Palazzani

Palazzani Industrie spa

PaLIFT - DIVISION

RAGNO XTJ 32 / C

OPERATION AND MAINTENANCE MANUAL

RAGNO XTJ 32/C	**CRAWLER VERSION**
SERIAL NR.	**PT 2712**
YEAR	**2010**
CE CERTIFICATION	**D 04 AA4121401**
MANUAL N°	**NM 119 A 09**

TO THE OWNER

The platform you have bought has been designed and manufactured with a goal in mind: the quality

This machine complies with the safety standards in force; yet, this does not means that there is no risk of danger. Therefore, it is vital that you observe the safety regulations and follow some elementary precautions.

First of all, we strongly insist that you read this manual and observe all safety standards, as well use and maintenance instructions, in order to avoid work-related dangers

This manual is intended as a guide for platform use. Proper machine use and maintenance will ensure long-lasting product and satisfaction.

Before to entrust the platform to its operator, be sure that:

1. **he has received proper safety and use training at our facility, or, alternatively, by a specialized and experienced person**
2. he has read and understood the instructions of this manual

In any case, the machine can be used only by a trained, 18 years old, operator authorized by employer

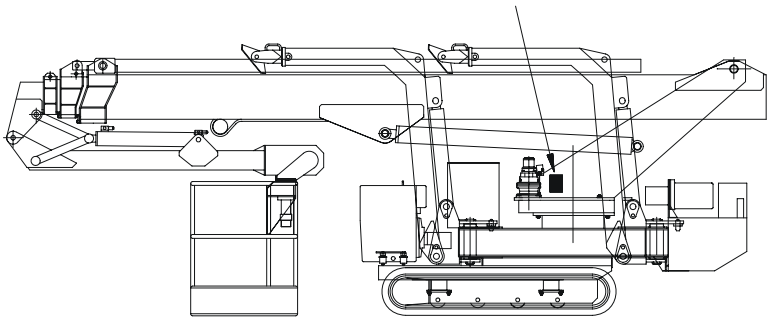
Always keep a copy of this manual on the platform - keep it complete and in good condition

Palazzani Industrie S.p.A. is at your disposal for any additional information and do not hesitate to get in touch should you require technical assistance or original spare parts, the only ones granting compatibility and quality

IDENTIFICATION OF THE PLATFORM

identification plate

When you ask for information, spare parts, or technical intervention, please always specify to Palazzani Industrie S.p.A. Model and Serial Number evidenced on the identification plate



WARNING

THIS SYMBOL MEANS “SAFETY WARNING” AND HIGHLIGHTS IMPORTANT SAFETY INFORMATION

WHEN YOU SEE THIS SYMBOL, CAREFULLY READ THE MESSAGE THAT FOLLOWS AND PAY YOUR BEST ATTENTION SINCE THERE IS A DANGER OF SERIOUS PHYSICAL INJURY

THE IMPROPER USE OF THE PLATFORM, OR THE INOBSERVANCE OF THE SAFETY DIRECTIONS, COULD LEAD TO SERIOUS, EVEN FATAL, INJURY

BEFORE USING THE PLATFORM:

1. READ THIS MANUAL CAREFULLY
2. BE SURE THAT THE PLATFORM IS IN PERFECT ORDER, PARTICULARLY FOR SAFETY DEVICES
3. INQUIRE ABOUT SAFETY REGULATIONS REGARDING THE ACTIVITY SECTOR AND IN FORCE ON THE SITE

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RICAMBI (vedi Catalogo parti di ricambio)
SCHEMA IDRAULICO (vedi Catalogo parti di ricambio)
SCHEMA ELETTRICO (vedi Catalogo parti di ricambio)
USO - MANUTENZIONE – RICAMBI MOTORE DIESEL (vedi apposito libro del Costruttore)

CHAP. 1 GENERAL CHARACTERISTICS

1.1 INTRODUCTION

"Ragno" are aerial access platforms having the best facilities for internal positioning and working and for external applications, where entrance, slope or path are an impossible obstacle for more conventional machines.
One of the "Ragno" peculiarities is the stabilizing-legs' possibility to be rotated and articulated independently, which gives unprecedented versatility when setting up in confined spaces and on inclines.
"Ragno" have standard dual power: no-noise thermic power pack for robust external working and electric motor(s) for quiet and fume-free indoor operations.
This platform is available in rubber-tracked crawler version particularly fit for irregular grounds, being capable of climbing steps or steep slopes.
The platform is not electrically isolated but it is being projected to operate outside.

1.2 DESCRIPTION

"Ragno" unit mainly consists of a frame with 4 articulated stabilizing legs, and supporting the turntable, slewing on a ball bearing ring.
Steel made multi-telescopic boom is hinged to the turntable and it supports the aerial cage, with an hydraulically articulating jib. All movements are actuated by hydraulic cylinders, or hydraulic motors
Unit is mounted on rubber tracks, completely integrated with the supporting frame.
Two power packs are mounted on the Ragno : el.motor 220V and no-noise diesel engine, all driving the platform movements alternatively and both source are able to the boom mouvements and travelling.
The machine has two control panel, one on the round, and one in the cage and are interlocked; it's possible to use only one.
The ground control panel allows the travelling and stabilizer positioning, and the boom mouvements generally used for the emergency operations.

1.3 DIMENSIONS AND PERFORMANCES XTJ 32/C

Transfer position machine

Min. height.	1985 mm
Length	6900 mm
Width (without cage)	1400 mm
Total weight	5940 kg
Max pressure on the ground of track	0.85 kg/cm^2
Max. working height	32 m
Max. cage floor height	30 m
Max. outreach	15 m 16.5 m
Safe working load	200 kg 120 kg
Max. horizontal pull	400 N
Aerial cage dimensions (A x B)	1.95 x 0.7 x h 1.1 m
Tracks lenght	1990 m
Min.steering radius	4520 mm.
Max. selfpropelling speed	4.5 km/h
Max. superable slope	40 %
Max. lateral slope (with tracks)	15 %
Turntable slewing	360° (not continuous)
Cage rotation	90° + 90°
Hydr. system working pressure with diesel engine	240 bar
Hydr. system working pressure with el. motor	180 bar
Clearance	190 mm
Max. admitted wind speed	45 km/h
Max. admitted platform slope	2°

Technical data: - hydr. pressure and work speed with:

	Pressione	220 V	DIESEL
Stabilizing legs lowering	40 bar	75 sec.	20 sec.
Stabilizing legs raising	50 bar	30 sec.	15 sec.
Boom hoisting (completamente rientrati)	55 bar	90 sec.	70 sec.
Boom lowering (completamente rientrati)	140 bar	90 sec.	56 sec.
Boom hoisting (sfilati)	55 bar	160 sec.	160 sec.
Boom lowering (sfilati)	140 bar	123 sec.	123 sec.
Telescopic boom extension	100 bar	180 sec.	63 sec.
Telescopic boom re-entry	120 bar	87 sec.	46 sec.
Salita jib	150 bar	100 sec.	65 sec.
Discesa jib	170 bar	75 sec.	50 sec.
Jib opening	210 bar	10 sec.	10 sec.
Jib closing	210 bar	18 sec	18 sec.
Complete slewing (1 turn)	55 bar	160 sec.	160 sec.

Selfpropelling speed:

10 m slow speed	50 bar	105 sec.	28 sec.
10 m fast speed	50 bar	60 sec.	8 sec.

Time and pressare are intended with empty cage, worm oil and max joystick activation.
A 10% tolerance on this value is acceptable
Time and dimensions are indicative and Palazzani SpA may change the value for internal causes.

Main mechanic components:

Tracks:	MESSERSI' TIPO RTU 28F
Differential ratio:	1 : 41.9
Brakes:	automatic, with hydraulic releasing
Diesel engine:	HATZ 2L 41C
Cage levelling gears:	DINAMIC OIL RE242T2S-16,28-MD20
Turntable motoreducer:	DINAMIC OIL 111-NS-MD40

Main hydraulic components:

Diesel engine pump	PLP 20.14/20.14D
220V el.motor pump	PLP 20.4D
Hand pump	EP.25.W.B.TXA
El. generator motor	PLM 20.6.3S
Turntable slewing motor	MLG 400
Cage levelling motor	MLG 300
Cage rotation motor	ATTUATORE MOVECO 180°
Proportional electrodistributor	PVG32
Overcenter valve on cylinders	OIL CONTROL
Hoses	SAE 100 R2A
Filter	25 micron
Oil: hydraulic system	BP ENERGOL HLP HM 46
reducer gears groups	IP PONTIAX FZG85W/90
diesel engine	see engine booklet
Grease	IP AUTO GREASE MP
Fuel	GASOIL

ATTENTION! for filling-up, it is recommended to use the above specified oil types exclusively - in case of oils with corresponding characteristics, it is advisable to make a complete change.

Main electric components:

Electrical motor	3 kW 220 V a.c.
Generator	(optional) 5 kW 220 V a.c.
Batteries	n° 2 100 Ah
Battery charger	220 V ac - 24 V dc - 6 A
Radio control	Autec

Engine	diesel
Type	Hatz 2L41C
Fuel	diesel
Rpm	3000 r/min.
Transmission	folle
Noise lowering solutions	original cover made by phonoabsorbing panel
Net power	14 kW a 3000 giri/min.

Phonometric tests (Directive CE 2002/44)

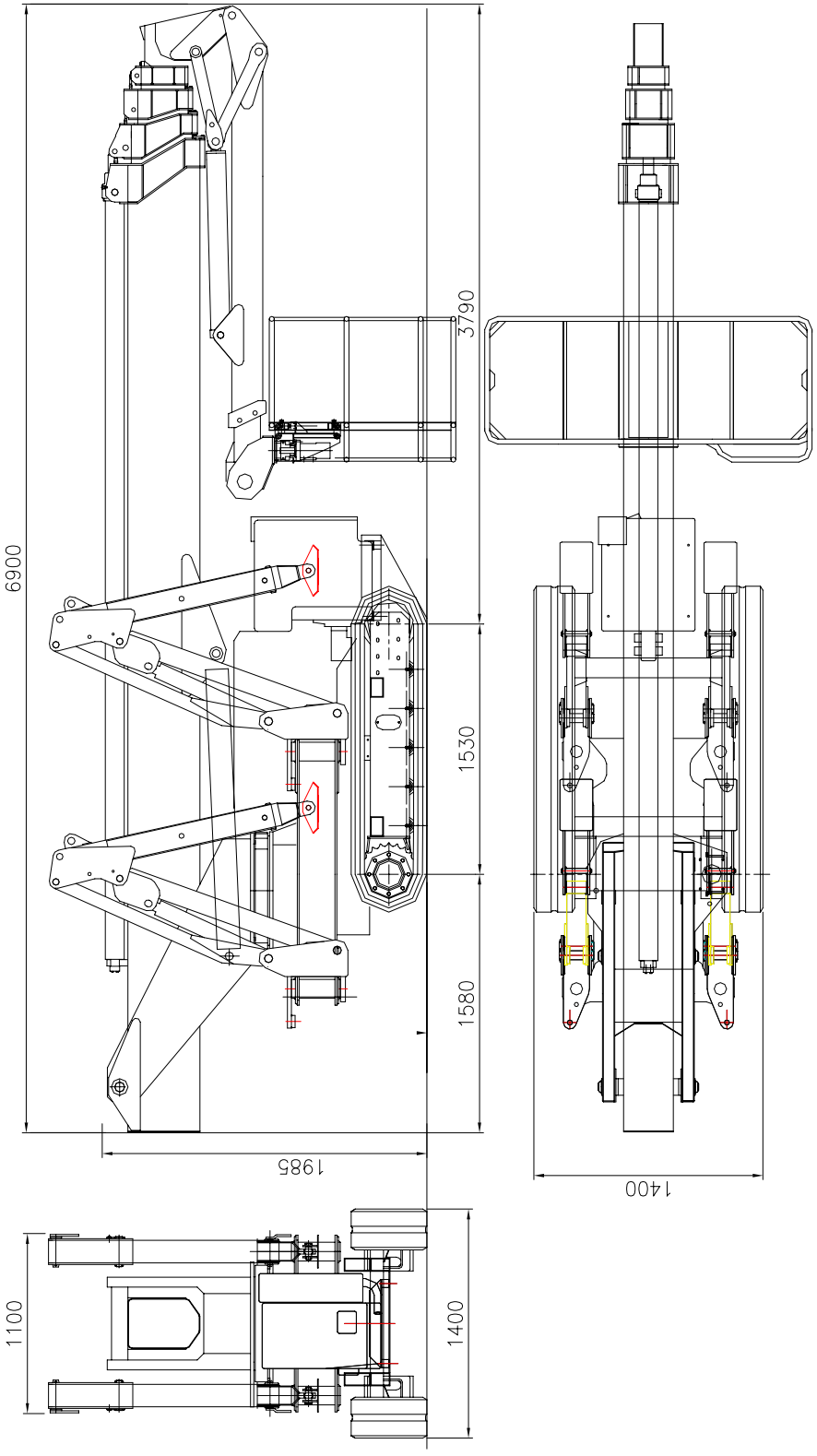
Acoustic pressure level (cage)	dB(A) 70.1
Acoustic pressure level (at ground during travelling)	dB(A) 78.9
Acoustic pressure level	dB(A) 96.5

Vibrations (Directive CE 2002/44)

Operator hand/arm	< 2,5 m/sec2 of A(8)
Operator body	< 1,25 m/sec2 of A(8)

Gas emissions (exhaust gas)

The engine power is less than 19 kW, therefore not subject to Directive CE97/68, however the Manufacturer complais from now with the above mentioned Directive, granting 3A forcasted on 2011.



Max ground pressure of the track 0.85 kg/cm^2

Fig. 1.1 Main dimensions

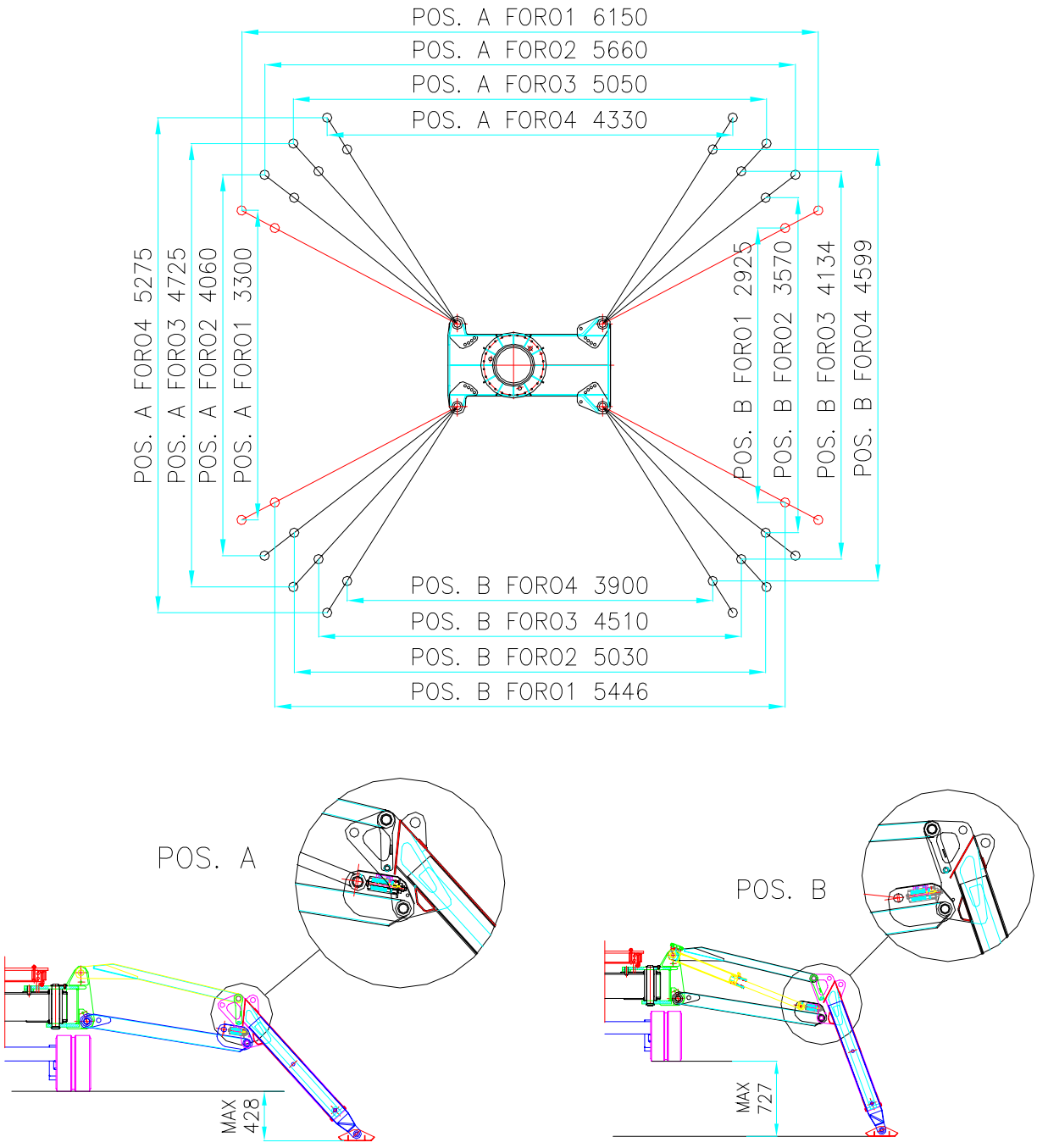


Fig. 1.2 – Stabilizer positions

Max loading on a stabiliser KN 35

1.4. WORKING AREA

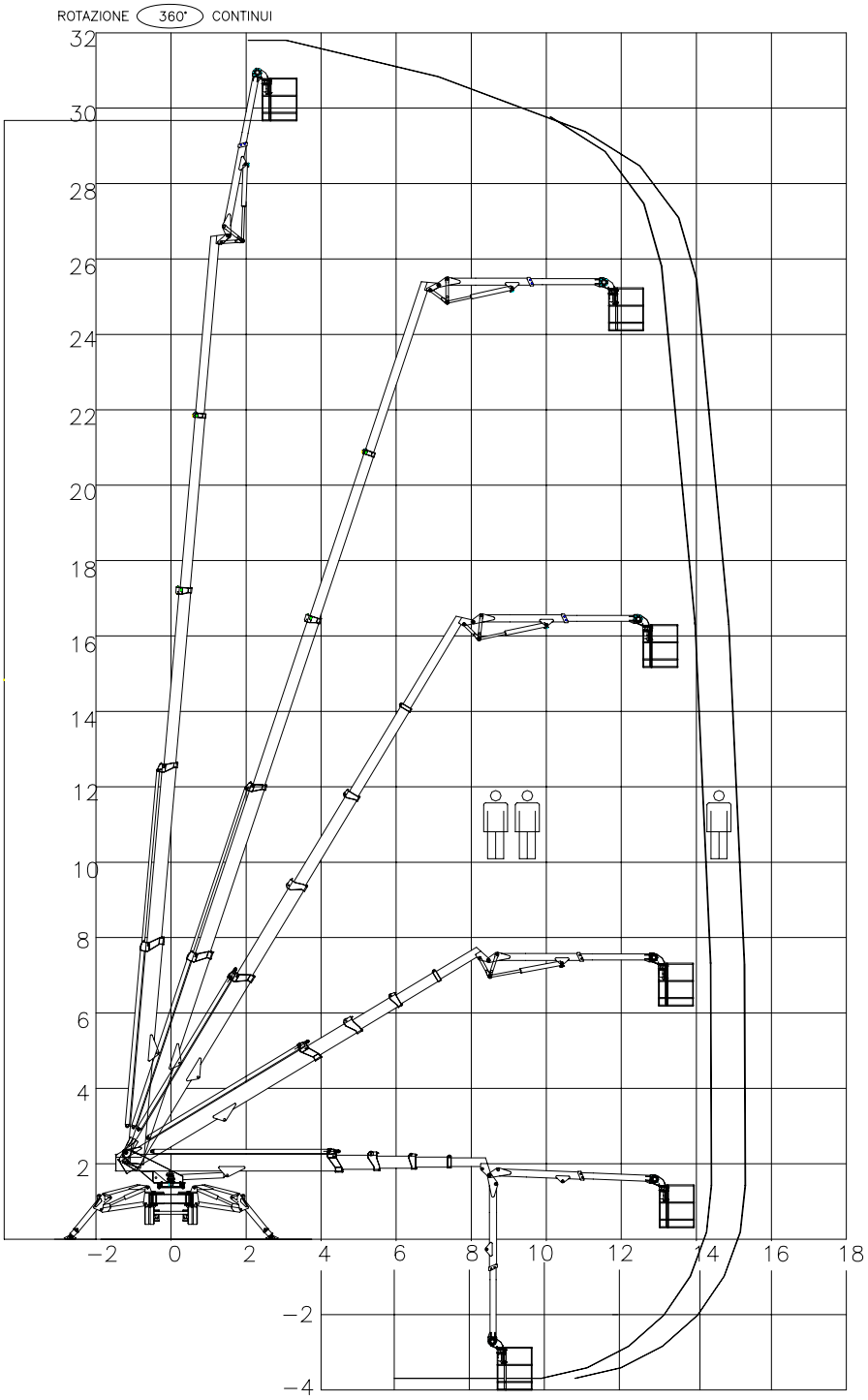


Fig. 1.3 – Working area

Note! This diagram show the max working area obtainable with the boom toward the diesel engine and the stabilizer at the hole n°1 and the position A of Fig. 1.2. In all the other configuration of the machine the working area my be reduced.

1.5 TRANSPORT

"Ragno" platform is authorized to road running only under particular conditions (see par.) and, therefore, it must be transported by lorry.
"Ragno" loading\unloading is possible in different ways: by using their stabilizing-legs, according to the directions of this manual (see chap. 3.1), hoisted by a crane, for loading\unloading or for work positioning. For this purpose, hooking eyebolts are placed on the top of stabilizing-legs.
According to lorry's characteristics, "Ragno" can be positioned on the bed with the boom over the driver's cab or towards the rear side.
It is possible to arrange a lorry for use of the "Ragno" as a normal truck-mounted platform: 4 eyebolts can be welded on the lorry bed and fastened to the "Ragno" supports by means of 20M turnbuckles.
In case of a normal lorry, it is better to fix front and rear wheels or tracks, to fix the boom with a textile chord around it and fixed on the winch sides of the lorry bed.

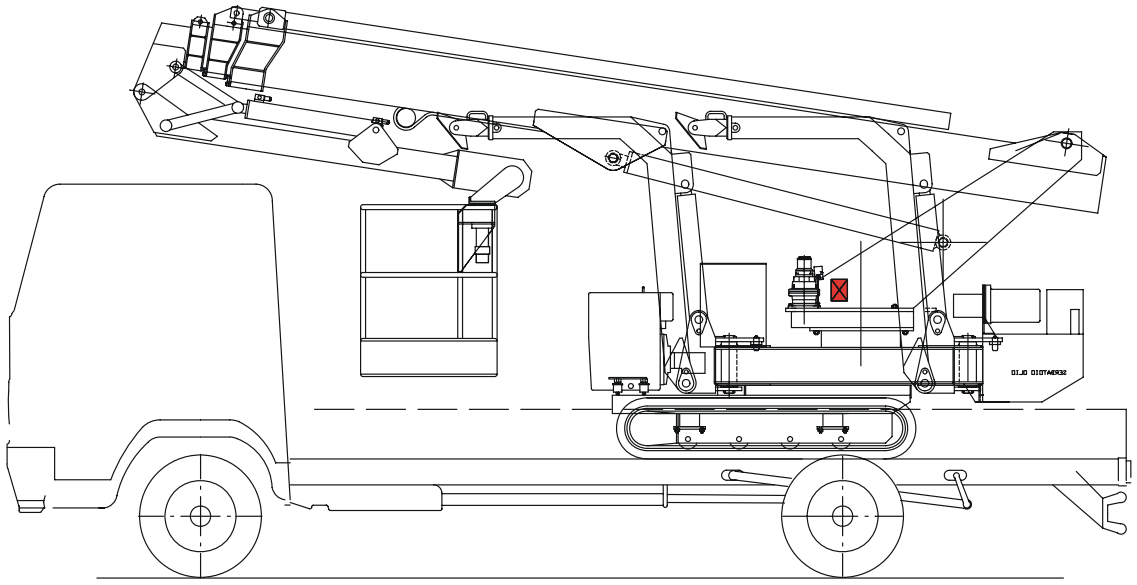


Fig. 1.4 Exemple of transport by lorry

1.6 MAIN GROUPS OF THE PLATFORM

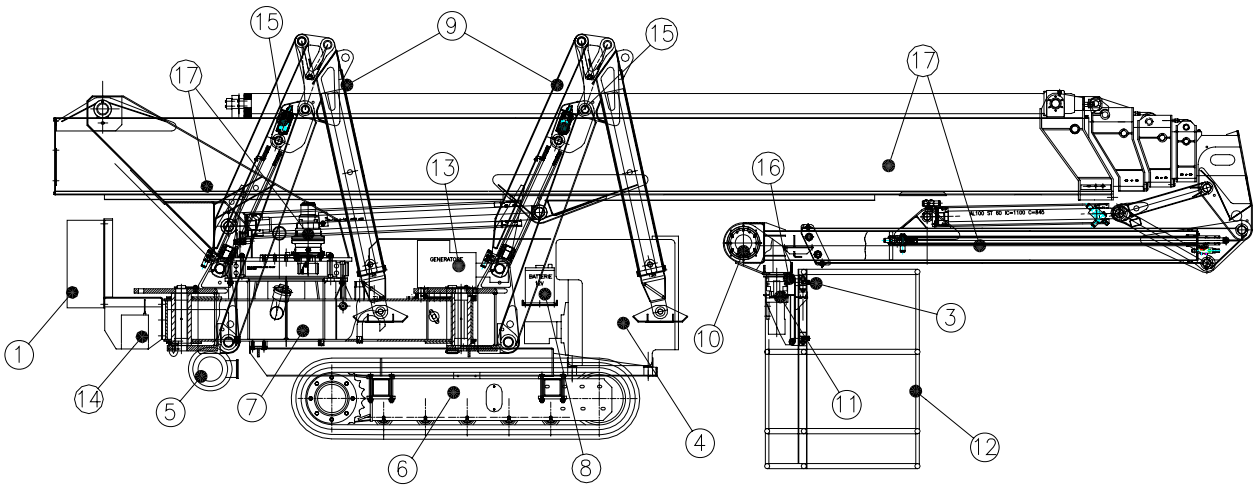


Fig. 1.5 Ragno with tracks

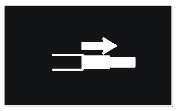
1) General control desk
2) Ground control panel
3) Cage control panel
4) Diesel engine
5) Electric motor
6) Track
7) Chassis frame
8) Batteries
9) Stabilizer
10) Cage levelling system
11) Cage rotation motor
12) Cage
13) Generator
14) Radio receiver (opzionale)
15) Load management system
16) Cage load limiting device
17) Turntable rotation device
18) Main telescopic boom and jib

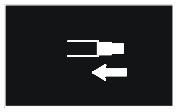
1.7 PICTOGRAMS LEGEND

For a better understanding, we give you a brief description of the pictograms placed on the platform


main boom hoisting


main boom lowering


extension of telescopic boom


telescopic booms re-entry


turntable rotation (right)

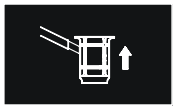

turntable rotation (left)

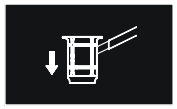

Jib opening

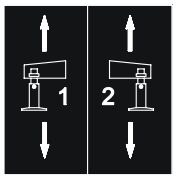

jib closing


cage rotation (left)

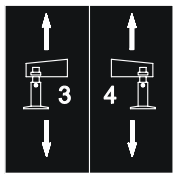

cage rotation (right)


upward cage levelling


downward cage levelling



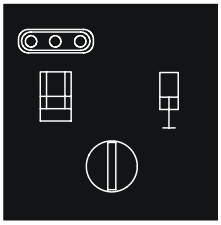
outriggers (legs) nr. 1/2 lowering and re-entering)

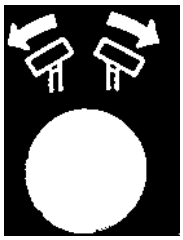


outriggers (legs) nr. 3/4 lowering and re-entering)

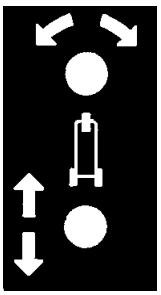

Red light signalling max. allowed outreach position


green light signalling the control panel activation


key switch selection control fonctions or panel outriggers-boom –traslation


cage rotation

Fixing points for transport

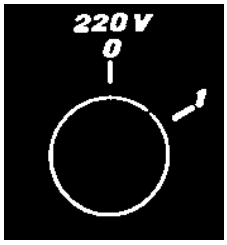


steering right

steering left

selfpropelling forwards

selfpropelling backwards



General electricity switch

hydraulic oil reservoir

fuel reservoir

selfpropelling fast speed

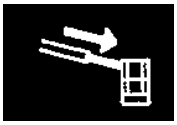
selfpropelling slow speed

engine start control

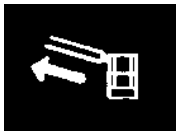
engine stop control

hooking point for hoisting

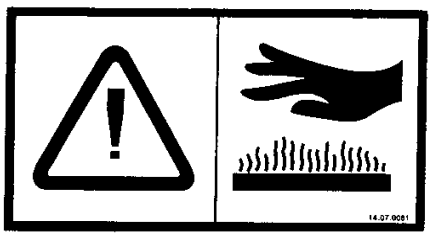
horn



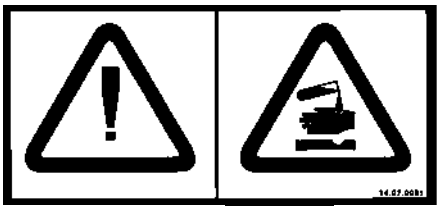
jib extension



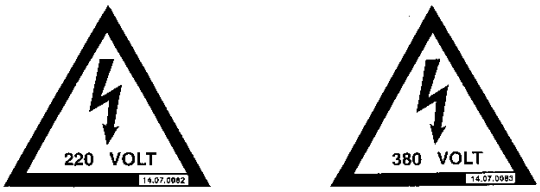
jib re-entry



warning: diesel Engine and exhaust pipe scorch. Danger of burnes. Don’t touch.

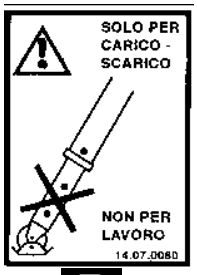


warning: acid. Burning danger. Do not breath vapors



danger: equipment under tension
Detach the plug before to open covers and work on internal parts

danger of hands chushing, or shearing



warning: it is absolutely forbic to stabilize the p for aerial, work manual sections extended

accelerator lever for booms movements

accelerator lever for booms and outriggers movements

accelerator lever for selfpropelling movements (crawler version)

accelerator lever for selfpropelling movements (wheelmounted version)

-  The above mentioned pictograms and other stickers are important; even just a not-readable or missing one can cause serious consequences
- Every day be sure that all stickers are readable, clean them regularly and substitute them with new ones if necessary
- If an element of the machine which requires a sticker is subsitituted, put the new one after the substitution.

CHAP. 2 SAFETY DIRECTIONS

2.1 SCOPE

In accordance with European Standard "Machine Directive", this operational and maintenance manual :

- gives the operators all necessary information for a correct use of the platform
- points out hazards arising from an use not expressely foreseen by the manufacturer and, also, hazards existing even with a correct use of the platform.
- gives information about the safety devices mounted on the platform and directions for their check-up
- allows fast location of an eventual fault and gives directions for prompt intervention
- gives directions for recovery in emergency
- gives a calendar of routine maintenance interventions
- gives a list of reccomanded spare parts
- gives a list of the workshops authorized for interventions on the platform
- gives a check up schedule in the manufacturer or authorised sites

This manual must be read by the operators before using the platform and it must accompany the platform in case of a change of property

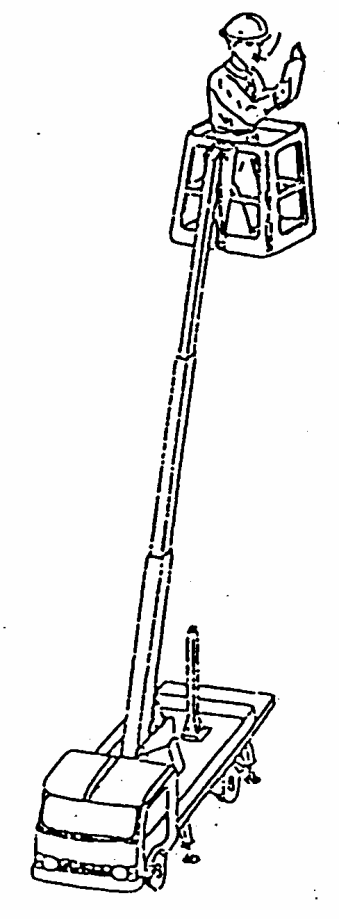
The safety instructions contained in this chapter refer to the most frequent risks only and are not to be considered exhaustive. The machine **can not** operate in particular situations sites: i.e. inflammable vapors, not unbreakable or toxic materials, free flames or pressure water, scarce light or high noise, etc.

It is recommendable to train operators with a short course by the Manufacturer so that than they can train the following new operators.

If the machine pass to another owner, this manual must be supplied to the new owner because it is part of the machine.

2.2 SPECIAL DIRECTIONS

Although it is specifically designed for personnel hoisting and aerial work, platform can be used exclusively by trained operators, working in conformity with general safety standards and following specific instructions of this manual



read carefully the directions for use and maintenance

Fig. 2.1

During sloping transfer, keep the cage towards the slope by keeping away from scarps, landslide zones, deep holes and study the way considering the necessary steering radius.
Use the transfer controls, away from the base machine, by using the belt.
In cold temperatures, start the engine and let the oil warming for 5 min before the first manoeuvres which need slow speed.

platform must be stabilised on compact ground - it is always recommended to place wooden boards under stabilising-legs, to increase the contact area and to reduce the specific pressure on the ground

DANGER

never go in or out the cage
when it is in aerial position

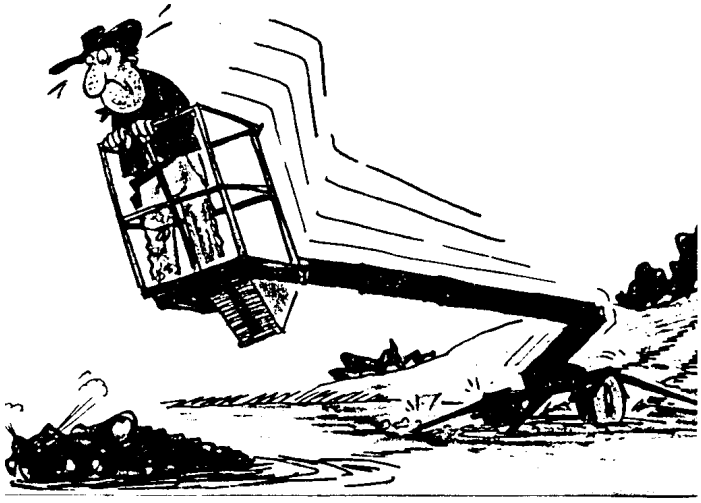


Fig. 2.2

before completing the stabilising manoeuvre, check that the platform is perfectly levelled - 2° max. slope is admitted, as per fig. 2.3 (bubble must be positioned inside the external ring

level
always
the platform

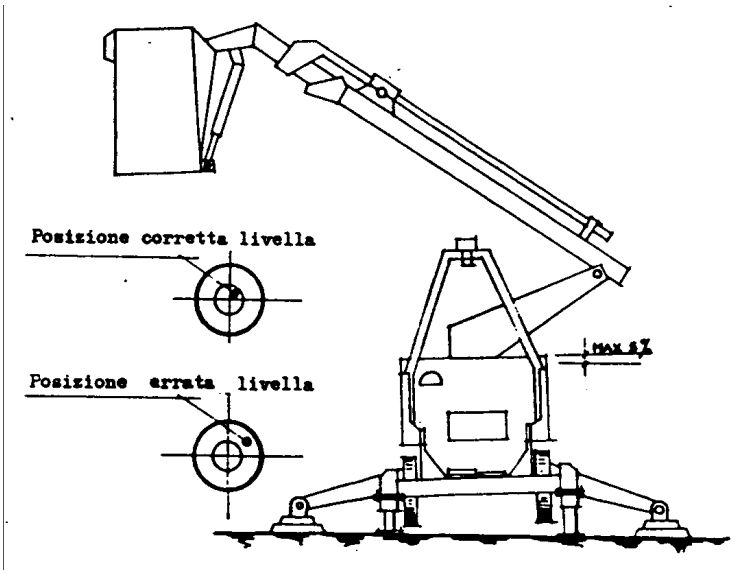
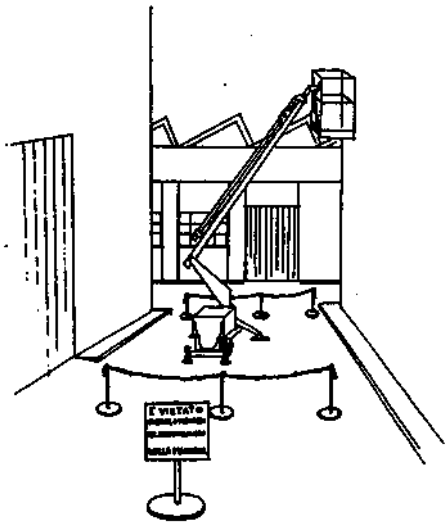


Fig. 2.3

before approaching floors, verify if platform weight and legs pressure can be supported

working area must be signalled and delimited - unauthorised persons are not admitted on the platform working area



DANGER

projection on the ground of aerial working area must be signalled and delimited

Fig. 2.4

Before using the platform, verify the correct functioning of the safety decives.
Inform the technical responsible in case of noise, vibrations or anomalous machine behaviours.

never use the platform as an elevator

⚠ aerial movements must be controlled by the operator on the cage exclusively control from the ground is admitted in emergency case, only. A trained person on ground, has to follow, in any case, the operation on the cage.

⚠ when working near overhead electric lines, it is necessary to operate with a particular caution, to avoid any accidental contact of the boom or of the cage.

Here below the table of safety distances from electric as per D.Lgs 81/2008

Nominal tension Un	Minimal allowed distance
kV	m
≤ 1	3
10	3,5
15	3,5
132	5
220	7
380	7

⚠ This platfmor **is not** electrically isolated

DANGER

avoid
contacts
with electric
lines

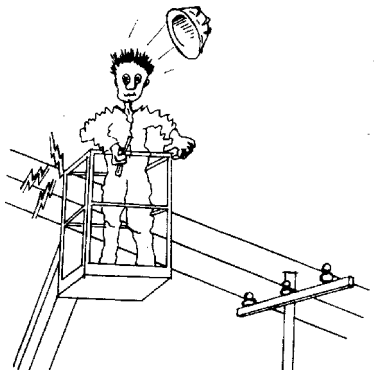
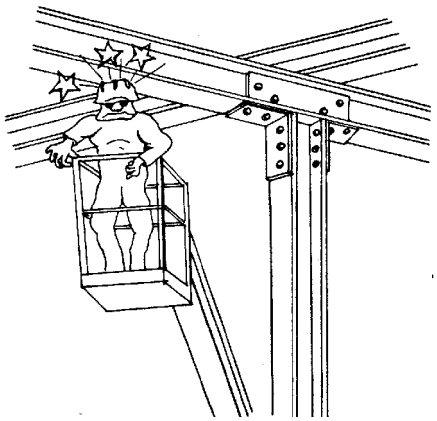


Fig. 2.5

Use the proportionality in the controls and doo not fulfill sudden manoeuvres or inversions.

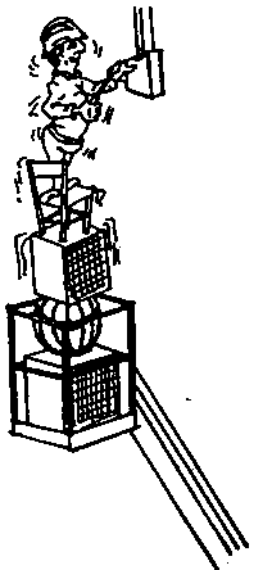
before operating aerial movements, verify eventual overhanging obstacles: balconies, branches, electric or telephonic lines, beams, etc.



DANGER
use protecting helmet
and safety belt

Fig. 2.6

operators in aerial cage must always work with their feet on the cage floor use of footboards is not admitted no climbing on the railing and no leaning out It's also forbidden to lean out over the edge of the platform, but, , if necessary, do it only hooked to the safety belt and however staying with the feet on the floor



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footboards
on the
cage floor
are not
admitted

Fig. 2.7

⚠ no throwing materials or tools from the cage to the ground and vice versa - use of a wire is recommended
tools used by operators in the cage must be laid on the cage floor, or stowed in special pockets

DANGER

no horizontal
pulling or
pushing action

no tools throwing

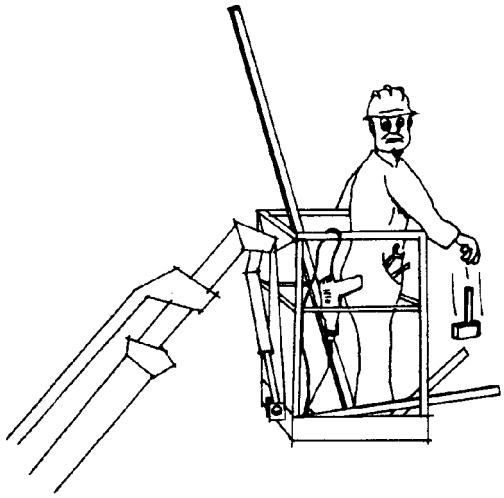


Fig. 2.8

⚠ don't place flags or large stripes on the aerial cage, increasing the surface exposed to the wind

DANGER
don’t use the platform in case of wind speed over 12.5m/s (45 km.p.h.)
In the following schedule it is indicated the “Beaufort scale” that gives indications about evaluation of the wind speed

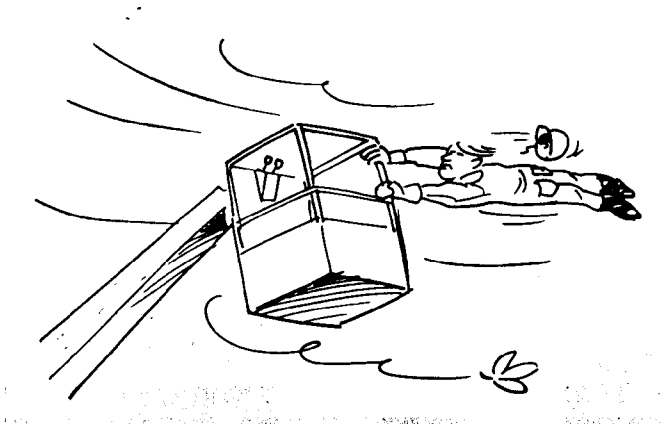


Fig. 2.9

Beaufort scale

Number of Beaufort	Wind speed (km/h)	Description	Earth conditions
0	0	Calm	Smoke vertically climbs
1	1-6	Drivel of wind	Wind movement visible from the smoke.
2	7-11	Light breeze	You feels the wind on the naked skin. The leaves rustle.
3	12-19	Tense breeze	Leaves and smaller branches in constant movement.
4	20-29	Moderate wind	Lifting of dust and paper. The branches have shaken.
5	30-39	Tense wind	The bushes oscillate with leaves. They forms small waves in the inland waters.
6	40-50	Fresch wind	Movement of big branches. Difficulty to use the umbrella.
7	51-62	Strong wind	Whole shaken trees. Difficulty to walk against wind.
8	63-75	Storm	Twigs torn by the trees. Generally it is impossible to walk against wind.
9	76-87	Strong storm	Light damages to the structures (fireplaces and tiles removed).
10	88-102	Storm	(Rare in dry land) Eradication of trees. Considerable structural damages.
11	103-117	Violent storm	Vast structural damages.
12	>117	Hurricane	Huge and wide damages to the structures.

Avoid any contact against fixed, or mobile structures

never exceed the max admitted safe working load avoid to load material during work condition

DANGER
use of the platform as
a crane is forbidden

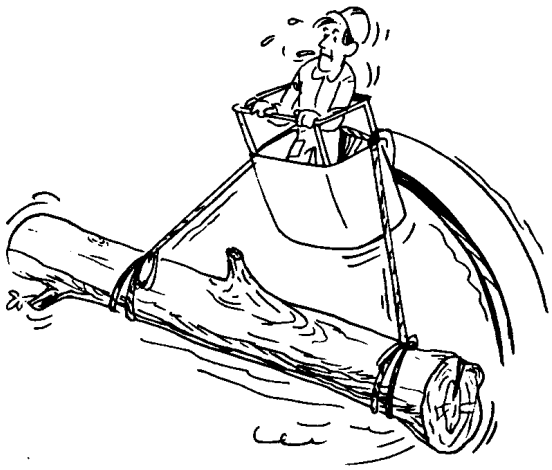


Fig. 2.10

Keep cleaned the cage of the platform by oily and slippery substances and from residual of preceding workmanships (bricks, jars, utensils).

Don't modify the electrohydraulic plant or the regu
lations to get higher performances to those suitable from the builder

Don't make maintenances with people on board and platform in movement.

CAP. 3° NORMAL USE CONDITIONS

3.1 LOAD AND UNLOAD ON TRUCK.

a) By crane

- take the tensors or the equipment fixing stripes off.
- hook the 4 eyebolts on the top of the stabilizing legs with proper loading ropes (min half weight each) (Fig. 3.1)
- lift the machine and go out with truck

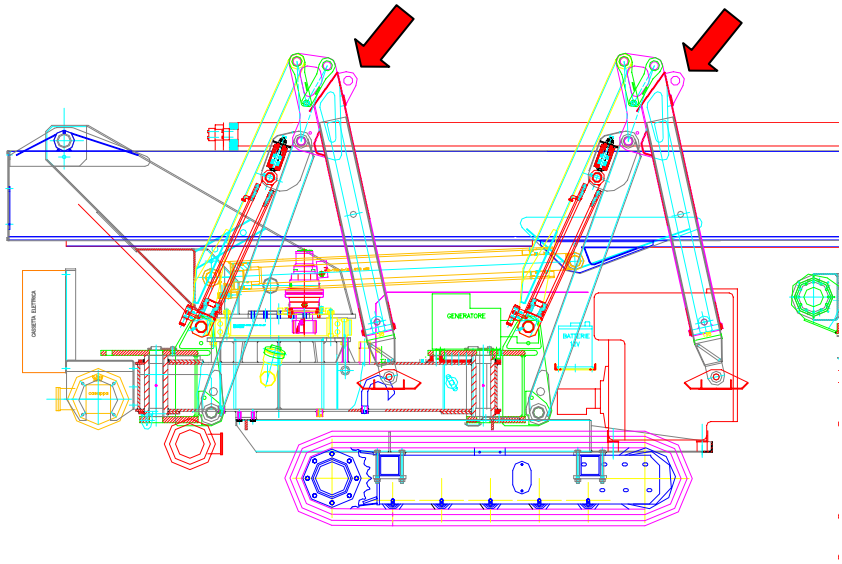


Fig. 3.1

b) Self-loading (if possible). See also the Chap. 3.24

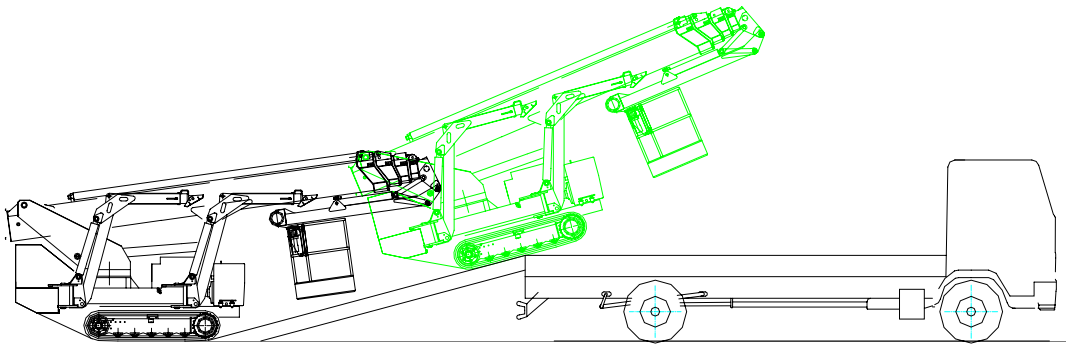
- stop the lorry on level and rough ground
- rotate the stabilizing legs in the hole 2 (see Fig. 1.2)
- start the diesel engine.
- turn the selecting key of the ground control panel on the "stabiling-legs" symbol (part 6 of Fig. 3.2)
- extend the telescopic section of the stabilizar, lock it by means of the pins and lower the stabilizer on the ground.
- before lay the plates on the ground, put the proper rolling chariots (see Fig. 3.34).
- disengage the machine from the lorry and lowering the stabilizing-legs, hoist the platform from the lorry
- slowly, drive the lorry out of the platform
- lift the stabilisers as described in paragraph 3.12 with the belt control

distant from the machine

- when the tracks are lowered on the ground, retract the telescope sections of the stabilizr.

NB: If the ground is solid and resistant (pressed earth, cement, asphalt) the operation is easy; on the contrary if the ground is yelding and irregular it is better to drive the charriots on wooden plates.
- for the loading, lift the stabilisers from the boom side before and than balancing them with the other two, and follow the procedure on the contrary.
- select now the controls key on "turntable" and transfer to the site with the stabilisers up (min 10/15 cm) for a better stability in case of strong asperities.

c) By using a ramp.
ATTENTION!! If you are using a ramp we recommend a max slope of 15° (about 25%) and to attack the ramp with the cage toward the climb. This is absolutly necessari for the stability of the machine.
To attack the ramp, lift up the cage just the necessary to avoid the ramp and not more, like showed in the following picture. (To lift up the cage, thus the main boom, see chap. 3.9)



Warning! During the transport on the lorry, bee sure that the locking rotation pin is insert.

3.2 MAIN CONTROL DESK

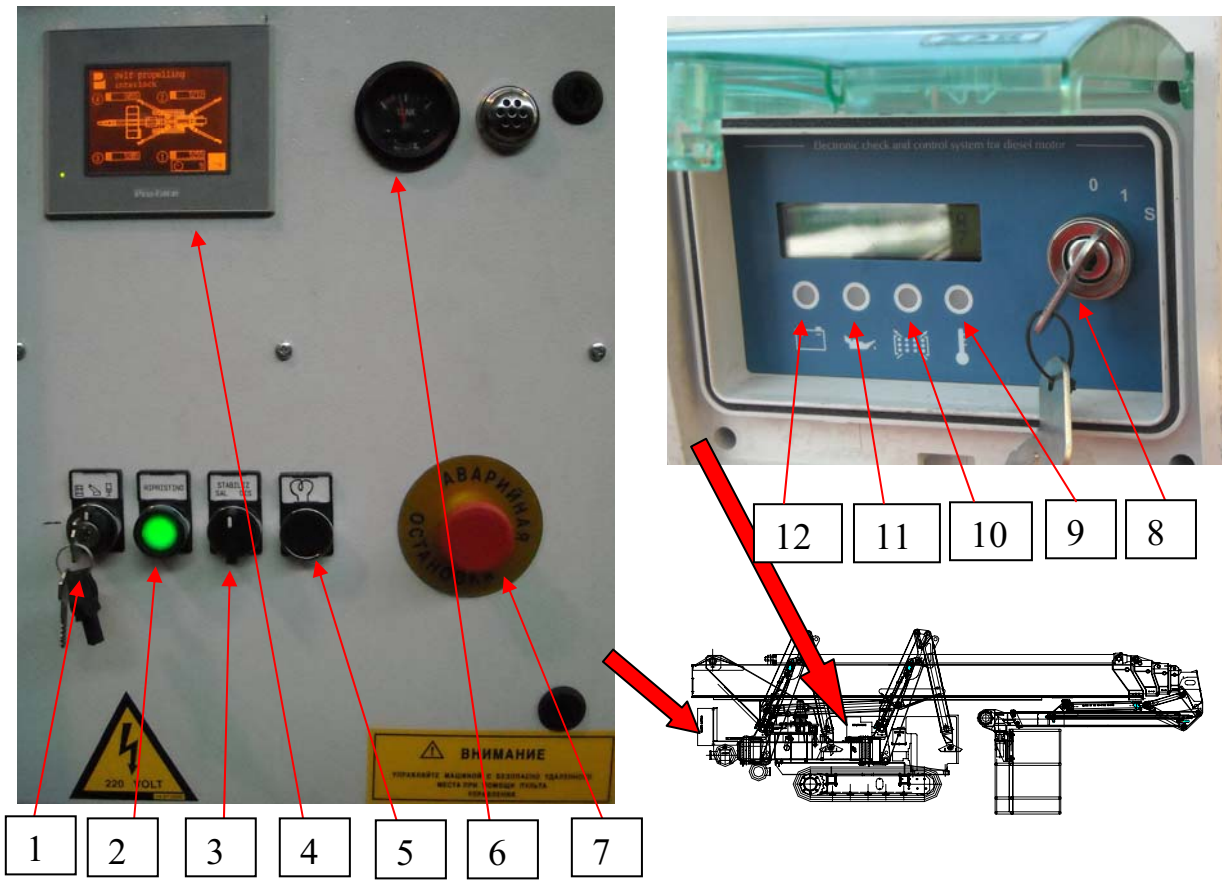


Fig. 3.2

1) Switching controls key.
2) Boom lifting up in travel condition
3) Lift up/lower stabilizer
4) Programmable Logic Control (PLC)
5) Heating diesel engine glow plug
6) Fuel level
7) Emergency stop button
8) General key
9) Overheating diesel engine
10) Air filter barred
11) Low oil pressare diesel engine
12) Low tension generator of the diesel engin

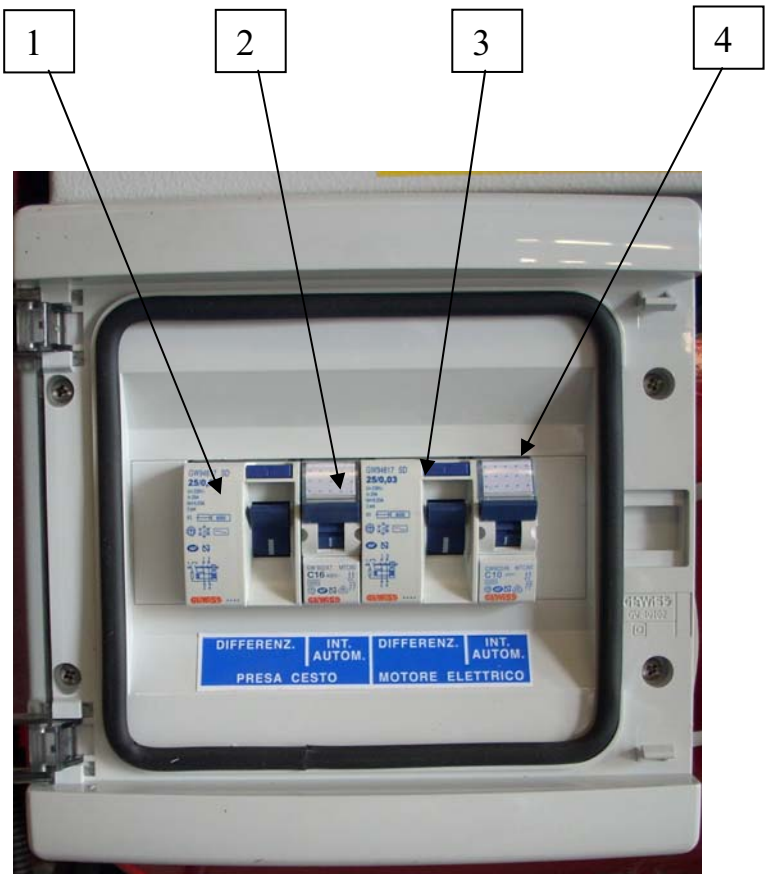


Fig. 3.3

1) Differential switch (cage plug)
2) Automatic magnetothermic switch (cage plug)
3) Differential switch (el. motor)
4) Automatic magnetothermic switch (el. motor)

BATTERY CHARGES

The battery charges is fitted into the general electrical box.

1. Connect the machine net cable to a plug 230V – 50 Hz.
2. After this operation the battery charger (in the electric box) light on automatically and the three leds light on contemporarely for few seconds (self-diagnosis)
3. Then the batteries recharging proces starts and the led shows the recharging status
4. Battery charges doesn't need any maintenance or intervention

A warning light with flashing leds is mounted to signal any eventual anomaly during the charge.
Battery charger, is placed on the platform and it is connected at its electric panel
During working with electric motor, the external electric plug feeds the motor and this device maintaining the batteries efficient.
Batteries are also re-charged by the alternator of the diesel engine.

RISK OF BURN

When the electrolyte is freezed it can make the battery explodes if you try to charge it or to start the thermic motor with a secour battery.
To avoid to the electrolyte to freezes, maintain the battery always charged, disconnect always the negative pole (-) at firs and connect it always at last; never bridge the battery poles.
The electrolyte causes big burns, avoid the contact with skin, eyes, clothes.
External: wash with water.
Internal: drink a big quantity of water or milk. Ask to a doctor.
Eyes: wash with water for 15 minutes and ask immediately to a doctor.

BATTERY CHARGES FOR RADIO-CONTROL

The radio-control has two batteries; while using the radio-control, one of them charging. In this way it's possible to have always a charged battery when necessary.

The battery charter is suitable inside the right cover of the machine (see the side pictures).

3.3 PLATFORM WORKING WITH DIESEL ENGINE

Platform is provided with 2 separate power; one of them is connected to the diesel engine installed on the same platform.
Used for the truck downloading and for long transfers to reach the working site.
It can be used also for elevation working if the emissions gas are accepted (closed sites, noise prohibition, etc.)
Thanks to the diesel engine adequate power, platform movements can be driven at the best rated speed. (at least in respect to the motor at 220V)

Starting procedure:

- on main control desk (Fig. 3.2) rotate the key (item 8) on pos. 1 (oil and el. tension warning lights)
- rotate the key on position 2 to start diesel engine.
- let the engine run some minuts (almost 5 min. with a ridig temperature) before manoeuvring the platform
- due to the presence of a protecting timer, in case of engine stop, wait almost 20 sec. before re-starting
- il motore è regolato tra 2000 g/1 ed a tale regime resterà durante la fase di riposo; durante la traslazione del carro aumenterà il numero di giri automaticamente.

- the engine is set between 1800 and 2000 rpm and remains on this level during the rest phase; during the slow travelling, but the rpm increase automatically in fast travelling.
- to stop it push the button "STOP" on one of the control panel or reset the main panel key; remember to unlock the "STOP" button rotating it slightly otherwise the engine does not start from any other control panel.
- it is possible to start engine also from control panel on cage by turning the key switch 2 of Fig. 3.7 if the stabilisers are on the ground and the controls selected on the above mentioned panel (key 1 in fig. 3.2 selected on cage symbol).
- it is possibile to start engine also from ground control panel, by the switch 12 of Fig. 3.6, but before it's necessary to activate it (see radio control manual).

WARNING

Exhaust pipe is not protectet and burns also on the upper part of the diesel engine.
During work with diesel engine in enclosed spaces, exhaust gas must be removed by means of an appropriate hose of a suitable material.

FIRE AND EXPLOSION RISKS

- Fuel of the engine can cause fires and explosions
- Stop the engine before the refuelling
- No smoking during the refuelling
- All necessary protections must be activated in case of weldings, or free flames
- Clean the machine from oily materials and deposits or inflammable residual with non inflammable solvent.
- Also batteries can explode in presence of sparks or free flames: air the site and most of all do not put the battery in charge in these conditions.
- The exhaust gas can contain sparks, therefore air the working site if any vapours, gas or inflammable liquids are present.
- Eventual hydraulic oil or fuel leakage must be eliminated in phase of scheduled maintenance.

3.4 PLATFORM WORKING WITH ELECTRIC MOTORS

This energy source use is recommended when the machine works indoor or where the exhaust gas or noise are forbidden and when the energy saving is important.

Where possible, it is recommended to branch always the platform to an electric source, in fact, el.motors can be used alternatively to diesel engine, for small aerial movements and, eventually, for recovery in emergency (i.e. diesel breakdown)

Starting procedure:

- on main control desk (Fig. 3.2) rotate the key (item 8) on pos. 1 (oil and el. tension warning lights)
- branch the electric plug (fig. 3.4) and socket (16A)
- verify that one of the "STOP" push-buttons is not pressed
- now, acting on one control lever, electric motor run
- it is also possible to stop electric motor, by acting on the same STOP push-button of the diesel engine, or by rotating key on OFF position
- electric motor re-starts, when the push-button is re-set by rotation and you act on one control lever

Fig. 3.4

NOTE:
For the efficient functionning of magnetothermic differentials switch (life-savers) on the machine, the electricity plug mus be safely connected to the ground and be on a normal box; do not use flying cables sometimes existing on the working sites.
During the machine displacement on the ground, keep the max attention to not crush the feeding cable with wheels or tracks and to the cable limit lenght.

3.5 GROUND CONTROL PANEL

Fig.3.6

1. Stabilizer n° 1 – telescope boom – left track
2. Stabilizer n° 2 – turntable rotation
3. Stabilizer n° 3 – telescope jib
4. Stabilizer n° 4 – cage rotation
5. Jib articulation
6. Stabilizer oil – main boom – right track
7. Radio-control switch on
8. Radio-conrol activation
9. Moving sped slow/fast
10. Automatic/manual stabilizing
11. Opzionale
12. Start/stop engine
13. Stop control

3.6 CAGE CONTROL PANEL

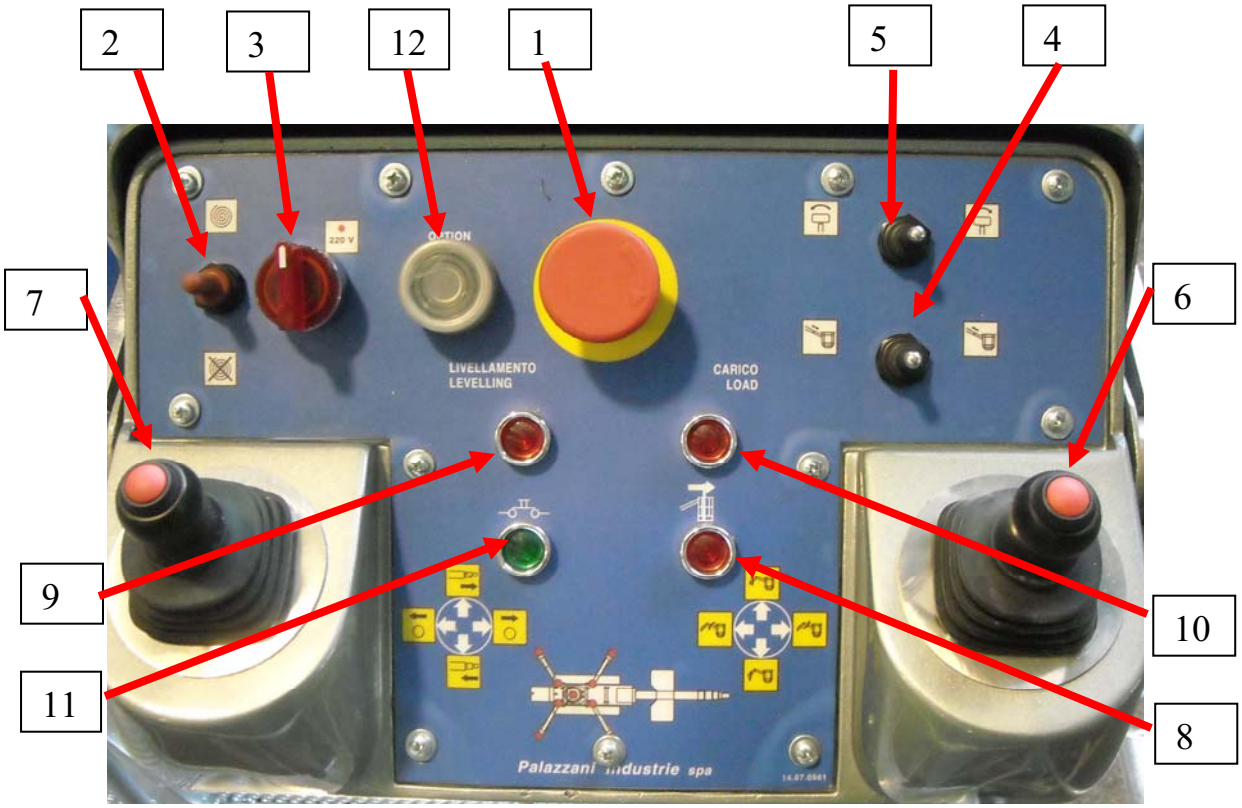


Fig. 3.7

1. Emergency stop button
2. Start/Stop engine
3. Activation current generator
4. Extend/retract jib
5. Cage rotation
6. Joystick activing main boom and jib
7. Joystick activing turntable roatation and telescopic boom
8. Led max outreach
9. Led cage not levelled
10. Led cage overload
11. Led control panel activate.
12. Cage anticollision deactivation

3.7 PLATFORM STARTING PROCEDURE

Especially after a period of inactivity, before starting the engine it is recommended to check all the safety devices and controls.
Some of these controls can be fulfilled with the machine off, other controls after the stabilisers positioning. For the first ones:

1) verify the fuel level
2) verify the hydraulic oil level
3) verify the electrolyte level and batteries charge
4) verify the track condition
5) also check that STOP push-buttons are de-locked
6) check the booms extension chains integrity and tension (the chains must remain tense to the touch and not loosen during boom extension and retraction)

 WARNING
Don't start the platform in case of any irregularity

3.8 PLATFORM SELFPROPELLING

- start diesel engine from control panel (pos. 8 Fig. 3.2)
- select the controls selection key (pos. 1 Fig. 3.2) the turntable symbol (central position)
- detach the radio control from its support, use the shoulder belt and choose a remote, safe and panoramic control position, far from the platform

 WARNING
never drive the platform till you have reached a safe and panoramic remote control position.

- select “rabbit or snail” on the ground control panel with switch 9 in fig. 3.6
- softly act the two control levers 1 and 6 in fig. 3.6 to transfer forward or backward.
- it is possible to rotate the platform, acting on the levers in opposite sense

 WARNING
Use slow speed selection when driving on irregular grounds, slopes, restricted areas when sloping up or down, the cage side of the platform must always be in uphill position

Stop the platform before inverting the drive sense

against overturging risks, it is recommended to drive with the stabilizing legs enlarged and lowered near the ground

 WARNING
Platform is not admitted to road circulation and, therefore, driving on an area opened to the traffic needs necessary protections and signals.
Many times an authority authorisation for the manufacturing site is necessary.

If not possible, follow the machine by the truck or by another vehicle with emergency lights on.
The operator must drive the machine on the sidewalk by paying attention to eventual obstacles or people present on the way.
The transfer on a public area must be short, made in favourable hours, and if necessary with the police approval.

3.9 SPECIAL BOOM ACTIVATION

In case of a strong slope or loading ramps, the boom can be lifted at the necessary angle to avoid that the cage touches the ground without put stabilizers on the ground.
Act as following:

- the boom must be with extension completely retracted
- with the engine on, push the button part. 2 in fig. 3.2 and contemporarily, from the ground controls panel, lift the boom up (part.6 Fig. 3.6).
- when the operation is finished, repeat the operation on reverse to bring the boom back to horizontal position

 Do not lift the cage floor more than 80 cm from the ground**.**

3.10 STEERING

It is controlled varying the speed of the tracks, by means of the corresponding control lever.
Platform can be also be rotated, acting on the two levers 1 and 5 of Fig. 3.6 at the

same time and in contrary sense. It is advised to make this manoeuvre at a low speed and on flat and regular ground, only

3.11 AUTOMATIC BRAKE

No braking control is necessary, as the platform is provided with an automatic system consisting of mechanic negative brakes, with hydraulic release and overcentre valves, mounted on transmission hydraulic motors
Slow speed pre-selection 10 of Fig. 3.6 increases braking action and, therefore, it is recommended for driving and parking on a slope

3.12 LEVELLING THE MACHINE

Stabilizing legs can be individually rotated and articulated, according the owner needs.
Once detect the desire position it's indispensable to insert the pins in the appropriate holes (fig. 3.12).

Fig. 3.12

⚠ always verify that the floor capacity is adequate to the pressure of each outrigger (this value is signalled by a special label).

The stabilisers telescopic extensions can be retracted only for loading/downloading operation from the truck but they MUST be completely retracted during elevation booms working.

A different use can cause very dangerous injuries to operators and machine.

Now it is possible to level the machine as following:

- Turn the selecting key pos. 1 of Fig. 3.2 on "legs" symbol (right side)
- Check that the green light on the turntable will be switched on.
- You have two possibility to levelling the machine:
  - Automatic mode: switch on "Auto" the selector pos. 10 fig. 3.6. Activate the joystick pos. 1 fig. 3.6 to give the direction of the movement, and at the same time push forward the joystick pos. 6 of the same picture, to give oil to the stabilizer. In this modality the machine levelling automatically and when the frame is in horizontal position, the system stop the stabilizer movements. **Note: check always the correct level of the frame using the visual bubble on the frame.**

  - Manual mode: switch the pos. 10 fig. 3.6 on "Man". Activate the joystick from pos. 1 to 4 fig. 3.6 to give the direction movements for each stabilizer and at the same time push forward the joystick pos. 6 of the same pictures, to give oil to the stabilizer. In this modality it's possible to move separately every stabilizer.
- When the machine is leveled, the four light on the stabilizer (fig. 3.13) switch off. Attention! This do not ensure the correct levelling of the machine; before use the platform, check the correct levelling by means of the bubble on the frame.

Fig. 3.13

NOTE: When the machine is livelled, it's recommended (by means of the manual procedure) to give a short impulse, without movement of the frame, to the four

stabilizer to ensure a correct pressure on the ground. In this way the performance of the machine will be at the top.

Important! Check the correct levelling of the machine by means of the bubbole on the frame (Fig. 3.14).
Use wooden plates to make the ground more solid (Fig. 3.15), which must be wide enought to avoid dumping and high no more than 20 cm.
It can be necessary to position the stabilisers on different height levels (i.e. on stairs, sidewalks, slopes, etc.) and this is easy because the stabilisers can lower independently (Fig. 3.16).

Fig. 3.14

Fig. 3.15

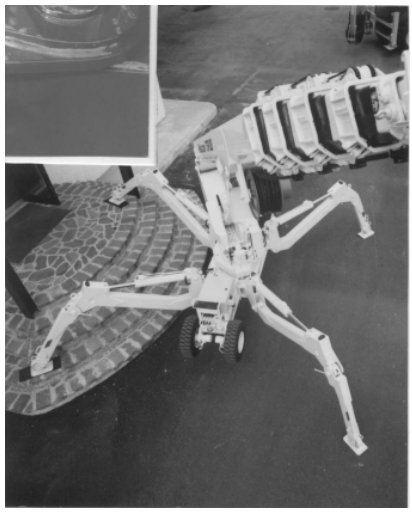


Fig. 3.16

Remember that, in case of manual stabilization, it is easier and safer to adjust the levelling by lowering the stabilisers instead of lifting them.
Always check that the plates are solidly positioned on the ground (it is dangerous to put them on gutters, near scarps, on soft or water grounds, etc.)

To retract the sabiliser, check that the green light on the turntable (Fig. 3.17) is lighted on. Select the key 1 in fig. 3.2 on stabilisers symbol, act the accelerator lever part 6 in fig 3.6 and the lever 1 to stabilisers lifting direction until the complete retraction. In alternative, act manually on every stabiliser in the following way: switch pos. 10 fig. 3.6 on "Man", act, preferably, two levers contemporarily (the two front or the two rear ones) and push the accelerator lever softly, until the complete retraction.

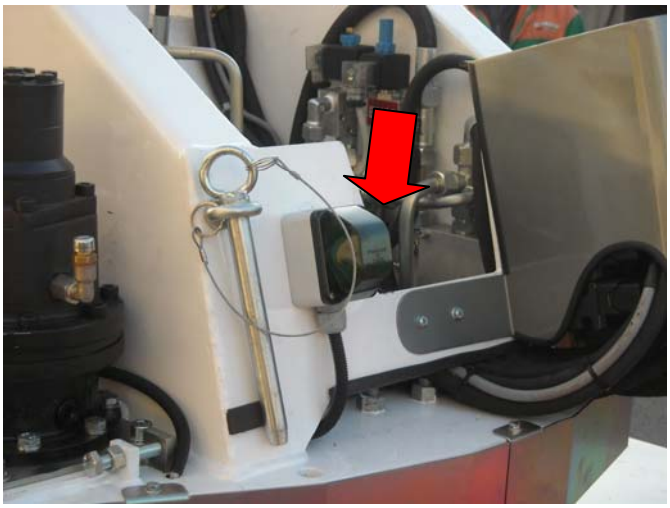


Fig. 3.17

NOTE:
In normal working conditions platform is to be hoisted 10 ÷ 40 cms. over flat ground
Do not excede 40 cm from the ground on flat ground.
Stabilization on steps gives no problem, it is only important to level the platform.
On a steep slope, where there is a risk of sliding, it is recommended to place some woods under the legs, in order to be within 2° (see spirit level) before levelling with legs

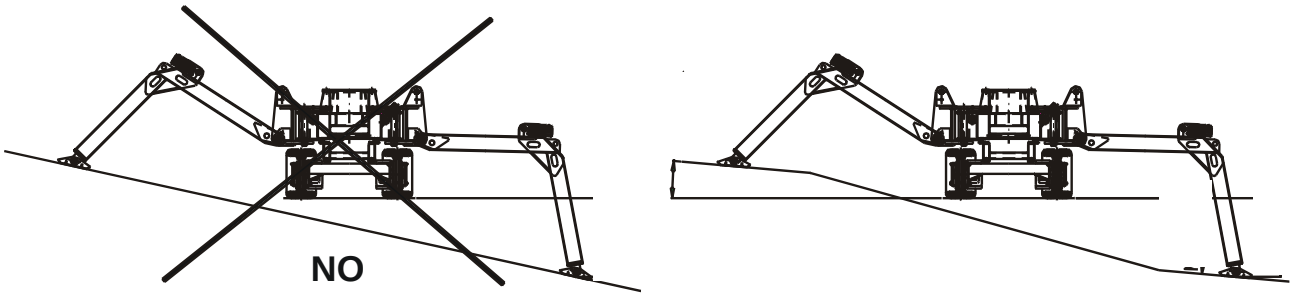


Fig. 3.18

The max slope between the two stabilisers plates laying floors indipendently from the scarp must not excede 5° to avoid chariot sliding due to the limited attrition resistance (Fig. 3.18).

3.13 AERIAL WORK

Access to the platform

Access to the platform with retracted boom and cage near the ground. Materials also must be loaded this way.
Operators must not exit and access from the cage from high position.
Stay on the cage only for lifting and working in high position. During the transfer, operators must not stay on board.
It is possible but it is **very dangerous** to load material when the machine is placed and extended. Protections don't grant all risks from a possible overturn.
If the light and the overloading acoustic alarm activates, quickly download the exceeding load.
If the cage has to lift beyond an obstacle (river, difficult ground..) it is advisable to try before with a similar weight (i.e. 2 persons) and check if the boom reaches the wished position without stopping.
In this case it is always possible to safety lower the cage to the ground and lift again.

After positioning the stabilisers on the ground and leveling the chariot, the machine is ready for aerial work. Do the following: take the safety socket off (fig 3.19) used for transport and use the control panel in the cage.
From this position it is possible now to operatively move the boom. In fig. 3.7 all joystick manoeuvres are indicated.
It is possible to enable the aerial movement controls with the key also from a different position from the usual one (for maintenance, regulations, rentals with

operator, training courses, etc.).

After the cage access, before making any control, fix the safety belt (which must have a rope not more than 1 m lenght) to the proper rings (Fig. 3.20).

To control any movement, act on the corresponding lever, avoiding sudden and brusque manoeuvres.
First lift the first boom around 45° and than open the jib to get away from the boom; then you can procede with turntable rotation and telescopic extensions.

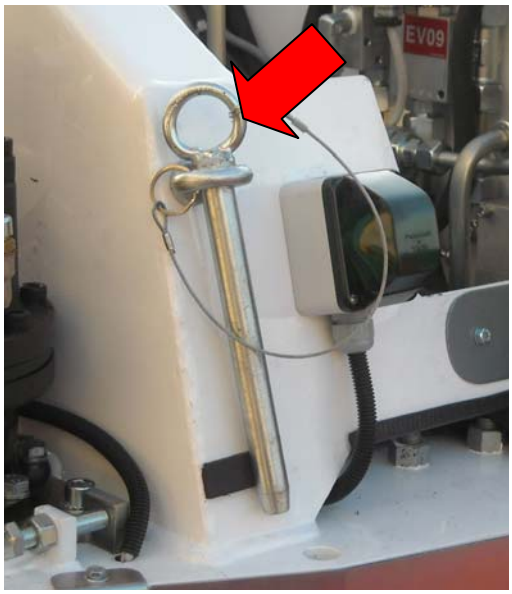


Fig. 3.19

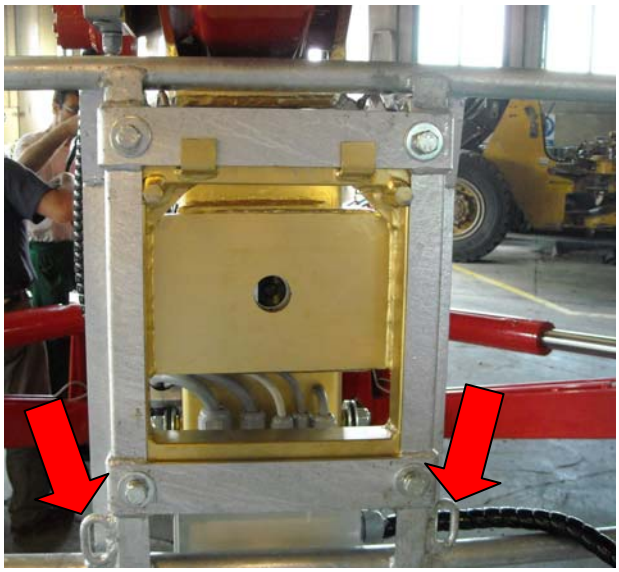


Fig. 3.20

Do not make abrupt manoeuvres or sudden inversions in movements to not counterblow the cage.
The more the telescopic are extended the lower must be the transfer.
To go back to rest position, retract the extension completely, close the jib, straighten the cage eventually rotated, put the chassis on axle rotating the turntable and lower with the first boom until the green light switch on (Fig. 3.17).

The above mentioned green light activates only when the booms are: completely retracted, on the longitudinal axle in respect to the chassis towards the diesel engine, lowered below a certain angle.
From this moment it is possible to lift the stabilisers selecting the stabilisers symbol with the key 1 Fig. 3.2 and proceeding as described in the paragraph 3.12.

3.14 SAFETY DEVICES

Platform is provided with the following safety devices:

- automatic interlock between thermic and electric power sources
- automatic interlock between stabilizing legs and selfpropelling drive
- automatic interlock between stabilizing legs and boom
- load management system
- load limiting device (con preallarme)
- self-locking valves on hydraulic cylinders
- protection of the control levers
- rings for harness on aerial cage
- overpressure valves on hydraulic system
- booms extensions chains doubling
- automatic brake on turntable slewing
- automatic brake on transmission
- mobile panel for remote control
- emergengy stop push-buttons on all control stations
- el.sensors on the chains of the first boom section
- el. sensors on the pins of the legs supports
- cage levelling limiter (5°-10°)
- cage anticollision system

3.15 LOAD MANAGEMENT SYSTEM

Platform is provided with an automatic moment limiting device, constantly monitoring the specific pressure of each stabilizing leg on the ground.
When the pressure of one leg goes down to a minimum pre-set value, the red lamp mounted on this leg lights (fig.3.13) and, “limitator block” is displayed, at the same time, movements increasing working outreach are automatically excluded.
This load\outreach limit situation is also signalled by a red light on the control panel. (Fig. 3.7 pos. 8)

Movements reducing outreach are always normally working and, therefore, operator can act on them to reduce the outreach.

Cage re-entering in safe position is signalled by leg and panel lamps switching off

Never switch off the start key of main control desk, when aerial cage is on the load\outreach limit situation, signalled by the red lamp on the control panel.

⚠ WARNING This particular load management system gives full protection, either with regards to all different legs positions and with different loads in the cage. It is tared by the manufacturer according to the platform’s characteristics of stability.
Any intervention of modification and\or exclusion of this device is absolutely prohibited

⚠ No embarking persons, or materials in the cage, when it is in aerial position

3.16 LOAD LIMITING DEVICE

The machine is equipped with and load limiting device in the cage.
This device avoids the overcoming of mominal capacity.
If this would happen it will cause the stop of all manoeuvres and the switching on of an acustic and luminous alarm on the cage (pos. 10 Fig. 3.7).
To re-start all mouvements, take off the excess of load, wrongly loaded.

 In case of accidental bump under a moulding or in branches, it is possible to activate the emergency operations to move tha machine like the instructions of chapter 5.

3.17 CAGE SELF-LEVELLING AND ROTATION

Aerial cage has two movements: rotation on horizontal position to grant the constant_levelling with the proper ground_and rotation right-left in respect to the vertical axle.

The first movement is automatically and consisting of an electronic pendulum acting on a proportional electro-distributor valve that opens the oil flow from main system to the hydraulic motor mounted on the boom top; the complete system is activated by acting on the boom or jib movement leveres, situated on both manoeuvre sites, and this excludes the sudden and unexpected movements of the cage.

The second movement is activated by switch on the control panel. (Fig. 3.7 pos. 5)
For obtaining a complete rotation, keep the jib horizontal to avoid contacts between the cage and the boom; remember to return to the orthogonal position to the boom before lowering to rest.

 The cage is equipped with an electronic device which activates with two main articulated booms lifting and lowering movements.
To maintain the cage horizontal, if there’s no a defeat, act the lever during the jib manoeuvres softly; if the cage loses horizontal position more than 5° all boom movements stop so that the system has time to level the cage.

N.B.: After 10° of inclination all movements stop and any by-pass is possible.

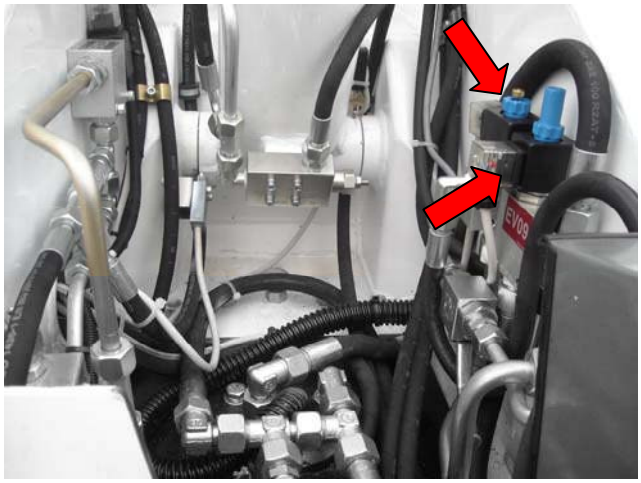


Fig. 3.24

If this happens:

- inside the turntable fig. take of the lead at the valve Fig. 3.24 marked with EV9 and and unscrew the blue cap.
- push and rotate the cursor.
- while pushing the button on the valve marked with EV10 act one manual lever of boom or jib lifting/lowering from one of the activated control panels until the cage returns vertical

In this way all service controls re-activate.

⚠ It is compulsory necessary to unlock the valve, put the cover, lead and write the cause for having taking off the lead on the manual **before** going back to work with the service controls.

3.18 ELECTRONIC INCLINOMETER

Acoustic code	Alarm description
12 rings	Electro-mechanical bubbles in short circuit
11 rings	Permanent damage – **repairable only by ISB S.r.l.**
10 rings	Machine parameters not correct - send correct parameters
9 rings	Temperature over the allowed values
8 rings	Feeding tension over the allowed values
7 rings	Clockwise movement valve spool in court circuit or disconnected
2 rings	Platform inclination out of permitted limit

Note 1

The system generates a permanent alarm when an irreversible error can occur and the safety of the machine users could no more be assured. When this alarm activates, the machine is maintained in functioning condition only to allow the user on the cage to reach the ground. In these conditions, the light alarm displays 11 blinking, while 25 sec of acoustic alarm activates every 60 sec.

Note 2

The weight pre-alarm is indicated by a continuous acoustic alarm, interrupted by intervals of about 1 sec. This is for better hear the alarm

Fatal error

If the ecu system makes a permanent acoustic alarm (the light is permanent switched on), the system is no more working. The level and weight regulation will be permanently deactivated.

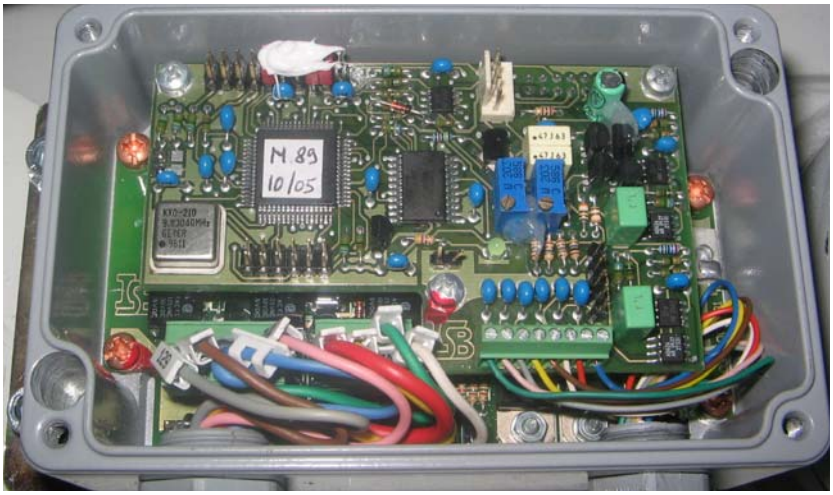


Fig. 3.26

In the electronic card of Fig. 3.26 there's a green led (1) indicating the blinking (the same blinkings as the ringings), there are also some trimmer for the manual regulation of some parameters in case the programme device wouldn't be available.

See these trimmers and their function on Fig. 3.27

TRIMMER USE

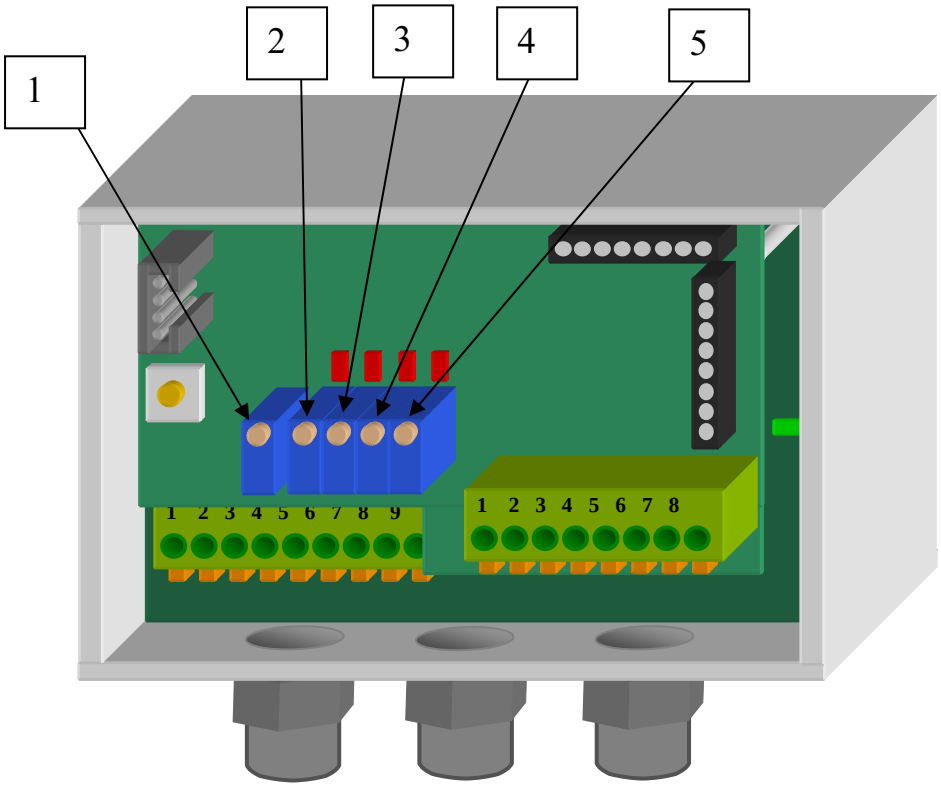
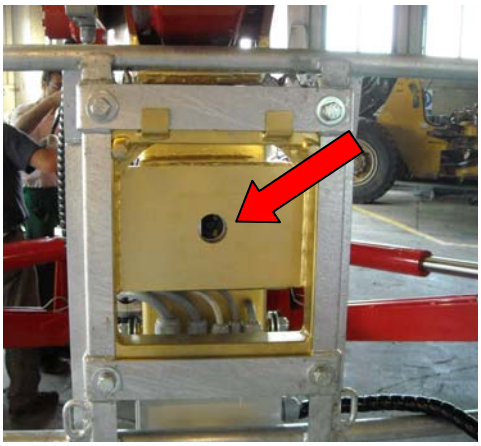


Fig. 3.27

1	cage horizontality
2	clockwise current rotation
3	under clockwise current rotation
4	clockwise speed
5	under clockwise speed

3.19 CAGE LOAD LIMITING

On the machine is fitted a sensor to evoid an overload of the cage (Fig.3.28).



If the weight in the cage is over the maximum admissible, all the movements of the machine are stepped and there i san acoustic and optical warning on the cage control panel. Before stop all the movements, there is a countinuous acoustic worning setted at the 80% of the maximum admissible load.
When the maximum load is reached there is an alternate acoustic worning.

Fig. 3.28

In the pictures 3.29 there is a short diagnostic of the load sensor.

- Error LED. Red color. If on, there is an anomaly in the sensor.
- Alarm LED. Red color. If on, there i san overload in the cage.
- Zero/Tara LED. Orange color. If on, the sensor works correctly and the measure is inside a tollerance +15kg -15kg.
- Power LED. Green color. If blinking, there is electrical power to the sensor.

Fig. 3.29

3.20 ELECTRIC CURRENT GENERATOR (OPTIONAL)

Platform is provided with an electric generator, hydraulically actuated by diesel engine exclusively, deliverying 1 kW-220V single phase el.curent to the aerial cage.
Electric generator is put in action from aerial cage panel (Fig. 3.7 pos. 3), when diesel engine runs, platform is stabilized and selecting key rotated on “cage” position.
Nevertheless, for economy reasons, it is advisable to actuate the el. generator only when it is strictly necessary.
Weekly check of the differential magnetothermic relay is recommended (life saver Fig. 3.3); drive the generator, push the test button and verify that el.current does not arrive at the plug on the cage.
In case of an electricity lost and differential intervention, make the electric system controlled by a skilled person.

 Use exclusively tools and projectors in conformity with electric standards and in good conditions. (In alternative use the proper individual protection devices)

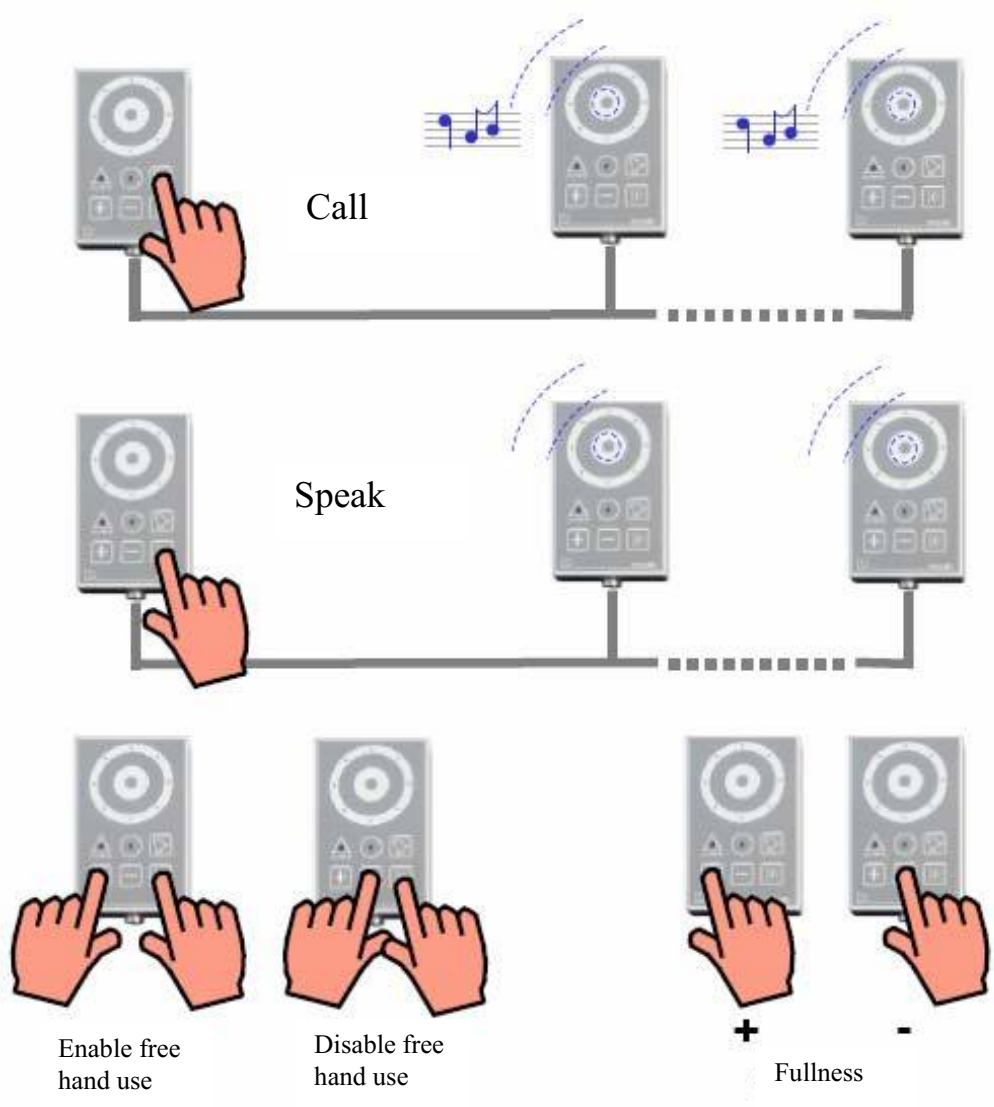
3.21 INTERCOM (OPTIONAL)
It is possible to comunicate to the persons on the cage with the intercom.

SKYTALK is the industrial intercom water resistant for external use.

easytalk

INTERCOM FOR AEREAL WORK PLATFORMS

USE MANUAL



A warning alarm disabile		the conversation
To answer it's enought push the button 		

3.22 CHECK-UP (FROM GROUND PANELS)

Especially after a period of inactivity, platform needs a check-up before working :

Check up list:

- when you turn the starting key of diesel engine, legs' flashing lights must be on (Fig. 3.13)
- these lights must be off when legs are lowered in pressure on the ground
- the green light on the turntable is on (Fig. 3.17)
- lift the boom until this green light on the turntable is switched off, descent until it switch on again, rotate the turntable slightly until the green light switches off.
- Hoist the boom till the green lamp of rest position is off and try to raise the legs (it must be impossible !!) If the stabilisers move do not use the machine and bring it to an authorised workshop or to the manufacturer)
- open the jib slightly and extend the boom until it stops when the red light on the manoeuvre panel and on one of the two stabilisers from the opposite boom position side (Fig. 3.13) switches on
- try now to lift the boom slightly and than lower it (if the red light is still on this manouvre must be possible)
- check that the red light on the manoeuvre panel remains on together with the green light near it
- check the correct working of : emergency stop push-buttons

3.23 CHECK-UP (FROM CAGE PANEL)

Verify the correct working of all controls and warning lights of cage control panel and, also that aerial cage is correctly screwed on its support:

- test all above mentioned movements
- extend the telescopic until the red light switches on (fig. 3.7 pos. 8)
- start generator and also verify the light on the selector
- check the impossibility to make the rotation, boom descent and telescopic extentions manoeuvres, when the red light is ona (Fig. 3.7 pos. 8)
- verify the cage rotation
- verify the emergency STOP. Make a manoeuvre and push the stop button. On the contrary do not use the machine and contact an authorised workshop
- verify the start device
- Connect external line on one of electric plugs of the platform and verify that el. motor runs when STOP push button is released, also check that el.motor stop, when diesel engine start
- Check that the booms extension chains and their relative electric micro contacts on the first boom are integral
- Check if the load limiting device is functioning by loading (with the boom in horizontal position and the cage close to the ground) kg 240 or more and verifying the blinking red light, the acoustic alarm and the stopping of all movements of the booms.

3.24 SPECIAL DIRECTIONS

Transport

The machine has a modest transfer speed, therefore the transfering on working site must be done on truck.
The machine can be loaded with the boom above the cabin if the truck is not equipped with a crane, pallet holder or protection nets, or with the boom toward the back.
In this case put the indication of leaning loads from on the boom extremity.
Transport shoud be on a truck equipped for this purpose, because the platform is equipped with connections corresponding to the truck ones and this keep the fixing time shorter and the transport safer (Fig. 3.32)
Put tensers to these connections and fix them to the truck.

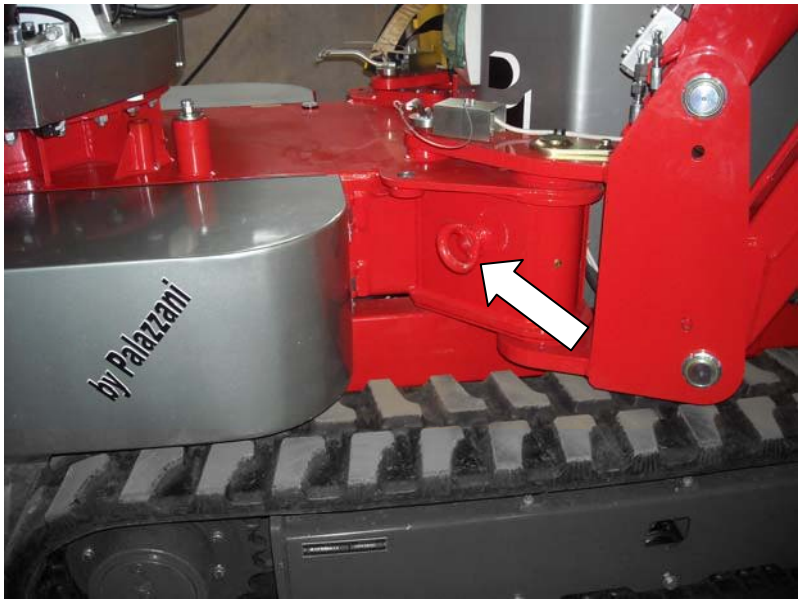


Fig. 3.32

Starting in rigid climate conditions

In favourable climate conditions act with a special procedure, most of all in first engine starting.

- start diesel engine and let it run almost 5'; in case of engine stop, wait almost 30 sec. before re-starting, due to the presence of a protecting timer
- after this time, accelerate at max selecting on “rabbit” and transfering for 1 minute

- control first movements at a slow speed and let engine run, in order to have hydraulic oil at a right temperature
- leave the engine turning for the first 15 min even if the aerial work does not requires it
- till hydraulic oil has not reached a right temperature, irregular speed movements are possible

Driving on a slope

In case of slope grounds, first select the slow speed "snail" and observe the following:

- keep the booms extremities towards the slope
- when driving on a slope, it is recommended to pre-select slow speed and cage side of the platform must be always up-hill positioned
- when driving on irregular ground it is recommended to lower stabilizing legs near the ground (30 cms. approx.)
- it is also recommended to take the boom as low as possible
- platform must be driven from a safe side position (not before or behind)

Lights

For night working or in few lighted sites, use the electric socket on the cage to light a lamp max 60W a 220v c.a.

Lifted by crane

For loading the platform on a truck, it is possible to use a crane.
In this case:

- be sure that the stabilisers are completely retracted
- use the fixing rings onthe stabilisers to attach the machine to the crane with four independent ropes

 Use lifting equipment, i.e. ropes, with proper sections for lifting and check that the crane loading is proper with the total platform weight indicated in the turntable.

Self-loading on truck (if possible)

The machine complete of original carriage can be loaded by itself on the truck with the following procedure:

- place the machine on a flat ground (if it's possible) and in any case in a not very difficult ground considering also the space for the truck
- put the outriggers supports in the position of central hole or in a sufficient position for the following truck passage.
- if the truck is very high, extract the manual extensions of the outriggers to second or third hole and put again the blocking pins (Fig. 3.33)

Fig. 3.33

⚠ These manual extensions of the outriggers must be used only for the loading on truck.
It is forbidden to move the boom while working with these extensions. **They mustn't** be used to enlarge the placement base nor to increase the working height of machines.

- put the carriage with proper rolls under the plates (Fig. 3.34)
- lift completely the machine, moving alternatively the two front and rear stabilisers. Always lift the two front stabilisers first, and then to balance with the rear ones until the cylinders course is finished. (Fig. 3.35)

Fig. 3.34

Fig. 3.35

 During loading/unloading phase from the truck, you **must** mount the proper roll carriages on the extensions if they are extended.
On the contrary you **must not** mount the roll carriages during normal placements for lifting working.

- move the truck as to place the load area under the machine
- retract the outriggers as to place the chassis on the supports and on the area itself
- fix the machine
- recover the carriages

3.25 DIAGNOSTIC

On the machine is fitted a touch screen interactive display located on the main electrical box (Fig. 3.36), and it's function is to monitoring the work cycle of the machine.

Additional the monitor has a diagnostic function.

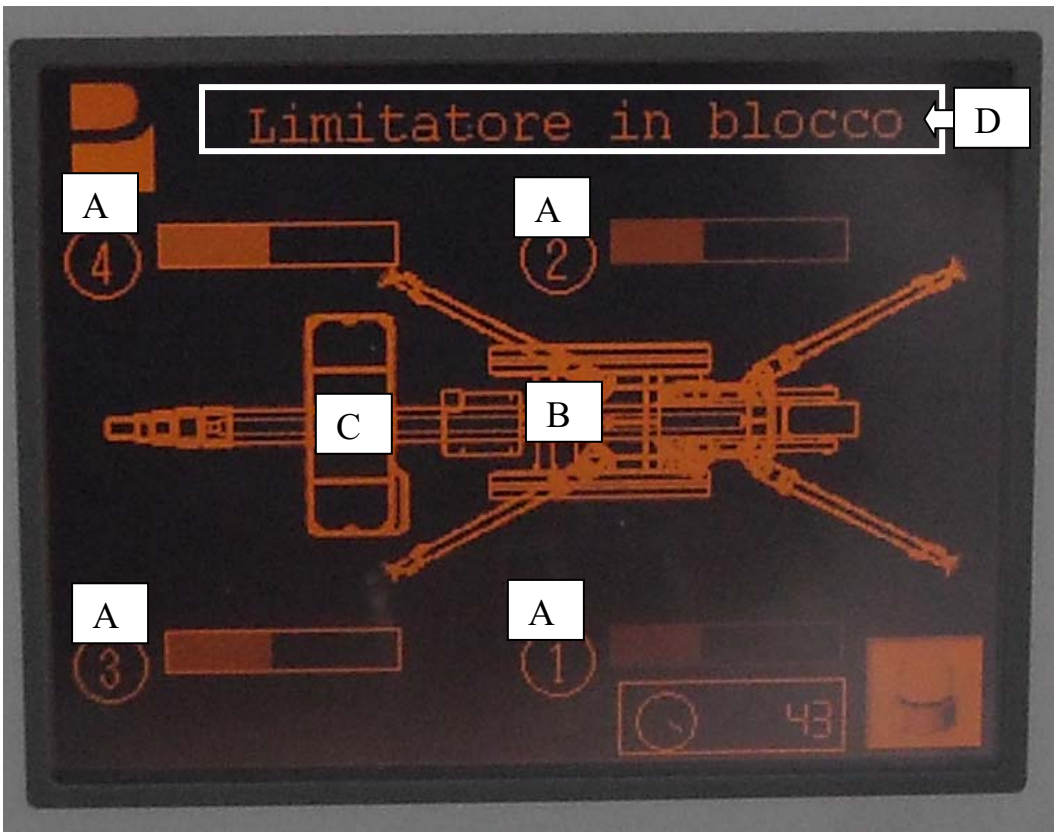


Fig. 3.36

Touching the area A it's possible to read the instantaneous value of the pressure on the pertinent stabilizer. The number is not indicative of a force or pressure, but it's only a value given from the sensor and it's range is between 1000 and 25000 (when the load is maximum).

Since on every stabilizer there are two sensor, for redundancy, touching the area A it's possible to read the channel "a" and the channel "b"; if the difference of the two value is over 1000, the machine stop because some sensor has a problem.

Touching the area B, it's possible to view the value of the sensors, channel "a" and "b", of the four stabilizer on the same page.

Touching the area C, it's possible to view the parameters setted by Palazzani for the control of the sensor. For details of this value, contact the service department of

the Palazzani Industrie S.p.A.

In the area D it's possible to view the diagnostic messages; following a short description:

- Potentiometer 1a breakdown: it is displayed when the potentiometer exceede the min or max setted value. During booms working, it stops also movements which are controlled by the moment limitator. During transfer the movement is not stopped and only the message is displayed
- Potentiometer 2a breakdown: idem
- Potentiometer 3a breakdown: idem
- Potentiometer 4a breakdown: idem
- Potentiometer 1b breakdown: idem
- Potentiometer 2b breakdown: idem
- Potentiometer 3b breakdown: idem
- Potentiometer 4b breakdown: idem
- Selfpropelling interlock: it is displayed when the stabilizers are not layed on the ground and key selector is switched on "transfer" (and no allarm messages are displayed)
- Stabilizer interlock: it is displayed when at least one stabilizer touches the ground and the key selector is switched on transfer (the transfer is blocked)
- Uncorrect levelling of 2°: it is displayed if the machine is wrongly placed and it doesn't allow the booms movements. If the machine goes to an uncorrect levelling during working, only the message is displayed.
- Stabilizer pin not engaged: it is displayed during the positioning if a pin is not inserted. It blocks the stabilizers movement
- Articulation pin not engaged of 120°: it is displayed after the machine positioning if all stabilizers in working position are not open and it doesn't allow the booms movement
- Area manager temporarily blocking: it is displayed it is displayed during the normal blocking of the limitator (it turns on when the machine returns in the allowed area). The message remains displayed if an area transfer end of stroke is defeated
- Area manager permanently blocking: it is displayed if a limitator relay is blocked or if a potentiometer has not the alligned values (the locking limitator remains in fuction)
- Wide area: it is displayed after having placed teh stabilizers correctly and switched the key selector on boom position
- Medium area: it is displayed after wide area (and there are no allarm messages)
- Narrow area: it is displayed after medium area (and there are no allarm messages)

CAP. 3° NORMAL USE CONDITIONS

3.1 LOAD AND UNLOAD ON TRUCK.

a) By crane

- take the tensors or the equipment fixing stripes off.
- hook the 4 eyebolts on the top of the stabilizing legs with proper loading ropes (min half weight each) (Fig. 3.1)
- lift the machine and go out with truck

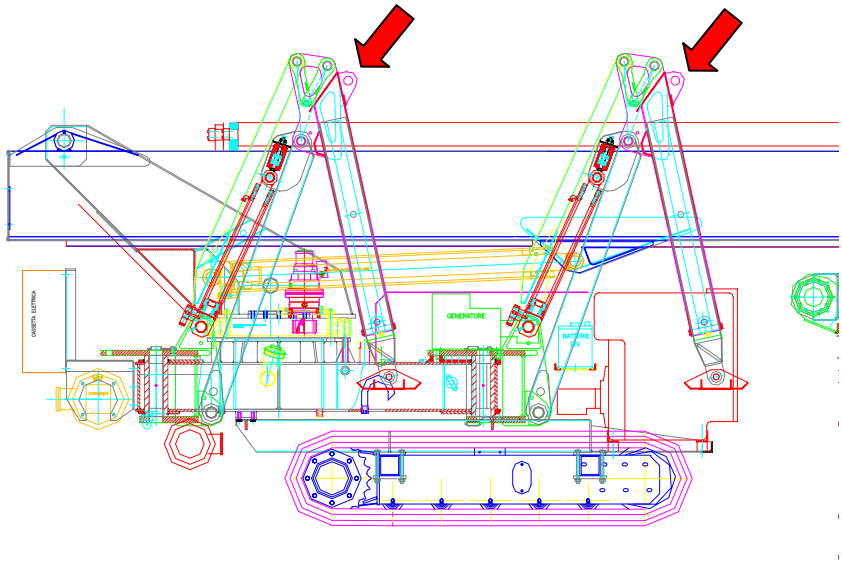


Fig. 3.1

b) Self-loading (if possible). See also the Chap. 3.24

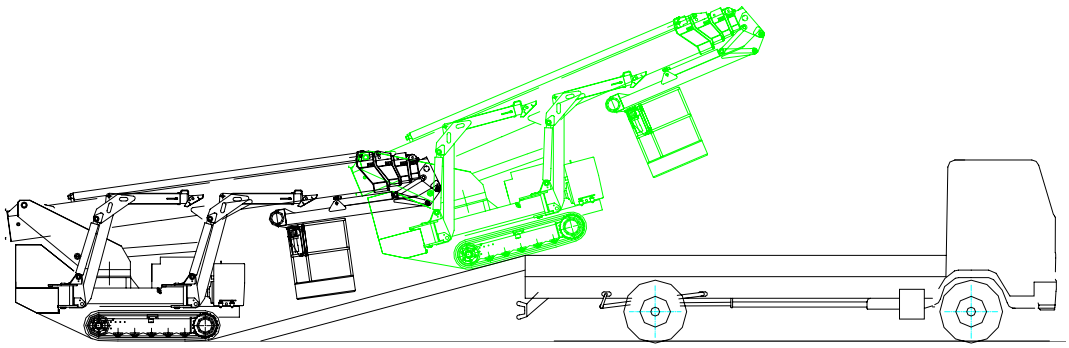
- stop the lorry on level and rough ground
- rotate the stabilizing legs in the hole 2 (see Fig. 1.2)
- start the diesel engine.
- turn the selecting key of the ground control panel on the "stabiling-legs" symbol (part 6 of Fig. 3.2)
- extend the telescopic section of the stabilizar, lock it by means of the pins and lower the stabilizer on the ground.
- before lay the plates on the ground, put the proper rolling chariots (see Fig. 3.34).
- disengage the machine from the lorry and lowering the stabilizing-legs, hoist the platform from the lorry
- slowly, drive the lorry out of the platform
- lift the stabilisers as described in paragraph 3.12 with the belt control

distant from the machine

- when the tracks are lowered on the ground, retract the telescope sections of the stabilizr.

NB: If the ground is solid and resistant (pressed earth, cement, asphalt) the operation is easy; on the contrary if the ground is yelding and irregular it is better to drive the charriots on wooden plates.
- for the loading, lift the stabilisers from the boom side before and than balancing them with the other two, and follow the procedure on the contrary.
- select now the controls key on "turntable" and transfer to the site with the stabilisers up (min 10/15 cm) for a better stability in case of strong asperities.

c) By using a ramp.
ATTENTION!! If you are using a ramp we recommend a max slope of 15° (about 25%) and to attack the ramp with the cage toward the climb. This is absolutly necessari for the stability of the machine.
To attack the ramp, lift up the cage just the necessary to avoid the ramp and not more, like showed in the following picture. (To lift up the cage, thus the main boom, see chap. 3.9)



Warning! During the transport on the lorry, bee sure that the locking rotation pin is insert.

3.2 MAIN CONTROL DESK

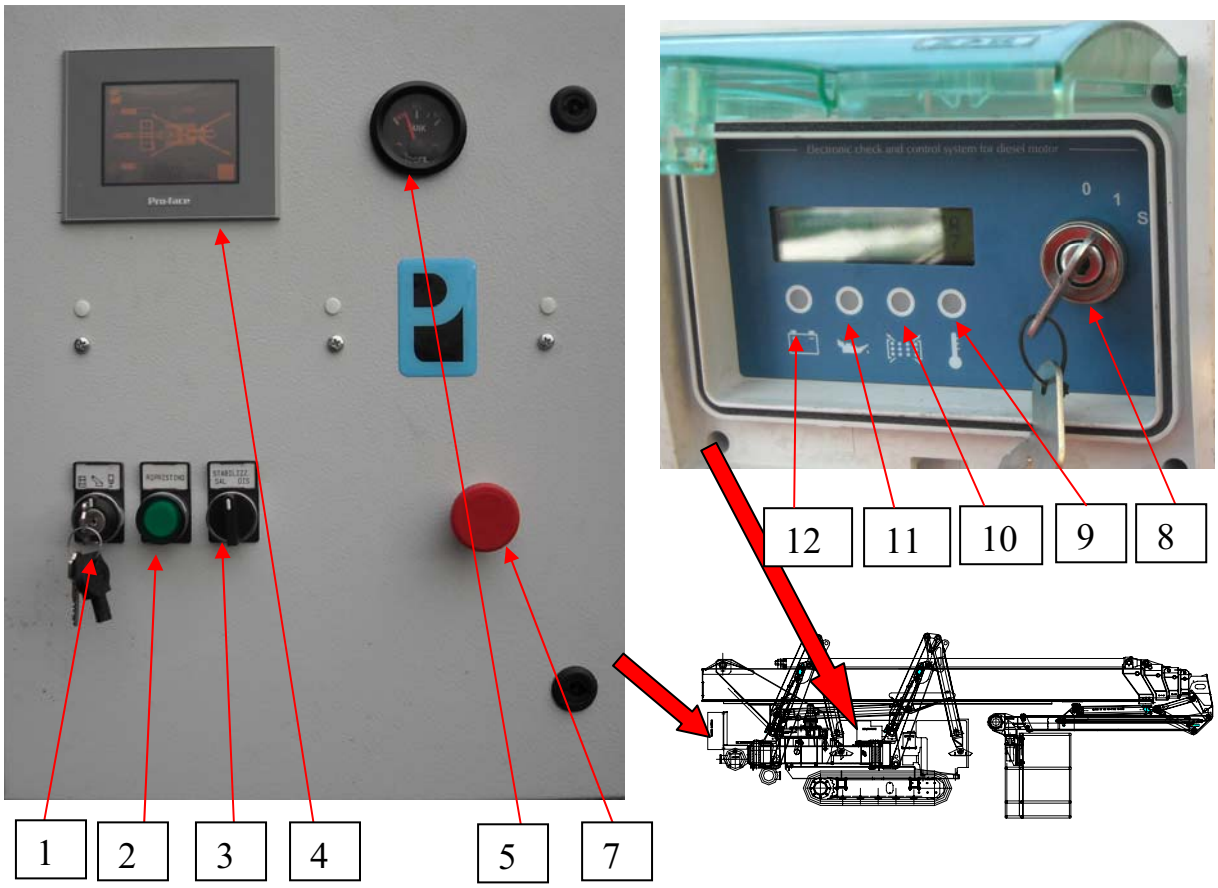


Fig. 3.2

13)
witching controls key.
14)
oom lifting up in travel condition
15)
ift up/lower stabilizer
16)
rogrammable Logic Control (PLC)
17)
uel level
18)
----
19)
mergency stop button
20)
eneral key
21)
verheating diesel engine
22) Air filter barred
23) Low oil pressare diesel engine
24) Low tension generator of the diesel engin

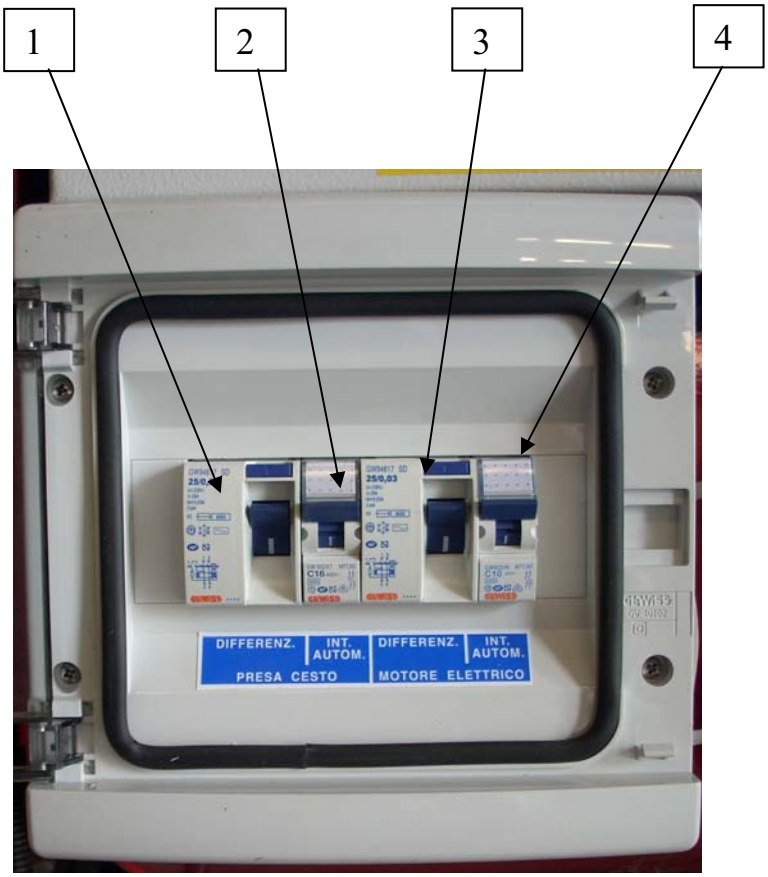


Fig. 3.3

5) Differential switch (cage plug)
6) Automatic magnetothermic switch (cage plug)
7) Differential switch (el. motor)
8) Automatic magnetothermic switch (el. motor)

BATTERY CHARGES
The battery charges is fitted into the general electrical box.

5. Connect the machine net cable to a plug 230V – 50 Hz.
6. After this operation the battery charger (in the electric box) light on automatically and the three leds light on contemporarely for few seconds (self-diagnosis)
7. Then the batteries recharging proces starts and the led shows the recharging status
8. Battery charges doesn't need any maintenance or intervention

A warning light with flashing leds is mounted to signal any eventual anomaly during the charge.
Battery charger, is placed on the platform and it is connected at its electric panel
During working with electric motor, the external electric plug feeds the motor and this device maintaining the batteries efficient.
Batteries are also re-charged by the alternator of the diesel engine.

RISK OF BURN
When the electrolyte is freezed it can make the battery explodes if you try to charge it or to start the thermic motor with a secour battery.
To avoid to the electrolyte to freezes, maintain the battery always charged, disconnect always the negative pole (-) at firs and connect it always at last; never bridge the battery poles.
The electrolyte causes big burns, avoid the contact with skin, eyes, clothes.

External: wash with water.
Internal: drink a big quantity of water or milk. Ask to a doctor.
Eyes: wash with water for 15 minutes and ask immediately to a doctor.

BATTERY CHARGES FOR RADIO-CONTROL

The radio-control has two batteries; while using the radio-control, one of them charging. In this way it's possible to have always a charged battery when necessary.

The battery charter is suitable inside the right cover of the machine (see the side pictures).

3.3 PLATFORM WORKING WITH DIESEL ENGINE

Platform is provided with 2 separate power; one of them is connected to the diesel engine installed on the same platform.
Used for the truck downloading and for long transfers to reach the working site.
It can be used also for elevation working if the emissions gas are accepted (closed sites, noise prohibition, etc.)
Thanks to the diesel engine adequate power, platform movements can be driven at the best rated speed. (at least in respect to the motor at 220V)

Starting procedure:

- on main control desk (Fig. 3.2) rotate the key (item 8) on pos. 1 (oil and el. tension warning lights)
- rotate the key on position 2 to start diesel engine.
- let the engine run some minuts (almost 5 min. with a ridig temperature) before manoeuvring the platform
- due to the presence of a protecting timer, in case of engine stop, wait almost 20 sec. before re-starting

- il motore è regolato tra 2000 g/1 ed a tale regime resterà durante la fase di riposo; durante la traslazione del carro aumenterà il numero di giri automaticamente.
- the engine is set between 1800 and 2000 rpm and remains on this level during the rest phase; during the slow travelling, but the rpm increase automatically in fast travelling.
- to stop it push the button "STOP" on one of the control panel or reset the main panel key; remember to unlock the "STOP" button rotating it slightly otherwise the engine does not start from any other control panel.
- it is possible to start engine also from control panel on cage by turning the key switch 2 of Fig. 3.7 if the stabilisers are on the ground and the controls selected on the above mentioned panel (key 1 in fig. 3.2 selected on cage symbol).
- it is possibile to start engine also from ground control panel, by the switch 12 of Fig. 3.6, but before it's necessary to activate it (see radio control manual).

WARNING

Exhaust pipe is not protectet and burns also on the upper part of the diesel engine.
During work with diesel engine in enclosed spaces, exhaust gas must be removed by means of an appropriate hose of a suitable material.

FIRE AND EXPLOSION RISKS

- Fuel of the engine can cause fires and explosions
- Stop the engine before the refuelling
- No smoking during the refuelling
- All necessary protections must be activated in case of weldings, or free flames
- Clean the machine from oily materials and deposits or inflammable residual with non inflammable solvent.
- Also batteries can explode in presence of sparks or free flames: air the site and most of all do not put the battery in charge in these conditions.
- The exhaust gas can contain sparks, therefore air the working site if any vapours, gas or inflammable liquids are present.
- Eventual hydraulic oil or fuel leakage must be eliminated in phase of scheduled maintenance.

3.4 PLATFORM WORKING WITH ELECTRIC MOTORS

This energy source use is recommended when the machine works indoor or where the exhaust gas or noise are forbidden and when the energy saving is important.
Where possible, it is recommended to branch always the platform to an electric source, in fact, el.motors can be used alternatively to diesel engine, for small aerial movements and, eventually, for recovery in emergency (i.e. diesel breakdown)

Starting procedure:

- on main control desk (Fig. 3.2) rotate the key (item 8) on pos. 1 (oil and el. tension warning lights)
- branch the electric plug (fig. 3.4) and socket (16A)
- verify that one of the "STOP" push-buttons is not pressed
- now, acting on one control lever, electric motor run
- it is also possible to stop electric motor, by acting on the same STOP push-button of the diesel engine, or by rotating key on OFF position
- electric motor re-starts, when the push-button is re-set by rotation and you act on one control lever

Fig. 3.4

NOTE:
For the efficient functionning of magnetothermic differentials switch (life-savers) on the machine, the electricity plug mus be safely connected to the ground and be on a normal box; do not use flying cables sometimes existing on the working sites.
During the machine displacement on the ground, keep the max attention to not

crush the feeding cable with wheels or tracks and to the cable limit lenght.

3.5 GROUND CONTROL PANEL

Fig.3.6

14. Stabilizer n° 1 – telescope boom – left track
15. Stabilizer n° 2 – turntable rotation
16. Stabilizer n° 3 – telescope jib
17. Stabilizer n° 4 – cage rotation
18. Jib articulation
19. Stabilizer oil – main boom – right track
20. Radio-control switch on
21. Radio-conrol activation
22. Moving sped slow/fast
23. Automatic/manual stabilizing
24. Opzionale
25. Start/stop engine
26. Stop control

3.6 CAGE CONTROL PANEL

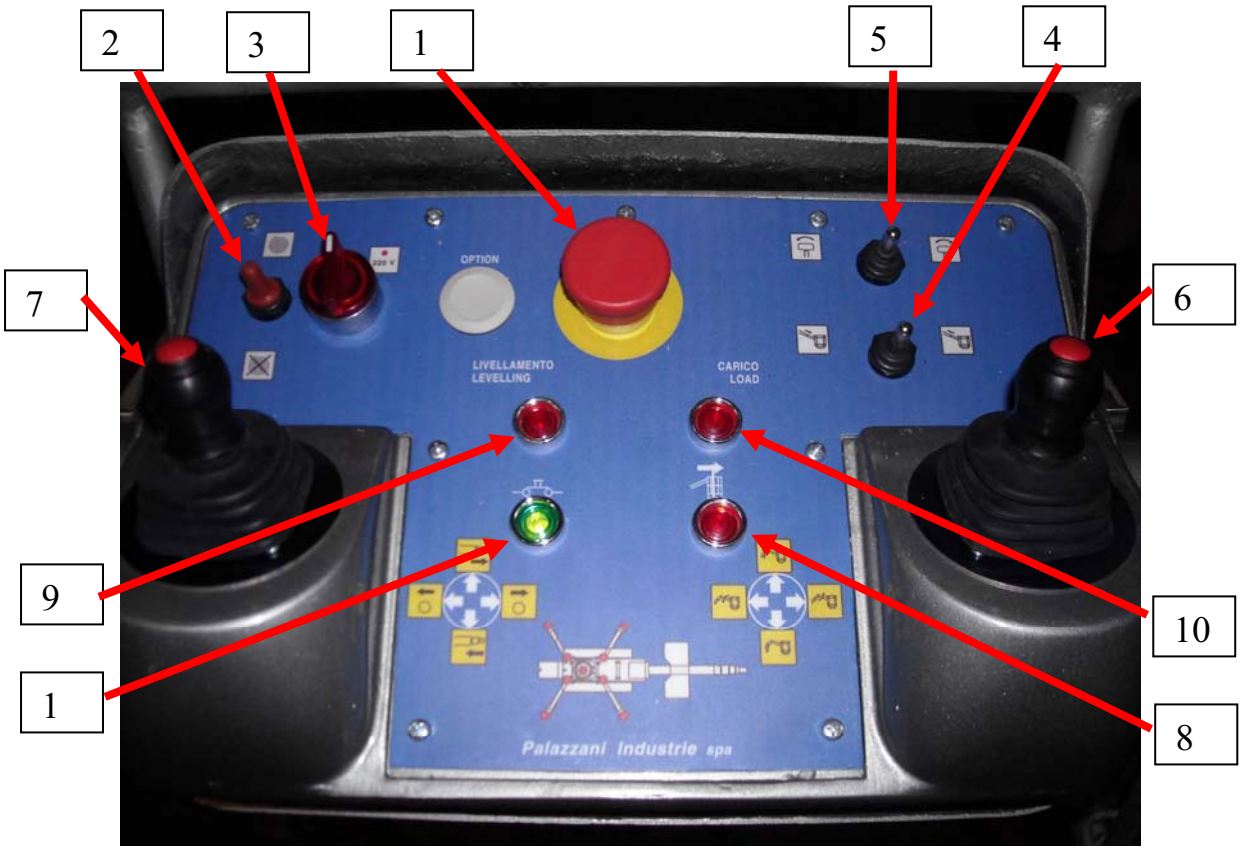


Fig. 3.7

13. Emergency stop button
14. Start/Stop engine
15. Activation current generator
16. Extend/retract jib
17. Cage rotation
18. Joystick activing main boom and jib
19. Joystick activing turntable roatation and telescopic boom
20. Led max outreach
21. Led cage not levelled
22. Led cage overload
23. Led control panel activate.

3.7 PLATFORM STARTING PROCEDURE

Especially after a period of inactivity, before starting the engine it is recommended to check all the safety devices and controls.
Some of these controls can be fulfilled with the machine off, other controls after the stabilisers positioning. For the first ones:

7) verify the fuel level
8) verify the hydraulic oil level
9) verify the electrolyte level and batteries charge
10) v erify the track condition
11) a lso check that STOP push-buttons are de-locked
12) c heck the booms extension chains integrity and tension (the chains must remain tense to the touch and not loosen during boom extension and retraction)

⚠ WARNING
Don't start the platform in case of any irregularity

3.8 PLATFORM SELFPROPELLING

- start diesel engine from control panel (pos. 8 Fig. 3.2)
- select the controls selection key (pos. 1 Fig. 3.2) the turntable symbol (central position)
- detach the radio control from its support, use the shoulder belt and choose a remote, safe and panoramic control position, far from the platform

⚠ WARNING
never drive the platform till you have reached a safe and panoramic remote control position.

- select “rabbit or snail” on the ground control panel with switch 9 in fig. 3.6
- softly act the two control levers 1 and 6 in fig. 3.6 to transfer forward or backward.

- it is possible to rotate the platform, acting on the levers in opposite sense

WARNING
Use slow speed selection when driving on irregular grounds, slopes, restricted areas when sloping up or down, the cage side of the platform must always be in uphill position

Stop the platform before inverting the drive sense

against overturging risks, it is recommended to drive with the stabilizing legs enlarged and lowered near the ground

WARNING
Platform is not admitted to road circulation and, therefore, driving on an area opened to the traffic needs necessary protections and signals.
Many times an authority authorisation for the manufacturing site is necessary.

If not possible, follow the machine by the truck or by another vehicle with emergency lights on.
The operator must drive the machine on the sidewalk by paying attention to eventual obstacles or people present on the way.
The transfer on a public area must be short, made in favourable hours, and if necessary with the police approval.

3.9 SPECIAL BOOM ACTIVATION

In case of a strong slope or loading ramps, the boom can be lifted at the necessary angle to avoid that the cage touches the ground without put stabilizers on the ground.
Act as following:

- the boom must be with extension completely retracted
- with the engine on, push the button part. 2 in fig. 3.2 and contemporarily, from the ground controls panel, lift the boom up (part.6 Fig. 3.6).
- when the operation is finished, repeat the operation on reverse to bring the boom back to horizontal position

Do not lift the cage floor more than 80 cm from the ground**.**

3.10 STEERING

It is controlled varying the speed of the tracks, by means of the corresponding control lever.
Platform can be also be rotated, acting on the two levers 1 and 5 of Fig. 3.6 at the same time and in contrary sense. It is advised to make this manoeuvre at a low speed and on flat and regular ground, only

3.11 AUTOMATIC BRAKE

No braking control is necessary, as the platform is provided with an automatic system consisting of mechanic negative brakes, with hydraulic release and overcentre valves, mounted on transmission hydraulic motors
Slow speed pre-selection 10 of Fig. 3.6 increases braking action and, therefore, it is recommended for driving and parking on a slope

3.12 LEVELLING THE MACHINE

Stabilizing legs can be individually rotated and articulated, according the owner needs.
Once detect the desire position it's indispensable to insert the pins in the appropriate holes (fig. 3.12).

Fig. 3.12

⚠ always verify that the floor capacity is adequate to the pressure of each outrigger (this value is signalled by a special label).

⚠ The stabilisers telescopic extensions can be retracted only for loading/downloading operation from the truck but they MUST be completely retracted during elevation booms working.

A different use can cause very dangerous injuries to operators and machine.

Now it is possible to level the machine as following:

- Turn the selecting key pos. 1 of Fig. 3.2 on "legs" symbol (right side)
- Check that the green light on the turntable will be switched on.
- You have two possibility to levelling the machine:
  - Automatic mode: switch on "Auto" the selector pos. 10 fig. 3.6. Activate the joystick pos. 1 fig. 3.6 to give the direction of the movement, and at the same time push forward the joystick pos. 6 of the same picture, to give oil to the stabilizer. In this modality the machine levelling automatically and when the frame is in horizontal position, the system stop the stabilizer movements. **Note: check always the correct level of the frame using the visual bubble on the frame.**

  - Manual mode: switch the pos. 10 fig. 3.6 on "Man". Activate the joystick from pos. 1 to 4 fig. 3.6 to give the direction movements for each stabilizer and at the same time push forward the joystick pos. 6 of the same pictures, to give oil to the stabilizer. In this modality it's possible to move separately every stabilizer.
- When the machine is leveled, the four light on the stabilizer (fig. 3.13) switch off. Attention! This do not ensure the correct levelling of the machine; before use the platform, check the correct levelling by means of the bubble on the frame.

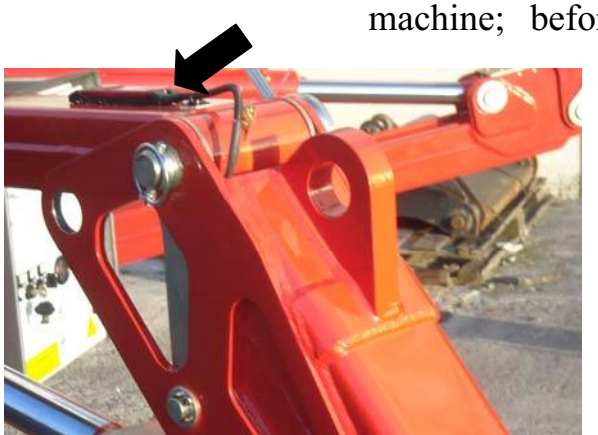


Fig. 3.13

NOTE: When the machine is livelled, it's recommended (by means of the manual procedure) to give a short impulse, without movement of the frame, to the four stabilizer to ensure a correct pressure on the ground. In this way the performance of the machine will be at the top.

Important! Check the correct levelling of the machine by means of the bubbole on the frame (Fig. 3.14).
Use wooden plates to make the ground more solid (Fig. 3.15), which must be wide enought to avoid dumping and high no more than 20 cm.
It can be necessary to position the stabilisers on different height levels (i.e. on stairs, sidewalks, slopes, etc.) and this is easy because the stabilisers can lower independently (Fig. 3.16).

Fig. 3.14

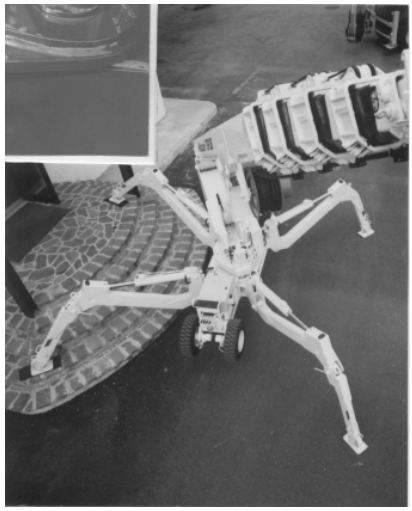


Fig. 3.15 Fig. 3.16

Remember that, in case of manual stabilization, it is easier and safer to adjust the levelling by lowering the stabilisers instead of lifting them.
Always check that the plates are solidly positioned on the ground (it is dangerous to put them on gutters, near scarps, on soft or water grounds, etc.)

To retract the sabiliser, check that the green light on the turntable (Fig. 3.17) is lighted on. Select the key 1 in fig. 3.2 on stabilisers symbol, act the accelerator lever part 6 in fig 3.6 and the lever 1 to stabilisers lifting direction until the complete retraction. In alternative, act manually on every stabiliser in the following way: switch pos. 10 fig. 3.6 on "Man", act, preferably, two levers contemporarily (the two front or the two rear ones) and push the accelerator lever softly, until the complete retraction.

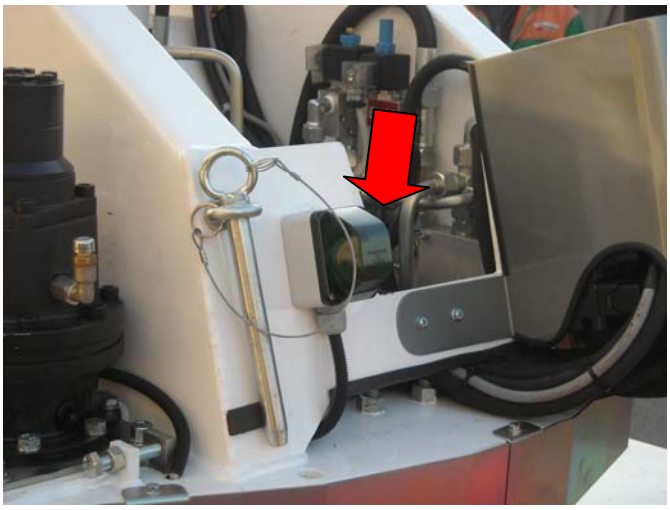


Fig. 3.17

NOTE:
In normal working conditions platform is to be hoisted 10 ÷ 40 cms. over flat ground
Do not excede 40 cm from the ground on flat ground.
Stabilization on steps gives no problem, it is only important to level the platform.
On a steep slope, where there is a risk of sliding, it is recommended to place some woods under the legs, in order to be within 2° (see spirit level) before levelling

with legs

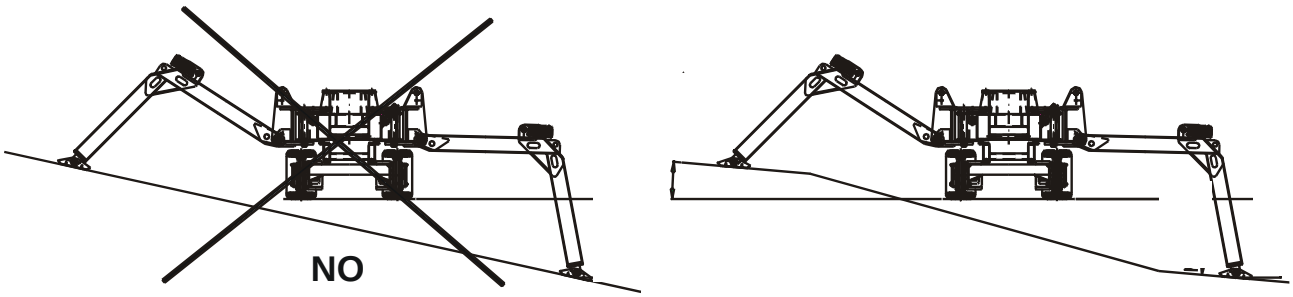


Fig. 3.18

The max slope between the two stabilisers plates laying floors indipendently from the scarp must not excede 5° to avoid chariot sliding due to the limited attrition resistance (Fig. 3.18).

3.13 AERIAL WORK

Access to the platform

Access to the platform with retracted boom and cage near the ground. Materials also must be loaded this way.
Operators must not exit and access from the cage from high position.
Stay on the cage only for lifting and working in high position. During the transfer, operators must not stay on board.
It is possible but it is **very dangerous** to load material when the machine is placed and extended. Protections don't grant all risks from a possible overturn.
If the light and the overloading acoustic alarm activates, quickly download the exceeding load.
If the cage has to lift beyond an obstacle (river, difficult ground..) it is advisable to try before with a similar weight (i.e. 2 persons) and check if the boom reaches the wished position without stopping.
In this case it is always possible to safety lower the cage to the ground and lift again.

After positioning the stabilisers on the ground and leveling the chariot, the machine is ready for aerial work. Do the following: take the safety socket off (fig 3.19) used for transport and use the control panel in the cage.
From this position it is possible now to operatively move the boom. In fig. 3.7 all

joystick manoeuvres are indicated.
It is possible to enable the aerial movement controls with the key also from a different position from the usual one (for maintenance, regulations, rentals with operator, training courses, etc.).

After the cage access, before making any control, fix the safety belt (which must have a rope not more than 1 m lenght) to the proper rings (Fig. 3.20).

To control any movement, act on the corresponding lever, avoiding sudden and brusque manoeuvres.
First lift the first boom around 45° and than open the jib to get away from the boom; then you can procede with turntable rotation and telescopic extensions.

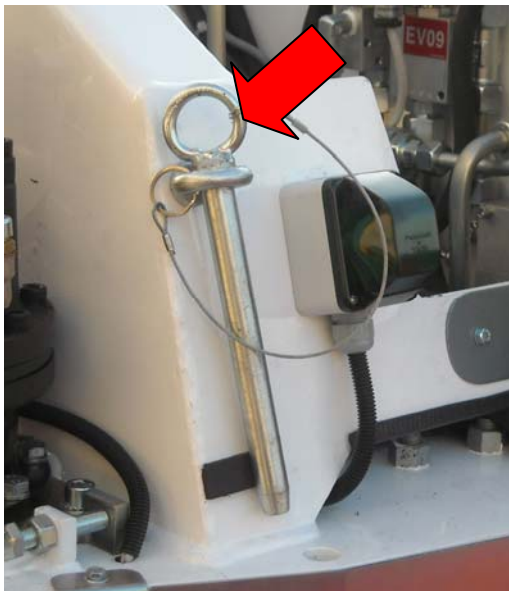


Fig. 3.19

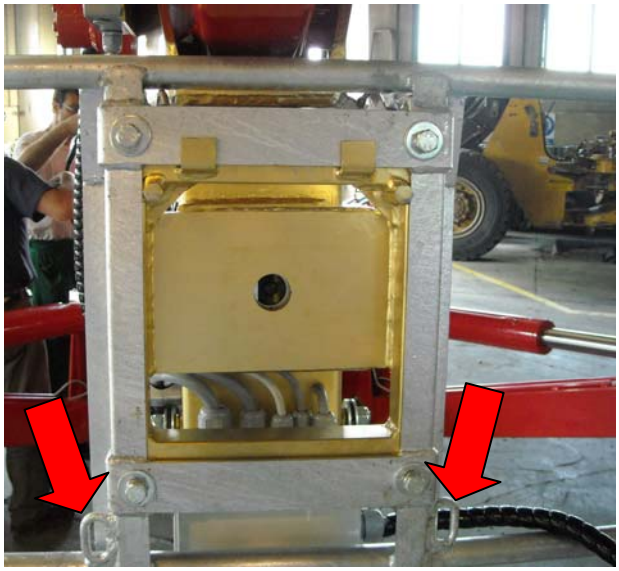


Fig. 3.20

⚠ Do not make abrupt manoeuvres or sudden inversions in movements to not counterblow the cage.
The more the telescopic are extended the lower must be the transfer.
To go back to rest position, retract the extension completely, close the jib, straighten the cage eventually rotated, put the chassis on axle rotating the turntable and lower with the first boom until the green light switch on (Fig. 3.17).

⚠ The above mentioned green light activates only when the booms are: completely retracted, on the longitudinal axle in respect to the chassis towards the

diesel engine, lowered below a certain angle.
From this moment it is possible to lift the stabilisers selecting the stabilisers symbol with the key 1 Fig. 3.2 and proceeding as described in the paragraph 3.12.

3.14 SAFETY DEVICES

Platform is provided with the following safety devices:

- automatic interlock between thermic and electric power sources
- automatic interlock between stabilizing legs and selfpropelling drive
- automatic interlock between stabilizing legs and boom
- load management system
- load limiting device (con preallarme)
- self-locking valves on hydraulic cylinders
- protection of the control levers
- rings for harness on aerial cage
- overpressure valves on hydraulic system
- booms extensions chains doubling
- automatic brake on turntable slewing
- automatic brake on transmission
- mobile panel for remote control
- emergengy stop push-buttons on all control stations
- el.sensors on the chains of the first boom section
- el. sensors on the pins of the legs supports
- cage levelling limiter (5°-10°)

3.15 LOAD MANAGEMENT SYSTEM

Platform is provided with an automatic moment limiting device, constantly monitoring the specific pressure of each stabilizing leg on the ground.
When the pressure of one leg goes down to a minimum pre-set value, the red lamp mounted on this leg lights (fig.3.13) and, “limitator block” is displayed, at the same time, movements increasing working outreach are automatically excluded.
This load\outreach limit situation is also signalled by a red light on the control panel. (Fig. 3.7 pos. 8)

Movements reducing outreach are always normally working and, therefore, operator can act on them to reduce the outreach.

Cage re-entering in safe position is signalled by leg and panel lamps switching off

Never switch off the start key of main control desk, when aerial cage is on the load\outreach limit situation, signalled by the red lamp on the control panel.

⚠ WARNING This particular load management system gives full protection, either with regards to all different legs positions and with different loads in the cage. It is tared by the manufacturer according to the platform’s characteristics of stability.
Any intervention of modification and\or exclusion of this device is absolutely prohibited

⚠No embarking persons, or materials in the cage, when it is in aerial position

3.16 LOAD LIMITING DEVICE

The machine is equipped with and load limiting device in the cage.
This device avoids the overcoming of mominal capacity.
If this would happen it will cause the stop of all manoeuvres and the switching on of an acustic and luminous alarm on the cage (pos. 10 Fig. 3.7).
To re-start all mouvements, take off the excess of load, wrongly loaded.

 In case of accidental bump under a moulding or in branches, it is possible to activate the emergency operations to move tha machine like the instructions of chapter 5.

3.17 CAGE SELF-LEVELLING AND ROTATION

Aerial cage has two movements: rotation on horizontal position to grant the constant_levelling with the proper ground_and rotation right-left in respect to the vertical axle.

The first movement is automatically and consisting of an electronic pendulum acting on a proportional electro-distributor valve that opens the oil flow from main system to the hydraulic motor mounted on the boom top; the complete system is activated by acting on the boom or jib movement leveres, situated on both manoeuvre sites, and this excludes the sudden and unexpected movements of the cage.

The second movement is activated by switch on the control panel. (Fig. 3.7 pos. 5)
For obtaining a complete rotation, keep the jib horizontal to avoid contacts between the cage and the boom; remember to return to the orthogonal position to the boom before lowering to rest.

 The cage is equipped with an electronic device which activates with two main articulated booms lifting and lowering movements.
To maintain the cage horizontal, if there’s no a defeat, act the lever during the jib manoeuvres softly; if the cage loses horizontal position more than 5° all boom movements stop so that the system has time to level the cage.

N.B.: After 10° of inclination all movements stop and any by-pass is possible.

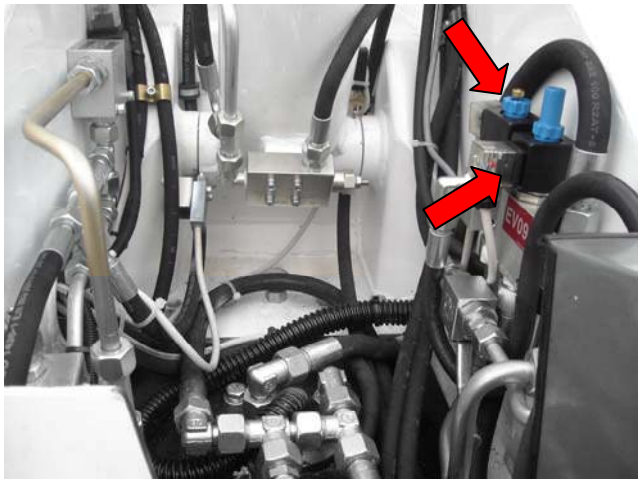


Fig. 3.24

If this happens:

- inside the turntable fig. take of the lead at the valve Fig. 3.24 marked with EV9 and and unscrew the blue cap.
- push and rotate the cursor.
- while pushing the button on the valve marked with EV10 act one manual lever of boom or jib lifting/lowering from one of the activated control panels until the cage returns vertical

In this way all service controls re-activate.

⚠ It is compulsory necessary to unlock the valve, put the cover, lead and write the cause for having taking off the lead on the manual **before** going back to work with the service controls.

3.18 ELECTRONIC INCLINOMETER

Acoustic code	Alarm description
12 rings	Electro-mechanical bubbles in short circuit
11 rings	Permanent damage – **repairable only by ISB S.r.l.**
10 rings	Machine parameters not correct - send correct parameters
9 rings	Temperature over the allowed values
8 rings	Feeding tension over the allowed values
7 rings	Clockwise movement valve spool in court circuit or disconnected
2 rings	Platform inclination out of permitted limit

Note 1

The system generates a permanent alarm when an irreversible error can occur and the safety of the machine users could no more be assured. When this alarm activates, the machine is maintained in functioning condition only to allow the user on the cage to reach the ground. In these conditions, the light alarm displays 11 blinking, while 25 sec of acoustic alarm activates every 60 sec.

Note 2

The weight pre-alarm is indicated by a continuous acoustic alarm, interrupted by intervals of about 1 sec. This is for better hear the alarm

Fatal error

If the ecu system makes a permanent acoustic alarm (the light is permanent switched on), the system is no more working. The level and weight regulation will be permanently deactivated.

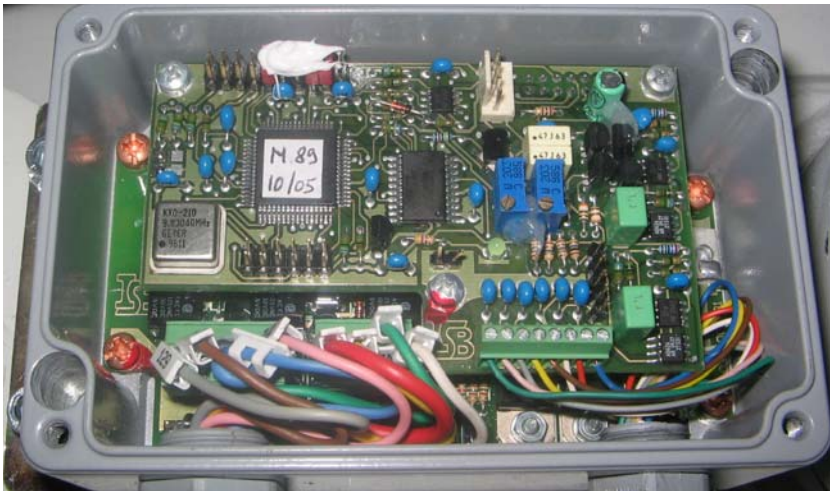


Fig. 3.26

In the electronic card of Fig. 3.26 there's a green led (1) indicating the blinking (the same blinkings as the ringings), there are also some trimmer for the manual regulation of some parameters in case the programme device wouldn't be available.

See these trimmers and their function on Fig. 3.27

TRIMMER USE

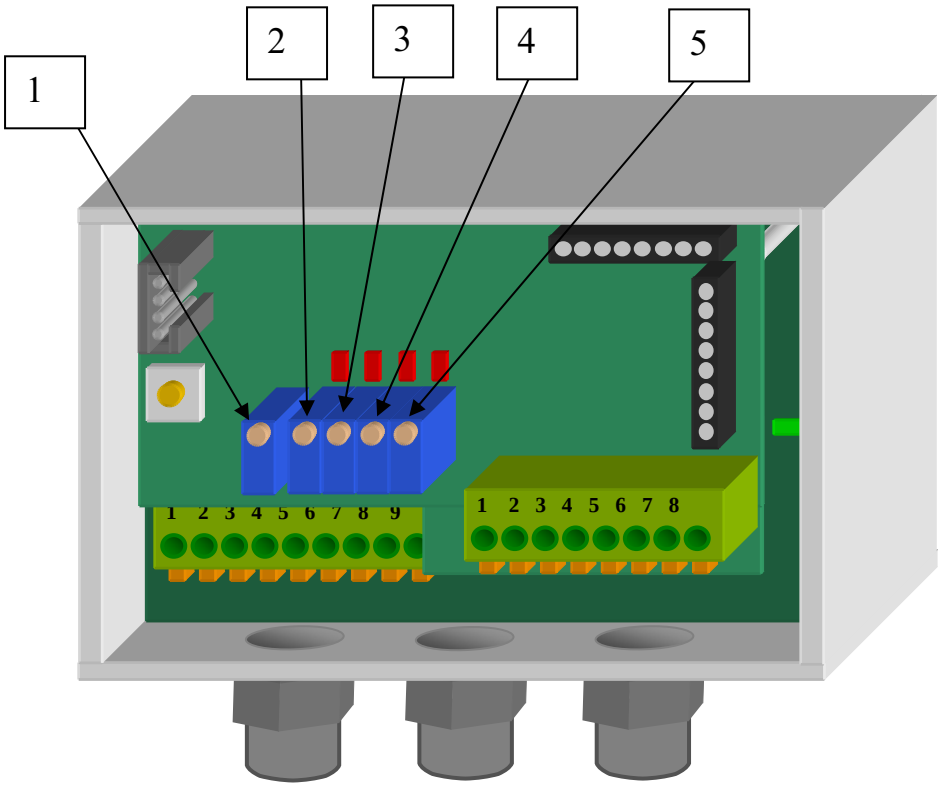
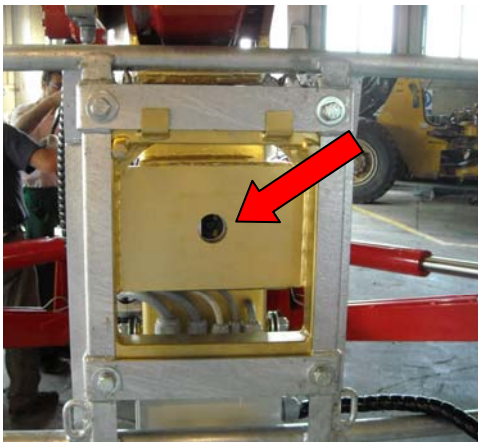


Fig. 3.27

6	cage horizontality
7	clockwise current rotation
8	under clockwise current rotation
9	clockwise speed
10	under clockwise speed

3.19 CAGE LOAD LIMITING

On the machine is fitted a sensor to evoid an overload of the cage (Fig.3.28).



If the weight in the cage is over the maximum admissible, all the movements of the machine are stepped and there i san acoustic and optical warning on the cage control panel. Before stop all the movements, there is a countinuous acoustic worning setted at the 80% of the maximum admissible load.
When the maximum load is reached there is an alternate acoustic worning.

Fig. 3.28

In the pictures 3.29 there is a short diagnostic of the load sensor.

- Error LED. Red color. If on, there is an anomaly in the sensor.
- Alarm LED. Red color. If on, there i san overload in the cage.
- Zero/Tara LED. Orange color. If on, the sensor works correctly and the measure is inside a tollerance +15kg -15kg.
- Power LED. Green color. If blinking, there is electrical power to the sensor.

Fig. 3.29

3.20 ELECTRIC CURRENT GENERATOR (OPTIONAL)

Platform is provided with an electric generator, hydraulically actuated by diesel engine exclusively, deliverying 1 kW-220V single phase el.curent to the aerial cage.
Electric generator is put in action from aerial cage panel (Fig. 3.7 pos. 3), when diesel engine runs, platform is stabilized and selecting key rotated on “cage” position.
Nevertheless, for economy reasons, it is advisable to actuate the el. generator only when it is strictly necessary.
Weekly check of the differential magnetothermic relay is recommended (life saver Fig. 3.3); drive the generator, push the test button and verify that el.current does not arrive at the plug on the cage.
In case of an electricity lost and differential intervention, make the electric system controlled by a skilled person.

 Use exclusively tools and projectors in conformity with electric standards and in good conditions. (In alternative use the proper individual protection devices)

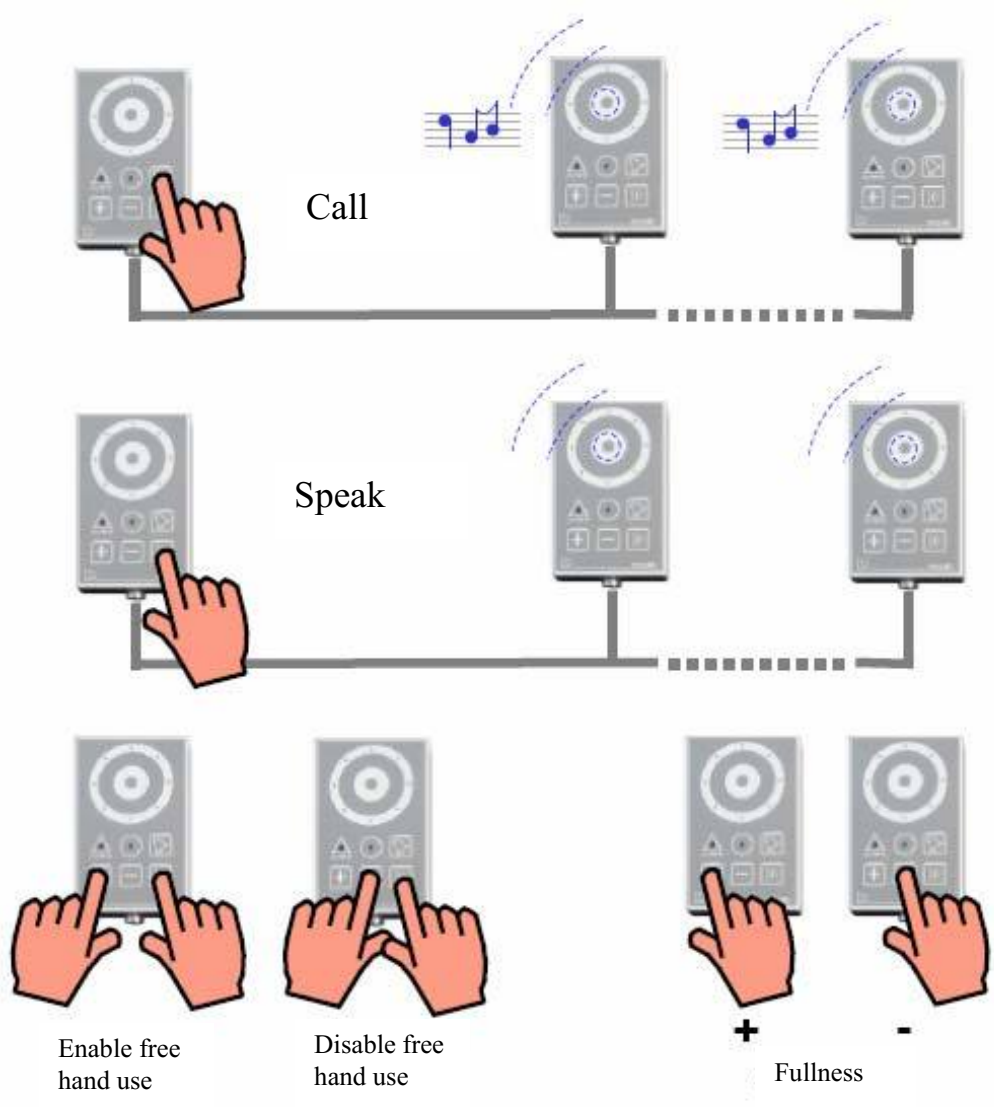
3.21 INTERCOM (OPTIONAL)
It is possible to comunicate to the persons on the cage with the intercom.

SKYTALK is the industrial intercom water resistant for external use.

easytalk

INTERCOM FOR AEREAL WORK PLATFORMS

USE MANUAL



A warning alarm disabile		the conversation
To answer it's enought push the button 		

3.22 CHECK-UP (FROM GROUND PANELS)

Especially after a period of inactivity, platform needs a check-up before working :

Check up list:

- when you turn the starting key of diesel engine, legs' flashing lights must be on (Fig. 3.13)
- these lights must be off when legs are lowered in pressure on the ground
- the green light on the turntable is on (Fig. 3.17)
- lift the boom until this green light on the turntable is switched off, descent until it switch on again, rotate the turntable slightly until the green light switches off.
- Hoist the boom till the green lamp of rest position is off and try to raise the legs (it must be impossible !!) If the stabilisers move do not use the machine and bring it to an authorised workshop or to the manufacturer)
- open the jib slightly and extend the boom until it stops when the red light on the manoeuvre panel and on one of the two stabilisers from the opposite boom position side (Fig. 3.13) switches on
- try now to lift the boom slightly and than lower it (if the red light is still on this manouvre must be possible)
- check that the red light on the manoeuvre panel remains on together with the green light near it
- check the correct working of : emergency stop push-buttons

3.23 CHECK-UP (FROM CAGE PANEL)

Verify the correct working of all controls and warning lights of cage control panel and, also that aerial cage is correctly screwed on its support:

- test all above mentioned movements
- extend the telescopic until the red light switches on (fig. 3.7 pos. 8)
- start generator and also verify the light on the selector
- check the impossibility to make the rotation, boom descent and telescopic extentions manoeuvres, when the red light is ona (Fig. 3.7 pos. 8)
- verify the cage rotation
- verify the emergency STOP. Make a manoeuvre and push the stop button. On the contrary do not use the machine and contact an authorised workshop
- verify the start device
- Connect external line on one of electric plugs of the platform and verify that el. motor runs when STOP push button is released, also check that el.motor stop, when diesel engine start
- Check that the booms extension chains and their relative electric micro contacts on the first boom are integral
- Check if the load limiting device is functioning by loading (with the boom in horizontal position and the cage close to the ground) kg 240 or more and verifying the blinking red light, the acoustic alarm and the stopping of all movements of the booms.

3.24 SPECIAL DIRECTIONS

Transport

The machine has a modest transfer speed, therefore the transfering on working site must be done on truck.
The machine can be loaded with the boom above the cabin if the truck is not equipped with a crane, pallet holder or protection nets, or with the boom toward the back.
In this case put the indication of leaning loads from on the boom extremity.
Transport shoud be on a truck equipped for this purpose, because the platform is equipped with connections corresponding to the truck ones and this keep the fixing time shorter and the transport safer (Fig. 3.32)
Put tensers to these connections and fix them to the truck.

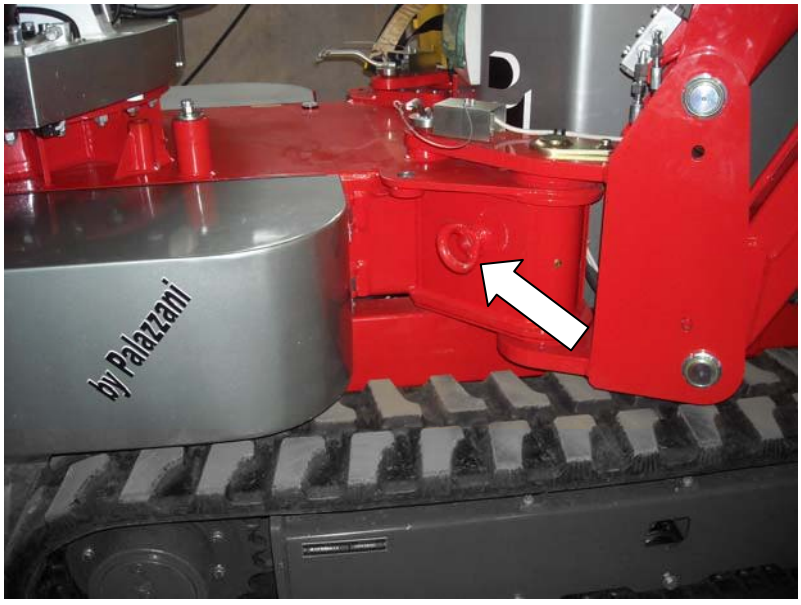


Fig. 3.32

Starting in rigid climate conditions

In favourable climate conditions act with a special procedure, most of all in first engine starting.

- start diesel engine and let it run almost 5'; in case of engine stop, wait almost 30 sec. before re-starting, due to the presence of a protecting timer
- after this time, accelerate at max selecting on “rabbit” and transfering for 1 minute

- control first movements at a slow speed and let engine run, in order to have hydraulic oil at a right temperature
- leave the engine turning for the first 15 min even if the aerial work does not requires it
- till hydraulic oil has not reached a right temperature, irregular speed movements are possible

Driving on a slope

In case of slope grounds, first select the slow speed "snail" and observe the following:

- keep the booms extremities towards the slope
- when driving on a slope, it is recommended to pre-select slow speed and cage side of the platform must be always up-hill positioned
- when driving on irregular ground it is recommended to lower stabilizing legs near the ground (30 cms. approx.)
- it is also recommended to take the boom as low as possible
- platform must be driven from a safe side position (not before or behind)

Lights

For night working or in few lighted sites, use the electric socket on the cage to light a lamp max 60W a 220v c.a.

Lifted by crane

For loading the platform on a truck, it is possible to use a crane.
In this case:

- be sure that the stabilisers are completely retracted
- use the fixing rings onthe stabilisers to attach the machine to the crane with four independent ropes

 Use lifting equipment, i.e. ropes, with proper sections for lifting and check that the crane loading is proper with the total platform weight indicated in the turntable.

Self-loading on truck (if possible)

The machine complete of original carriage can be loaded by itself on the truck with the following procedure:

- place the machine on a flat ground (if it's possible) and in any case in a not very difficult ground considering also the space for the truck
- put the outriggers supports in the position of central hole or in a sufficient position for the following truck passage.
- if the truck is very high, extract the manual extensions of the outriggers to second or third hole and put again the blocking pins (Fig. 3.33)

Fig. 3.33

⚠ These manual extensions of the outriggers must be used only for the loading on truck.
It is forbidden to move the boom while working with these extensions. **They mustn't** be used to enlarge the placement base nor to increase the working height of machines.

- put the carriage with proper rolls under the plates (Fig. 3.34)
- lift completely the machine, moving alternatively the two front and rear stabilisers. Always lift the two front stabilisers first, and then to balance with the rear ones until the cylinders course is finished. (Fig. 3.35)

Fig. 3.34

Fig. 3.35

 During loading/unloading phase from the truck, you **must** mount the proper roll carriages on the extensions if they are extended.
On the contrary you **must not** mount the roll carriages during normal placements for lifting working.

- move the truck as to place the load area under the machine
- retract the outriggers as to place the chassis on the supports and on the area itself
- fix the machine
- recover the carriages

3.25 DIAGNOSTIC

On the machine is fitted a touch screen interactive display located on the main electrical box (Fig. 3.36), and it's function is to monitoring the work cycle of the machine.

Additional the monitor has a diagnostic function.

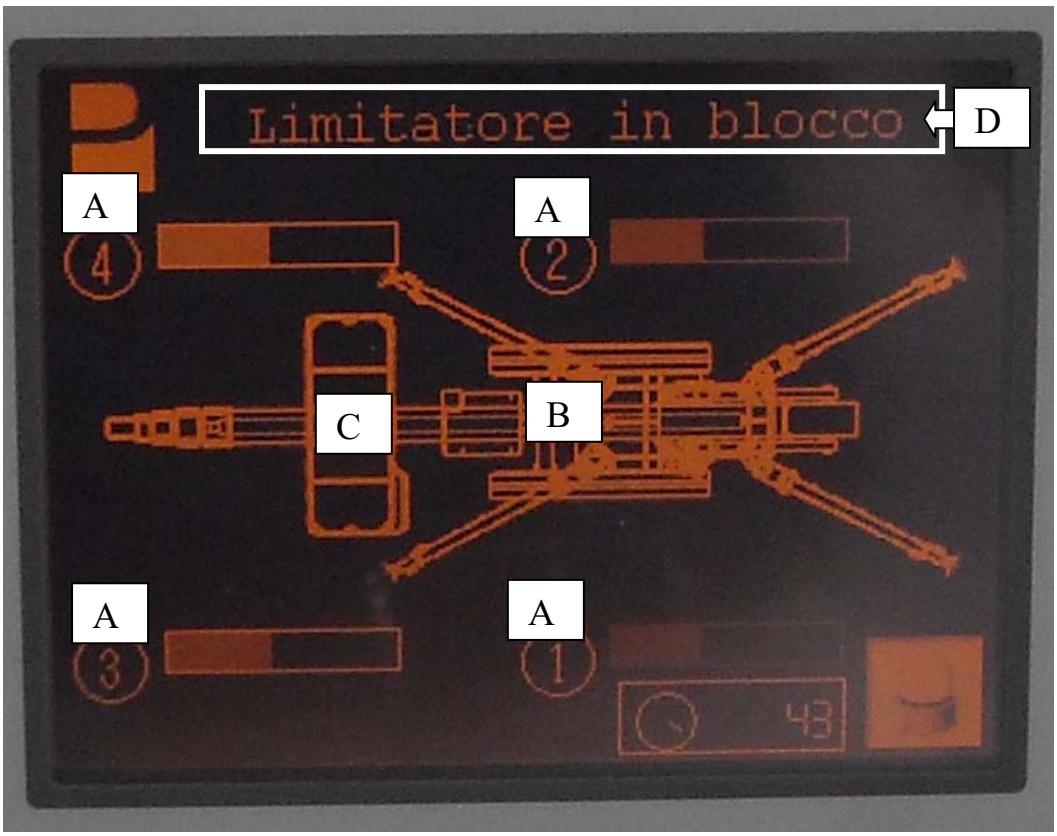


Fig. 3.36

Touching the area A it's possible to read the instantaneous value of the pressure on the pertinent stabilizer. The number is not indicative of a force or pressure, but it's only a value given from the sensor and it's range is between 1000 and 25000 (when the load is maximum).

Since on every stabilizer there are two sensor, for redundancy, touching the area A it's possible to read the channel "a" and the channel "b"; if the difference of the two value is over 1000, the machine stop because some sensor has a problem.

Touching the area B, it's possible to view the value of the sensors, channel "a" and "b", of the four stabilizer on the same page.

Touching the area C, it's possible to view the parameters setted by Palazzani for the control of the sensor. For details of this value, contact the service department of

the Palazzani Industrie S.p.A.

In the area D it's possible to view the diagnostic messages; following a short description:

- Potentiometer 1a breakdown: it is displayed when the potentiometer exceede the min or max setted value. During booms working, it stops also movements which are controlled by the moment limitator. During transfer the movement is not stopped and only the message is displayed
- Potentiometer 2a breakdown: idem
- Potentiometer 3a breakdown: idem
- Potentiometer 4a breakdown: idem
- Potentiometer 1b breakdown: idem
- Potentiometer 2b breakdown: idem
- Potentiometer 3b breakdown: idem
- Potentiometer 4b breakdown: idem
- Selfpropelling interlock: it is displayed when the stabilizers are not layed on the ground and key selector is switched on "transfer" (and no allarm messages are displayed)
- Stabilizer interlock: it is displayed when at least one stabilizer touches the ground and the key selector is switched on transfer (the transfer is blocked)
- Uncorrect levelling of 2°: it is displayed if the machine is wrongly placed and it doesn't allow the booms movements. If the machine goes to an uncorrect levelling during working, only the message is displayed.
- Stabilizer pin not engaged: it is displayed during the positioning if a pin is not inserted. It blocks the stabilizers movement
- Articulation pin not engaged of 120°: it is displayed after the machine positioning if all stabilizers in working position are not open and it doesn't allow the booms movement
- Area manager temporarily blocking: it is displayed it is displayed during the normal blocking of the limitator (it turns on when the machine returns in the allowed area). The message remains displayed if an area transfer end of stroke is defeated
- Area manager permanently blocking: it is displayed if a limitator relay is blocked or if a potentiometer has not the alligned values (the locking limitator remains in fuction)
- Wide area: it is displayed after having placed teh stabilizers correctly and switched the key selector on boom position
- Medium area: it is displayed after wide area (and there are no allarm messages)
- Narrow area: it is displayed after medium area (and there are no allarm messages)

CHAP. 4 ANOMALOUS WORK CONDITIONS

4.1 IMPROPER USE

- If not explicitly indicated by the customer, it is forbidden to use the platform as a crane, with or without the aerial cage
- The strains induced to the frame due to the weigh lifting may cause serious damage to the parts and affect the arms stability itself or the chains endurance.
- It is forbidden to drive the platform, if the boom is not lowered on its rest position. The machine stability may be seriously affected.
- The same is for the arm maneuvers without placing the stabilizers.
- Any modification of the speed of the movements is forbidden
- It is forbidden to mount on the aerial cage, or along the boom any superstructure increasing the resistence to the wind
- In case of using the equipment this way, place the machine with the square base and let the extensions re-enter for at least 1 mt. each.
- It is forbidden to extend the telescopic section of the legs, for the stabilization of the platform (it can be extended exclusively for loading/unloading operations)
- It is forbidden to stabilize the platform on the holes indicated for the rest position of the legs (rest hole).
- The contact area may result too small and the machine stability to overturning may not be guaranteed.
- The machine, during this forbidden operation, does not allow arms maneuvers, also when the placement is done.

4.2 ANOMALOUS CONDITIONS

- Outcoming the area automatic limits is severely forbidden.
- Manual intervention on the hydraulic controls (by-passing the safety devices) is allowed exclusively for an intervention in emergency – **it is forbidden** to follow this procedure for an increase of the performances of the platform
- In case of a failure in the electric plant, the emergency operations will allow every maneuver (see the chapter about the emergency operations).platform must be directly controlled by the operator on the aerial cage – operation from the ground is admitted only for particular situations and for emergency interventions (maintenance interventions, machine resetting, staff education, short use with an assistant previously authorized by the boss, when persons

not prepared are present in the cage).

4.3 CRITICAL CONDITIONS

- When the expanding of the tracks is provided, always maneuver with extended tracks and shrink them when maneuvering on plain terrain only, for trepassing narrow passages.
- lower the outriggers near the ground, when the the platform is driven on irregular ground, with important side slopes (15-20%).
- driving on a slope, the cage side of the platform must be up-hill positioned
- when the platform is stabilized on a garage slope, it is advisable to place wooden boards under the lower legs, avoiding any sliding possibility; make sure that the machine does not slip and operate oblique or upward.

CHAP. 5 EMERGENCY CONDITIONS

5.1 DEFINITION

Intervention under emergency conditions is the recovery of the personnel blocked on the cage in aerial position, for a sudden illness, or for a breakdown.
The reasons for a recovery can be of two kinds:

- illness of the people driving the cage
- machine damage, due to a lack of the engine power, settling of the pumps, battery or flexible pipes damage, electric failures.

In this last case, the persons on the platform may have become unable to move but can use the emergency devices placed near them.
Any other emergency situation (fire, earthquake, etc.) is not considered, as the machine is not designed for fire-fighting and for rescue service.
Time of the recovery operations is not necessarily short

5.2 INTERVENTIONS UNDER EMERGENCY CONDITIONS

The platform is provided with safety devices protectiong the personnel during the normal work and also allowing the recovery in case of a possible breakdown
Main emergency devices consist of :
dual power source, dual control stations, emergency stop push buttons, interphonic communication system, supplementary hand pump, direct control of electro-distributor valves.

1 Procedures to follow in emergency

Platform is provided with several devices for aerial cage recovery. Therefore, it is recommended to follow these directions, avoiding operators descent by cables, along the boom, etc.

THAT IS VERY DANGEROUS!!!

In case the operator on the aerial cage is seized by a sudden illness, before touching the platform, be sure that boom or cage are not in contact with live electric lines.

DON'T TOUCH THE PLATFORM, ALSO FOR PERSONS AT GROUND THERE IS A SERIOUS ELECTROCUTION HAZARD
When the emergency caused by a breakdown is finished, platform must be submitted to a check-up by a specialist.

2 Hydraulic power

In case of a breakdown of diesel engine, it is recommended to connect the electric

motor to a feeding line, so operators have an alternative power source at their disposal also in emergency; on the contrary, in absence of electric energy, the power source can be replaced with the starting of the diesel engine

In both cases the work can continue and all safety devices are regularly working

3 Controls

Turning the selecting key on turntable symbol, assistant can operate any movement for normal aerial work, or for re-entry in emergency, from the ground control panel.
In this case, all safety devices are regularly working

4 Emergency stop

Emergency red push button is mounted on all control stations and, when pressed, it allows to stop the energy source activated at that moment.
Push-button is of self-retaining type and permanently cuts re-starting system from any control station if it has not been re-set by rotation
If you do not succeed in starting the diesel or the electric engine, check whether one of these “stop” buttons has been left stuck down or not.

6 Electropump for emergency (optional)

In case of failure or impossibility to use the service pumps, it is possible to intervent, in order to recover people, onto the emergency elecric pump connected to the equipment batteries.
Push the STOP button on the panel and act on the control levers
Is fed by the batteries of the diesel engine and, for overheating problems, can be activated for cycles of 3’ with a pause of 15’

 WARNING this electropump is to be used exclusively for recovery in emergency

5.3 RECOVERY OF THE PERSONNEL ON THE AERIAL CAGE

Machine working in order.

It is possible to recovery personnel on the aerial cage acting on the ground controls: turn key (Fig. 3.2 pos. 1) on turntable symbol and operate by the remote control; in this case you can working because all the safety devices work regularly

Anomaly to the electric plant

In case of motor and pump doesn't run, it is impossible to act on ground control panels, or there is an anomaly to the electric plant.
To lower the aerial cage on ground, act as follow:

- Inside to the turntable, uncover in lead and unscrew the blue cap of the valve marked with EV09 (fig. 5.1 part.1) and EV23 (Fig.5.2), push the cursor and rotate in clockwise and lock in that position.
- Open the cover of Fig. 5.3

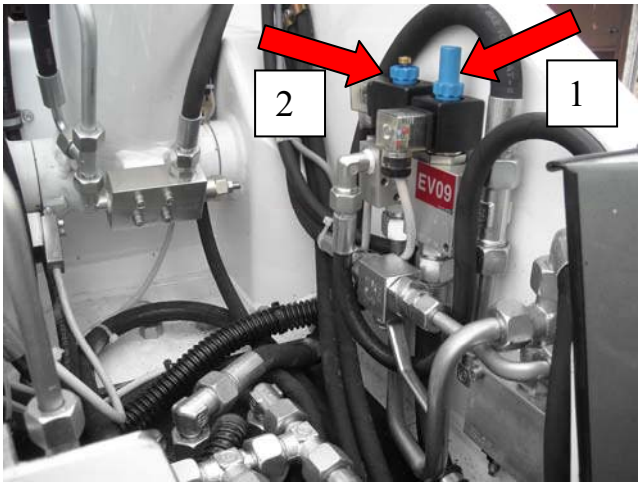


Fig. 5.1

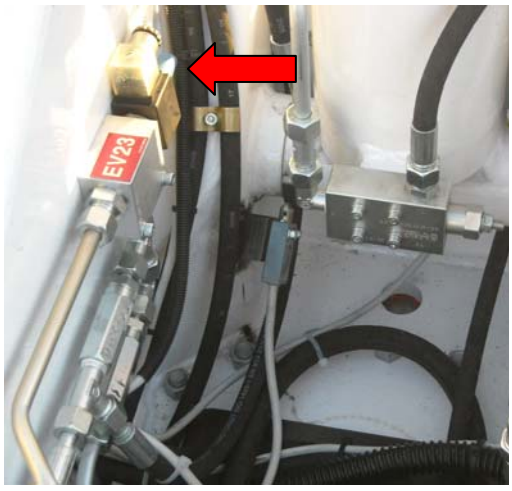


Fig. 5.2

- ***Telescopic boom in***. By means the lever 1 of Fig. 5.4 activate the boom in (see the label).
- ***Lowering main boom.*** Once the telescopic boom is total in, with the lever 2 of Fi. 5.4 activate the lowering boom (see the label) until the cage is on the ground.
- ***Attention!*** During the lowering boom, the cage not levelling automatically but it's necessary to do this manually as follow: push the button of the valve in the turntable marked with EV10(Fig. 5.1 part. 2) and at same time, the person on the cage has to push the centre of the valve of Fig. 5.5 from one side or other until the cage floor is horizontal. Execute alternatively the cage levelling and boom lowering.

Fig. 5.3

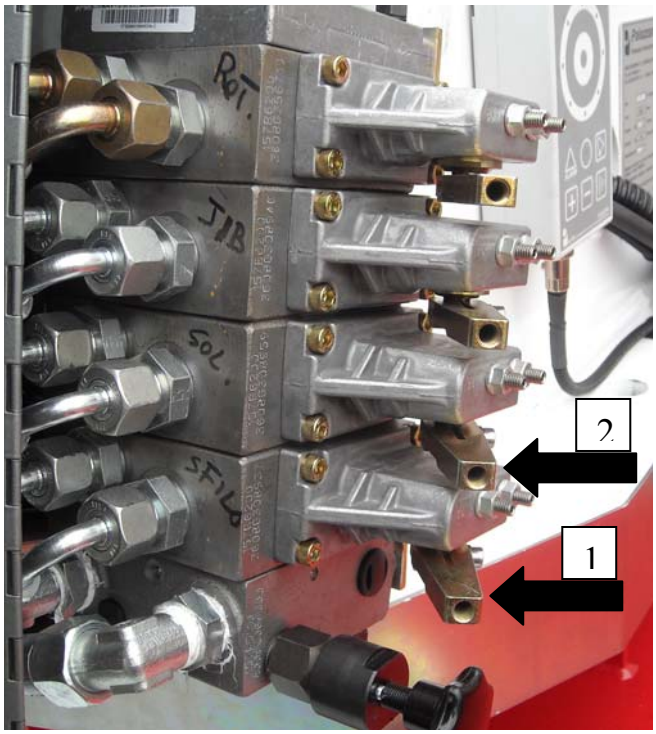


Fig. 5.4

Fig. 5.5

Safety devices are excluded when you act on the hand pump – therefore, recovery interventions must be executed exclusively by specialized personnel, authorized by the employer

In any case, telescopic extension and rotation of the boom must be avoided

⚠ Warning! Once the operation has been completed, inform the responsible personnel so that they control the machine, also informing about how the machine has been used and in which conditions the failure has occured.

⚠ Warning! The uncovering in lead of the valves (fig 5.1 and fig 5.2) is to be justified on the register in the Manual that comes with the machine and the valves are to be unclamped and re-covered in lead before restarting the machine.
Any tampering that is not justified makes the discharges the producer's responsibility.

Recovery by hand pump

In case of a total breakdown including engine and el.motors, it is necessary to generate the hydraulic power by means of the hand pump

Fig. 5.6

The use of the pump is only possible when first closing the “piloting exclusion” wheel (fig 5.6), and by using its proper lever of the pump (Fig. 5.7).
The manual pump is an alternative pump, though it is small and hard to use.
Once the wheel has been closed, in order to recover the cage you only need to follow all the instructions in the previous paragraph (Anomaly in the electric plant), with the difference that now you use the manual pump Fig. 5.7 as source of energy.

Fig. 5.7

5.4 STABILIZER LIFTING

When the boom is completely leaned and retracted, it is possible to hoist the stabilizing legs acting a.f. :

This operation is not included in the emergency procedures because the arm has to be laid down already and the people kept back from the cage; anyway, it may be necessary to close the stabilizers for loading onto a lorry.

Recovery has to be executed following this path

1. start the diesel engine
2. open the cover of Fig. 5.8
3. screw the knob of the valve marked with EV03 and EV06 of Fig. 5.9
4. activate the lever of Fig. 5.10 of the hydraulic distributor side “stabilizer” and at the same time push the centre of the valve of the stabilizers in the cover of the left side of the machine (from EV11 to EV14 of Fig. 5.11) one by one.

Fig. 5.8

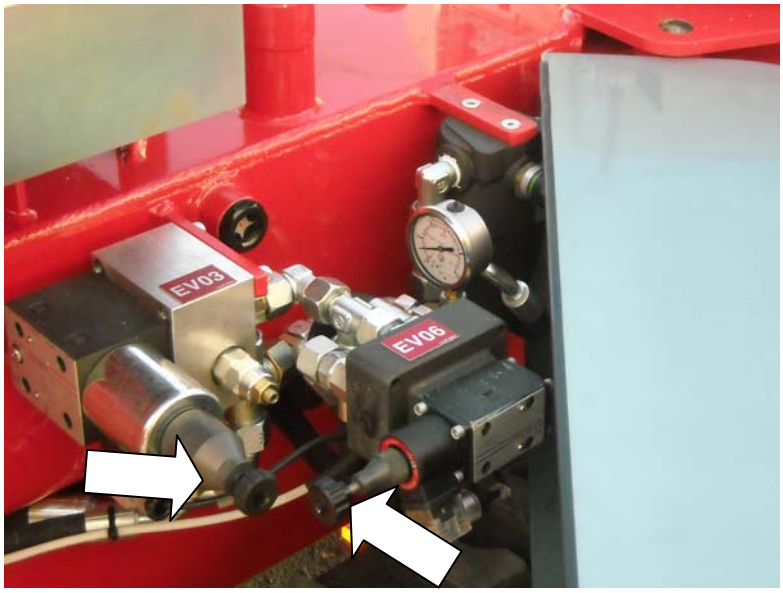


Fig. 5.9

Fig. 5.10

Fig. 5.11

5.5 SELFPROPELLING

This operation is not part of the emergency operations. Anyway it may be necessary to move the machine in order not to obstruct a passage.
Act as follow:

- execute the preview operations until the point 2
- screw the only knob of the valve marked with EV03 of Fig. 5.9 (the knob of the valve EV06 has to be unscrew).
- act on the two control levers (Fig. 5.10) forward and backward

5.6 FIRST BREAKDOWN SHOOTING FOR OPERATORS

 IN CASE OF ANY IRREGULARITY IN WORKING, IMMEDIATELY RECOVER THE PLATFORM AND ASK FOR A TECHNICAL INTERVENTION

If diesel engine, or A.C.el. motor does not start, check that:

- electric line is live
- switch on electric case cover is rotated on pos. 1
- the level of the fuel
- the charge of the batteries
- general key on main control desk is turned on pos. 1
- emergency stop push-buttons are re-set
- an additive is needed in the diesel oil in case of low temperatures
- all the el. switches are on ON position

If selfpropelling does not work, verify that:

- selecting key on ground control panel is rotated on "turntable" symbol
- all legs are not in pressure on the ground
- there is no oil leakage or damaged component

Cosa controllare se le manovre si effettuano con sobbalzi e non con moto uniforme; verificare che:

- nel caso delle prolunghe che queste siano ingrassate
- che a macchina tutta chiusa il livello olio nel serbatoio sia regolare
- se è stato aperto il circuito per una qualunque riparazione è necessario spurgare l'aria effettuando tutte le manovre fino a fine corsa per un paio di volte cominciando dagli stabilizzatori.

If aerial work movements do not work, verify that:

- control panel has been selected to the ground
- red lamp on control panel is off
- hydraulic oil level is regular
- turntable locking pin has been taken away
- one pin of the legs suppors is not insert

In case of vibrations or irregular movements, verify that:

- telescopic boom sections are greased
- the chains of the booms are regularly tensed and hydraulic oil level is regular
- after a repair intervention, the presence of air is possible in the hydraulic system - in this case, it is recommended to make two complete movements sequences, to end stroke, starting from stabilizing legs

5.7 TRAILING

Platform trailing is not admitted, and so it is forbidden.
The machine has to move at low speed, not only because of its low levels of power, but also because of its high centre of gravity, its narrow support area and the lack of elastic suspensions.

CHAP. 6° MAINTENANCE AND CHECK-UP

Foreword

It is recommended that the maintenance is carried out by personnel, which:
- is specifically prepared,
- knows the manual
- is authorized by the boss
- intervents only following the producer's guidelines

Any intervention has to be carried out by:
- a producer authorized workshop
- experienced personnel instructed by the producer.

 Always ask the producer when complex interventions are needed.

6.1. ORDINARY MAINTENANCE - GENERAL INFORMATION

Advise for a correct maintenance, which guarantees long life performance:

- place the machine on plain ground.
- take the key off or attach a sign saying “do not start the engine”
- always clean the working area before opening the engine or the hydraulic system.
- do not open a circuit or an engine in presence of contaminating fluids
- never leave the engine or parts open longer than necessary for reparation and keep them safe from powder and rain
- only use lubrificants specificated by the producer
- keep track of any recommendation by the operators, in order to check any disorder, also to avoid more serious damage.
- Do not use the equipment in case it has not been repaired completely or all the safeties are not operational
- The personnel assigned to maintenance must know this manual and must wear protection clothes and devices

- Do not allow reparations by personnel which has not been authorized by the producer.
- Do not use spare parts different from the original, in this way producer's responsibility decays.
- Do not use this equipment for different purposes, as who does it, becomes its producer.
- Do not apply mods to the machine (bigger cage, longer hand extension, more powerful engine, highest speed of work, etc.) because also in this case, who does it, becomes its producer with all the responsibility that follow.
- Respect the programmed repair terms and keep track of them on the register
- Keep track of any failure on the register and any reparation intervention

6.2. HYDRAULIC OILS FEATURES

The oils used in this equipment are:

Hydraulic system	BP ENERGOL HLP – HM 46
Reducers/Bridges	FZG 85 W/90
Turntable/Frame Fat	AUTOGREASE MP
Arms fat	NILS NILEX EP2

Topping up using different oils is allows but not recommended.

It is suggested that you completely replace the oil with the one you are using for other machines because of saving matters, provided it has similar features.
We do not give names of alternative products because of the constant name changing by other producers.

The features requested for an oil to be suitable are the following:

Hydraulic system	ISO - VG 46
Reducers and bridges	ISO - VG 11,0 ÷ 13,5

6.3. DAILY CHECK

Before starting any intervention, set close the machine, engine off, disconnected from the power source and possibly clean.

A DIRTY MACHINE DOES NOT ALLOW A CORRECT INSPECTION.

Check:

1. Absence of damage to the equipment due to transport; parts missing or damaged, oil leaks, damaged tyres, disconnected cables
2. The hydraulic oil level, which has to reach the middle of the optic signal when the machine is in transport position
   The engine oil level through the engine stick (see the engine manufacturer manual attached) and the fuel level through the indicator Fig. 6.1

Fig. 6.1

3. The hydraulic oil level in the tank must be half in the optical signal Fig 6.2 when the machine is completely closed (in transport conditions)

Fig. 6.2

4. The integrity of the arms extension chains, and their junction (cup spring, nuts and banking pins)
5. The interlock between stabilizers and arms. When the stabilizers are lifted from the ground, try to commute the key pos. 15 Fig. 3.5 to the turntable symbol and cage symbol and check that in both positions no manoeuvre of the arm can be executed. When the stabilizers are set to the ground, the machine has been levelled and the arms are not in transport position, try to commute the key pos. 15 Fig. 3.5 onto the stabilizer symbol and check that the stabilizers do not move

6. The area limiter works this way:
   - Set the stabilizers into the narrowest hole
   - Using the horizontal arm, on the engine side, unthread the extensions and check the extension is blocked when the area limiter activates; one or both the lights on the stabilizers will turn on. Check now that it is impossible to lower the arm, rotate and unthread.
   - Repeat the previous operation when the arm is taken off opposite to the engine and, when the lights on the stabilizers are on, check that the extension, the lowering and the rotation of the arm are blocked.
7. The emergency arrest buttons are positioned in every command position. By arming the emergency button, every machine movement has becomes disabled.

 It is recommended not to start the machine before checking that the command devices are functioning.
If the machine is used rarely, the check must be done before the machine is started.

6.4. WEEKLY CHECK

The cleaning must be done weekly also to better find liquids leakings or loosened tightening.

- The cleaning must be done at least weekly. When the diesel engine is running, check the hydraulic pressure level, by completely retiring one of the stabilizers and checking if this corresponds to the value shown in chapter 1
- Check the tracks tension. If they're inflected, it is recommended to put them under tension by using a greasing pump (6bar), as shown in Fig. 6.3

Fig. 6.4

- Check the level of the endothermal engine fumes and its noise level.
- Check the batteries and grease their positive pole. The poles must not present encrustations.
- Check the correct manual pump functioning (after having closed the piloting “exclusion wheel”, as described in the chapter about emergency operations it is sufficient to use the pump some seconds without making any movement to check if the pressure increases during the operation.
- Check the instruction plates are legible and not damaged, in contrary case substitute them
- Check that the ground and cage commands are functioning. Using the controls the movement must be correct.
- Grease all the articulations arms, cylinders, stabilizers and the cage. Before applying the greasing pump, clean the greasers and then keep on greasing until the old grease comes out
- Execute all the checks as shown in the previous paragraph

Inform the responsible personnel about any failure encountered.

6.5. QUARTERLY CHECK

The quarterly check must be done when the machine is clean and has to be registered. The operator is recommended to wear gloves, glasses, proper clothes and to have his hair protected.
Pay attention when using compressed air or water under high pressure and check no other people are in that area; it is better that only one person make the ordinary check. If the work has not been completed, leave a sign on the machine in order not to allow its usage.
When opening the hoods from the engine, the batteries and the hydraulic main circuit, be aware of this:

- The noise levels are changed and it is recommended to wear acoustic protections
- The batteries are not covered and so it is recommended not to allow flames or fires near them. It is also recommended to wear glasses
- The temperature in some parts may overcome the ordinary level, thus it is recommended not to touch any part without gloves

It is recommended to execute these operations:

- Check the inspection register to verify the completeness of the previous maintenance operations
- Daily execute all the maintenance operations.
- Grease the telescopic extensions of the arms using a brush
- lubricate chain for the boom extension with a brush (see paragraph 6.12 “maintenance”
- Check the state of the oil in the tank: it must be coloured in light yellow; it must not present foam or look milky because of the presence of water
- Verify the absence of oil leaks or damage to flexible pipes in the articulations of the arms or inside the frame (lift the machine on the stabilizers and look beneath the frame
- Check the oil levels and the amount of hours the thermal engine has been running; therefore execute all the maintenance operations or the needed replacements. Clean the edge of the caps in order not to let powder in
- Check the level of the electrolyte in the batteries
- Inspect the arms next to the pivots or the sliding pads, in order to verify the absence of damages in the joins, maybe caused by crashes or by unusual vibrations
- Put the tracks under tension using the greasing pump (see previous chapter)

- Check the output voltage from the generator on board. While the thermal engine is running, activate the generator using the selector on the control panel in the cage. Open the main command panel (fig 3.2) and measure the voltage between the binding clamps G1 and G2 (fig 6.5). The voltage must be 200V ±10%. If the voltage is higher or lower, set the number of rounds of the thermal engine

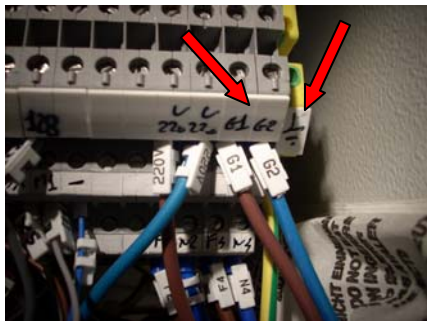


Fig. 6.5

- Using a dynamometrical wrench, check the bolts of the slewing (see the following table)

SCREWING TORQUE TABLE (kgm)											
Screw type		Screw diameter									
ISO	DIN	M 10	M 12	M 14	M 16	M 18	M 20	M 22	M 24	M 27	M 30
8,8	8G	4	7	12	18	26	33	44	57	80	105
10,9	10K	6	8,5	15	22	32	41	53	69	100	127
12,9	12K	8	10	18	26	38	49	63	82	115	150

- Check the oil level in the reducer gear for the cage levelling by means of the special display Fig. 6.6. When the display is in horizontal position, the oil level has to be at the middle. If not refill by means of the dedicate cap (Fig. 6.6).
- Check the play between the reducer and the slewing; set the equipment in work position and execute the boom rotation manoeuvre. Check that when you leave the command, the rotation stops and does not produce strange plays. If you notice any play, it is necessary to set the reducer closer to the slewing. Check the oil level from the visor as shown in fig 6.7; the oil must be visible, if not, top up from the proper cap.

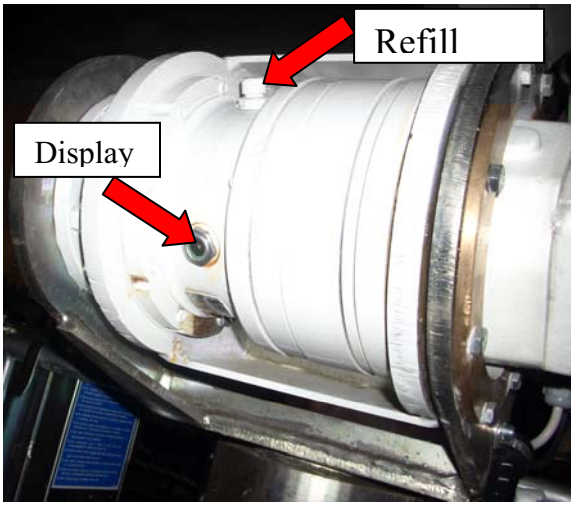


Fig. 6.6

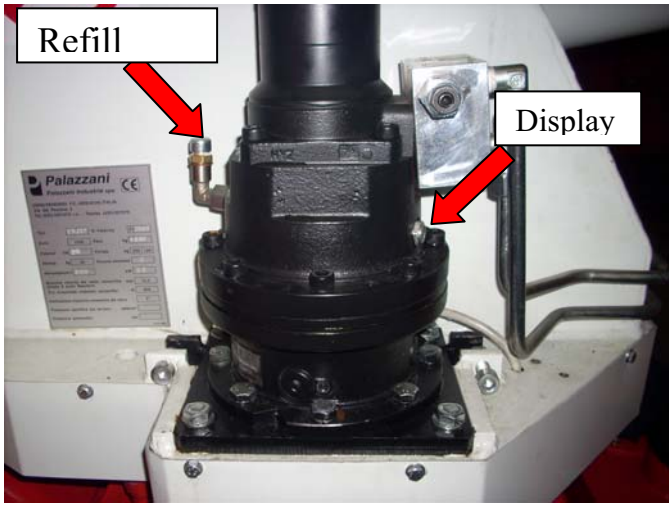


Fig. 6.7

- Check the absence of leaks in the turntable reducer, otherwise top up.
- Execute a functioning test, paying attention to the safety devices and their working conditions.
- Check the microswitch is functioning correctly (stabilizer pivots, chains, turntable centering, resting arm)
- Check the correct functioning of the outreach limiting device in this way:
  - put stabilizers at the first hole (see Fig. 1.2) and, if provided, open the last boom of the stabilizer at max angle, pos. A Fig. 1.2. **Note:** not all the Palazzani machine has the possibility to set the extreme boom of the stabilizer.
  - level the equipment using the stabilizers on a plain ground by lifting the tracks 15/20cm from the ground. Take care the stabilizers are well pressed onto the ground, in order to reach the maximum machine performance.
  - load 200 kg into the cage
  - open the jib and lower the arm in horizontal position
  - while the arm is in horizontal position, unthread the extensions on the engine side until you reach the locking of extension, rotation and arm lowering.
  - now check the distance from the slewing rotation centre to the edge of the cage (R1 of Fig. 6.8) is like the comparative value showed in the following table “max outreach for Ragni” with a max tolerance of 300 mm
  - retire the telescopic booms; rotate the arm to the other side opposite to the engine.
  - while the arm is in horizontal position, unthread the extensions on the engine side until you reach the locking of extension, rotation and arm lowering.
  - now check the distance from the slewing rotation centre to the edge of the cage (R2 of Fig. 6.9) is like the comparative value showed in the following table “max outreach for Ragni” with a max tolerance of 300 mm

WARNING! If you noticed an excessive value regarding the extensions outreach, do not use the machine and ask Palazzani or an authorized workshop.

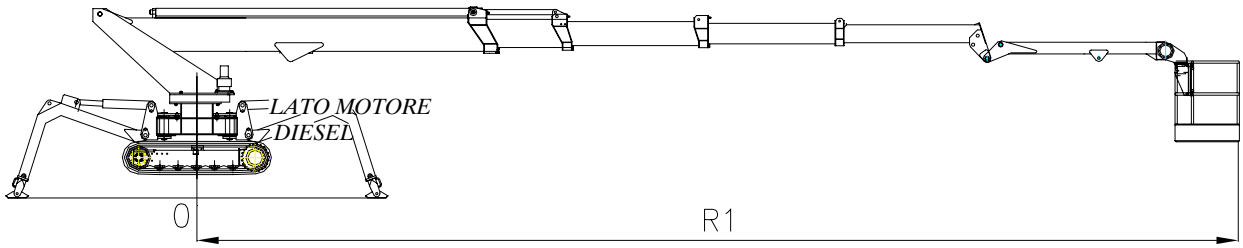


Fig. 6.8

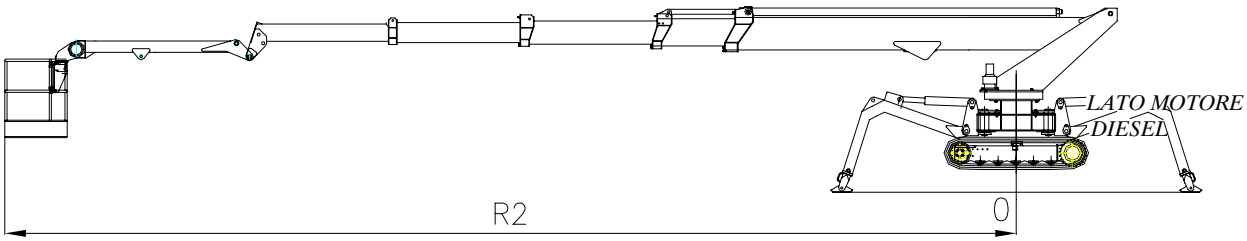


Fig. 6.9

Max outreach for Ragni Palazzani

Model	**Outreach engine side R1 [m]**	**Outreach opposite engine side R2 [m]**
TSJ 23	10	9
TSJ 27	13.5	12.5
TSJ 34	11.3	12.6
TSJ 39	15	15.5
XTJ 32	15	15
XTJ 42	18	18
XTJ 48	18	18

Assembly advice:
The screws have to be lubricated with oil for engines.
In case of assembling with two or more screws, the screwing will have to be progressive and alternated until the proper torque is reached.
If you need to use plain washers, these are to be made of steel and have to be a minimum strenght of 80kg/mmq.
Inform the responsible personnel about any anomalies encountered.

6.6. SIX-MONTH MAINTENANCE

Besides the checks described previously, it is recommended to evaluate the situations and the environment in which the machine has been operating, above all if near the sea, in aggressive environments or if the equipment has been left outside all the time and thus subject to the weather.

- Check if the fluid in the hydraulic system has foam or is dark coloured
- Check the conditions of the extension chain and its usury (see paragraph 6.12) and grease it
- Check the tracks conditions (even if some steel wires are uncovered or damaged, the endurance of the machine is not committed)
- Check the solderings are not rusty
- Check the conditions of the protection paint and, if necessary, fix it, in order to prevent rust formation.
- Check the possible presence of paint blisters on the cylinders and on the arms and make sure it is not because of any structural subsidence
- Set the engine following the proper manual
- check the usury of the chromium plated stems of the cylinders, especially if near the sea
- Once the machine is parked and the engine is not running, check the stabilizers in search of any subsidence; subsidences are not accepted for these cylinders and the replacement must be instantaneous
- Check the signs on the command panels, the instruction plates and the emergency signs and replace the ones damaged
- refill the slewring reducer and the tracks engines
- Clean the arm and stabilizers microswitches
- grease the stabilizers articulation springs.

Inform the responsible personnel of any problem encountered.

6.7. ANNUAL MAINTENANCE

Besides the checks described in the previous section, check the following:
- the chains tension and if necessary set them by acting on the bolts. Fig. 6.10 and 6.11 (for any further detail see paragraph 6.12). Setting the arm in horizontal position, pull out 10 cm and make it go back in. Loosen the upper bolts until the chain is loose and then screw until the chain becomes a little tight.

- Grease the chains and check there is no rust
- Check the plays in the manoeuvres: the arm in the turntable, the cage at the end of the arm, stabilizers over the support plan and between them, turntable.
- Check that the slewing screws are well tightened.
- Check the cage support and the levelling system bearings usury
- Replace the engine oil filters if not done previously following the producer's recommendations.
- Replace the flexible damaged pipes.

Fig. 6.10

Fig. 6.11

Inform the responsible personnel of any problem encountered.

6.8. FOUR-YEAR MAINTENANCE

Besides the recommendations in the previous paragraph, check the extension chains and if damaged, prepare them for replacement.

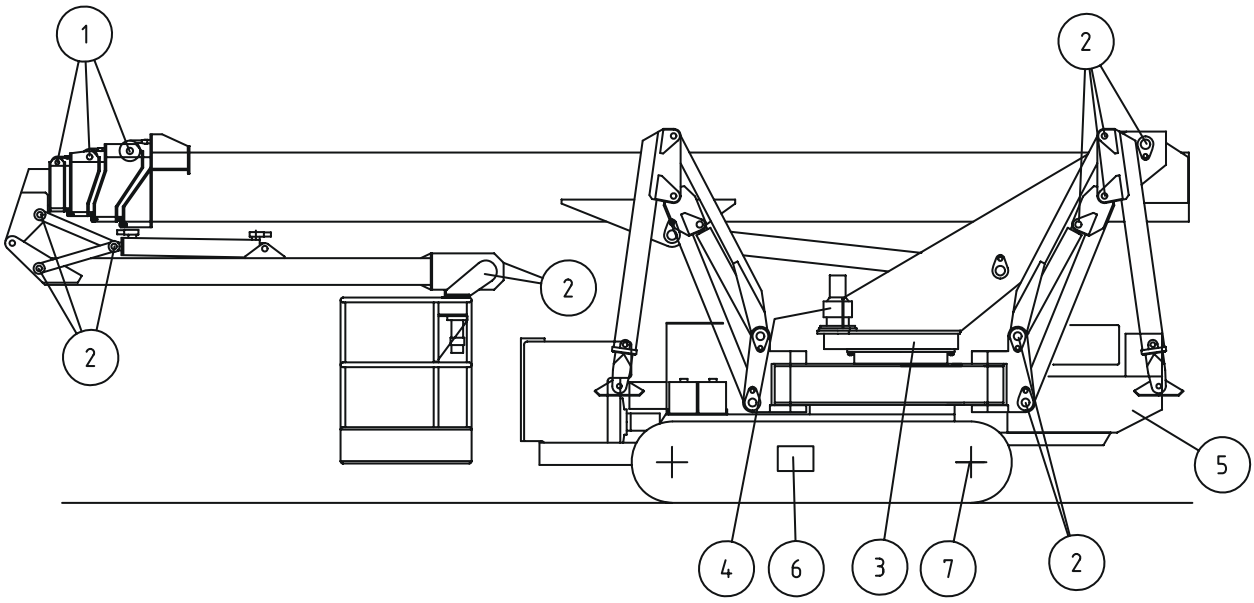
- hydraulic oil replacement
- cylinders resistance and valves check. Put the cylinders under pressure and, after at least 1 hour, check that no subsidence has taken place
- check the cylinders stems surface
- flexible pipes and articulations replacement
- check the command levers on the manoeuvres panel
- check the articulations pivots iron rings
- replace the turntable rotation reducer oil
- Filters replacement (cartridge)
- Dismount and check the chains, particularly the booms connections and the not accessible areas. Substitute the defeated parts if any.

We remind you that these checks are just recommendations.
The operator must inform and the maintenance operator must provide for lubrication, refillments, replacements etc.

Inform the responsible personnel of any problem encountered

6.9. EXTRAORDINARY MAINTENANCE

As described above, in hostile work conditions it may be necessary to anticipate the programmed maintenance operations. For example, the saltiness damages paint, chains, cylinders stems; the wind, when carrying sand, may damage the hydraulic oil or the command panels. It is also recommended not to leave the machine outside for a long time: water may penetrate and damage electric equipment and cause rust formation.
In other situations too the agent must intervent immediately: pump replacement, perforated tyres, damage of flexible pipes, damage of batteries, solderings...
In case of battery damage we recommend the maximum care because the electrolyte is dangerous for people and for the environment.
Wear glasses to avoid squirts into the eyes and wear glasses to avoid skin damage.
Use these protections also when treating oil. The oil acts as human fat solvent and a constant exposition to it may cause dermatitis or serious irritation. In case of any contact with the eyes rinse copiously with water and if the irritation persists, contact a doctor.
Moreover, before manipulating these products, read carefully the producer's recommendations about its usage.
Before soldering, disconnect both the battery poles. Connect the mass onto the element where you have to execute the soldering and **never** onto a hydraulic circuit element.



LUBRICATION SCHEME

1) SLIDING PADS GREASING
Lubricant NILS NILEX EP2

2) VARIOUS PIVOTS GREASING
Lubricant AUTO GREASE MP

3) SLEWRING GREASING
Lubricant AUTO GREASE MP

4) ROTATION REDUCER
Lubricant PONTIAX FZG 85W/90

5) HYDRAULIC OIL TANK
Lubricant BP ENERGOL HLP – HM 46

6) DEVICE FOR PUTTING TRACKS UNDER TENSION
Lubricant AUTO GREASE MP

7) TRACKS ENGINES
Lubricant PONTIAX FZG 85W/90

6.10. HYDRAULIC CIRCUIT CHECK

These are the recommended checks for the hydraulic circuit.

- Oil in the tank: through the level visually
- Diesel engine pumps efficiency: when the engine is running, commute the command key to “stabilizers”, activate a stabilizer until it is completely retired and check that the pressure is within the maximum value shown in chapter 1. When the stabilizers are under pressure, start the generator and check the voltage is 220V + 10%.
- Electric engine pump efficiency. When the engine is running, turn the key onto “stabilizers” and move a stabilizer until it's completely retired; then check the pressure value is within the maximum shown in chapter 1.
- Filters efficiency. Open the engine hood and after a few minutes (10 minutes during the cold season) check the indicators are not on the red.
- Maximum pressure valves. Using the thermal engine and moving the arms until they're completely retired, the manometer should show the maximum value as shown in chap 1.
- Flexible pipes: check if they're not damaged or blistered near the hose fitting, damages in the metalic/textil stranded wire or permanent foldings. The black surface film spealing is not dangerous for the pipe
- Cylinders locking valves. Put the stabilizer cylinders under pressure, after lifting the lifting cylinder, jib open (and then closed): mark the stems with a plaster and measure the distance from a point (as the flange thread) to the plaster. The subsidence allowed is none within 15 minutes, 1mm after an hour.
- Oil leaks: Maximum allowed is few on the stems and on the spiral pipes.

6.11. GENERAL ELECTRIC SYSTEM AND BATTERY RECHARGER CHECK

The machine mounts a rectifier for the battery charge, set in the general electric frame (box1).
This rectifier is automatically fed by the plug (both 220 V or 380 V) for the equipment starting.
Also the diesel engine contributes to the battery charge, when it is running.
Thus, it is necessary to keep the electrolyte level in the batteries checked and keep the positive poles greased.
We've seen that it is fundamental to check the safety devices correct functioning, many of which are electric and may simulate manoeuvre mistakes.
Often, the electric plant check corresponds to the searching for a failure, given that these parts are the most exposed to injuries due to rain, powder, vibrations etc.
The maintenance employee has to be specifically instructed, but above all precise and respectful of the electric parts and their connections.
We remind you some important things.

- The microswitches, the relays, the diode valves and the condensers may be similar but connected each other in different ways. We recommend to replace them with parts that has the same brand and the same code; try to remember the colour of the cables or the terminal numbers not to make connections mistakes
- Do not take off more than one relay at a time, check it and if necessary replace it with an equal one
- The microswitches have a symbol representing a little arrow inside a circle or this **P** . They're just in case of emergency and cannot be replaced with other similar parts which do not have this symbol
- Be careful with NA or NC connections
- Always re-connect the grounding cables and the equipotentiality cables
- The emergency stop buttons must be repaired immediately when a failure is encountered.
- Follow carefully the scheme and do not operate any modification that may damage or commit the entire machine functioning.
- After any intervention check all the machine emergency functions.

N.B. The access to the inside of the electric plant wrappings is recommended to be executed by instructed personnel only.

6.12. CHAIN CHECK

The chain for the boom extension are Fleyer type and for safety factor are fitted in couple with separate link and a device that assure the approximately equal tension on the chains.
The chains need of periodical maintenance.

Maintenance

For proper operation of the chains and moving parts must always be maintain appropriate lubrication conditions.
To lubricate chains, develop your arm horizontally, making sure to support end with a crane with adequate capacity (see Fig. 6.12). In this way the chains Extension are available for maintenance and inspections.

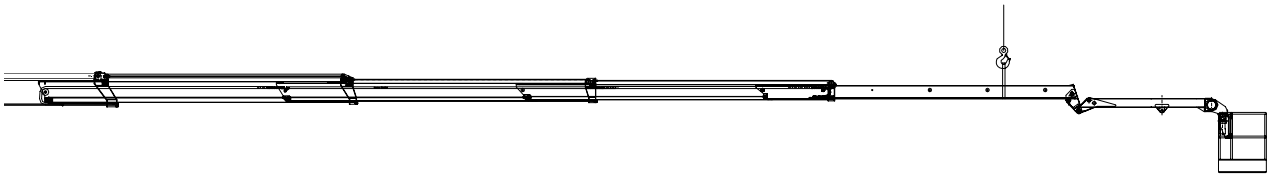


Fig. 6.12

The lubricant has two main tasks: Action anti-friction, protective action.
The lubricant is usually applied brushstrokes on the surface of the plates, it must penetrate inside the plates to reach the area of wear between the pin and hole plates.
If on the chain there are abrasive particles (e.g. sand), before oiling must be carefully cleaned by washing with appropriate solvent. Oiling the chains with dirty indeed push the abrasive material in the joints, triggering phenomena of abrasive wear.
The type of lubricant to use is a normal mineral oil with viscosity about ISO VG 46 – 460. Keep in mind that more viscous oils are suitable for ambient temperatures lower.
An oil very fluid, penetrates in the joints better, but resists less, compared with more viscous lubricants. A compound very viscous contrast, has difficulties to penetrate the joints and thus may not allow the lubricant effect desired.
Perform lubrication every 200 hours or every 12 weeks

Check

For each intervention lubrication must be recorded, if necessary, the chain tensioning system and check for abnormalities of alignment between the chain and pulley system attack. The misalignments are very dangerous because they can induce high Overstressing the chains.

Check for wear elongation

To control the elongation due to wear is necessary to establish a registration form. Since probably will not wear the uniform along the entire length, the measure must be made for features that are appropriately identified. (Break the chain length in 5 sections) Should be recognized that the original measure serves as a reference for subsequent ones and should be kept in mind that all subsequent measurements must be made on the same traits.

After a few measures you can identify which traits are more subject to the phenomenon of wear, and then subsequent measurements can be restricted only to these traits. The measurement can be made or slide gauge long enough or line graph. The reference may be either the head of the pins or the profile of the plate. The maximum elongation is conservatively set at 2%.

Check wear plates Profile

After identifying the length of chain where this phenomenon is more evident, with a gauge should be recognized the actual height of the plate eyelet and compared with the initial one.

They set the limit on the maximum acceptable wear (see Fig. 6.13):

Wear on one side $[(H - H1) / H] \times 100 < 2\%$

Wear on two side $[(H – H2) / H2] \times 100 < 3.5\%$

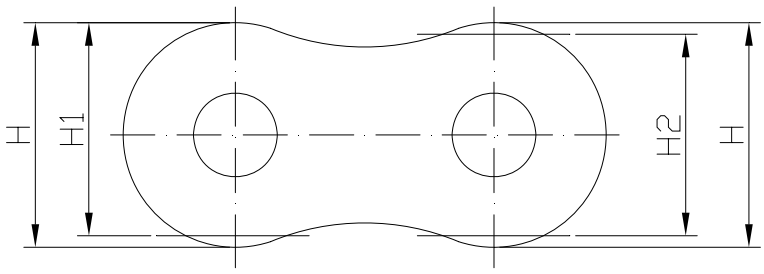


Fig. 6.213

The high specific pressures between the plate and pulleys can cause plates, as well as wear, even consummation of the material on the edge of the plate that can lead to blocked joints. If you encounter locked joints, the chain must be replaced.

Wear on the side chain

This wear is caused by improper interaction with the chain pulleys or guide elements side.

If it is found that consumption over the heads of pins over 25% of the projection of rewriting or on the outside of the plate more than 20% of the thickness (see Fig. 6.14), and the chain must be replaced before applying the new , must be sought the cause of this malfunction.

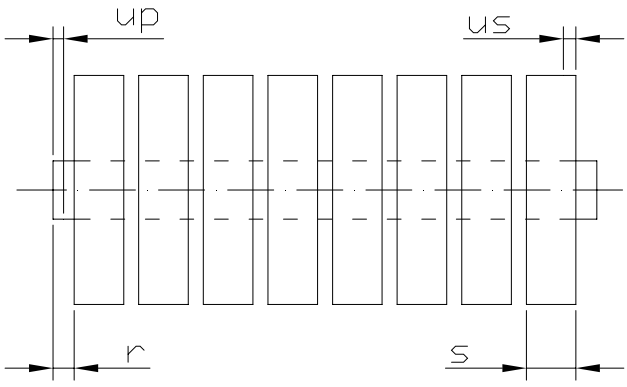


Fig. 6.14

Consumption rate head pin up / r x 100 < 25%
Consumption percentage edge plate us / s x 100 < 20%

These checks should be performed every 3 months.

After four years of the chains must be dismantled and inspected in the attacks on the arm and in areas not normally accessible and, if damaged, replace.

6.13. TRACKS CHECK

If a track is loose or tends to come off, it is necessary to tighten it.
In order to do this it is necessary to take off the two plates which are set on the external side of the base (fig.6.15) using a greasing pump, pump the grease in until the tanks are full.
This operation is even easier if executed when the tracks are lifted from the ground.

Fig. 6.15

6.14 TERMS FOR THE PRODUCER'S CHECKS

In order to guarantee a better performance to the user, it is recommended to have the equipment checked at Palazzani Industrie spa or at one of the authorized workshops within thirty months from the purchase or the last check.
During this check the machine functioning, its safety, its booms, chains and the rest of its parts are tested. A test certificate will be released.
Whether the check shows the necessity of a part to be replaced or fixed, the estimated cost of the operation will be communicated to the user.
If the machine has not been tested in 4 years from its purchase or from the last check, the guarantee will be no more valuable.

CAP. 7° SETTINGS

Some settings are necessary both to keep track of some relevant temperature gaps in comparison to the first calibration and because of the different work conditions in matter of usable space.

CAGE ROTATION: if the cage rotates too slowly or it does not rotate at all, set the two valves opening as shown in fig 7.1.
Mount it all again and check the correct cage rotation speed.
Rimontare il tutto e verificare la corretta velocità di rotazione della navicella.

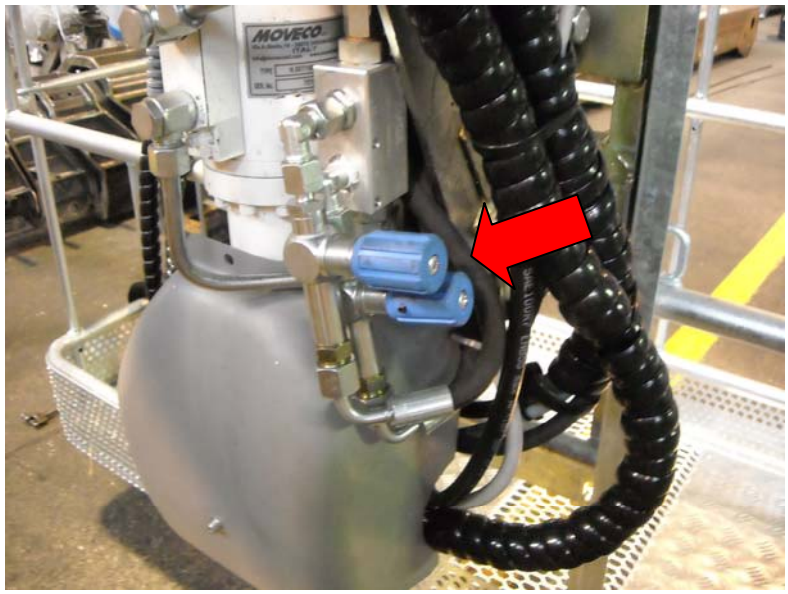


Fig. 7.1

EXTENSION CHAINS: if the extension chains are loose, you must screw the auto-locking bolt (6.9) without using further extensions, until they're tight. Straighten the chains (6.10).

JIB ARM: if maneuver is not available, specially after a long period of inactivity, it is necessary to set the locking valves by acting as shown in fig 7.2 and 7.3;
Take off the valves cap and then rotate the grub screw by using a key. By rotating counter-clockwise, the valve opens and the maneuver is speeded up; if rotating clockwise the maneuver is slowed down.

Warning: if the jib cannot be lifted, it is necessary to loosen the valve set on the chromed stem side; if the jib cannot be lowered down, use the other valve.

Fig. 7.2

Fig. 7.3

LIFTING ARM: in case of hard vibrations when the oil is already hot, while moving the boom, it is recommended to intervent on the overcenter valve mounted on the lifting cylinder bottom.

- screw by a 1/8 round (fig. 7.4)

Fig. 7.4

TURNTABLE ROTATION: If the turntable rotates vibrating or jumping, act on the locking valve (fig 7.5) as shown in the lifting boom paragraph.

Fig. 7.5

STABILIZERS: the stabilizer setting can be chosen in function of the work area. Their regulation concerns their position in respect to the frame.
Fig. 7.6 shows three work holes.
The rest position does not allow using the arm and it is thus to be used only for

transporting in narrow spaces.
The other four possibilities are all usable (the most external hole in the frame limits consistently the work area and thus it is to be used when the work area is narrow).
It is obvious that if the positions chose are symmetrical the machine will operate at the same distance in both sides.
Forgetting to insert a locking pivot does not allow to use the boom

Fig. 7.6

CHAP 8 PLATFORM ASSIGNEMNT

It is remembered that in case of a next sale, the seller has the responsability of the manufacturer, towards the new owner, if he has modified the platform.

Therefore, the platform must be delivered in its original execution and in a perfect efficiency, as regards: safety devices, control systems and structures integrity.

All warning and directions paltes must be readables perfectly and CE Mark must be evidenced.

Being an integral part of the machine, this Operation and Maintenance Manual and the Conformity Declaration must follow the platform.

The seller must also make a training to the personnel of the new owner, about use and maintenance of the platform.

CHAP. 9 PLATFORM DEMOLITION

Platform is essentially steel made and, therefore, it can be almost totally breaked into iron scraps.

Nevertheless, some components are classified toxic-noxious waste and special waste and they must be treated by specialized companies.

Toxic-noxious waste:	batteries
Special waste:	hose, fiberglass, el. wires and oil of: hydraulic system, engine, reducer-gears, and differential gear group

CHAP. 10 TRAINING COURSES

Use and maintenance of Ragno, platforms require personnel specifically informed about the machine functions, its safety devices and the manoeuvres in emergency.

For this reason, users are invited to partecipate to the one-day training courses organized by Palazzani Industrie S.p.A. and its Distributors and explaining: basic rules for use, periodical maintenance, selfpropelling and stabilizing manoeuvres in critical conditions, interventions in emergency, etc.

CHAP. 11 MAINTENANCE REGISTER

The register is issued by Palazzani Industrie S.p.A. to the owner of Ragno, in accordance with encl. I of the Directive 98/37/CEE and following modifications.

DIRECTIONS FOR PRESERVATION

This register is an integral part of the Operation Manual and it must follow the platform during its life, till to its final demolition.

DIRECTIONS FOR FILLING IN

Following directions are given in accordance with the Directive ruling at the moment of the sale of the platform. New rules can modify the user's obligations.

Following the schemes of the register, all the events concerning the life of the platform must be annotated:

* change of property
* replacement of engine, gear groups, structural elemets, safety devices and their components

important breakdowns and repairs

DELIVERY OF RAGNO ……. TO THE FIRST OWNER

Ragno Mod. …….. Serial nr. …….. Year of manufacture ……
on …… has been delivered by Palazzani Industrie spa to:
…….
……
in conformity with contractual conditions agreeded upon and with tecnical, dimensional and working characteristics described by the operational manual and by the summary of this register

…….

FOLLOWING CHANGE OF PROPERTY

On …… the property of Ragno …… is transferred to:
……
……
……
It is certified that, under this date, technical, dimensional and working characteristics of the platform are exactly corresponding to ones described by the operational manual and that eventual modifications have been annotated on this register.

For the Seller
……..…….

FOLLOWING CHANGE OF PROPERTY

On …… the property of Ragno …… is transferred to:
……
……
……
It is certified that, under this date, technical, dimensional and working characteristics of the platform are exactly corresponding to ones described by the operational manual and that eventual modifications have been annotated on this register.

For the Seller
……..…….

REPLACEMENT OF DIESEL ENGINE / ELECTRIC MOTOR

Date
Manufacturer
kW
replaced with the engine / motor
Serial Nr.
Manufacturer
kW
cause of replacement:
……
……

responsabile fo the replacement

……

REPLACEMENT OF DIESEL ENGINE / ELECTRIC MOTOR

Date
Manufacturer
kW
replaced with the engine / motor
Serial Nr.
Manufacturer
kW
cause of replacement:
……
……

responsabile fo the replacement

……

REPLACEMENT OF GEAR GROUPS

Date
Description of the gear group
…….
Manufacturer ……..
Delivered by ……...
Cause of the replacement
…….
……..…
……..…

REPLACEMENT OF GEAR GROUPS

Date
Description of the gear group
…….
Manufacturer ……..
Delivered by ……...
Cause of the replacement
…….
……..…
……..…

REPLACEMENT OF STRUCTURAL ELEMENTS

Date
Description of the material
…….
Manufacturer ……..
Delivered by ……...
Cause of the replacement
…….
……..…
……..…

REPLACEMENT OF STRUCTURAL ELEMENTS

Date
Description of the material
…….
Manufacturer ……..
Delivered by ……...
Cause of the replacement
…….
……..…
……..…

REPLACEMENT OF SAFETY SYSTEM AND ITS COMPONENTS

Date
Description of the material
…….
Manufacturer ……..
Delivered by ……...
Cause of the replacement
…….
……..…
……..…

REPLACEMENT OF SAFETY SYSTEM AND ITS COMPONENTS

Date
Description of the material
…….
Manufacturer ……..
Delivered by ……...
Cause of the replacement
…….
……..…
……..…

PERIODICAL CHECK-UP

User is obligated to follow the check-up and maintenance program described by the operational manual of the platform.

ITEM	DATE	DESCRIPTION OF THE INTERVENTION	SIGNATURE

RAGNO MOD. ……... SERIAL NR. PT ……

Palazzani

Palazzani Industrie spa

PaLIFT - DIVISION

RAGNO
XTJ 32/C

VERSIONE CINGOLATA-CRAWLER VERSION
EXECUTION SUR CHENILLE

CATALOGO
PARTI DI RICAMBIO

CATALOGUE RECHANGES

SPARE PARTS LIST

NR 081 A 10

RAGNO MOD. ……... SERIAL NR. PT ……

MEMORANDUM FOR THE MAINTENANCE SERVICE

When you ask for spare parts, always specify to the manufacturer the platform model and serial number

Required spare must be located in this book and corresponding table and code numbers must be communicated

Use original spares exclusively and not similar products. It is remembered that the manufacturer responsability can be reduced, or cancelled when the user does not follow the instructions given by the operational manual, or use spare parts not originals or without warranty

Be sure to execute the intervention in a correct way, otherwise apply to Palazzani after sale service

During your intervention, follow all safety rules and use individual protections

No servicing intervention is allowed with persons in aerial cage and with platform in action: firstly, lower the booms, place the platform in a safe position, stop the engine and detach the el.plug

Never modify the original setting values of the platform: engine r.p.m., hydraulic pressures, speeds, valves regulations and throttlers, to increase the performances

Do not change the use for which the platform has been designed

WARNING FOR THE RESPONSIBLE TO EXTRAORDINARY REPARATION AND/OR MAINTENANCE

- The complex interventions of reparation must be carried out by Palazzani Industrie or authorised workshops technical personnel

- After 30 months and after no more than 4 years, the machine must be checked by Palazzani personnel at customer's site, or at Manufacturer's site in case of a most general control, with the appropriate procedure and with registration on the intervention report

- Not important interventions can be carried out by the personnel, authorised by the customer, who have the capacities, instruments and knowledge of the Manufacturers instructions and schemes

In this personal occasion we remind to:

- Verify that the component which must be substituted is conforming to the original one (in case it has been bought from Palazzani or on site)

- Detach the components one by one and substitute it before proceeding with any further detaching (this regards most of all relay, diodes, breakers, end of stroke, electrovalves connectors, flex pipes).

- Memorise the connections before detach the faulty components, in order to reconnect them to the new piece correctly (the diodes have an horizontal line on the cover to indicate the correct position), put insulating sticker on the electrovalves connectors as not to invert their position during the re-connection

- Never forget to make a complete functioning test with particular regards to the safety devices and to the circuit where the components substitution have taken place, before start working with the machine

Tel. ++39 030 6857073 – Fax ++39 030 657079
mailto: info@palazzani.it – www.palazzani.it

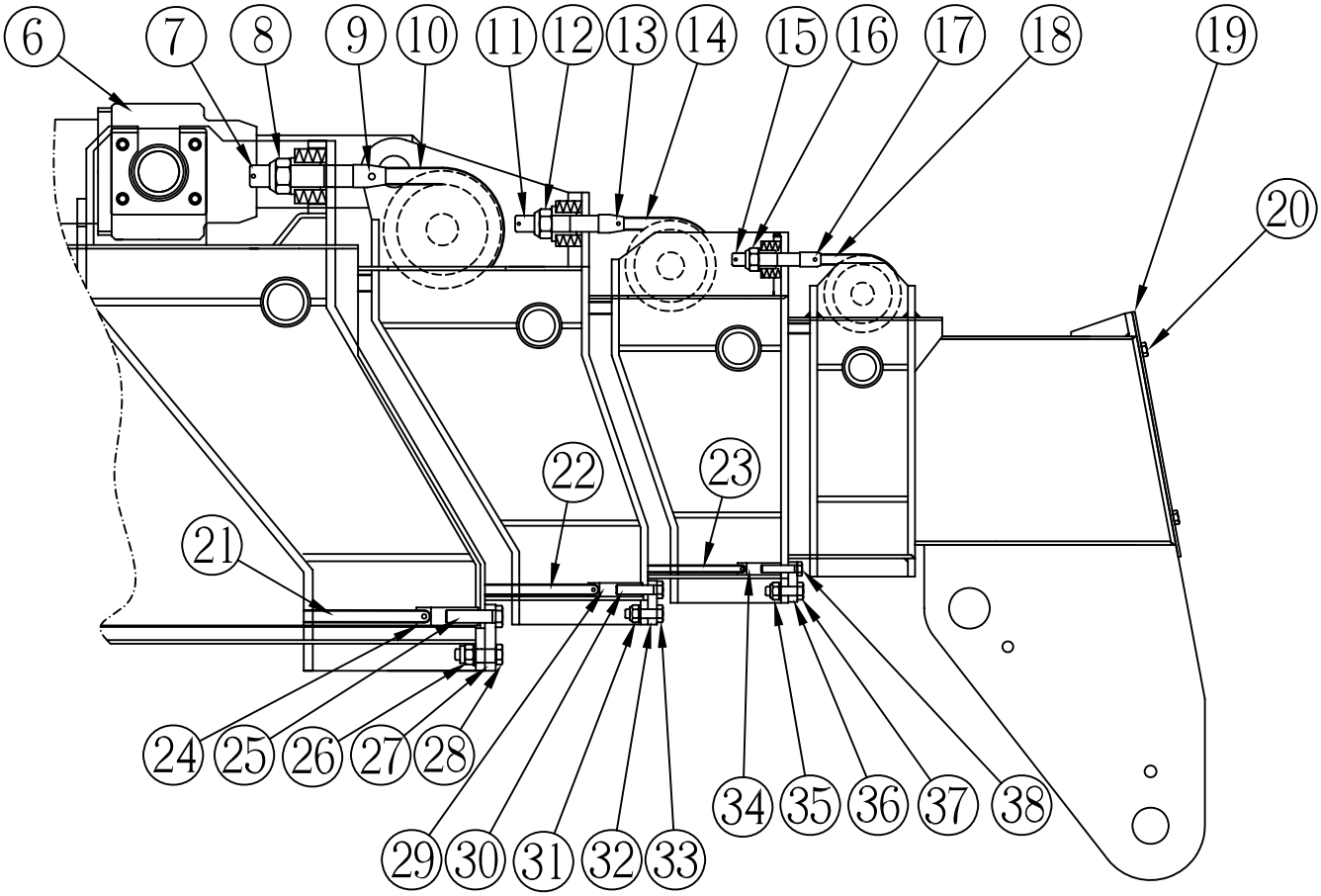
GRUPPO BRACCI			BOOM SET		GROUP DE BRAS
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	05.14.1762	1	BRACCIO SOLLEVAMENTO	LIFTING BOOM	BRAS LEVAGE
2	05.14.1761	1	PRIMO BRACCIO	1° BOOM	1° BRAS
3	05.14.1760	1	SECONDO BRACCIO	2° BOOM	2° BRAS
4	05.14.1759	1	TERZO BRACCIO	3° BOOM	3° BRAS
5	05.14.1758	1	QUARTO BRACCIO	4° BOOM	4° BRAS
6	01.01.0609	1	CILINDRO DI SFILO	EXTENSION RAM	VERIN DE TELESCOPAGE
7	08.14.3072	2	TIRANTE CATENA	ROD	TIRANT
8	19.02.0021	2	DADO	NUT	ECROU
9	07.14.1062	2	PERNO	PIN	AXE
10	55.28.0545	---	CATENA LH 1266	CHAIN	CHAINE
11	08.14.1902	2	TIRANTE CATENA	ROD	TIRANT
12	19.02.0018	2	DADO	NUT	ECROU
13	55.28.0098	2	PERNO	PIN	AXE
14	55.28.0046	---	CATENA UF 1588	CHAIN	CHAINE
15	08.14.2504	2	TIRANTE CATENA	ROD	TIRANT
16	19.02.0016	2	DADO	NUT	ECROU
17	55.28.0571	2	PERNO	PIN	AXE
18	55.28.0563	---	CATENA UF 1266	CHAIN	CHAINE
19	08.14.3076	1	COPERCHIO	LID	COUVERCLE
20	19.01.0003	4	VITE	BOLT	VIS
21	55.28.0056	---	CATENA UF1566	CHAIN	CHAINE
22	55.28.0564	---	CATENA UF1244	CHAIN	CHAINE
23	55.28.0050	---	CATENA UF 944	CHAIN	CHAINE
24	08.14.3037	1	TIRANTE CATENA	ROD	TIRANT

GRUPPO BRACCI			BOOM SET		GROUP DE BRAS
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
25	19.01.0073	2	VITE	BOLT	VIS
26	19.02.0025	3	DADO	NUT	ECROU
27	08.14.3056	1	PIATTO TIRANTE CATENA	SUPPORT	SUPPORT
28	19.01.0053	3	VITE	BOLT	VIS
29	08.14.3089	1	TIRANTE CATENA	ROD	TIRANT
30	19.01.0037	2	VITE	BOLT	VIS
31	19.02.0024	3	DADO	NUT	ECROU
32	08.14.1916	1	PIATTO TIRANTE CATENA	SUPPORT	SUPPORT
33	19.01.0035	3	VITE	BOLT	VIS
34	08.14.2335	1	TIRANTE CATENA	ROD	TIRANT
35	19.02.0024	3	DADO	NUT	ECROU
36	08.14.3035	1	PIATTO TIRANTE CATENA	SUPPORT	SUPPORT
37	19.01.0035	3	VITE	BOLT	VIS
38	19.01.0266	2	VITE	BOLT	VIS
39	08.14.3073	4	VITE	BOLT	VIS
40	08.14.3073	2	FLANGIA	FLANGE	BRIDE
41	55.10.0021	2	COPIGLIA	SPLIT PIN	GOUPILLE
42	08.14.3082	2	BOCCOLA	BUSH	DOUILLE
43	55.13.0029	14	MOLLA A TAZZA	SPRING	RESSORT
44	19.02.0022	1	DADO	NUT	ECROU
45	19.01.0012	1	VITE	BOLT	VIS
46	55.10.0032	2	COPIGLIA	SPLIT PIN	GOUPILLE
47	08.14.1906	2	BOCCOLA	BUSH	DOUILLE
48	55.13.0014	14	MOLLA A TAZZA	SPRING	RESSORT

GRUPPO BRACCI			BOOM SET		GROUP DE BRAS
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
49	19.02.0022	1	DADO	NUT	ECROU
50	19.01.0010	1	VITE	BOLT	VIS
51	55.10.0032	2	COPIGLIA	SPLIT PIN	GOUPILLE
52	08.14.2503	2	BOCCOLA	BUSH	DOUILLE
53	55.13.0030	14	MOLLA A TAZZA	SPRING	RESSORT
54	19.02.0022	1	DADO	NUT	ECROU
55	19.010009	1	VITE	BOLT	VIS
56	08.14.3030	2	PATTINO	LINING	GOUJON
57	19.01.0239	2	VITE	BOLT	VIS
58	08.14.2566	1	PATTINO	LINING	GOUJON
59	55.14.0002	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
60	08.14.3034	2	PATTINO	LINING	GOUJON
61	19.01.0264	2	VITE	BOLT	VIS
62	08.14.3077	1	PATTINO	LINING	GOUJON
63	55.14.0002	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
64	49.02.0072	2	CUSCINETTO	BALL BEARING	ROULEMENT
65	08.14.3121	1	RULLO	ROLLER	ROULEAU
66	08.14.1911	2	DISTANZIALE	SPACER	ENTRETOISE
67	07.14.0933	1	PERNO	PIN	AXE
68	07.14.0932	1	PERNO	PIN	AXE
69	49.02.0070	2	CUSCINETTO	BALL BEARING	ROULEMENT
70	08.14.3122	1	RULLO	ROLLER	ROULEAU
71	08.14.1910	2	DISTANZIALE	SPACER	ENTRETOISE
72	08.14.3119	2	PATTINO	LINING	GOUJON

GRUPPO BRACCI	BOOM SET	GROUP DE BRAS

PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
73	08.14.2577	2	PIATTO FERMAPATTINO	SUPPORT	SUPPORT
74	55.14.0005	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
75	08.14.2333	2	PATTINO	LINING	GOUJON
76	08.14.1972	2	PIATTO FERMAPATTINO	SUPPORT	SUPPORT
77	55.14.0005	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
78	55.14.0002	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
79	19.01.0264	2	VITE	BOLT	VIS
80	08.14.3078	1	PATTINO	LINING	GOUJON
81	08.14.3034	2	PATTINO	LINING	GOUJON
82	08.14.3051	2	PATTINO	LINING	GOUJON
83	08.14.3080	2	PATTINO	LINING	GOUJON
84	19.01.0252	4	VITE	BOLT	VIS
85	55.01.0002	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
86	08.14.3079	2	RULLO	ROLLER	ROULEAU
87	07.14.1134	1	PERNO	PIN	AXE
88	55.07.0071	2	SEEGER	CIRCLIP	ANNEAU DE RETENUE
89	49.02.0071	4	CUSCINETTO	BALL BEARING	ROULEMENT
90	07.14.1131	1	PERNO	PIN	AXE
91	08.14.3025	2	PIATTO FERMAPATTINO	SUPPORT	SUPPORT
92	08.14.3020	2	PATTINO	LINING	GOUJON
93	55.14.0005	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
94	55.14.0005	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
95	08.141921	2	PIATTO FERMAPATTINO	SUPPORT	SUPPORT
96	08.14.3081	2	PATTINO	LINING	GOUJON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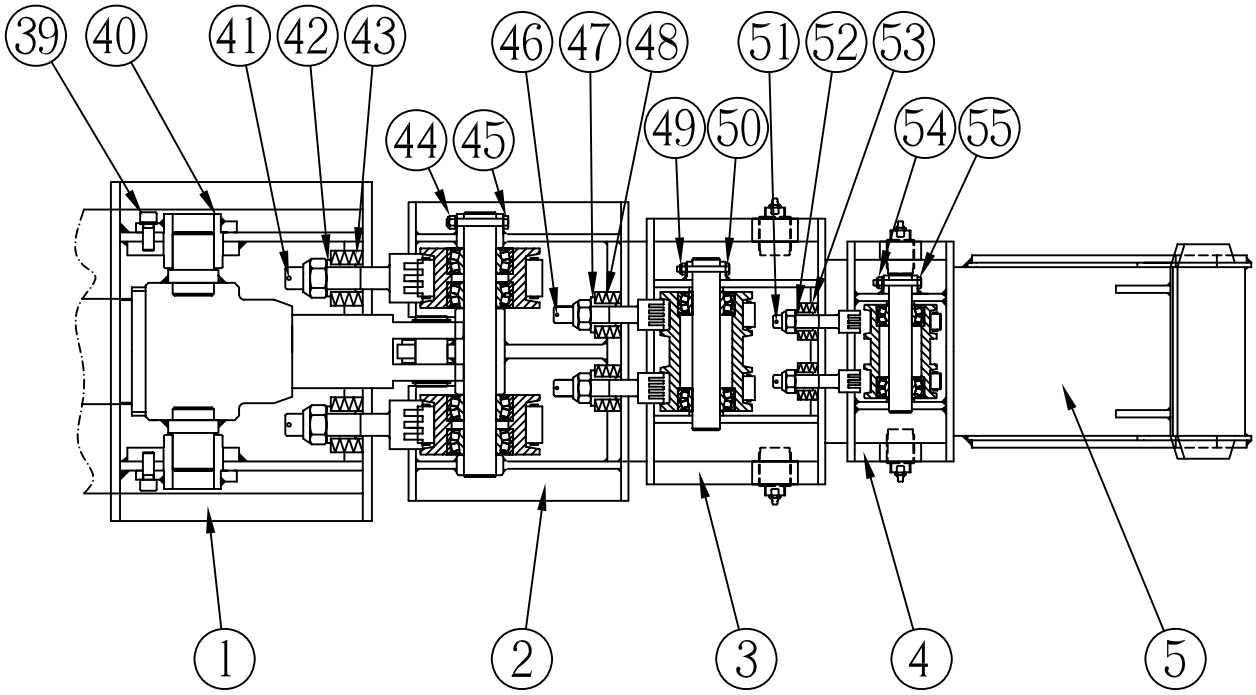
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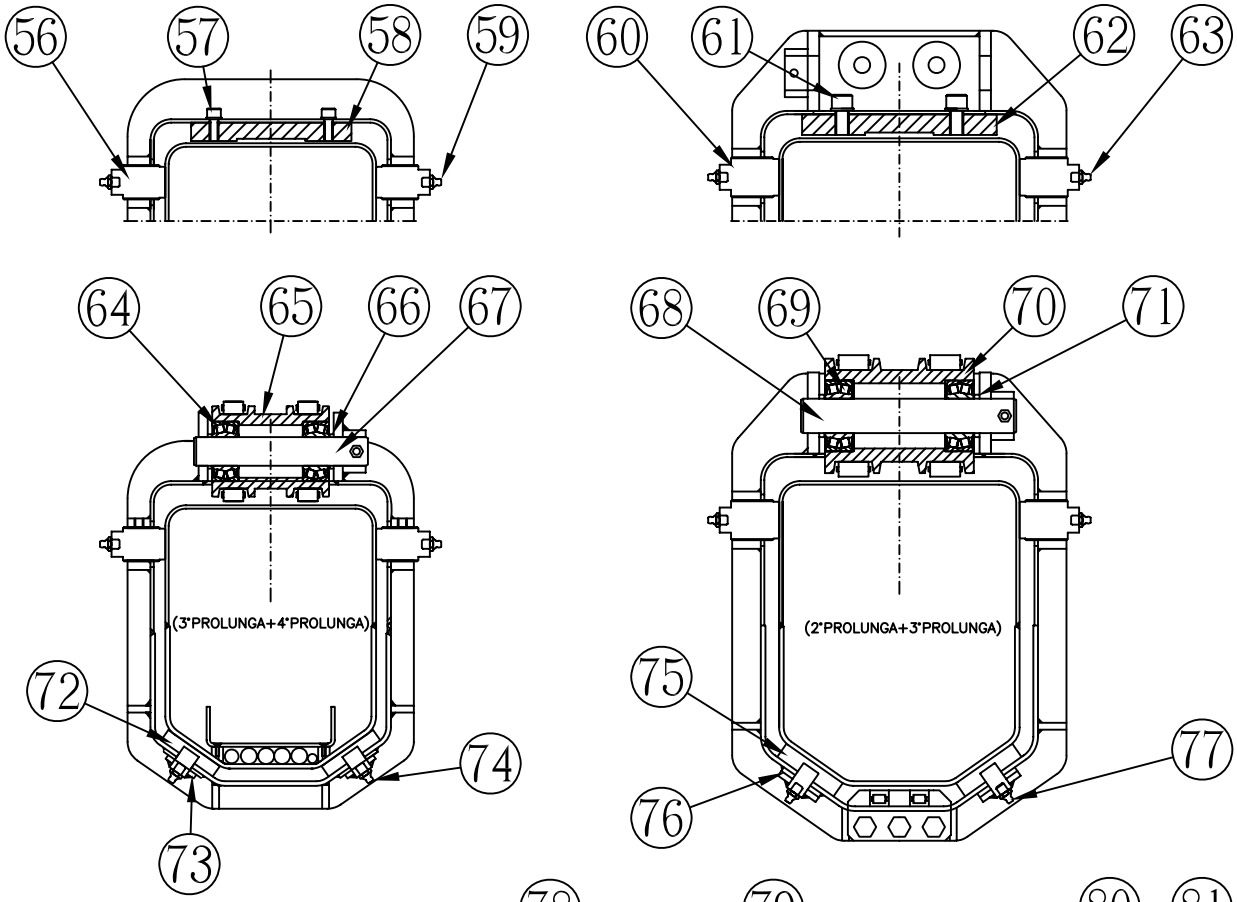
TAV. 1A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(3°PROLUNGA+4°PROLUNGA)
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(2°PROLUNGA+3°PROLUNGA)
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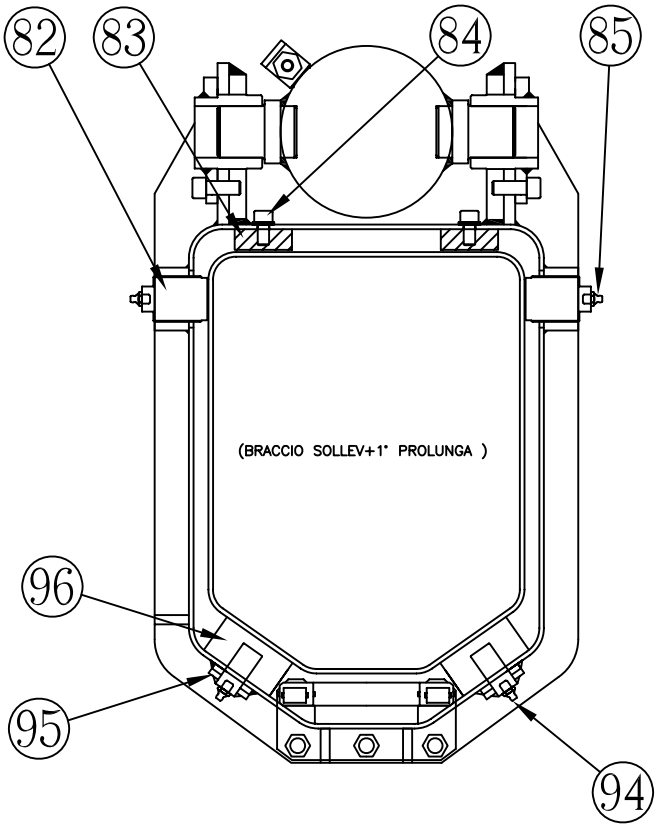
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(BRACCIO SOLLEV+1° PROLUNGA)
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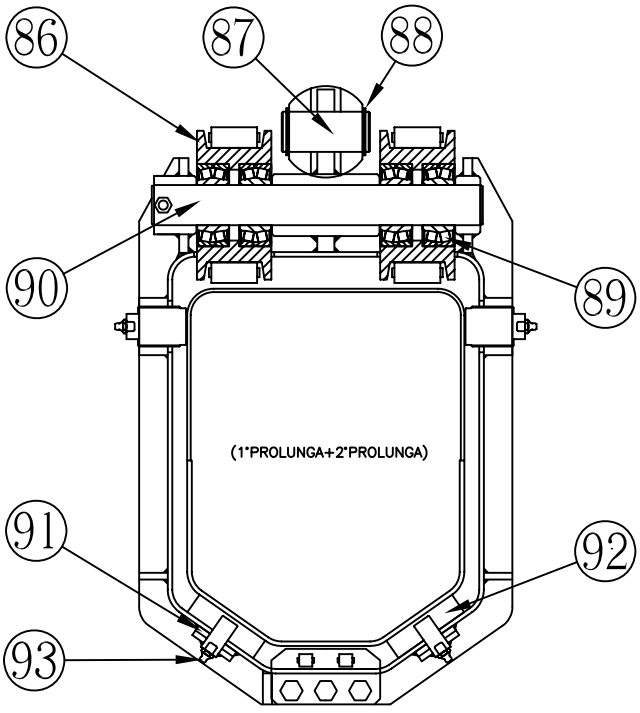
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(1°PROLUNGA+2°PROLUNGA)
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TAV. 1B

GRUPPO BRACCI			BOOM SET		GROUP DE BRAS
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	19.01.0003	6	VITE	BOLT	VIS
2	08.14.3085	1	COPERCHIO	COVER	COUVERCLE
3	55.28.0694	---	CATENARIA POSTERIORE	CHAIN	CHAINE
4	08.14.3096	1	SUPPORTO FONDELLO	SUPPORT	SUPPORT
5	08.14.3091	1	TIRANTE CATENA	ROD	TIRANT
6	07.14.1062	2	PERNO	PIN	AXE
7	08.14.3083	1	TIRANTE CATENA	ROD	TIRANT
8	55.28.0098	2	PERNO	PIN	AXE
9	08.14.3123	1	TIRANTE CATENA	ROD	TIRANT
10	55.28.0571	2	PERNO	PIN	AXE
11	55.28.0056	---	CATENA UF1288	CHAIN	CHAINE
12	55.28.0102	2	PERNO	PIN	AXE
13	08.14.3022	2	TIRANTE CATENA	ROD	TIRANT
14	55.28.0564	---	CATENA UF1288	CHAIN	CHAINE
15	55.28.0572	2	PERNO	PIN	AXE
16	08.14.3018	1	TIRANTE CATENA	ROD	TIRANT
17	55.28.0050	2	CATENA UF1288	CHAIN	CHAINE
18	55.28.0100	2	PERNO	PIN	AXE
19	08.14.2321	1	TIRANTE CATENA	ROD	TIRANT
20	19.01.0003	2	VITE	BOLT	VIS
21	19.02.0022	2	DADO	NUT	ECROU
22	08.14.3055	1	MASSELLO TUBI IDRAULICI	CONNECTION	RACCORD
23	19.01.0004	4	VITE	BOLT	VIS
24	19.01.0005	4	VITE	BOLT	VIS

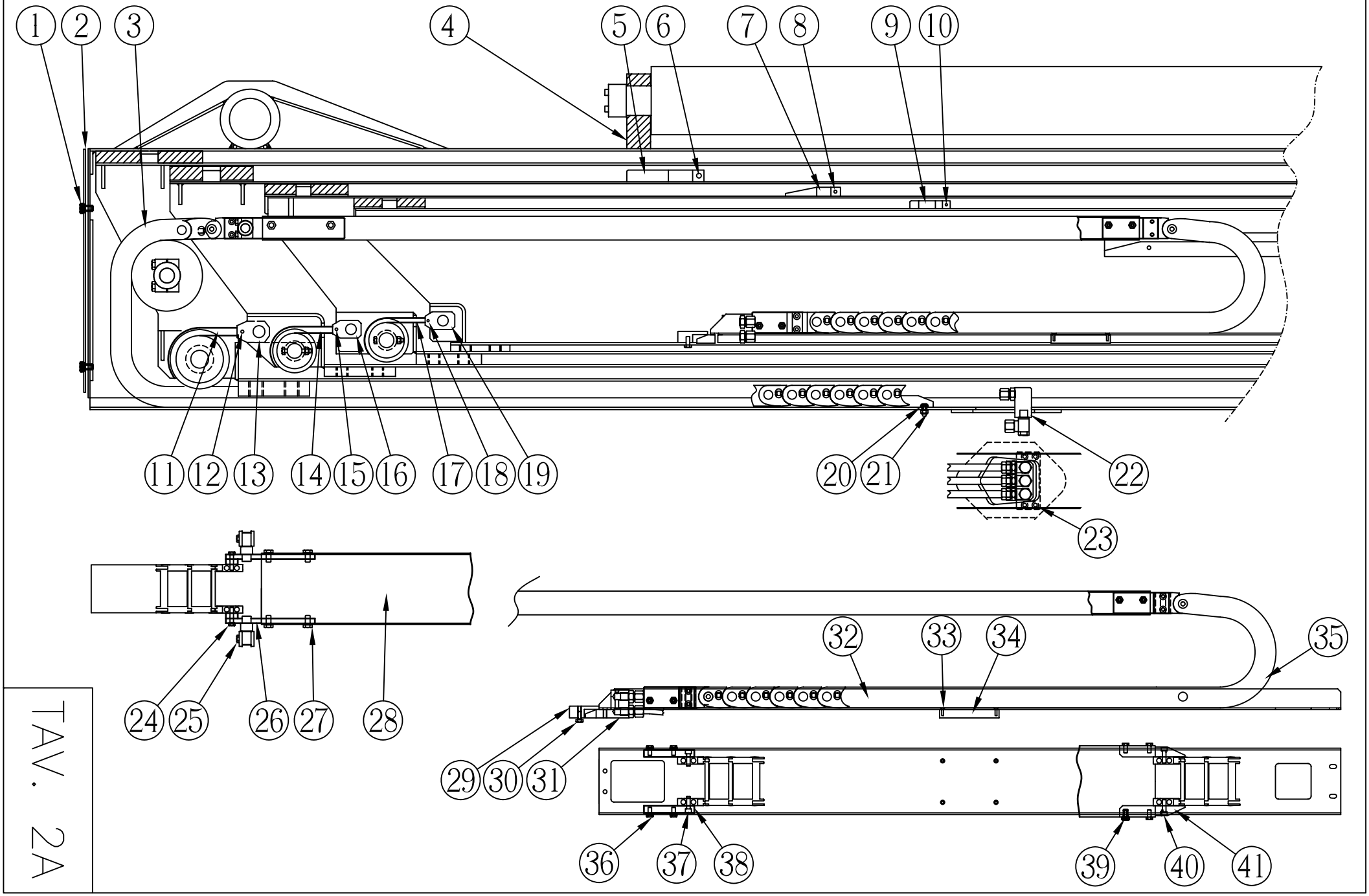
GRUPPO BRACCI	BOOM SET	GROUP DE BRAS

PART.	CODICE	QUANT.	DENOMINAZIONE	DESCRIPTION	DESIGNATION
25	19.01.0004	4	VITE	BOLT	VIS
26	08.14.3146	2	SUPPORTO TUBOLARE	SUPPORT	SUPPORT
27	19.01.0017	4	VITE	BOLT	VIS
28	08.14.3095	1	TUBOLARE	TUBULAR	TUBOLAIRE
29	08.14.3017	1	TASSELLO FERMA CANALINA	LINING	GOUJON
30	19.01.0003	2	VITE	BOLT	VIS
31	08.14.3047	1	MASSELLO TUBI IDRAULICI	CONNECTION	RACCORD
32	08.14.3094	1	STAFFA CATENARIA	BRACKET	BRACKET
33	19.01.0300	12	VITE	BOLT	VIS
34	08.14.3046	6	TASSELLO FERMA CANALINA	LINING	GOUJON
35	55.28.0693	---	CATENARIA ANTERIORE	CHAIN	CHAINE
36	19.01.0002	4	VITE	BOLT	VIS
37	19.01.0231	4	VITE	BOLT	VIS
38	08.14.3045	2	PIATTO CATENARIA	SUPPORT	SUPPORT
39	19.01.0231	4	VITE	BOLT	VIS
40	19.01.0231	4	VITE	BOLT	VIS
41	08.14.3045	2	PIATTO CATENARIA	SUPPORT	SUPPORT
42	08.14.2891	2	BOCCOLA	BUSH	DOUILLE
43	08.14.3043	1	RULLO CATENARIA	ROLLER	ROULEAU
44	49.02.0008	2	CUSCINETTO	BALL BEARING	ROULEMENT
45	49.02.0001	4	CUSCINETTO	BALL BEARING	ROULEMENT
46	08.14.1901	2	DISTANZIALE	SPACER	ENTRETOISE
47	07.14.1120	1	PERNO	PIN	AXE
48	07.14.1133	1	PERNO	PIN	AXE

GRUPPO BRACCI			BOOM SET		GROUP DE BRAS
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
49	50.09.0084	1	GHIERA	WHEEL	GNIERA
50	08.14.3088	2	PATTINO	LINING	GOUJON
51	19.01.0010	1	VITE	BOLT	VIS
52	19.02.0022	1	DADO	NUT	ECROU
53	08.14.3023	1	RULLO CATENARIA	ROLLER	ROULEAU
54	19.01.0021	4	VITE	BOLT	VIS
55	07.14.1123	1	PERNO	PIN	AXE
56	08.14.3087	1	PATTINO	LINING	GOUJON
57	55.14.0002	1	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
58	08.14.3092	2	PATTINO	LINING	GOUJON
59	07.14.1021	1	PERNO	PIN	AXE
60	08.14.1183	1	RULLO CATENARIA	ROLLER	ROULEAU
61	55.10.0021	2	COPIGLIA	SPLIT PIN	GOUPILLE
62	07.14.1116	1	PERNO	PIN	AXE
63	08.14.3093	2	PATTINO	LINING	GOUJON
64	19.01.0008	1	VITE	BOLT	VIS
65	19.02.0022	1	DADO	NUT	ECROU
66	08.14.1911	2	DISTANZIALE	SPACER	ENTRETOISE
67	08.14.3019	2	PATTINO	LINING	GOUJON
68	19.01.0008	1	VITE	BOLT	VIS
69	07.14.1118	1	PERNO	PIN	AXE
70	19.02.0022	1	DADO	NUT	ECROU
71	07.14.1115	1	PERNO	PIN	AXE
72	19.01.0314	2	VITE	BOLT	VIS

GRUPPO BRACCI	BOOM SET	GROUP DE BRAS

PART.	CODICE	QUANT.	DENOMINAZIONE	DESCRIPTION	DESIGNATION
73	08.14.3013	2	RONDELLA	WASHER	RONDELLE
74	55.10.0021	2	COPIGLIA	SPLIT PIN	GOUPILLE
75	07.14.1117	1	PERNO	PIN	AXE
76	49.02.0042	4	CUSCINETTO	BALL BEARING	ROULEMENT
77	08.14.1911	2	DISTANZIALE	SPACER	ENTRETOISE
78	08.14.1183	1	RULLO CATENARIA	ROLLER	ROULEAU
79	08.14.3012	1	RULLO CATENARIA	ROLLER	ROULEAU
80	49.02.0068	2	CUSCINETTO	BALL BEARING	ROULEMENT
81	08.14.3084	1	PATTINO	LINING	GOUJON
82	08.14.3120	2	PATTINO	LINING	GOUJON
83	07.14.1117	1	PERNO	PIN	AXE
84	55.10.0021	2	COPIGLIA	SPLIT PIN	GOUPILLE
85	07.14.1151	1	PERNO	PIN	AXE
86	19.01.0314	2	VITE	BOLT	VIS
87	08.14.3013	2	RONDELLA	WASHER	RONDELLE
88	08.14.3147	1	PATTINO	LINING	GOUJON
89	08.14.3012	1	RULLO CATENARIA	ROLLER	ROULEAU
90	49.02.0068	2	CUSCINETTO	BALL BEARING	ROULEMENT
91	08.14.3118	2	PATTINO	LINING	GOUJON
92	19.01.0021	18	VITE	BOLT	VIS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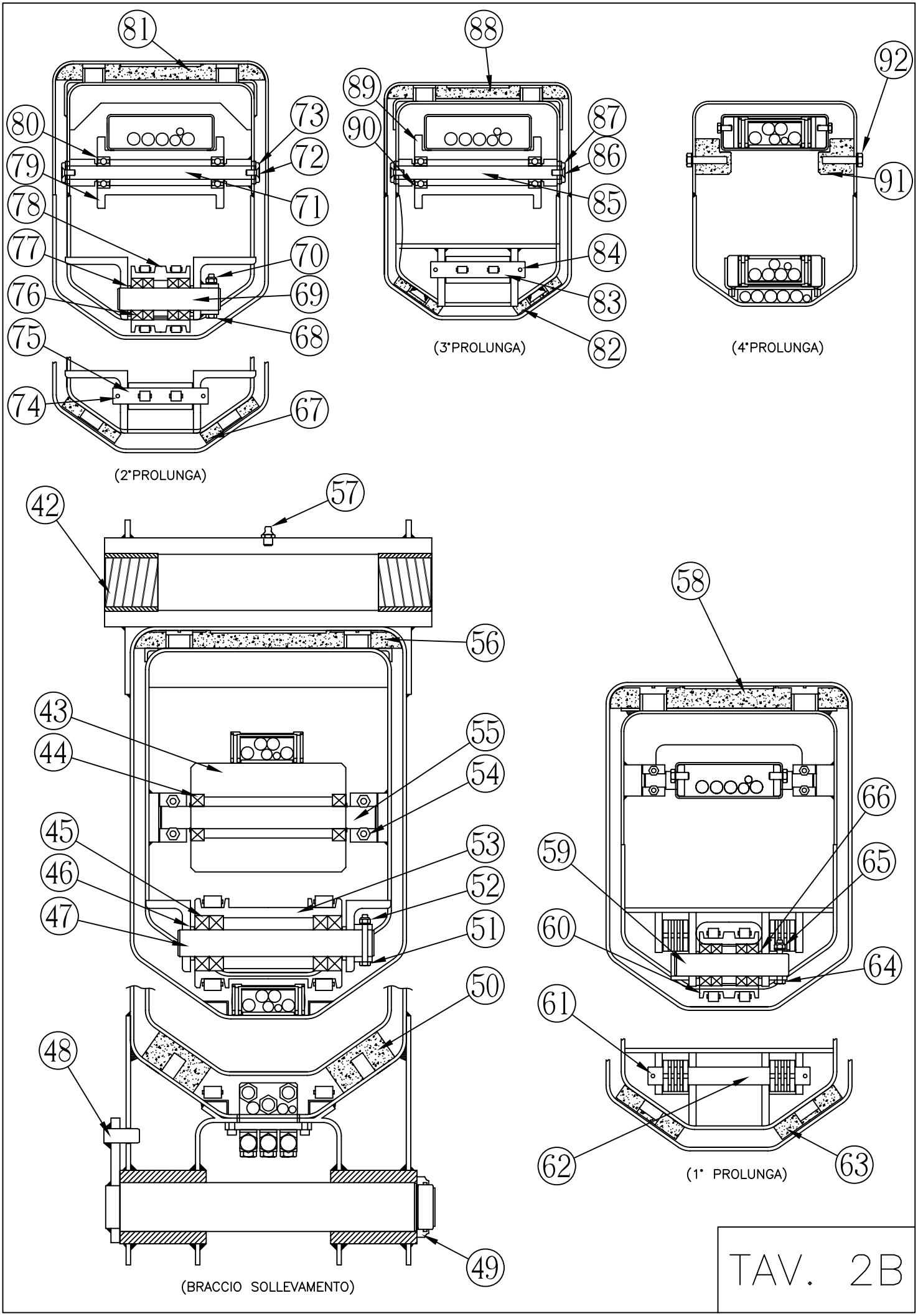
TAV. 2A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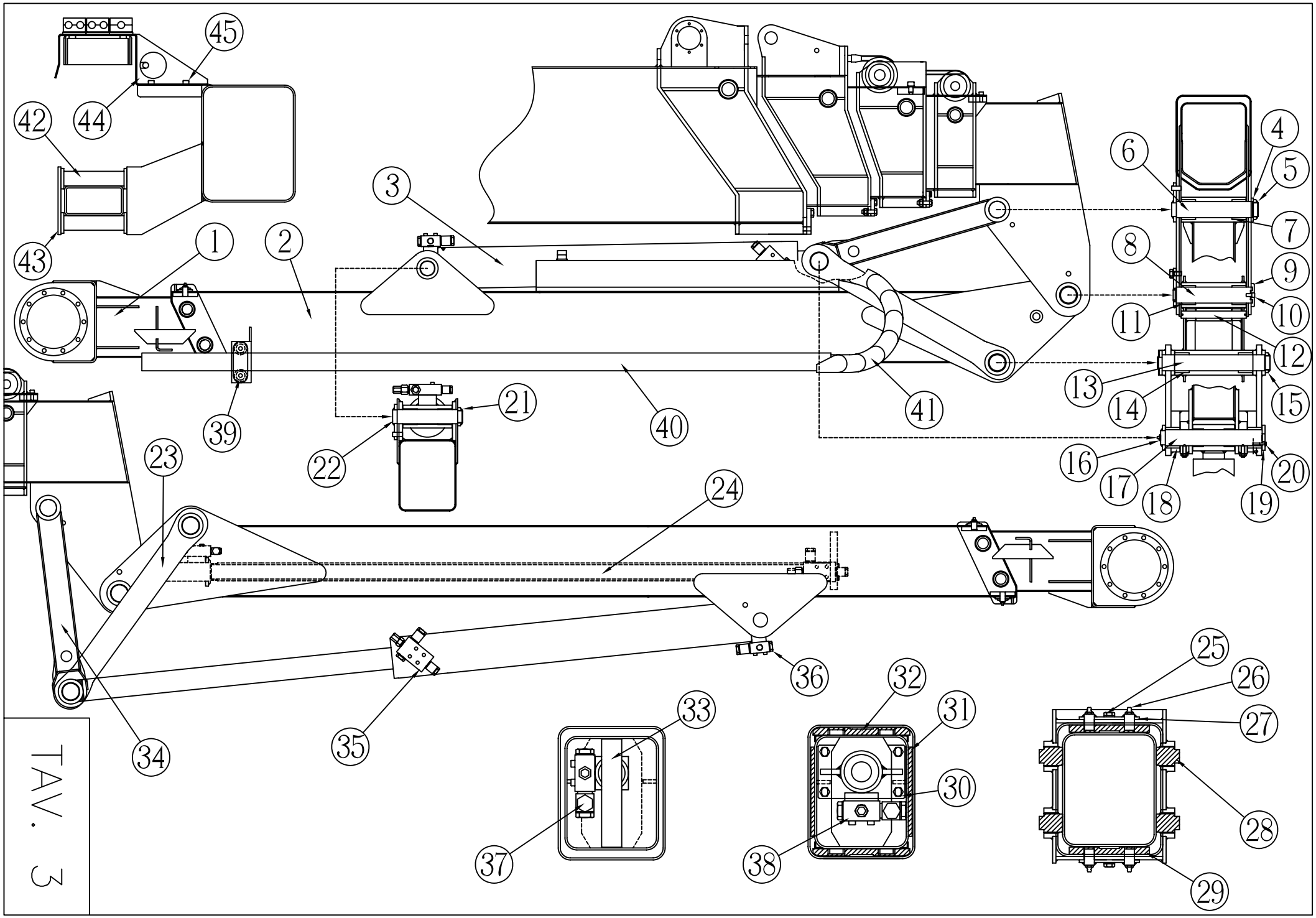
(1° PROLUNGA)
TAV. 2B

GRUPPO ORIENTAMENTO JIB	JIB SET	GROUPE DE PENDULAIRE

PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	05.14.1754	1	PROLUNGA JIB	JIB EXTENSION	JIB RALLONGE
2	05.14.1755	1	BRACCIO JIB	JIB BOOM	BRAS PENDULAIRE
3	01.01.0614	1	CILINDRO ORIENT. JIB	JIB CYLINDER	VERIN PENDULAIRE
4	55.11.0026	1	RONDELLA	WASHER	RONDELLE
5	50.09.0060	1	GHIERA	WHEEL	GNIERA
6	07.14.1148	1	PERNO	PIN	AXE
7	08.14.2988	2	BOCCOLA	BUSH	DOUILLE
8	07.14.1145	2	BOCCOLA	BUSH	DOUILLE
9	08.14.3112	1	RONDELLA	WASHER	RONDELLE
10	19.01.0238		VITE	BOLT	VIS
11	08.14.2988	2	BOCCOLA	BUSH	DOUILLE
12	07.14.1146	1	PERNO	PIN	AXE
13	07.141147	1	PERNO	PIN	AXE
14	08.14.2988	2	BOCCOLA	BUSH	DOUILLE
15	50.09.0060	1	GHIERA	WHEEL	GNIERA
16	55.14.0002	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
17	07.14.1150	1	PERNO	PIN	AXE
18	08.14.2988	2	BOCCOLA	BUSH	DOUILLE
19	08.14.3113	1	RONDELLA	WASHER	RONDELLE
20	19.01.0231		VITE	BOLT	VIS
21	50.09.0059	1	GHIERA	WHEEL	GNIERA
22	07.14.1149	1	PERNO	PIN	AXE
23	05.14.1756	1	TIRANTE	CONNECTING ROD	TIRANT
24	01.01.0615	1	CILINDRO SFILO JIB	RAM	VERIN

GRUPPO BRACCI	BOOM SET	GROUP DE BRAS

PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
25	19.01.0016	2	VITE	BOLT	VIS
26	55.14.0005	4	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
27	08.14.3110	2	SUPPORTO PATTINO	SUPPORT	SUPPORT
28	08.14.3115	4	PATTINO	LINING	GOUJON
29	08.14.3114	2	PATTINO	LINING	GOUJON
30	19.01.0017	4	VITE	BOLT	VIS
31	13.92.0003	2	PATTINO	LINING	GOUJON
32	08.14.3111	2	PATTINO	LINING	GOUJON
33	08.14.3116	1	PATTINO	LINING	GOUJON
34	05.14.1757	1	TIRANTE	CONNECTING ROD	TIRANT
35	50.12.0166	1	VALVOLA	VALVE	VALVE
36	50.12.0166	1	VALVOLA	VALVE	VALVE
37	50.12.0166	1	VALVOLA	VALVE	VALVE
38	50.12.0166	1	VALVOLA	VALVE	VALVE
39	08.14.1158	2	PERNO	PIN	AXE
40	08.14.2143	1	TUBOLARE	TUBULAR	TUBOLAIRE
41	55.28.0388	---	CATENARIA	CHAIN	CHAINE
42	08.14.1159	2	RULLO	ROLLER	ROULEAU
43	08.14.1157	1	PIATTO TENUTA RULLI	SUPPORT	SUPPORT
44	08.14.2996	1	SUPPORTO CATENARIA	SUPPORT	SUPPORT
45	19.01.0231	4	VITE	BOLT	VIS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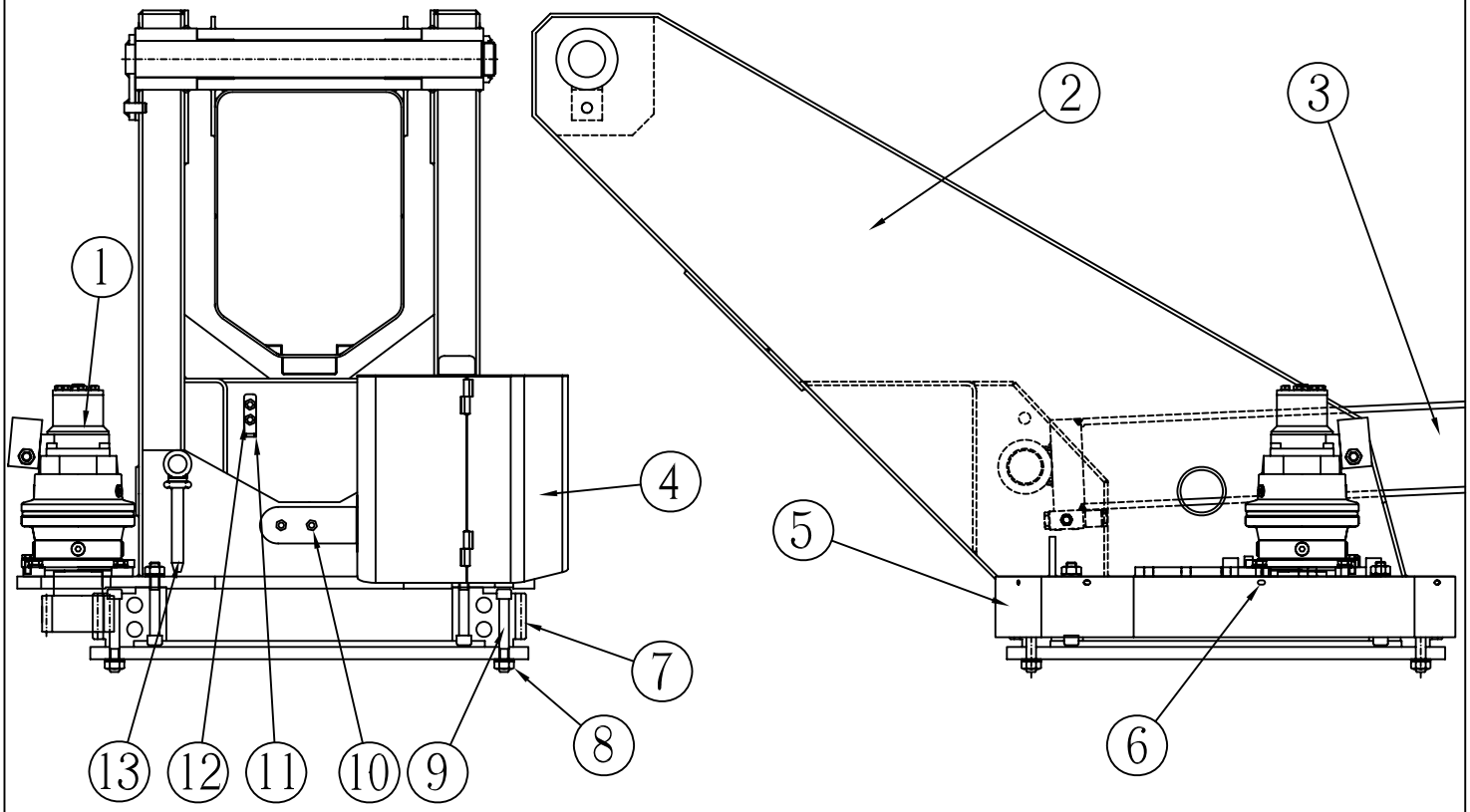
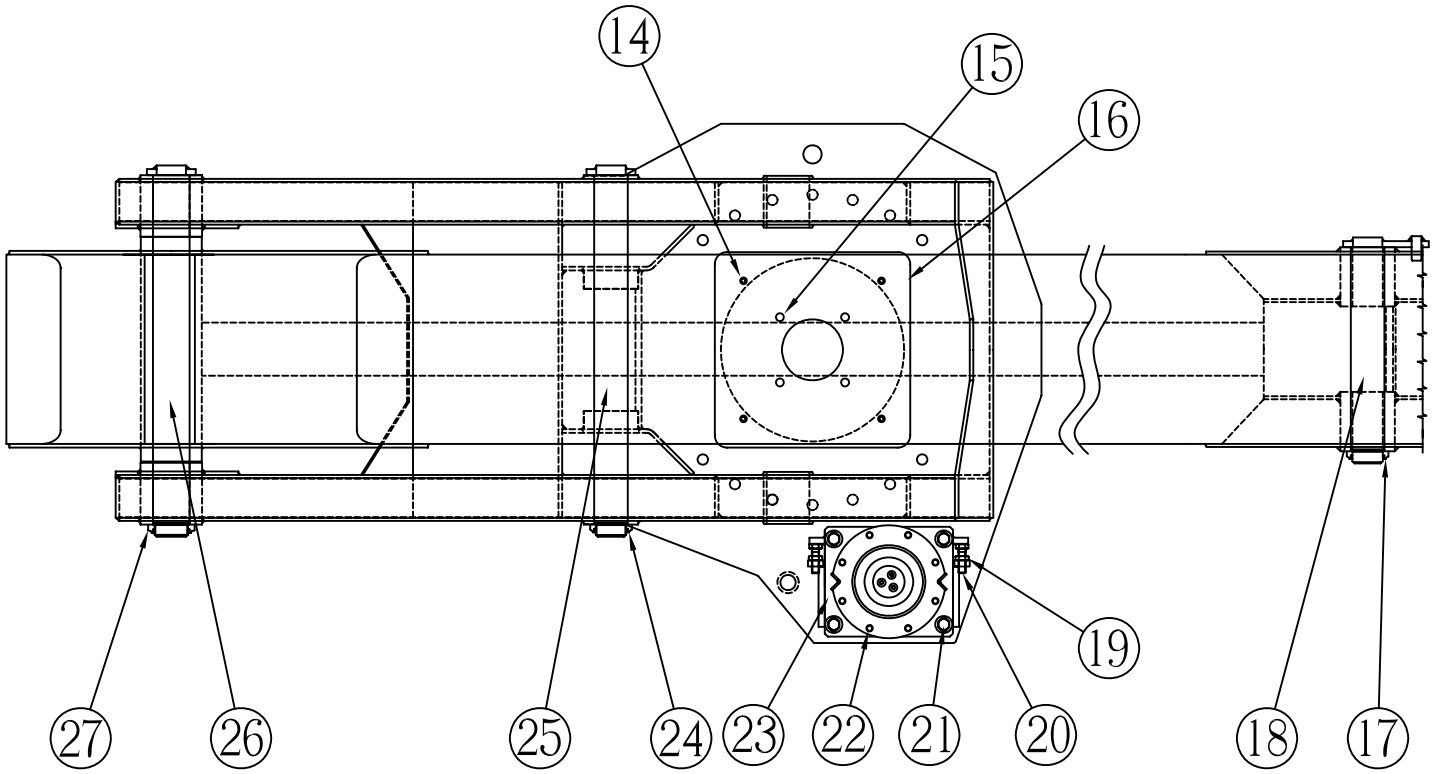
TAV. 3

GRUPPO TORRETTA			TURNTABLE SET		GROUP TOURELLE
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	55.28.0316	1	RIDUTTORE	SLEWING OIL	ENGRANAGE ROTATION
2	05.14.1763	1	TORRETTA	TURNTABLE	TOURELLE
3	01.01.0616	1	CILINDRO DI SOLLEVAMENTO	CYLINDER	CYLINDRE
4	05.92.0003	1	CARTER DANFOSS	COVER	CARTER
5	05.14.1863	1	CARTER RALLA	COVER	CARTER
6	19.01.0003	4	VITE	BOLT	VIS
7	55.28.0352	1	RALLA	SLEWING REAR RING	COURONNE DE ROTATION
8	19.02.0086	38	DADO	NUT	ECROU
9	19.01.0231	48	VITE	BOLT	VIS
10	19.01.0327	2	VITE	BOLT	VIS
11	08.14.2997	1	SUPPORTO FINECORSA	SUPPORT	SUPPORT
12	19.01.0004	2	VITE	BOLT	VIS
13	07.14.0407	1	PERNO	PIN	AXE
14	19.01.0034	4	VITE	BOLT	VIS
15	19.01.0054	4	VITE	BOLT	VIS
16	08.14.2987	1	PIASTRA COLLETTORE	BRACKET	PATTE
17	50.09.0084	1	GHIERA	WHEEL	GNIERA
18	07.14.1133	1	PERNO	PIN	AXE
19	19.02.0006	2	DADO	NUT	ECROU
20	19.01.0052	2	VITE	BOLT	VIS
21	19.01.0051	4	VITE	BOLT	VIS
22	19.01.0035	8	VITE	BOLT	VIS
23	08.14.3059	1	PIASTRA RIDUTTORE	BRACKET	PATTE
24	50.09.0084	1	GHIERA	WHEEL	GNIERA

GRUPPO TORRETTA	TURNTABLE SET	GROUP TOURELLE

PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
25	07.14.1135	1	PERNO	PIN	AXE
26	07.14.1136	1	PERNO	PIN	AXE
27	50.09.0062	1	GHIERA	WHEEL	GNIERA

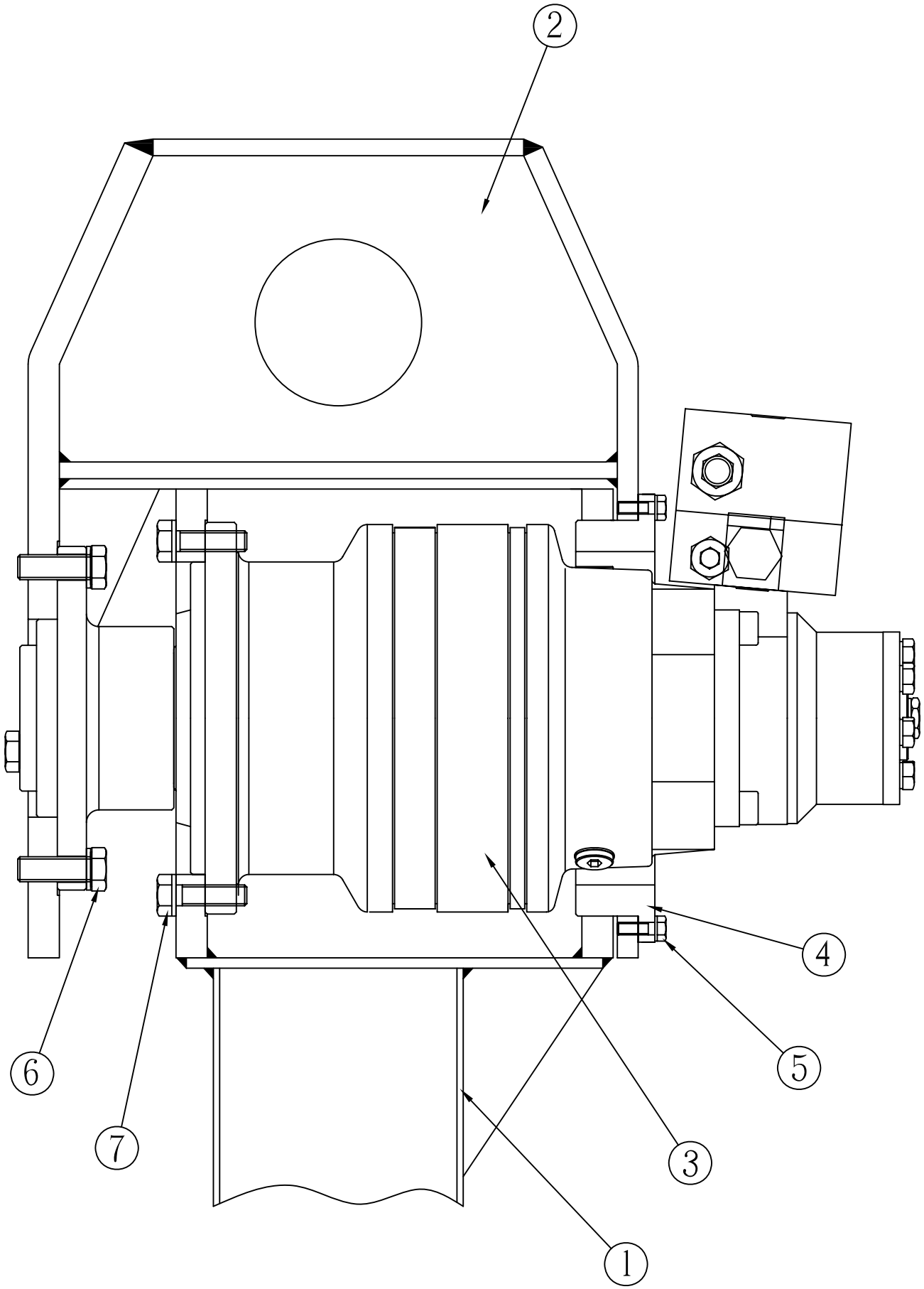




TAV. 4

ORIENTAMENTO CESTO	ORIENTATION BASKET	ORIENTATION NACELLE

PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	05.14.1754	1	BRACCIO JIB	BOOM	BRAS
2	05.14.1626	1	SUPPORTO GIREVOLE (JIB)	SUPPORT	SUPPORT
3	55.28.0457	1	RIDUTTORE ROTAZIONE	SLEWING OIL	ENGRANAGE ROTATION
4	08.14.2357	1	BOCCOLA	BUSH	DOUILLE
5	19.01.0003	8	VITE	BOLT	VIS
6	19.01.0051	12	VITE	BOLT	VIS
7	19.01.0035	10	VITE	BOLT	VIS



TAV. 5

ORIENTAMENTO CESTO	ORIENTATION BASKET	ORIENTATION NACELLE

PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	05.14.1626	1	SUPP. GIREVOLE (JIB)	SUPPORT	SUPPORT
2	05.14.1848	1	SUPP. GIREVOLE (CESTO)	SUPPORT	SUPPORT
3	55.28.0485	1	BRONZINA	BUSH	DOUILLE
4	49.04.0015	1	CUSCINETTO	BEARING	ROULEMENT
5	08.14.2315	1	GHIERA	RING	ECROU
6	55.28.0486	1	BRONZINA	BUSH	DOUILLE
7	19.01.0257	5	VITE	BOLT	VIS
8	55.28.0392	1	ATTUATORE ROTATIVO	ACTUATOR	MOTEUR
9	08.14.2610	1	COPERCHIO	COVER	COVER
10	08.14.2314	1	ALBERO CENTRALE	GEAR	PIVOT
11	08.14.2967	4	CAVO ACCIAIO	CABLE	CABLE
12	08.14.2921	1	SUPPORTO SNODO CESTO	SUPPORT	SUPPORT
13	14.12.1007	1	CELLA DI CARICO	LOAD CELL	CELLULE DE CHARGE
14	19.02.0026	4	DADO	NUT	ECROU
15	08.14.2717	1	CARTER	COVER	COUVERCLE
16	19.01.0233	2	VITE	BOLT	VIS
17	19.01.0068	8	VITE	BOLT	VIS
18	05.14.1524	1	CESTO	CAGE	NACELLE

Palazzani
Palazzani Industrie spa

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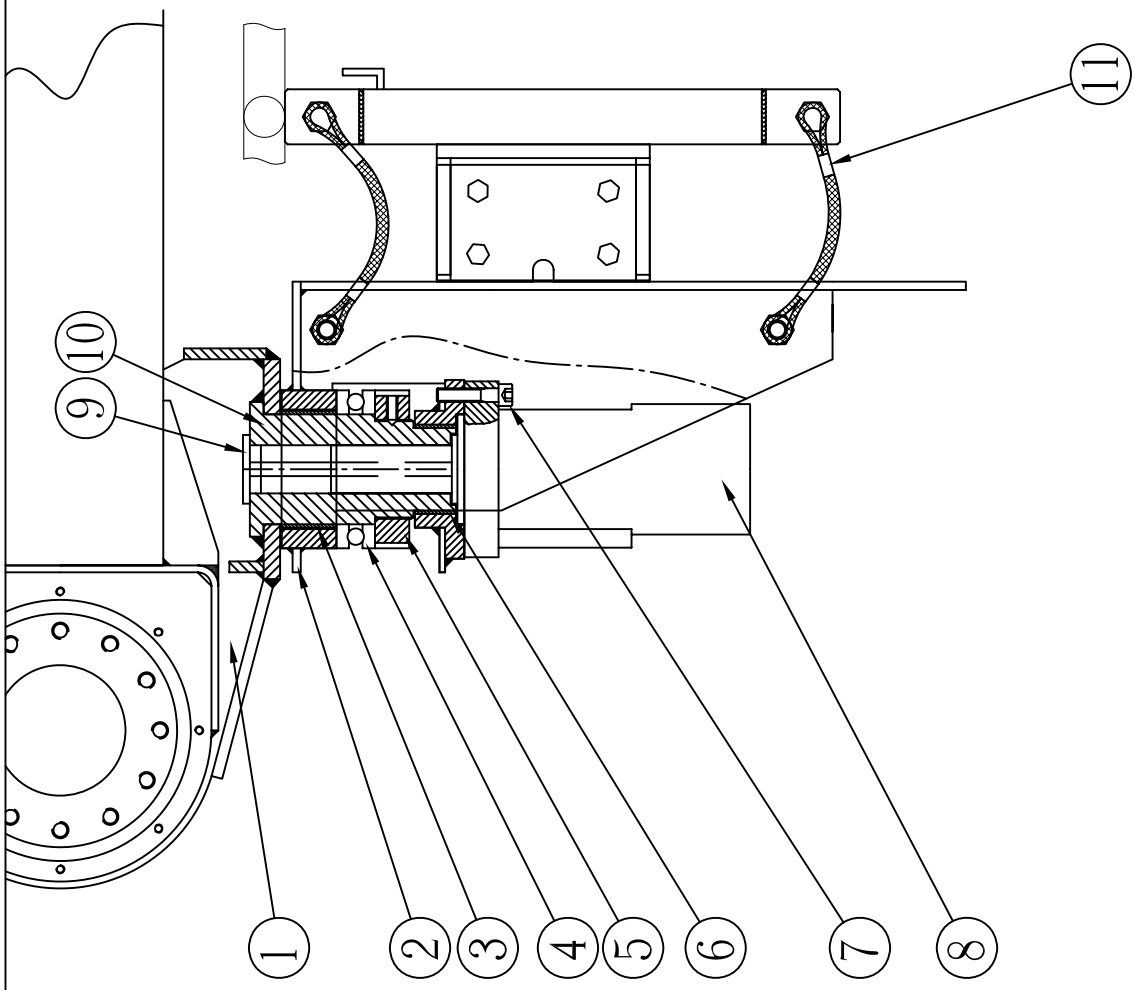
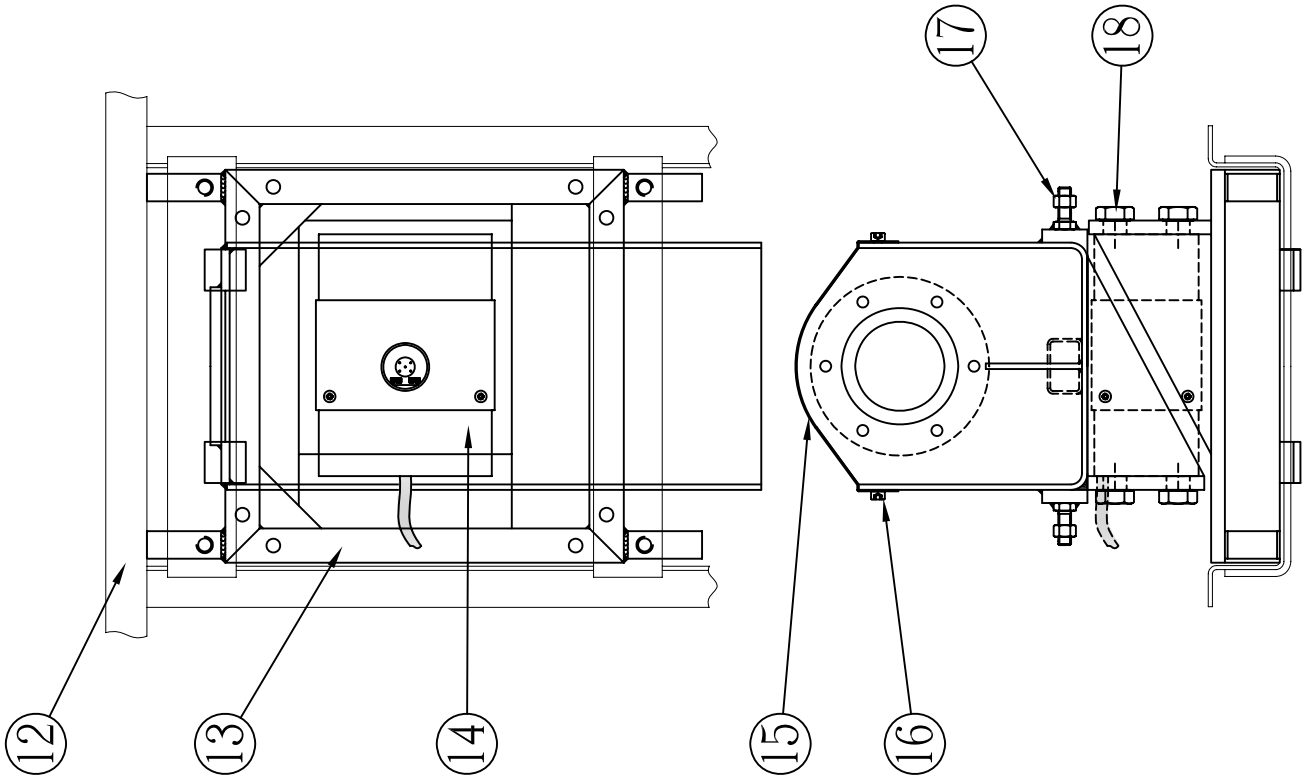
DIVISION

TAV N° 6

XTJ 32



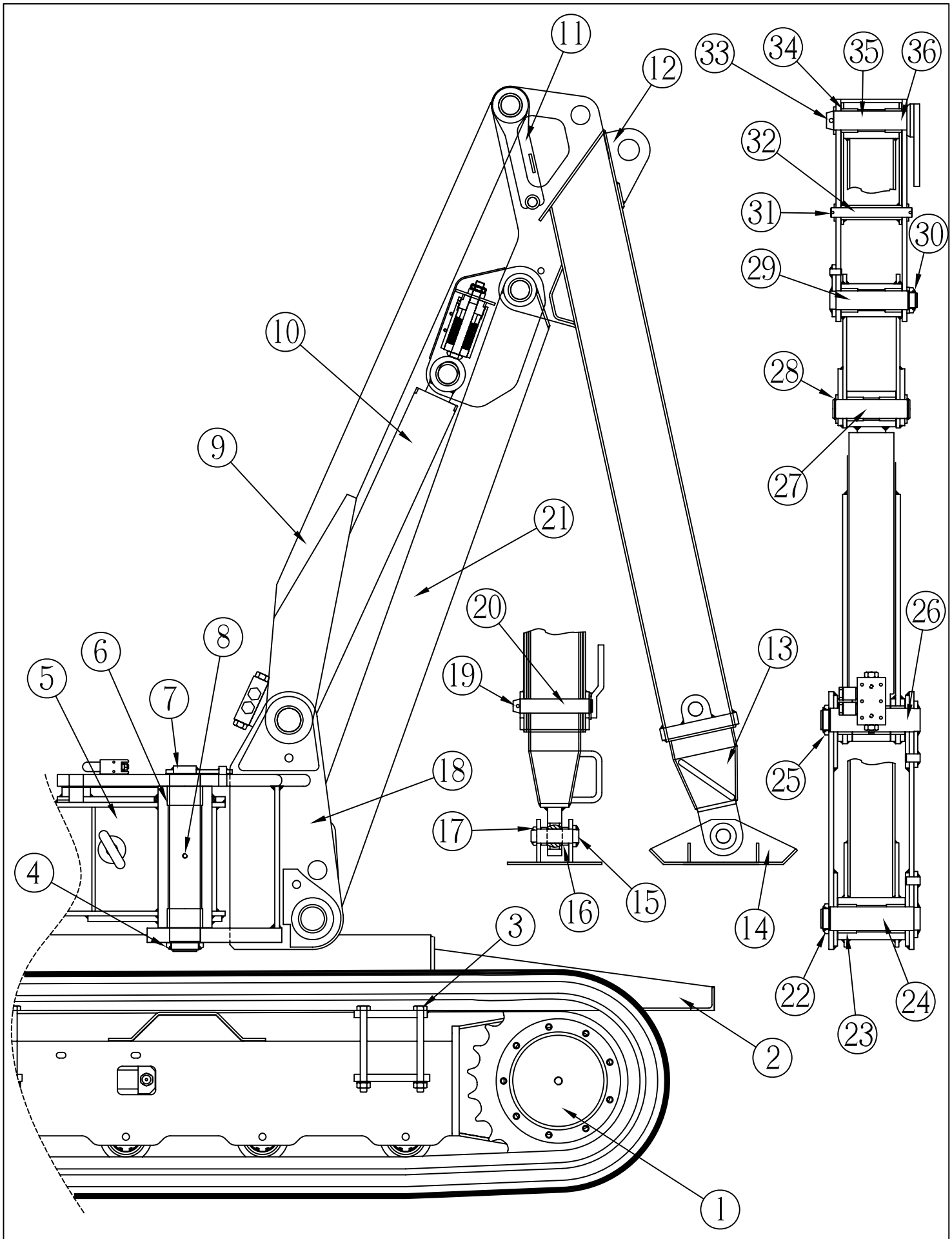


TAV. 6

CARRO BASE			UNDER CARRIAGE	CHAR DE BASE	
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	55.28.0705	1	CARRO	CARRIGE	CHAR
2	05.14.1171	1	TELAIO	FRAME	CHASSIS
3	19.01.0401	8	VITE	BOLT	VIS
4	50.09.0083	4	GHIERA	RING	ECROU
5	05.14.1767	1	BASAMENTO	FRAME	CADRE DE VEHIEVRE
6	08.14.3108	8	BOCCOLA	BUSH	DOUILLE
7	07.14.1140	4	PERNO	PIN	AXE
8	55.14.0002	4	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
9	05.14.1749	4	PUNTONE SUPERIORE	SUPERIOR BOOM	BRAS SUPERIEUR
10	01.01.0618	4	CILINDRO STABILIZZATORI	STABILIZER RAM	VERIN DE STABILIS.
11	05.14.1769	4	LEVA STABILIZZATORI	LEVER	LEVIER
12	05.14.1768	4	SECONDO BRACCIO STABILIZZATORE	SECOND BOOM	DEUXIEME BRAS
13	05.14.1770	4	PROLUNGA STABILIZZATORI	THIRD BOOM	DERNIER BRAS
14	05.14.1000	4	PIATTELLO	JOINT FOOT	PIED ARTICULE
15	07.14.2261	4	PERNO	PIN	AXE
16	08.14.2261	8	DISTANZIALE	SPACER	ENTRETOISE
17	50.09.0058	4	GHIERA	RING	ECROU
18	05.14.1766	4	SUPPORTO STABILIZZATORI	STAB. SUPPORT	SUPPORT DE STAB.
19	14.01.0016	4	FERMO A MOLLA	SPLIT PIN	COUPILLE FENDUE
20	07.14.1155	4	PERNO	PIN	AXE
21	05.14.1750	4	PRIMO BRACCIO STABILIZZATORE	FIRST BOOM	PREMIER BRAS
22	50.09.0061	4	GHIERA	RING	ECROU
23	08.14.2849	8	BOCCOLA	BUSH	DOUILLE
24	07.14.1139	4	PERNO	PIN	AXE

CARRO BASE			UNDER CARRIAGE		CHAR DE BASE
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
25	50.09.0061	4	GHIERA	RING	ECROU
26	07.14.1138	4	PERNO	PIN	AXE
27	07.11.1159	4	PERNO	PIN	AXE
28	55.07.0025	8	SEEGER	CIRCLIP	ANNEAU DE RETENUE
29	07.14.1157	4	PERNO	PIN	AXE
30	50.09.0059	4	GHIERA	RING	ECROU
31	55.10.0014	2	COPIGLIA	RING	ECROU
32	07.14.1156	4	PERNO	PIN	AXE
33	14.01.0082	4	FERMO A MOLLA	SPLIT PIN	COUPILLE FENDUE
34	55.11.0086	4	RONDELLA	WASHER	RONDELLE
35	08.14.2418	8	BOCCOLA	BUSH	DOUILLE
36	07.14.1158	4	PERNO	PIN	AXE
37	07.92.0001	4	PERNO	PIN	AXE
38	08.14.3502	4	SUPPORTO MICRO	SUPPORT	SUPPORT
39	19.01.0008	8	VITE	BOLT	VIS
40	13.92.0001	4	CARTER	COVER	COUVERCLE
41	50.12.0310	4	VALVOLA	VALVE	VALVE
42	08.14.3141	4	PERNO PREMIMOLLE	PIN	AXE
43	19.01.0003	16	VITE	BOLT	VIS
44	08.14.3144	4	STANTUFFO PREMIMOLLE	PRESS-SPRINGS	PRESSE-RESSORTS
45	08.14.3139	4	CILINDRO CUSTODIA MOLLE	SPRINGS CARE	CILINDRE ETUI RESSORTS
46	55.13.0032		MOLLE A TAZZA	SPRINGS	RESSORTS
47	14.12.1153	4	DISTANZIALE	SPACER	ENTRETOISE
48	08.14.3140	4	GHIERA DI REGISTRO	RING	ECROU

CARRO BASE			UNDER CARRIAGE		CHAR DE BASE
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
49	08.14.3143	4	PIATTO PER FINECORSA	SUPPORT	SUPPORT
50	19.02.0018	4	DADO	NUT	ECROU
51	19.01.0461	8	VITE	BOLT	VIS
52	14.12.1190	4	LUCCIOLA	FIREFLY	LUCIOLE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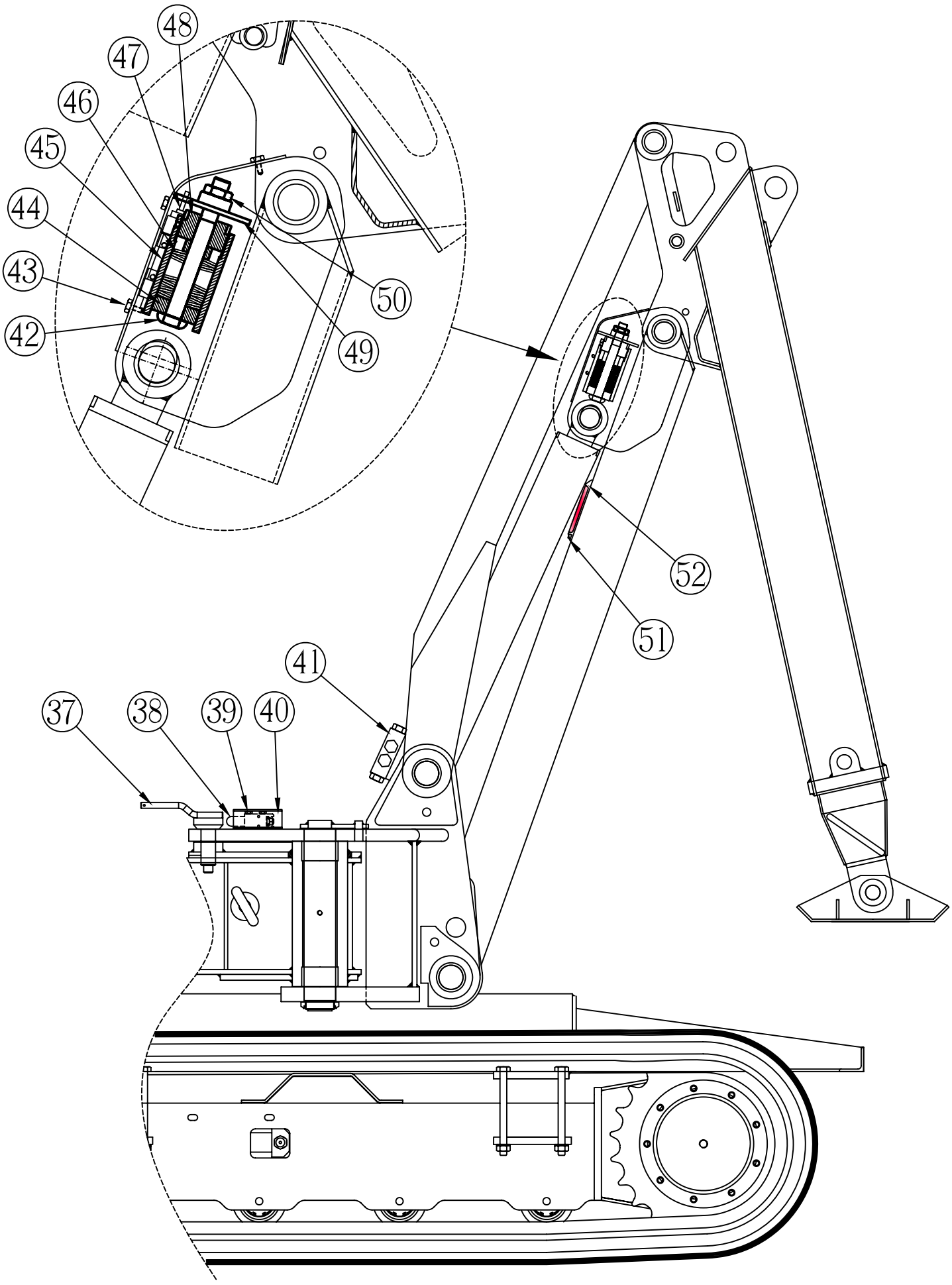
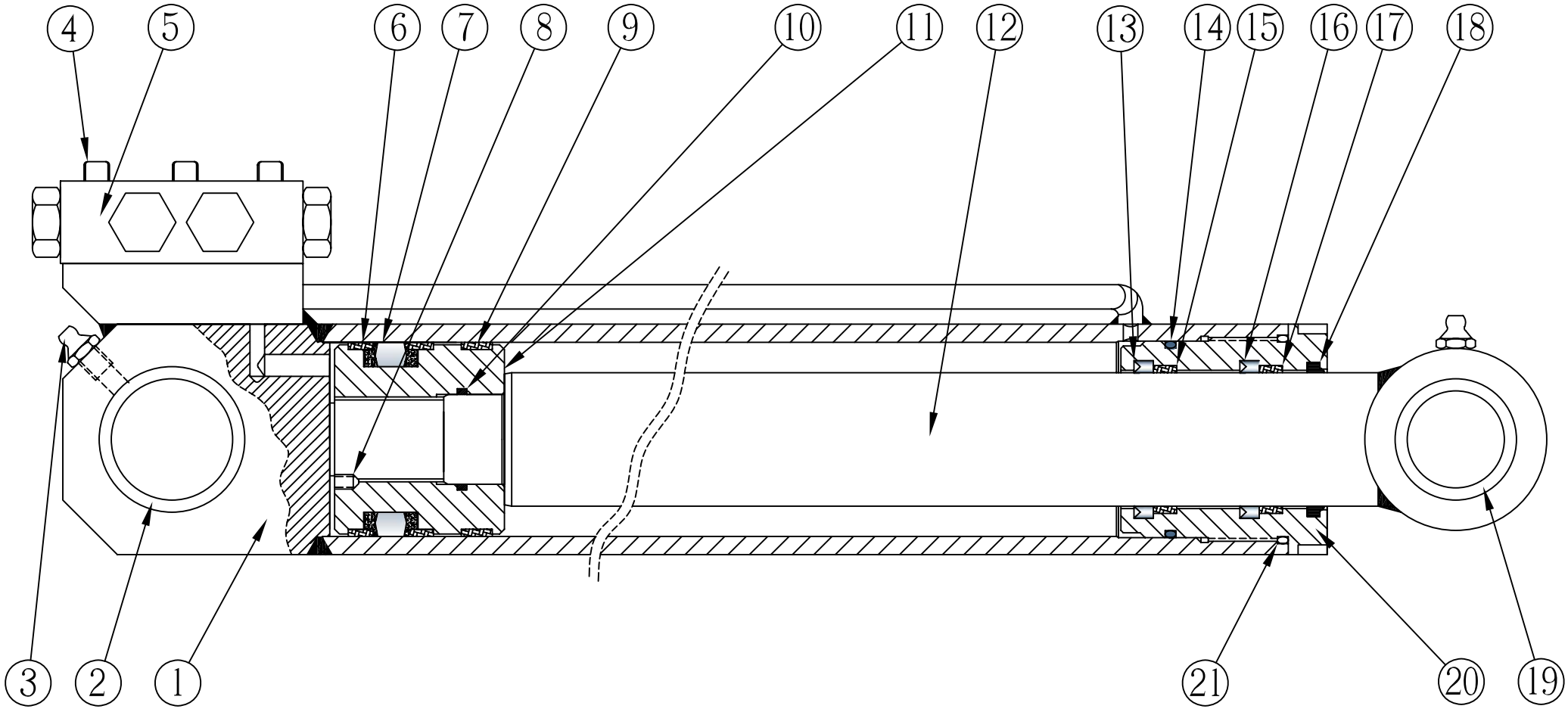
TAV. 7A



TAV. 7B

CILINDRO STABILIZZATORI	STABILIZER RAM	VERIN DE STABILISATEUR

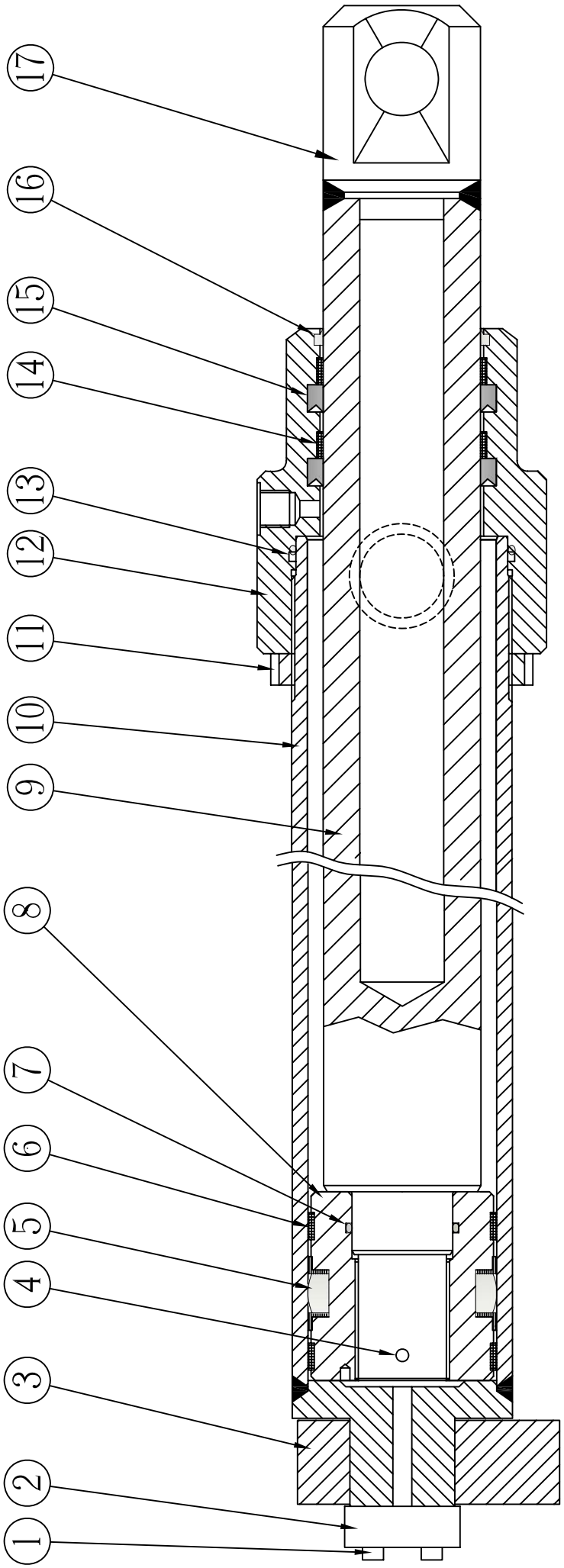
PART.	CODICE	QUANT.	DENOMINAZIONE	DESCRIPTION	DESIGNATION
1	01.01.0618	4	CILINDRO COMPLETO	LIFTING RAM	VERIN DE LEVAGE
2	08.14.3104	2	BOCCOLA	BUSH	DOUILLE
3	55.14.0002	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
4	19.01.0236	6	VITE	BOLT	VIS
5	50.12.0310	1	VALVOLA	VALVE	SOUPAPE
6	18.05.0051	3	ANELLO DI GUIDA	GUIDE RING	BAGUE DE GUIDAGE
7	18.04.0033	1	GUARNIZIONE	GASKET	JOINT
8	19.01.0351	1	GRANO	SCREW	VIS
9	01.09.0613	1	CAMICIA	CYLINDER TUBE	TUYAU DE CILINDRE
10	18.01.0115	1	GUARNIZIONE OR	GASKET	JOINT
11	01.15.1104	1	STANTUFFO	PISTON	PISTON
12	01.10.0802	1	STELO	PISTON ROD	TIGE DE PISTON
13	18.02.0047	1	GUARNIZIONE EU	GASKET	JOINT
14	18.01.0160	1	GUARNIZIONE OR	GASKET	JOINT
15	18.05.0043	1	ANELLO DI GUIDA	GUIDE RING	BAGUE DE GUIDAGE
16	18.02.0047	1	GUARNIZIONE EU	GASKET	JOINT
17	18.05.0043	1	ANELLO DI GUIDA	GUIDE RING	BAGUE DE GUIDAGE
18	18.06.0004	1	RASCHIATORE	WIPER SCAL	SEGMENT RACLEUR
19	08.14.2418	2	BOCCOLA	BUSH	DOUILLE
20	01.15.1110	1	FLANGIA ANTERIORE	FRONT FLANGE	BRIDE
21	18.01.0160	1	GUARNIZIONE OR	GASKET	JOINT



TAV. 8

CILINDRO DI SFILO	EXTENSION RAM	VERIN DE TELESCOPAGE

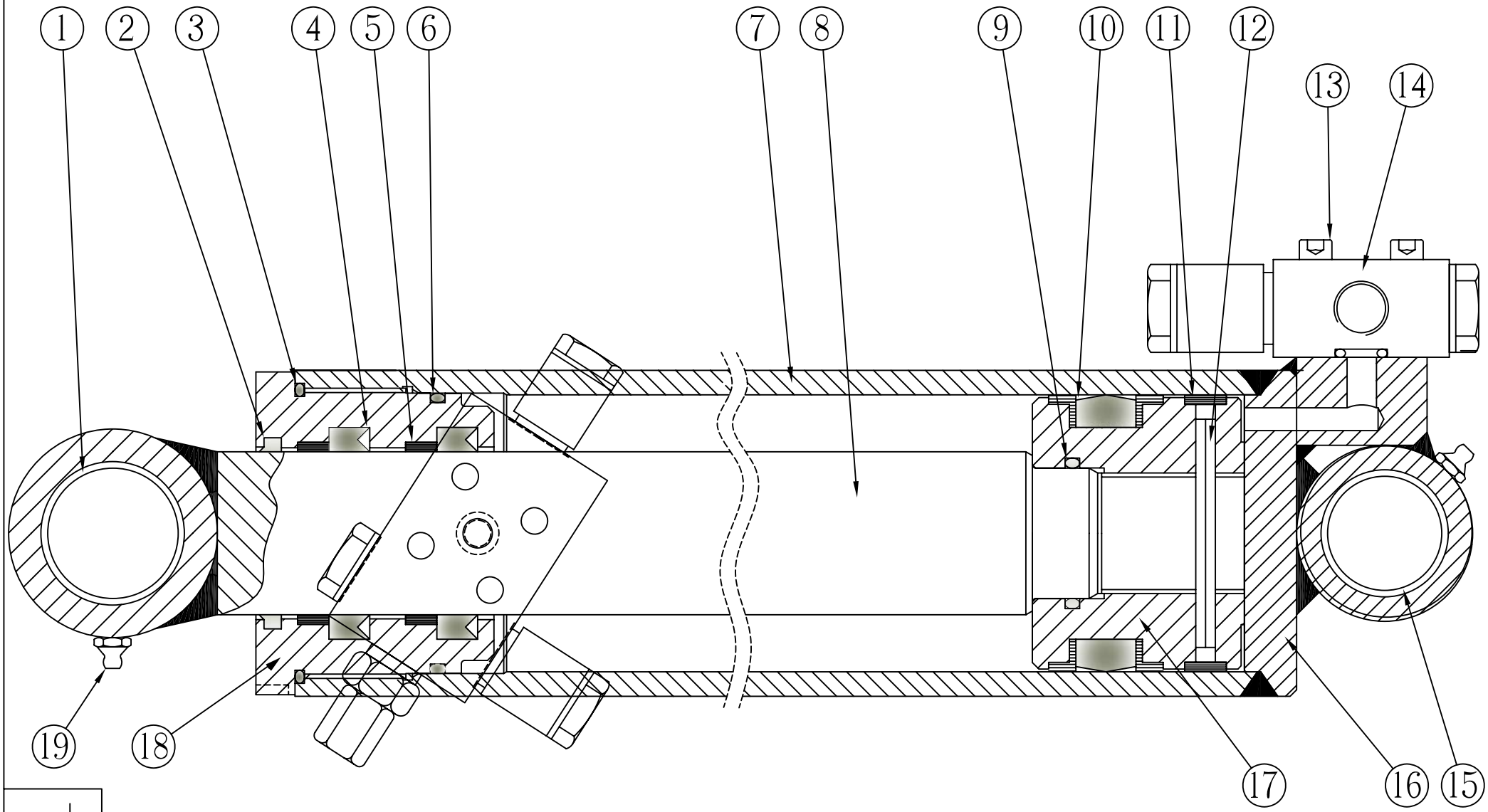
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	19.01.0236	4	VITE	BOLT	VIS
2	50.12.0166	1	VALVOLA	VALVE	SOUPAPE
3	08.14.3096	1	SUPPORTO FONDELLO	SUPPORT	SUPPORT
4	55.09.0001	1	SPINA ELASTICA	SPLIT SPIN	GOUPILLE FENDUE
5	18.04.0054	1	GUARNIZIONE	GASKET	JOINT
6	18.05.0041	2	ANELLO DI GUIDA	GUIDE RING	BAGUE DE GUIDAGE
7	18.01.0051	1	GUARNIZIONE OR	GASKET	JOINT
8	01.15.1106	1	STANTUFFO	PISTON	PISTON
9	01.10.0884	1	STELO	PISTON ROD	TIGE DE PISTON
10	01.151106	1	CAMICIA	CYLINDER TUBE	TUYAU DE CYLINDRE
11	01.15.1021	1	GHIERA DI BLOCCAGGIO	NUT	ECROU
12	01.15.1105	1	BUSSOLA DI GUIDA	GUIDE BUSH	DOUILLE DE GUIDAGE
13	18.01.0170	1	GUARNIZIONE OR	GASKET	JOINT
14	18.05.0056	2	ANELLO DI GUIDA	GUIDE RING	BAGUE DE GUIDAGE
15	18.05.0145	2	GUARNIZIONE	GASKET	JOINT
16	18.06.0037	1	RASCHIATORE	NIPER SCAL	SEGMENT RACLUER
17	01.01.0609	1	CILINDRO COMPLETO	LIFTING RAM	VERIN DE LEVAGE



TAV. 9

CILINDRO ORINTAMENTO JIB	JIB RAM	VERIN JIB

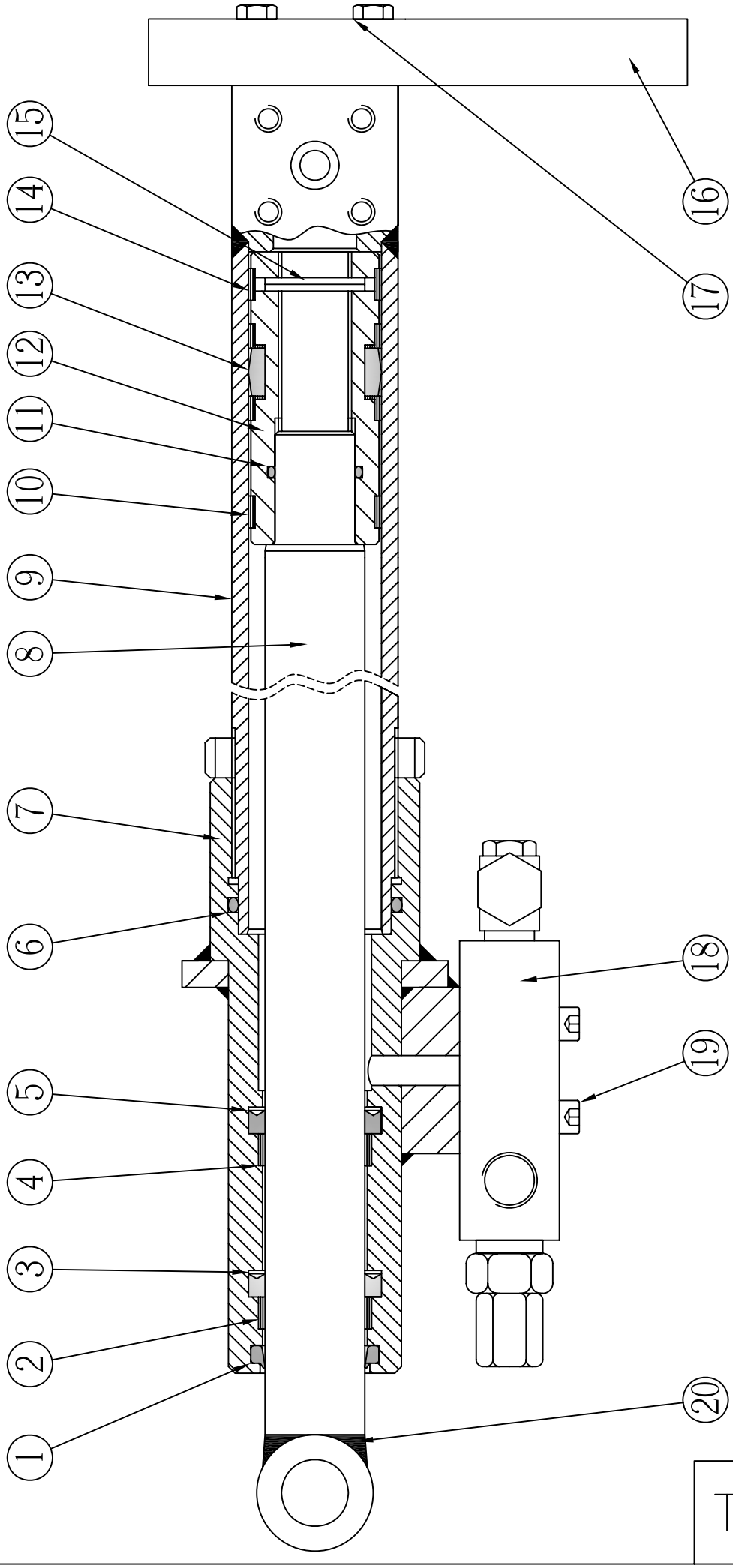
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	08.14.3511	2	BOCCOLA	BUSH	DOUILLE
2	18.06.0005	1	RASCHIATORE	WIPER SCAL	SEGMENT RACLEUR
3	18.01.0166	1	GUARNIZIONE OR	GASKET	JOINT
4	18.05.0061	2	GUARNIZIONE	GASKET	JOINT
5	18.05.0044	2	ANELLO DI GUIDA	RING	BAGUE
6	18.01.0167	1	GUARNIZIONE OR	GASKET	JOINT
7	01.09.0609	1	CAMICIA	CYLINDER TUBE	TUYAU DE CILINDRE
8	01.10.0888	1	STELO	PISTON ROD	TIGE DE PISTON
9	18.01.0210	1	GUARNIZIONE OR	GASKET	JOINT
10	18.04.0054	1	GUARNIZIONE	GASKET	JOINT
11	18.05.0041	1	ANELLO DI GUIDA	RING	BAGUE
12	55.09.0001	1	SPINA ELASTICA	SPLIT PIN	GOUPILLE FENDUE
13	19.01.0236	8	VITE	BOLT	VIS
14	50.12.0166	2	VALVOLA	VALVE	SOUPAPE
15	08.98.0002	2	BOCCOLA	BUSH	DOUILLE
16	01.01.0614	1	CILINDRO COMPLETO	JIB RAM	VERIN JIB
17	01.15.1113	1	STANTUFFO	PISTON	PISTON
18	01.15.1112	1	BUSSOLA DI GUIDA	GUIDE BUSH	DOUILLE DE GUIDAGE
19	55.14.0002	2	INGRASSATORE	GREASE NIPPLE	GRAISSEUR



TAV. 10

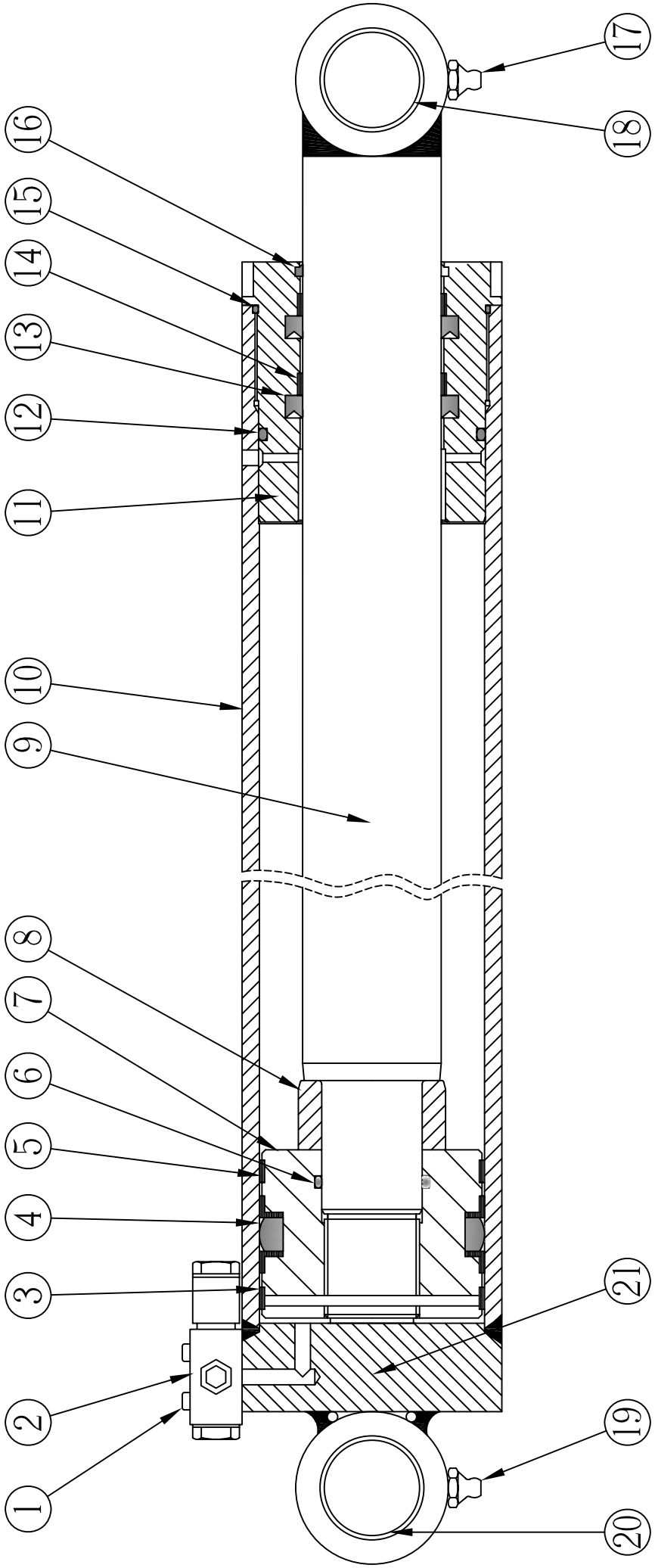
CILINDRO SFILO JIB	EXTENSION JIB RAM	VERIN DE TELESCOPAGE JIB

PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	18.06.0036	1	RASCHIATORE	WIPER SCAL	SEGMENT RACLEUR
2	18.05.0048	1	ANELLO DI GUIDA	RING	BAGUE
3	18.05.0146	1	GUARNIZIONE	GASKET	JOINT
4	18.05.0048	1	ANELLO DI GUIDA	RING	BAGUE
5	18.05.0146	1	GUARNIZIONE	GASKET	JOINT
6	18.01.0044	1	GUARNIZIONE	GASKET	JOINT
7	01.15.1114	1	TESTATA	GUIDE BUSH	DOUILLE DE GUIDAGE
8	01.10.0889	1	STELO	PISTON ROD	TIGE DE PISTON
9	01.09.0610	1	CAMICIA	CYLINDER TUBE	TUYAU DE CILINDRE
10	18.05.0055	1	ANELLO DI GUIDA	RING	BAGUE
11	18.01.0026	1	GUARNIZIONE	GASKET	JOINT
12	01.15.0909	1	STANTUFFO	PISTON	PISTON
13	18.04.0073	1	GUARNIZIONE	GASKET	JOINT
14	18.05.0055	1	ANELLO DI GUIDA	RING	BAGUE
15	55.09.0022	1	SPINA ELASTICA	SPLIT PIN	GOUPILLE FENDUE
16	08.14.3116	1	PATTINO	LINING	GOUJON
17	19.01.0005	4	VITE	BOLT	VIS
18	50.12.0166	2	VALVOLA	VALVE	SOUPAPE
19	19.01.0235	8	VITE	BOLT	VIS
20	01.01.0615	1	CILINDRO COMPLETO	JIB RAM	VERIN JIB



TAV. 11

CILINDRO DI SOLLEVAMENTO			LIFTING RAM		VERIN DE LEVAGE
PART.	*CODICE*	*QUANT.*	*DENOMINAZIONE*	*DESCRIPTION*	*DESIGNATION*
1	19.01.0235	4	VITE	BOLT	VIS
2	50.12.0166	1	VALVOLA	VALVE	SOUPAPE
3	18.05.0078	1	ANELLO DI GUIDA	RING	BAGUE
4	18.04.0059	1	GUARNIZIONE	GASKET	JOINT
5	18.05.0078	1	ANELLO DI GUIDA	RING	BAGUE
6	18.01.0264	1	GUARNIZIONE OR	GASKET	JOINT
7	01.15.1116	1	STANTUFFO	PISTON	PISTON
8	01.15.1109	1	BUSSOLA DI FRENATURA	GUIDE BUSH	DOUILLE DE GUIDAGE
9	01.10.0890	1	STELO	PISTON ROD	TIGE DE PISTON
10	01.09.0611	1	CAMICIA	CYLINDER TUBE	TUYAU DE CILINDRE
11	01.15.1115	1	BUSSOLA DI GUIDA	GUIDE BUSH	DOUILLE DE GUIDAGE
12	18.01.0093	1	GUARNIZIONE OR	GASKET	JOINT
13	18.55.0082	1	GUARNIZIONE	GASKET	JOINT
14	18.05.0056	1	ANELLO DI GUIDA	RING	BAGUE
15	18.01.0176	1	GUARNIZIONE	GASKET	JOINT
16	18.06.0037	1	RASCHIATORE	WIPER SCAL	SEGMENT RACLEUR
17	55.14.0002	1	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
18	08.14.3512	2	BOCCOLA	BUSH	DOUILLE
19	55.14.0002	1	INGRASSATORE	GREASE NIPPLE	GRAISSEUR
20	08.14.3512	2	BOCCOLA	BUSH	DOUILLE
21	01.01.0616	1	CILINDRO COMPLETO	JIB RAM	VERIN JIB



TAV. 12

VARIANTE CON STABILIZZATORI A BRACCIO FISSO

OPZIONALE

ELENCO TUBI FLESSIBILI XTJ 32

Cod. 02.24.0111

LE LUNGHEZZE SI RIFERISCONO AL TAGLIO DEL TUBO
AGGIORNATO AL : 31/12/2009

(a) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x250AK
DA FILTRO A 1630

(b) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1400AK
MANDATA GENERATORE

(c) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1000AK
2° POMPA HATZ A FILTRO

(d) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1000AK
SCARICO BASE STABILIZZATORE

(e) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x800AA
SCARICO VEI GENERATORE

(f) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1250AK
MANDATA BASE STABILIZZATORE

(g) -N°1 TUBO FLEX. SAE100 R2AT 3/4"gas TR20x900AK
DA 1630 A 1630

(h) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x350AA
1° FILTRO A 1630

(i) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1200AK
1° POMPA HATZ A FILTRO

(j) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1000AK
MANDATA COLLETTORE

(k) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x700AK
SCARICO COLLETTORE

(l) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1300AK
SCARICO DANFOSS

(m)-N°1 TUBI FLEX. SAE100 R2AT 3/4"gas TR20x1400AK
1630 A DANFOSS

(n) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x1000AK
MANDATA MOTORE 220

(o) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x1400AK
POMPA A MANO

(p) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1300AK
630 A CINGOLO

(q) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x900AA
SCARICO 630

(r) -N°3 TUBI FLEX. SAE100 R2AT 1/2"gas TR16x2600AK
CINGOLI

(s) -N°2 TUBI FLEX. SAE100 R2AT 5/16"gas TR10x1500AK
FRENO

(t) -N°2 TUBI FLEX. SAE100 R2AT 5/16"gas TR10x900AK
DRENAGGIO

(u) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x900AA
SCARICO 220

(v) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR10x300AK
SCARICO VALVOLA DOPPIA VELOCITA'

(w) -N°4 TUBI FLEX. SAE100 R2AT 1/4"gas TR10x2700AA
STAB. N 1-2 – ANTIABRASIONE

(x) -N°4 TUBI FLEX. SAE100 R2AT 1/4"gas TR10x2000AA
STAB. N 3-4 – ANTIABRASIONE

(y) -N°1 TUBO FLEX. SAE100 R2AT 1/6"gas TR16x2000AK
DA 630 A DANFOSS

(z) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x600AK
SFILO VALVOLA DI MASSIMA

(aa) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x900AK
SOLL. A VALVOLA DI NON RITORNO

(bb) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x1500AK
DANFOSS A PISTONE SOLL.

(cc) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x500AK
DA VALVOLA RIPARATRICE A DANFOSS

(dd) -N°1 TUBI FLEX. SAE100 R2AT 5/16"gas TR12x1000AK
DA VEI A PISTONE

(ee) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x700AK
VEI A COLLETTORE

(ff) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x600AA
VALVOLA RIPARATRICE A VEI

(gg) -N°4 TUBI FLEX. SAE100 R2AT 1/2"gas TR16x500AA
SCARICO VEI TORRETTA

(hh) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x300AK
SCARICO VALVOLA DI MASSIMA

(ii) -N°1 TUBO FLEX. SAE100 R2AT 1/2"gas TR16x1000AK SCARICO DANFOSS TORRETTA

(jj) -N°2 TUBI FLEX. SAE100 R2AT 5/16"gas TR12x1000AK ROTAZIONE TORRETTA

(kk) –N°2 TUBI FLEX. SAE100 R2AT 5/16"gas TR12x2000AK DANFOSS JIB TORRETTA

(ll) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x2500AK SFILO

(mm) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x2900AK DANFOSS SFILO

(nn) -N°3 TUBI FLEX. SAE100 R2AT 5/16"gas TR10x1200AK JIB

(oo) -N°2 TUBI FLEX. SAE100 R2AT 5/16"gas TR10x1200AK PISTONE JIB

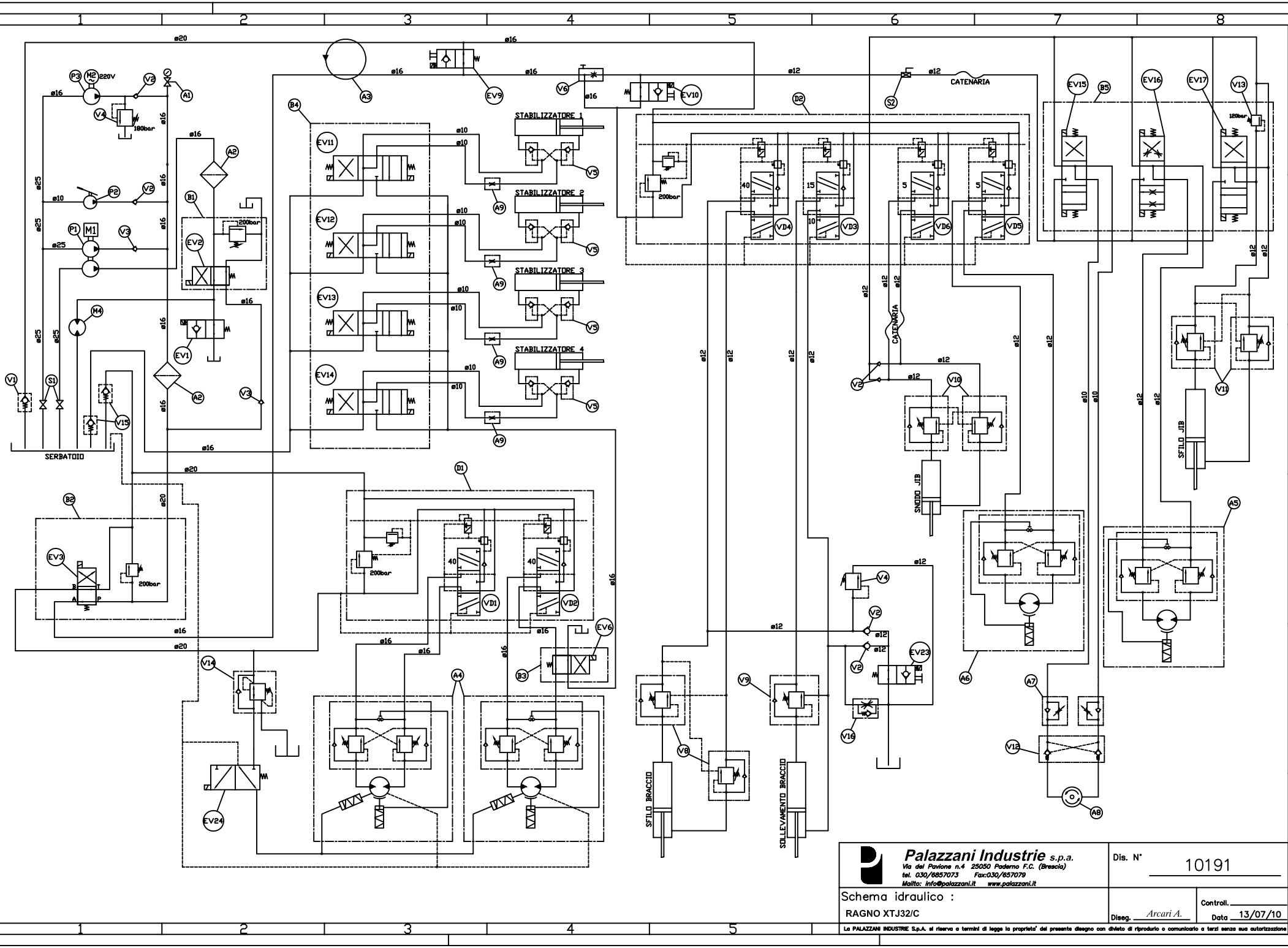
(pp) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR12x4800AA R7

(qq) -N°1 TUBO FLEX. SAE100 R2AT 5/16"gas TR10x4800AA R7

(rr) -N°1 TUBO FLEX. SAE100 R2AT 1/4"gas TR10x800AA

RAGNO XTJ 32 CON CINGOLI DIS. 10191

POS	qnt	DENOMINAZIONE	CODE
A1	1	MANOMETRO 0 - 250 bar ø 80 con rubinetto 1/4" gas	50120227
A2	2	FILTRO IN MANDATA 25 micron 40 lt/min. 1/2" gas	50120261
A3	1	COLLETTORE A 2 VIE da 1/2" gas	55280531
A4	2	MOTORE IDRAULICO TRASMITAL 704 C2K + valvola blocco + freno	Orig. Cing.
A5	1	MOTORE IDRAULICO MGLR 300 AS + freno xf30 ei 6b + valvola controllo	55280543
A6	1	MOTORID.MD211TS7,2+MLG400 VBO35MD + FRENO	55280148
A7	2	REGOLATORE DI FLUSSO DA 1/4" gas	50120146
A8	1	ATTUATORE ROTANTE ARM30/168/F cod.H.807/168F1A1F	55280548
A9	4	RACCORDO 337/F/006 FORO Ø 1	50110307
B1	1	BASE 3/4" gas (IDM 323 con sovrappressione incorporata)	50120252
B2	1	BASE 3/4" gas IDM 323 con sovrapressione incorporata	50120252
B3	1	BASE BA 302 1/2" gas	55280291
B4	1	PANNELLO A 4 PER DHU senza sovrappressione	55280313
B5	1	PANNELLO A 3 PER ELETTROVALVOLE	55280290
D1	1	DISTRIBUTORE PROPORZIONALE PVG 32/2 - 40 l/min.	55280354
D2	1	DISTRIBUTORE PROPORZIONALE PVG 32/4 (40 - 15 - 5 - 5l/min.) Cod.157F3094	55280537
EV1	1	ELETTROVALVOLA VEI - A2 - 09 con massello 1/2" gas	55280360
EV10	1	ELETTROVALVOLA VEI - 8A- 2A- 06 - NA - D1 con massello 3/8" gas	55280363
EV11	1	ELETTROVALVOLA DHU 0713 WP 24V	55280289
EV12	1	ELETTROVALVOLA DHU 0713 WP 24V	55280289
EV13	1	ELETTROVALVOLA DHU 0713 WP 24V	55280289
EV14	1	ELETTROVALVOLA DHU 0713 WP 24V	55280289
EV15	1	ELETTROVALVOLA DHU 0713 WP 24V	55280289
EV16	1	ELETTROVALVOLA DHZO-A-073-L1/18 20	55280315
EV17	1	ELETTROVALVOLA DHU 0713 WP 24V	55280289
EV2	1	ELETTROVALVOLA DKU 1630 WP - 24V	55280282
EV23	1	VEIC S128A COD. OS150617190302 +S8H12.7 24VDC 17W	55280428
EV24	1	VALVOLA OS131051300900 + OD02160130OC00	55280599
EV3	1	ELETTROVALVOLA DKU 1630 - WP - 24V	55280282
EV6	1	ELETTROVALVOLA DHU 0630 - WP - 24V	55280287
EV8	1	ELETTROVALVOLA 1/4 gas Cod. 5012262 24V	55280599
EV9	1	VEIC S128A COD. OS150617190302 +S8H12.7 24VDC 17W	55280428
M1	1	MOTORE TERMICO HATZ 2L 41 C insonorizzato 24V	55280303
M2	1	MOTORE ELETTRICO 220 V - 2,2 Kw monofase	55280284
M4	1	MOTORE IDRAULICO PLM 20.6,3 SO - 82E2 - LEA	14170065
P1	1	POMPA DOPPIA PLP 20.14 / 20.14D / FS EL	14170063
P2	1	POMPA DI EMERGENZA EP25 - W - B - TXA	55280013
P3	1	POMPA PLP 20.4 DO - 82E2 - LEA / EA N - EL	14170061
S1	2	SARACINESCA DA 3/4" gas	55030113
S2	1	RUBINETTO BK 3/8 gas AP	50120225
V1	1	VALVOLA DI FONDO EUROPA 1" gas	50120325
V10	2	VALVOLA DI BLOCCO VBSO - SEC - 30 - 4,2 : 1 - 20 - D	50120166B
V11	2	VALVOLA DI BLOCCO A - VBSO - SE 30 FC1 38 - 35 A	50120166
V12	1	VALVOLA DI BLOCCO VSO DEL 14	50120202
V13	1	VALVOLA HMP - 012/210 22	55280568
V14	1	VALVOLA RIDUZIONE PRESSIONE	50120333
V15	2	VALVOLA DI FONDO EUROPA 1" gas	50120241
V16	1	VALVOLA REGOLATRICE DI FLUSSO VRF 1/4"	50120289
V2	6	VALVOLA UNIDIREZIONALE CD 3/8" gas	50120120
V4	2	VALVOLA SOVRAPRESSIONE VSC 30 N da 3/8" gas	50120204
V5	4	VALVOLA DI BLOCCO VSO-DE-FC2 055344000201000	50120310
V6	1	VALVOLA RIPARTITRICE VRFC3 -C da 1/2" gas	50120250
V7	1	VALVOLA SOVRAPPRESSIONE VSC 80N da 1/2" gas	50120213
V8	2	VALVOLA DI BLOCCO A - VBSO - SE 30 FC1 38 - 35 A	50120166
V9	1	VALVOLA DI BLOCCO A - VBSO - SE 30 - PL - 38 - 35	50120196


SERBATOIO
STABILIZZATORE 1
STABILIZZATORE 2
STABILIZZATORE 3
STABILIZZATORE 4
CATENARIA
CATENARIA
SNODO JIB
STILO JIB
STILO BRACCIO
SOLLEVAMENTO BRACCIO
220V
180bar
200bar
200bar
200bar
120bar
Palazzani Industrie s.p.a.
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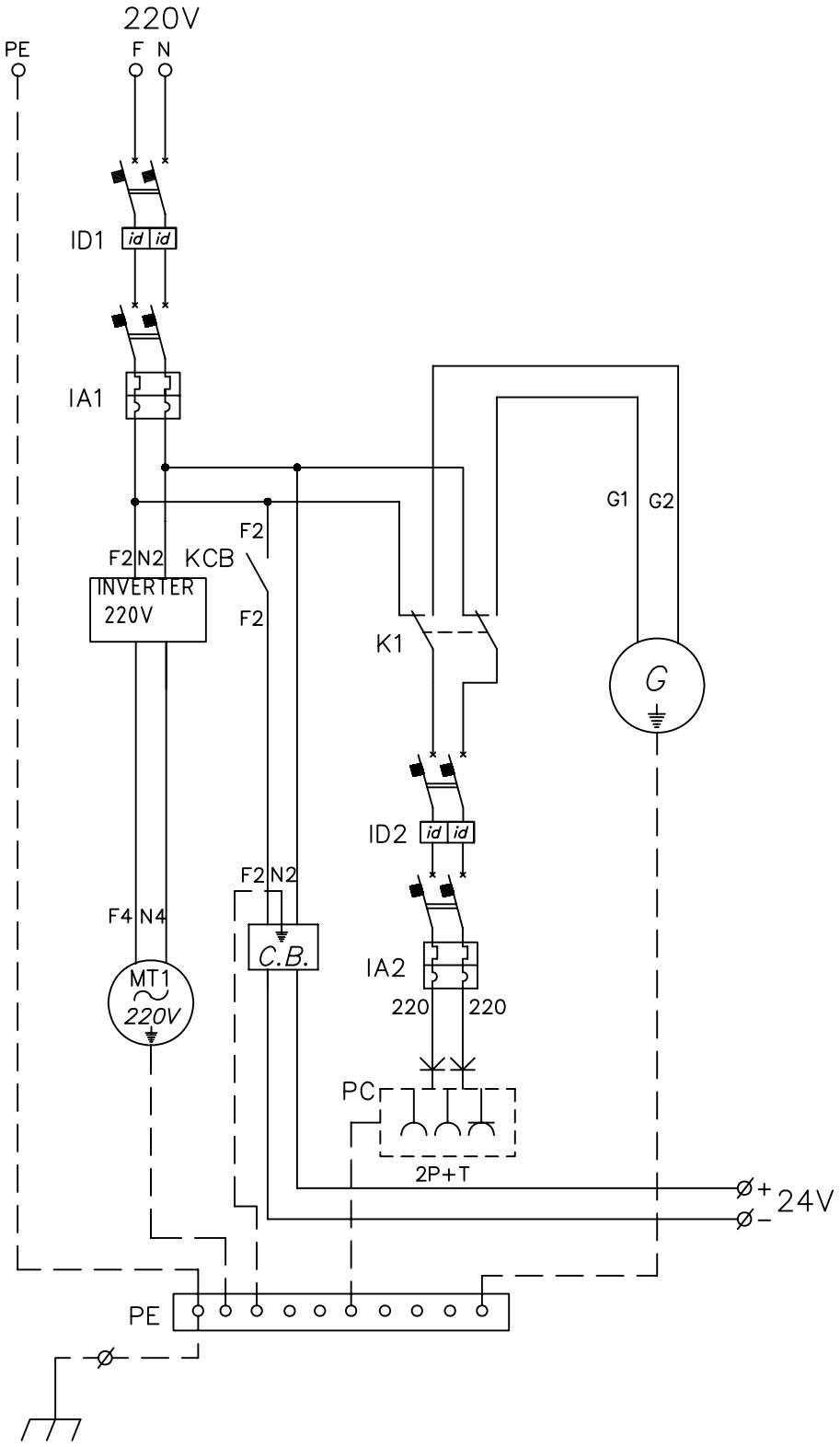
tel. 030/6857073 Fax:030/657079
Mailto: info@palazzani.it www.palazzani.it
Dis. N° 10191
Schema idraulico :
RAGNO XTJ32/C
Diseg. Arcari A.
Controll.
Data 13/07/10
La PALAZZANI INDUSTRIE S.p.A. si riserva a termini di legge la proprieta' del presente disegno con divieto di riprodurlo o comunicarlo a terzi senza sua autorizzazione

CIRCUITO DI POTENZA 220V CON GENERATORE E INVERTER DIS. 10129

SIGLA	DESCRIZIONE	POSIZIONE
CB	CARICA BATTERIE 10A 24V	
KCB	RELE' PROTEZIONE CARICA BATTERIE	
G	GENERATORE	
IA1	INTERRUTTORE AUTOMATICO LINEA 220V – 16A	
IA2	INTERRUTTORE LINEA GENERATORE 6A	
ID1	INTERRUTTORE DIFFERENZIALE AUTOMATICO LINEA 220V – 25A – 0,03A	
ID2	INTERRUTTORE DIFFERENZIALE AUTOMATICO LINEA GENERATORE 25A – 0,03A	
K1	RELE' GENERATORE	
MT1	MOTORE ELETTRICO 220V 2,2Kw	
INVERTER	INVERTER	
PC	PRESA SUL CESTO 220V 2P+T	
PE	BARRETTA DI RAME PER PROTEZIONE EQUIPOTENZIALE	



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Dis. N° 10129

Schema elettrico :

Circuito di potenza 220V con gener. e inverter

Diseg. Cajola M.

Controll. _____

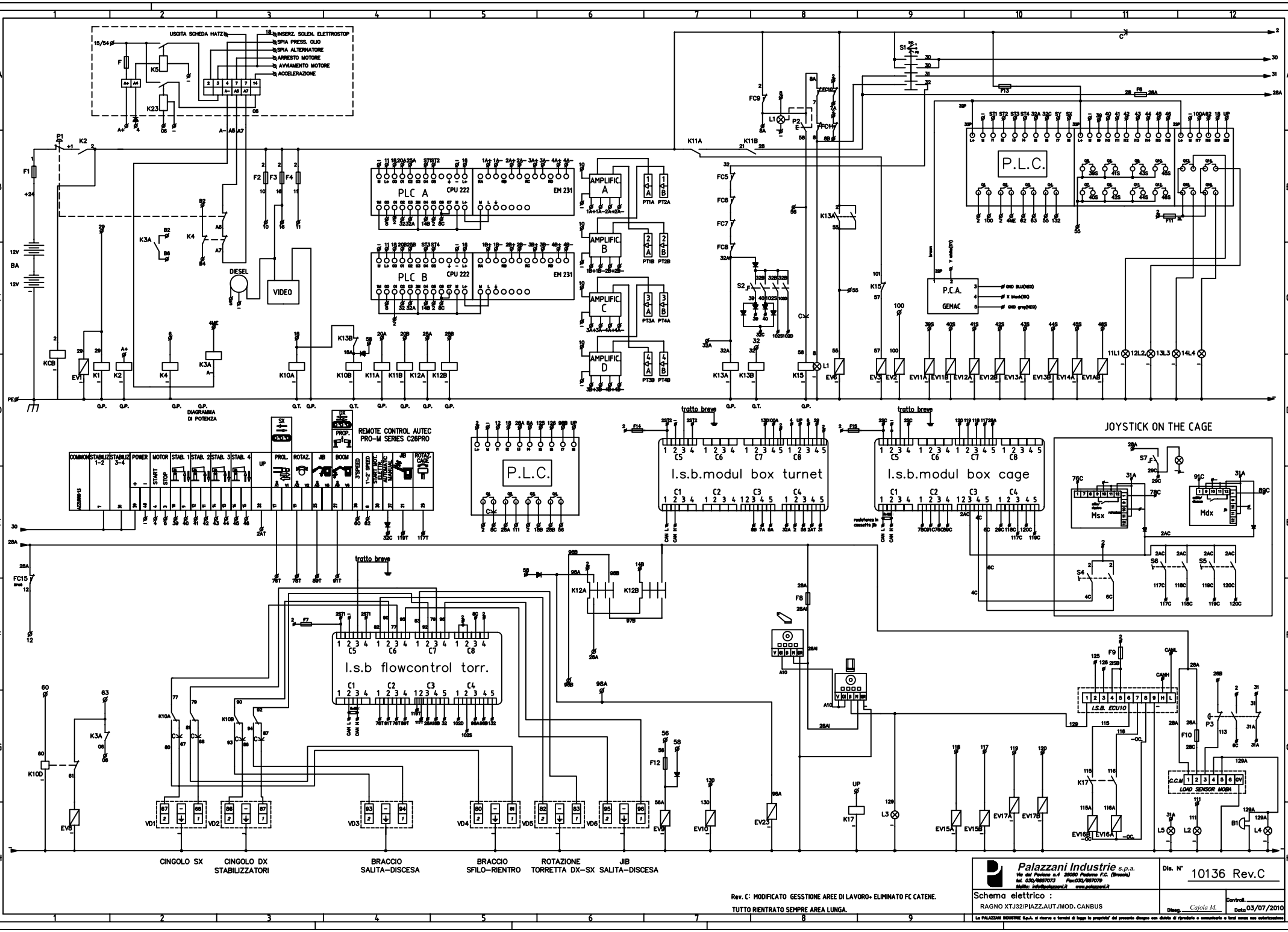
Data 29/09/09

RAGNO XTJ32 WITH TRACK

ELECTRICAL DIAGRAM DRAW 10136 REV.C

SIGLA	DESCRIZIONE
BA	BATTERY 12V
C	INTERCOMM. SYSTEM I.S.B.
B1	BUZZER LOAD SENSOR
EV1	ELETTROVALVE GENERATOR
EV2	ELETTROVALVE 2 PUMP
EV3	ELETTROVALVE OIL GROUND – BOOM
EV6	ELETTROVALVE OIL OUTRIGGERS
EV8	ELETTROVALVE 3 SPEED
EV9	ELETTROVALVE OIL BOOM
EV10	ELETTROVALVE OIL CAGE
EV11A	ELETTROVALVE OUTRIGGERS N°1(HOISTING)
EV11B	ELETTROVALVE OUTRIGGERS N°1(LOWERING)
EV12A	ELETTROVALVE OUTRIGGERS N°2(HOISTING)
EV12B	ELETTROVALVE OUTRIGGERS N°2(LOWERING)
EV13A	ELETTROVALVE OUTRIGGERS N°3(HOISTING)
EV13B	ELETTROVALVE OUTRIGGERS N°3(LOWERING)
EV14A	ELETTROVALVE OUTRIGGERS N°4(HOISTING)
EV14B	ELETTROVALVE OUTRIGGERS N°4(LOWERING)
EV15A	ELETTROVALVE ROTATION CAGE RIGHT
EV15B	ELETTROVALVE ROTATION CAGE LEFT
EV16A	ELETTROVALVE LEVELLING CAGE
EV16B	ELETTROVALVE LEVELLING CAGE
EV17A	ELETTROVALVE EXTENSION JIB
EV17B	ELETTROVALVE RE-ENTRY JIB
EV23	ELETTROVALVE LIMITATOR OIL
F	FUSE HATZ BOARD 10A
F1	MAIN FUSE 8A
F2	POWER AMPLIFICATOR FUSE 2A
F3	FUSE OF POWER PLC A – PLC B 2A
F4	FUSE FOR OUTPUT PLC A – PLC B 1A
F6	FUSE FOR THE CAGE LINE 4A
F7	FUSE FOR THE FLOWCONTROL 2A
F8	FUSE FOR THE EASY TALK 4A
F9	FUSE FOR THE ISB LEVELLING CAGE 4A
F10	FUSE FOR THE MOBA 2A
F11	FUSE FOR THE OUTRIGGERS LUMP 2A
F12	FUSE FOR THE OIL BOOM 2A
F13	FUSE FOR THE PLC FOR THE AUTOMATIC LEVELLING 2A
F14	FUSE FOR THE MODULBOX ISB 2A
F15	FUSIBILE MODULBOX ON THE CAGE 2A
FC5	MICROSWITCH FOR THE OUTRIGGERS
FC6	MICROSWITCH FOR THE OUTRIGGERS
FC7	MICROSWITCH FOR THE OUTRIGGERS
FC8	MICROSWITCH FOR THE OUTRIGGERS
FC9	MICROSWITCH BOOM RE-ENTRY
FC10	MICROSWITCH LOWERING BOOM
FC11	MICROSWITCH CENTER BOOM
FC15	MICROSWITCH AREA WORKING
I.S.B.	ELETTRONIC LEVELLING SYSTEM ECU10
MOBA	LOAD SENSOR
KCB	RELAY TO CHARGE BATTERY
K1	RELAY GENERATOR
K2	MAIN RELAY
K3A	RELAY TO CHANGE ELECTRICAL MOTOR AND HATZ
K4	RELAY STOP MOTOR
K5	RELAY START MOTOR
K10A	RELAY CHANGE TRAVELLING
K10B	RELAY CHANGE TRAVELLING
K10D	RELAY 3SPEED
K11A	RELAY BOOM MOVEMENTS INTERLOCK
K11B	RELAY BOOM MOVMENTS INTERLOCK
K12A	RELAY LIMIT AREA PLC A

K12B	RELAY LIMIT AREA PLC B
K13A	RELAY CHANGE OUTRIGGERS
K13B	RELAY CHANGE OUTRIGGERS
K15	RELAY EMERGENCY BOOM
K17	RELAY FOR THE LEVELLING ELECTROVALVE
K23	RELAY ACCELERATOR
L1	GREEN LUMP
L2	LUMP FOR THE LIMIT AREA WORKING
L3	LUMP FOR THE ALARM TO LEVELLING CAGE
L4	LUMP FOR THE LOAD ALARM
L5	GREEN LUMP FOR THE CONTROL PANEL IN THE CAGE
11L1	LUMP OUTRIGGER 1
12L2	LUMP OUTRIGGER 2
13L3	LUMP OUTRIGGER 3
14L4	LUMP OUTRIGGER 4
P1	EMERGENCY STOP IN THE MAIN BOX
P2	PUSH BUTTON TO HOISTING THE BOOM (WITH GREEN LUMP)
P3	EMERGENCY STOP IN THE CAGE
PLC A	PROGRAMMABLE LOGIC CONTROLLER
PLC B	PROGRAMMABLE LOGIC CONTROLLER
PT1A	POTENTIOMETER GEFRAN
PT1B	POTENTIOMETER GEFRAN
PT2A	POTENTIOMETER GEFRAN
PT2B	POTENTIOMETER GEFRAN
PT3A	POTENTIOMETER GEFRAN
PT3B	POTENTIOMETER GEFRAN
PT4A	POTENTIOMETER GEFRAN
PT4B	POTENTIOMETER GEFRAN
S1	SWITCH OUTRIGGER/TRASLATION/CAGE
S2	SWITCH TO AUTOMATIC LEVELING
S4	SWITCH START/STOP ON THE CAGE
S5	SWITCH EXTENSION/RE-ENTRY JIB ON THE CAGE
S6	SWITCH ROTATION CAGE ON THE CAGE
S7	SWITCH GENERATOR ON THE CAGE
MA1	JOYSTICH ROTATION/EXTENSION
MA2	JOYSTICH BOOM/JIB
VD1	DANFOSS – TRACK LEFT
VD2	DANFOSS –TRACK RIGHT– OUTRIGGERS
VD3	DANFOSS – BOOM
VD4	DANFOSS – EXTENSION/RE-ENTRY BOOM
VD5	DANFOSS – ROTATION
VD6	DANFOSS –JIB
P.L.C.	P.L.C. AUTOMATIC LEVELLING
P.A.C.	AUTOMATIC LEVELLING SENSOR
ISB FLOW	MODULO FLOWCONTROL CANBUS
ISB TOR	MODULO CANBUS
ISB TAST.	MODULO TASTIERA CANBUS



Rev. C: MODIFICATO GESSTIONE AREE DI LAVORO+ ELIMINATO FC CATENE.
TUTTO RIENTRATO SEMPRE AREA LUNGA.

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Dis. N° 10136 Rev.C

Schema elettrico :
RAGNO XTJ32/PIAZZ.AUT./MOD. CANBUS

Disegn. Cajola M.

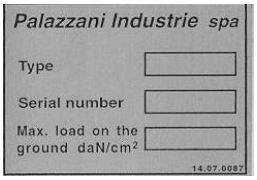
Controll.

Data 03/07/2010

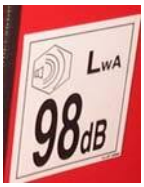
KIT ADESIVI XTJ32 FILO 14070558

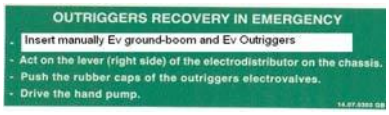
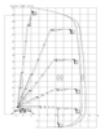
CODICE	DESCRIZIONE	Qta	
14070077	ADESIVO GANCIO DI SOLLEVAMENTO	4	
14070078	ADESIVO RIFORNIMENTO GASOLIO	1	
14070079	ADESIVO RIFORNIMENTO OLIO IDRAULICO	1	
14070080	ADESIVO DIVIETO LAVORO CON STAB. SFILATI	4	
14070082	ADESIVO TENSIONE 220VOLT	1	
14070084	ADESIVO PERICOLO SCHIACCIAMENTO MANI	1	
14070085	TARGA ALLUM. IDENTIFIC. PALIFT ITALIA	1	
14070086	TARGA ALLUM.IDENTIFICAZIONE NAVICELLA	1	

14070087	TARGHETTA ALLUM. IDENTIFIC. STABILIZ.	4
14070088	ADESIVO USO ATTREZZATURA	1
14070089	ADESIVO ISTRUZ.OPERATIVE	1
14070090	ADESIVO MANUTENZIONE ORDINARIA	1
14070095	ADESIVO PORTATA MAX. CESTO	2
14070178	ADESIVO LOGO PALAZZANI h10cm	2
14070556	ADESIVO CARICO SUGLI STABILIZZ. 35 KN	4
14070244	ADESIVO PALAZZANI.IT TRICOLORE BASE 130	1
14070286	ADESIVO POTENZA SONORA LWA...d/B CE 2000/14	1



scritto kN35

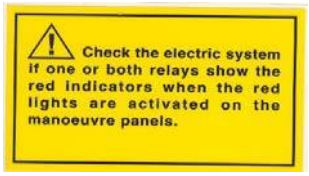


14070303	ADESIVO RECUPERO STABILIZZATORI	1	
14070304	ADESIVO USO DELLA POMPA A MANO	1	
14070305	ADESIVO APPARECC. ELETTRICA RAGNI	1	
14070352	ADESIVO ACCESSO AI DISTRIBUTORI (PALIFT)	1	
14070353	ADESIVO TRASLAZIONE	1	
14070555	ADESIVO AREA DI LAVORO RAGNI XTJ32	1	
14070393	ADESIVO PER RAGNI	1	
14070413	SERIE ADESIVI "1 2 3 4" STAB. PIATTAFORME	2	
14070414	ADESIVO OBBLIGO DI INDOSSARE L'ELMETTO	1	

14070415	ADESIVO OBBLIGO DI INDOSSARE LE CINTURE DI SICUREZ	1
14070416	OBBLIGO DI UTILIZZARE UTENSILI CLASSE 2	1
14070418	ADESIVO PRESP. PALAZZANI TSJ CON OMBRA	2
14070420	ADESIVO PERICOLO ATTREZ. NON ISOLATA	1
14070421	ADESIVO POMPA MANUALE	1
14070422	ADESIVO PRESA 220V 35X20mm	1
14070429	ADESIVO PROIBITO SOSTARE RAGGIO AZIONE MACCHINA	1
14070430	ADESIVO GANCIO SOLLEVAMENTO RAGNO	4
14070431	ADESIVO SALITA STABILIZZATORI	1

14070432	TARGA ADESIVA ALLUM. 'ARRESTO D'EMERGENZA'	1
14070436	ADESIVO VERDE MANOVRE EMERGENZA ELETTROVAL.	1
14070442	ADESIVO BLU "STACCABATTERIE"	1
14070446	ADESIVO ESCLUSIONE MOVIMENTI SUPERIORI	1
14070457	ADESIVO GIALLO PERICOLO SOSTITUZIONE RELE',…	1
14070458	ADESIVO: PULSANTE PER LIVELLAMENTO CESTA	1
14070557	RECUPERO CESTO (VERDE)	1
14070479	ADESIVO DA APPLICARE SU LEVA PER MOVIMENTO CINGOLI	2
14070480	ADESIVO DA APPL. SU LEVA (SELEZIONA CESTO O STAB)	1

14070485	ADESIVO GIALLO: FAR CONTROLLARE L'IMPIANTO SE.. .	1
14070488	ADESIVO VERDE ESCLUSIONE PILOTAGGI	2
14070437	ADESIVO SFILO - RIENTRO JIB	1
14070552	ADESIVI TARGHETTE EV	1



COD. 14070552
KIT TARGHETTE ALLUMINIO ELETTROVALVOLE PER XTJ32
FONDO ALLUMINIO
SCRITTA COLORE ROSSO
DIMENSIONI: H= 3 Cm L= 4,5 Cm

EV01
EV02
EV03
EV06
EV09
EV10
EV11
EV12
EV13
EV14
EV15
EV16
EV17
EV23