JP6-3	N.U.
4	JP6-4	S5 COMUNE

PIN JP6	NUMBER	FUNCTION
1	JP6-1	S1 MANDREL COUNTERCLOCKWISE ROT.
2	JP6-2	S1 MANDREL CLOCKWISE ROTATION
3	JP6-3	N.U.
4	JP6-4	S5 COMMON

PIN JP2	NUMERO	FUNZIONE
1	JP2-1	G2 BATTERIA -
2	JP2-2	G2 BATTERIA +

PIN JP2	NUMBER	FUNCTION
1	JP2-1	G2 BATTERY -
2	JP2-2	G2 BATTERY +

P1	NUMERO	FUNZIONE
X1		0-12Vdc

P1	NUMBER	FUNCTION
X1		0-12Vdc

PIN JP9	NUMERO	FUNZIONE
1	JP9-1	N.U.
2	JP9-2	N.U.
4	JP9-4	N.U.

PIN JP9	NUMBER	FUNCTION
1	JP9-1	N.U.
2	JP9-2	N.U.
4	JP9-4	N.U.

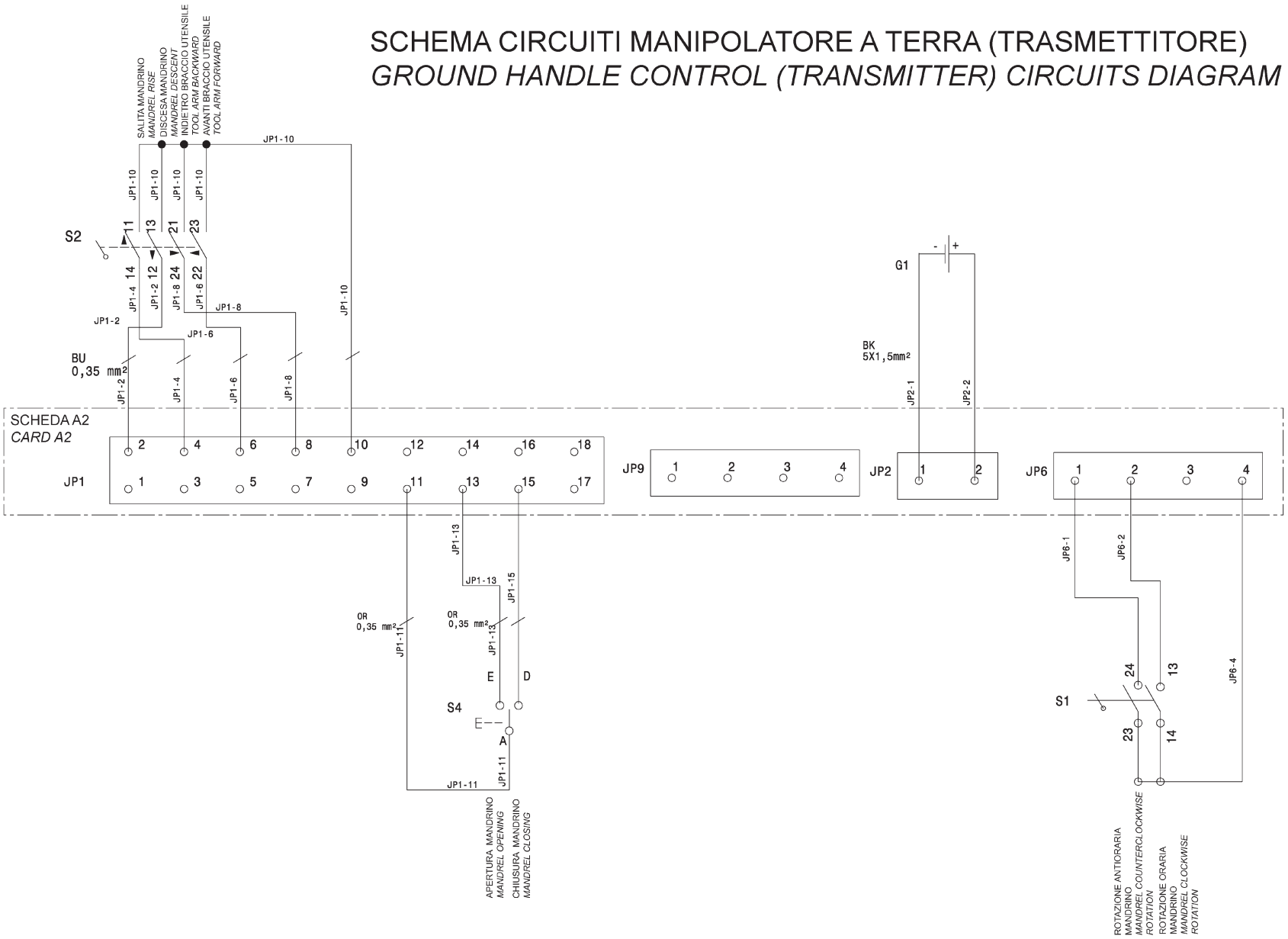
PIN JP13	NUMERO	FUNZIONE
1	JP13-1	P2 LED ROSSO +
2	JP13-2	P2 LED ROSSO -

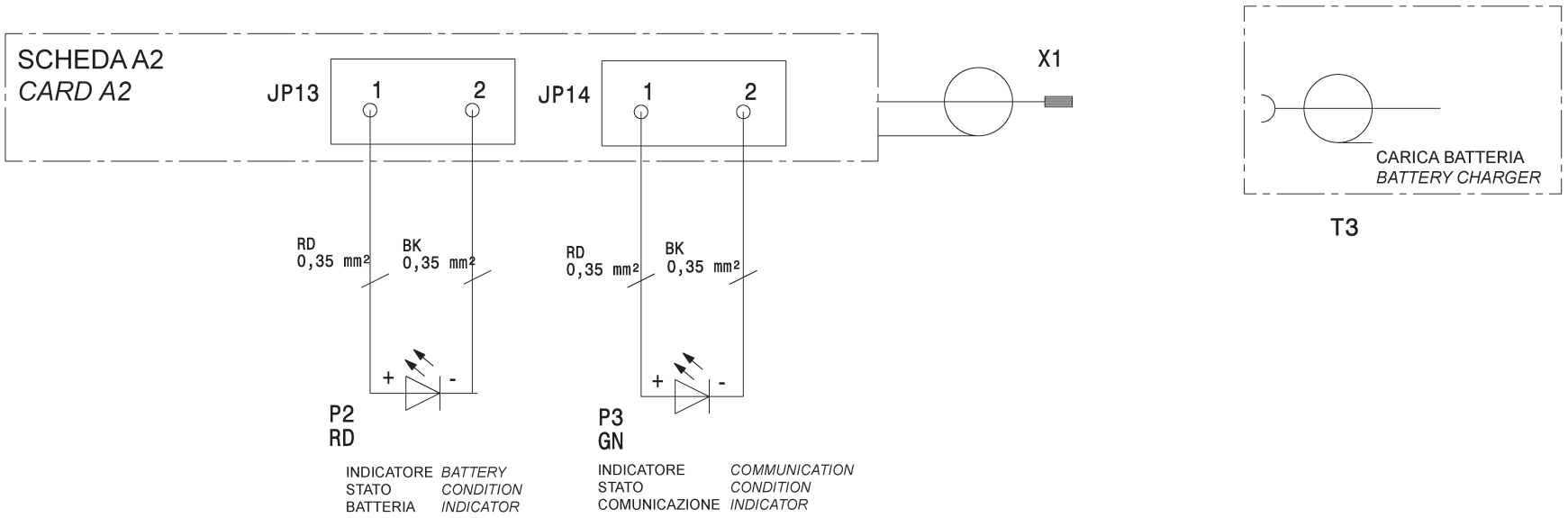
PIN JP13	NUMBER	FUNCTION
1	JP13-1	P2 RED LED +
2	JP13-2	P2 RED LED -

PIN JP14	NUMERO	FUNZIONE
1	JP14-1	P3 LED VERDE +
2	JP14-2	P3 LED VERDE -

PIN JP14	NUMBER	FUNCTION
1	JP14-1	P3 GREEN LED +
2	JP14-2	P3 GREEN LED -

SCHEMA CIRCUITI MANIPOLATORE A TERRA (TRASMETTITORE)
GROUND HANDLE CONTROL (TRANSMITTER) CIRCUITS DIAGRAM



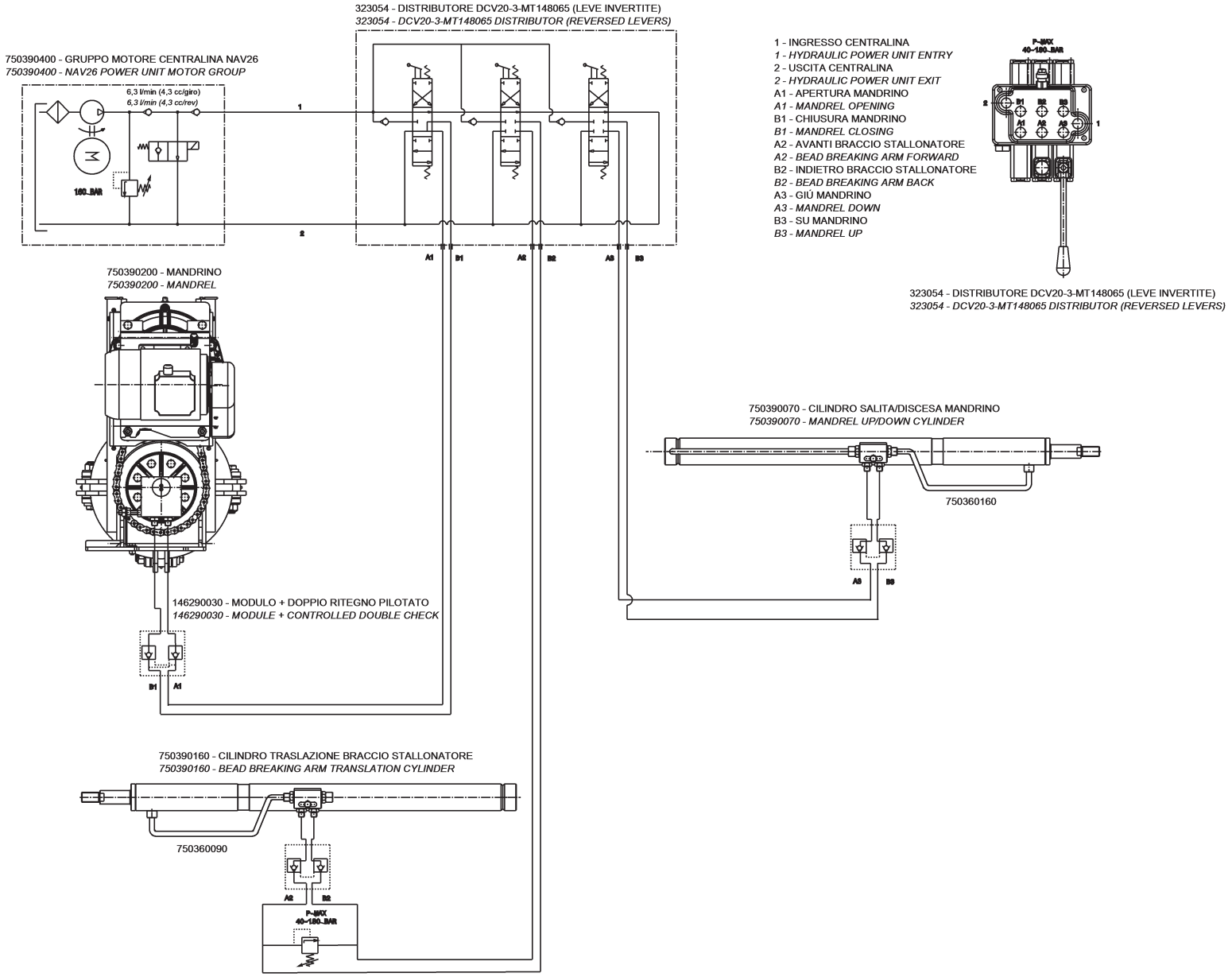

SCHEDA A2
CARD A2
JP13
1
2
JP14
1
2
X1
RD
0,35 mm²
BK
0,35 mm²
RD
0,35 mm²
BK
0,35 mm²
+
-
+
-
P2
RD
P3
GN
INDICATORE STATO BATTERIA
BATTERY CONDITION INDICATOR
INDICATORE STATO COMUNICAZIONE
COMMUNICATION CONDITION INDICATOR
CARICA BATTERIA
BATTERY CHARGER
T3

LISTA COMPONENTI

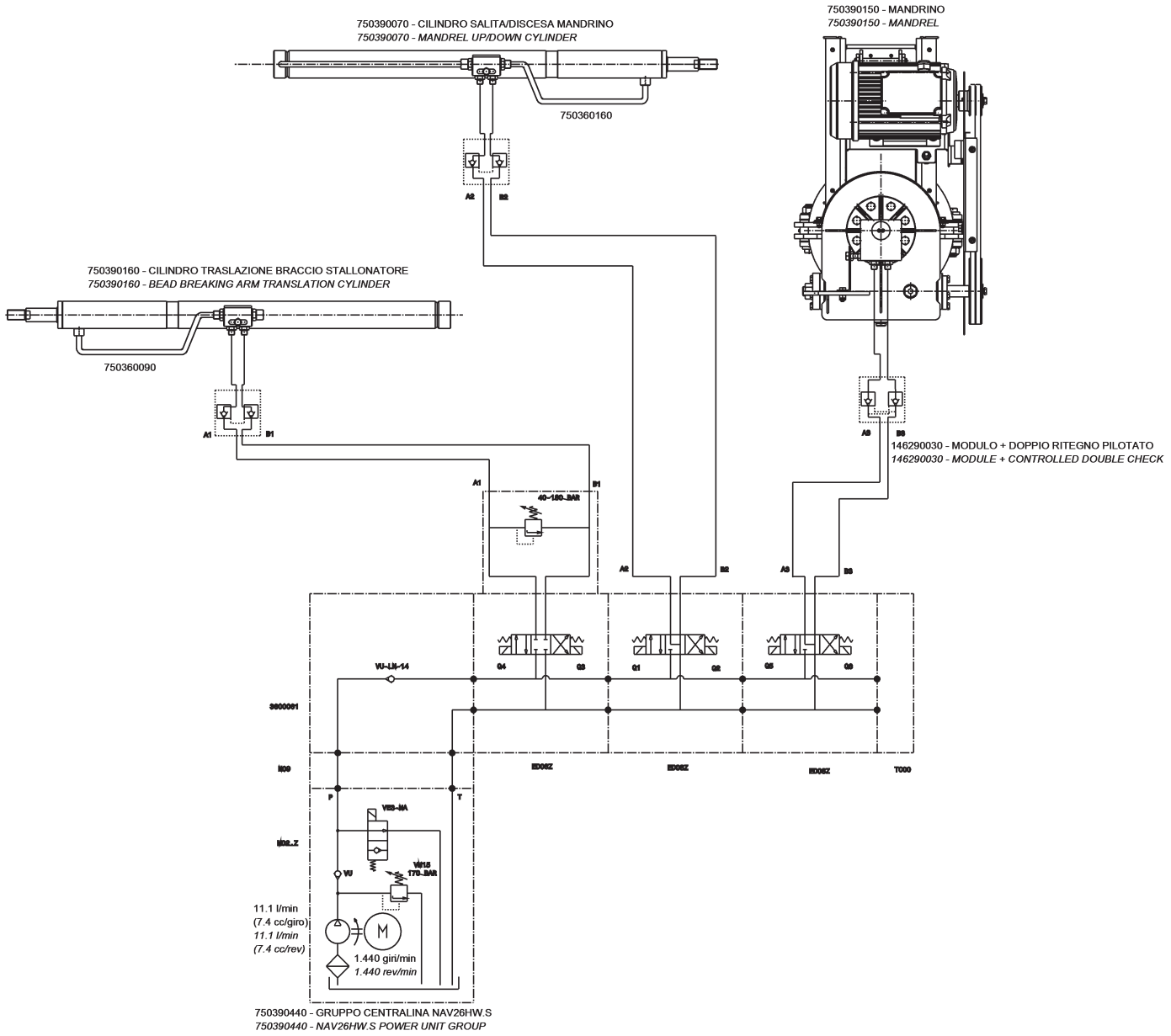
RIFERIMENTO	DESCRIZIONE	DATI TECNICI	SIGLA CATALOGO	QUANTITA	RIFERIMENTO DOCUMENTO
A1	SCHEDA ELETT. RICEVENTE	-	18962	1	2.5
A2	SCHEDA ELETT.TRASMITTENTE		18961	1	11.2
F1	PORTAFUSIBILE	3 POLI SEZIONABILE 10,3x38 32A 690V	515025	1	6.6
	FUSIBILE	10,3x38 16A 500V aM RITARDATO	507045	3	
F2	INTERRUTTORE AUTOM. TRIPOLARE	6,3-10A AC3 400V 2,2KW	518277	1	6.2
	CONTATTI AUSILIARI	1NO+1NC ATTACCO FRONTALE	518279	1	6.2
F3	PORTAFUSIBILE	2 POLI SEZIONABILE 10,3x38 32A 690V	515027	1	5.3
	FUSIBILE	10,3X38 2A 500V RAPIDO	507019	2	
F4	FUSIBILE	5x20F 250V 2A RAPIDO	507043	1	5.3
F5	FUSIBILE	5x20F 250V 8A RAPIDO	507090	1	5.3
F6	FUSIBILE	5X20 T 8A 250V	507118	1	5.7
G1	BATTERIA	6V 3,3AH/20HR Lead	10066	1	14.6
K1	CONTATTORE TRIPOLARE	9A AC3 400V 4,2KW 1NC 24Vac 50/60Hz	522137	1	7.6
K2	CONTATTORE TRIPOLARE	9A AC3 400V 4,2KW 1NC 24Vac 50/60Hz	522137	1	7.6
K3	CONTATTORE TRIPOLARE	9A AC3 400V 4,2KW 1NC 24Vac 50/60Hz	522137	1	7.5
P2	INDICATORE LUMINOSO (LED)	ROSSO -	18065	1	15.4
P3	INDICATORE LUMINOSO (LED)	VERDE	18066	1	15.5
Q1...Q13	ELETTROVALVOLE	-	-	13	8-9
Q14	SEZIONATORE TRIPOLARE	Ith 32A Ui 690V-50Hz Uimp 4KW	518223+518226	1	5.2
S1	MANIPOLATORE	4 POS.+CENTR.TEMPORANEE Ø22	517157AS	1	14.2
S2	MANIPOLATORE	2 POS.+CENTR.TEMPORANEE Ø22	517156AS	1	14.2
-	TAPPO IN PLASTICA PER PULSANTE	-	413252	1	-
S4	PULSANTE BASCULANTE	-	517283	1	14.4
T1	TRASFORMATORE	200 VA 50/60 Hz PRI: 0/230/400V SEC: 0/19V 8,95A 0/24V 1,25A	528056	1	5.3
-	-	-	-	-	-
T3	CARICABATTERIA	21.6W 7.2V 3A Lithium ion	18064	1	15.6
M1	MOTORE CENTRALINA	90S4 B3DX B14 KW 2.2 230/400V 50HZ S3 30% CL.F IP54	900003970	1	6.2
M2	MOTORE MANDRINO	KW 2 T400/50 B3 G90L 450 1410 RPM	900004160	1	6.5-6,6

COMPONENTS LIST

REFERENCE	DESCRIPTION	TECHNICAL SPECIFICATIONS	ABBREVIATION ON CATALOGUE	QUANTITY	DOCUMENT REFERENCE
A1	RECEIVING ELECTRICAL CARD	-	18962	1	2.5
A2	TRANSMITTING ELECTRICAL CARD		18961	1	11.2
F1	FUSE HOLDER	10,3x38 32A 690V SECTIONABLE 3 POLES	515025	1	6.6
	FUSE	10,3x38 16A 500V aM RITARDATO	507045	3	
F2	TRIPOLAR AUTOMATIC SWITCH	6,3-10A AC3 400V 2,2KW	518277	1	6.2
	AUXILIARY CONTACTS	1NO+1NC FRONT COUPLING	518279	1	6.2
F3	FUSE HOLDER	10,3x38 32A 690V 2 POLES SECTIONABLE	515027	1	5.3
	FUSE	10,3x38 2A 500V RAPID	507019	2	
F4	FUSE	5x20F 250V 2A RAPID	507043	1	5.3
F5	FUSE	5x20F 250V 8A RAPID	507090	1	5.3
F6	FUSE	5X20 T 8A 250V	507118	1	5.7
G1	BATTERY	6V 3,3AH/20HR Lead	10066	1	14.6
K1	TRIPOLAR CONTACTOR	9A AC3 400V 4,2KW 1NC 24Vac 50/60Hz	522137	1	7.6
K2	TRIPOLAR CONTACTOR	9A AC3 400V 4,2KW 1NC 24Vac 50/60Hz	522137	1	7.6
K3	TRIPOLAR CONTACTOR	9A AC3 400V 4,2KW 1NC 24Vac 50/60Hz	522137	1	7.5
P2	BACKLIGHTED INDICATOR (LED)	RED	18065	1	15.4
P3	BACKLIGHTED INDICATOR (LED)	GREEN	18066	1	15.5
Q1...Q13	SOLENOID VALVES	-	-	13	8-9
Q14	TRIPOLAR KNIFE SWITCH	Ith 32A Ui 690V-50Hz Uimp 4KW	518223+518226	1	5.2
S1	HANDLE CONTROL	4 POS.+ CENTRAL POS. TEMPORARY Ø22	517157AS	1	14.2
S2	HANDLE CONTROL	2 POS.+ CENTRAL POS. TEMPORARY Ø 22	517156AS	1	14.2
-	PLASTIC PLUG FOR PUSHBUTTON	-	413252	1	-
S4	BALANCING PUSHBUTTON	-	517283	1	14.4
T1	TRANSFORMER	200 VA 50/60 Hz PRI: 0/230/400V SEC: 0/19V 8,95A 0/24V 1,25A	528056	1	5.3
-	-	-	-	-	-
T3	BATTERY CHARGER	21.6W 7.2V 3A Lithium ion	18064	1	15.6
M1	HYDRAULIC POWER UNIT MOTOR	90S4 B3DX B14 KW 2.2 230/400V 50HZ S3 30% CL.F IP54	900003970	1	6.2
M2	MANDREL MOTOR	KW 2 T400/50 B3 G90L 450 1410 RPM	900004160	1	6.5-6,6



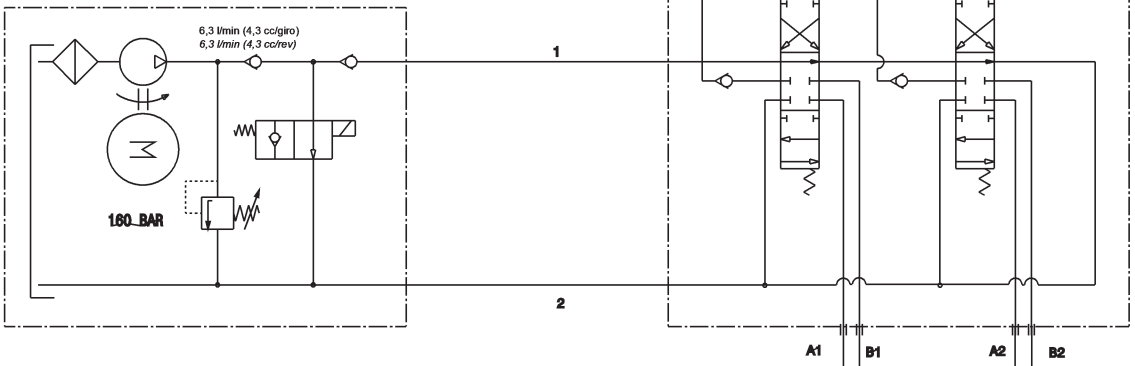
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*SCHEMA OLEODINAMICO (NAV26HW) HYDRAULIC SCHEME (NAV26HW) ÖLDYNAMISCHPLAN (NAV26HW) SCHEMA HYDRAULIQUE (NAV26HW) ESQUEMA OLEODINÁMICO (NAV26HW)*	***Pag. 60 di 68***
	Tavola N°C - Rev. 1	**750305030**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



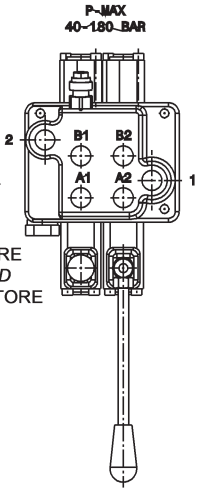
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*SCHEMA OLEODINAMICO (NAV26HW.S) HYDRAULIC SCHEME (NAV26HW.S) ÖLDYNAMISCHPLAN (NAV26HW.S) SCHEMA HYDRAULIQUE (NAV26HW.S) ESQUEMA OLEODINÁMICO (NAV26HW.S)*	***Pag. 61 di 68***
	Tavola N°D - Rev. 1	**750305050**		**NAV26HW - NAV26HW.S - NAV26HW.ST**

323055 - DISTRIBUTORE DCV20/2ISTO11 ST1CS1D1VB1 (150)
323055 - DCV20-3-MT148065 DISTRIBUTOR (REVERSED LEVERS)

750390400 - GRUPPO MOTORE CENTRALINA NAV26
750390400 - NAV26 POWER UNIT MOTOR GROUP

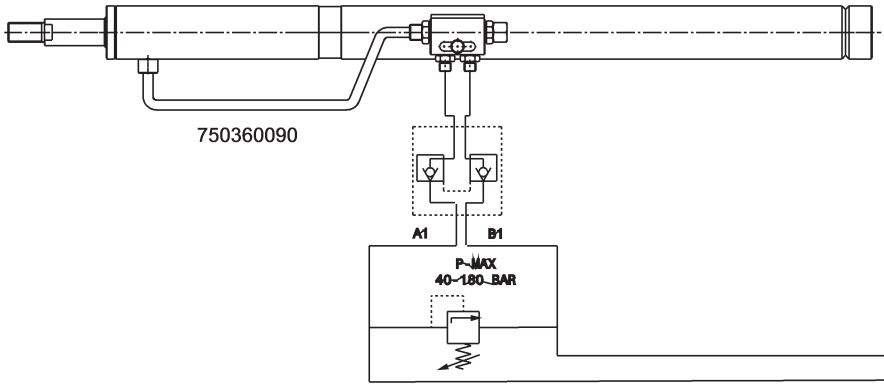


1 - INGRESSO CENTRALINA
1 - HYDRAULIC POWER UNIT ENTRY
2 - USCITA CENTRALINA
2 - HYDRAULIC POWER UNIT EXIT
A1 - AVANTI BRACCIO STALLONATORE
A1 - BEAD BREAKING ARM FORWARD
B1 - INDIETRO BRACCIO STALLONATORE
B1 - BEAD BREAKING ARM BACK
A2 - GIÚ MANDRINO
A2 - MANDREL DOWN
B2 - SU MANDRINO
B2 - MANDREL UP

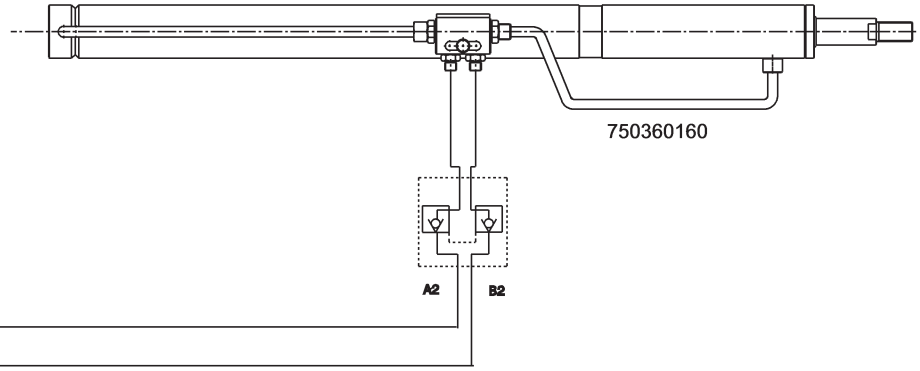


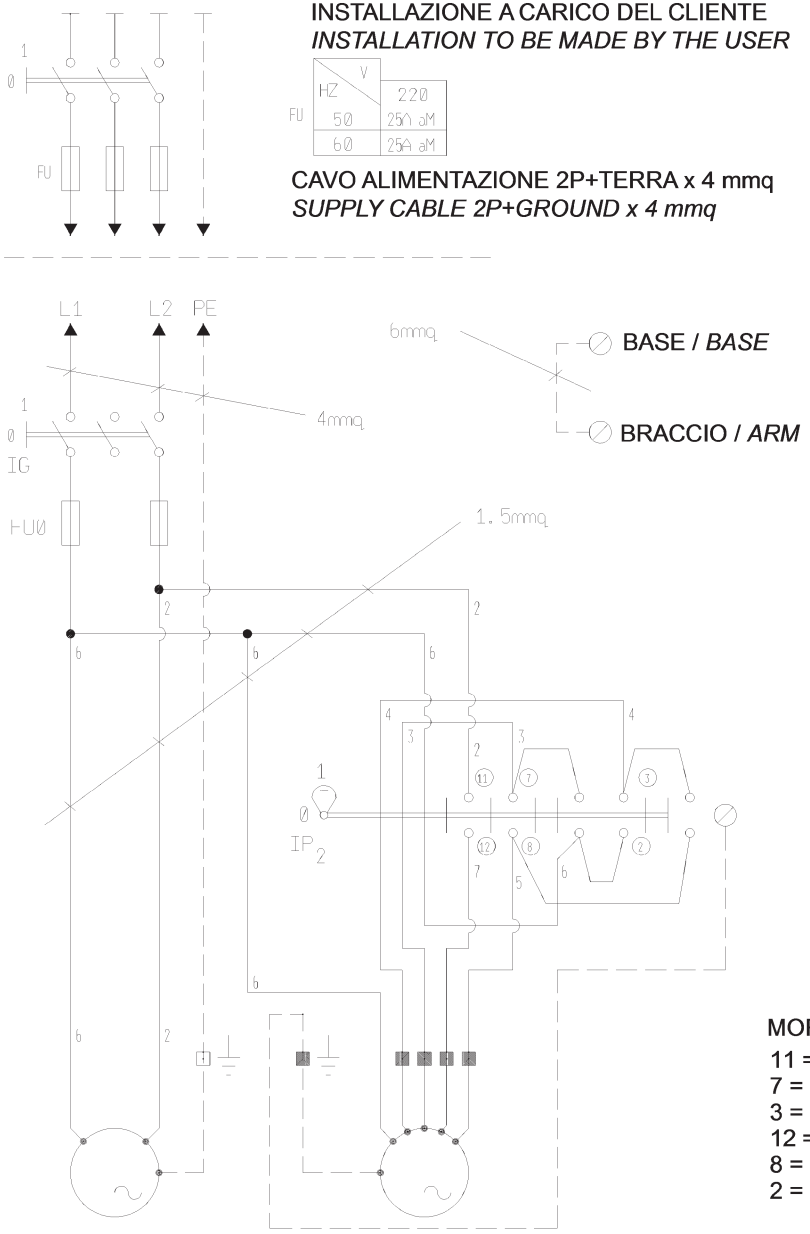
323055 - DISTRIBUTORE DCV20/2ISTO11 ST1CS1D1VB1 (150)
323055 - DCV20-3-MT148065 DISTRIBUTOR (REVERSED LEVERS)

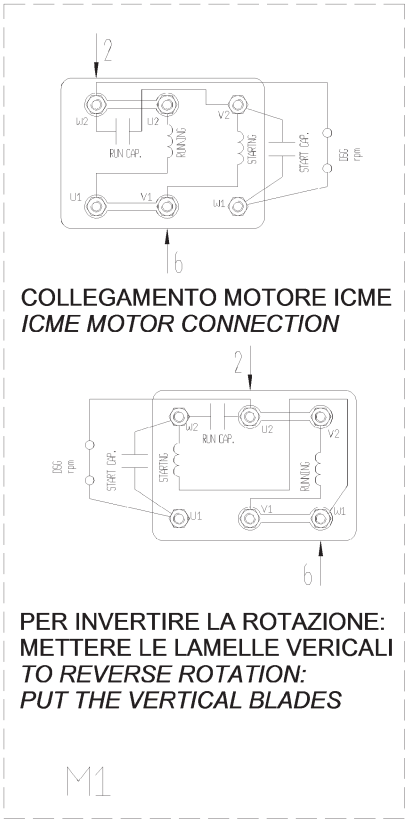
750390160 - CILINDRO TRASLAZIONE BRACCIO STALLONATORE
750390160 - BEAD BREAKING ARM TRANSLATION CYLINDER

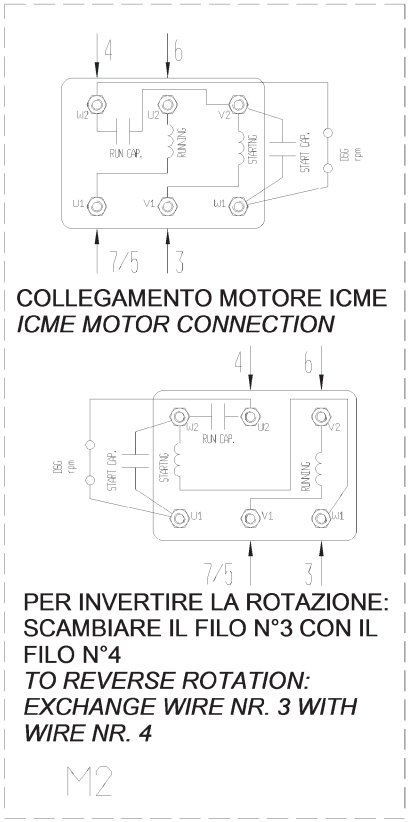


750390070 - CILINDRO SALITA/DISCESA MANDRINO
750390070 - MANDREL UP/DOWN CYLINDER





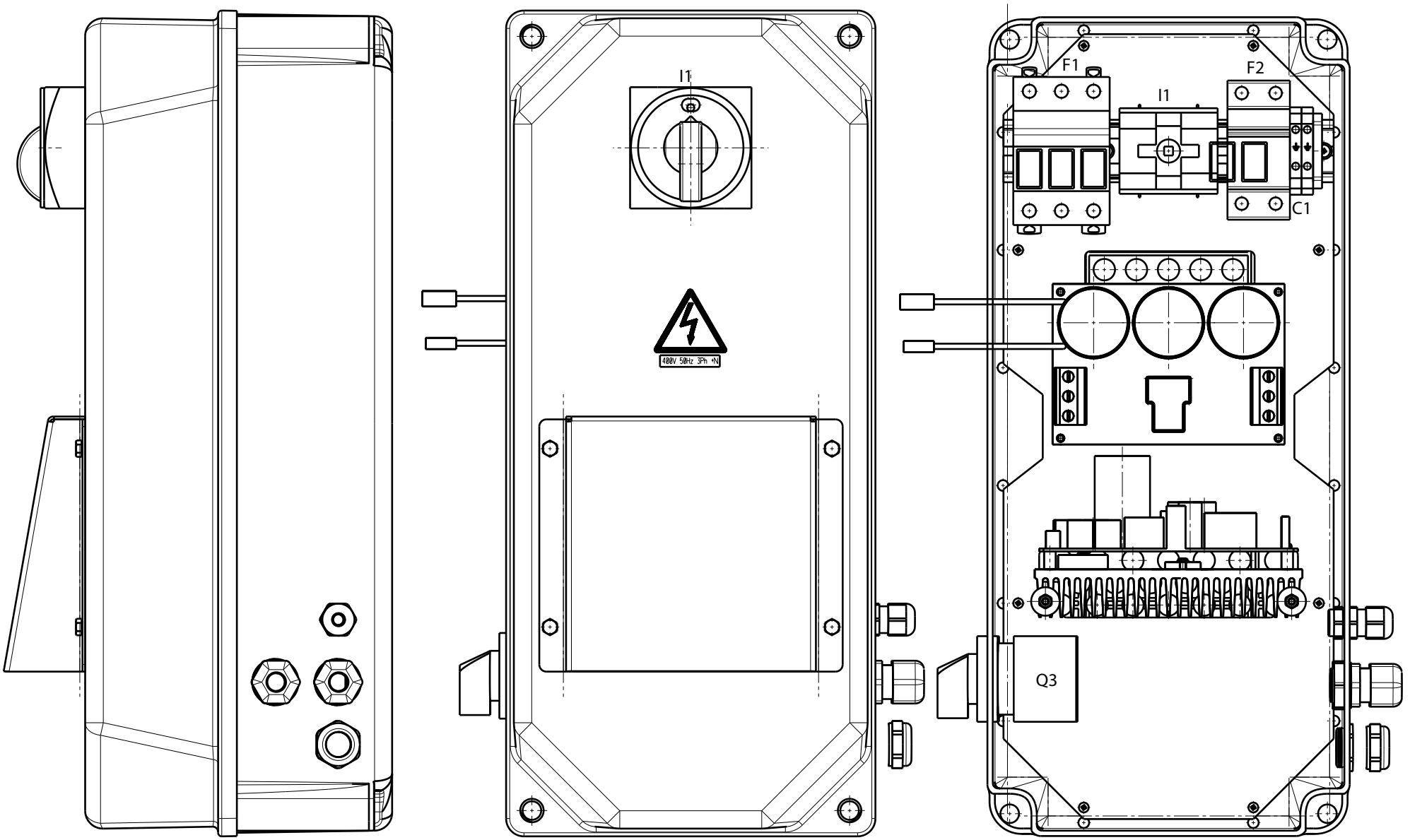


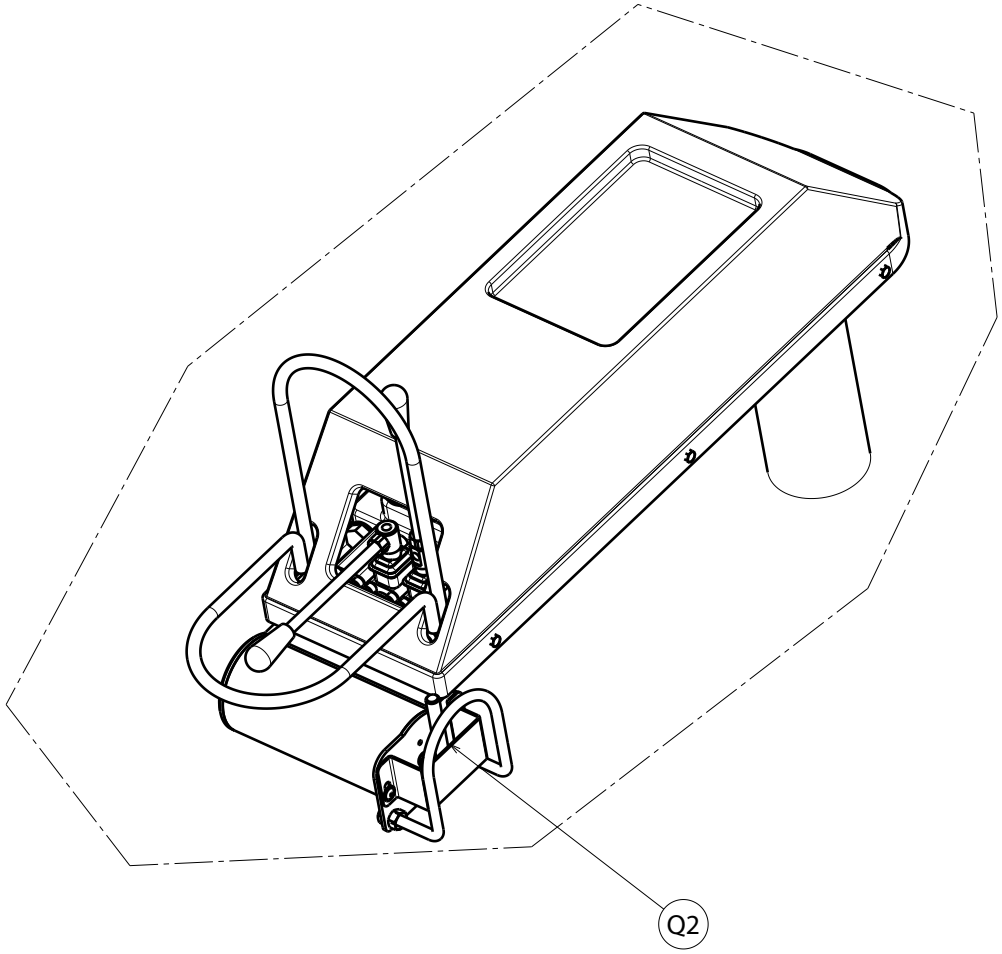


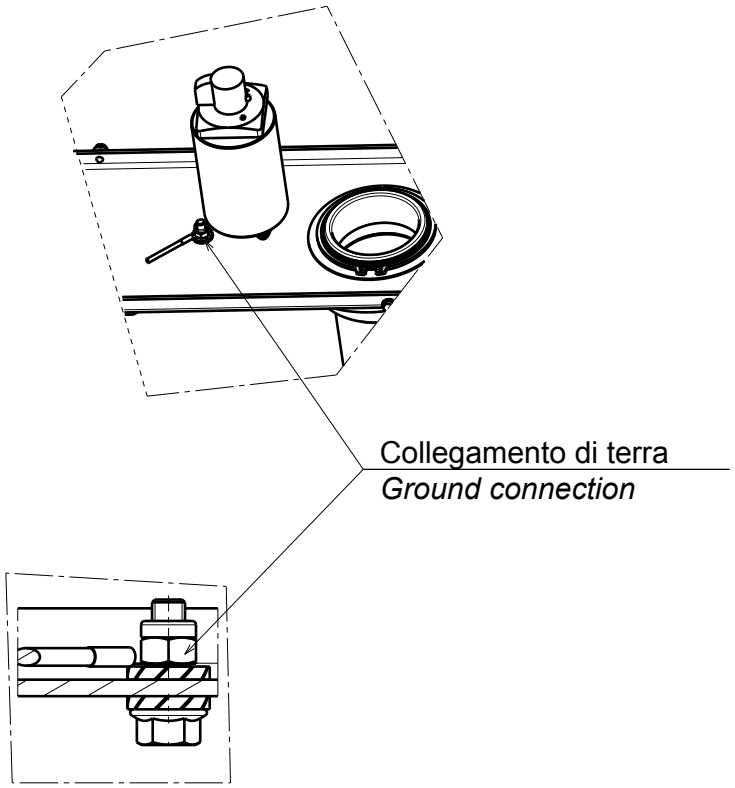
MORSETTI IP / *IP CLAMPS*

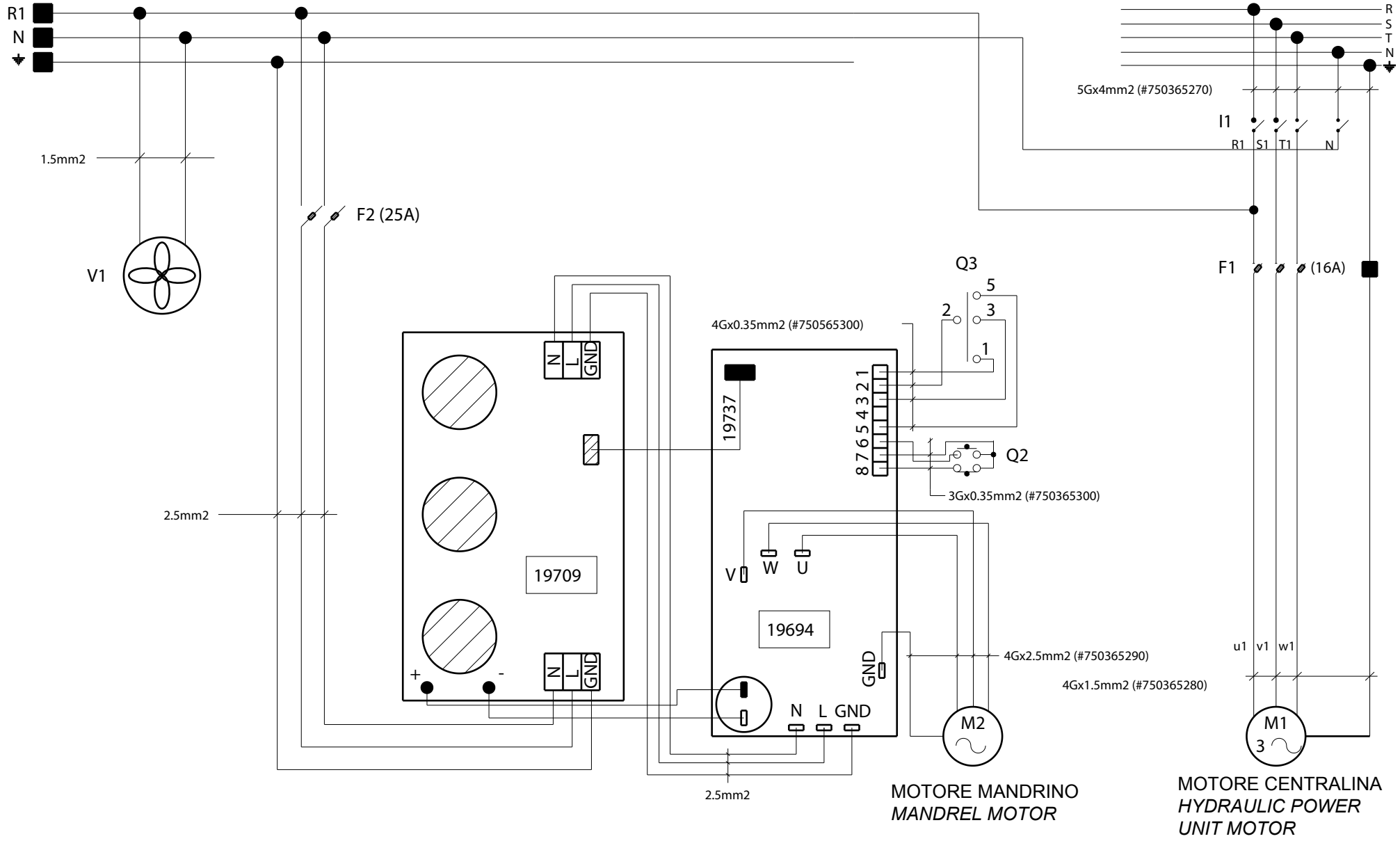
11 = L2
7 = 3
3 = 2
12 = 4
8 = 5
2 = 1/6 (L1)

N°	Cod.	Descrizione	Description	Beschreibung	Description	Descripción
	■	*Morsetto*	*Clamp*	*Klemme*	*Borne*	*Abrazadera*
	M2	*Motore mandrino*	*Chuck motor*	*Spiendel Motor*	*Moteur mandrin*	*Motor mandril*
	M1	*Motore centralina*	*Hydraulic power unit motor*	*Steuerung Motor*	*Moteur distributeur*	*Motor centralita*
	IP	*Invertitore pedaliera*	*Pedalboard inverter*	*Pedalleiste Frequenumformer*	*Variateur pédales de direction*	*Inversor pedalera*
	IG	*Interruttore generale*	*Main switch*	*Schalter general*	*Interrupteur general*	*Interruptor general*
	FU0	*Fusibile protezione linea*	*Line guard fuse*	*Linieschmelzsicherung*	*Fusible protection ligne*	*Fusible protección linea*


I1
400V 50Hz 3Ph +N
F1
I1
F2
C1
Q3


Q2


Collegamento di terra
Ground connection


R1
N
1.5mm2
V1
F2 (25A)
2.5mm2
5Gx4mm2 (#750365270)
R
S
T
N
I1
R1 S1 T1 N
F1 (16A)
Q3
5
2
3
1
4Gx0.35mm2 (#750565300)
19737
8 7 6 5 4 3 2 1
Q2
3Gx0.35mm2 (#750365300)
N L GND
19709
+ -
V W U
19694
GND
4Gx2.5mm2 (#750365290)
4Gx1.5mm2 (#750365280)
N L GND
M2
u1 v1 w1
M1
3
2.5mm2
MOTORE MANDRINO
MANDREL MOTOR
MOTORE CENTRALINA
HYDRAULIC POWER
UNIT MOTOR

LISTA COMPONENTI

RIFERIMENTO	DESCRIZIONE	DATI TECNICI	SIGLA CATALOGO	QUANTITA	RIFERIMENTO DOCUMENTO
F1	PORTAFUSIBILE	3 POLI P10-3 5450334 WIMEX	515035	1	
	FUSIBILE	FUSIBILE 10x38 16A 500V aM	507045	3	
F2	PORTAFUSIBILE	PORTAF.BIP.GK1-DD 32A F.10X38	515027	1	
	FUSIBILE	FUSIBILE RIT.10,3X38 25A 500V	507048	2	
I1	INTERRUTTORE GENERALE		518250 + 518226	1	
C1	MORSETTO	G/V4mmq ART.TEO.4 CABUR T0430	510150	2	
Q2	COMMUTATORE	Ith 25A Ui 690V-50Hz Uimp 4KW	518227	1	
Q3	COMMUTATORE 3POS. 25A	ST31/8ENSX70A SONTHEIMER	518270	1	
M1	MOTORE CENTRALINA	80.4.B14 KW0,75 230-400 50 S1	900002250	1	
M2	MOTORE MANDRINO	ME 80.B4 KW1.1 185V 50HZ 3PH3	900004800	1	
V1	VENTOLA DI RAFFREDDAMENTO		16718	1	
	ASSIEME IV3K		19752	1	

COMPONENTS LIST

REFERENCE	DESCRIPTION	TECHNICAL SPECIFICATIONS	ABBREVIATION ON CATALOGUE	QUANTITY	DOCUMENT
F1	FUSE HOLDER	3 POLES P10-3 5450334 WIMEX	515035	1	
	FUSE	10x38 16A 500V aM FUSE	507045	3	
F2	FUSE HOLDER	BIP.GK1-DD 32A F.10X38 FUSE HOLDER	515027	1	
	FUSE	10,3X38 25A 500V DELAYED FUSE	507048	2	
I1	GENERAL SWITCH		518250 + 518226	1	
C1	CLAMP	G/V4mmq ART.TEO.4 CABUR T0430	510150	2	
Q2	COMMUTATOR	Ith 25A Ui 690V-50Hz Uimp 4KW	518227	1	
Q3	COMMUTATOR 3POS. 25A	ST31/8ENSX70A SONTHEIMER	518270	1	
M1	HYDRAULIC POWER UNIT MOTOR	80.4.B14 KW0,75 230-400 50 S1	900002250	1	
M2	MANDREL MOTOR	ME 80.B4 KW1.1 185V 50HZ 3PH3	900004800	1	
V1	COOLING FAN		16718	1	
	IV3K ASSEMBLY		19752	1	

Butler
ENGINEERING and MARKETING S.P.A.

7503-R002-7_B

NAV26HW
NAV26HW.S
NAV26HW.ST

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.

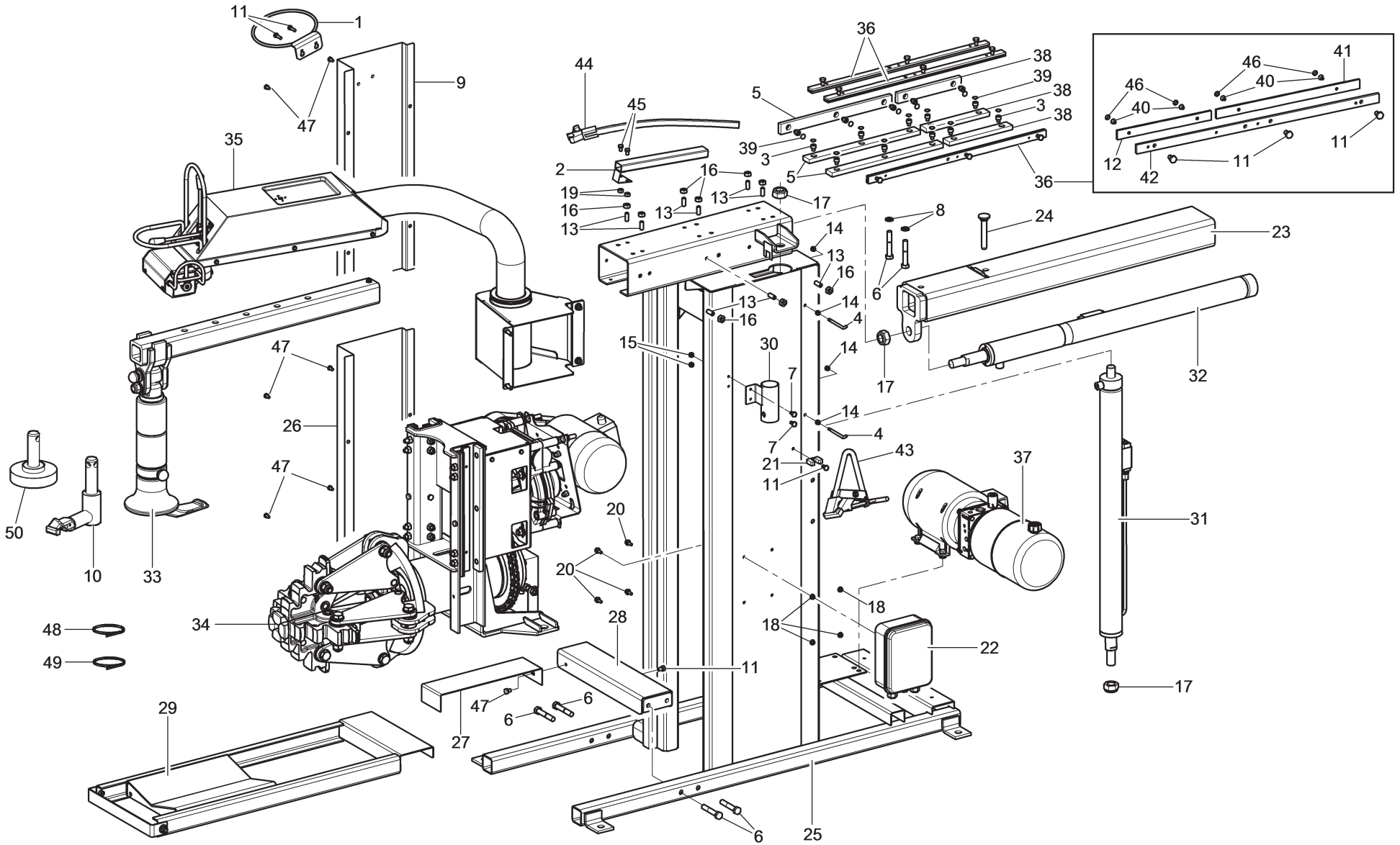
- Per eventuali chiarimenti interpellare il più vicino rivenditore oppure rivolgersi direttamente a:
- For any further information please contact your local dealer or call:
- Im Zweifelsfall ober bei Rückfragen wenden Sie sich bitte an den nächsten Wiederverkäufer oder direkt an:
- Pour tout renseignement 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:

BUTLER ENGINEERING & MARKETING S.p.A. a s. u.
Via dell'Ecologia, 6 - 42047 Rolo - (RE) Italy
Phone (+39) 0522 647911 - Fax (+39) 0522 649760 - e-mail: Info@butler.it

SOMMARIO - SUMMARY - INHALT
SOMMAIRE - SUMARIO

Tav.	Cod.	NAV26HW	NAV26HW.S	NAV26HW.ST			
1	750390210	●					
2	750390320		●				
3	750390310			●			
4	750390200	●					
5	750390150		●				
6	750390530		●				
7	750390260			●			
8	750390641	●	●	●			
9	750390400	●		●			
10	750390440		●				
11	750390071	●	●	●			
12	750390161	●	●	●			
13	750390170	●		●			
14	750390840	●	VAR				
15	750390461		●				
16	750390910			●			
17	B8365000	●	●	●			
18A	750303000	●		●			
18B	750303040	●		●			
19	750303031		●				
20	G108A22	●	●	●			
21	G108A20			●			
22	G108A21			●			
23	750390590		●				
24	750390900	VAR					
25	750390710		VAR				
26	G108A41	●	●	●			

VAR = VARIANTE



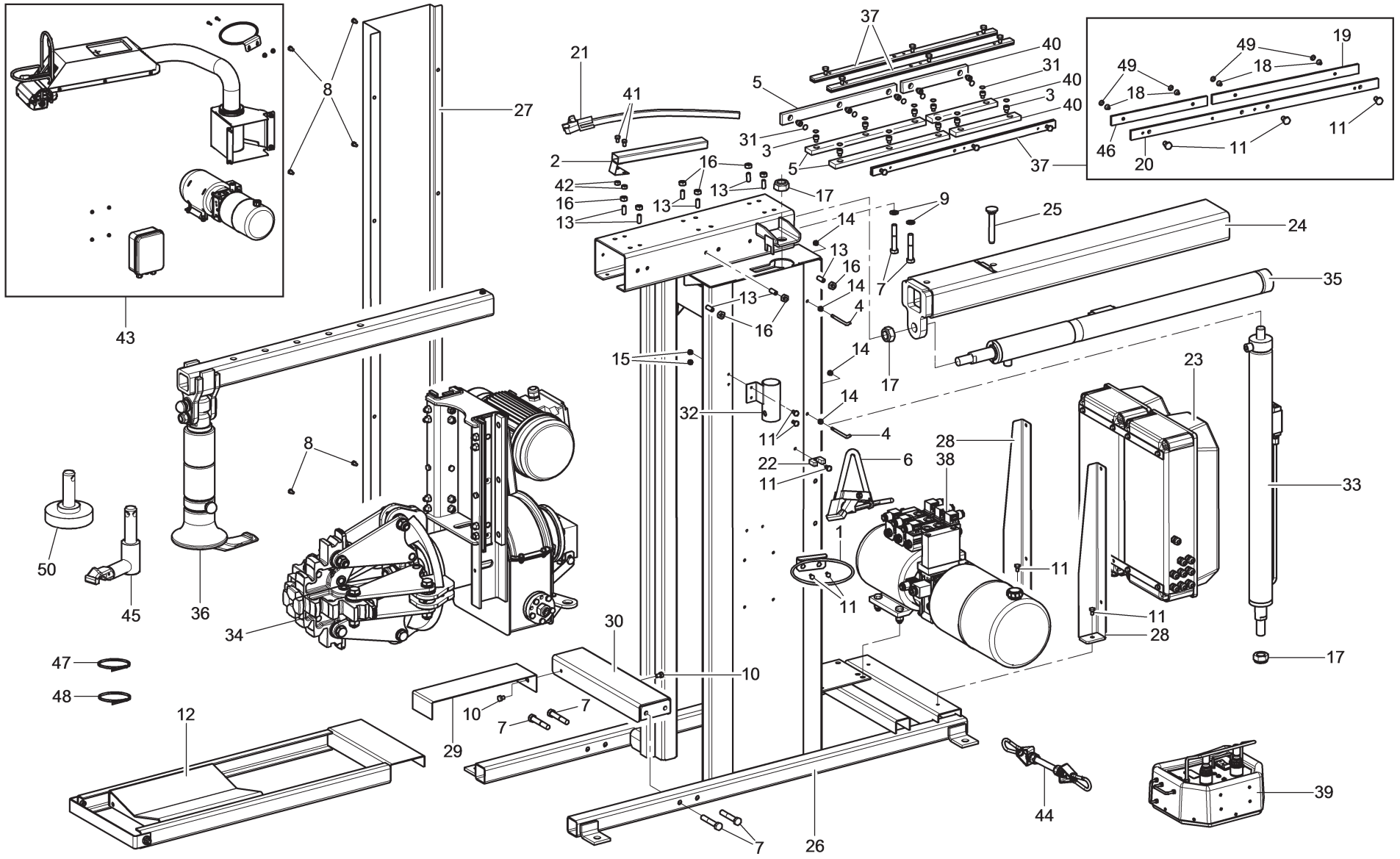
NAV26HW	NAV26HW.S	NAV26HW.ST	
•			

Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

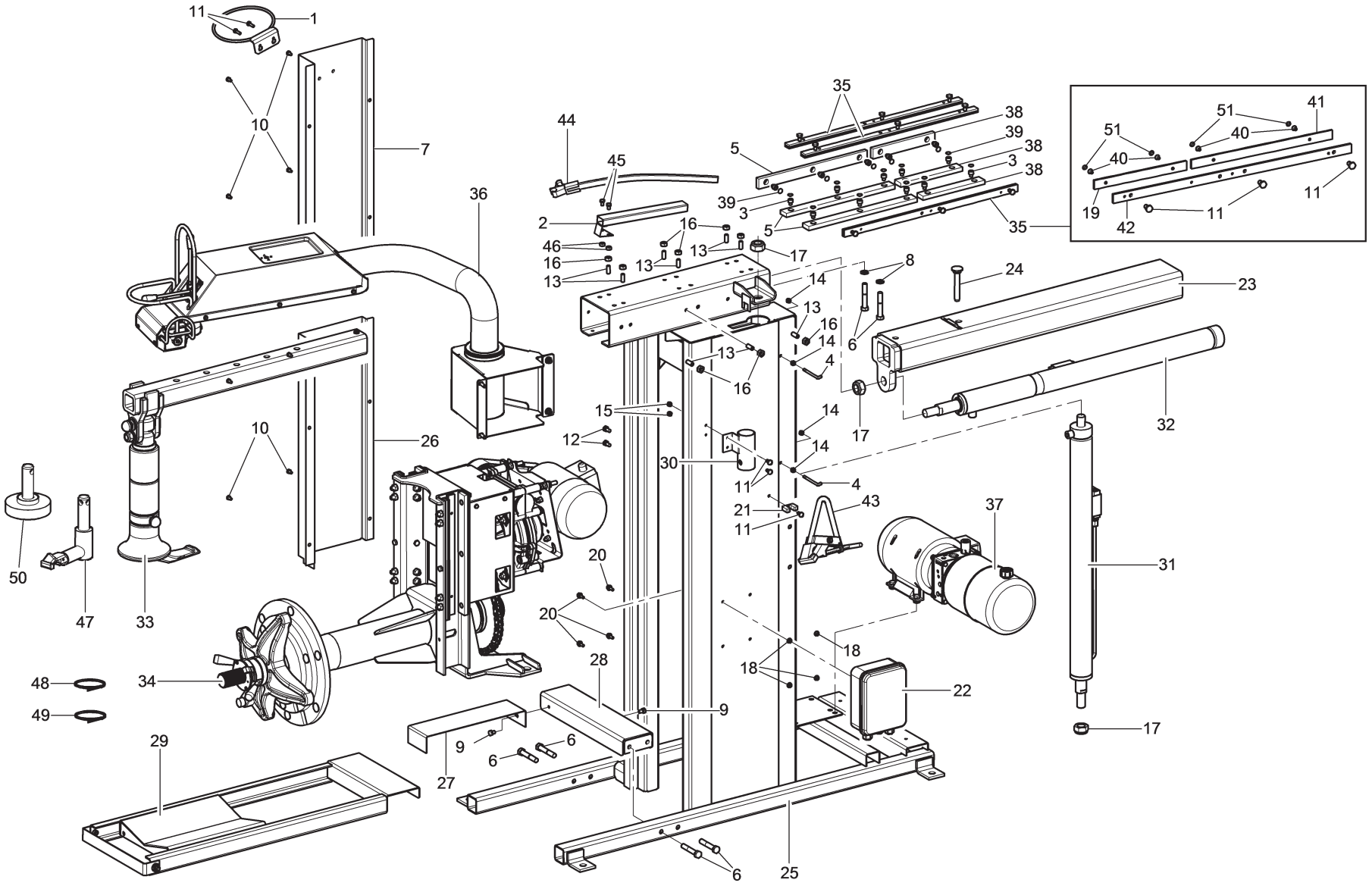
Tavola N°1 - Rev. 6 | **750390210**

ASSIEME GENERALE
MAIN ASSEMBLY
GENERALSATZ
ASSEMBLAGE GENERAL
JUNTO GENERAL



NAV26HW	NAV26HW.S	NAV26HW.ST	
	•		

Butler ENGINEERING and MARKETING 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. 6 di 31***
	Tavola N°2 - Rev. 6 / **750390320**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



NAV26HW	NAV26HW.S	NAV26HW.ST	
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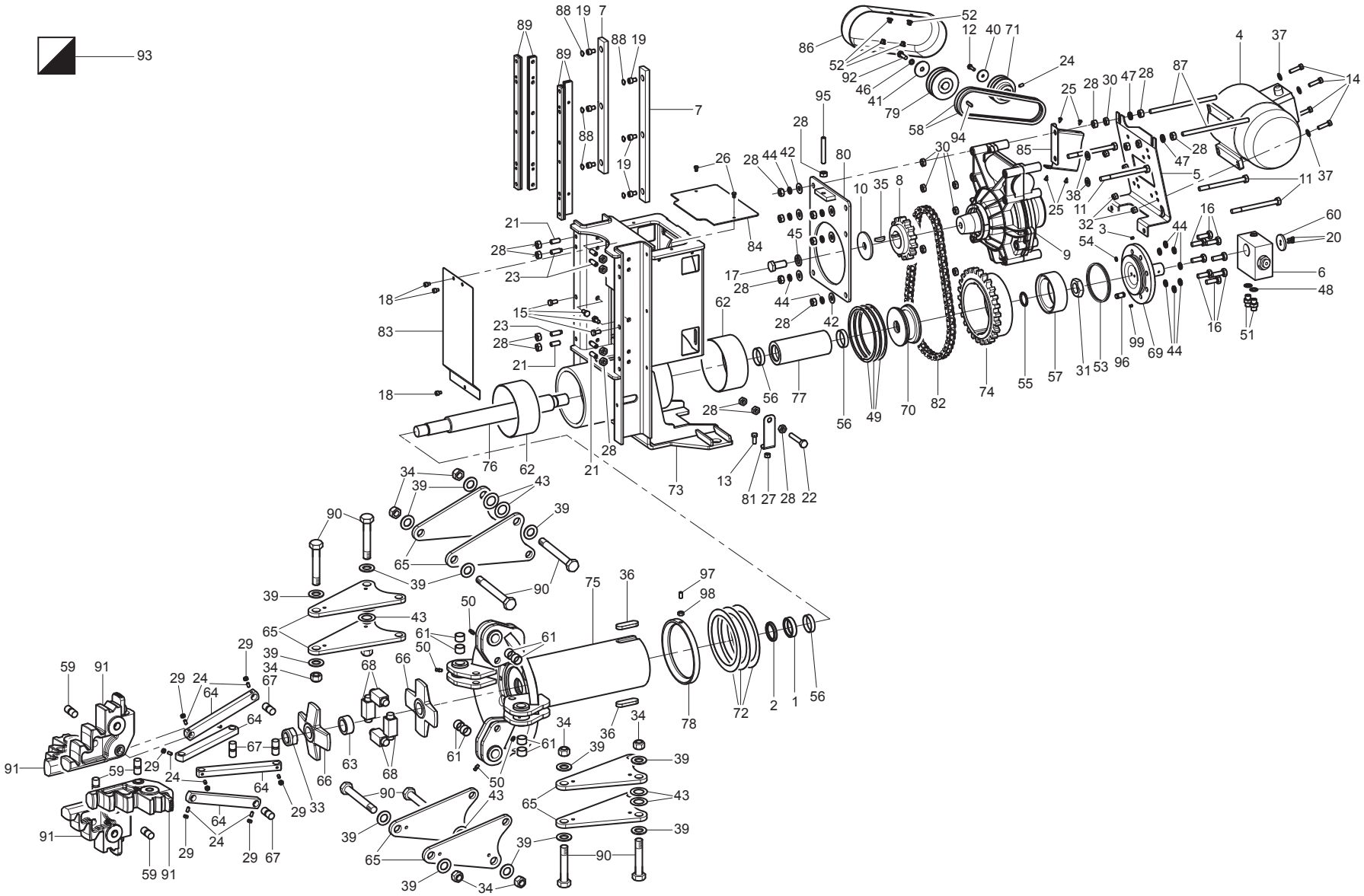
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°3 - Rev. 6 | **750390310**

ASSIEME GENERALE
MAIN ASSEMBLY
GENERALSATZ
ASSEMBLAGE GENERAL
JUNTO GENERAL



NAV26HW	NAV26HW.S	NAV26HW.ST	
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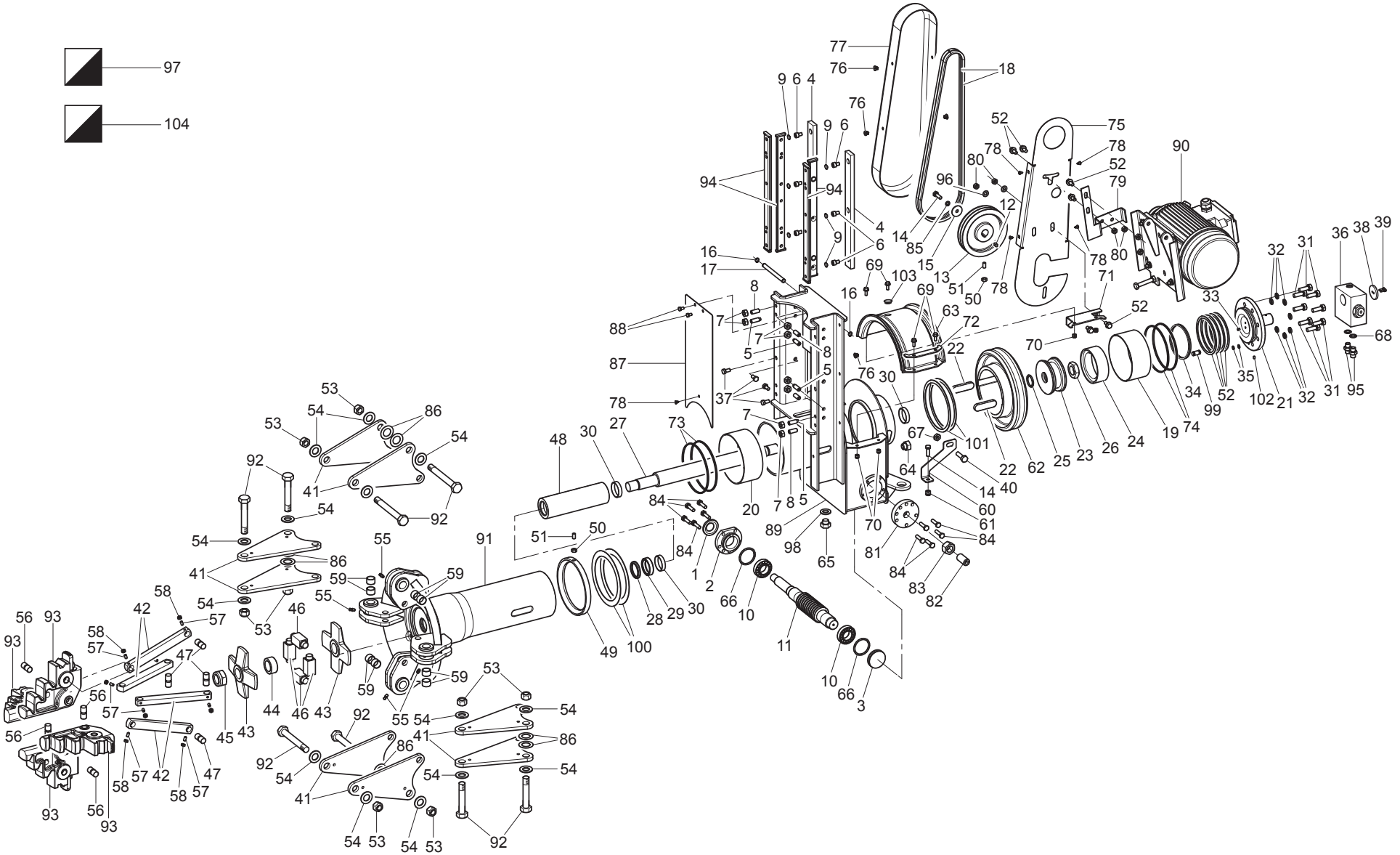
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°4 - Rev. 6 | **750390200**

GRUPPO MANDRINO
CHUCK UNIT
SPINDELSATZ
GROUPE MANDRIN
GRUPO MANDRIL



NAV26HW	NAV26HW.S	NAV26HW.ST	
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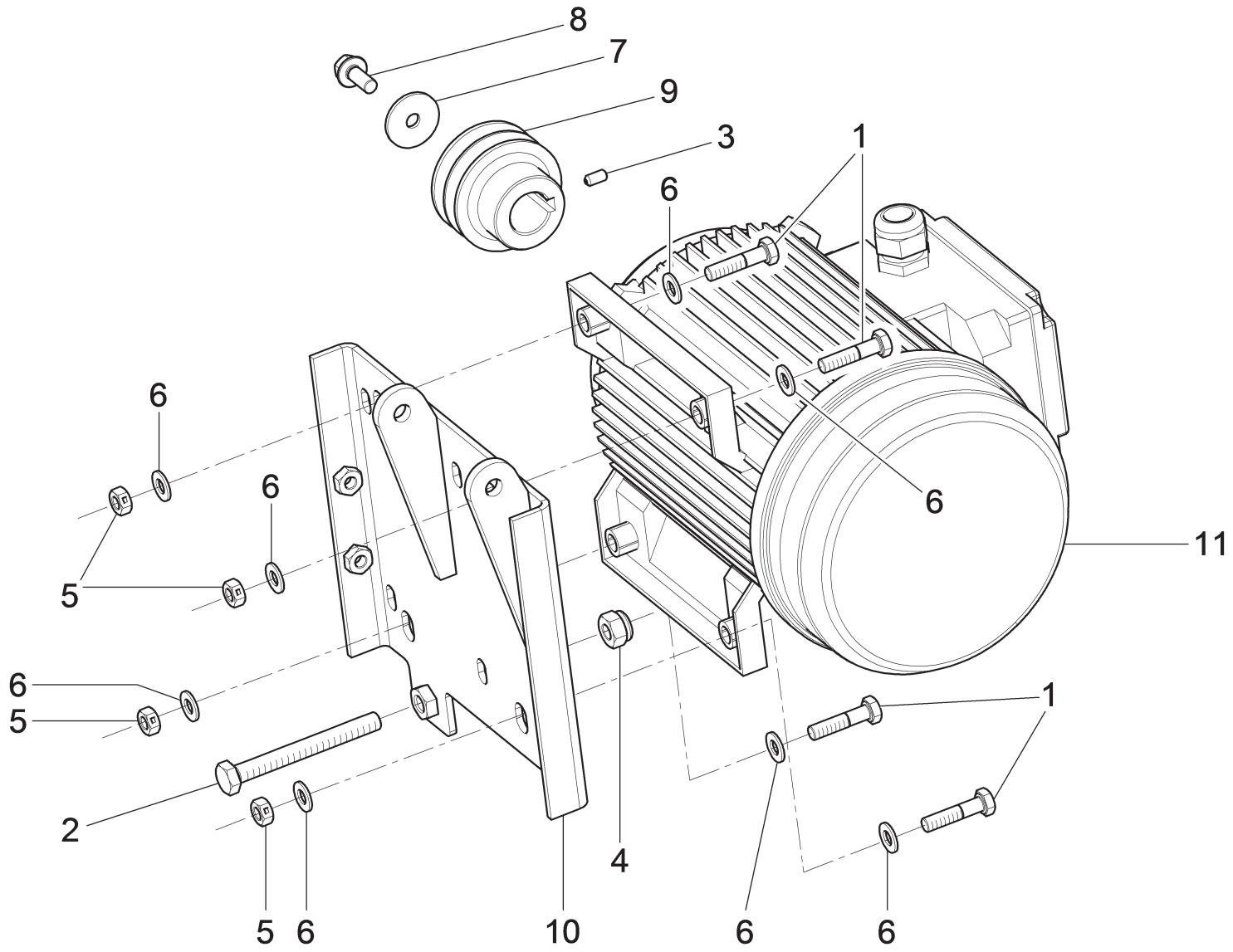
Butler
ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°5 - Rev. 5 | **750390150**

MANDRINO MOBILE
MOBILE MANDREL
FAHRBARER SPINDEL
MANDRIN MOBILE
MANDRIN MOBILE



NAV26HW	NAV26HW.S	NAV26HW.ST	
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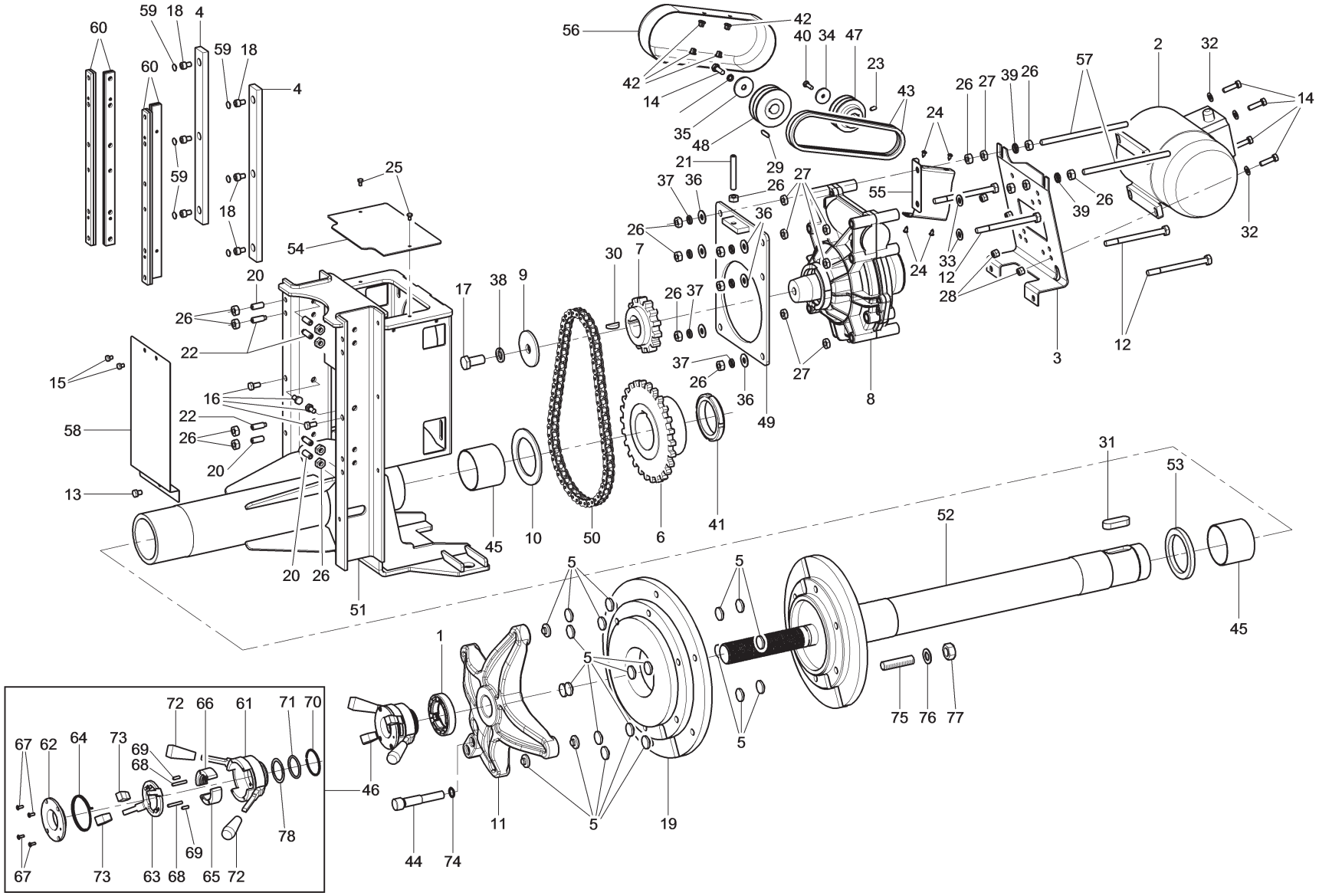
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**		*GRUPPO SELLA CON MOTORE SADDLE UNIT WITH MOTOR SATTELSATZ MIT MOTOR GROUPE SELLE AVEC MOTEUR GRUPO MONTURA CON MOTOR*	***Pag. 10 di 31***
	Tavola N°6 - Rev. 1	**750390530**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



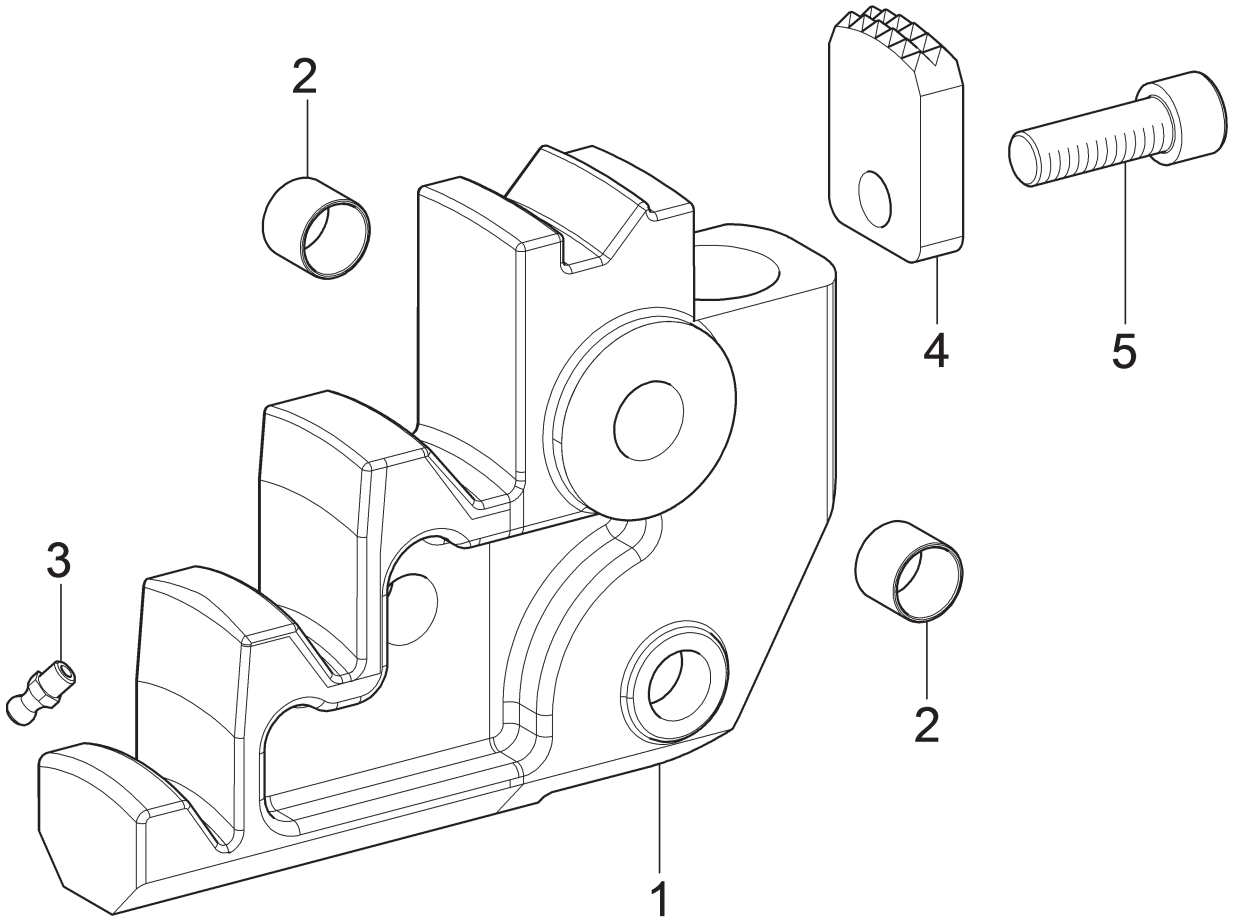
NAV26HW	NAV26HW.S	NAV26HW.ST	
		•	

Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°7 - Rev. 5 | **750390260**

GRUPPO RIDUTTORE CON FLANGIA
REDUCTION UNIT WITH FLANGE
UNTERSETZERSATZ MIT
GROUPE REDUCTEUR AVEC BRIDE
GRUPO REDUCTOR CON BRIDA



NAV26HW	NAV26HW.S	NAV26HW.ST	
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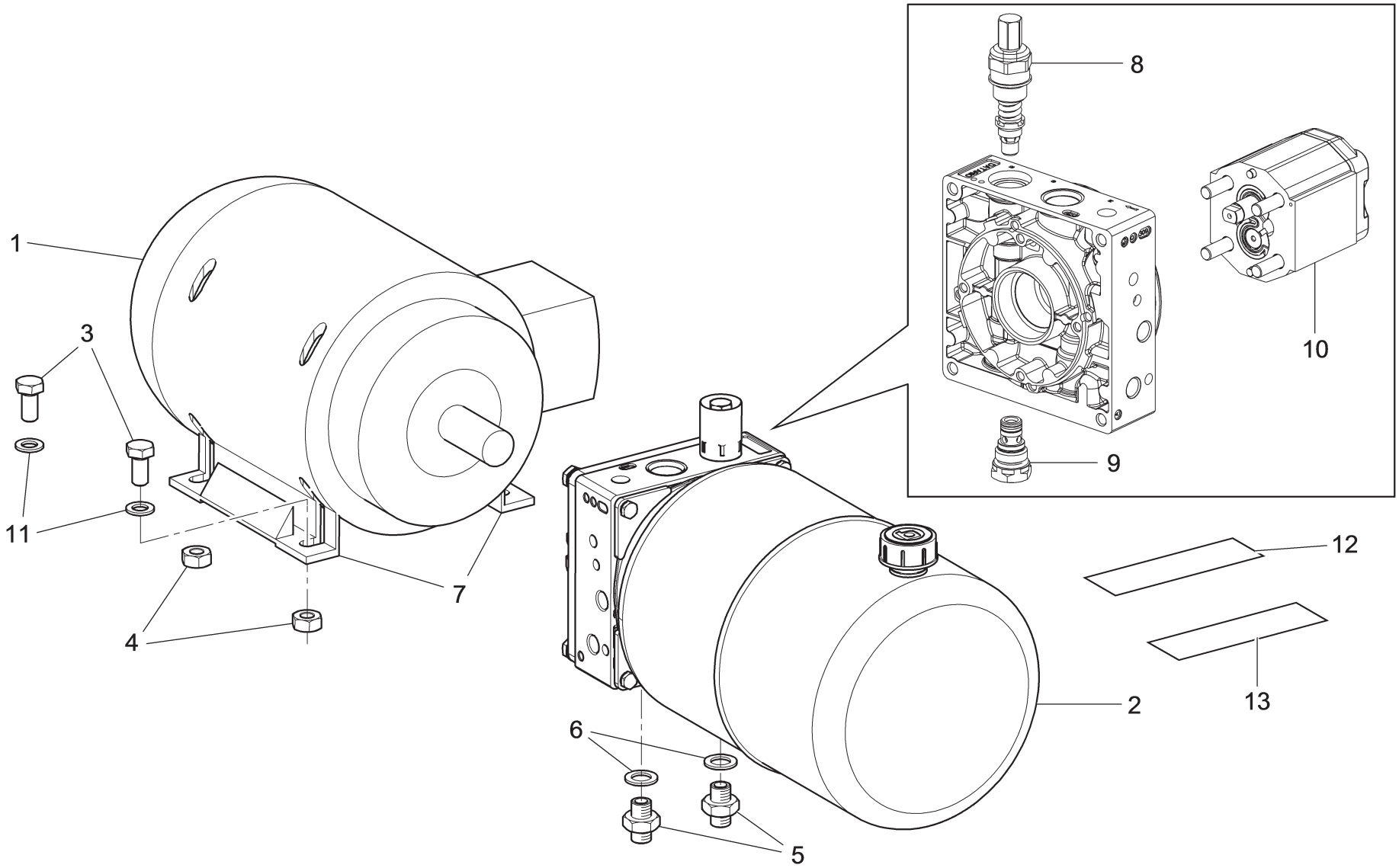
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**	*GRUPPO GRIFFA AUTOCENTRANTE SELF-CENTERING JAW UNIT SELBSTZENTRIERENDES KLAUESATZ GROUPE GRIFFE AUTOCENTREURE GRUPO GANCHO AUTOCENTRANTE*	***Pag. 12 di 31***
	Tavola N°8 - Rev. 3 — **750390641**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



NAV26HW	NAV26HW.S	NAV26HW.ST	
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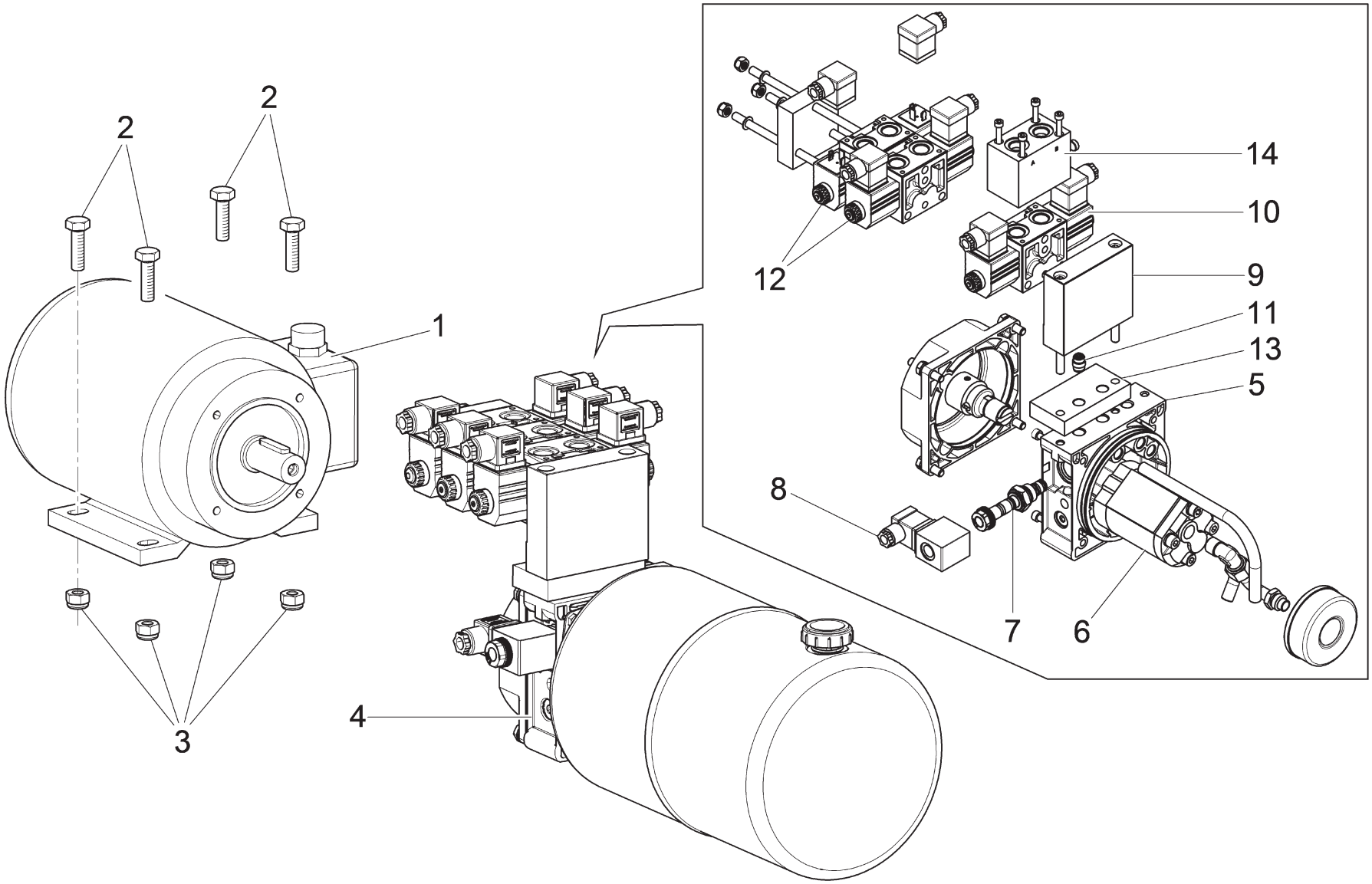
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°9 - Rev. 3 | **750390400**

GRUPPO MOTORE + CENTRALINA
MOTOR UNIT + HYDRAULIC POWER UNIT
MOTORSATZ + STEUERUNG
GROUPE MOTEUR + DISTRIBUTEUR
GRUPO MOTOR + CENTRALITA



NAV26HW	NAV26HW.S	NAV26HW.ST	
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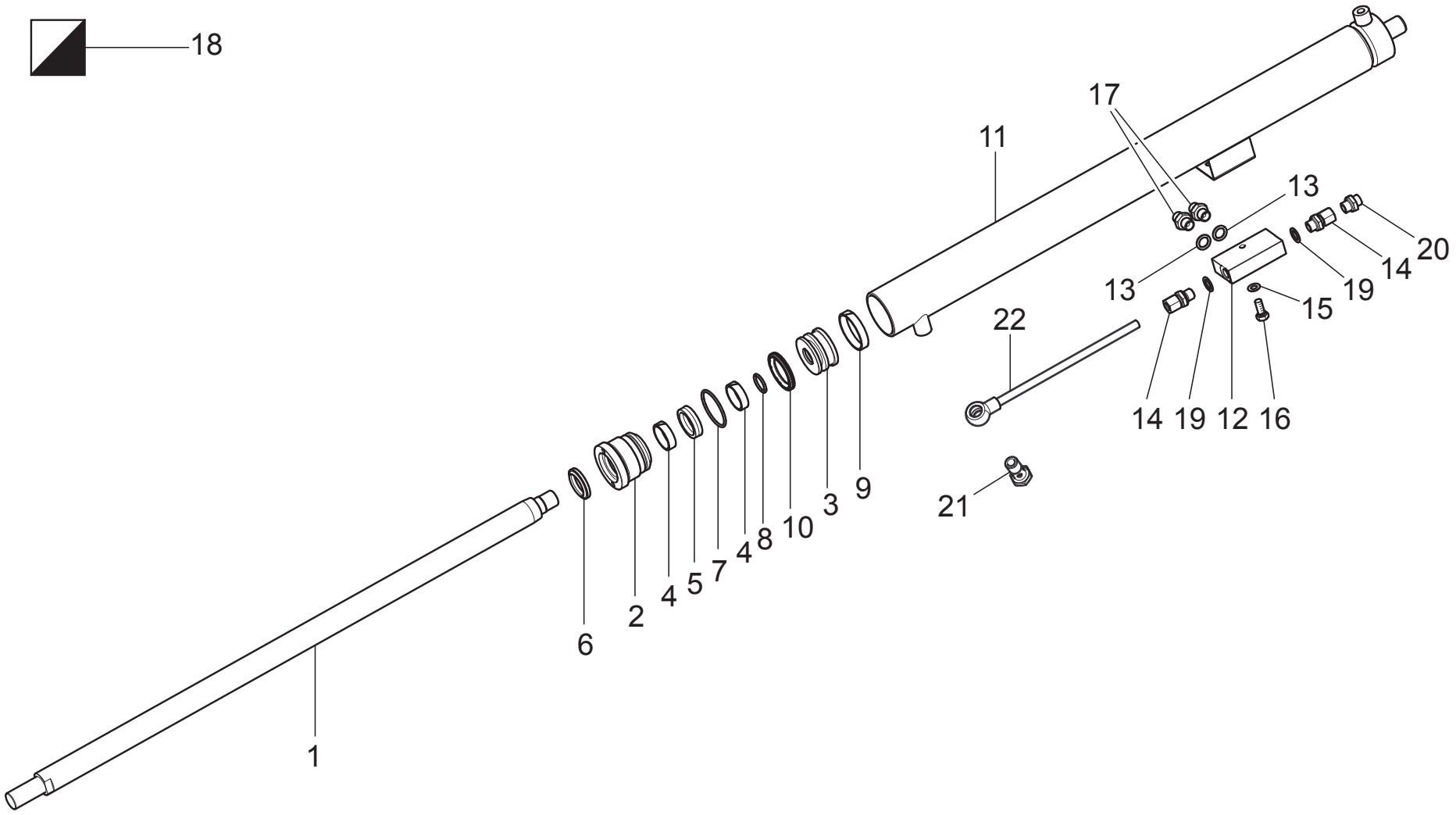
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°10 - Rev. 2 | **750390440**

GRUPPO MOTORE + CENTRALINA
MOTOR UNIT + HYDRAULIC POWER UNIT
MOTORSATZ + STEUERUNG
GROUPE MOTEUR + DISTRIBUTEUR
GRUPO MOTOR + CENTRALITA



NAV26HW	NAV26HW.S	NAV26HW.ST	
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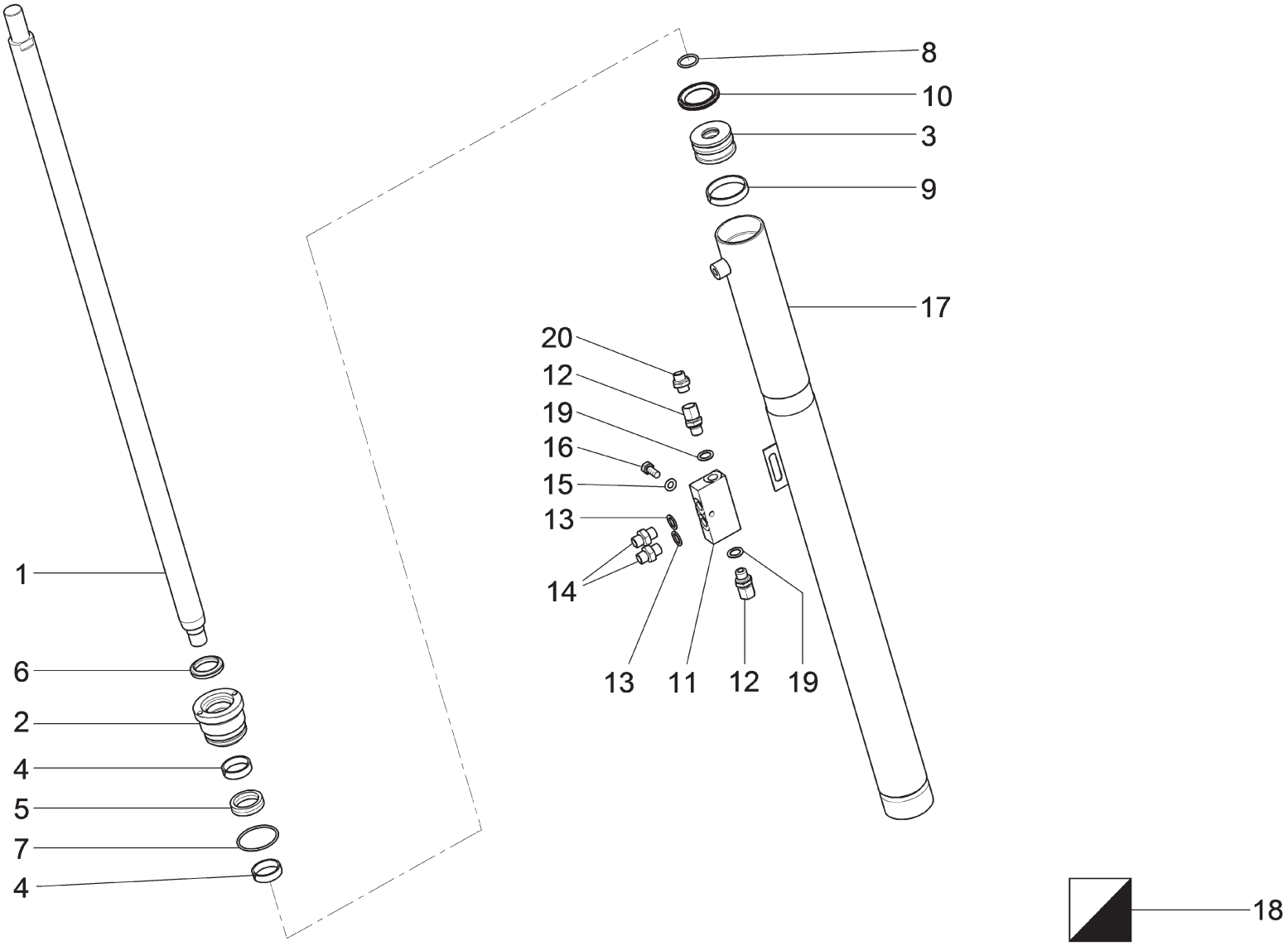
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**	*CILINDRO 50-30-660 50-30-660 CYLINDER ZYLINDER 50-30-660 CYLINDRE 50-30-660 CILINDRO 50-30-660*	***Pag. 15 di 31***
	Tavola N°11 - Rev. 2 / **750390071**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



NAV26HW	NAV26HW.S	NAV26HW.ST	
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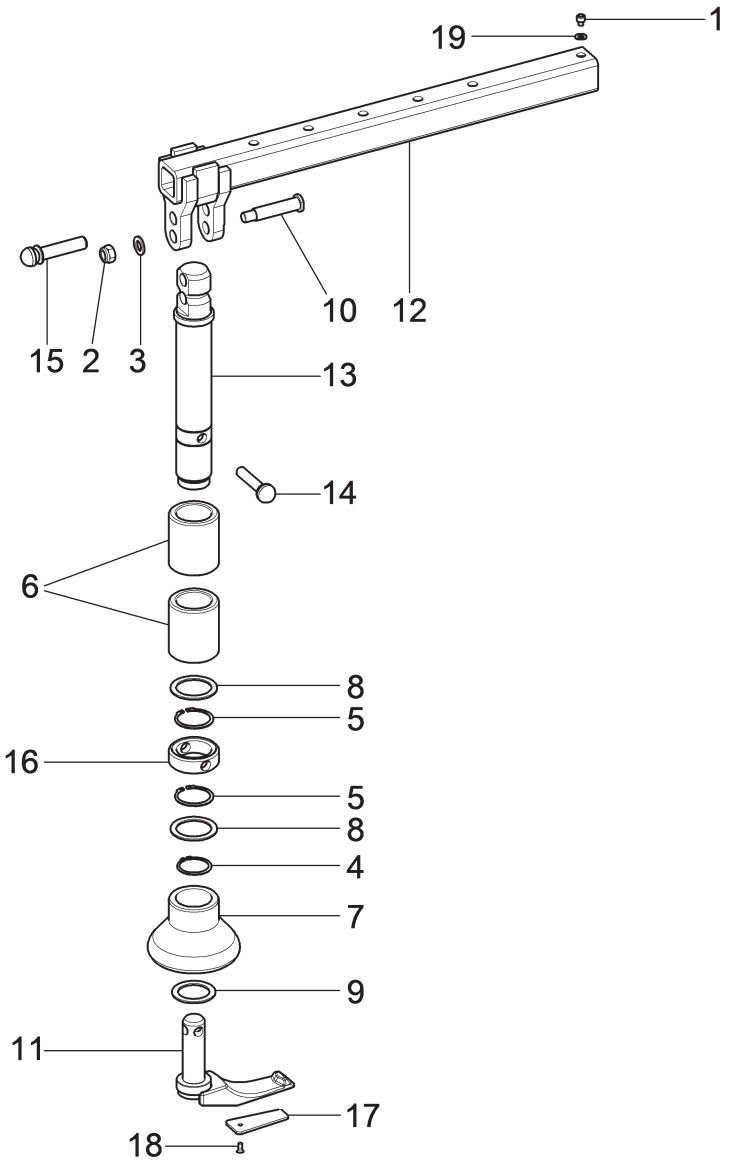
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°12 - Rev. 1 | **750390161**

CILINDRO 50-30-800
50-30-800 CYLINDER
ZYLINDER 50-30-800
CYLINDRE 50-30-800
CILINDRO 50-30-800



NAV26HW	NAV26HW.S	NAV26HW.ST	
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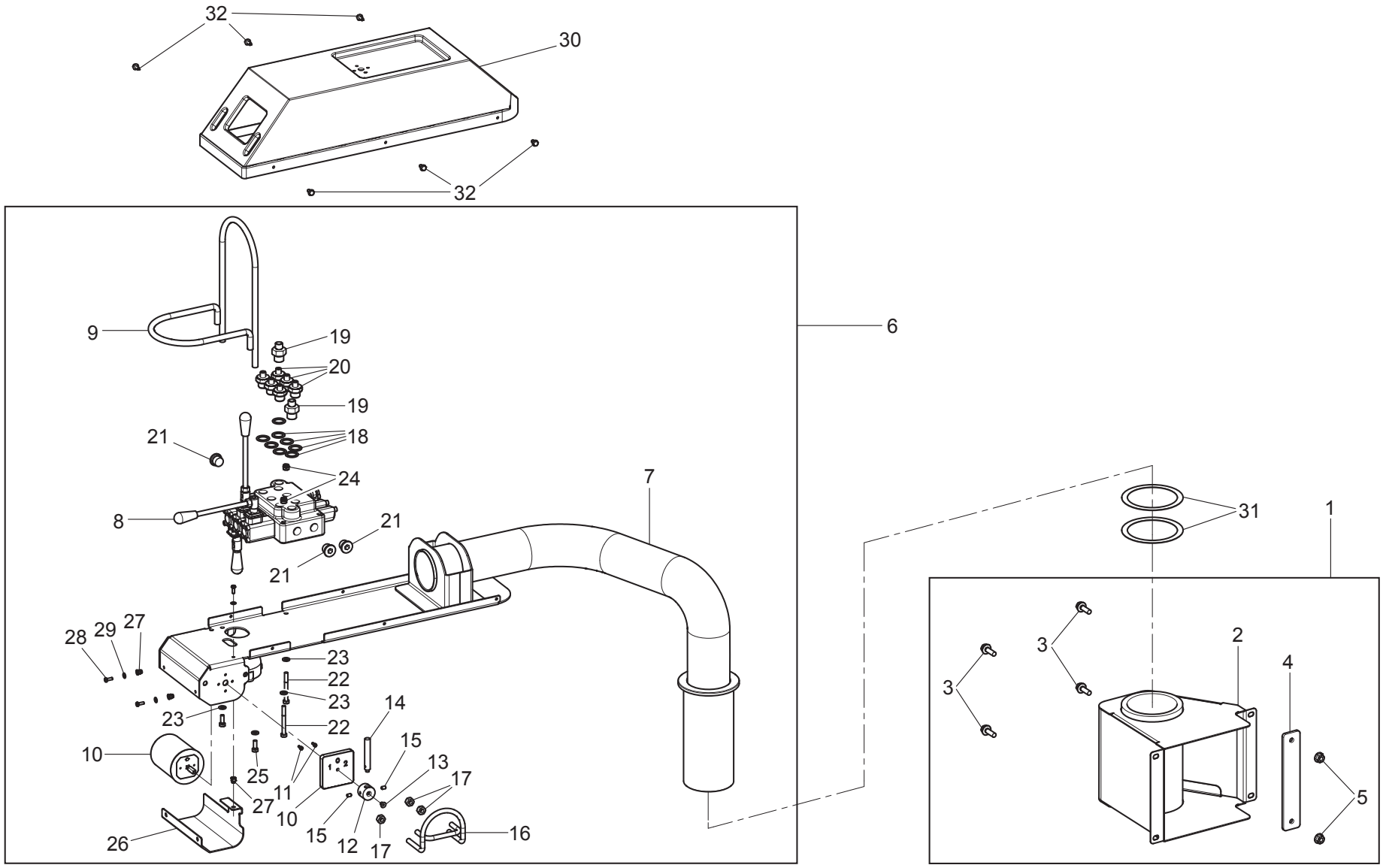
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°13 - Rev. 4 | **750390170**

BRACCIO UTENSILE
TOOL ARM
WERKZEUGARM
BRAS OUTIL
BRAZO UTENSILLO



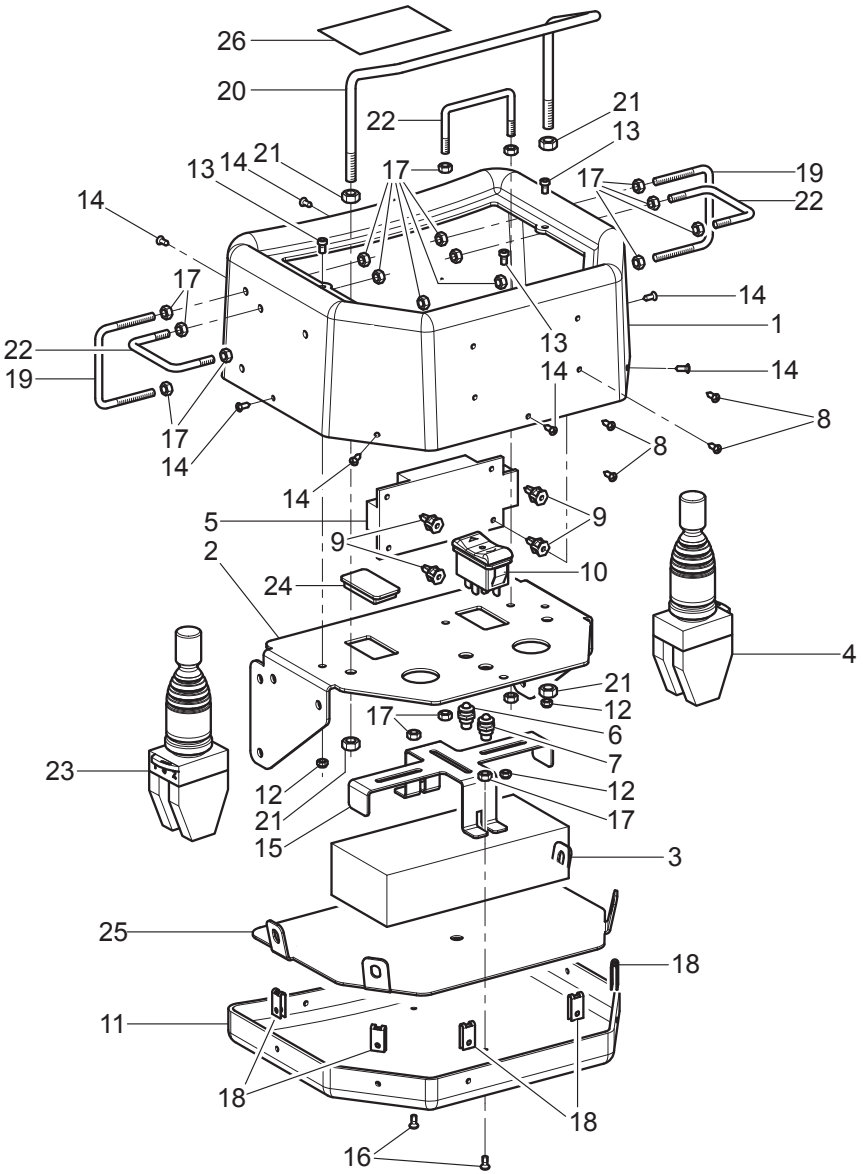
NAV26HW	NAV26HW.S	NAV26HW.ST	
●	VAR		

Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°14 - Rev. 2 | **750390840**

GRUPPO COMANDO MOBILE
MOBILE CONTROL UNIT
BEWEGLICHER BEFEHLUNGSATZ
GROUPE COMMANDE MOBILE
GRUPO MANDO MÓVIL



NAV26HW	NAV26HW.S	NAV26HW.ST	
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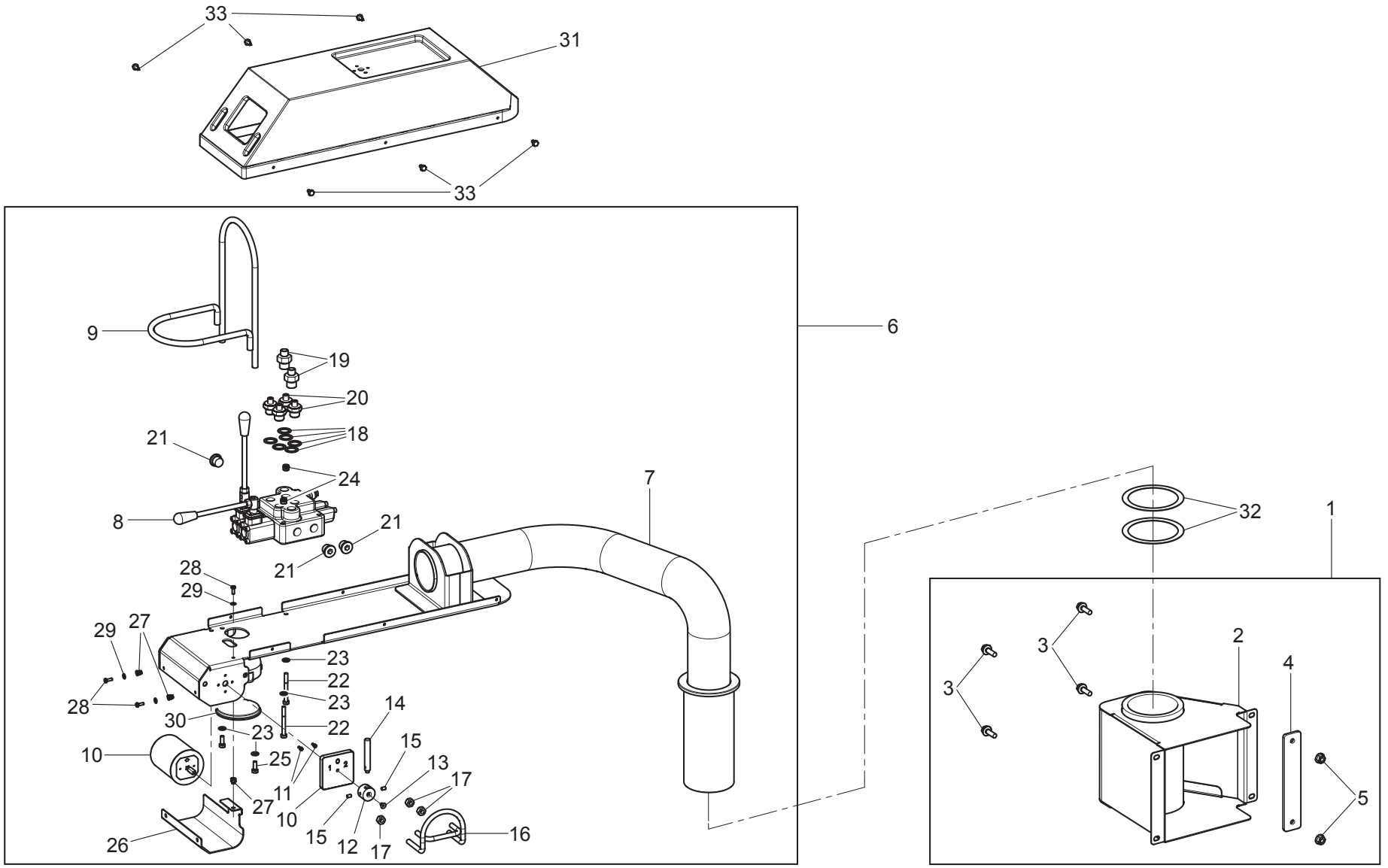
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**	*RADIOCOMANDO RADIO CONTROL FUNKSTEUERUNG RADIOCOMMANDE RADIOCOMANDO*	***Pag. 19 di 31***
	Tavola N°15 - Rev. 2 / **750390461**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



NAV26HW	NAV26HW.S	NAV26HW.ST	
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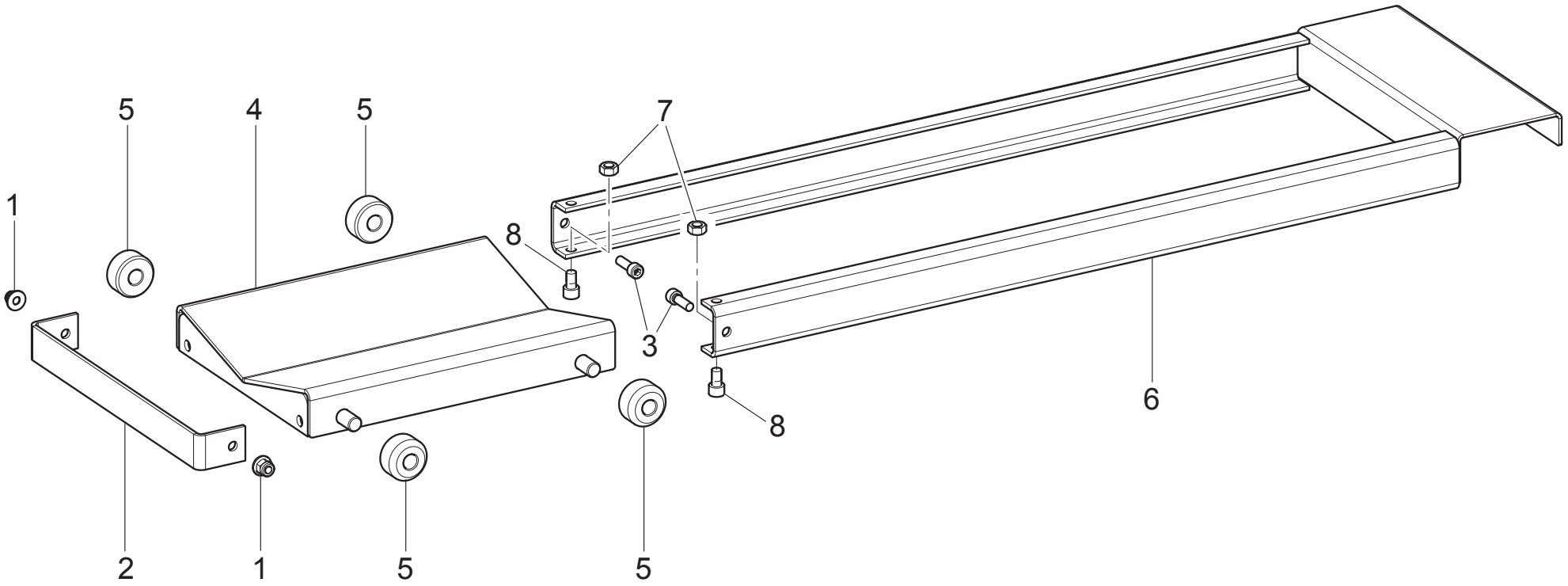
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°16 - Rev. 1 | **750390910**

GRUPPO COMANDO MOBILE 2 LEVE
2 LEVER MOBILE CONTROL UNIT
BEWEGLICHER BEFEHLUNGSATZ MIT ZWEI HEBEL
GROUPE COMMANDE MOBILE 2 LEVIERS
GRUPO MANDO MÓVIL 2 PALANCAS



NAV26HW	NAV26HW.S	NAV26HW.ST	
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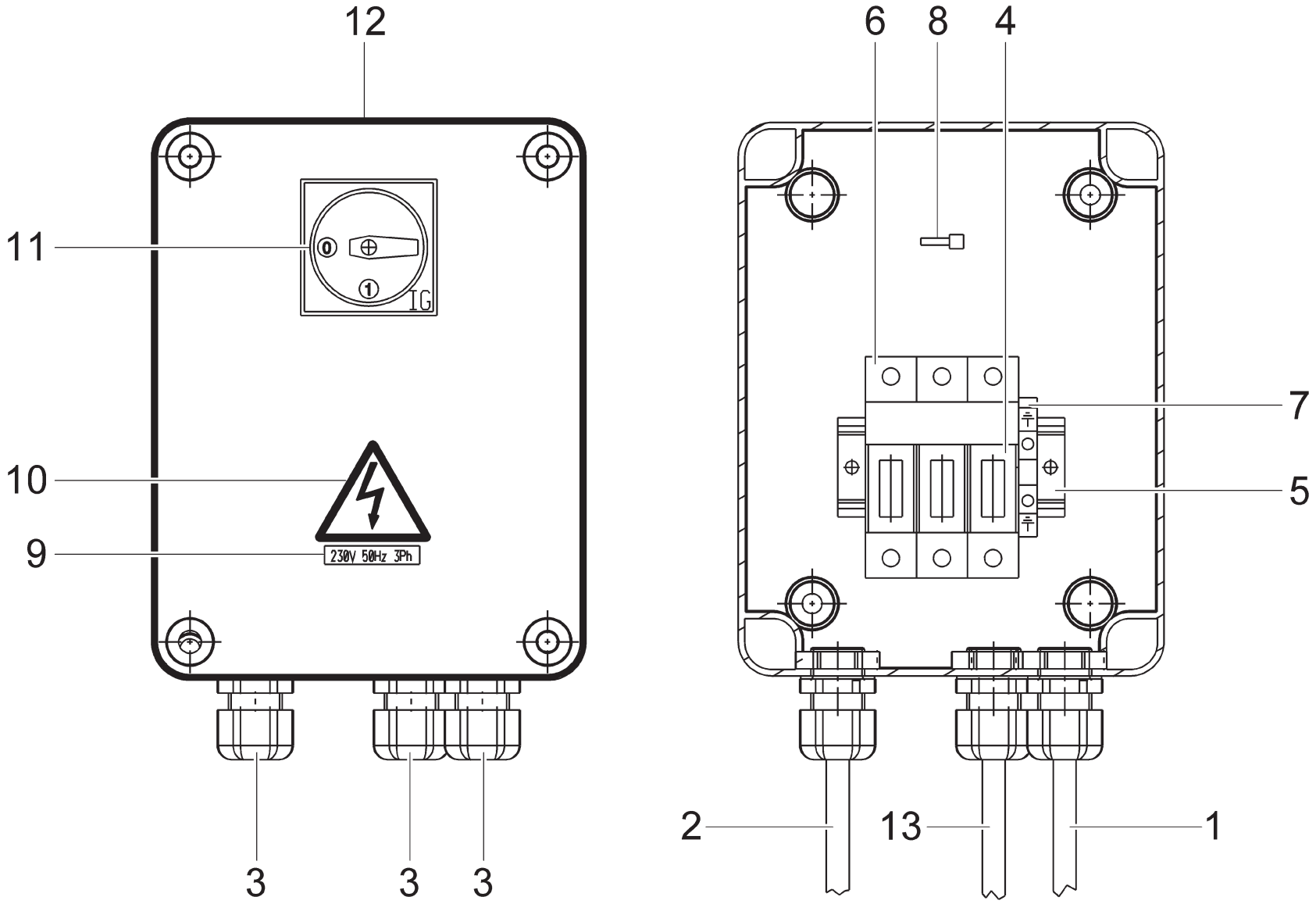
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°17 - Rev. 2 | **B8365000**

PEDANA APPOGGIO RUOTA
WHEEL BEARING FOOTBOARD
TRITTBRETT RADTRÄGER
MARCHEPIED APPUI ROUE
TABURETE APOYARUEDA



NAV26HW	NAV26HW.S	NAV26HW.ST	
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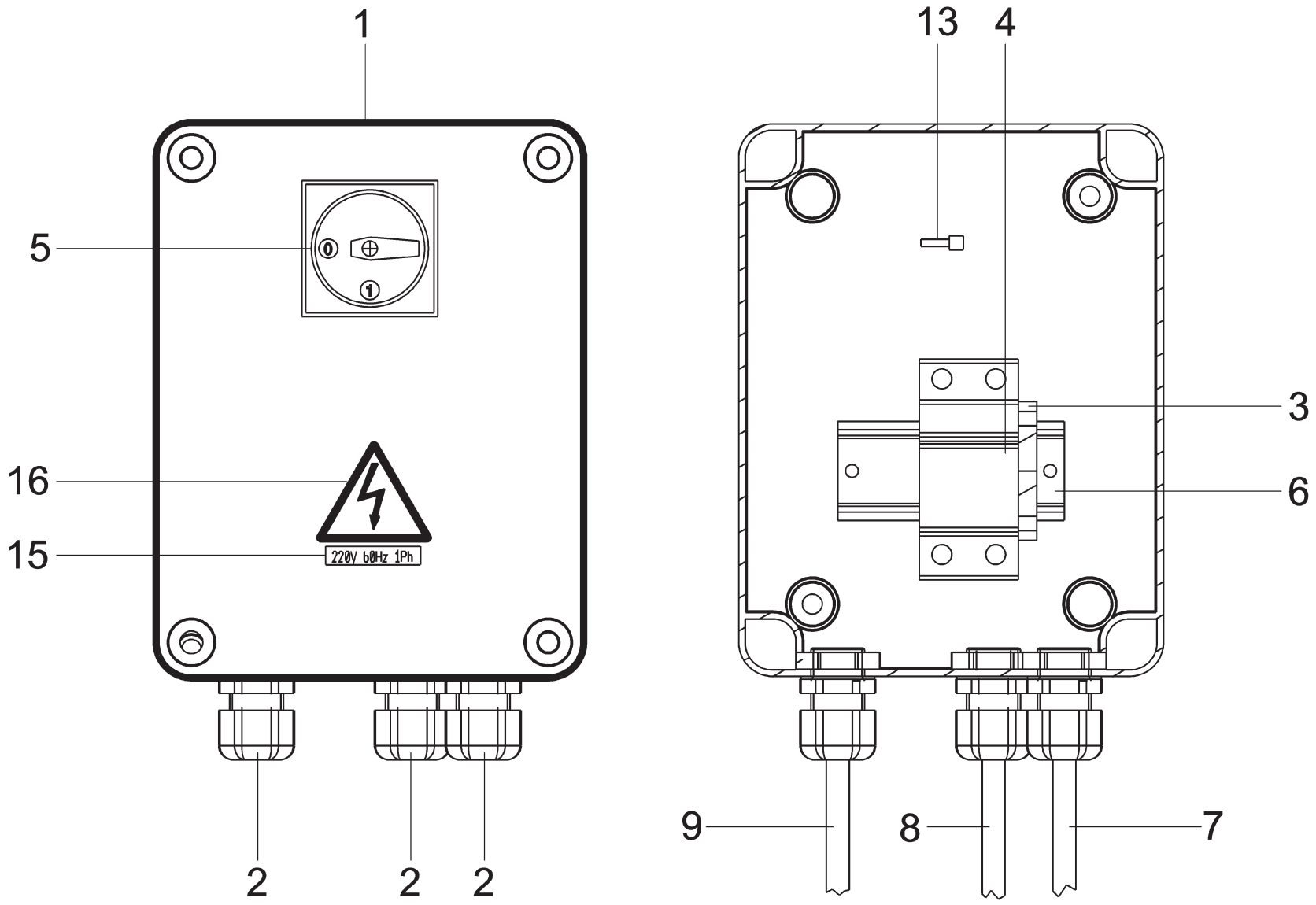
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**	*QUADRO ELETTRICO TRIFASE THREEPHASE ELECTRIC CABINET DREIPHASEN SCHALTPULT TABLEAU ÉLECTRIQUE TRIPHASÉ CUADRO ELÉCTRICO TRIFÁSICO*	***Pag. 22 di 31***
	Tavola N°18A - Rev. 1 / **750303000**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



NAV26HW	NAV26HW.S	NAV26HW.ST	
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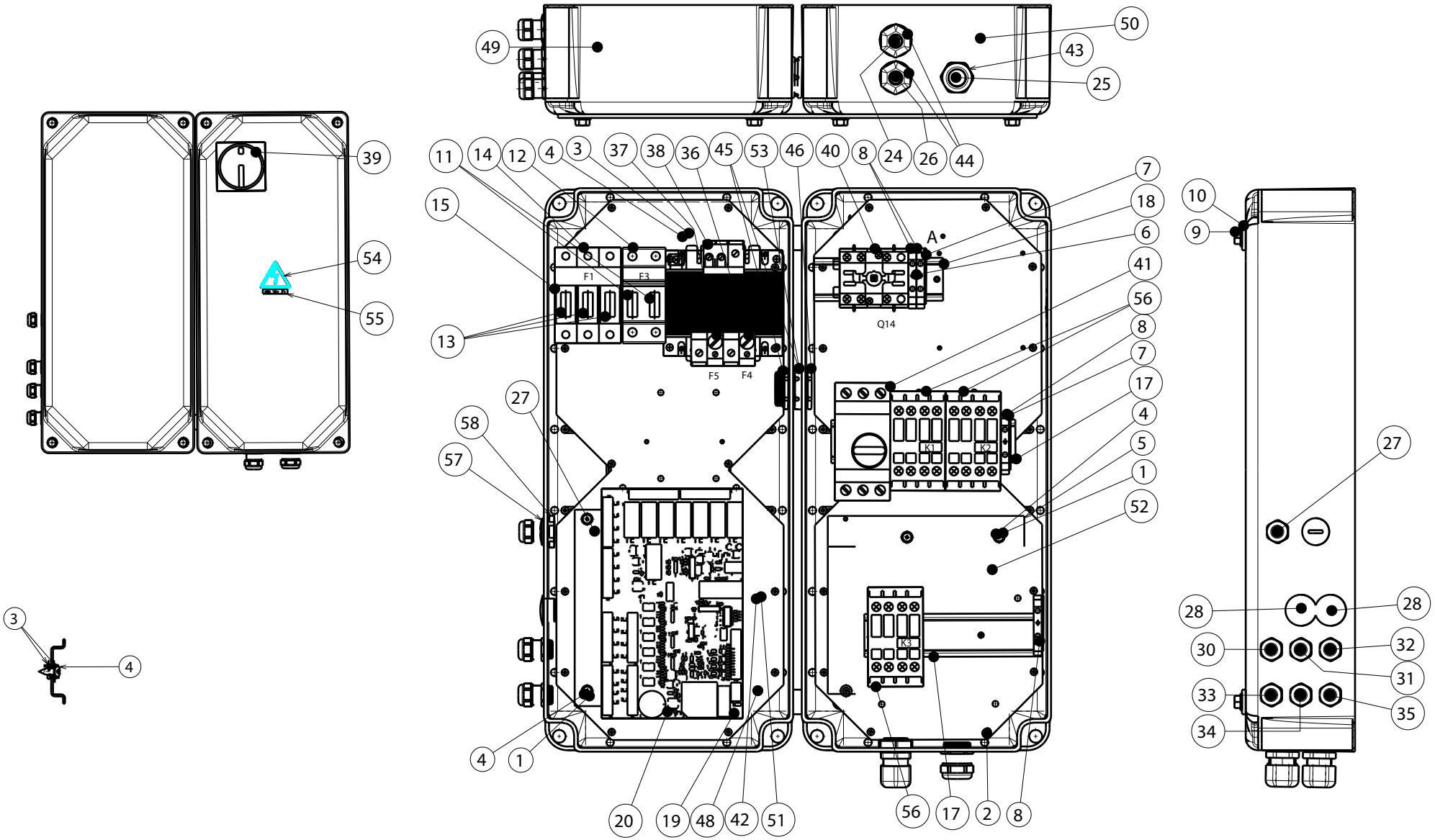
Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**	*QUADRO ELETTRICO MONOFASE MONOPHASE ELECTRIC CABINET EINPHASEN SCHALTPULT TABLEAU ÉLECTRIQUE UNIPHASÉ CUADRO ELÉCTRICO MONOFÁSICO*	***Pag. 23 di 31***
	Tavola N°18B - Rev. 0 / **750303040**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



NAV26HW	NAV26HW.S	NAV26HW.ST	
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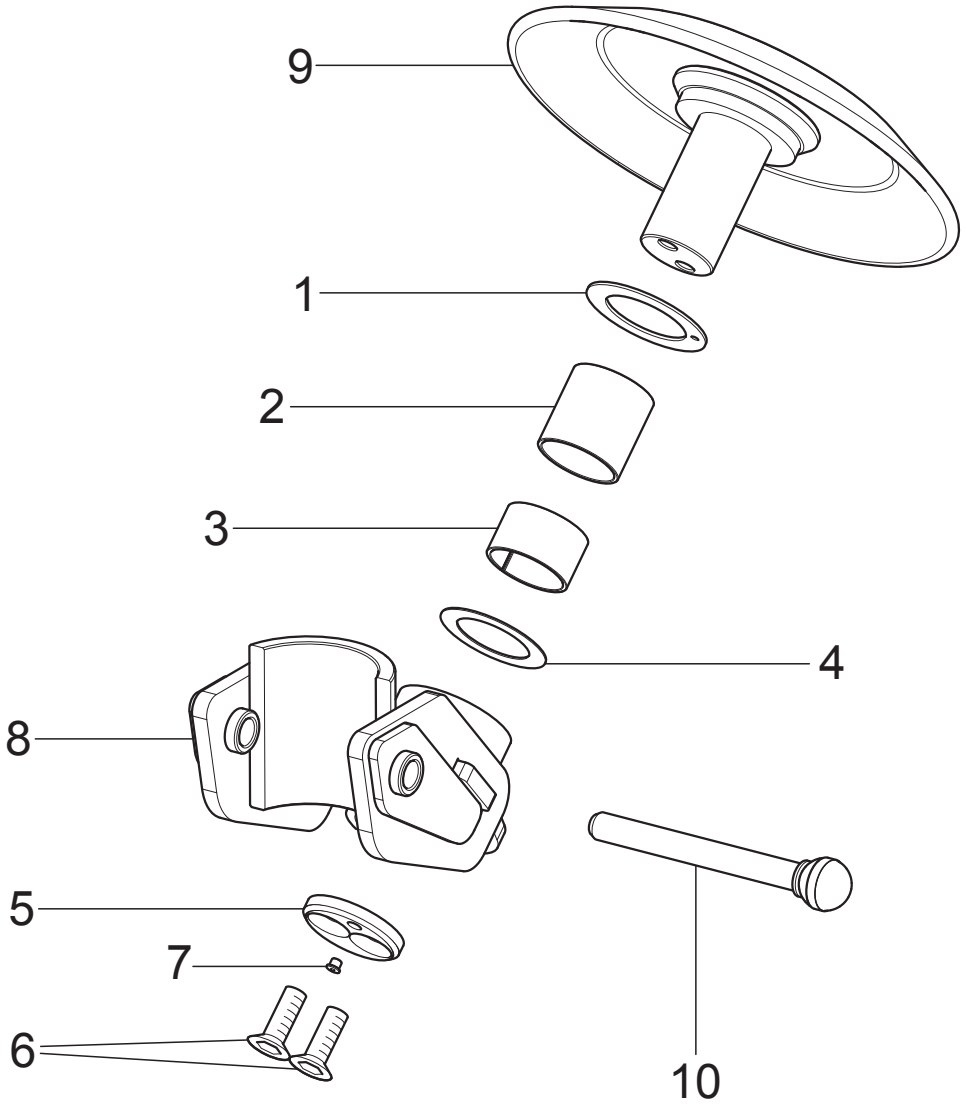
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

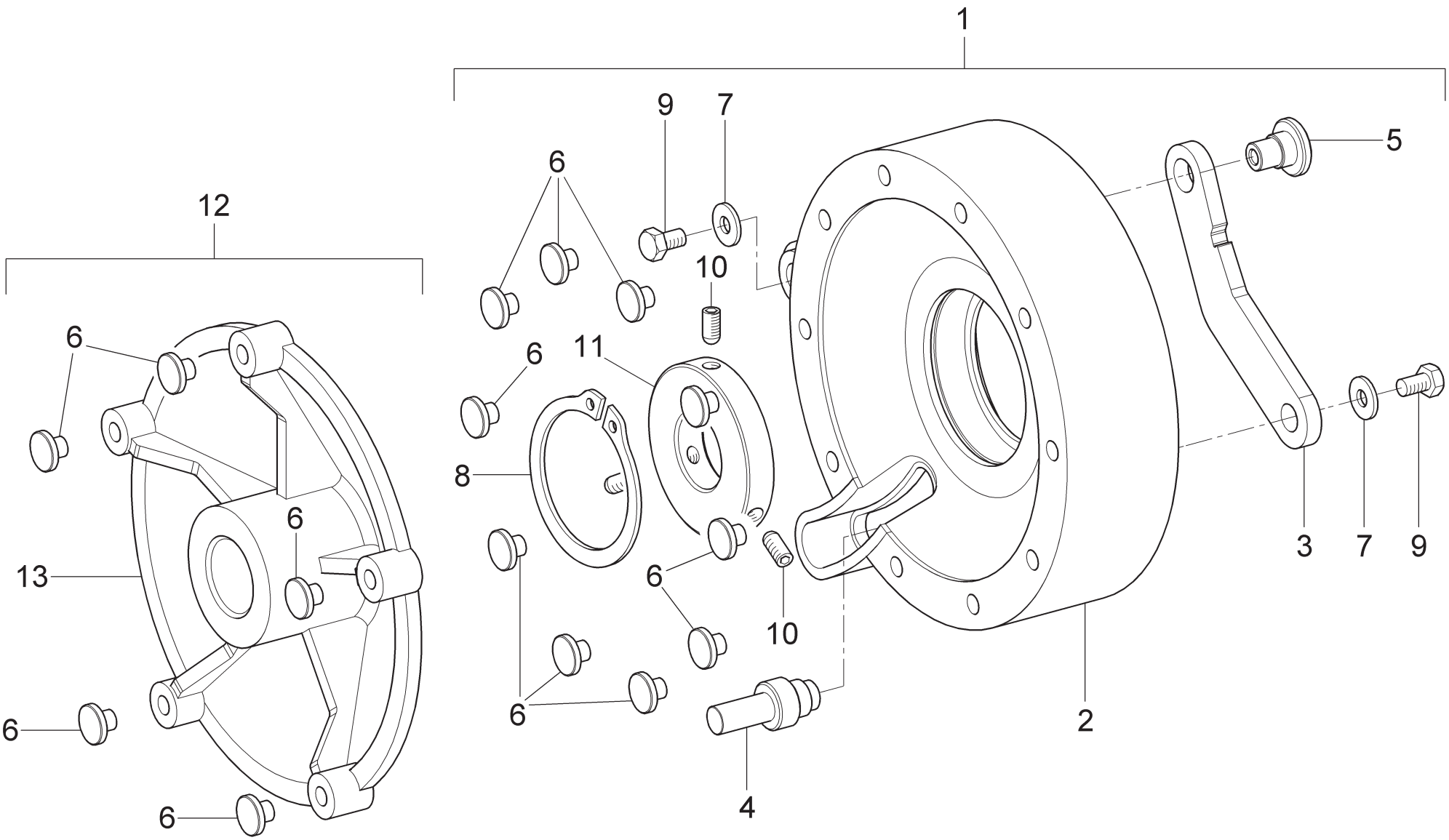
Tavola N°19 - Rev. 2 | **750303031**

INSIEME MONTAGGIO CASSETTA ELETTRICA
ELECTTRICAL BOX ASSEMBLY
ELEKTRISCHEKISTESATZ
ASSEMBLAGE BOÎTER ÉLECTRIQUE
CONJUNTO MONTAJE CAJITA ELÉCTRICA



NAV26HW	NAV26HW.S	NAV26HW.ST	
•	•	•	

Butler ENGINEERING and MARKETING S.P.A.	**LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE LISTE DES PIECES DETACHEES - LISTA DE PIEZAS**	*DISCO STALLONATORE RUOTE CERCHIETTO BEAD BREAKING DISC BEAD WIRES ABRÜCKPLATTE WULSTKERNSRÄDER DISQUE DECOLLE-TALONS ROUES TRINGLE DISCO DESTALONADOR RUEDAS ALAMBRE*	***Pag. 25 di 31***
	Tavola N°20 - Rev. 2 / **G108A22**		**NAV26HW - NAV26HW.S - NAV26HW.ST**



NAV26HW	NAV26HW.S	NAV26HW.ST	
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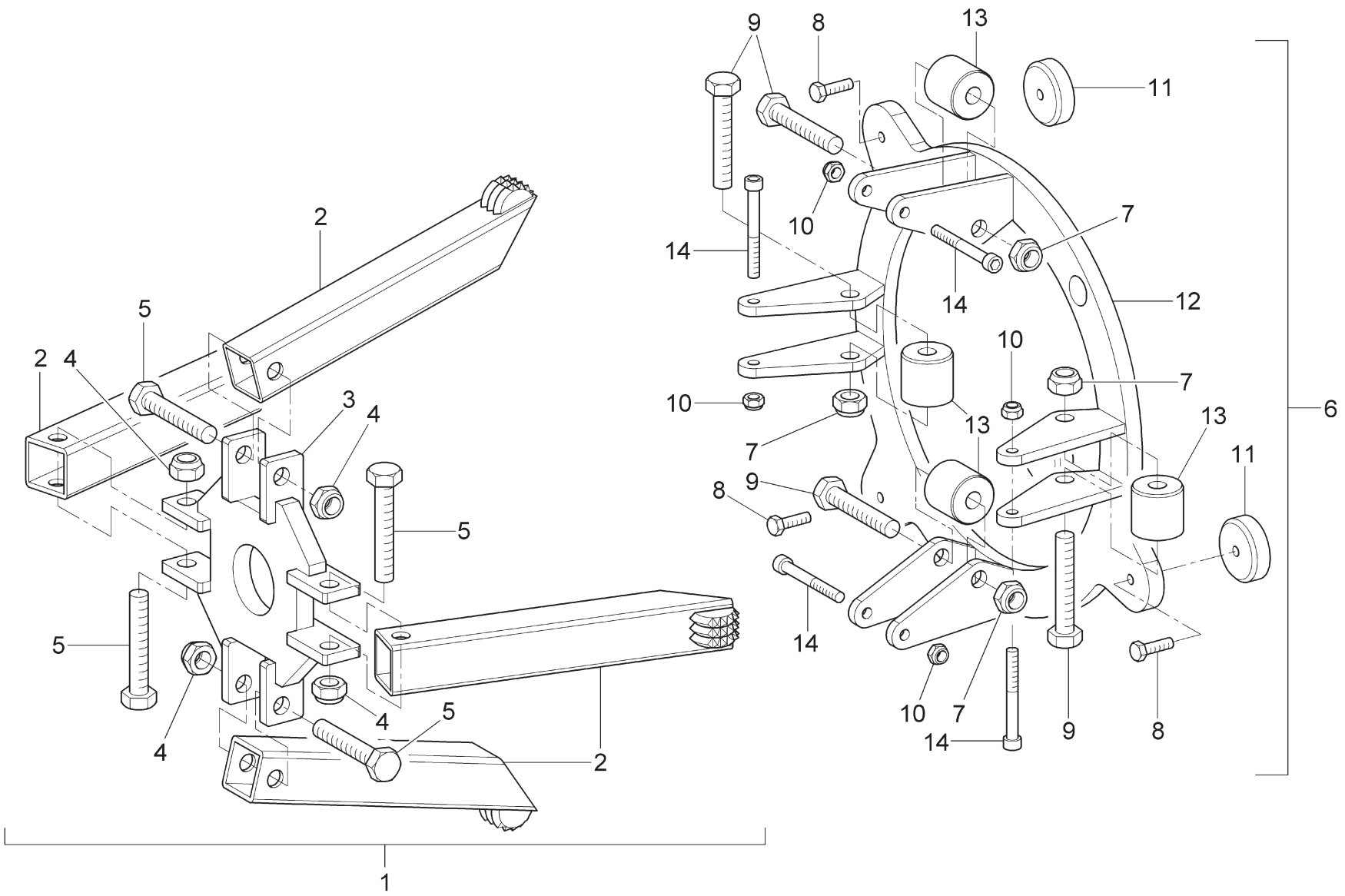
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°21 - Rev. 0 | **G108A20**

KIT CONI PER BLOCCAGGIO UNIVERSALE
CONES KIT FOR UNIVERSAL LOCKING
KEGELSET FÜR UNIVERSELLE BLOCKIERUNG
KIT CONES POUR BLOCAGE UNIVERSAL
KIT CONO PARA BLOQUEO UNIVERSAL



NAV26HW	NAV26HW.S	NAV26HW.ST	
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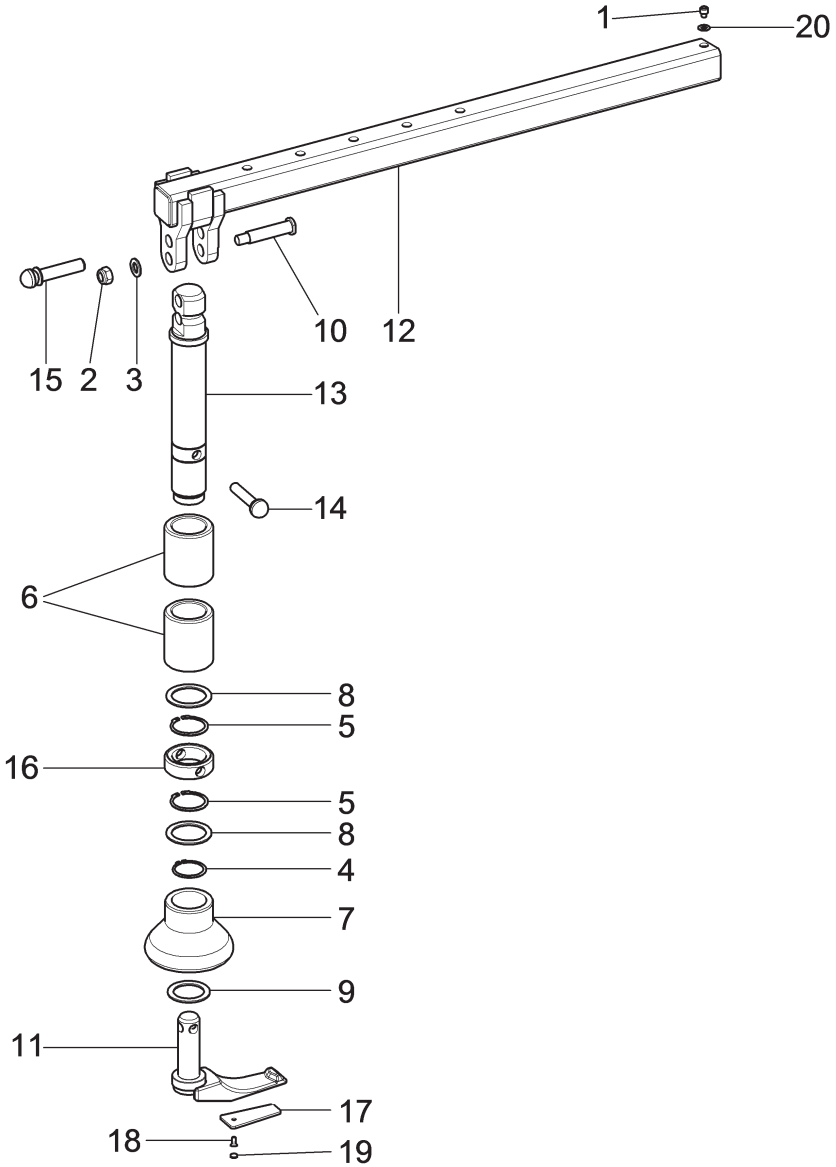
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°22 - Rev. 0 | **G108A21**

ADATTATORE PER RUOTE DAYTON
ADAPTER FOR DAYTON WHEELS
ADAPTER FÜR RÄDER DAYTON
ADAPTATEUR POUR ROUES DAYTON
ADAPTADOR PARA RUEDAS DAYTON



NAV26HW	NAV26HW.S	NAV26HW.ST	
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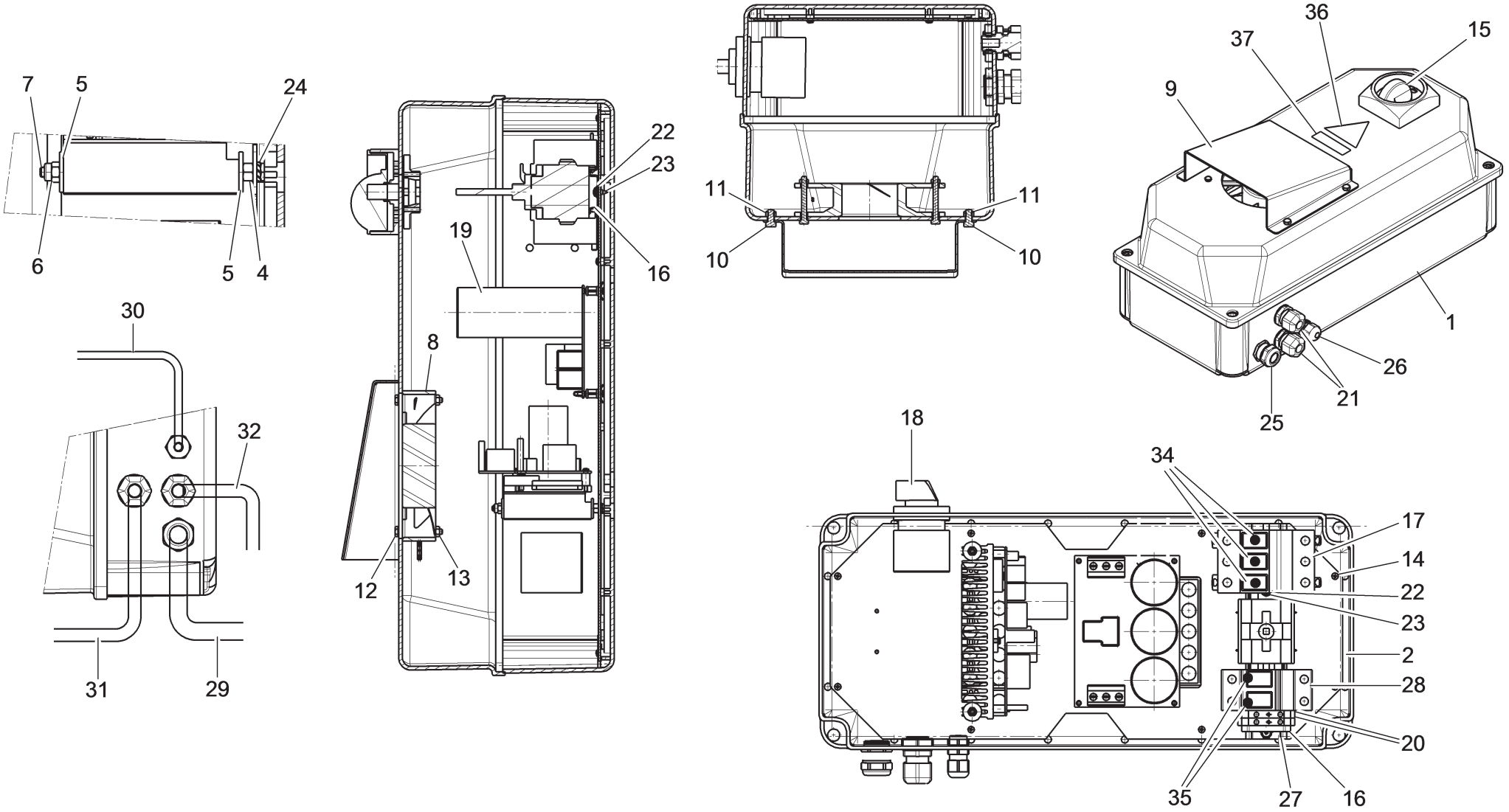
Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°23 - Rev. 2 | **750390590**

BRACCIO UTENSILE
TOOL ARM
WERKZEUGARM
BRAS OUTIL
BRAZO UTENSILLO



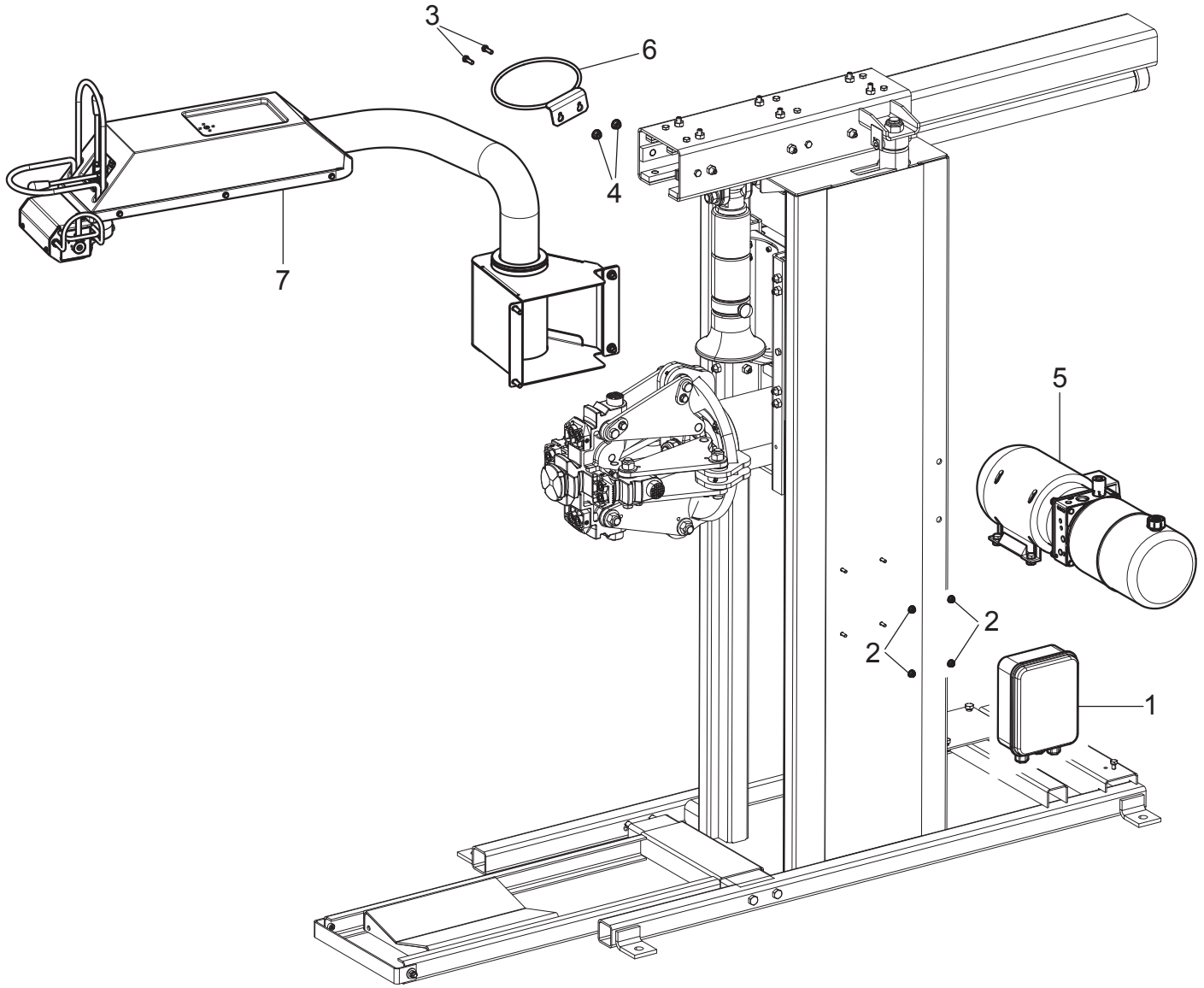
NAV26HW	NAV26HW.S	NAV26HW.ST	
VAR			

Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°24 - Rev. 1 | **750390900**

INSIEME MTG CASSETTA ELETTRICA
ELECTRICAL BOX MTG ASSEMBLY
SATZ MTG ELEKTRISCHEKISTE
ASSEMBLAGE MTG BOITIER ÉLECTRIQUE
CONJUNTO MTG CAJITA ELECTRICA



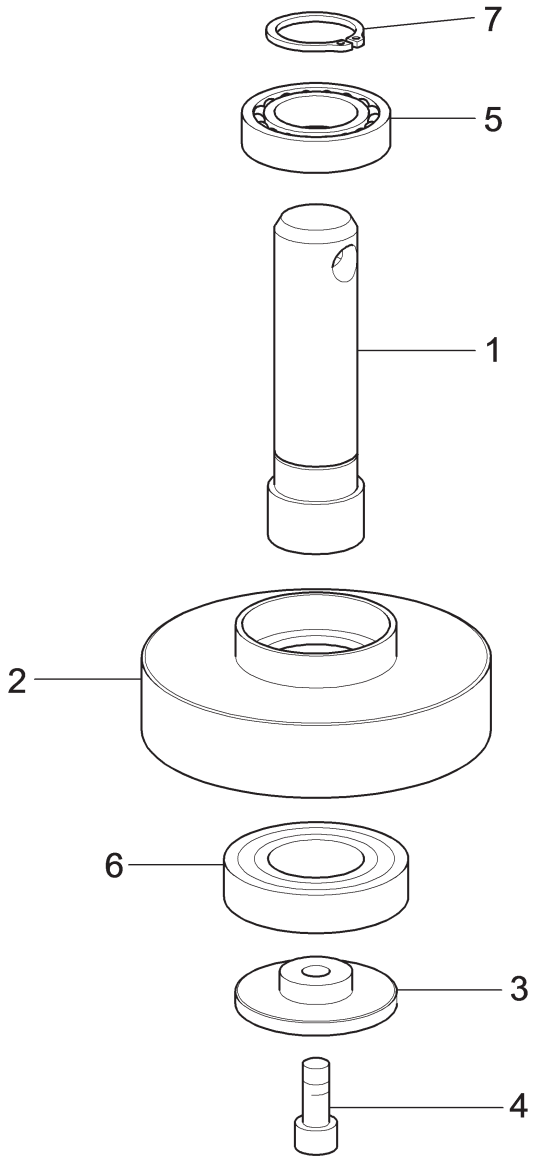
NAV26HW	NAV26HW.S	NAV26HW.ST	
	VAR		

Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°25 - Rev. 0 | **750390710**

VARIANTE COMANDI IDRAULICI
HYDRAULIC CONTROLS VERSION
HYDRAULISCHE BEFEHLUNGEN VERSION
VERSION COMMANDES HYDRAULIQUES
VERSIÓN MANDOS HIDRÁULICOS



NAV26HW	NAV26HW.S	NAV26HW.ST	
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Butler ENGINEERING and MARKETING S.P.A.

LISTA DEI COMPONENTI - LIST OF COMPONENTS - TEILELISTE
LISTE DES PIECES DETACHEES - LISTA DE PIEZAS

Tavola N°26 - Rev. 0 | **G108A41**

GRUPPO RULLO PER CERCHIETTI
ROLL FOR BEAD WIREUNIT
ROLLE FÜR WULSTKERNE SATZ
GROUPE ROULEAU POUR TRINGLES
GRUPO RODILLOS PARA AROS