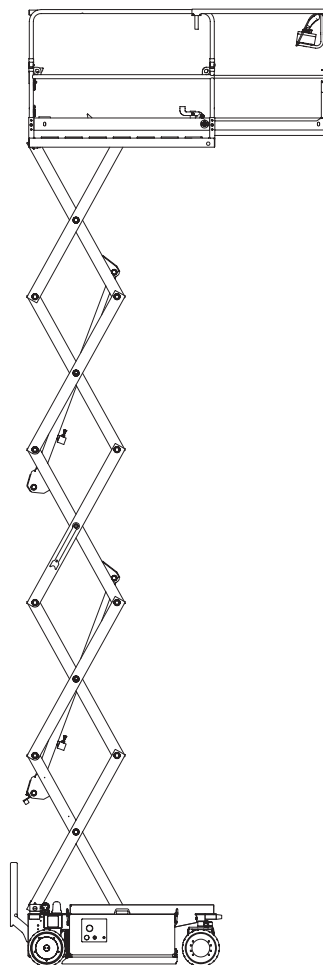


IM 3230

MOBILE ELEVATING WORK PLATFORM USE AND MAINTENANCE MANUAL

MUM IM 3230 EN R00 06/2019



IM 3230

TRANSLATION OF THE ORIGINAL INSTRUCTIONS

IMER INTERNATIONAL S.p.A.

Headquarters

Via Salceto, 55 - 53036 POGGIBONSI (SI) - (ITALY)
Tel. +39 0577 97341 - Fax +39 0577 983304

ACCESS PLATFORMS Division

Via San Francesco d'Assisi, 8 - 46020 PEGOGNAGA (MN) - ITALY
Tel. 0376 554011 - Fax 0376 559855

www.imergroup.com





Headquarters

IMER International S.p.A.

Via Salceto, 53-55 - 53036 POGGIBONSI (SI)
(ITALY)

Tel. +39 0577 97341 - Fax +39 0577 983304



Access Platform Division

46020 PEGOGNAGA (MN) ITALIA

Via S. Francesco D'Assisi, 8

Tel. +39 0376 554011 Fax +39 0376 559855



**IM 3230 is compliant to
ANSI A92.20/2018**

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Static and dynamic tests

Before commissioning, the static and dynamic tests have been performed according to the harmonised standard EN 280 section 6.3.

After-sale service

For interventions, repairs and revisions, address to authorized workshops. For information contact our Technical After-Sale Assistance.

Spare-part service

A good and lasting working guarantee is assured by using original spare parts only; make reference to the "SPARE PARTS CATALOGUE".

Always state the data described on the identification plate placed on the chassis if you need spare parts or assistance.

Responsibility

IMER International s.p.a. will be exempted from any responsibility and obligation for any damage caused to persons or things due to one of the reasons listed below:

- Failure to comply with the instructions in the USE AND MAINTENANCE MANUAL as regards the control, use and maintenance of the machine;
- Incorrect use and maintenance of the machine;
- Changes to the structure or components of the machine without the authorisation of IMER International s.p.a. and/or without the use of appropriate equipment;
- Circumstances unrelated with the normal and correct use of the machine as described in this USE AND MAINTENANCE MANUAL.
- Use of non-original spare parts not authorised by the manufacturer.

General instructions - safety



Manual

A suitable working safety is very important in order to avoid serious injuries for the operator himself and for the other persons, therefore it is compulsory to carefully read and well-understand this manual to know the exact and essential instructions for the use of the machine and the maintenance operations.

This manual is to be considered as an integral part of the machine and it should always remain on the platform for future reference.

This use manual must be carefully preserved by the user for the whole machine life, even if the machine is lent, rent or sold

The figures described in this manual DON'T always exactly reproduce the model described but these are used for a better and easier understanding of the text

Safety systems

The safety systems applied to the machine are inevitably subject to wear and to go out of tune. Therefore, they must be controlled and kept in perfect efficiency; also, it is not advisable to evaluate their operational and safety conditions only on the basis of their functioning.

Such systems do not relieve the operator of the responsibility of carrying out an informed and appropriate use of the machine.

It is absolutely forbidden to remove, modify or tamper with parts of the self-propelled aerial platform, which are important for safety and stability.

In particular as batteries have also a stabilizing function, in case of replacement, check that their weight is not lower than the one indicated in the technical data table of the machine.

Any tampering whatsoever with the main members of the self-propelled aerial platform and associated safety devices immediately nullifies guarantee conditions.



Labels and plates

Potential dangers and instructions regarding the machine are given on labels and plates; these should therefore be kept in a clearly legible, good condition.

Operator's requirements

The operator shall:



1. Read and well understand all the documentation enclosed to the machine, be properly trained and instructed in the correct use of the machine and know the safety rules and devices.
2. Be physically in good conditions and not make use of dope, alcohol or drugs that could affect the attention, the reaction, the sight and the hearing.
3. Give a great importance to safety and refuse to work if you think you are not working under safe conditions.
4. Well-know the maximum working load.
5. Use suitable accident prevention equipment accordingly with the working conditions and the local rules in force.
6. During the working keep all the parts of the body inside the guard rails and both feet have to be firmly rest on the floor surface.
7. Make always use of an assistant in areas where the sight is obstructed.
8. Always work under highest safe conditions, tidiness and cleaning.
9. Before using the machine check daily the controls and safety devices and make sure they are in perfect working order.
10. Check that the working area is free from persons, animals or obstacles before making any movement of the machine.
11. Check that the ground where the machine has to operate is free from holes, bumps, drops, uneven level, obstructions, debris and coverings which could hide possible potholes or others dangers.
12. Clean the ladder, the floor surface of the platform and the handrails from oil and grease.
13. Once the work has been finished and when the machine remains unattended, take the key off to avoid that unauthorized persons can use it.
14. Commuting platform control panel, always remove the key to avoid an unauthorized use from the ground control panel while personnel is present on the platform. The safety manager must hold a spare key enabling to use the ground control panel as emergency place. (In case of failure it is possible to lower the machine).

Distance from the electric lines



The machine is not electrically insulated and does not offer any protection against active parts, electrical lines and plants which are not protected or not sufficiently protected.

Here below you can find a table concerning the safety distances to be compulsory observed according to the Italian law.

In other countries the operator may have different limitations to be observed

Un (V)	Minimum Allowed Distance	
0 – 300 V	<i>Avoid contact</i>	
300 V – 50kV	10ft	3,05m
50kV – 200kV	15ft	4,80m
200kV – 350kV	20ft	6,10m
350kV – 500kV	25ft	7,80m
500kV – 750kV	35ft	10,70m
750kV – 1000kV	45ft	13,70m

Un = nominal voltage

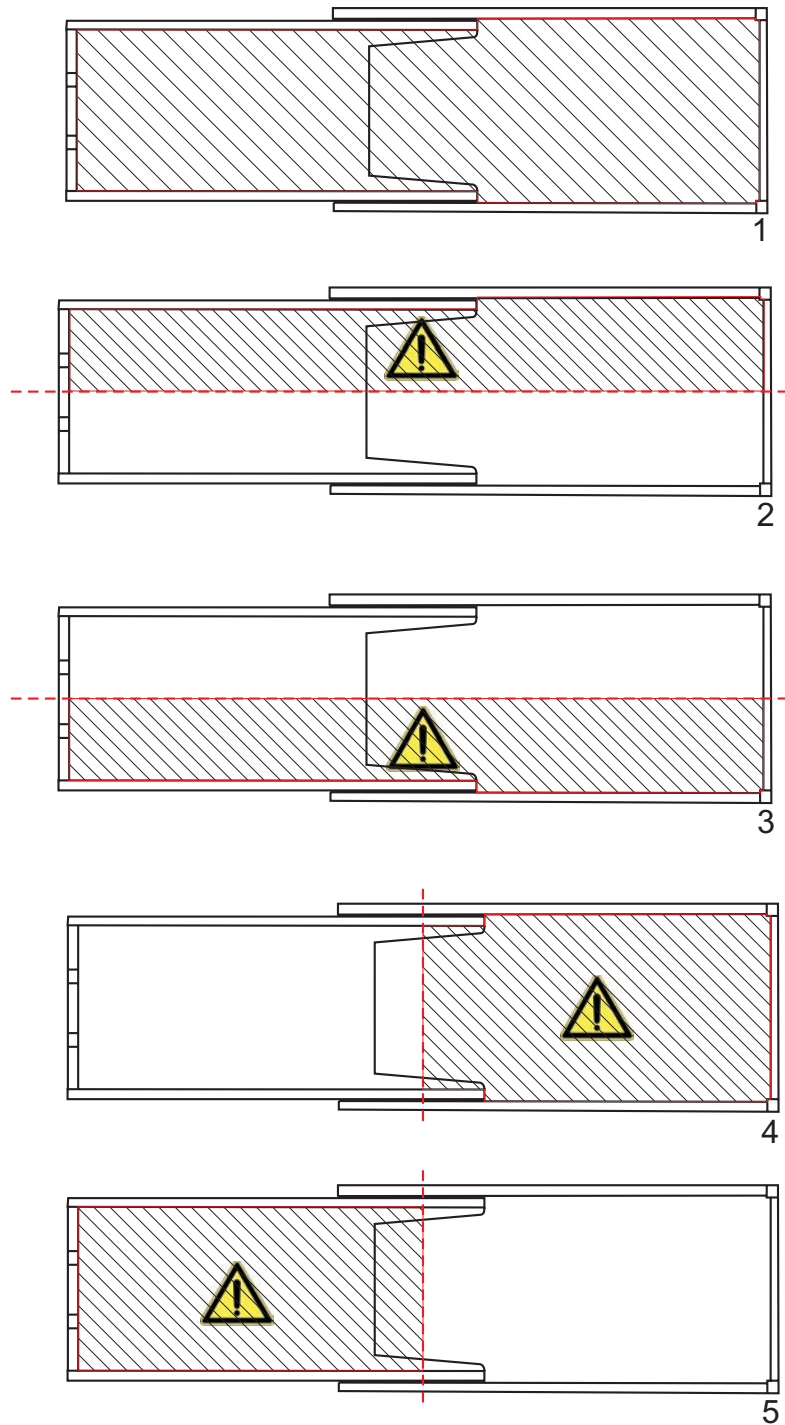
Load distribution

Distribute the load on the entire platform surface uniformly (figure 1)

Do not load on surfaces that are lower than those indicated in figures 2-3-4-5.

Mobile platform

Fixed platform





Not allowed operations

It is strictly forbidden to use the machine:

- Out of closed places (IM 4680 - IM 5980 - IM 3230).
- On public roads.
- Without an adequate environmental lighting to work or to move under safety conditions.
- Work in case of strong storm, with or without rain, or with wind with speed higher than 12,5 m/s, 6 grade of the Beaufort scale described below (IM 5980 EX).
- Without making sure that the platform gate bar is closed.
- While moving, with boxes opened.
- If the working area is not free from obstacles which could cause dangerous conditions.
- While entering in contact with fixed or mobile objects.
- Under bad working conditions.
- In a different way from what it has been described in the instruction manual.
- After modifying or removing the safety devices.
- After fastening it to adjacent structures.

In addition, it is forbidden to:

- Operate or lift the platform when it is placed on the truck loading platform or other vehicle.
- To throw some objects and tools from the top to down and vice versa.
- Go up and down the ladder when the back box is not completely closed.

Beaufort Wind Scale

	Description	Wind speed (km/h)	Wind speed (km/h)	Sea conditions	Land conditions
0	Calm	0	0	Flat	Calm. Smoke rises vertically.
1	Light air	1-6	0.3-1.5	Ripples without crests.	Wind motion visible in smoke.
2	Light Breeze	7-11	1.6-3.4	Small wavelets. Crests of glassy appearance, not breaking.	Wind felt on exposed skin. Leaves rustle.
3	Gentle breeze	12-19	3.4-5.4	Large wavelets. Crests begin to break; scattered whitecaps.	Leaves and smaller twigs in constant motion.
4	Moderate breeze	20-29	5.5-7.9	Small waves.	Dust and loose paper raised. Small branches begin to move.
5	Fresh breeze	30-39	8.0-10.7	Moderate (1.2 m) longer waves. Some foam and spray.	Smaller trees sway.
6	Strong breeze	40-50	10.8-13.8	Large waves with foam crests and some spray.	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	Near gale / Moderate gale	51-62	13.9-17.1	Sea heaps up and foam begins to streak.	Whole trees in motion. Effort needed to walk against the wind.
8	Fresh gale	63-75	17.2-20.7	Moderately high waves with breaking crests forming spindrift. Streaks of foam.	Some twigs broken from trees. Cars veer on road.
9	Strong gale	76-87	20.8-24.4	High waves (6-7 m) with dense foam. Wave crests start to roll over. Considerable spray.	Larger branches break off trees, construction/ temporary signs and barricades blown over, damage to circus tents and canopies.
10	Whole gale / Storm	88-102	24.5-28.4	Very high waves. The sea surface is white and there is considerable tumbling. Visibility is reduced.	Trees broken off or uprooted, saplings bent and/ or deformed, poorly attached asphalt shingles and shingles in poor condition peel off roofs.
11	Violent storm	103-117	28.5-32.6	Exceptionally high waves.	Widespread vegetation damage, minor damage to most roof shingles/surfaces, gravel may be blown from flat roofs.
12	Hurricane	> 117	> 32.5	Huge waves. Air filled with foam and spray. Sea completely white with driving spray. Visibility greatly reduced.	Considerable and widespread damage to vegetation, a few windows broken, structural damage to mobile homes and poorly constructed sheds and barns.

To minimize hazards

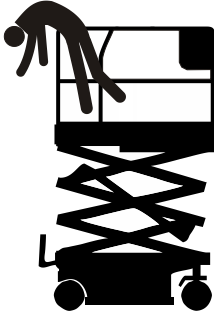
Follow the instructions below:

Risk of folding



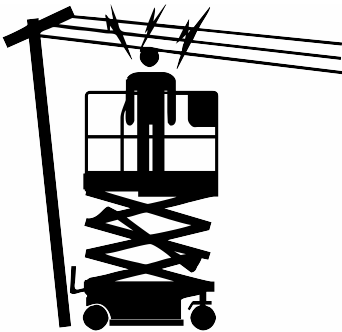
- Check the ground is firm and even.
 - Do not use the machine on slippery, icy, muddy ground and with holes, which has a slope higher than the allowed limit.
 - Make sure that the ground suitably supports the maximum load of each wheel.
 - Check that the ground where the machine has to operate is free from holes, bumps, drops, uneven level, obstructions, debris and coverings which could hide possible potholes or others dangers.
 - Comply with the maximum load and the allowable number of persons.
-
- Distribute the loads and place them as indicated on page 15.
 - Avoid the machine knocks against fixed or mobile obstacles.
 - Do not use the machine as a crane with materials suspended to the guard rails or to the scissor.
 - Do not increase the maximum available working height by putting ladders or scaffolds on the platform or climbing onto the guard rails.
 - Do not place materials on the guard rails.
 - Give the best attention during movements with mobile travelling platform.
 - During movements, lifting and lowering of the platform, check that there are not obstructions around, above and below the machine.
 - Carry out the movements only if the working area visibility is complete.
 - During movements on slopes or when loading/unloading from the truck through ramps only use the second (medium) speed.
 - Do not use an horizontal force above:
 - 400 N (IM 4680 - IM 5980 - IM 3230)
 - 400 N (internal use) - 200 N (external use) (IM 5980 EX)
 - Do not equip the machine with elements (ex. panels) which increase the wind exposure (IM 5980 EX).

Risk of falling



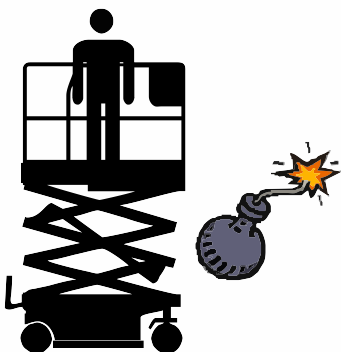
- Do not lean out of the safety perimeter guard rails of the platform.
- Do not use guard rails as admittance means to get on or get down from the platform.
- Do not get on or get down from the platform when it is lifted.

Electric hazards



- As the machine is not electrically insulated, the operator has to pay a particular attention to avoid any contact with probably energized parts.
- Do not carry out works near electrical lines at a distance lower than the one indicated in the table page 14.
- To assure the earth-leakage of the electrostatic charges, the front partition of the machine is equipped with a conductive strip. **Always check the wear of this strip and its contact with the earth.**

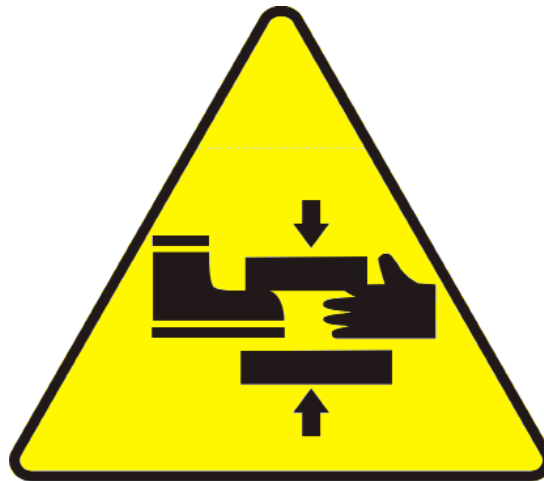
Explosion or burn hazards



- Do not use the machine near open flames or heat sources.
- Charge batteries in ventilated environment, far from heat sources or explosive fluids.
- Do not use the machine if there are oil leakage.
- Do not use the machine in environments with explosive atmosphere.

Residual risks

The plates and labels listed below indicate the residual risks that remain despite there being protective measures incorporated into the machine's design and regardless of the safety devices adopted.



Description of the machine

This edition contains the use and maintenance of the self-propelled aerial platform:

IM 3230

Designed and manufactured to be electrically operated and with proportional controls.

Only qualified and skilled operators can use these machines.

Platform manufacturer:

IMER INTERNATIONAL S.p.A.

Via Salceto, 55 - 53036 POGGIBONSI (SI) -(ITALY)

Tel. 0577 97341 - Fax 0577 983304

www.imergroup.it

SEDE OPERATIVA

Business Unit IMER ACCESS

46020 PEGOGNAGA (MN) ITALIA

Via S. Francesco D'Assisi, 8

Tel. Fax +39 0376.559855

Standard equipment

- Electric drive on front wheels
- Proportional controls with diagnostics
- Parking brakes with electric disengagement
- Hydraulic steering at 90°
- Manually-operated platform extension m. 1,00
- Emergency manual lowering
- Lock valve on lifting cylinders
- Drive batteries 24V-185Ah C5
- Automatic disengagement battery charger
- Audible motion alarms, Horn, Hour-counter
- Inclination sensor with motion locking device
- Mechanical wheel drive unlock for emergency towing
- Battery isolator
- Non-marking cushion tyres
- Electric shearing-proof protection
- Battery control system with low-voltage protection
- Overload sensor
- Folding rails
- Anti-overturn protections
- EC - EN280 marking
- Rotating beacon
- Cable pre-set for 120V line

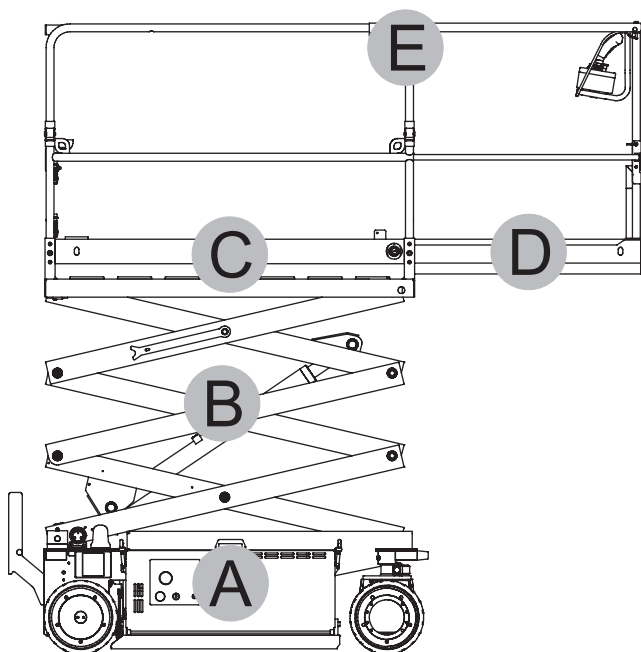
Optional

- AGM battery kit
- Second beacon kit
- Compressed air kit

Presentation

The aerial platform IM 3230 is used to lift persons, materials and equipment to enable works to be performed at certain heights.

must to be used accordingly with the foreseen technical data described in the suitable sheet, on solid and strong grounds and not before a Qualified Operator has checked the operational safety.

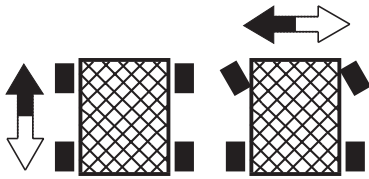


It is equipped with:

- Chassis (A)
- Scissor (B)
- Platform (C)
- Platform extension (D)
- Guard rails (E)

The **railings are folding** to minimise when the machine is completely closed, the maximum height thus allowing the passage through openings of reduced height.

List of movements



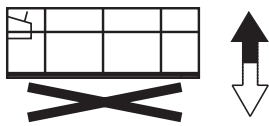
Drive and Steering

The chassis is equipped with two front driving and steering wheels to drive the machine; the two rear wheels are idler.

Electromagnetic brakes act on the front wheels.

The steering is operated by an hydraulic cylinders.

Drive and steering can be carried out also with lifted platform and/or extended.



Lifting/lowering the platform

The movement is operated by:

- one hydraulic cylinder (IM 4680 - IM 5980 - IM 5980 EX)
- two hydraulic cylinders (IM 3230)

that work on the scissors.

The lifting/lowering the platform can be carried out also with extended platform.


Control proportionality

Drive and lifting are controlled by proportional control.

The movement graduality is obtained by means of the electronic control; depending on the movements of the joystick on the platform control panel, more or less energy is supplied to the electric motors and electric pump.

Identification

A metallic plate fixed to the chassis contains all data necessary to identify the machine.

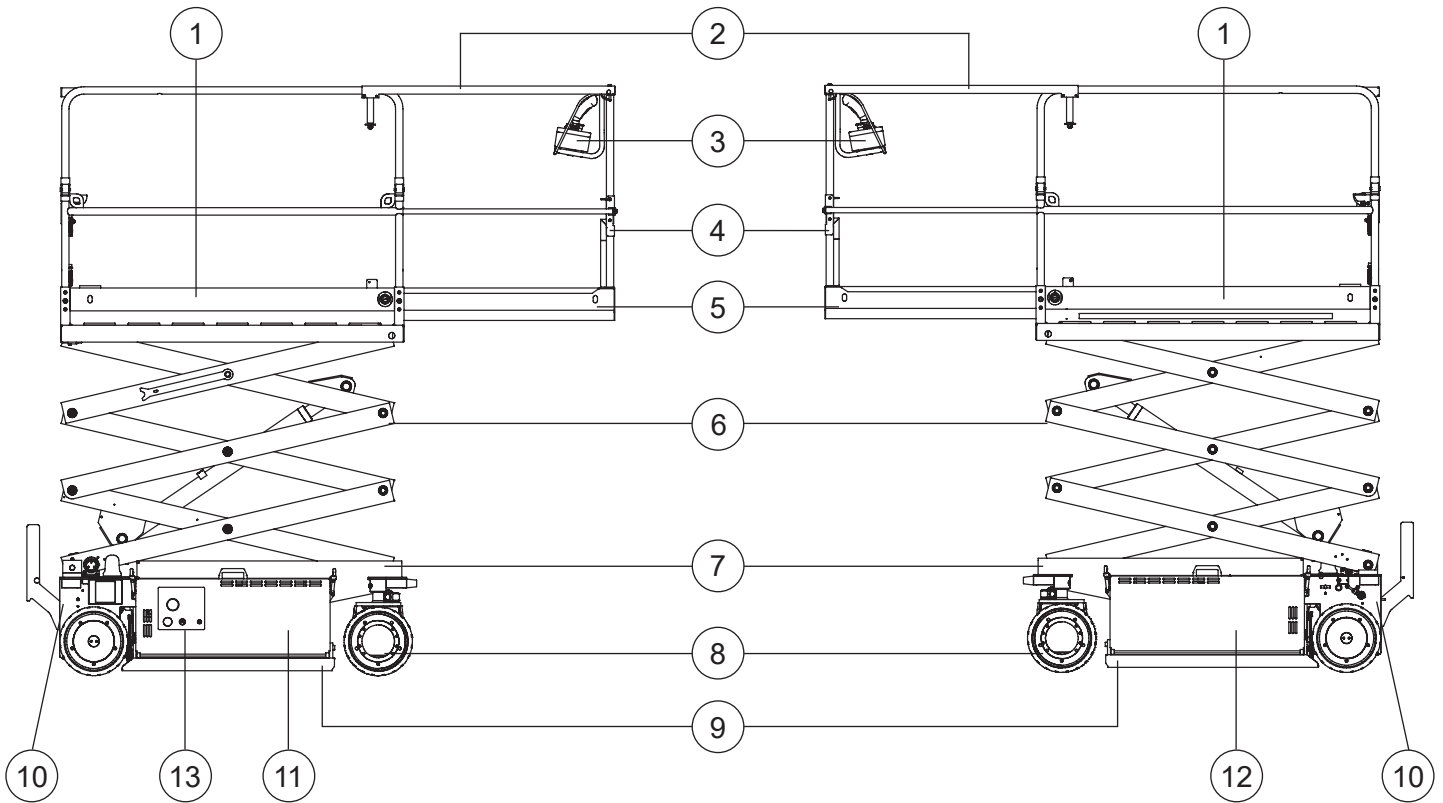
 IMER International SpA Via Salceto, 53-55 53036 Poggibonsi (SI) ITALY	
DENOMINATION	MOBILE ELEVATING WORK PLATFORM
MODEL	IM 3230
MEWP CLASSIFICATION	TYPE 3 GROUP A
SERIAL N.	POWER 2,4 + 2,2 kW
MANUFACTURING YEAR	BATTERY 24/185 C5 V/Ah
MASS	MAX PRESSURE
MAX WORKING HEIGHT	WIND SPEED ALLOWED
MAXIMUM ALLOWABLE OPERATING INCLINATION	
RATED LOAD	
n.PERSONS	
MASS OF EQUIPMENT	
MANUAL FORCE	
A00031USA	

The data refers to the standard model

Main components

RIGHT SIDE

LEFT SIDE



1. Fixed platform

2. Guard rails

3. Control panel

4. Document holder

5. Platform extension

6. Lifting structure:

IM 3230

5 scissors 2 lifting cylinders

7. Chassis

8. Driving wheels

9. Pot-hole guards

10. Back box

11. Right box

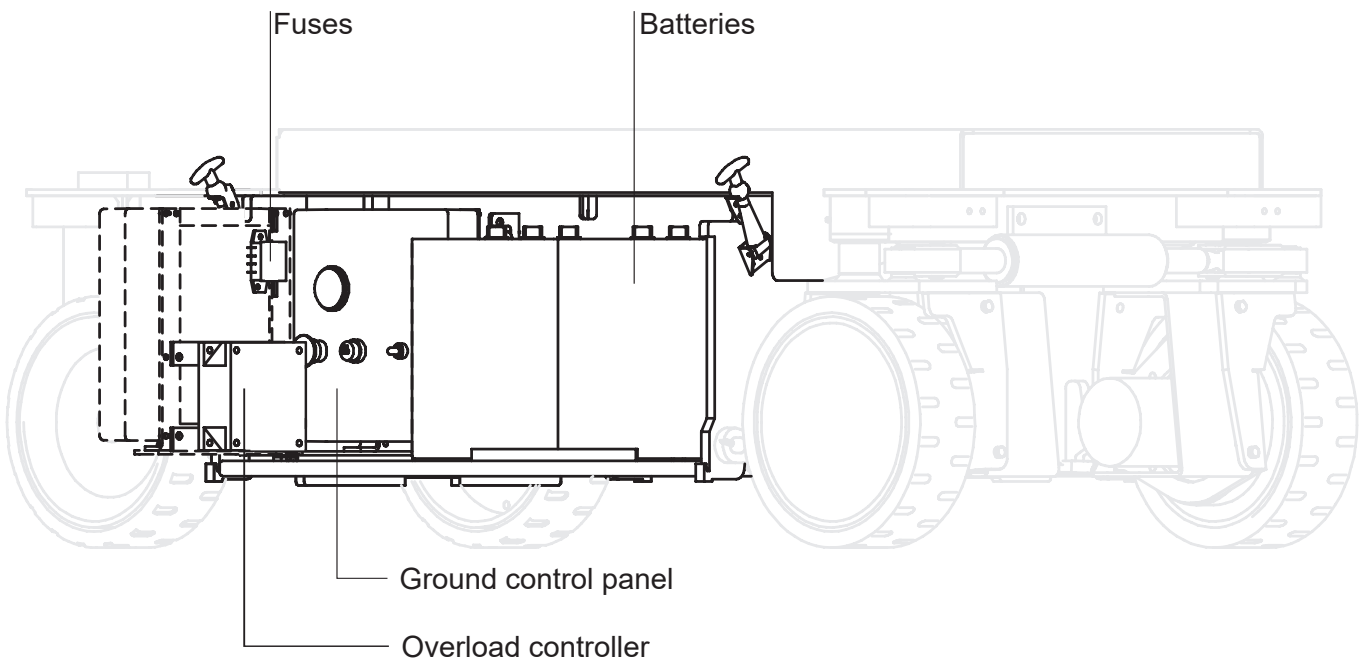
12. Left box

13. Ground control panel

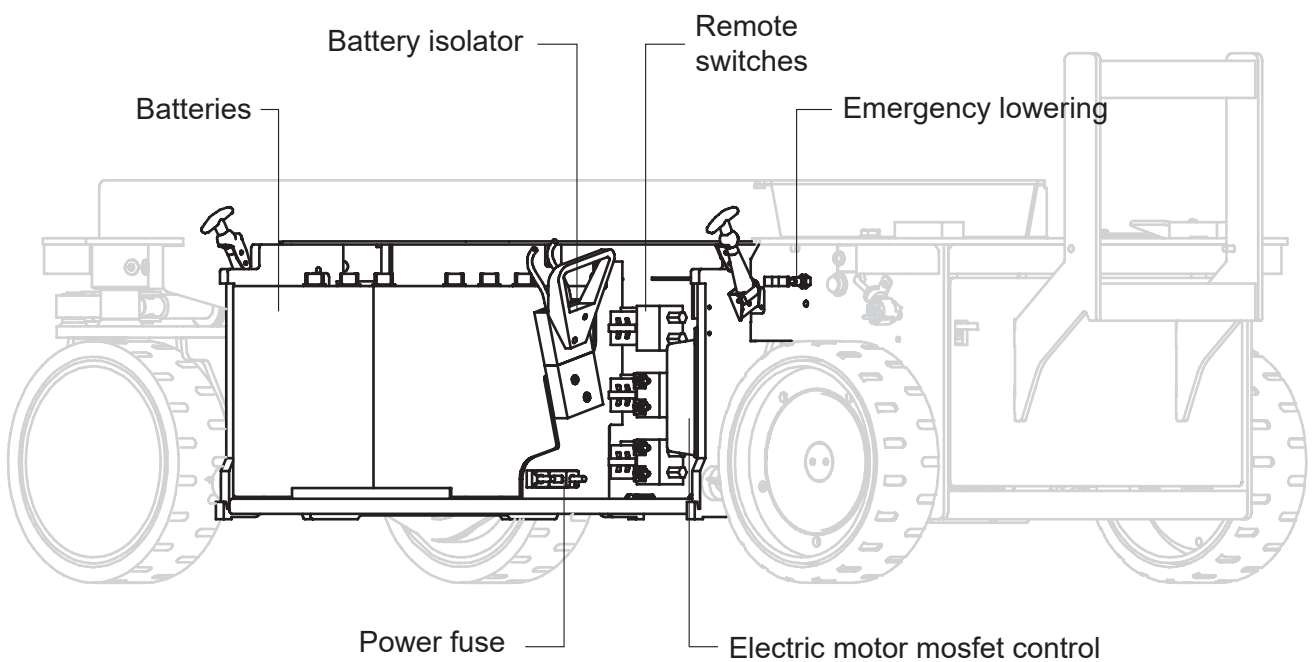
Control and power instruments position

RIGHT BOX

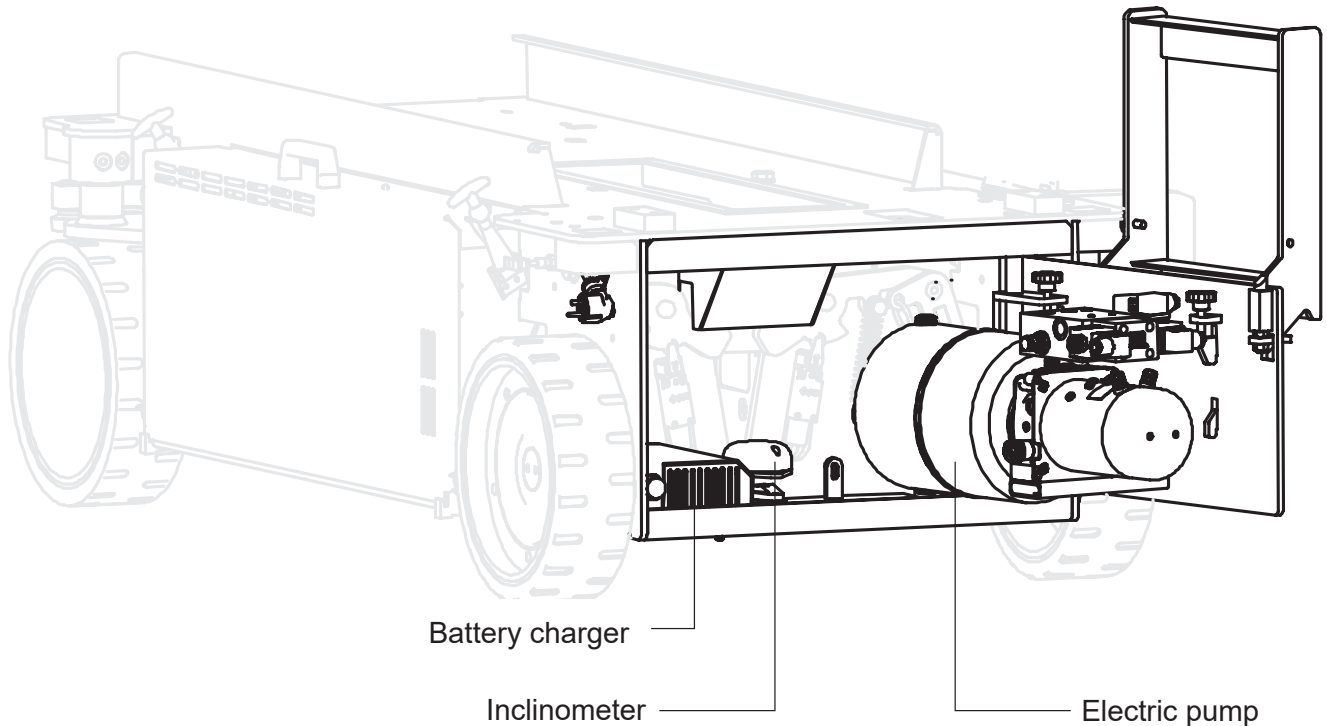
The ground control panel is installed on a swivel rest.



LEFT BOX



BACK BOX



Electronic circuit

The electronic equipment is composed of two microprocessor boards for the machine operation: one main board placed on the ground control panel, one on the platform control panel. These boards are connected through the CAN Bus messaging protocol.

The electronic equipment is also composed of further electronic microprocessor devices with the following functions:

- monitoring of the battery discharge level
- platform overload controller
- machine inclination control
- battery charge

The display placed on the ground control panel displays the error codes detected by the self-diagnostic of the main board.

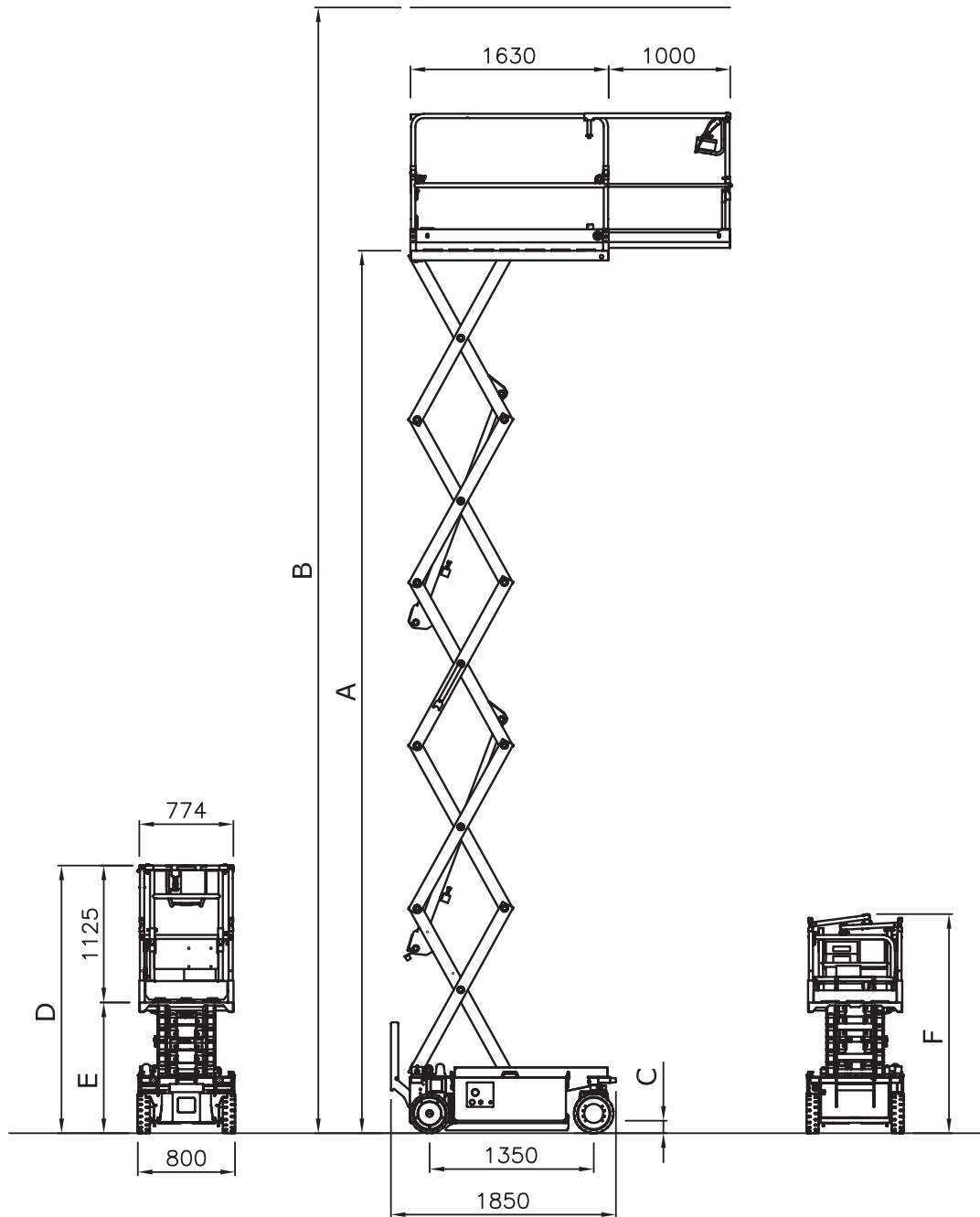
Description	Unit of measurement	IM 3230
Number of scissors	n.	5
Max. working load		
internal use including 2 people	lbs - kg	510 - 230
Lifting time (loaded)	s	36
Lowering time (loaded)	s	35
Drive speed (high)	mph - km/h	2,5 - 4
Drive speed (safety)	mph -km/h	0,6
Max. slope	%	25
Max. allowed side force		
internal use	lbf - N	90 - 400
Max. allowed side inclination for the chassis	°	1,5
Max. allowed rear inclination for the chassis	°	2,5
Max. allowed front inclination for the chassis	°	2,5
Drive batteries		
voltage	V	24
capacity	Ah	185
weight	lbs - kg	62 x 4 - 28 x 4
Amount of acid solution contained in the batteries	gal - l	5,7 - 26
Battery charger	V/A	24 / 20
Drive electric motors	V/kW	24 / 2,4
Hydraulic control unit	V/kW	24 / 2,2
Machine weight	lbs - kg	4045 - 1835
Oil tank	gal - l	1,5 - 7
Inside turning radius	ft - m	0
Outside turning radius	ft - m	5,4 - 1,65
Wheels dimensions	in - mm	12,8x3,9 - 325 x 100
Wheels type		cushion
Front wheels load	lbf - daN	2020 - 900
Rear wheels load	lbf - daN	2020 - 900
Level of acoustic pressure weighed at operator's place	dB	<70
Lifting pressure	psi - Bar	2175 - 150
Working temperature	°F	da 14 a 104

Vibrations

As regards vibrations, according to the measurings carried out in the most unfavourable conditions of use, it has been established that:

- the average weighted quadratic value in frequency of the acceleration relevant to the upper limbs is lower than 2.5 m/sec²;
- the average weighted quadratic value in frequency of the acceleration relevant to the body is lower than 0.5 m/sec².

Overall dimensions



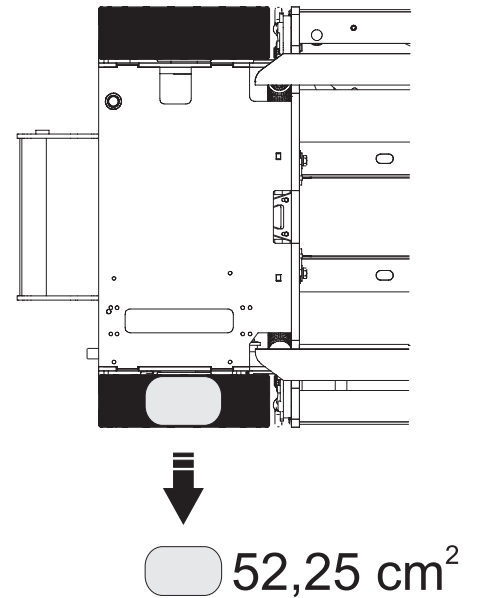
	A (in - mm)	B (in - mm)	C (in - mm)	D in - mm)	E (in - mm)	F (in - mm)
IM 3230	7200	9200	90/22*	2204	1075	1802

* Pot-hole guard lifted / lowered

Ground pressure

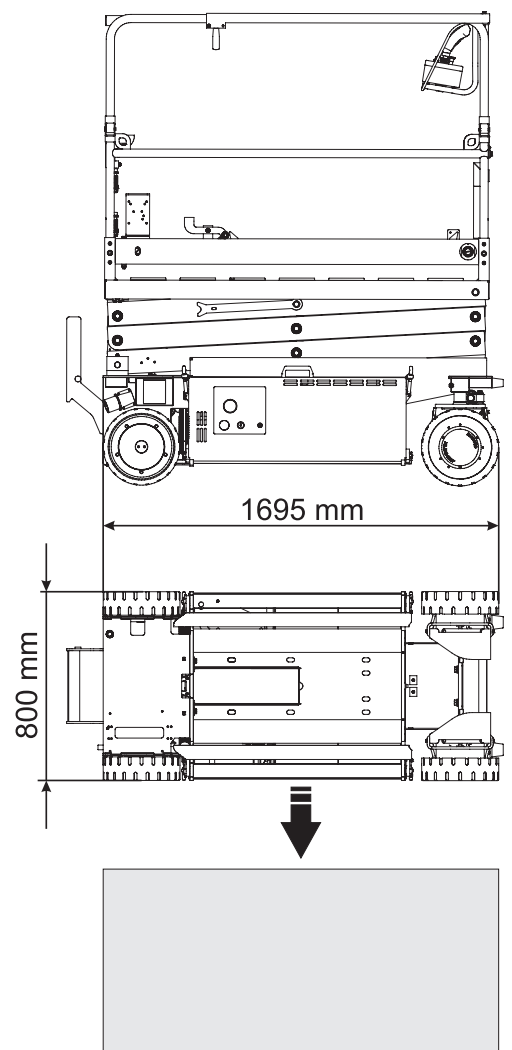
Localized pressure (per wheel)

MODEL	Use	Pressure (kg/cm ²)
IM 3230	internal	17.6



The full load pressure referring to the occupied surface space is the following:

Model	Pressure (kg/cm ²)
IM 3230	1401

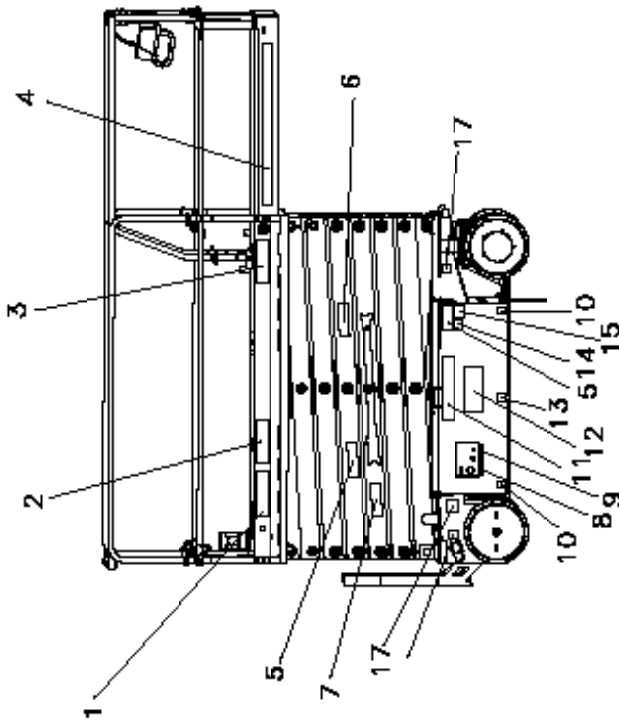
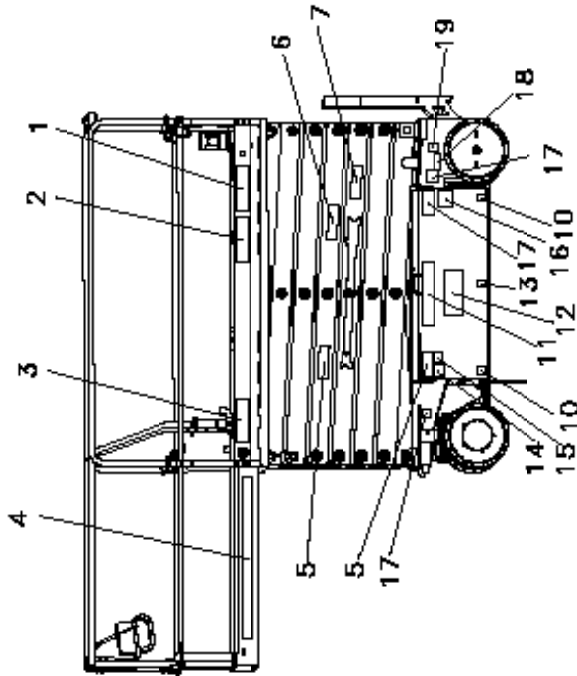


Plates and labels

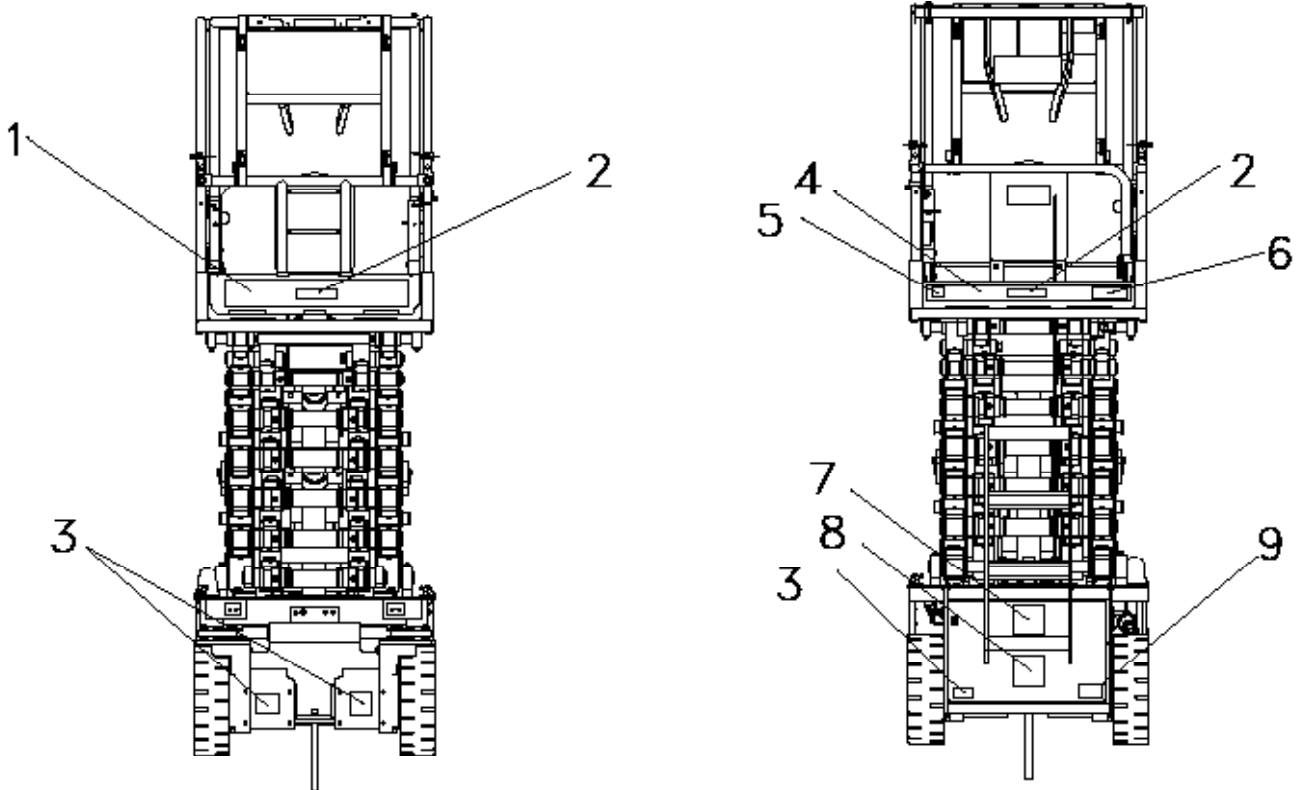
Using the illustrations, check that all the plates and labels are present.

Plates and labels that contain no text will have 8-digit numbering or an alphanumeric code ending with XX.

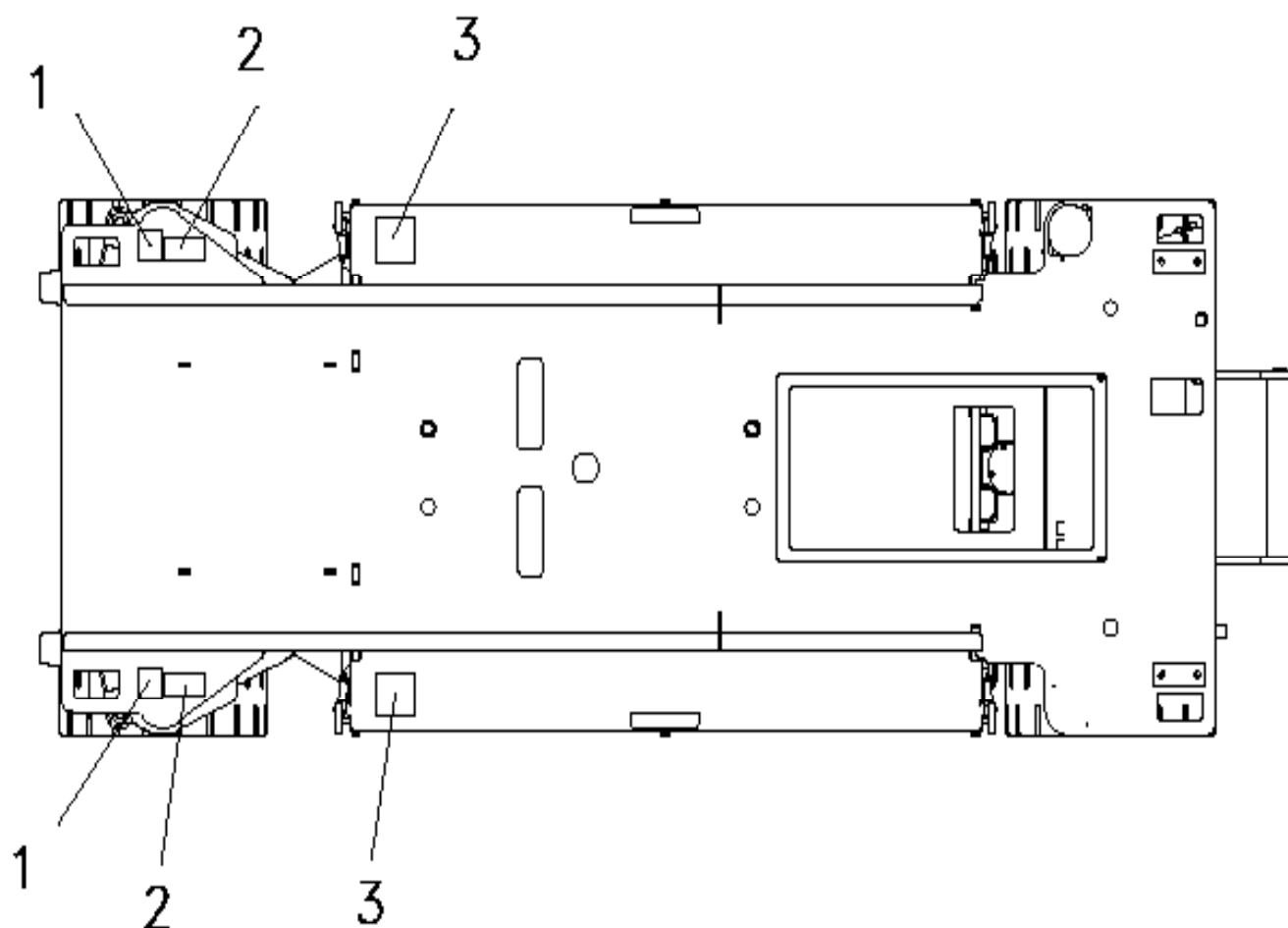
Plates and labels that contain text will have an alphanumeric code ending with the relevant country code for the machine's destination country.



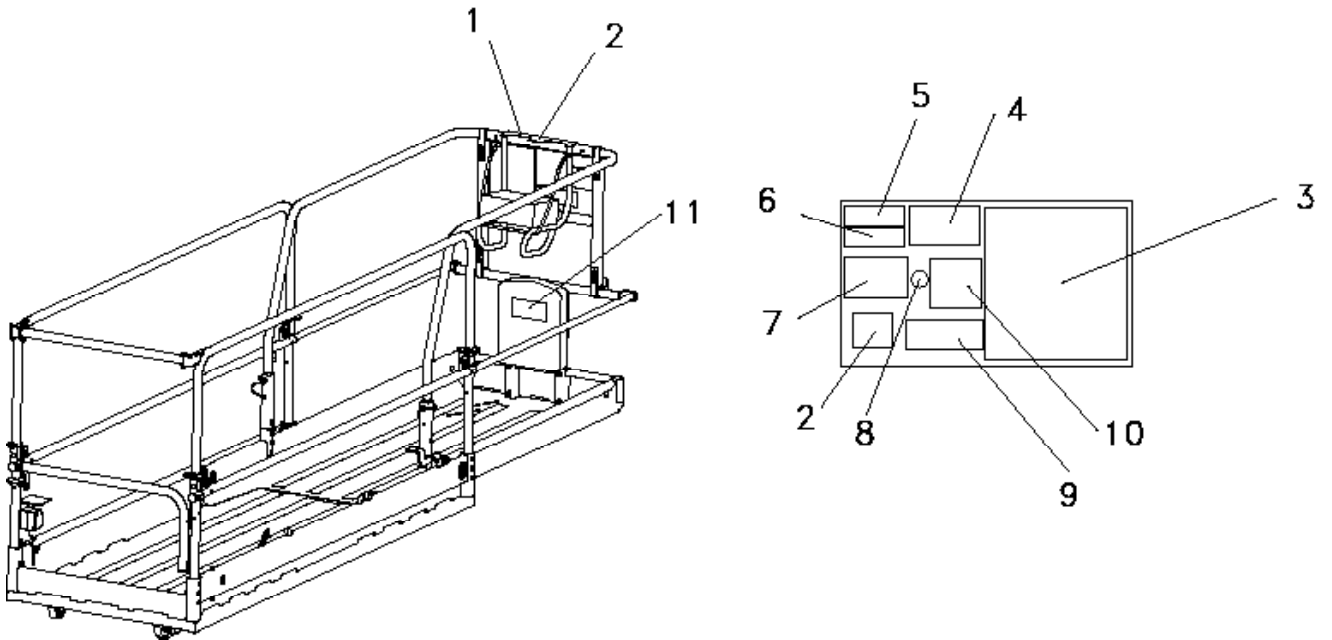
- 1 A00322XX 2pz
- 2 A00456USA 2pz
- 3 Max Load Label
- 4 A00258XX 2pz
- 5 A00103USA 4pz
- 6 A00435USA 2pz
- 7 A00441USA 2pz
- 8 A00033GB 1pz
- 9 A00383USA 1pz
- 10 A00172XX 4pz
- 11 NAME MODEL
- 12 A00322XX 2pz
- 13 A00448USA 2pz
- 14 A00463USA 2pz
- 15 A00442USA 2pz
- 16 A00105USA 1pz
- 17 A00434USA 1pz
- 18 A00436USA 1pz
- 19 A00359XX 1pz



- 1 82521034 1pz
- 2 A00438USA 2pz
- 3 A00463USA 3pz
- 4 82021098 1pz
- 5 A00483XX 1pz
- 6 Max Load Label
- 7 A00031USA 1pz
- 8 A00410USA 1pz
- 9 A00437USA 1pz



- 1 A00190XX 2pz
- 2 A00453USA 2pz
- 3 A00239XX 2pz



- 1 A00383USA 1pz
- 2 A00216XX 2pz
- 3 A00005USA 1pz
- 4 A00401USA 1pz
- 5 A00450USA 1pz
- 6 A00153GB 1pz
- 7 A00455USA 1pz
- 8 A00457XX 1pz
- 9 Max Load Label
- 10 A00464USA 1pz
- 11 A00145XX 1pz

Safety systems

The machine is provided with safety devices locking the normal operation in order to avoid injuries.

Knowledge of the characteristics and safety operations is crucial: do not operate the machine unless the following section has been read and understood.

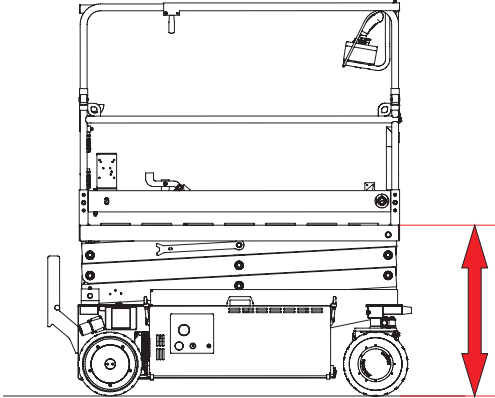
It is also important to know the meaning of CLOSED MACHINE and OPEN MACHINE shown below.

A safety device malfunction caused by fault or tampering, may cause severe damage to the machine and consequently endanger the operator's life.

Check periodically the safety devices according to the manual.

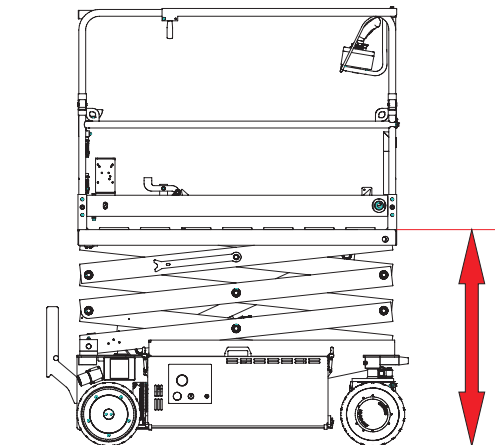
Safety devices should never be tampered with. The manufacturer declines any liability for accidents caused by interventions and tampering of the safety devices.

Machine closed - Machine opened



The machine is CLOSED when the height between the platform floor surface and the ground is LESS than:

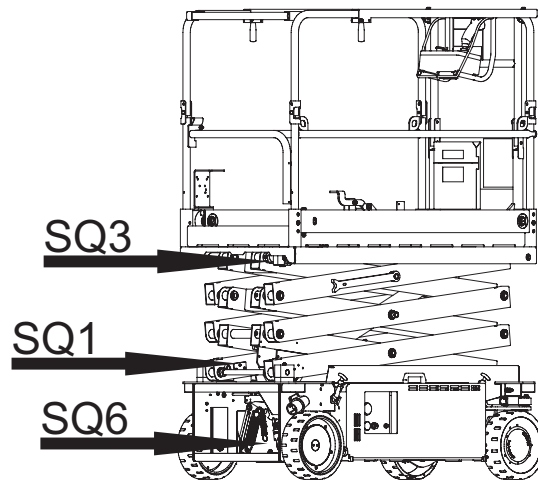
- 1.85 M (IM 3230)



The machine is OPEN when the height between the platform floor surface and the ground is GREATER or EQUAL to:

- 1.85 M (IM 3230)

Microswitches

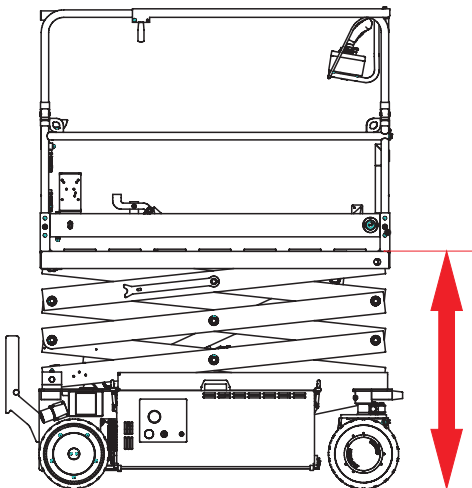


SQ3

When it is activated: by lifting the platform to the max. height.

What it activates: lifting movement to the maximum height is locked before the cylinder end stop.

SQ1



When it is activated: when the machine is open, i.e. , raising the platform at a height of:

- 1.85 M (IM 3230)

of the floor surface from the ground.

What it activates:

- automatic selection of drive reduced speed.
- the lock of all movements, apart from lowering, if the chassis inclination exceeds the allowed values.
- drive and steering are disabled if the anti-overturn protections are not lowered (combined with SQ6A-SQ6B microswitches).

SQ6A-B

When they are activated: during lowering of the pot-hole guards.

What they activate: full control of the lowering of the guards.

Safety speed

It is automatically activated at a platform height of SQ1 (machine opened):

- 1,85 m (IM 3230)

Anti-shearing operations

An electronic control unit locks the lowering for 5-6 seconds, when the distance between the boom and frame ends is 60 mm approx. (anti-shearing safety).

When lowering is locked:

- Move the joystick to rest position.
- Wait for 5-6 seconds checking that the persons being side the platform do not risk to be trapped or crushed between scissors.
- Give again the lowering command.

Pot-hole guard control

If the pot-hole guards are not entirely lowered, at a platform height of SQ1 (machine opened) **drive and steering are locked**.

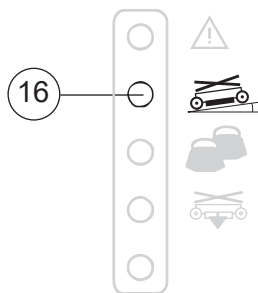
Inclination control

If the machine exceeds the maximum allowed inclination, at a platform height of SQ1 (machine opened) **all machine movements are locked, apart from platform lowering.**



The inclination is controlled by the flatness indicator; a digital device located in the rear box which detects the truck inclination.

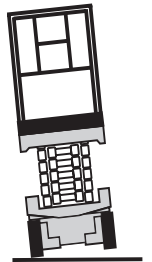
	Max. allowed inclination		
	side	front	rear
IM 3230	1,5°	2,5°	2,5°



If **inclination is higher** than the maximum allowed values:

With machine closed:

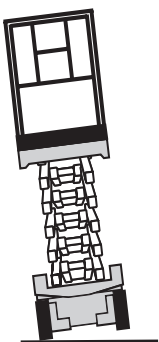
- warning light 16 flashes
- lifting is enabled up to microswitch SQ1 activation height.



Before lifting the platform set the machine back into the stability conditions.

With machine opened (above SQ1):

- warning light 16 turns on
- the alarm sounds
- **drive, steering and lifting are locked.**



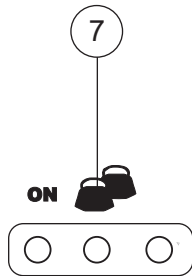
To restore movements , **lower the platform completely and set the machine back into stability conditions.**

Make sure that no obstacles are present below the platform before lowering it

Load limiter

Overloads, if any, are checked by the load limiter both with the machine at a standstill position and during platform lifting.

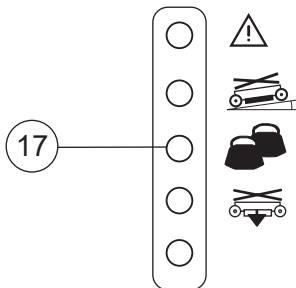
Overload is a load between the nominal one and value up to 120% of the latter.



With overload:

- warning light 7 on the ground control panel flashes
- warning light 17 on the platform control panel flashes
- the alarm sounds
- **all the movements are locked.**

To restore movements, remove the overload.



The load limiter consists of:

- An electronic control unit placed in the right box
- An angular sensor (positioned below the platform)
- Two analogue pressure sensors, set on the lifting cylinders

Safety belt attachments

The machine is equipped with suitable anchorage points for the safety belts.



Battery control

If batteries are exhausted, lifting is locked.

If the battery charger is connected, **all movements are locked**.

Battery connection plug

The battery connection plug is placed in the right box.

This safety device disconnects the power and control circuits of batteries and the battery charger solely remains connected.



Emergency stop

Press one or both the emergency stop buttons, placed on the ground control panel and on the platform control panel to **lock all movements**.

Warning lights and audible alarms remain active.

In order to restore normal functions, pull the button upwards.

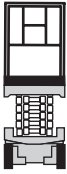




Audible alarms






Fault condition: signalled by a high frequency intermittent sound. Machine movements are entirely or partly locked until the machine is again under safety operating conditions.

Main fault conditions	Diagnostic display code
machine opened and inclination exceeding allowed values	4001
lifting with platform overload	4003
dead-man pressed for more than 8 seconds without any movements	2001

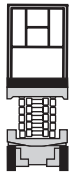








Normal operation: any machine movement is signalled by a high frequency intermittent sound.









Safety devices summary

 <p>MACHINE CLOSED</p>	 		
OVERLOAD	X	X	X
EXCEEDING INCLINATION			
EMERGENCY STOP BUTTON PRESSED	X	X	X
BATTERY CHARGER ACTIVATED	X	X	X
GENERAL ALARM WARNING LIGHT ON	X	X	X
EXHAUSTED BATTERIES		X	

 <p>MACHINE OPENED</p>	 			SAFETY
DRIVE				X
OVERLOAD	X	X	X	
EXCEEDING INCLINATION	X	X		
POT-HOLE GUARDS NOT LOWERED	X	X		
EMERGENCY STOP BUTTON PRESSED	X	X	X	
BATTERY CHARGER ACTIVATED	X	X	X	
GENERAL ALARM WARNING LIGHT ON	X	X		
EXHAUSTED BATTERIES		X		

Warning lights summary

 MACHINE CLOSED	 17	 16	 17	 18	
	○	○	○	○	
					
					
	●				

 MACHINE OPENED	 17	 16	 17	 18	
	○	○	○	○	
					
		●			
				●	

○ OFF

 RED FLASHING

● RED ON

 AUDIBLE ALARM

Use of the machine

Before carrying out any operation it is necessary to read and well-understand this manual along with the instructions described on plates and labels.

Checking before use

Before setting at work the machine and carrying out any operation, the machine itself is to be subjected to a visual and operating check described here below.

During the setting at work it is also necessary to carry out the safety device checking.

Visual checking

Make sure that the following failures are NOT occurred:

- Oil leakage from pipes and other hydraulic components.
- Cut or disconnected electric wires.
- Unloosed or missing nuts in the wheels.
- Irregular worn or cuts in the wheels.
- Damages, deformations, loosen or missing screws and bolts, cracked welding on chassis, wheel supports, steering systems, lifting systems, platforms and guard rails.

Check that:

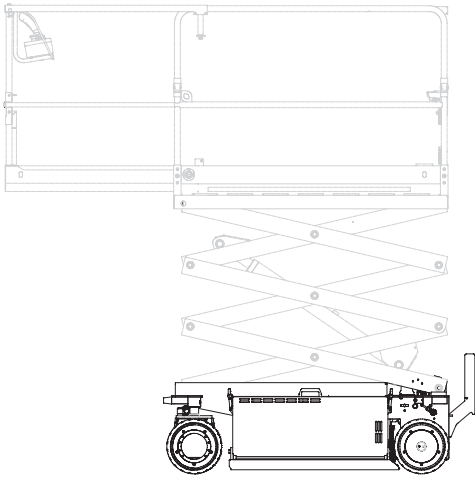
- The soil where the platform should operate is solid and able to support the maximum load per each wheel.
- The use manual is on board and plates and labels well visible.
- The ladder, the handrails and the platform are free from grease and oil traces.
- The working area is free, without holes and uneven grounds.

Operating check

Once the visual inspection has been finished it is also necessary to carry out an operating check.

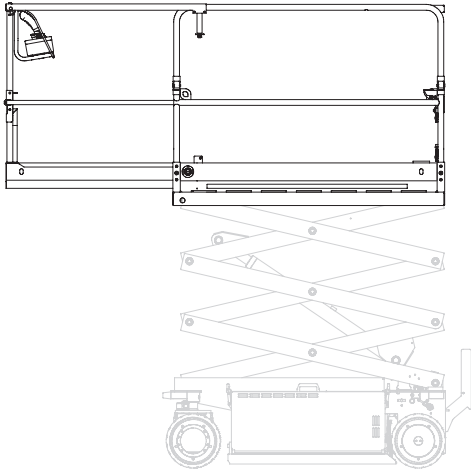
- Check the hydraulic oil level.
- Check the electrolyte level in the batteries.
- Check that all the foreseen plates and labels have been suitably positioned and are legible.

From ground



- Make sure that batteries are well charged.
 - Press emergency STOP button and check that no operation can be enabled both from ground and from platform. Put button to ON position again.
 - Lift and lower the platform more times and check that no obstacle can occur during these operations.
 - Make sure that the anti-overturn protections are lowered during the platform lifting.
 - Make sure that the audible alarm and the electric anti-shearing device well work during the platform lowering.
- Carry out the operations described in the “Emergency lowering” section and check that everything works well.
 - Lift the platform till the anti-overturn protections are completely lowered, push each protection inwards the chassis and check they keep still

From platform



- Press emergency STOP button and check that no operation can be enabled both from ground and from platform. Put button to ON position again.
 - Lift and lower the platform more times and check that no obstacle could occur during these operations.
 - Make sure that the audible alarm and the electric anti-shearing device well work during the platform lowering.
 - Drive forward and back and check that the operation is correct and audible alarm well works.
 - Check that during drive only steering movement is enabled.
- Right and left steer and check that the operation is correct.
 - Press horn and check if it works correctly.
 - During drive release the joystick to check the brakes work correctly: the machine must block in a narrow space.
 - Lift the platform and try the drive forward and back, making sure that the drive speed is made under safety conditions.

Control panels

The foreseen control panels for the operator are two:

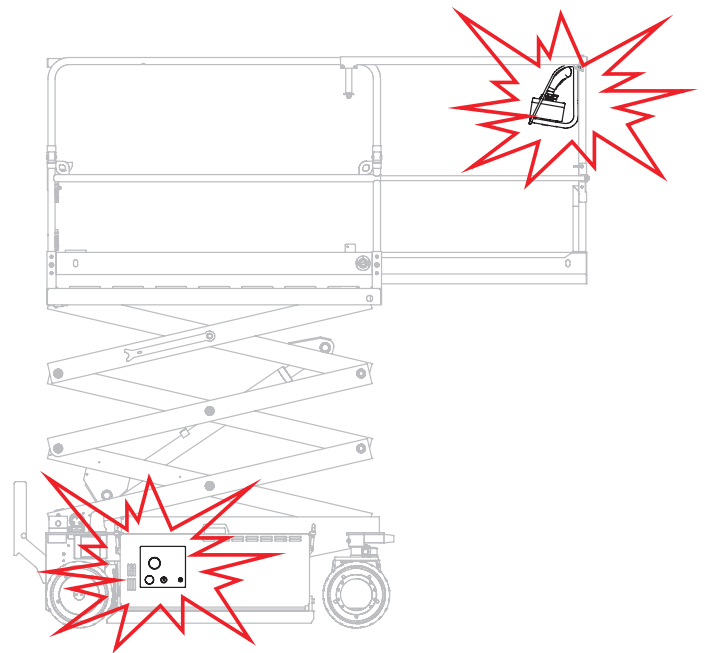
- on platform
- on the ground, on the right side of the truck.

Using one control panel doesn't allow the other panel to come into operation.

For normal operating condition **all movements are carried out by the platform control panel or control box**, which is **the main control panel**.

Platform lifting and lowering can be also carried out from the **ground control panel**.

The ground control panel is also used in emergency situations or for maintenance.



The machine movements are:

- Drive (backward and forward)
- Steering
- Platform lowering and lifting
- Manually-operated translation of the mobile platform.

Every time the machine carries out a movement, the rotating beacon installed on the chassis turns on.

The energy required to movements is supplied by electric batteries that feed:

- two electric motors for the machine drive
- an electric pump for lifting and steering.

Control panels

Ground control panel

6 Warning light machine ON (green)

7 Overload warning light (red)

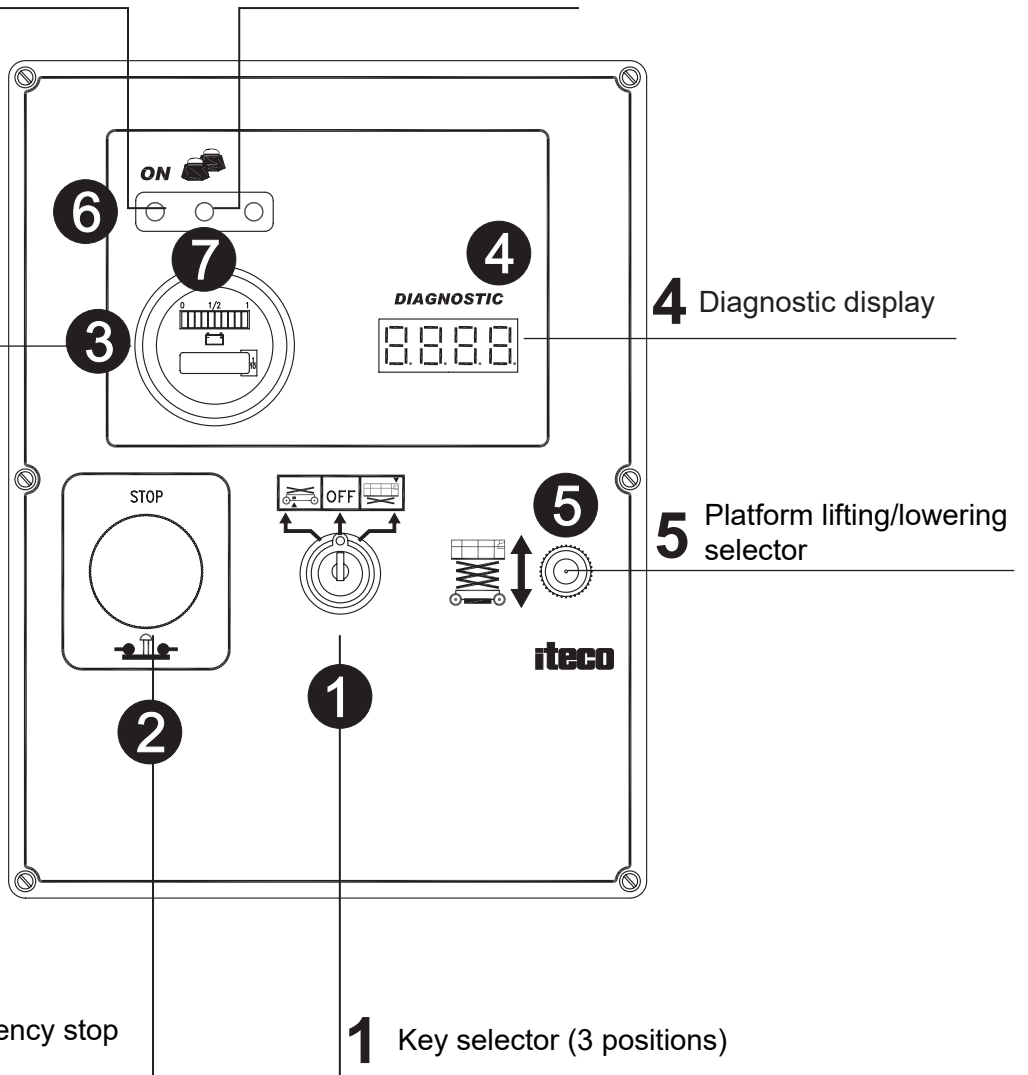
3 Hour meter and battery check display

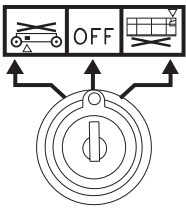
4 Diagnostic display

5 Platform lifting/lowering selector

2 Red emergency stop button

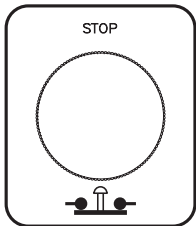
1 Key selector (3 positions)





1 - Key selector (3 positions)

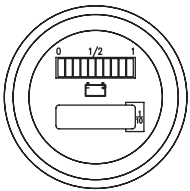
- Central position: the machine is off
- Right position: the platform controls are enabled..
- Left position: controls from ground control panel are active.



2 - Red emergency stop button

- Pressed it locks all the functions of the machine.
- Released it allows for the operation of the machine.

In order to restore normal functions, pull the button upwards.



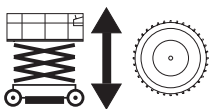
3 - Hour meter and battery check display

It shows the electrical pump working hours and the battery charge status.



4 - Diagnostic display

It displays the fault and error codes detected by the self-diagnostic.



5 - Platform lifting/lowering selector

- Upwards to lift the platform.
- Downwards to lower the platform.

ON

6 - Warning light machine ON (green)

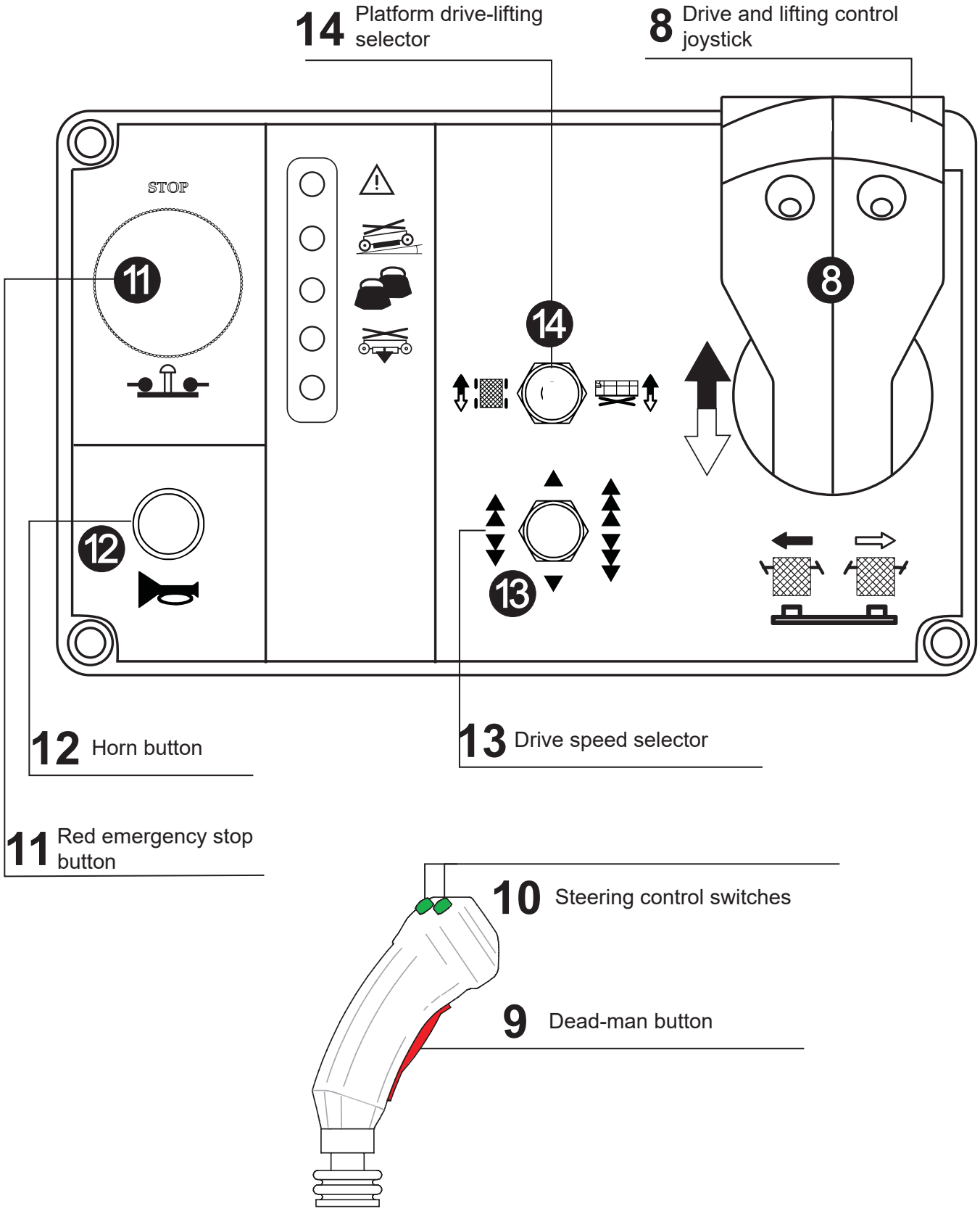
Light goes on when selector 1 is not in a central position.



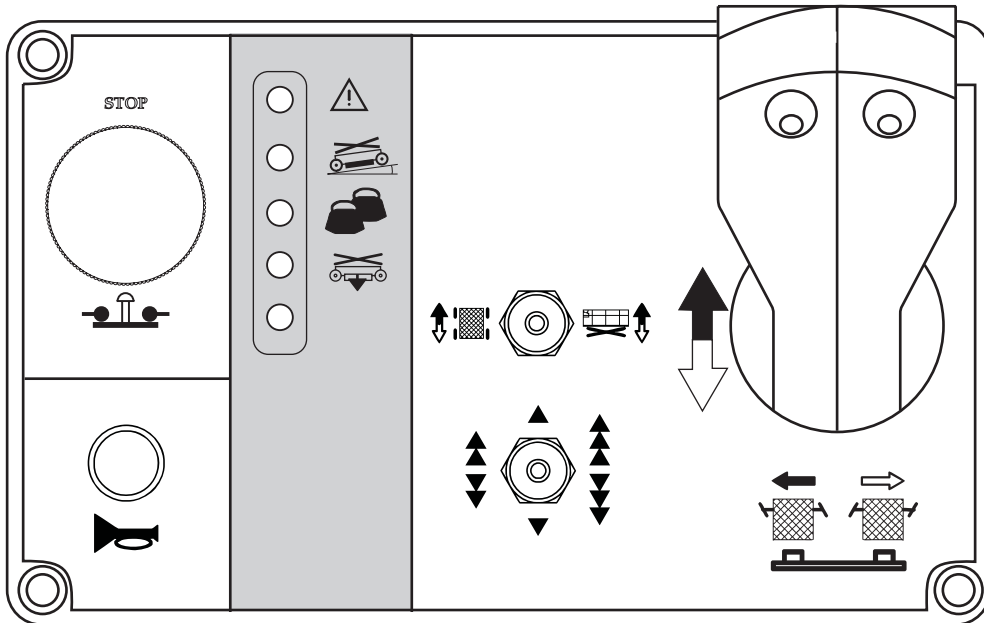
7 - Overload warning light (red)

Light goes on when an overload is present.

Platform control panel



Warning lights

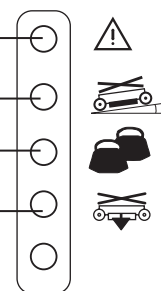


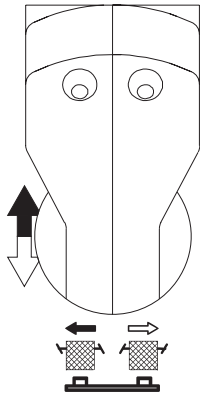
15 General alarm warning light (red)

16 Unstable machine warning light (red)

17 Overload warning light (red)

18 Anti-overturn protections warning light (red)





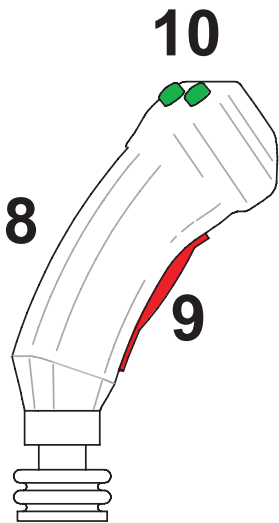
8 - Drive and lifting control joystick

9 - Dead-man button

10 - Steering control switches

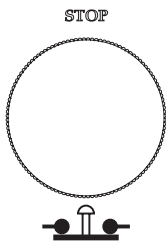
Machine movements are carried out by moving joystick-8 and holding down the dead-man button 9

The joystick works on the drive or on the scissor movement depending on the position of selector 14.



Selector 14 left		
JOYSTICK 8	SWITCHES 10	MOVEMENT
Forward		Drive forward
Back		Drive backward
	right	Steering to the right
	left	Steering to the left

Selector 14 right		
JOYSTICK 8	SWITCHES 10	MOVEMENT
Forward		Platform lifting
Back		Platform lowering



11 - Red emergency stop button

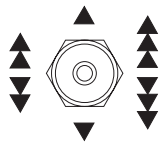
- Pressed it locks all the functions of the machine.
- Released it allows for the operation of the machine.

In order to restore normal functions, pull the button upwards.



12 - Horn button

- Press the button to beep the horn.



13 - Drive speed selector

- to the right maximum speed
- to the left average speed
- at the center minimum speed.



14 - Platform drive-lifting selector

- to the right: use joystick 8 to carry out platform lifting and lowering
- to the left: use joystick 8 to carry out drive and steering



15 - General alarm warning light (red)

Normally off.

It goes on to signal a malfunction in the control system. Check the display diagnostics error code.



16 - Unstable machine warning light (red)

Normally off.

It goes on if an inclination that exceeds the allowed limits is present.

With closed machine it flashes.

With open machine it lights up steady.



17 - Overload warning light (red)

Normally off.

It flashes when there is an overload.



18 - Anti-overturn protections warning light (red)

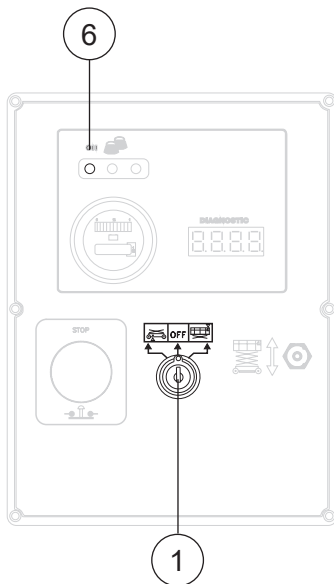
Normally off.

It goes on when raising the platform the pot-hole guards cannot be lowered.

How to use

Operations from ground

Make sure that the red emergency stop button is not pressed on ground and platform control panel

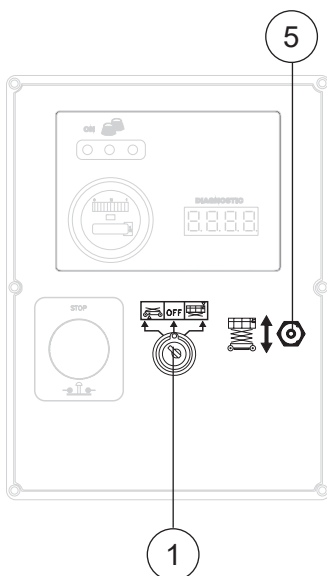


Starting and enabling the ground control panel

- Insert key in selector 1.
- Turn it **left**, keeping it in position (in this position it is not possible to extract the key).
- Warning light 6 will turn on.

If the key is released, it returns automatically to central position (OFF) and the machine is turned off.

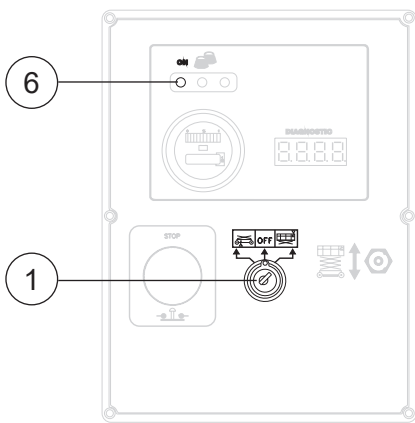
Each time the machine is started up, audible alarms (buzzer) and warning lights turn on to verify their correct operation. Before using the machine, wait they are switched off.



Platform lifting/lowering

- Insert key in selector 1.
- Turn it **left**, keeping the position.
- Move selector 5 **upwards to lift the platform**.
- Move selector 5 **downwards to lower the platform**.

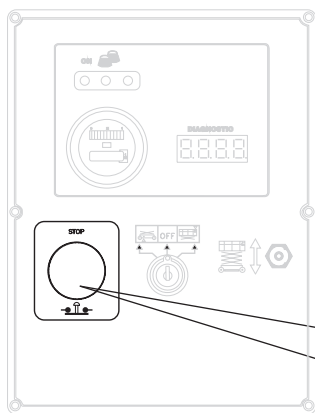
Before lifting or lowering platform, make sure that there are no obstacles above or below it



Starting and enabling the platform control panel

- Insert key in selector 1.
- Turn it to the **right**.
- Warning light 6 will turn on.

It is possible to extract the key.

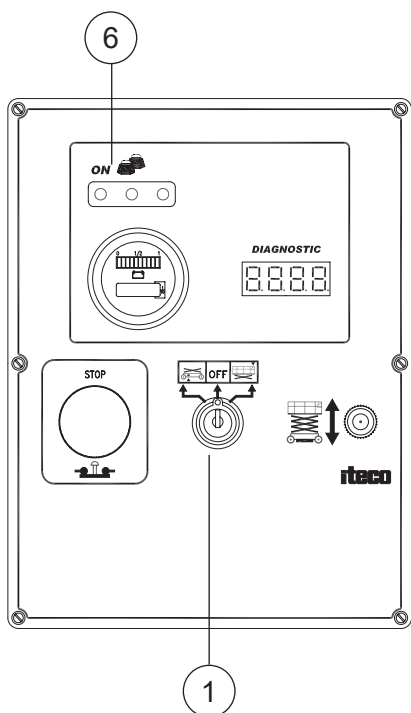
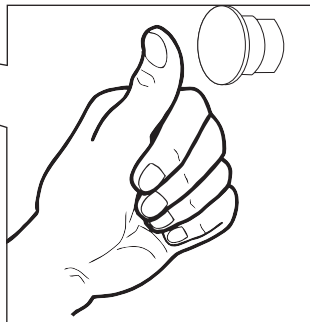


Emergency stop

- Press button 2.

All machine movements and controls are stopped both from ground and platform, except for safety indicators (warning lights and audible alarm).

To restore the normal functions pull button 2 upwards.



Machine stop

It is required to stop the machine every time it is left unattended to avoid any undesired use.

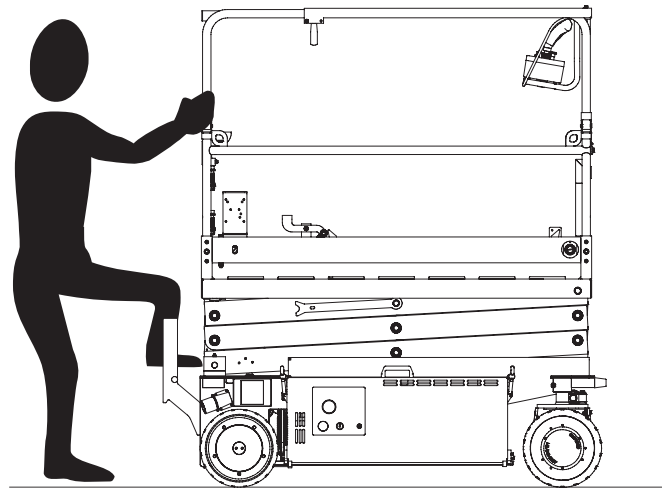
- From the ground control panel, set key selector 1 to central position: warning light 6 will turn off.
- Remove the key and keep it in a guarded place.

Platform access

The “access position” to the platform is possible when the scissor is completely lowered.

The “access position” is the only one from which loading or unloading of persons and/or materials is allowed.

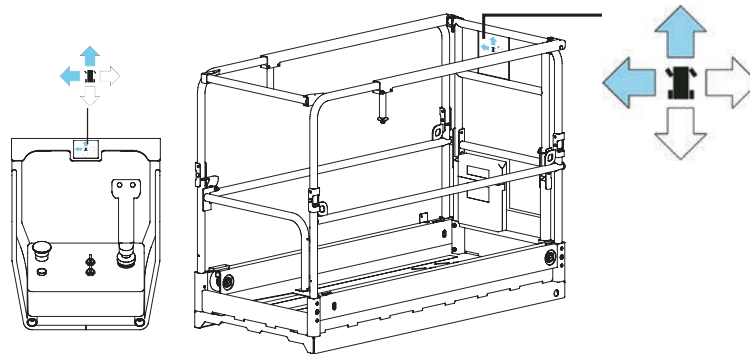
- Get on the platform using the ladder and hanging on to the side rails
- Open the protection bar and get onto the platform
- Close the protection bar



Before getting on the ladder check that the rear box is completely closed.

Operations from platform

- Make sure that the load respects the limits and is well distributed.
- Make sure that the platform gate is perfectly closed.
- Make sure that the red emergency stop button is not pressed on ground and platform control panel.
- Always check the state of the emergency warning lights.
- All platform movements described in the following pages depend on the correct position of the control panel, signalled by a plate placed on the front guard rail. If control panel is moved, use the coloured direction arrows on control panel support and on the front side of the platform, in order to identify the movement direction of the machine.

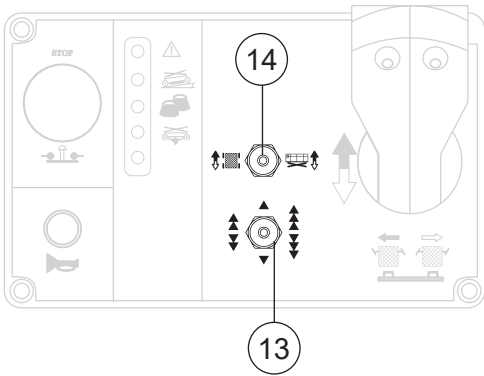


Before moving the machine, make sure that the way is free from obstacles. Check that the way is free from holes, bumps, unevenness, obstructions or debris and coverings which can hide holes or other dangers

Always check the state of the emergency warning lights

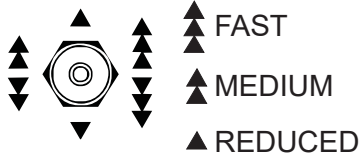
Do not move the machine, when the platform is extended, without having checked that there are no obstacles even where there is poor visibility

During movement, do not move selector 14 from drive to lifting position and vice versa. In this case the machine stops. Release joystick 8 and give the command again to restore the movement



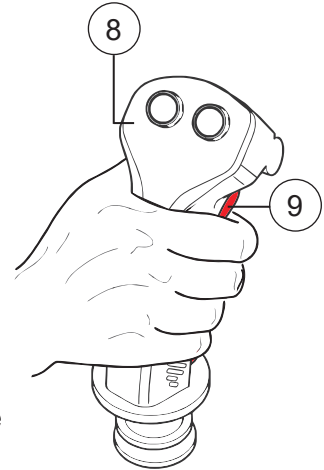
Drive

- With machine **at a standstill position**, move selector **14** left.
- With selector **13** select the drive speed.



- Hold joystick 8.
- Press dead-man button 9 and keep it pressed.
- Move joystick forward and back, keeping button 9 always pressed.

It is also possible to move joystick 8 first and then press button 9 to begin the operation.

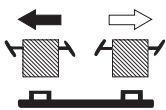


The movement speed depends on the joystick inclination and the selected speed.

The drive is signalled by an audible alarm.

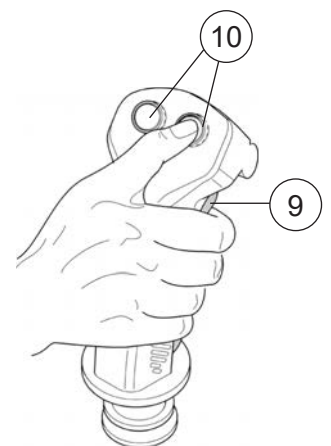
Drive stop

- Gradual stop: set joystick 8 back into starting position, keeping button 9 pressed.
- Quick stop: release button 9.



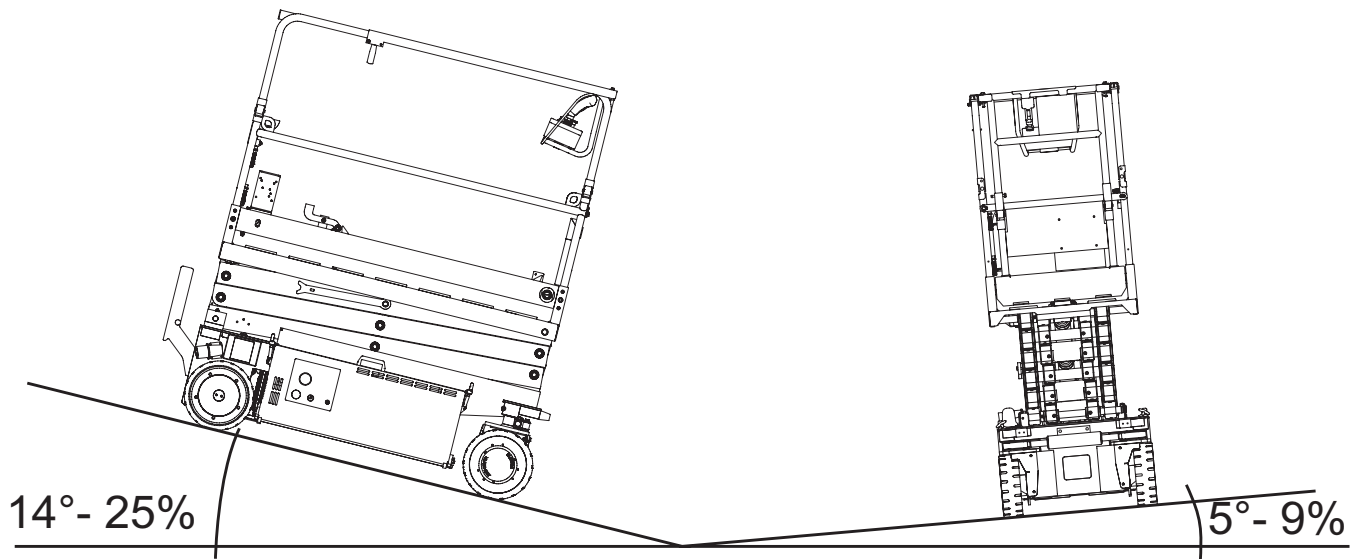
Steering

During drive press switches 10 right or left, keeping button 9 always pressed.



Driving on slopes

- Do not drive the machine upward or downward on slopes that are higher than 14° (25 %)
- Do not drive the machine on side slopes that exceed the 5° (9 %).



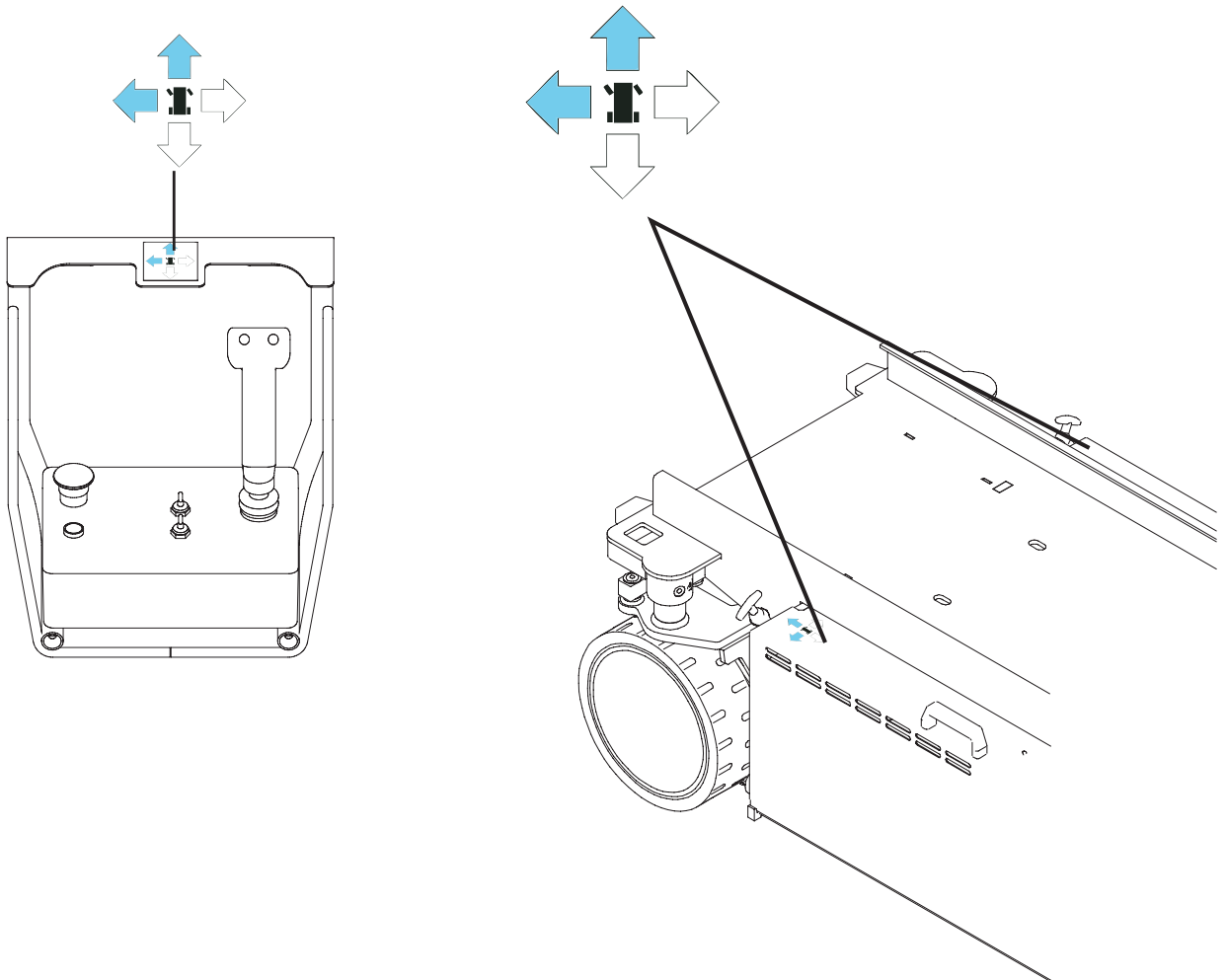
When driving on slopes or when loading/unloading from the truck through ramps only use the second (medium) speed

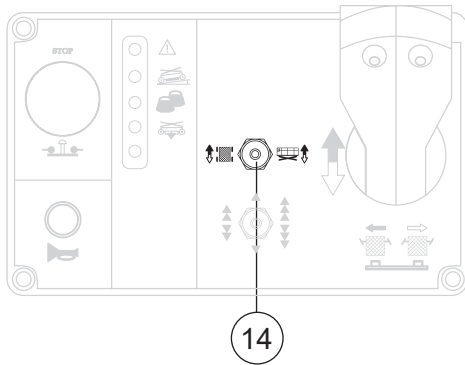
Drive controlled from ground

To pass through openings having limited height, it is possible to drive the machine from ground using the platform control panel.

Making sure that:

- guard rails are folded down;
- the operator keeps a minimum distance of 1 m from the machine;
- the selected speed is the slower one;
- the machine is entirely lowered (closed) ;
- use the direction arrows applied on the control box support and on the cowling to identify the running and steering direction.

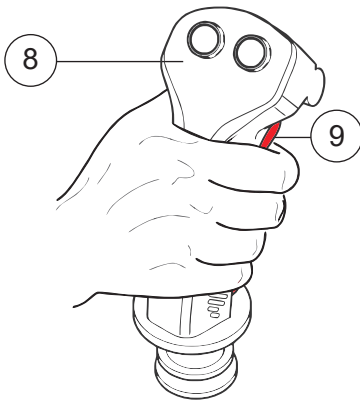




Platform lifting/lowering

- With machine at a standstill position, move selector 14 to the right.
- Hold joystick 8.
- Press dead-man button 9 and keep it pressed.
- Move the joystick forward to lift the platform or backward to lower it.

The **lifting speed** is adjusted by the inclination given to joystick 8.



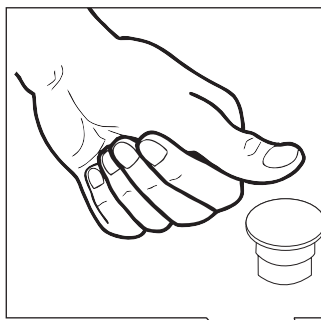
Lifting stop

Slow: Set gradually joystick 8 back into starting position, keeping pressed dead-man button 9. The electronic control device assures a soft stop.

Quick: release dead-man switch 9. The electronic control device assures a quick stop.

Lowering stop

Set joystick 8 back to starting position or release dead-man button 9: stop is immediate.

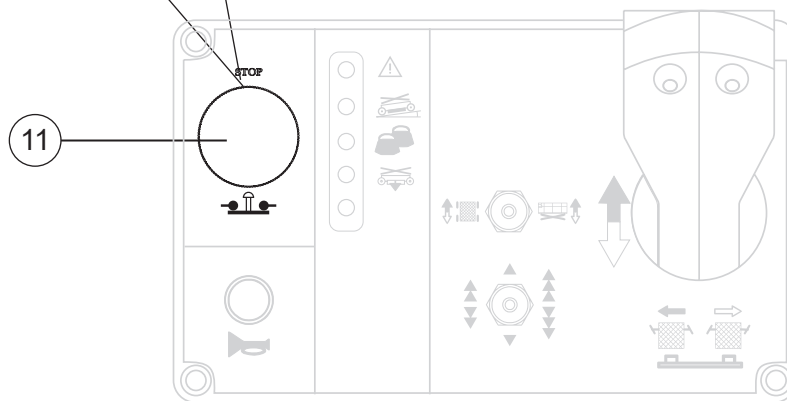


Emergency stop

Press the red emergency stop button **11**:

- In any emergency situation.

By pressing the emergency stop button all machine movements and controls are stopped both from ground and platform, except for safety indicators (warning lights and audible alarm).

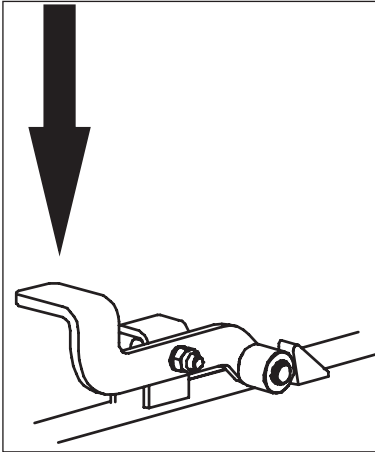


To restore the normal functions pull button 11 upwards.

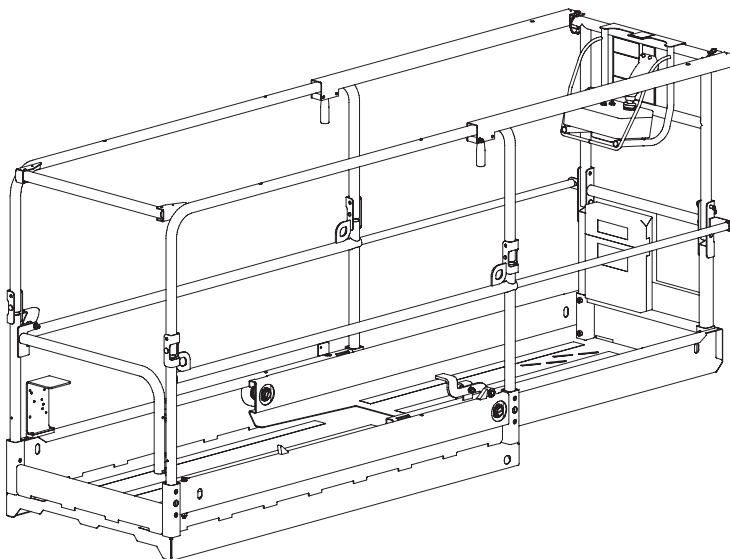
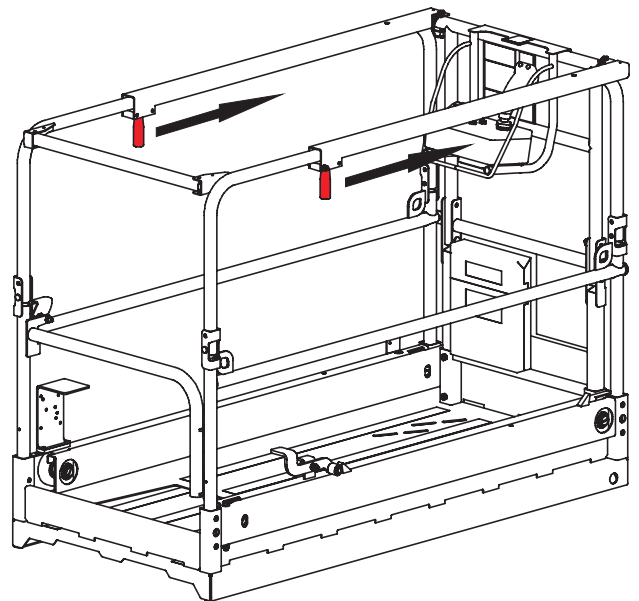
Platform extension

The platform is equipped with a manually-operated extension.

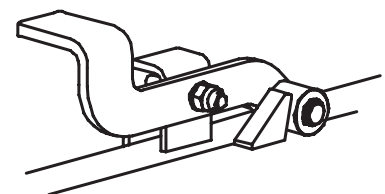
To extend the platform:



- Be positioned on the fixed platform;
- Press the pedal on the platform with your right foot;
- Grip the handles and push forward the platform.

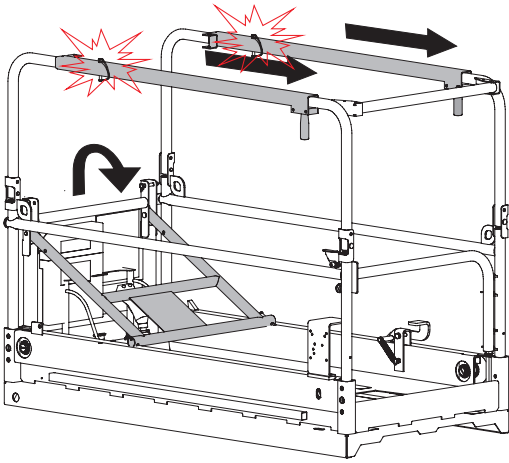


- Push the platform until the pedal pivot arrives above the lock;
- Release the pedal making sure that the suitable lock stops the pivot.



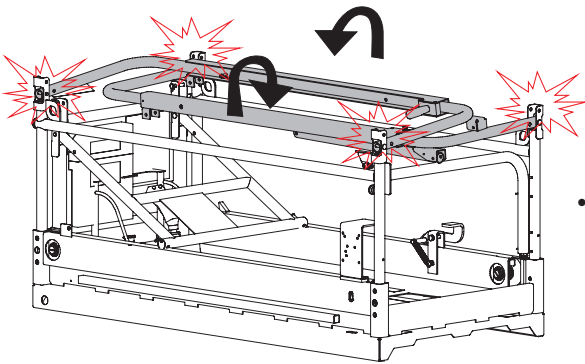
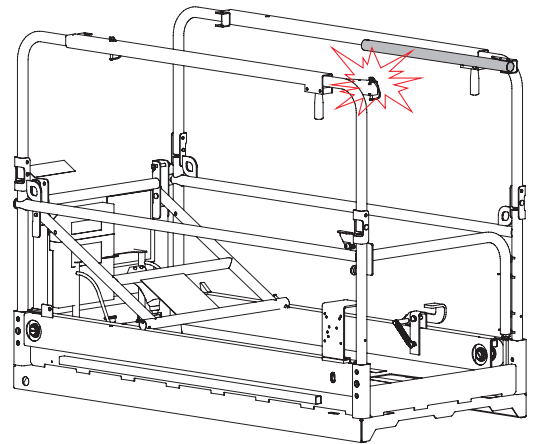
Guard rails folding

Fold down the guard rails when platform is not extended.



- Position the control panel with relevant support on the platform extension.
- Extract the 4 spring plungers from the front protection and fold it down.
- Extend the upper handrails and couple them to the round ones of the fixed platform by means of the spring plungers.

- Bend the platform gate bar by extracting the spring plunger.



- Remove 4 the spring plungers from hinged points and overturn the side protections.

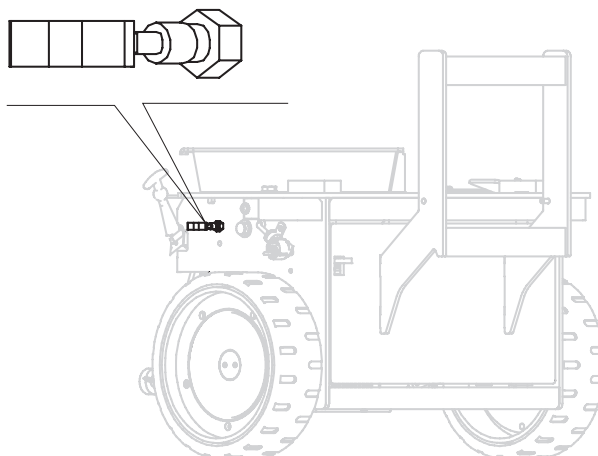
Do not use the machine resting on board when guard rails are folded down

Do not use the machine if the guard rails and gates are not correctly positioned and perfectly fixed

Emergency manual procedures

Manual lowering

If the machine blocks in lifted position due to a failure, an operator on the ground can lower the platform by pulling the handle on the rear left side.



Before carrying out the emergency lowering, press the red emergency stop button

Before carrying out the emergency lowering, make sure that there are no obstacles below the platform

Emergency towing

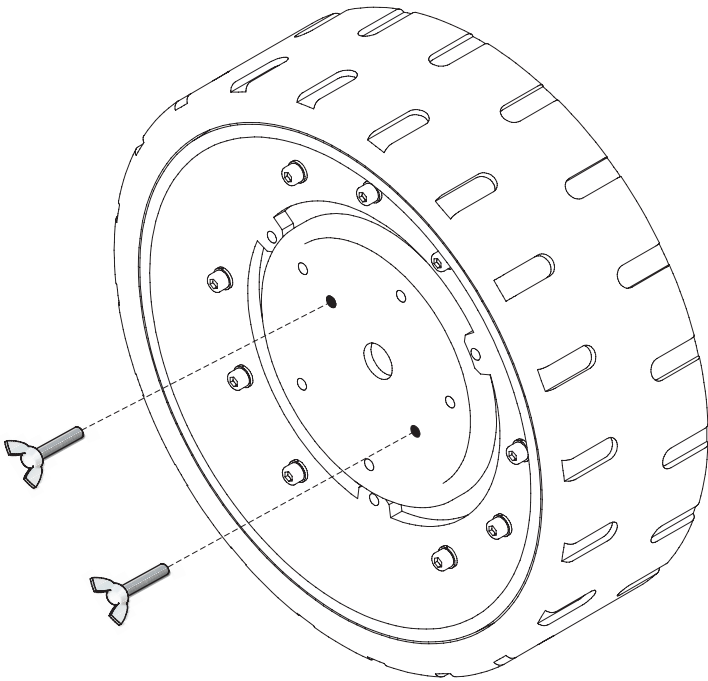
It is forbidden to tow the machine unless an emergency, such as a malfunctioning or a complete breakdown, occurs

Move the machine for short distances, because this operation disables the steering

Make sure that:

- The scissor is completely closed.
- The machine is off.

To perform the operation a key and thumbscrews, which are kept in the document holder box, are provided. Should thumbscrews be not available use 4 M5x30 screws .



Complete the following operations:

- Connect the machine with a rigid towing bar.
- Remove the protection cover of the front wheels.
- Screw the thumbscrews in the holes on both wheels.
- Carry out towing.

In this configuration the machine is not braked; do not exceed 4 km/h

- At the end of towing operation unscrew and remove the 4 screws.
- Place the protection covers of the wheels.

Battery recharge

Batteries are the energy source of the machine. To use their capacities in the best way without the risk of a premature decay, always carry out the recharge after every use, independently of what the charge indicator signals.

If the battery recharge is not carried out immediately, the battery might be permanently damaged

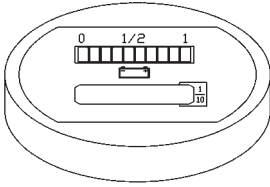
Leaving even only one night the batteries exhausted may result in a permanent damage

The batteries have to be charged with the special battery charger placed in the back box

Battery charger features

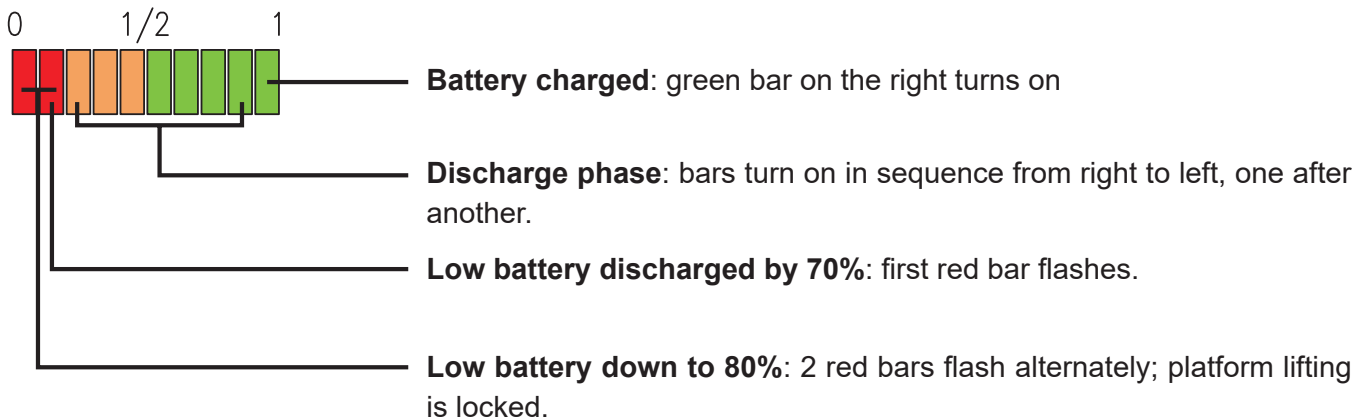
Battery charger	24V – 20A
Power supply	DI 90/135 -185/265V - 47/62Hz
Voltage	24V
Charge time	about 11 hours
Operating temperature	from 0°C to +40°C
Protection against output short circuit	
Protection against polarity reversal (fuse)	
Weight	1.5 kg
Connection to the supply mains	standard 3 pole 230V socket
Current function of maintenance	

Battery charge indicator



The charge indicator on the ground control panel shows the battery charge status by means of luminous bars.

- 2 reds
- 3 oranges
- 5 greens



Before the charge

Before starting the battery charge it is necessary to check the electrolyte level and, if necessary, fill up till all elements are completely covered:

- Remove the cowlings.
- Open the electrolyte filler caps.
- Check the level and if necessary fill up with distilled water.
- Close caps and dry if some liquid has poured out.

The sulphuric acid contained in the solution can cause serious injuries; if it is unintentionally poured, wash immediately the objects or the surfaces with abundant water

If the acid comes into contact with the skin, wash immediately with abundant water and consult a doctor

It is recommended to always wear gloves and protective glasses during the maintenance operations of batteries.

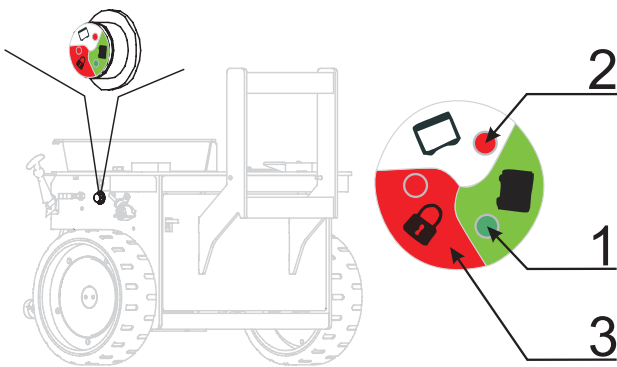
Charge start

The recharge is to be carried out in a suitable room, well ventilated and separate from the working room, because batteries generates inflammable gases, which can cause explosions if they come into contact with flames or sparks

The recharge is to be carried out with open cowlings

When battery charger is operating the machine is locked

The charge indicator is placed on the rear left part and it has 3 LEDS.



When the machine is locked for low battery LED 3 turns on.

By connecting a power cable to the back socket, the battery charger is automatically started after a few seconds; The CHARGE LED turns on (2). If this operation is not carried out, check the connection to the battery and to the supply mains.

If the above operation is carried out regularly, the battery charger completes the charge and then lights the LED 1.

Charge break

The power supply failure stops the charge and it causes the switching off of all leds; when the supply voltage is restored, the charge restarts from where it was broken. If you need to stop the charge, disconnect the supply mains cable and use the vehicle.

Maintenance

If the battery charger is fed and connected even during long inactivity periods, it is possible to always keep the battery in charge at 100%. If it is not possible to keep it fed, disconnect the Anderson plug and the battery connectors.

Special signals

When the microprocessor detects a problem it stops the charge and signals it by making the two CHARGE (1) and STOP (2) leds flashing or keeping them lighted and fixed. Follow the operations described below:

1. Disconnect the power supply from the supply mains,
2. Disconnect the battery charger from the battery through the provided grey connector.
3. Reconnect the battery charger to the battery.

If the fault is still present, contact the technical service.

Charge end

When the green led goes on, disconnect battery charger from outlet.

Battery disposal

Run-down lead batteries can not be dumped with ordinary solid waste; being composed of noxious materials, they must be collected, disposed of and/or recycled under the legislation prevailing in each state.

Transport

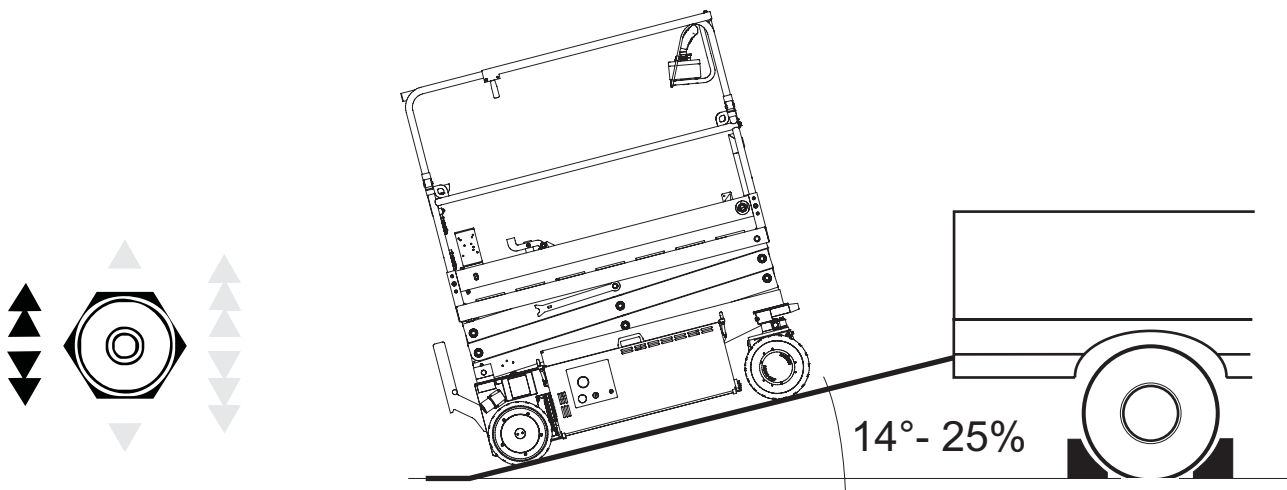
Make sure that the means of transport supports the machine mass

Loading and unloading of the machine

The loading and unloading of the machine on the vehicle platform takes place:

- through ramps
- by means of lifting

Through ramps



Move the machine only with the second (medium) speed. Using different speeds there is the risk of machine overturning.

- Park the means of transport on a flat surface
- Place the ramps parallel to each other, at a distance equal to that between the wheels and with an inclination that does not exceed 14 °.
- Always perform the loading and unloading operations with closed scissors and retracted platform.
- Proceed with caution.
- Place the machine so that no part of it protrudes from the floor area.

By means of lifting

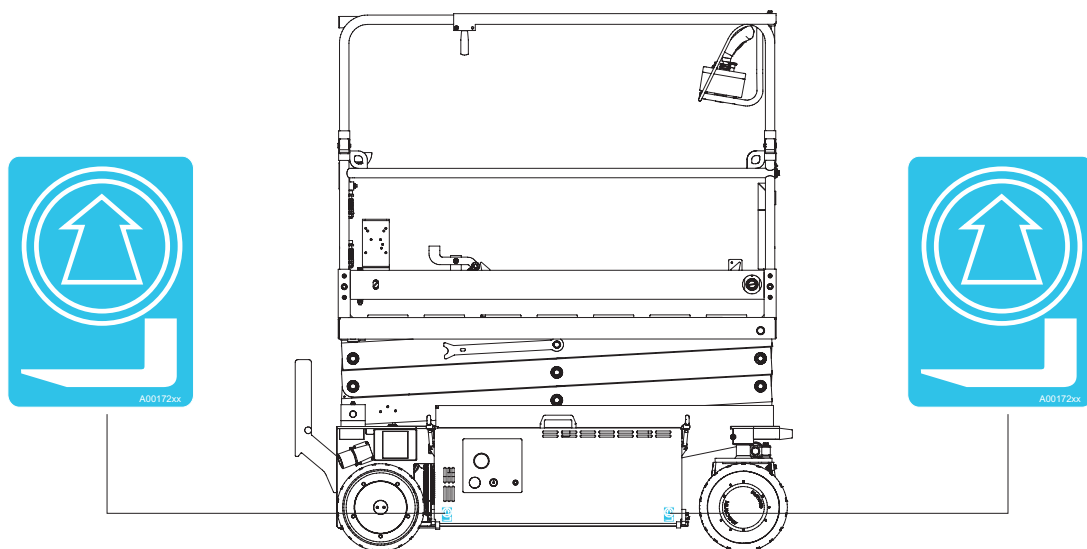
Facelift may be carried out with a fork chassis or a crane or overhead crane.

Make sure that:

- The scissor is completely closed.
- The platform is not extended.
- The machine is off.

With forklift truck

For forklift lifting, use the areas shown on the labels provided.

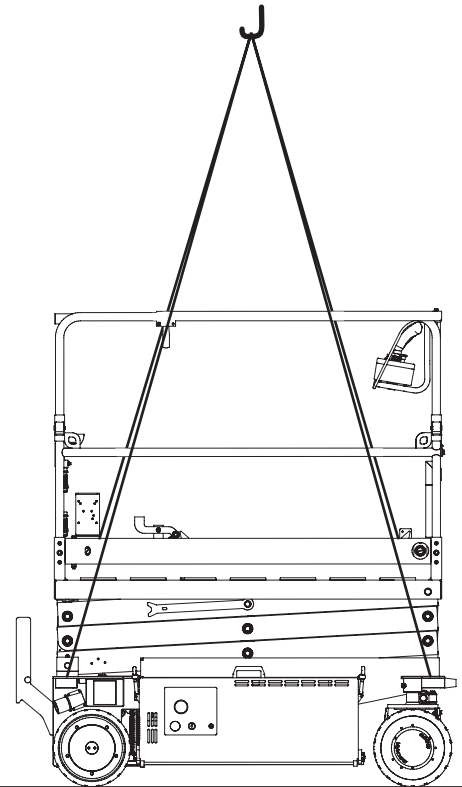


With crane or overhead crane

Use bands, chains and hooks in a perfect state of conservation.

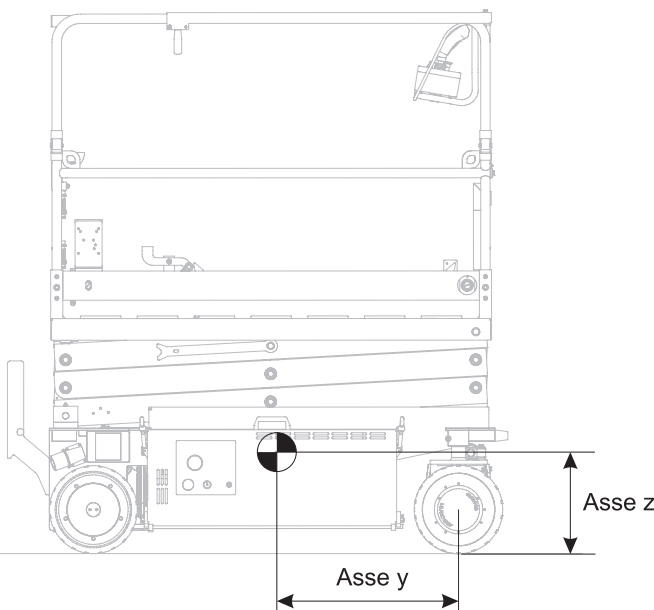
- No operator should be on the platform
- The area involved in the lifting must be free
- Do not transit with the machine suspended above people.

Use bands or chains passing through the 4 points of attachment indicated by the labels provided.



Make sure that the ropes do not come into contact with any machine parts that they might damage

Do not sling the machine in a manner other than the previously indicated, this may cause structural damage

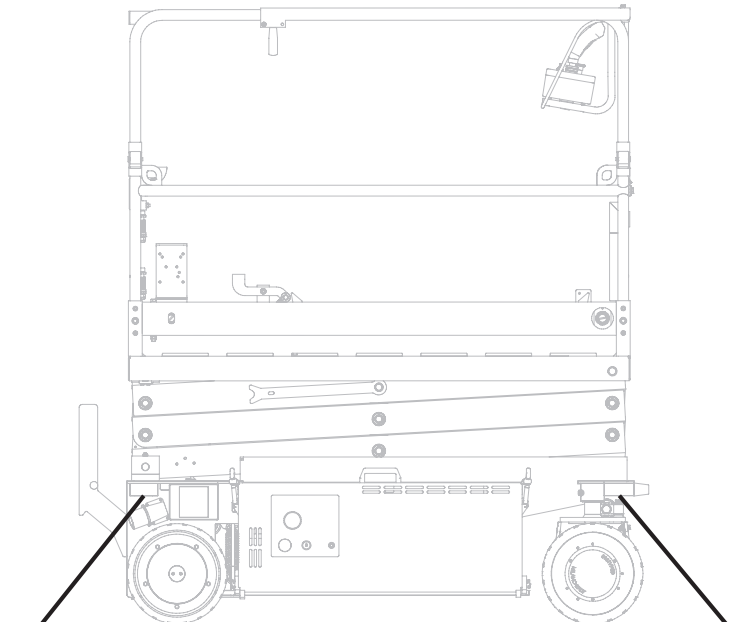


Determine the barycentre using the illustration and heights provided:

Barycentre	y-axis	z-axis
IM 3230	682	522

Machine fastening

During its transport, fasten the machine to the vehicle platform by means of bands passing through the 4 points of attachment indicated by the labels provided.



It is forbidden to lift the platform when the machine is placed on the vehicle platform

Storage

In case of long storage periods, shelter the machine in a dry and ventilated place, with completely loaded batteries. If possible leave the battery charger connected and fed in order to allow the maintenance of the batteries, otherwise recharge the batteries every 2 months regularly.

Storage temperature: -20/+50°C

Before using the machine after a storage period exceeding 30 days, carry out the inspections described in the Maintenance summary table, item “After long periods of inactivity of the machine”

Disposal and scrapping

The machine consists mainly of steel, aluminium, plastic, synthetic gum and copper.

Special attention must be paid to disposing of electric batteries (D.Lgs. 188/08) and of the hydraulic oil contained in the tank and in the hydraulic circuit (DPR 691/82).

The main components of the machine are listed hereunder.

- Cast iron
- Nylon
- Steel
- Teflon
- Copper
- Polycarbonate
- PVC
- Ertalyte

Optional

AGM battery kit

Features

- Voltage: 24V (4 6V batteries in series)
- Capacity: 190Ah C5
- Peso: 36 kg x 4 batterie=144 kg

Battery charger features

Battery charger	24V – 20A
Power supply	185/265V - 47/62Hz
Voltage	24V
Charge time	about 11 hours
Operating temperature	from 0°C to +40°C
Protection against output short circuit	
Protection against polarity reversal (fuse)	
Weight	1.5 kg
Connection to the supply mains	standard 3 pole 230V socket
Current function of maintenance	

Beacon kit

It adds a further beacon to the machine equipment.

Compressed air kit

It allows for the use of compressed air tools on the platform.

Maintenance

Long life and maximum safety during machine operation can only be assured by careful and constant maintenance.

The schedule reported in the maintenance summary table refers to normal use conditions; in case of heavy working conditions (extreme temperature, polluting atmosphere, high humidity, elevation) intervals must be shorter.

Frequency and scope of periodical maintenance and inspections may depend on national rules.

Machine cleaning

Once each work-shift has been finished or when you think it is necessary, clean the machine:

- Clean all surfaces by means of an air compressed blow, avoiding the formation of dirt heaps.
- Spray a normal degreasing product and eliminate the residual dirt by means of cotton clothes.

Never use diluents, scrapers and steel brushes to avoid damages to the painted surfaces

Do not clean the machine using a jet of high-pressure water. Humidity or water penetration inside electric elements could cause failures and/or damages to the electric/electronic control elements.

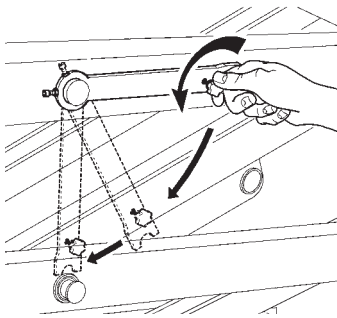
Maintenance devices

Safety rest

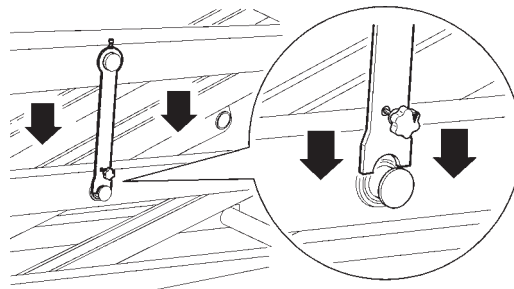
If the platform is subjected to maintenance while lifted, lock the lifting system on both machine sides by means of the suitable rests supplied with the machine.

Use the safety rests only when platform is unloaded

To lock the lifting system:



- Lift platform.
- Unscrew knobs which lock the rests to its boom.
- Lower the platform making sure that the lower fork of each rest fits in the housing obtained in the central pivot end.



Once works have been finished, lift a little the platform to release the rests, and fix them again to the boom.

Battery connection plug

The battery connection plug is placed in the left box.

This safety device disconnects the power and control circuits of batteries and the battery charger solely remains connected.



Make sure that batteries are disconnected before carrying out the electric equipment maintenance

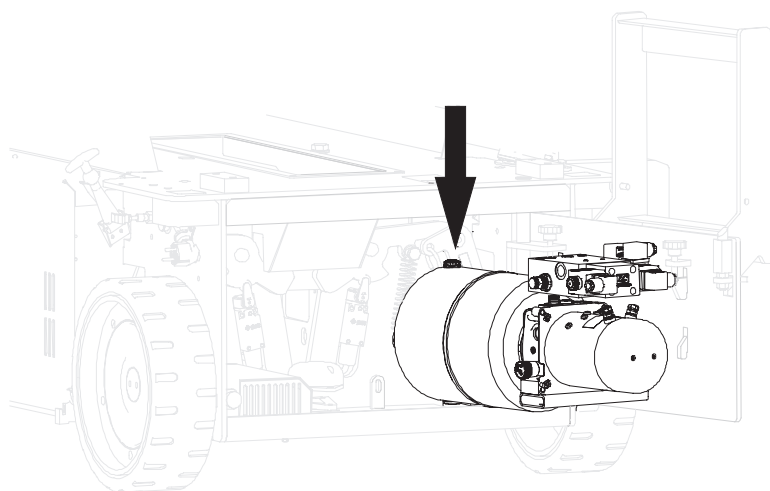
Maintenance summary table

OPERATION TO BE CARRIED OUT	AFTER THE FIRST 50 HOURS	EVERY DAY	EVERY MONTH	100 HOURS OR 6 MONTHS	500 HOURS OR YEARLY	EVERY YEAR	EVERY 2 YEARS	AFTER LONG PERIODS OF INACTIVITY (30 days)	DOPO LUNGI PERIODI DI INATTIVITA' (30 gg)
Check oil level					X			X	
Oil change				X				X	
Check electrolyte level				X				X	
Check battery charge				X				X	
Grease the mechanisms						X		X	
Safety devices check			X			X		X	
Battery inspection and cleaning			X			X		X	
Emergency lowering control					X			X	
Motor brushes check (drive and control unit)						X		X	
Check brakes on ramp							X	X	
Structure check						X		X	
Check of hydraulic tubes			X		X			X	
Checking performance							X	X	
							X	X	
							X	X	

The above mentioned operations are described in the following pages.

Check oil level

The oil level checking and the possible topping up should be made when the platform is entirely lowered



- Open the back box;
- Remove oil tank cap of the hydraulic control unit;
- Check that the oil level touches the top of the pump.
- Should it be necessary top up with oil of the same viscosity as indicated on the tank.

Oil change

Hydraulic oil is a polluting product

Avoid fluid leakages by using collection tanks and take precautions against accidental leakages by resorting to oil-absorbing products

Exhausted oil must be collected and not disposed of into normal discharge lines; specialized firms attend to dispose of or possibly recycle industrial oils, under the laws prevailing in each individual state

A cap is located under the tank for total oil drain.

- Open the back box

To access the discharge cap it is necessary to increase the box opening unscrewing the pad placed on the right external part of the ladder

- Discharge all oil in a suitable container.
- Close discharge cap.
- Fill in new oil through the filling cap.

Electrolyte level check

- Remove the cowlings.
- Remove the electrolyte filler caps.
- Check the level and if necessary top up with distilled water.
- Close caps and dry if some liquid has poured out.

The sulphuric acid contained in the solution can cause serious injuries; if it is unintentionally poured, wash immediately the objects or the surfaces with abundant water

If the acid comes into contact with the skin, wash immediately with abundant water and consult a doctor

It is recommended to always wear gloves and protective glasses during the maintenance operations of batteries

Check of battery charge

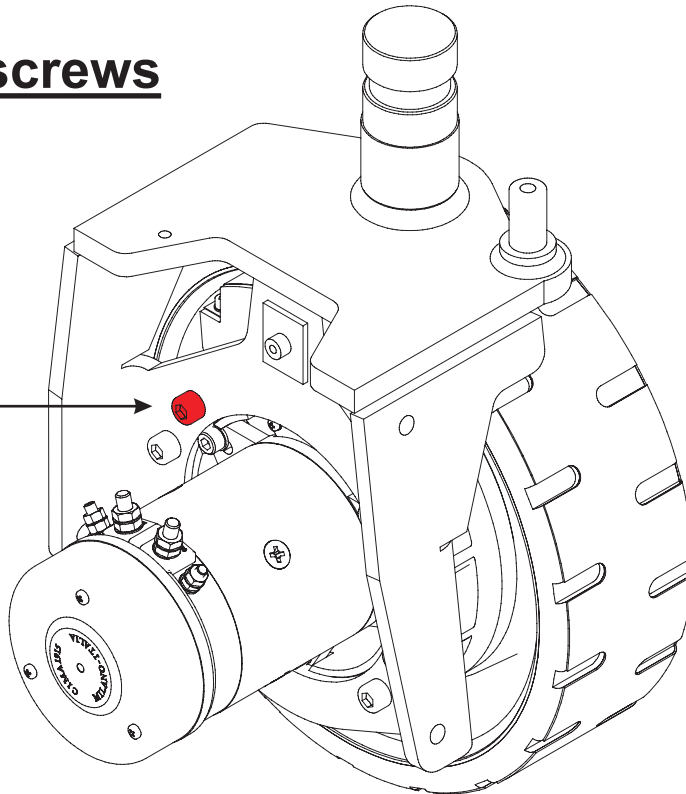
The battery charge level can be read on ground control panel.

For the battery recharge see section "Battery recharge".

Check of screw tightening

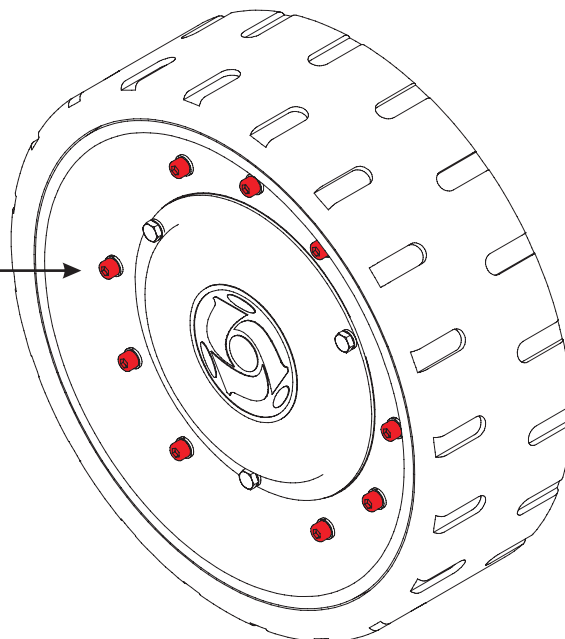
Drive unit fixing screws

8 TCCE M10x25 UNI5931
2,5÷3 daNm

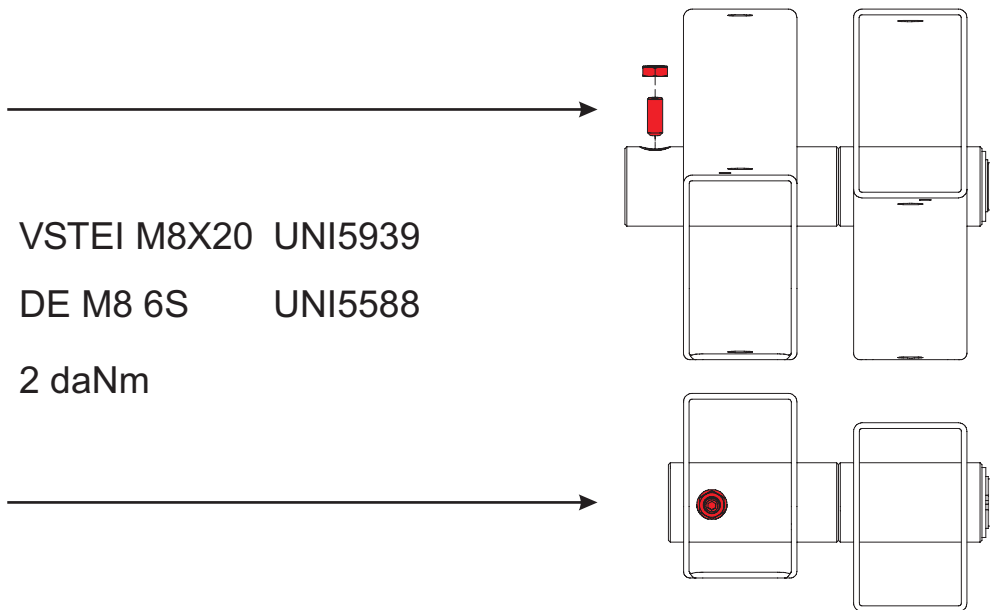


Front wheel fixing

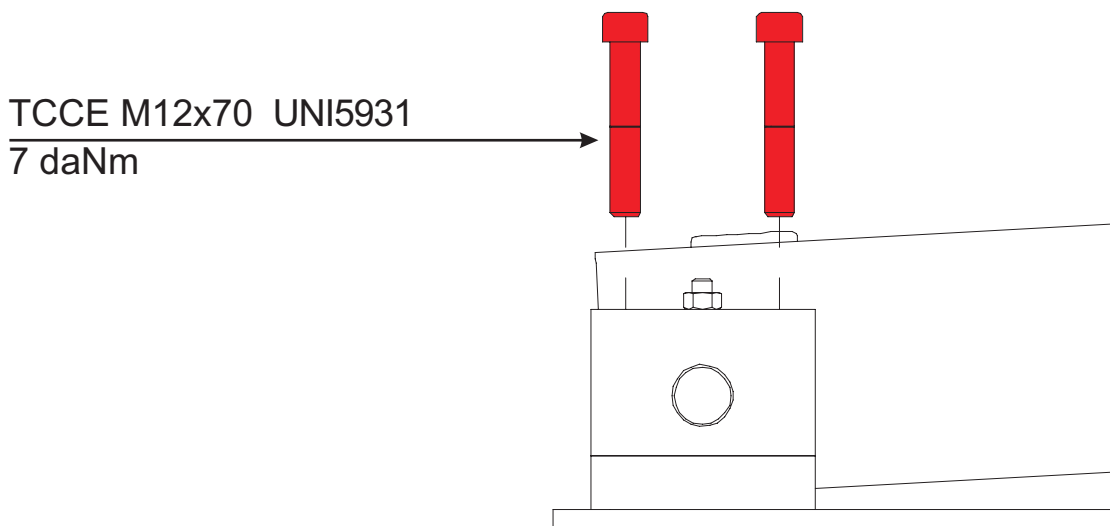
9 TCCE M6x40 UNI5931
0,5÷0,6 daNm



Pin fixing screws on frame

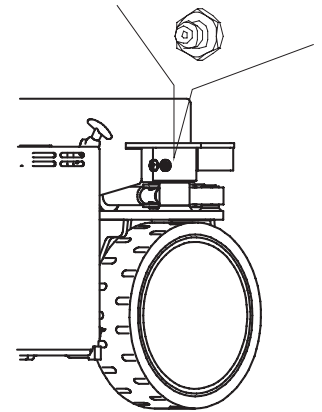


Frame shells fixing



Grease the mechanisms

Use the lubricators located on both sides of the truck (as shown in figure) to grease the steering wheels spindles.



Battery inspection and cleaning

Batteries must be periodically inspected for checking that there are no damages, breakages, fluid leakages or terminal corrosion. Also inspect cables looking for breakages, cuts or fraying.

Disconnect battery connecting plug before carrying out the checks

Always clean batteries that show signs of corrosion on terminals or onto which electrolytic fluid has fallen during filling.

Always clean terminal contact surfaces, lubricate with anti-acid grease or vaseline.

The battery fluid is highly corrosive and can cause severe injuries; if it is poured unintentionally, wash objects or surfaces with abundant water

If the acid comes into contact with the skin, wash immediately with abundant water and consult a doctor

Always wear gloves and goggles during battery maintenance

Keep open flames, cigarettes, sparks or any other flammable source away from batteries

Safety devices check

The following test enables to check that all safety devices of the machine work properly.

The safety systems applied to the machine are inevitably subject to wear and decalibration. Therefore, they must be controlled and kept in perfect efficiency; also, it is not advisable to evaluate their operational and safety conditions only on the basis of their functioning.

Such systems do not relieve the operator of the responsibility of carrying out an informed and appropriate use of the machine.

Red emergency stop button

- Press emergency stop button on ground control panel and check that no operation is possible, either from ground or platform. Put button to ON position again.
- Press emergency stop button on platform control panel and check that no operation is possible, either from ground or platform. Put button to ON position again.

SQ1 Microswitch

Safety speed

Make sure that there are no obstacles above or below platform before carrying out the check

- Lift platform above microswitch SQ1 activation height from platform control panel.
- Check that drive is possible at safety speed only.

Inclination

Starting with the machine in a perfectly level condition so as to avoid altering the angle values, carry out the following tests

Carry out the following tests from ground by using platform control panel

Do not stop on platform

Make sure that there are no obstacles above or below platform before carrying out the check

The tests are to be carried out in 4 different positions of the machine, using 2 different wedges. Below are listed the positions and the tests to be carried out.

- Lower platform completely.



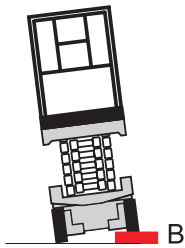
POSITION 1

- Place wedge A measuring about 60 mm under each wheel **of front axle** and move the machine on it.
- Lift the platform and carry out the tests reported on the following page.

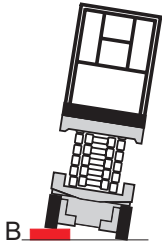


POSITION 2

- Place wedge A under each wheel **of rear axle** and move the machine on it.
- Lift the platform and carry out the tests reported on the following page.

**POSITION 3**

- Place wedge B measuring about 20 mm under each front and rear left wheel and move the machine on it.
- Lift the platform and carry out the tests reported on the following page.

**POSITION 4**

- Place wedges B under each front and rear right wheel.
- Lift the platform and carry out the tests reported on the following page.

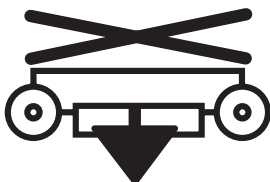
For each position check that:

- Inclination warning light flashes below SQ1 activation height.
- By lifting the platform above SQ1 activation height:
 - inclination warning light is on.
 - the alarm sounds.
 - all movements, lowering excluded, are locked.
- By lowering the platform the movements are restored.

Lower platform completely, move machine forward and remove wedges.

Anti-overturn protections

During normal machine operation, the anti-overturn protections automatically lower when platform is lifted and they are completely lowered when the platform reaches the SQ1 activation height; on the contrary, drive and steering are disabled.



- Entirely lower the platform.
- Place an obstacle of 30 mm under one of the anti-overturn protections to avoid its lowering.
- Lift the platform above SQ1 activation height.
- Check that drive and steering movements are locked.
- Check that the anti-overturn protections warning light on the platform control panel and audible alarm turn on.
- Lower the platform and remove the obstacle.

Load Limiter

- Load platform with a load equal to 120% the nominal load.
 - Check that by operating platform lifting:
 - the overload warning light flashes on the platform control panel
 - the overload warning light flashes on the ground panel.
 - the alarm sounds;
 - all movements are locked.
- Remove overload.
- Check that all movements are restored.



Anti-shearing operations

Make sure that there are no obstacles above or below platform before carrying out the check

- Lift platform by 2 meters approximately.
- Lower platform and check that lowering is locked when distance between boom and frame ends is approx. 60 mm. After a time interval of 5 ÷ 6 seconds, put the joystick in standstill position and continue the lowering.
- Check that lowering remains disabled even if you move the joystick for the lowering before the indicated time interval has passed.

Emergency lowering control

Make sure that there are no obstacles below the platform before carrying out the control

- Lift platform.
- Pull the handle placed on the rear left part checking the correct operation of the emergency lowering.

Check brakes on ramp

Parking brakes must be capable to stop the machine on max. slope indicated in the “Technical data” table.

Check that brakes stop on a slope indicated in the above mentioned table.

Braking spaces

All tests must be executed with the machine flat

FAST SPEED

- Select fast speed on platform control panel.
- Push joystick to max forward position.
- Release joystick and check that the braking space is lower than 60 cm.

Check of engine brushes

Check brush wear of drive electric motors and electrical pump motor; replace them if necessary.

Wheels replacement

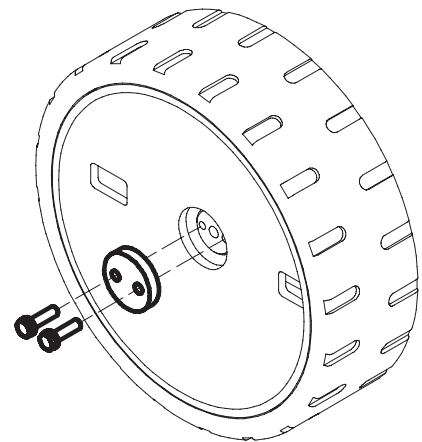
The wheels must be replaced if:

- the wheel overall diameter is lower than the diameter shown in the technical data table;
- there are traces of irregular wear such as cuts, tears, or missing fragments;
- the metal part is visible through the tread.

Rear wheels

To remove the wheels:

- Raise the machine.
- Remove the central disk unscrewing the two screws.
- Extract the wheel from the hub using an extractor: the wheel is provided with two slots for the extractor arms.



To install the wheels:

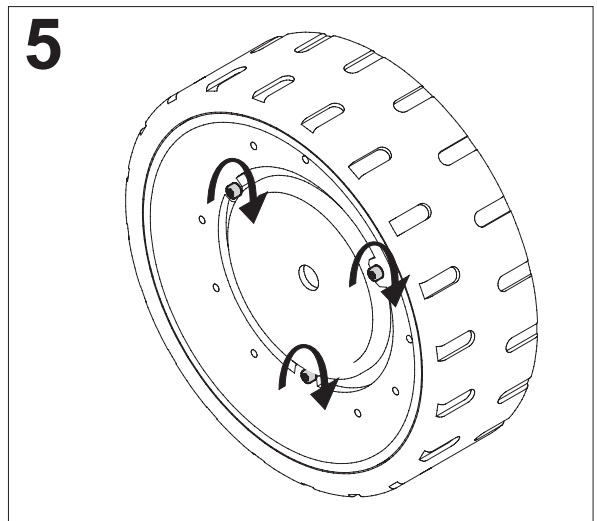
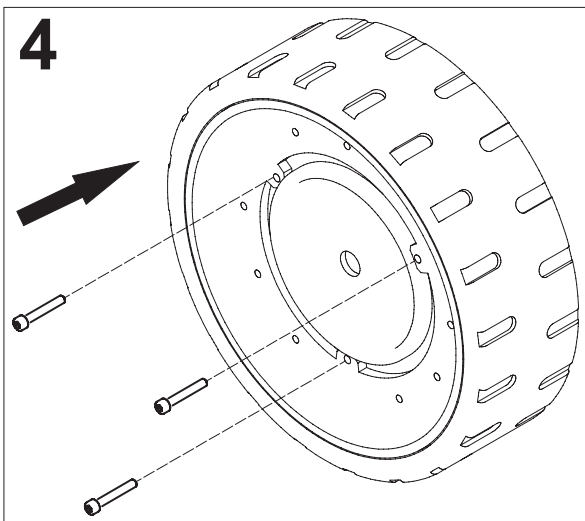
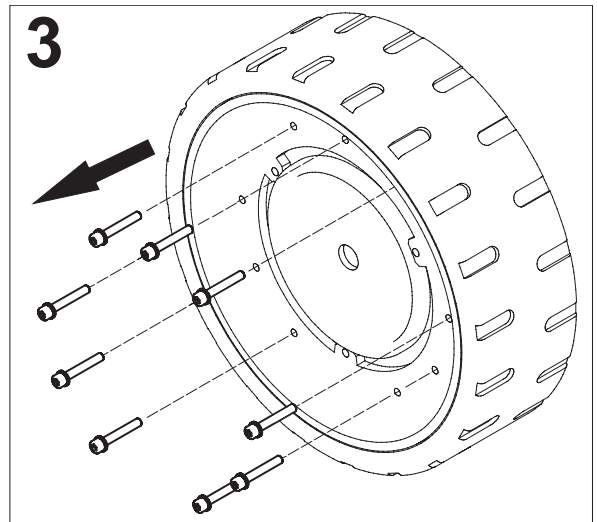
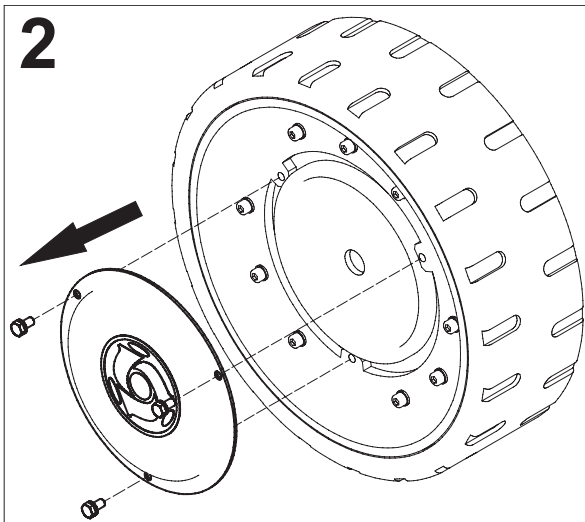
- Insert the new wheel, already equipped with bearings, on the pin using a rubber mallet.
- When the wheel stops, screw the disk on the pin.

Front wheels

Do not use electric or pneumatic tools to screw or unscrew the screws of the wheel

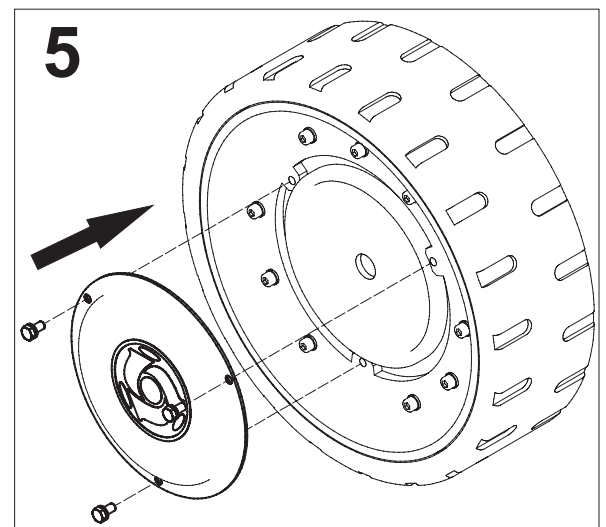
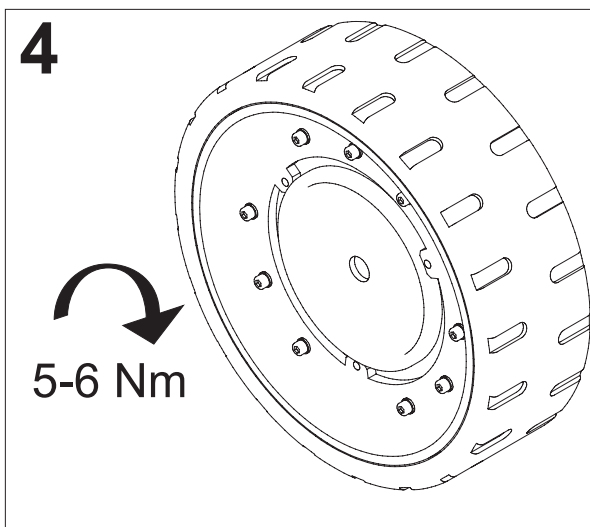
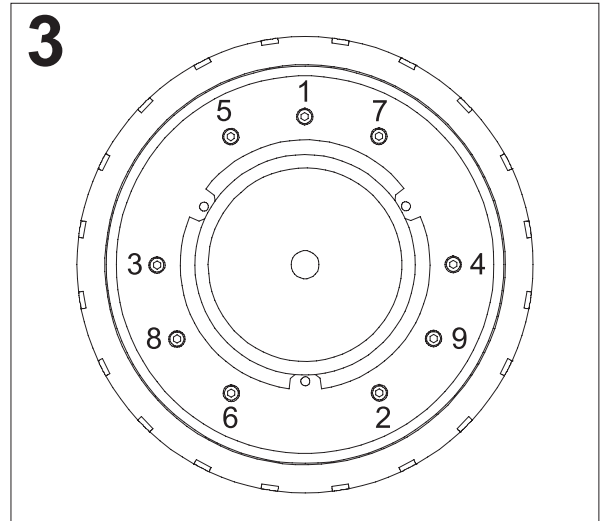
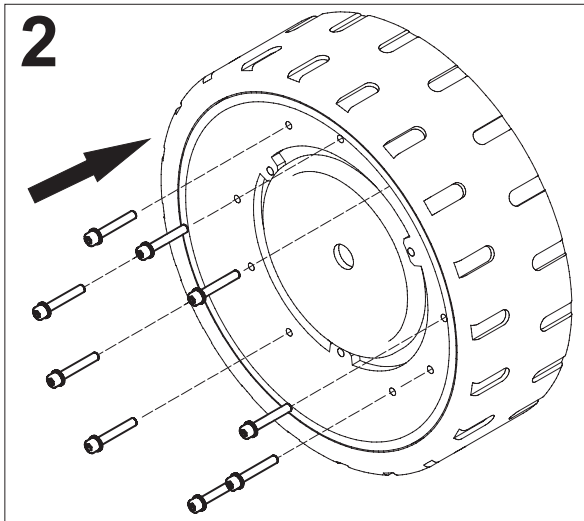
To remove the wheels:

1. Raise the machine
2. Remove the centre cover paying attention not to damage the gasket.
3. Unscrew the nine screws that secure the wheels.
4. Hand-tighten the three screws just removed on the cover fixing holes until they touch.
5. At this point alternatively screw the three screws with a key, no more than half a turn at a time: the wheel is installed on the reduction with a slight interference, this operation allows the wheel removal.



To install the wheels:

1. Center the wheel holes with those of the reduction using a longer screw or a thin screwdriver.
2. Screw the nine screws until they exert a resistance and check that the wheel is parallel to the reduction.
3. At this point alternatively screw the screws rotating them always of the same angle, but no more than half a turn at a time: this operation allows you to insert the wheel on the reduction, until it stops.
4. At the end tighten the nine screws with a torque of no more than 5 - 6 Nm.
5. Reinstall the cover with its gasket.

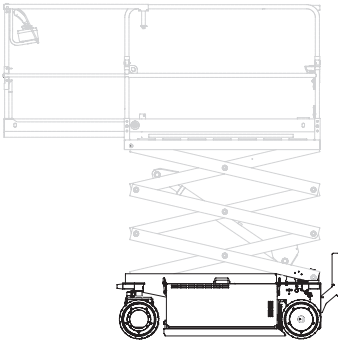


Structure check

General

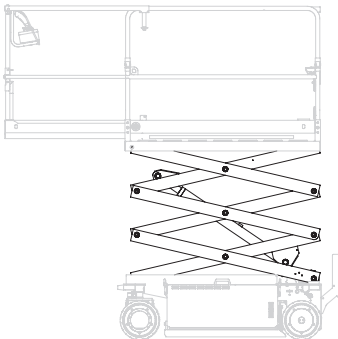
- Check that mechanical structures are protected against oxidation and, if necessary, retouch oxidized area.

Chassis



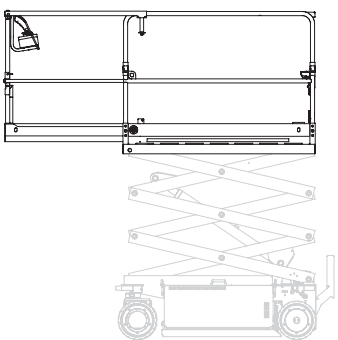
- Check the most important welds visually or by means of penetrating fluids:
 - Bearing structure.
 - Spindles of steering wheels.
 - Wheel supports.
 - Scissor hinging supports.
- Check the shape of the guide profiles for the sliding blocks.
- Check trunnions on spindles.
- Check bushings; replace them by using lubricating grease if necessary.
- Check wheel conditions.

Machine frame



- Visual inspection of its integrity and of the shape of booms and frames.
- Check, visually or by means of penetrating fluids, all welds of articulation bushes, lifting cylinder attachments, and welds on cylinder.
- Check fastening of trunnions and hinging pins of lifting cylinder.
- Check surface conditions of trunnions and bushes; replace if necessary, by utilizing lubricating grease.

Platform



- Check the most important welds visually or by means of penetrating fluids:
 - Tubular structures.
 - Hinging supports.
- Visually check work surface conditions of both fixed and mobile platform.
- Check the shape of guide profile for sliding blocks.
- Check sliding blocks.
- Visually check guard rails and their fastening.

Check of hydraulic tubes

Hydraulic oil is a polluting product. Avoid fluid leakages by using collection tanks and take precautions against accidental leakages by resorting to oil-absorbing products.

- Visual control of all hydraulic joints and tighten junctions, if necessary.
- Check conditions of flexible hydraulic tubes; replace if necessary.

Checking performance

Use a chronometer for executing the following controls.

All tests must be executed with the machine flat

Safety speed

- Select safety speed on platform control panel.
- Push joystick to max forward position.
- Check that machine covers 10 m in a time greater than 55 sec.

Steering speed

- Select safety speed.
- Steer wheels rightwards completely.
- Execute drive and steer leftward completely.
- Check that time necessary to steer from right to left is $6 \div 8$ sec.

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Check register

Reference to legislation

This check register is issued for aerial work platform users, as envisaged by Enclosure I of 2006/42/EC guideline.

Instructions for keeping this register

This check register must be considered as an integral part of the work aerial platform and must be kept with the platform for its whole life, until it is finally dismantled.

Instructions for compilation

These instructions are supplied based on provisions that are already known at the date the aerial work platform is first marketed. New provisions might be issued which could change the user's obligations.

This register is prearranged for recording the following events related to the useful life of the aerial work platform, based on proposed diagrams::

- Delivery of aerial work platform to the first owner.
- Changes of ownership.
- Replacement of components in the hydraulic system.
- Replacement of components in the electric system.
- Replacement of mechanisms or structural elements.
- Replacement of safety devices and their components.
- Periodical maintenance verification except daily inspections indicated in the maintenance summary table.
- Remarkable failures and their repair.

The MONTHLY checks and controls may be recorded on the check Register every 6 months