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# Operator's and Safety Manual

## ZEBRA 12

**Translation of the original Manual**

*1NO0039UK-01 Revision 10/2016*

**DISTRIBUTOR'S STAMP**

# FOREWORD

This manual has been compiled to assist to properly use and maintain your ZEBRA 12 self-propelled work platform.

Take the time to carefully read and familiarise yourself with its content. Once you have read and understood all sections, keep this manual in the manual storage box provided to this effect in the platform.

The information in this manual does not, in any case, replace community, state, local regulations or safety instructions or insurance policy requirements.

Due to constant improvements made to its products, **ATN** reserves the right to alter their specifications and equipment without prior notice.

# WARNING SYMBOLS AND SAFETY TERMS

These symbols alert the user to possible risks of injury and require the user to consult the operator and safety manual.
The safety instructions following these symbols must be respected to avoid any risk of serious or fatal injury.

| DANGER | CAUTION |
|---|---|
| INDICATES A DANGEROUS SITUATION WHICH MAY LEAD TO SERIOUS OR FATAL INJURIES IF THE SAFETY INSTRUCTIONS ARE NOT RESPECTED. | INDICATES A PROCEDURE OR OPERATION TO BE RESPECTED TO THE LETTER TO AVOID ANY DAMAGE TO THE MACHINE. |

**- NOTE-**

**These are general remarks relating to a procedure or important condition when using the machine.**


## DANGER

DO NOT USE THIS MACHINE IF YOU HAVE NOT BEEN PROPERLY TRAINED TO ITS SAFE OPERATION. TRAINING INCLUDES KNOWLEDGE OF YOUR EMPLOYER'S WORK REGULATIONS, THE INSTRUCTIONS IN THIS MANUAL AND THE REGULATIONS IN FORCE FOR THIS TYPE OF MACHINE.

AN UNTRAINED OPERATOR PUTS HIMSELF AND OTHERS AT RISK OF DEATH OR SERIOUS INJURIES.

## DANGER

NEVER EXCEED THE PLATFORM'S RATED CAPACITY.
THE LOAD MUST BE EVENLY DISTRIBUTED ACROSS THE WORK PLATFORM FLOOR.
DO NOT RAISE THE PLATFORM OR MOVE WITH THE PLATFORM RAISED ON INCLINES, HILLY OR SOFT SURFACES.
ALL 4 WHEELS MUST REMAIN IN PERMANENT CONTACT WITH THE GROUND.

# FORTHE ATTENTION OF THE CUSTOMER / USER

If this platform is involved in an accident, please contact your distributor immediately and provide them with all the details of the accident. If you do not know who your distributor is, or cannot inform them, please contact:

Tel: 33 (0)5 53 79 83 20
Fax: 33 (05) 53 88 01 07
Address: Lieu-Dit Bacqué, rue André Thévet, 47400 Fauillet, France

**A.T.N. - S.A.**
Head office: Lieu Dit Bacqué – Rue André Thevet, 47400 Fauillet, France
Administrative and accounting: Lieu Dit Bacqué – Rue André Thevet, 47400 Fauillet, France
RCS Agen 429 807 597 – Code APE/ 2822Z – SIRET 429 807 597 00068 - Capital 57900 €

# EC CONFORMITY DECLARATION

The constructor: A.T.N. declares that the machine designated below:

Denomination ..... PEMP (Mobile Personnel Lifting Platform)
Function ..... Lifting of people for work at heights
Type..... Diesel lifting platform with articulated arms (Group B – Type 3)
Model and commercial designation ……ZEBRA 12
Serial Number ..... **Z12xxxxx**

meets all of the relevant provisions in the appendix at the end of the 1st chapter in book III of the fourth section of the employment code (Machine Directive 2006/42/CE of 17th May 2006), also meets other relevant provisions such as EMC directive 2004/108/CE of 15th December 2004 and the noise emission directive 2000/14/CE of 8th May 2000..

Acoustic power level : 98dB

The EC type certificate has been awarded by:
APAVE
13 à 17 rue Salneuve
75854 PARIS CEDEX 17
Under the reference:
**0060/ 5253/ 760/ 10 / 15/ 0007**

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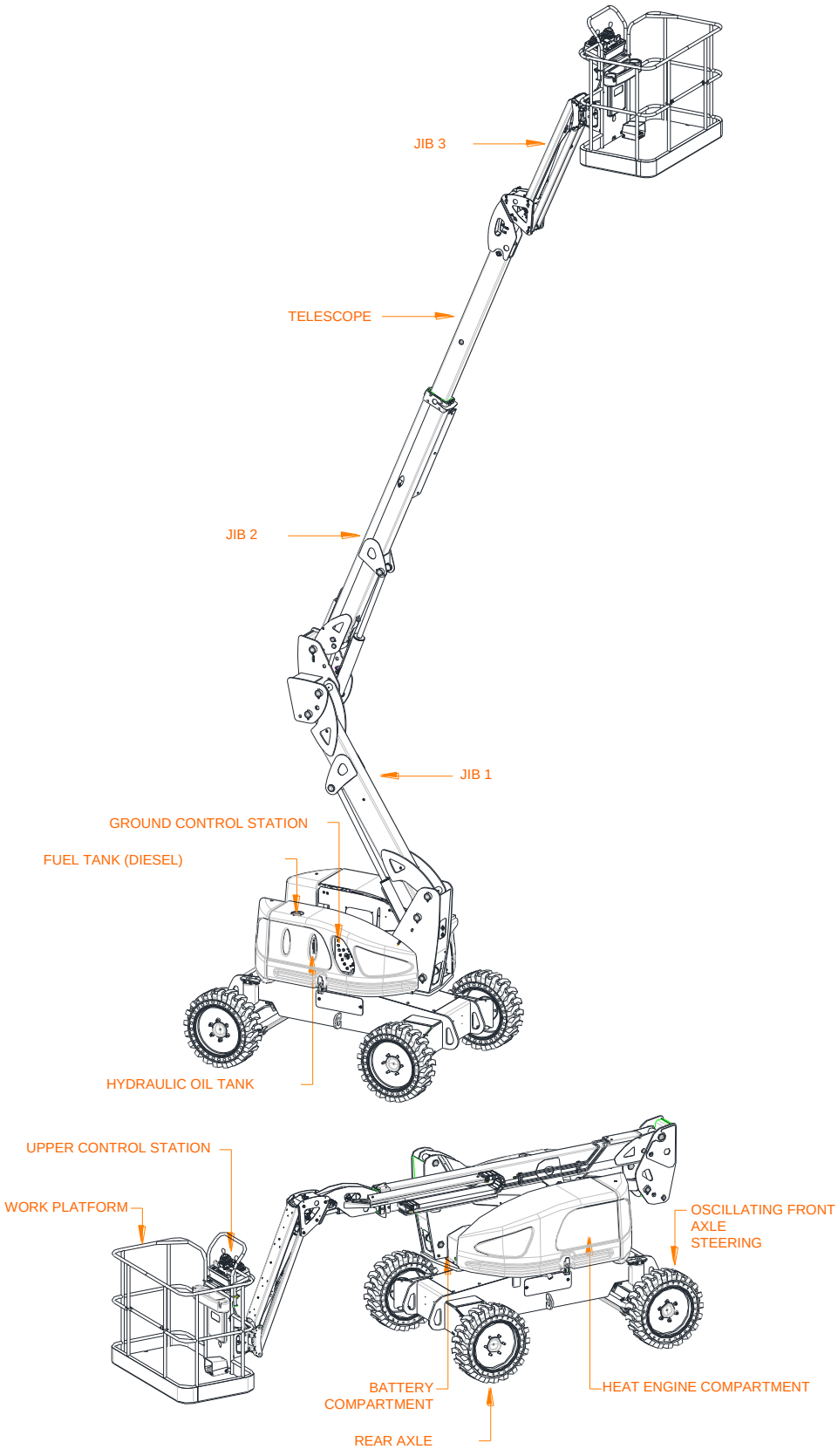
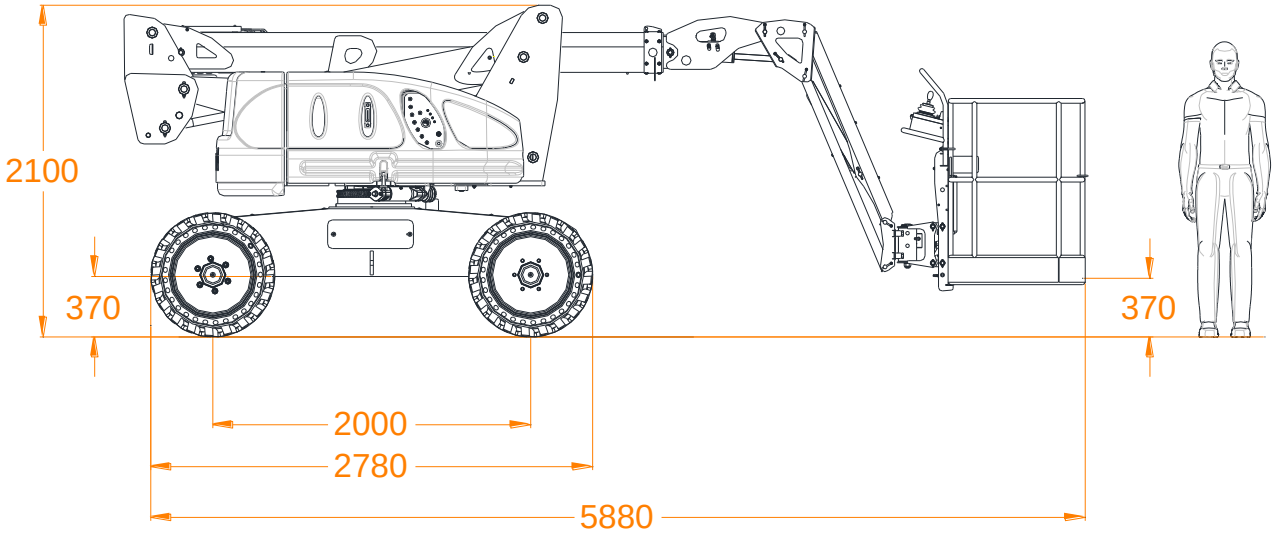
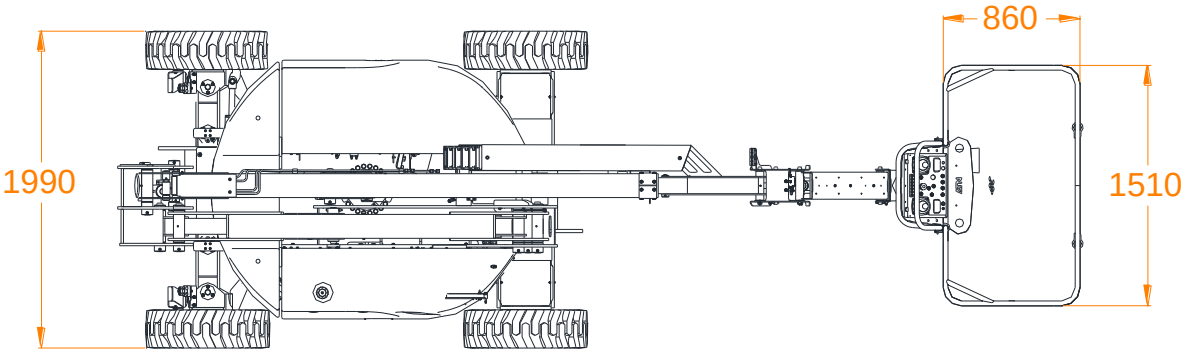
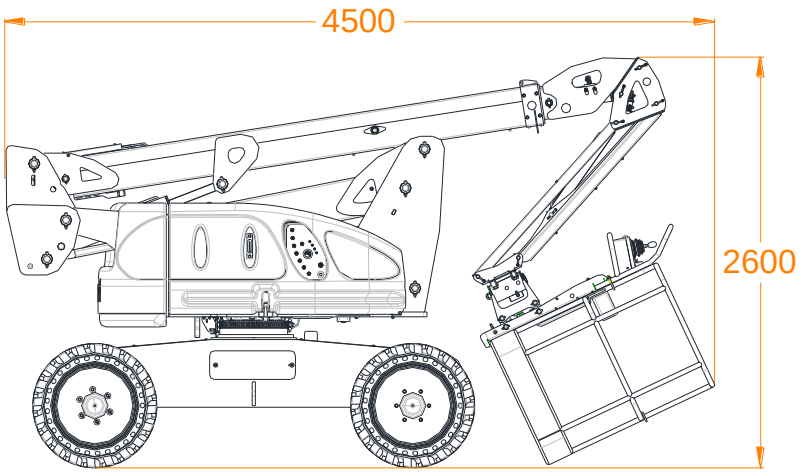
## 1.1. DESCRIPTION

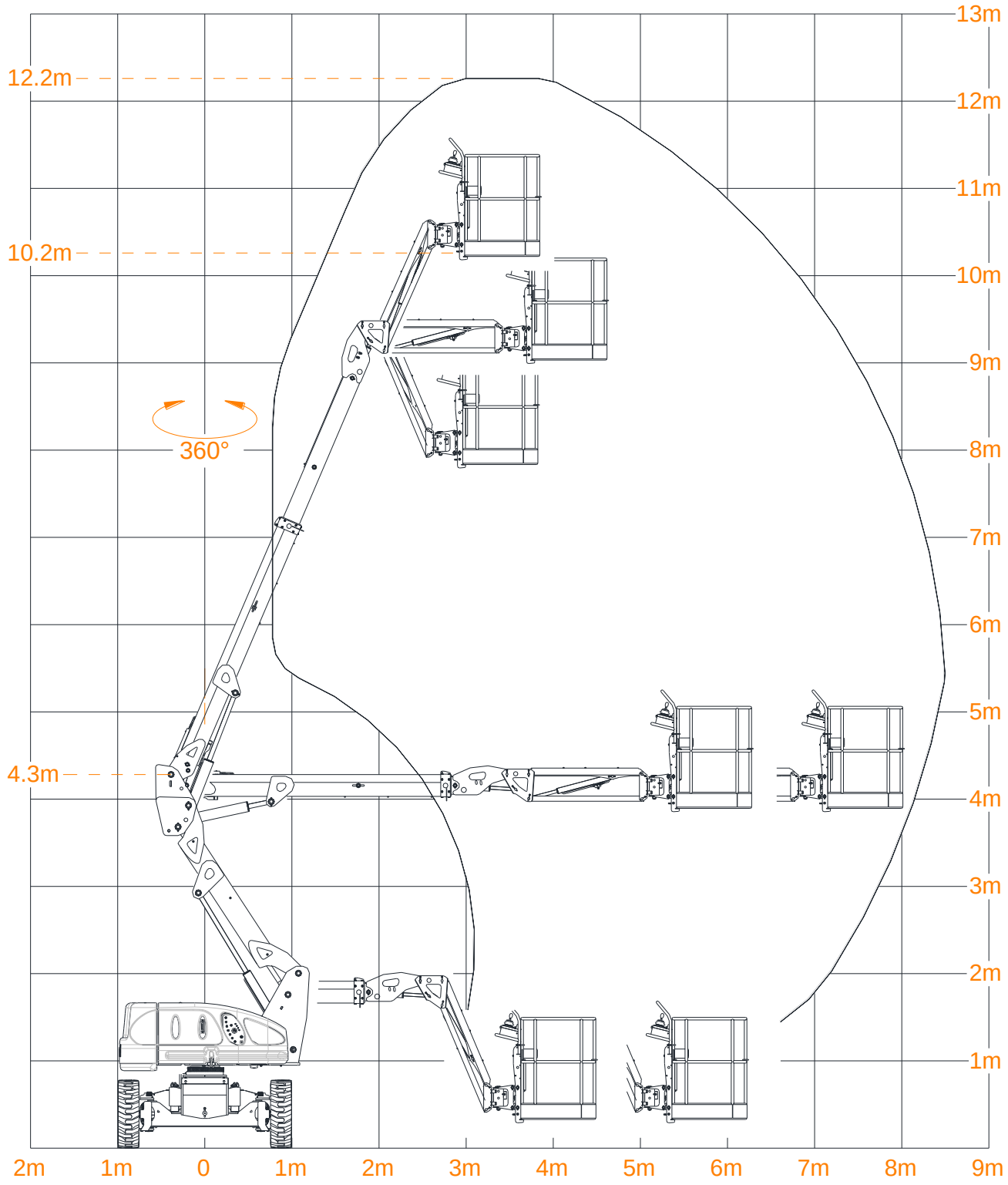


## 1.2. CHARACTERISTICS - DIMENSIONS

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| CHARACTERISTICS | | Zebra 12 |
|---|---|---|
| Max Working height | | 12.20 m |
| Max Floor height | | 10.20 m |
| Min Floor height | | 0.37 m |
| Max outreach (At centre line) | | 8.10 m |
| Max working outreach (At centre line) | | 8.60 m |
| Structure orientation | | 360° (Not continuous) |
| Work platform Rotation | | 2x 90° |
| Work platform Dimensions | | 0.86 x 1.51 m |
| Max number of persons in the work platform | | 2 |
| Platform capacity | | 230 kg |
| Max admissible wind speed | | 12.5 m/s (45 km/h) |
| Max Manual force | | 400 Newton |
| Max admissible tilt | | 4° |
| Max admissible slope | | 40% |
| Overall length (Transport position) | | 6.05 m |
| Overall length (Storage position) | | 4.50 m |
| Overall width | | 2.24 m |
| Overall height (Transport position) | | 2.10 m |
| Overall height (Storage position) | | 2.60 m |
| Wheelbase | | 2.00 m |
| Ground clearance | | 0.37 m |
| Oscillating axle travel | | 0.23 m (14°) |
| Number of driving wheels | | 4 |
| Number of steering wheels | | 2 |
| Tyres (Solid tyres) | | 21x10-20 |
| Turning radius | Inside | 1.72 m |
| | Outside | 4.28 m |
| Travel speed | Transport Position | 6 km/h |
| | Platform raised | 0.8 km/h |
| Empty weight | | 5 250kg |
| Ground load on one wheel (*) | Effort | 3 077 daN |
| | Contact pressure | 13.0 kg/cm² (1275 kPa) |

(*) : The floor load values indicated may vary depending on the configuration/position of the machine. An adequate safety margin should be kept with regards to these values.

The weighted acoustic pressure level A on the platform's control station is 78 dB(A).
The weighted acoustic power level emitted by the machine ($L_{WA}$) is 98 dB (test method according to European directive 2000/14/CE relating to noise emissions in the environment of equipment intended to be used outside buildings – Appendix III, Section B, Points 0 and 1).

The total value of the vibrations to which the hand-arm system is exposed does not exceed 2.5m/s². The average maximum quadratic value weighted by the acceleration frequency to which the whole body is exposed does not exceed 0.5m/s².

Due to constant improvements made to its products, **ATN** reserves the right to alter their specifications and equipment without notice.

| MOVEMENT DURATIONS | | | Zebra 12 |
|---|---|---|---|
| Jib 1 | Elevation | | 16 to 18 seconds |
| | Descent | | 16 to 18 seconds |
| Jib 2 | Elevation | | 16 to 19 seconds |
| | Descent | | 16 to 19 seconds |
| Jib 3 | Elevation | | 17 to 19 seconds |
| | Descent | | 17 to 19 seconds |
| Telescope | Out | Idle | 15 to 17 seconds |
| | | High regime | 11 to 13 seconds |
| | In | Idle | 13 to 15 seconds |
| | | High regime | 11 to 13 seconds |
| Orientation (end to end) | | | 70 to 80 seconds |
| Rotation (end to end) | | | 15 to 20 seconds |
| Note: The movement speeds may vary according to the telescope position, the adjustment of the limit switches and the adjustment of the load holding valves. | | | |

# Section 2. SAFETY INSTRUCTIONS

## 2.1. GENERAL

You, the operator, are the only part of the machine that can think and reason. Your responsibility is not diminished by the addition of alarm or operating assistance systems. You must avoid a false sense of security when using the machine. The control and alarm devices are there to help you and **NOT** to guide the machine's use.

You, the operator, are the only one responsible for your safety and that of others around you. Act as a **PROFESSIONAL** and respect the safety **RULES**.

This machine must only be used to take people, their tools and their equipment to a place at a height.

This machine may only be used and maintained by trained and authorised personnel. This training must be dispensed by qualified personnel.

The operator must acquire detailed knowledge of this machine's characteristics and operating limits, regardless of their experience with similar equipment.

The operator must read and understand the content of this manual. The manual must be kept in the document holder provided for this purpose on the working platform for later reference.

All operating personnel must be familiar with the machine's emergency commands and operation in the event of an emergency.

The operator must stop using the machine in the event of any incorrect operation or any safety problems concerning the machine or the workplace.

Anyone under the influence of alcohol or drugs or subject to crises, dizziness or loss of control must not use this machine.

### 2.1.1 OPERATOR TRAINING

The operator training must cover the following points:

- Use and usage limits for the working platform commands, commands on the ground and emergency commands.
- Operation of the safety systems and procedure if an alarm is triggered.
- Reading and understanding of the warning stickers on the machine.
- Knowledge of current regulations concerning this type of machine. (Classification: Group A – Type 3).
- Sufficient knowledge of how the machine operates to be able to recognise incorrect operation, a fault or a risk of a fault.

**DANGER**

DO NOT USE THIS MACHINE IF YOU HAVE NOT BEEN TRAINED TO USE IT SAFELY.
TRAINING COVERS KNOWLEDGE OF YOUR EMPLOYER'S WORKING REGULATIONS, THE INSTRUCTIONS IN THIS MANUAL AND THE CURRENT REGULATIONS THAT APPLY TO THIS TYPE OF MACHINE.

- Inspection and controls before start-up.
- Risks related to using the machine near overhead obstacles, other moving machines, holes, obstacles on the ground and tilt.
- Risks related to using the machine near conductors or powered electrical equipment.
- Use of an approved fall-protection mechanism.
- Safety requirements related to a task or specific use of the machine.

### 2.1.2 INSPECTION OF THE WORKPLACE

- Before using the machine, the operator must take precautions to avoid any risk in the workplace:
  - Note the hazardous locations in the working area.
  - Note the overhead obstacles, the electrical lines, overheadcranes, cranes or other elements.
  - Note on the ground the presence of holes, bumps, tilt, debris and coatings likely to hide holes or other dangers.
  - Check that the ground is able to support the wheel load.
- The machine must only be used in well-ventilated premises.
- The machine must be used with sufficient ambient lighting.
- The platform must not be raised if the machine is on the platform or trailer of a truck, on a train, a ship or any other mobile or non-stabilized structure.

## 2.2. TIPPING HAZARDS

- Never exceed the working platform's load capacity. Distribute the load evenly across the platform floor.
- Hold down all the loads inside the working platform. Do not suspend a load from any part of the platform or lifting structure. Do not place a load on the guard rail.
- Check that the ground is able to support the maximum wheel load.
- Do not drive the machine on slopes or tilts that exceed the maximum acceptable incline.
- Do not raise the platform or move with the platform on inclines, hilly or loose surfaces. Always make sure that the machine is on a firm and even surface before raising the working platform or moving with the platform raised.
- Keep the machine a good distance from holes, bumps, tilt, debris and coatings likely to hide holes or other dangers on the ground.
- Do not raise the working platform if the wind speed is greater than 12.5m/s (45km/h).
- Do not transport panels or large elements when the machine is used outdoors: these elements increase the wind surface and reduce the machine's stability.
- Do not pull or push an element outside the working platform. Acceptable manual force (total): 400N

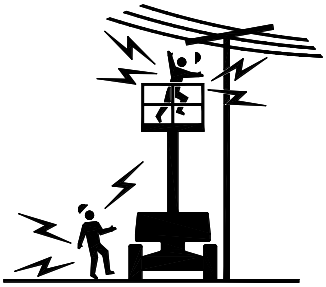
- Do not use the machine as a crane.
- Do not use the machine to pull or push any objects.
- Do not attach the machine to any neighbouring structure. Never use any part of the machine to stabilise or support any structure. Do not attach any electrical wires or other cables to the platform.

## 2.3. CRUSHING AND COLLISION HAZARDS


- When the machine is moving, keep all parts of the body inside the platform guard rail.
- Prevent any obstacles from hitting or hindering the commands or people onboard the platform.
- Make sure that you do not lower the platform onto any obstacles. It is recommended that you retract the telescope before lowering the platform.
- Warn the other occupants of the platform before controlling a movement and obtain their agreement where necessary.
- Make sure that non-operating personnel are kept out of the area where the machine is working. Warn personnel on the ground to keep away from under the platform when it is raised.
- Make sure that the operators of other machines at a height and on the ground are alerted to the lifting platform's presence. If necessary, place barriers around the area where the machine is working and cut the power to overhead cranes.
- Note the presence of any obstacles around, above and below the platform before commanding a movement.
- Adapt the movement speed according to the condition of the ground, the incline, the visibility, the presence of people in the working area, obstructions on the machine's route and any other factors likely to cause a collision or injury.
- Ask a person on the ground to guide you when visibility is reduced.
- Take into account the braking or stopping distances according to the movement speed. Reduce speed when moving on slopes (platform in low position).
- It is recommended to wear protection equipment.

## 2.4. ELECTROCUTION HAZARDS

- This machine is not insulated and does not offer any protection when near or in contact with an electric current.
- Maintain a minimum safety distance with electric lines (insulated or otherwise) or powered devices. The minimum distances indicated in the table below are provided for information purposes. Regulations specific to the country or site where the machine is used may demand greater safety distances.
- Take into account the machine's movements and possible swaying of the electric lines.
- Never raise the platform during a storm or lightning.

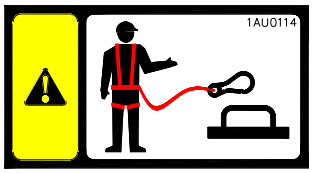


| Phase to phase voltage | Minimum safe distance |
|---|---|
| 0 to 300 V | Avoid contact |
| 300 V to 50 KV | 3.05 metres |
| 50 KV to 200 KV | 4.60 metres |
| 200 KV to 350 KV | 6.10 metres |
| 350 KV to 500 KV | 7.62 metres |
| 500 KV to 750 KV | 10.67 metres |
| 750 KV to 1000 KV | 13.72 metres |

**DANGER**

NEVER MOVE THE MACHINE OR MOVE PERSONNEL NEAR ELECTRICAL LINES OR EQUIPMENT.
ALWAYS ASSUME THAT THE ELECTRICAL LINES OR APPLIANCES ARE LIVE UNLESS YOU ARE SURE THAT THE POWER HAS BEEN CUT.
PERSONNEL ON THE GROUND MUST KEEP AWAY IF THE MACHINE IS BEING USED NEAR ELECTRIC LINES OR POWERED EQUIPMENT.
IN THE EVENT OF CONTACT WITH AN ELECTRIC LINE OR POWERED APPLIANCE, PERSONNEL ON THE GROUND MUST KEEP AWAY FROM THE MACHINE UNTIL THE ELECTRIC POWER HAS BEEN CUT OFF.

## 2.5. FALLING HAZARDS




- It is recommended that anyone on the platform wears a safety harness connected to one of the hooking points provided for this purpose on the work platform. Only attach one harness to each hooking point.
- Check the condition of the guard rail before you use the machine. Check that the access rail drops back correctly into closed position.
- Keep both feet flat on the platform floor at all times. Do not sit or climb onto the guard rails. Do not use a ladder or climb onto any objects in the platform to reach a greater height.
- When the platform is in raised position, do not use the lifting structure to leave the platform.
- Do not leave or access the work platform until it is fully lowered.
- Remove all debris, grease or any other slippery substance from shoes and from the edge and floor of the platform.
- Always face the machine when accessing or leaving the machine. Keep 3 contact points with the machine at all times: both hands and one or both feet and one hand.

## 2.6. OTHER HAZARDS

- During welding operations from the platform, do not use the machine as ground.
- During welding or metal cutting operations, make sure that you protect the machine's components from projections of fusing metal (control station, electric cables, hydraulic hoses, cylinders, etc.). Avoid any projection on/to the machine, in particular to the fuel tank.
- DO NOT use the machine in the presence of electromagnetic fields (radar, high voltage currents...). This could damage the machine electronic components.

## 2.7. OPERATING LIMITATIONS

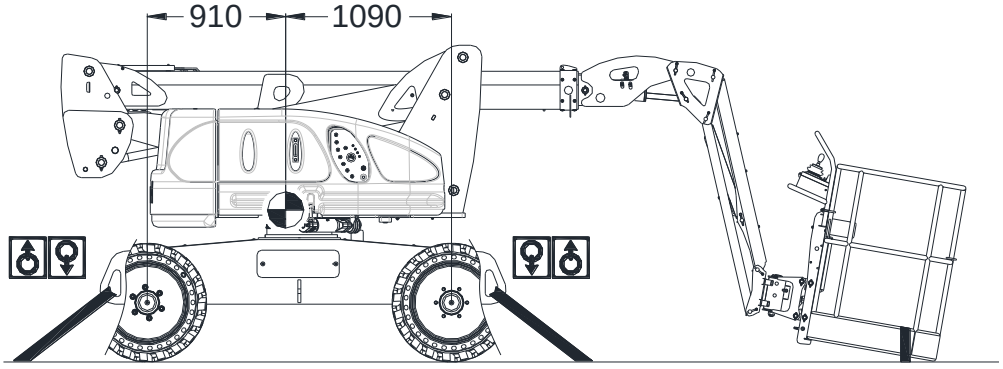
| | | |
|---|---|---|
| Model | | Zebra 12 |
| Max. floor height | | 10.20 m |
| Max. working height | | 12.20 m |
| Maximum number of occupants in the work platform | | 2 |
| Maximum load on the platform (distributed) | | 230kg |
| Maximum wind speed | | 12.5m/s (45km/h) |
| Maximum manual force | | 400 Newton |
| Max. Tilt | Transversal | 4 degrees |
| | Longitudinal | 4 degrees |
| Max slope (see Note) | | 40% |
| Operating temperature | | -20 … +60°C |

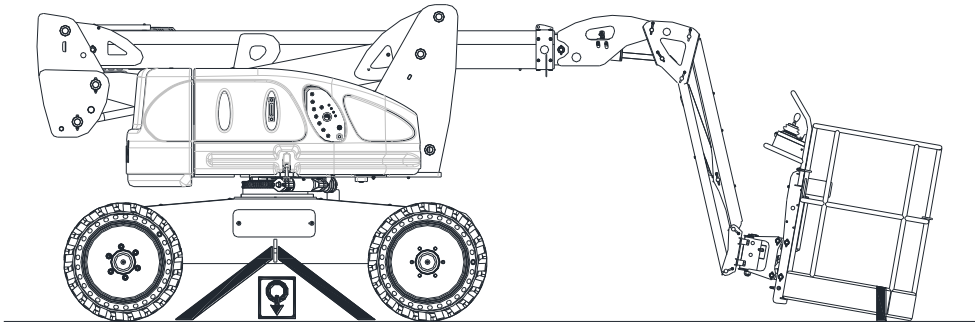
**-NOTE-**

**Do not run the diesel engine for over 10 minutes with a tilt or slope over 35%.**

## 2.8. TOWING, LIFTING, TRANSPORT

- Do not tow, lift or transport the machine with people or material in the work platform.
- Lower the platform completely before towing, lifting or transporting the machine.
- The machine must only be towed or lifted in the event of an emergency, a malfunction, a fault or for loading/unloading. See 6.2 – Emergency towing.
- Check the capacity of the equipment used to tow, lift or transport the machine.



## 2.9. MAINTENANCE

- To guarantee the machine's safety, a maintenance and operating verification programme must be established by a qualified person taking into account the information provided in this manual and in the maintenance manual.
- Before performing any maintenance or repair operations, cut the power to the control stations.
- Never work under the work platform or on the lifting structure without it being supported and immobilised by appropriate slinging.
- Disconnect the battery when working on the electrical circuit or when welding.
- Do not smoke, introduce flames, sparks near the battery.
- Do not place any metal tools or objects on the battery terminals.
- The acid contained in the battery is highly corrosive. Make sure that it does not come into contact with skin, eyes or clothing. Wear appropriate protective equipment when maintaining the battery.
- Only charge the battery in well-ventilated premises.
- Avoid any projection or make sure flammable products are kept away from the diesel engine hot parts (mainly collector and exhaust).
- Never intervene on a pressurised hydraulic circuit or component: drop the pressure before dismantling or loosening any components.
- Use only identical or equivalent parts and components to the original ones.
- Avoid intervening on the diesel engine when it is running. If such an intervention is necessary, do not wear loose clothing and tie back long hair to ensure it is not caught by moving parts. Do not intervene near moving parts (fan, alternator, fan belt, etc.).
- Do not open the radiator cap when the engine is hot.
- No modifications may be made to this machine without written agreement from the manufacturer (ATN). These modifications will invalidate the warranty and the owner and/or user will be held responsible if an accident occurs.

# Section 3. PREPARATION AND INSPECTION

Before use, careful inspection and operating check are recommended to ensure that the machine is in perfect working order.

Do not use the machine if it is damaged or has an operating defect.

Depending on national or local regulations, the machine must be submitted to periodic verifications and testing.

**DANGER**

FAILURE TO CORRECTLY MAINTAIN AND CHECK THIS MACHINE COULD RESULT IN DEATH OR SERIOUS INJURIES.
THIS MACHINE MUST NOT BE USED IF IT IS NOT IN PERFECT WORKING CONDITION.

## 3.1 INSPECTION BEFORE START UP

1- Make sure that there are no oil or fuel leaks. Check the machine's general cleanliness (slippery substances on the platform floor).

2- Inspect the machine's structure to detect any damaged parts, cracked welds or any other anomaly.

3- Check the presence and legibility of the safety stickers. Clean or replace any illegible stickers.

4- Check that there is a copy of the operator and safety manual in the working platform's document holder.

5- Carry out the inspection tour described below.

6- Carry out the operating checks described below.

## 3.2 INSPECTION TOUR

Check each element in the list below in order. For each element, in addition to the criteria mentioned, check that no parts are loose or missing, that the elements are correctly attached and that they have no leaks or visible damage.

1- - Diesel engine and accessories: Oil level, cooling fluid level – Hydraulic pumps.

2- Electric cables – Cable run and tightening of the battery connections.

3- Lock of the engine support turntable: Presence of the lock pin on the latch.

4- Oscillating axle - Oscillating axle cylinders.

5- Steering cylinder - Steering bar.

6- Front wheel motors - Wheel pivot pins: No screws missing - Screws correctly tightened.

7-

8- Hydraulic / fuel tank compartment: No oil leak on the hydraulic manifold or on the tank – Connector on the hydraulic control valve and sensors correctly installed/connected – no damaged electric cable – hydraulic oil level correct.
Fuel level – Presence of the fuel tank cap.

9- Control station on the ground: The control station switches are present and return to neutral position – The emergency stop switch is operating correctly.

10- Structure position sensor.

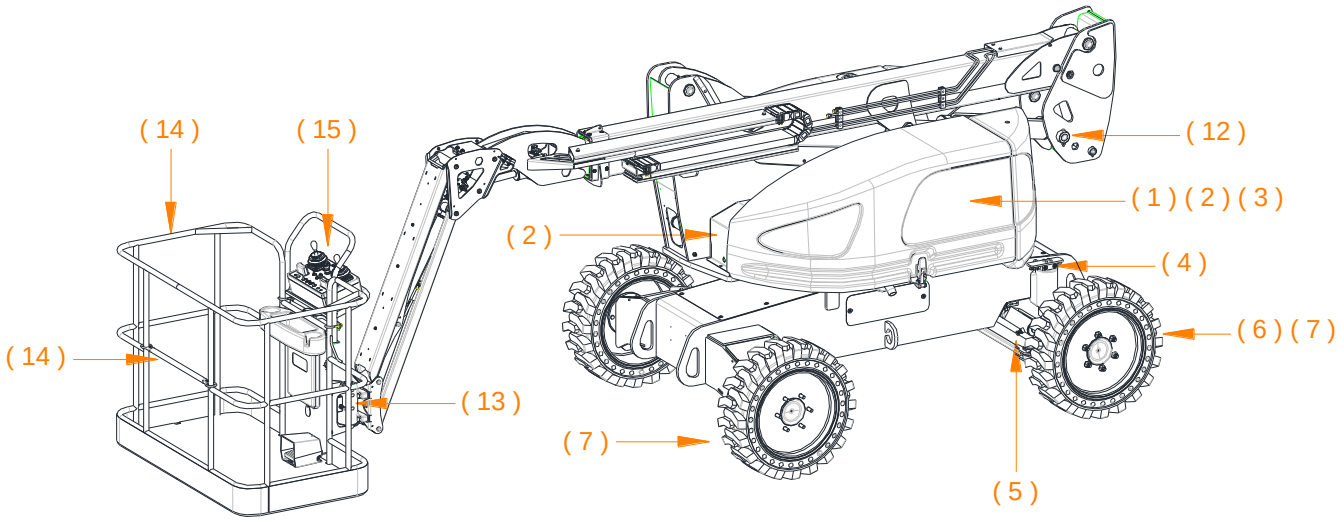
11- Hydraulic cylinders.

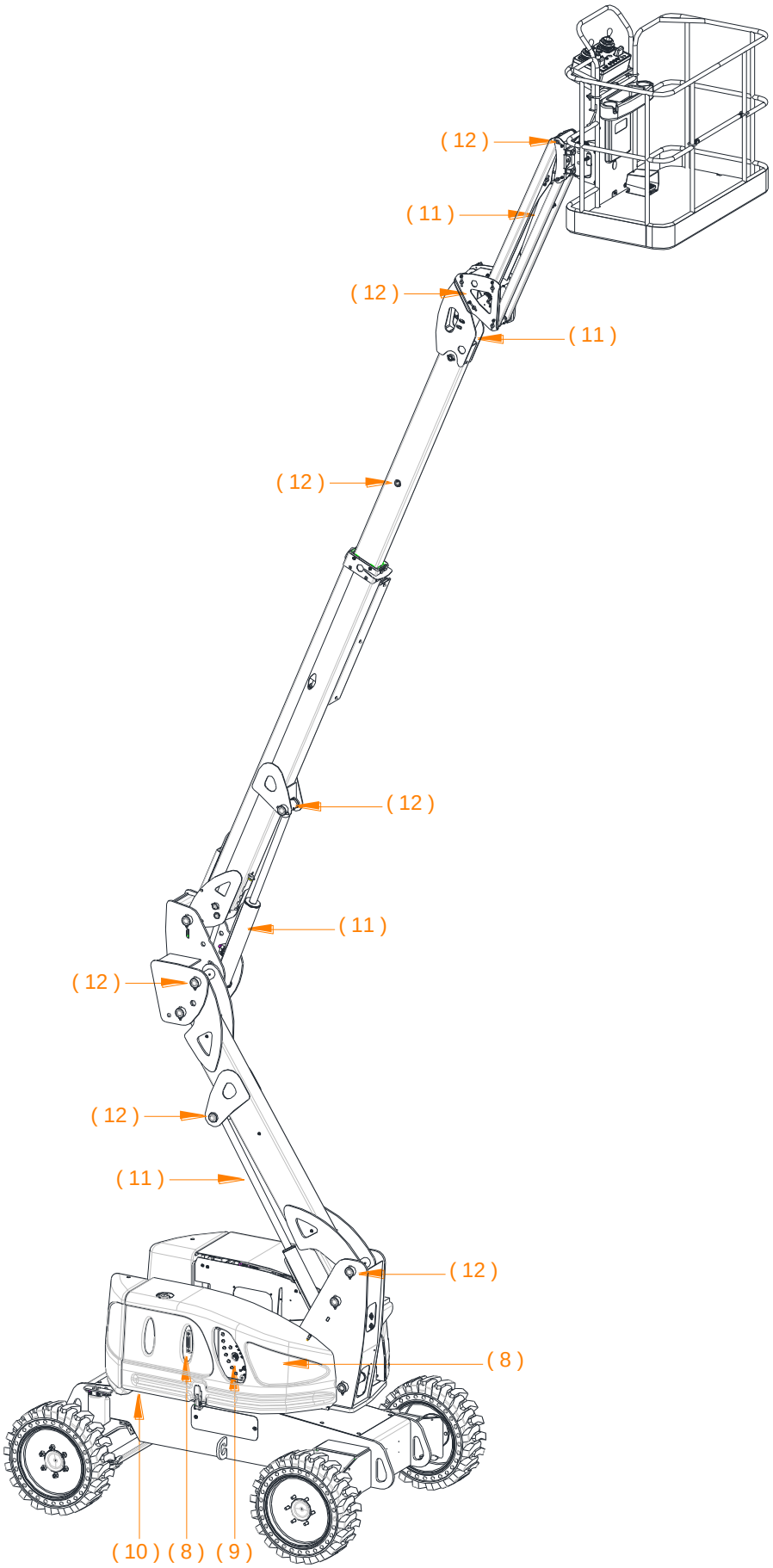
12- Articulation pins: Presence of the pin lock screws.

13-Rotator

14- Guardrails : Condition – Access bar drops back into position correctly.

15- Platform control station: Correctly secured - The levers and switches are present and return to neutral position – The validation pedal is correctly attached and is operating correctly. The emergency stop switch is operating correctly.

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## 3.3 OPERATING CONTROLS

Machine operation: See Section 4 – Operation.

### 3.3.1 CONTROL STATIONS

- **Ground control station**

  1- On power up, check that the lights come on (auto-test).

  2- Start the diesel engine and activate all the controls to check their good working order. Check that movement stops when the control is released. Check that movement stops when the enable button is released.

  3- Check that the emergency stop switch cuts the movements and the diesel engine (the diesel engine stops after around 2 seconds).

  4- With the diesel engine stopped, check that the auxiliary backup group is working.

- **Platform control station**

  1- On power up, check that the lights come on (Autotest).
  2- Start the diesel engine and activate all the controls to check their good working order. Check that movement stops when the control is released. Check that movement stops when the enable pedal is released.

  3- Check the machines switches to low speed when the work platform is raised.

  4- Check the machines switches to low speed when the telescope is out.

  5- Check that the emergency stop switch cuts the movements and the diesel engine (the diesel engine stops after around 2 seconds).

  6- With the diesel engine stopped, check that the auxiliary backup group is working.

### 3.3.2 LOCKING THE OSCILLATING AXLE

1- Place a sloped wedge of around 15cm in height in front of the front right hand side wheel.

2- Ensure the platform is fully lowered.

3- Drive the machine forward slowly until the wheel is on the wedge.

4- Swing the structure beyond the rear axle.

5- Slowly drive off the wedge.

6- Check the axle stays locked : the right wheel is no longer is contact with the ground.

7- Return the structure in line with the chassis.

8- Perform a drive movement in slow speed : the axle must unlock and the right wheel must contact the ground.

9- Repeat the procedure with the wedge under the front left hand side wheel.

**DANGER**

DO NOT USE THE MACHINE IF THE AXLE LOCK DOES NOT WORK CORRECTLY.

### 3.3.3 TILT INDICATOR

1- Platform lowered, drive the machine on a slope greater than the maximum accepted tilt: the tilt light comes on.

2- Raise the platform by around 1m: the alarm sounds.

3- Check the movements are disconnected according to the selected operating mode (see Section 5 – Safety devices).

# Section 4. OPERATION

This machine is a Mobile Elevating Work Platform intended to take to a working station at a height personnel, tools and the NECESSARY materials to carry out work FROM the platform. Contact the manufacturer for any information about a specific use or working condition.

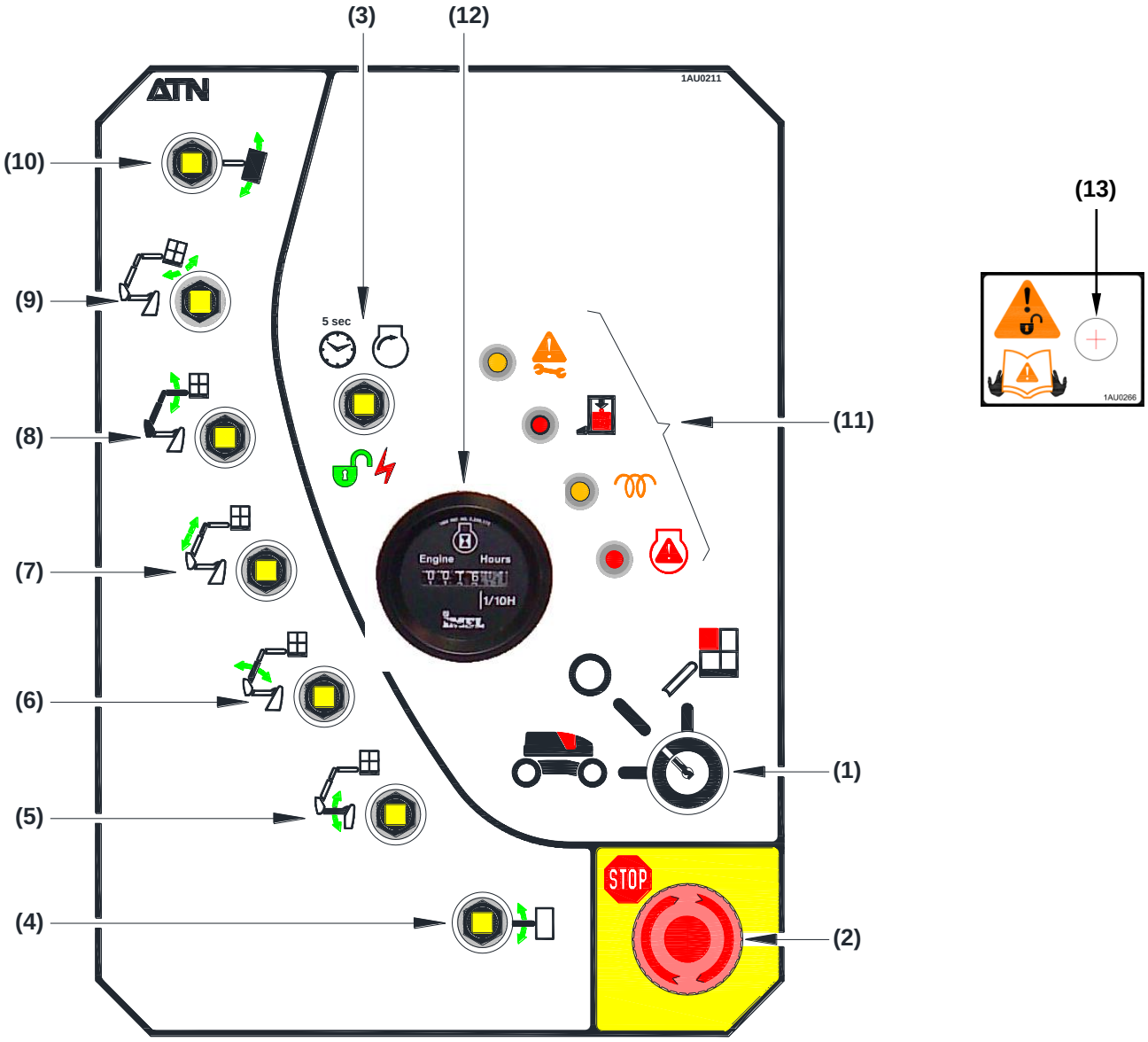
The machine has a main control station on the work platform used to control the elevation and drive movements.

A priority control station on the ground is used to raise or lower the platform in the event of an emergency, when the operator in the work platform is unable to operate the machine. Except for emergency cases, the ground control station should not be used when personnel are in the work platform.

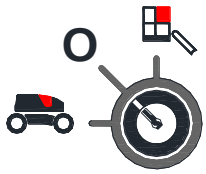
Read the safety instructions in Section 2 of this manual before using the machine.

## 4.1. CONTROLS AND INDICATORS

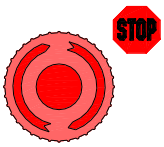
### 4.1.1 GROUND CONTROL STATION



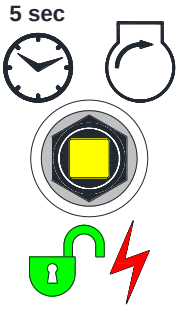

1- Control station selector / Machine shut down.
2- Emergency Stop Switch.
3- Diesel Engine ignition / Enable / Auxiliary group button.
4- Left / Right Orientation control.
5- Jib 1 Elevation / Lowering control.
6- Jib 2 Elevation / Lowering control.
7- Telescope In / Out control.
8- Jib 3 Elevation / Lowering control.
9- Platform levelling control Elevation/Lowering.
10- Right/Left Platform rotation control.
11- Controls lights.
12- Hourmeter.
13- Override emergency switch (located on the right side of the ground control box)



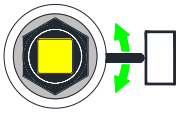

1- Control station selector :
Used to activate the controls on the work platform control station or the ground control station. In position O, the key may be removed to switch off the machine.



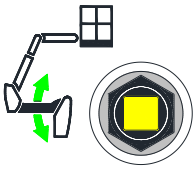

2- Emergency Stop Switch:
In the event of an emergency, PRESS the button to CUT all the machine's movements and shut down the diesel engine. Turn the button by 1/4 turn to restore the electrical power.



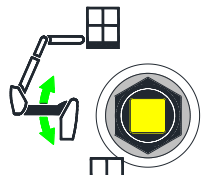

3- Diesel Engine ignition / Enable / Auxiliary group button:
Diesel engine ignition : toggle and hold the lever towards the top until the engine starts. Refer to Section 4.2 – Diesel engine operation.
Control validation: When the diesel engine is running, toggle and hold the lever towards the bottom to activate the movement controls.
Auxiliary Group: When the diesel engine is stopped, toggle and hold the lever towards the bottom to activate the hydraulic auxiliary group and the movement controls. Refer to Section 6.1.3 – Hydraulic auxiliary group.



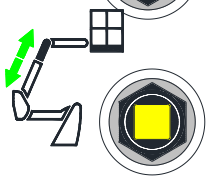
4- Left / Right Orientation Control:
Toggle the lever towards the top to swing the structure to the right or towards the bottom to swing the structure to the left.
Refer to Section 4.4.5 – Structure orientation.



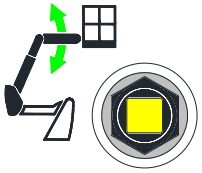
5- Jib 1 Elevation / Lowering Control:
Toggle the lever towards the top to raise the Jib 1 or towards the bottom to lower the Jib 1.
Refer to Section 4.4.2 – Elevation.



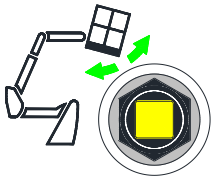
6- Jib 2 Elevation / Lowering Control:
Toggle the lever towards the top to raise the Jib 2 or towards the bottom to lower the Jib 2.
Refer to Section 4.4.2 – Elevation.



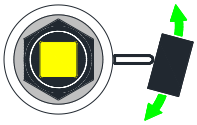
7- Telescope In / Out Control:
Toggle the lever towards the top to extend the telescope or towards the bottom to retract the telescope.
Refer to Section 4.4.3 –Telescope.



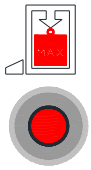
8- Jib 3 Elevation / Lowering Control:
Toggle the lever towards the top to raise the Jib 3 or towards the bottom to lower the Jib 3.
Refer to Section 4.4.2 – Elevation.



9- Platform levelling control Elevation / Lowering:
Toggle the lever towards the top to adjust the platform's level up or towards the bottom to adjust the platform's level down.
Refer to Section 4.4.4 – Platform's levelling.



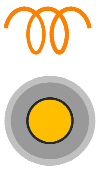
10- Platform Rotation Control:
Toggle the lever to the top to move the platform to the right or towards the bottom to move the platform to the left.
Refer to Section 4.4.6 – Rotation de la plate-forme de travail.



11- Overload indicator light :
This light flashes when the working platform's load capacity is exceeded.
Refer to Section 5.2 –Load control.

11- Engine fault indicator light:
This light comes on power up and must go out when the engine starts.
When the engine is running, this light flashes if there is an alternator fault: the alternator is no longer correctly recharging the battery.
When the engine is running, this light comes on steady when the diesel engine oil pressure is abnormally low or when the cooling fluid temperature is abnormally high: CUT the diesel engine as quickly as possible.
See 4.2.3 – Diesel engine safeties.

11- Maintenance / System fault indicator light :
This light flashes slowly when a maintenance / pre-scheduled maintenance operation is required.
This light is on steady (and accompanied by a sound alarm) if there is a control system fault.
Refer to 5.2.3 – System fault.

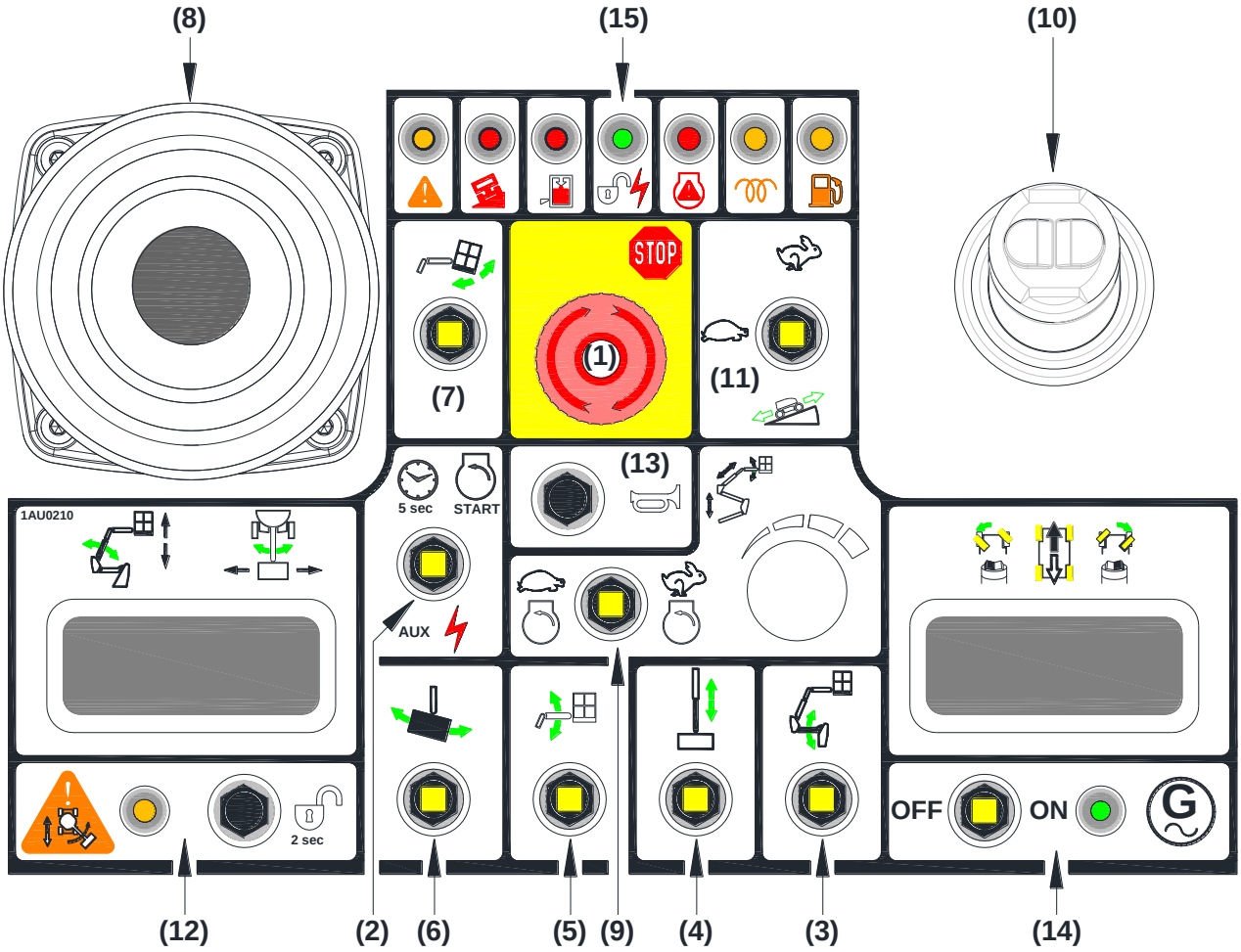


11- Preheating indicator light:
This light comes on when the engine is warming up and goes off once the engine is started.
Refer to Section 4.2 – Diesel engine operation.

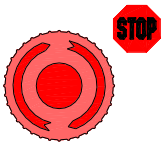

12- Hourmeter :
Indicates the total operating time for the diesel engine.

13- Override emergency switch :
This emergency functionality allows controlling the elevation movements even if the platform is on overload.
Refer to Section 6.1.4 – Override emergency system

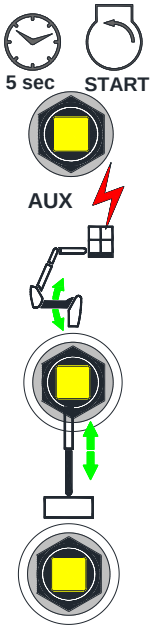
## 4.1.2 PLATFORM CONTROL STATION




1- Emergency Stop switch.
2- Diesel engine preheating and start / Auxiliary group button.
3- Jib 1 Elevation / Lowering Control.
4- Telescope In / Out Control.
5- Jib 3 Elevation / Lowering Control.
6- Right / Left Platform Rotation Control.
7- Raise / Lower Platform Levelling control.
8- Jib 2 Elevation / Lowering and Left / Right Orientation Joystick
9- Engine Regime Selector Switch.
10- Drive and Steering Control Joystick.
11- Drive Speed Selector Switch.
12- Drive Direction Indicator and Validation (Optional).
13- Horn.
14- Generator Indicator Light and Start Switch (Optional).
15- Indicator lights.




1- Emergency Stop Switch:
In the event of an emergency, PRESS the button to CUT all the machine's movements and shut down the diesel engine. Turn the button 1/4 turn to restore the electrical power.



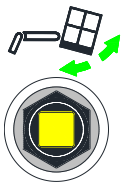

2- Diesel Engine Preheat and Start Button / Auxiliary Group:
Toggle the lever upwards to start the diesel engine.
Press the validation pedal and toggle the lever downwards to use the auxiliary hydraulic group.
Refer to Section 4.2 – Diesel engine operation.
Refer to Section 6.1.3 – Auxiliary hydraulic group.

3- Jib 1 Elevation / Lowering Control :
Toggle the lever forward to raise the jib 1 or backwards to lower the jib 1.
Refer to Section 4.4.2 – Elevation.

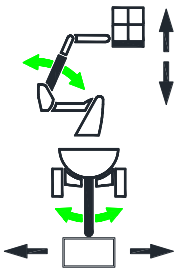
4- Telescope In / Out Control:
Toggle the lever backwards to extend the telescope or forward to retract the telescope.
Refer to Section 4.4.3 –Telescope.

5- Jib 3 Elevation / Lowering Control:
Toggle the lever forward to raise the jib 3 or backwards to lower the Jib 3.
Refer to Section 4.4.2 – Elevation.

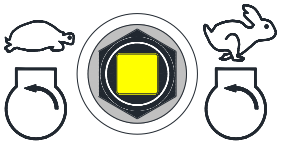
6- Platform Rotation Control:
Toggle the lever to the right or to the left to turn the platform in the corresponding direction.
Refer to Section 4.4.6 – Work platform rotation.



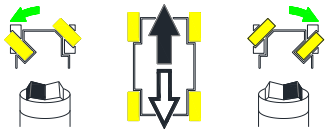
7- Platform leveling control Elevation / Lowering:
Toggle the lever forward to adjust the platform level upwards or backwards to adjust the platform level downwards.
Refer to Section 4.4.4 – Platform leveling.



8- Jib 2 Elevation / Lowering and Left / Right Orientation Joystick:
Push the lever forward to raise Jib 2 or pull the lever backwards to lower the Jib 2.
Tilt the lever to the right or to the left to rotate the structure in the corresponding direction.
Refer To Section 4.4.2 – Elevation.
Refer to Section 4.4.5 – Structure orientation.



9- Engine regime Selector switch:
This 2-position switch is used to select the engine regime for the structure movements:
: The structure movements will all be carried out slowly with the diesel engine running slowly.
: When the control system allows it, the structure movements will be carried out quickly, with the diesel engine accelerated.
Refer to Section 4.2.2 – Engine regime.



10- Drive and Steering control Joystick:
Push the lever forwards to move the machine forwards or pull the lever backwards to reverse the machine.
Tilt the lever to the right or to the left to turn the wheels in the corresponding direction.
Refer to Section 4 .3 – Drive - Steering.

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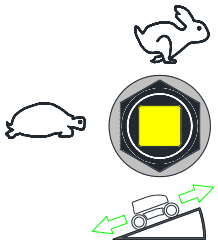
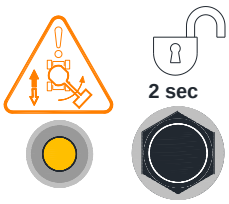
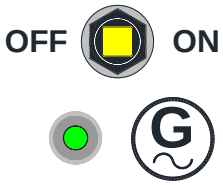


11- Drive speed selector switch:
This 3-position switch is used to select the maximum drive speed:
: Slow speed
: Intermediate speed. In this position, the engine power and torque are at their maximum to enable the machine to run on steep slopes or move on uneven grounds.
Note: When the platform is raised, the machine moves at slow speed by default.
Refer to Section 4.2.2 – Engine regime.




12- Drive Direction Indicator and Validation (Optional):
The indicator light comes on when the structure is turned beyond the rear axle.
The enable button must be activated before the drive movement is controlled.
Refer to Section 4 .3 – Drive / Steering.

13- Horn:
Press the button to activate the horn.

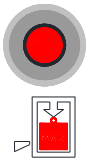



14- Generator Indicator Light and Start Switch (Optional):
Toggle the lever to the right (ON) to start the generator.
The light comes on when the generator is running.
Toggle the lever to the left (OFF) to cut the generator.

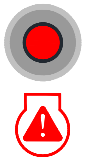
15- Tilt indicator light :
The indicator light comes on when the machine has reached the maximum authorised tilt.
Refer to Section 5.1 – Tilt sensor.

**DANGER**

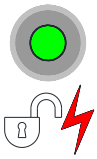
IF THIS LIGHT COMES ON AND AN ALARM SOUNDS WHEN THE WORK PLATFORM IS RAISED, LOWER THE PLATFORM IMMEDIATELY, STARTING BY BRINGING THE TELESCOPE BACK IN.



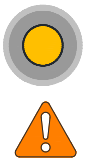
15- Overload indicator light:
This light flashes when the working platform's load capacity is exceeded.
Refer to Section 5.2 –Load control.



15- Engine fault indicator light:
This light comes on during start up and must go out after the engine has started.
When the engine is running, this light flashes if there is an alternator fault (the alternator is no longer correctly recharging the battery).
When the engine is running, this light comes on steady when the diesel engine oil pressure is abnormally low or when the cooling fluid temperature is abnormally high: CUT the diesel engine as quickly as possible.
Refer to 4.2.3 – Diesel engine safeties.

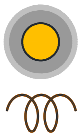


15- Validation indicator light:
This light is on when the enable pedal is activated and a movement can be controlled.



15- Maintenance / System fault indicator light:
This light flashes slowly when a maintenance / pre-scheduled maintenance operation is required.
The light is on steady if there is a fault in the control system.
Refer to 5.2.3 – System fault.

15- Fuel level indicator light:
This light comes on when the fuel level in the tank is low: add fuel in the tank.
Refer to 7.1.2 – Fuel.



15- Preheating indicator light:
This light comes on when the engine is warming up and goes off once the engine is started.
Refer to Section 4.2 – Diesel engine operation.

## 4.2. DIESEL ENGINE OPERATION

### 4.2.1 STARTING / STOPPING

**-NOTE-**

**Check the engine oil level and the cooling fluid level before starting the diesel engine.**

- **Control station selector switch**

The diesel engine may only be started from the control station selected.

**-NOTE-**

**To start the engine from the ground control station, the emergency stop on this station must be unlocked.**
**To start the engine from the platform control station, the emergency stops on both control stations must be unlocked.**
**If the engine was started from the ground control station and the Emergency Stop on the platform station is pushed in, the diesel engine will be cut when the control station is changed.**

**-NOTE-**

**The engine may only be started if all the controls are in neutral and the enable pedal is released.**

- **Starting from the ground control station**

Toggle the preheating / start button upwards until the engine starts.
Check that the engine fault light goes out when the engine starts.

- **Starting from the work platform control station**

Tilt the preheating/start button upwards until the diesel engine starts up.
Check that the engine fault light goes out when the engine starts.

- During a cold start, the preheating phase lasts 5 to 10 seconds before the engine starts (during this period the preheating light is on). Hold the button down for 1 to 2 seconds after the engine starts.
- When the engine is hot it starts immediately. Release the button as soon as the engine starts.

- **Stop / Emergency Stop**

Pressing the Emergency Stop buttons cuts

**CAUTION**

IF THE ENGINE DOES NOT START UP IMMEDIATELY, DO NOT KEEP ACTIVATING THE STARTER MOTOR FOR A LONG PERIOD OF TIME. RELEASE THE START BUTTON AND TRY AGAIN.
IF THE ENGINE FAILS TO START AGAIN, LET THE STARTER MOTOR COOL DOWN FOR 1 TO 2 MINUTES.
IF THE ENGINE STILL DOES NOT START AFTER SEVERAL ATTEMPTS, CONSULT THE ENGINE MAINTENANCE MANUAL.

**CAUTION**

LET THE ENGINE WARM UP FOR A FEW MINUTES BEFORE USING THE MACHINE.

the power to the controls and stops the diesel engine. From the ground control station, the engine may be stopped by placing the control station selector switch to position O.

### 4.2.2 ENGINE REGIME

The engine regime is managed by the control system function of movement(s) made and/or the activation of certain safety devices.

During a drive movement, with the platform in low position, the engine runs in high speed when the speed selector is in  or  position. The engine remains slowed down when slow speed  is selected or when the platform is in high position.

From the platform control station, when the engine speed selector is in  position, the elevation movements will be carried out in high speed when the control system authorizes it. If the selector is in  position, all the movements will be carried out with the engine idling.

From the ground control station, all the movements are carried out with the engine idling.

### 4.2.3 DIESEL ENGINE SAFETIES

When one of the following faults is detected:

- Oil pressure too low.
- Cooling fluid temperature too high.

  - ➢ The engine fault light comes on steady.
  - ➢ The command system prevents the change to high speed.

  Lower the platform and cut the engine immediately.
  The auxiliary hydraulic group may also be used to return the platform to its low position.

  The exact nature of the fault is indicated on the control module screen.

## 4.3. DRIVE – STEERING

- **Drive**

**DANGER**

ONLY RUN WITH THE PLATFORM RAISED ON AN EVEN, FIRM AND HORIZONTAL SURFACE.
TO AVOID ANY RISK OF TIPPING OVER, DO NOT DRIVE THE MACHINE NEAR OBSTACLES OR HOLES OR ON A SLOPE OR TILT GREATER THAN THE VALUES INDICATED IN SECTION 2.

1- Select the platform control station and start the diesel engine.
2- Select the movement speed you want. Refer to Section 2.3 – Crushing and collision risk..
3- Joystick in neutral position, activate the enable pedal.

➢ The validation light comes on.

➢ Within 5 seconds, push the joystick forwards to move forward or pull the joystick back to reverse. The machine's travel speed is proportional to the joystick displacement. If the movement is not controlled within 5 seconds, the validation light goes off and the pedal must be released and activated again..

➢ To stop the movement, put the joystick into neutral to reduce the speed then release the validation pedal.

**-NOTE-**

**When the structure is oriented beyond the rear axle and in particular above the front axle, the drive movement controls are reversed.**
**The black and white directional arrows on the pictogram in front of the joystick and those on the machine's chassis are used to identify the drive direction in relation to the direction in which the joystick is moved: activate the joystick in the direction indicated by the arrow which corresponds to the drive direction desired.**

- **Drive direction validation (Option)**

Optionally, the machine may be equipped with a drive direction validation mechanism composed of a light indicator and a push button.

When the structure is oriented beyond the rear axle, the fixed light comes on:

1- Use the black / white arrows on the chassis and on the drive joystick pictogram to identify the command direction that corresponds to the required drive direction.
2- Activate the validation pedal.
3- Activate the direction validation button.

➢ The light goes off.

4- Within 5 seconds, command the drive movement in the direction selected. If the movement is not controlled within 5 seconds, the enable pedal must be released and the validation sequence started again from step 2. Once the machine is running, release the enable button.

**-NOTE-**

**The light indicator and the enable button are fitted as standard. The function activation / disabling can be configured in the system: see §8.3.1 - Settings**

- **Steering**

The machine can be steered using the toggle switch on top of the joystick.
Activate the enable pedal and with the thumb, toggle the switch to the right to steer the wheels to the right, or to the left to steer the wheels to the left.
The wheels remain steered when the switch is released: toggle the switch in the opposite direction to straighten the wheels.

## 4.4. LIFTING STRUCTURE

### 4.4.1 ENGINE SPEED

A speed range may be selected for the structure movements with the engine speed selector. See Section 4.2.2 – Engine rate.

The engine high speed for the structure movements must only be used if the machine is being used in an area free of any obstacles. See Section 2.3 – Crushing and collision risk.

For approach movements, we recommend performing the movements with the engine slowed down.

**DANGER**

ONLY RAISE THE PLATFORM IF THE MACHINE IS ON EVEN, FIRM, HORIZONTAL AND FLAT GROUND.
IF THE TILT ALARM IS TRIGGERED, RETRACT THE TELESCOPE AND RETURN THE PLATFORM TO ITS LOW POSITION.
DO NOT USE THE GROUND STATION CONTROLS WHEN THERE ARE OCCUPANTS ON THE PLATFORM EXCEPT IN AN EMERGENCY. REFER TO THE SAFETY INSTRUCTIONS IN SECTION 2 IN THIS MANUAL.

### 4.4.2 ELEVATION

- **From the ground control station**

1- Activate and hold down the enable button. The enable button must be activated before a movement is controlled.
2- Tilt the arm 1, 2 or 3 control switch upwards to raise the corresponding arm. Tilt the arm 1, 2 or 3 control switch downwards to lower the corresponding arm.
3- To stop the movement, release the control switch or the enable button.

- **From the work platform control station**

1- Select the engine speed required.
2- Activate the enable pedal.
3- Within 5 seconds, tilt the arm 1, 2 or 3 control lever/joystick upwards to raise the corresponding arm or downwards to lower the corresponding arm.
The arm 2 movement speed is proportional to the joystick displacement.
The arm 1 and 3 movement speed may be adjusted using the speed adjustment gauge.
4- To stop the movement, place the lever/joystick into neutral to reduce the speed and release the enable pedal.

### 4.4.3 TELESCOPE

- **From the ground control station**

1- Tilt and hold the enable button downwards.
2- Tilt the telescope control switch upwards to extend the telescope. Tilt the control switch downwards to retract the telescope.
3- To stop the movement, release the control switch or the enable button.

- **From the work platform control station**

1- Select the engine speed required.
2- Activate the enable pedal.
3- Within 5 seconds, tilt the telescope control switch backwards to extend the telescope and backwards to retract the telescope.
The telescope movement speed may be adjusted using the speed adjustment gauge.
4- To stop the movement, put the switch into neutral to reduce the speed and release the enable pedal.

### 4.4.4 LEVELLING THE PLATFORM

This command is used to adjust the platform's horizontal level when driving on a slope.

- **From the ground control station**

1- Activate and hold down the enable button.
2- Tilt the levelling control switch upwards or downwards to correct the work platform's horizontal level in the corresponding direction.
3- To stop the movement, release the control switch or the enable button.

**DANGER**

WHEN THE PLATFORM IS ELEVATED, ONLY USE THIS CONTROL TO MAKE A SLIGHT LEVEL CORRECTION. INAPPROPRIATE USE OF THIS CONTROL MAY CAUSE OBJECTS OR OCCUPANTS ON THE WORK PLATFORM TO FALL OFF.

- **From the work platform control station**

1- Activate the enable pedal.
2- Within 5 seconds, tilt the levelling control switch upwards or downwards to correct the work platform's horizontal level in the corresponding direction.
3- To stop the movement, release the control switch or the enable button.

**-NOTE-**

**Disabling this function when the working platform is in high position may be configured in the system: See §8.3.1 - Settings**

### 4.4.5 STRUCTURE ORIENTATION

- **From the ground control station**

1- Activate and hold down the validation button.
2- Tilt the orientation control switch up to move the structure to the right or down to move the structure to the left.
3- To stop the movement, release the control switch or the enable button.

- **From the work platform control station**

1- Activate the enable pedal.
2- Within 5 seconds, tilt the orientation control joystick to the right or left to move the structure in the corresponding direction.
The orientation movement speed is proportional to the joystick displacement.
3- To stop the movement, put the joystick into neutral and release the enable pedal.

### 4.4.6 WORK PLATFORM ROTATION

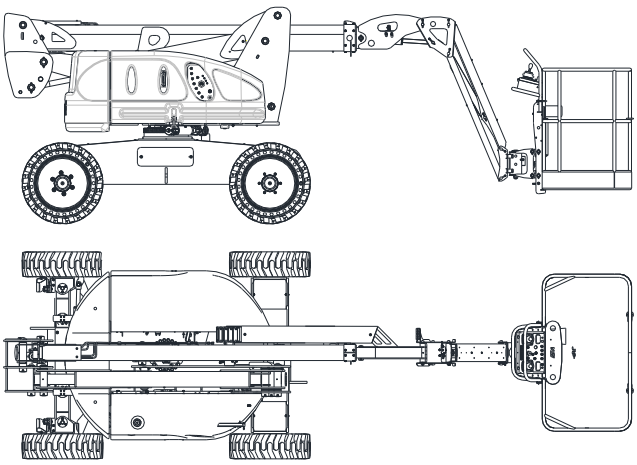
- **From the ground control station**

1- Activate and hold down the validation button.
2- Tilt the orientation control switch up to move the platform to the right or down to move the platform to the left.
3- To stop the movement, release the control switch or the enable button.

- **From the work platform control station**

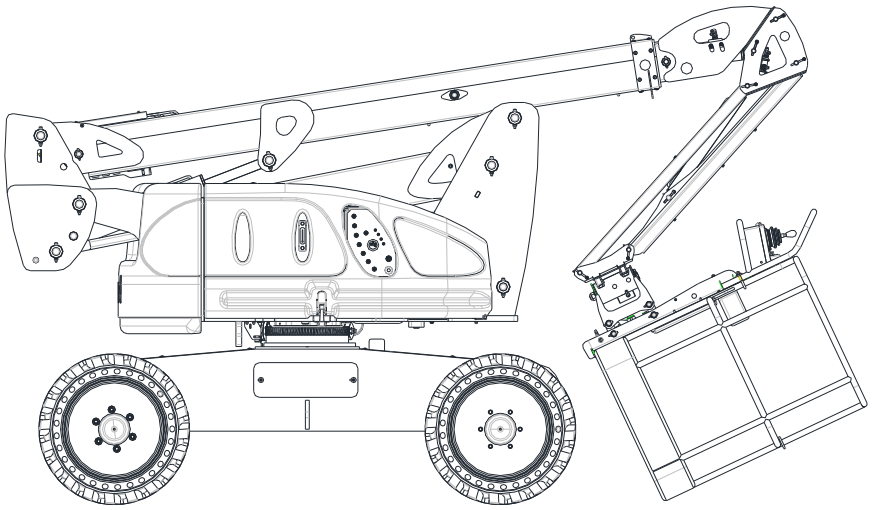
1- Activate the enable pedal.
2- Within 5 seconds, tilt the rotation control switch to the right or to the left to turn the work platform in the corresponding direction.
3- To stop the movement, release the control switch or the enable pedal.

## 4.5. PARKING - STORAGE



- Park the machine on horizontal ground in a well-protected and ventilated area.
- Fully lower the platform. Position the structure above the rear axle. Position the work platform in line.
- Straighten up the wheels.
- Place the control station selector to O position and remove the key to prevent any unauthorised use.
- Protect the control stations if necessary as well as the instruction or warning stickers using covers.
- For extended storage:
  - Disconnect the battery and charge it if necessary. See Section 7-5 Battery.
  - Chock the machine's wheels.
- For storage, the length of the machine may be reduced by folding the work platform under the telescopic arm:
  1- Remove any material from the work platform.

2- From the ground control station, raise jib 2 slightly.
3- Use the platform levelling control to position it under the jib making sure the platform does not hit the ground..



## 4.6. HANDLING – STOWAGE FOR TRANSPORT

### 4.6.1 HANDLING

The machine may be handled using a crane or similar equipment using the lifting/stowage rings on the chassis. You must then use adapted lifting accessories to avoid damaging the machine.
For the operation, the machine must be placed in parking-storage position as described in Section 4.5.

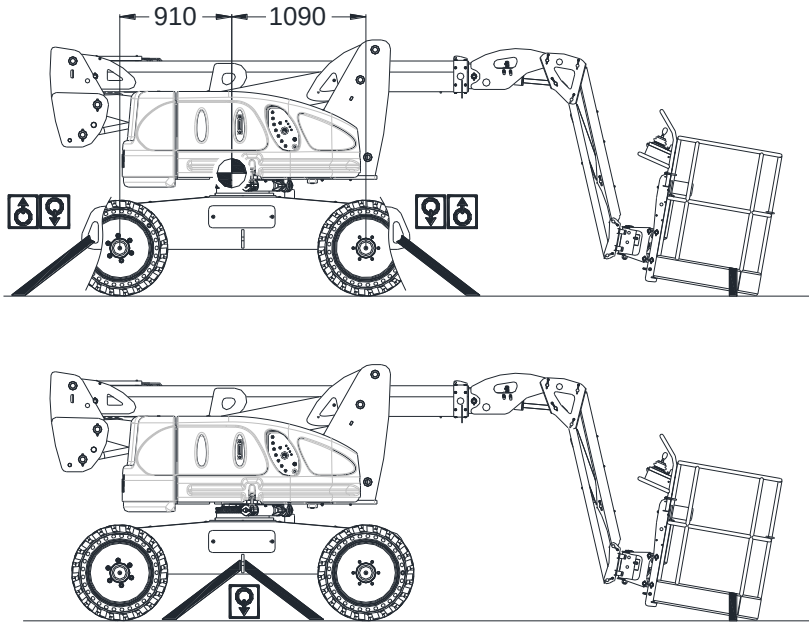
**DANGER**

CHECK THE CAPACITY OF THE LIFTING EQUIPMENT AND ACCESSORIES BEFORE RAISING THE MACHINE.
CHECK THAT THE PIVOTING MOTOR SUPPORT IS CORRECTLY LOCKED.
WHEN HANDLING THE MACHINE, THERE MUST BE NO PEOPLE OR MATERIAL ON THE WORK PLATFORM.

### 4.6.2 STOWAGE FOR TRANSPORT

During transport :

- The machine must be solidly secured to the vehicle's deck as shown below. To tie down the chassis, use chains or slings rather than textile straps. To prevent vibrations during transport, bring the work platform to contact the vehicle's deck using the platform levelling control from the ground control station (place a protection between the deck and the work platform to prevent damages). Strap the platform as shown (do not strap too tight to prevent damage to the platform).
  The wheels can also be chocked.
- Remove all the elements not secured to the machine.



# Section 5. SAFETIES

## 5.1. TILT SENSOR

The tilt sensor located in the ground control box constantly measures the machine's incline.

**-NOTE-**

**This safety mechanism must not guide how the machine is used. Do not raise the platform or move with the platform on inclines, hilly or loose surfaces.**

- When the structure is in low position, the light comes on to indicate that the machine's tilt level is too high for the platform to be raised.
- When the structure is raised, the tilt light comes on and an alarm is sounded when the maximum tilt authorised is reached.
  The alarm indicates that the machine has reached its stability limit.

**DANGER**

IF THE ALARM SOUNDS STOP ALL OPERATIONS IMMEDIATELY.
RETRACT THE TELESCOPE THEN FULLY LOWER THE PLATFORM AND RETURN THE MACHINE TO LEVEL GROUNDS AGAIN BEFORE RAISING THE WORK PLATFORM AGAIN

**DANGER**

NEVER PLACE ANY OBJECTS ON THE TILT SENSOR

Different movement cutout levels may be configured if the acceptable tilt is exceeded
.

- Mode 1(default) :
  - Alarm when the tilt reaches 0.5 degrees below the maximum value.
  - Drive movement cutout when the maximum tilt is reached.
  - Engine high speed cutout for the structure movements.
- Mode 2 :
  - Drive movement cutout when the maximum tilt authorised is reached.
  - Engine high speed cutout for the structure movements.
  - Structure movement speed reduction.
  - Telescope extension cutout
  - Arm 2 movement and orientation cutout until the telescope is taken back in.
  - Combined movements prohibited.
- Mode 3 :
  - Drive movement cutout when the maximum tilt authorised is reached.
  - Engine high speed cutout for the structure movements.
  - Structure movement speed reduction.
  - Telescope extension cutout
  - Arm 1 and 2 elevation cutout.
  - Arm 2 lower and orientation cutout until the telescope is taken back in.
  - Combined movements prohibited.
- Mode 4 **(CAUTION, this mode does not correspond to the EC standard)**:
  - No movement cutout.
  - Engine high speed cutout for the structure movements.

## 5.2. LOAD CONTROL

When the permissible load on the working platform is exceeded, the corresponding lights on the control stations flash, an alarm sounds and all the movements are stopped. The platform must be partially discharged until the alarm stops.

**DANGER**

DO NOT ACTIVATE THE EMERGENCY STOP TO CUT THE ALARM AND CONTINUE WORKING. UNLOAD THE PLATFORM UNTIL THE ALARM STOPS.

If the overload was triggered by a collision with an obstacle at a height, the platform may be cleared using the auxiliary hydraulic group. This clearance procedure is strictly reserved for this precise case.

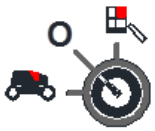
1- Cut the diesel engine.
2- Use the auxiliary hydraulic group to make the appropriate clearance movement (See Section 6.1.3 – Auxiliary hydraulic group). The telescope can only be lowered and retracted.
3- Once the platform is cleared, restart the diesel engine and return the platform to low position. Check that the platform or load control mechanism have not been damaged before returning the machine into service.

**-NOTE-**

**A cutout of all movements including those performed from the auxiliary group can be configured in the system : Refer to §8.3.1 - Settings**

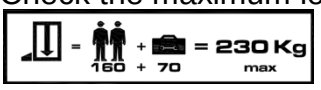
## 5.3. CALIBRATE THE OVERLOAD PLATFORM SYSTEM

1. Put the machine on a firm and level surface, place the platform.



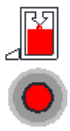
2. Turn the key switch to the platform or ground control

3. Check the maximum load allowed into the platform (firm plate).




4. Remove all tools and accessories to the platform.

5. Place a test weight equal to the maximum platform capacity + 10 kg (240kg).



6. **The overload light must flashing and the alarm must sounding.**

   If the alarm does not sound, slowly loosen the load spring adjustment nut in counterclockwise direction with 17mm wrenches until the alarm activation.

7. From the ground, move the platform up about 5cm, the alarm must stop sounding.

- If the alarm doesn't stop, tighten the load spring about ¼ turn and lift up again the platform about 5cm, repeat this procedure until the alarm stop.

8. Release the platform, the alarm shall sound (if not, repeat step 6).
- There may be a short delay before the platform overload alarm respond.

9. Move up again the platform about 5cm, the alarm shall stop sounding (if not, repeat step 7).

10. During the alarm activation, test all the machine functions from the ground and platform controls. All functions should not operate except the third arm.

11. Remove the test weight from the platform.

12. The alarm must be off, test all the machine functions from the ground and platform controls. All functions should operate.

## 5.4. SYSTEM FAULT

The system fault light comes on when the control system detects an anomaly on one of the components or an operating fault.

Depending on the importance of the fault on the machine's safe operation, the system allows the operation of certain controls in degraded mode or completely blocks the use of the machine.

The exact nature of the fault is indicated on the control module screen: Refer to Section 8
The machine's operation is restored when the fault disappears or after the emergency stop is recycled (depending on the nature of the fault).

**DANGER**

DO NOT USE THE EMERGENCY STOP TO CUT THE ALARM AND CONTINUE WORKING.
IF POSSIBLE, LOWER THE PLATFORM AND STOP USING THE MACHINE.

In any case, the fault must be corrected before the machine is returned to service. After repair, a full control on the operation of the machine and of the safety devices must be carried out by qualified person before the machine is brought back into service.

If a fault occurs when the platform is elevated and is occupied by personnel, appropriate measures must be taken to protect the platform's occupants.

## 5.5. MOVEMENT ALARMS

A movement alarm may sound:
- During drive movements
- During lifting structure movements
- During drive and lifting structure movements

See § 8.3.1 – Safety settings.

An optional flashing light may be installed on the machine.
This equipment may be activated:

- When the machine is powered up
- When the diesel engine is running
- During drive movements
- During drive and lifting structure movements

See § 8.3.1 – Option settings..

## 5.6. ANTICRUSHING SYSTEM (OPTION)

The anti-crushing system consist of a pressure sensitive bar mounted in front of the platform controls.
During translation (forward, backward) or elevation (arm 1, arm2, arm 3, telescope), if the operator get in crushing situation, he will trigger with his body the sensitive bar.
The movement will stop immediately and will reverse for about one second (the time depends of the movement) and the alarm will sound.
The bar doesn't need special maintenance. It has to be change every 10 years.

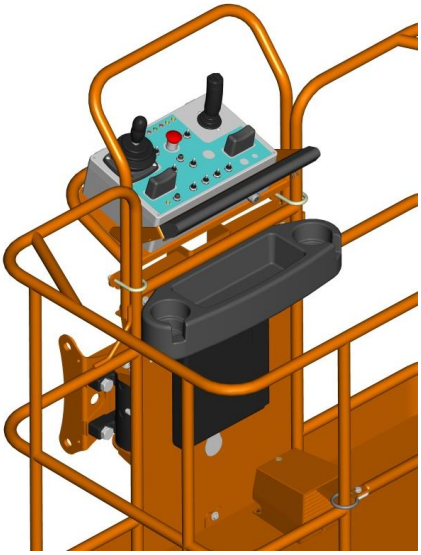
**Inspection :**

Be sure the bar is not visually damaged.

**Function Test :**

1. From the platform controls, press the foot switch and make any elevation movement or drive the machine.
2. Press the bar with your body during the movement.
3. The machine shall stop immediately and the alarm shall sound.
4. To reset "the crushing situation", the operator has to release the foot switch, remove his body from the sensitive bar and release any movement from the platform control box.

If you make any lowering movement and activate the pressure sensitive bar, nothing happens.
An operator can also take controls from the ground even with the sensitive bar activated.



# Section 6. EMERGENCY PROCEDURES

## 6.1. EMERGENCY CONTROLS

The emergency controls must only be used by personnel with detailed knowledge of the machine's operating characteristics and the ground control function.

If the platform is jammed or stuck in a structure or equipment at height, stop using the machine immediately. Use other equipment to rescue the platform's occupants. Stabilize the machine before you try to release it. Make sure you do not control any movements that might result in the machine tipping over.

### 6.1.1 EMERGENCY STOP

Each control station has an emergency stop button that stops the machine's movements and cuts the diesel engine when it is pushed in.

### 6.1.2 GROUND CONTROL STATION

The priority ground control station is used to raise or lower the platform in the event of an emergency, when the operator in the work platform is unable to operate the machine.

1- Set the control station selector to "ground control station ".

2- Start the diesel engine.

3- Check that there are no obstacles at height that might interfere when the platform is moved.

4- Activate the appropriate movement controls to raise or lower the platform.

### 6.1.3 AUXILIARY HYDRAULIC GROUP

In the event of a breakdown on the diesel engine, an auxiliary group is used to power the machine's hydraulic circuit to return the platform to its low position. The hydraulic group is powered by the diesel engine's start-up battery. It may be used from the ground control station or from the work platform's control station. The auxiliary hydraulic group may only be used when the diesel engine is stopped.

- **From the ground control station**

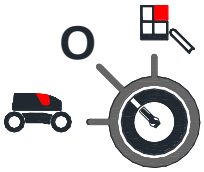
1- Activate and hold down the enable button. When the diesel engine is stopped, the auxiliary hydraulic group can run using the enable button.
2- Use the controls to take the platform back to its low position.

- **From the platform control station**

1- Press the validation pedal.
2- Toggle and hold the Start / Auxiliary Group button downwards.
3- Use the controls to take the platform back to its low position.

### 6.1.4 OVERRIDE EMERGENCY SYSTEM

This emergency functionality allows controlling the elevation movements even if the platform is on overload.
This functionality must be used to retrieve an operator trapped or unable to operate the machine from the platform on an overload situation.



1. On the ground control box, place key switch in the ground position.

2. Flip up the emergency cover.

3. Start the engine (If the engine doesn't start, the auxiliary pump will work automatically).


4. Hold the override safety switch and control the desired function.
   This switch is located on the right side of the ground control box.

## 6.2. EMERGENCY TOWING

In case of engine failure or machine malfunction, it is possible, after releasing the brakes, to tow the machine.
This operation is reserved for emergencies only, when it is imperative to move the machine.
The platform must be fully lowered and nobody should be on board the platform.

1- Chock the machine's wheels.

2- Remove the rear axle covers.

3- Unscrew the brake release clamps.

4- Using a screwdriver, remove the cover at the rear of the hydraulic motor.

5- Install the flange and tighten up to the maximum the screw on the brake piston then tighten the lock nut to draw the piston and release the brake. Perform this operation on each hydraulic motor on the rear axle.

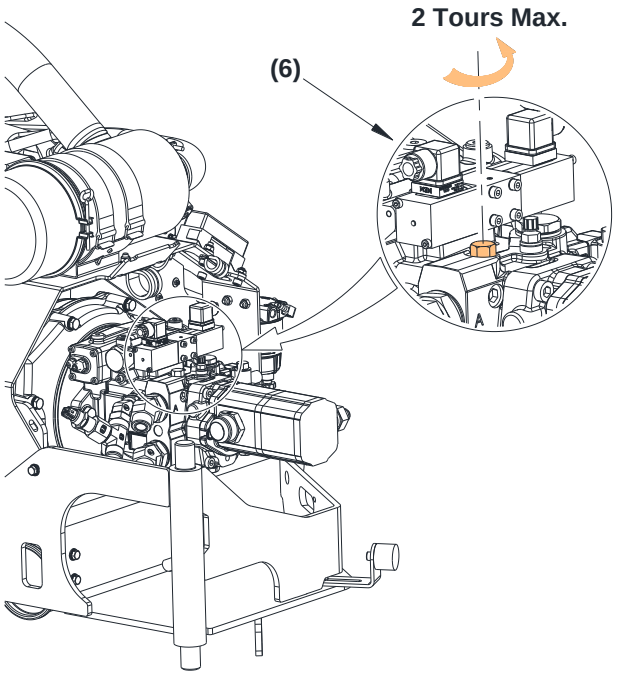
6- On the transmission pump, unscrew the by-pass valve by 2 turns maximum. (Do not unscrew by over 2 turns to avoid any external leaks).

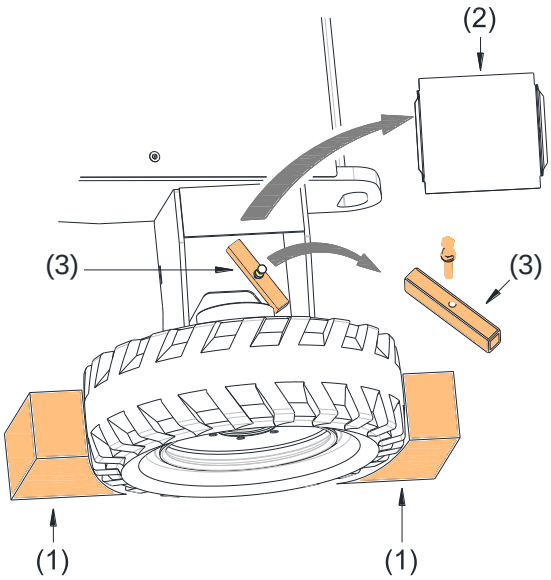
7- Using appropriate equipment, tow the machine at slow speed on level ground only.

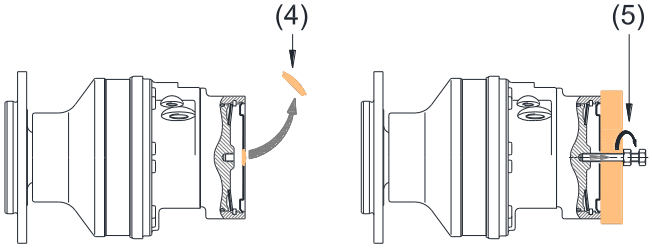
8- Once the towing has been performed, block the machine's wheels, remove the flanges to restore the brakes and tighten the by-pass valve.

**ATTENTION**

AFTER REPAIRING THE MACHINE, IT IS IMPERATIVE TO RE-INSTALL THE NEW COVERS ON THE MOTORS AND PUT THE REAR AXLE COVERS BACK IN PLACE.



## 6.3. AFTER AN INCIDENT

After an incident, carefully inspect the machine and test the good working order of all controls and safeties. Raise the platform by over a meter only after all damages have been repaired and all controls function correctly. If in doubt, contact your distributor or the manufacturer.

# Section 7. MAINTENANCE FOR THE OPERATOR

This section is intended to supply the operator with the necessary information to carry out control operations and daily maintenance on the machine. The following information does not replace the machine's preventive maintenance and inspection programme.

## 7.1. DIESEL ENGINE

**-NOTE-**

**Refer to the engine's maintenance manual for more information.**

### 7.1.1 CHARACTERISTICS

| KUBOTA | V1305-E2B |
|---|---|
| Type | 4-stroke diesel |
| Cooling | Liquide |
| Number of cylinders - Displacement | 4 - 1 335 $cm^3$ |
| Low regime | 1400 tr/mn |
| Max. regime. | 3000 tr/mn |
| Oil content | 6 litres |
| Starter | 12V - 1.4kW |
| Alternator | 12V - 40A |
| Battery | 12V - 80Ah / 640A |
| Power (ISO Continuous) at max. regime | 19.4kW (26ch) |

### 7.1.2 FUEL

Make sure that there is enough fuel in the tank to avoid unpriming the circuit. Only use fuel for GNR type diesel engines. Refer to the engine's maintenance manual.

**CAUTION**

ONLY USE FUEL FOR GNR TYPE DIESEL ENGINES.
MAKE SURE NO WATER OR IMPURITIES GET IN WHEN FILLING THE TANK.

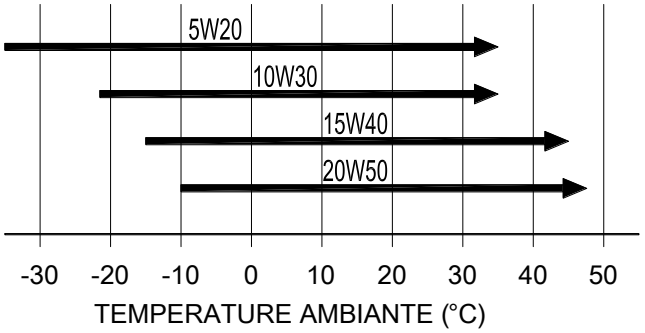
### 7.1.3 ENGINE OIL

At the factory, the machine is supplied with a lubricant Multi-Grade 15W40. . This type of lubricant enables the engine to start at temperatures as low as -15°C.

Depending on the conditions under which the machine is used, you may need to adapt the type of lubricant (See graph opposite).

**CAUTION**

THE USE OF SYNTHETIC OIL IS NOT RECOMMENDED.



# 7.2. LUBRICATION

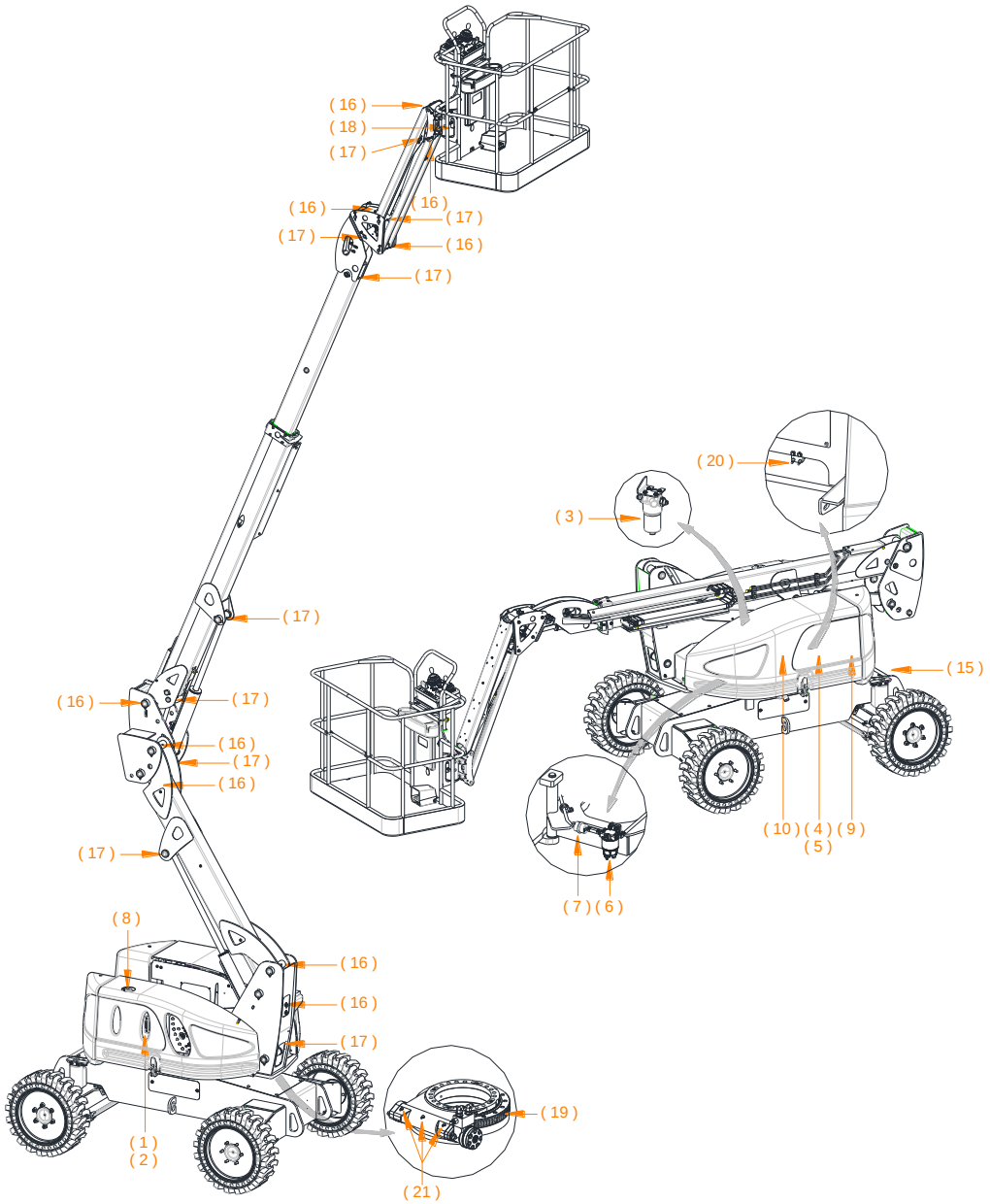
## 7.2.1 LUBRICANTS SPECIFICATIONS - CAPACITIES

| CODE | DESCRIPTION | CAPACITE | NOTES |
|---|---|---|---|
| GR | Multi-Use grease | - | Adhesive grease, resistant to water and extreme pressures |
| HM | Engine oil (15W40) | 6 l | See Section 7.1.3- Engine oil |
| H46 | Hydraulic oil H46 | 48 l | Fluid for Hydraulic circuits<br>Kinematic viscosity 46mm²/s @ 40°C |
| D | Fuel for Diesel engine | 50 l | GNR type (Non Road Diesel) |

## 7.2.2 LUBRICATION AND MAINTENANCE POINTS

**-NOTE-**

**The lubrication and maintenance intervals must be reduced if the machine is used intensively or in a dusty environment.**



| REP | DESCRIPTION | NB. PTS | CODE LUB. | OPERATION | INTERVALS | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | D | 50(1) | 200H | 400H | 1200H |
| 1 | Hydraulic tank | 1 | H46 | Level check (5) | X | | | | |
| | | | | Oil change | | | | | X(3) |
| 2 | Hydraulic filter (Return-Top of tank) | 1 | - | Filter element replacement | | X | | X(2) | |
| 3 | Hydraulic filter (pressure filter on gear pump outlet) | 1 | - | Filter element replacement | | X | | X(2) | |
| 4 | Engine oil | 1 | HM | Level check | X | | | | |
| | | | | Oil change | | X | X(2) | | |
| 5 | Engine oil filter | 1 | - | Replacement | | X | X(2) | | |
| 6 | Fuel filter | 1 | - | Filter element replacement | | X | | X(2) | |
| 7 | Fuel pre-filter | 1 | - | Replacement | | | | X | |
| 8 | Fuel Tank | 1 | - | Drainage and cleaning of sediments | | | | | X |
| 9 | Cooling liquid | 1 | - | Level check | X | | | | |
| 10 | Air filter | 1 | - | Cleaning | | | X(4) | | |
| | | | | Filter element replacement | | | | X(2) | |
| 15 | Oscillating axle cylinders grease nipples | 4 | GR | Application : Grease gun | | | X | | |
| 16 | Grease nipples jib pins | 4 | GR | Application : Grease gun | | | X | | |
| 17 | Lift cylinder pin grease nipples | 2 | GR | Application : Grease gun | | | X | | |
| 18 | Grease nipples load control system | 4 | GR | Application : Grease gun | | | X | | |
| 19 | Turntable teeth | 1 | GR | Remove old grease. Application : Brush | | | X(6) | | |
| 20 | Grease nipples Turntable bearing. | 2 | GR | Application : Grease gun | | | X(6) | | |
| 21 | Grease nipples turntable worm gear reducer | 3 | GR | Application : Grease gun | | | X(6) | | |

Notes:
D : On each commissioning or after each operator change.
(1) : After the first 50 hours' operation.
(2): At the interval indicated or every 2 years.
(3): At the interval indicated or every year.
(4): The air filter body has a clogging indicator. Clean the filter if the indicator turns red before the indicated interval.
(5): The oil level must appear on the level indicator.
(6): Rotate the structure to distribute the grease.

## 7.3. WHEELS

The wheel torque must be checked after the first 50 hours' use and every 3 months thereafter or every 100 hours' operation.

**CAUTION**

DO NOT USE AN IMPACT WRENCH TO TIGHTEN THE WHEEL NUTS.

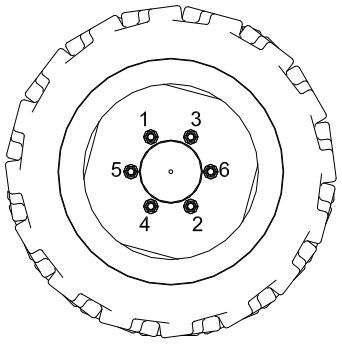
- **Wheel replacement**

The wheels can only be replaced by wheels with the same characteristics (dimensions, load capacities, deflection, lateral run out, mass…) to avoid impairing the stability of the machine.

The wheel nuts must be tightened and kept at the appropriate tightening torque to avoid any wheels becoming loose. The nuts must be tightened using a torque wrench. Excessive tightening of the nuts will lead to the studs breaking or the thread being deformed.

- **Wheel tightening**

1- Put all the nuts on by hand. Do not lubricate the threads.
2- Tighten the nuts turn by turn, respecting the order and the tightening steps indicated below:




| Wheel torque | | |
|---|---|---|
| 1st Step | 2nd Step | 3rd step |
| 100-120Nm | 250-280Nm | 350-400Nm |

## 7.4. BATTERY

**DANGER**

THE ELECTROLYTE CONTAINED IN THE BATTERIES IS HIGHLY CORROSIVE. AVOID ALL CONTACT WITH CLOTHING, SKIN OR EYES. IN THE EVENT OF CONTACT, RINSE THE AFFECTED AREA IMMEDIATELY WITH CLEAN WATER.

The battery must be kept fully charged to ensure the diesel engine always starts.

- Remove all traces of salt that may form on the battery terminals.
- Check the level of electrolyte in the battery cells.
- If the electrolyte overflows, rinse the affected metal surfaces immediately in clean water.
- Check the charge state regularly by measuring the electrolyte density.

**CAUTION**

NEVER ADD PURE ACID. USE DISTILLED OR DEMINERALISED WATER.

**CAUTION**

BEFORE CHARGING THE BATTERY, CUT THE POWER TO THE MACHINE OR DISCONNECT THE BATTERY.

- **Charging the battery**

- Use a 12 Volt charger adapted to the battery's capacity.
- Disconnect the battery from the machine before charging it.
- To preserve the battery's lifetime, avoid quick charges.
- Only charge the battery in well-ventilated premises.

- **Disconnecting - Connecting the battery**

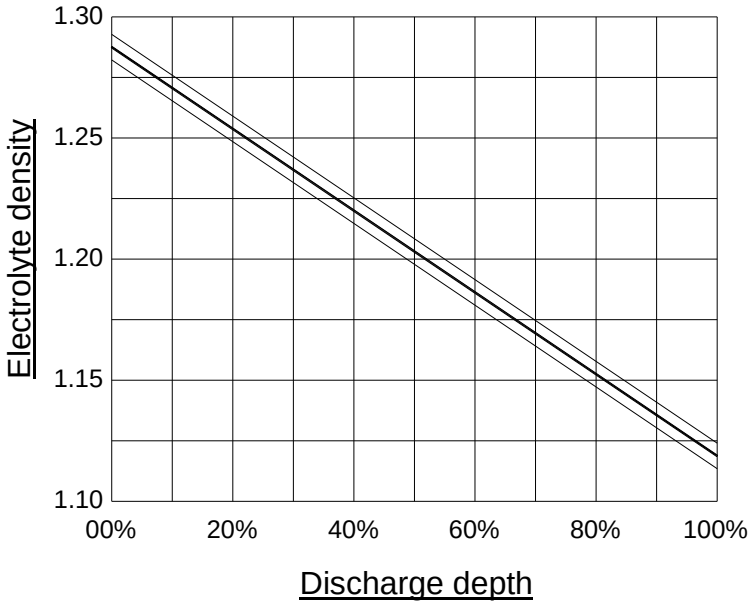
To avoid any risk of short circuit:

1- Disconnect the Negative terminal (-) before the Positive terminal (+)

2- Reconnect the Positive terminal (+) before the Negative terminal (-)

- **Extended storage**

- If the machine needs to be stored for long periods, it is best to remove the battery and store it in dry premises away from frost.
- Charge the battery if the battery voltage in open circuit is under 12.40 volts.
- Check the electrolyte level and recharge the battery approximately every two months.



# Section 8. CONTROL MODULE

The control circuit control module is located inside the ground control station. This interface is used to:

- View the diesel engine's operating parameters.
- View the status of the machine's different sensors and actuators.
- Store and display the machine's operating anomalies and faults.
- Programme the maintenance intervals.
- Diagnose a command circuit fault.
- Modify some of the machine's operating parameters.
- Display the manufacturer's details.

The operating parameters may only be accessed with an access code. These parameters may only be modified by qualified and authorised personnel.

## 8.1. HOME SCREEN

The following screen is displayed when the machine is powered up :


1- Machine model and serial number
2- Date / time,
3- System status: System OK / Error active.
4- Light - System fault.
5- Lights - Faults:

Tilt

Overload

Hydraulic transmission fault:
- Hydraulic oil temperature above 90°C.
- Boost pressure below 15 bars.

Diesel engine temperature fault

Diesel engine oil pressure fault.

6- Control station selection lights:

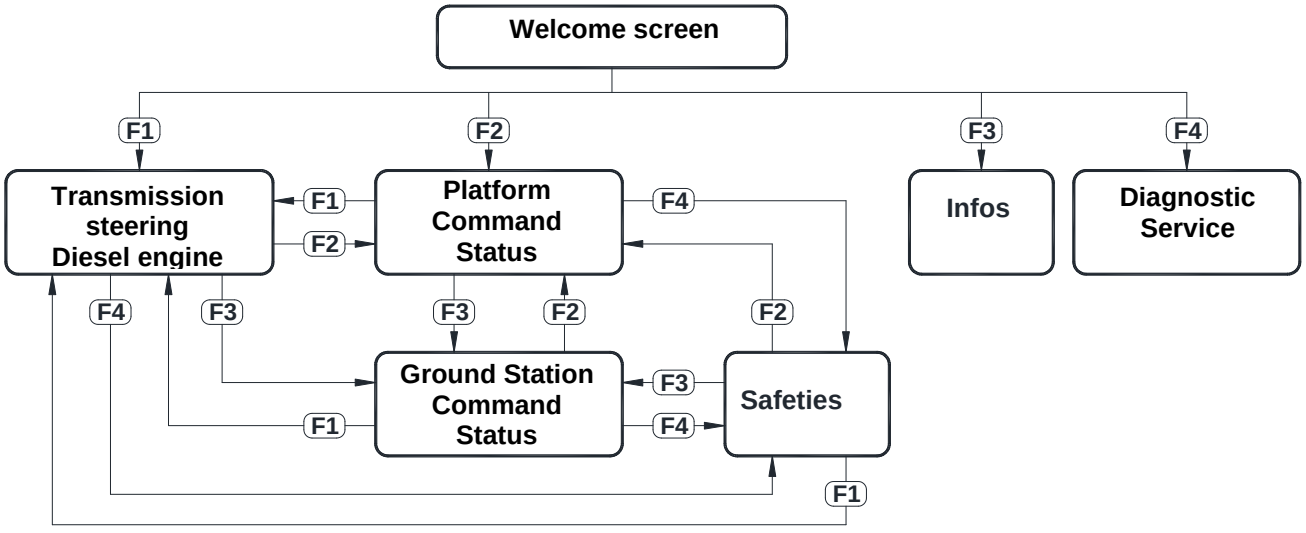
Platform control station selected.

Ground control station selected.

SELECTOR FAILURE Control station selection fault.

7- Hourmeter (moteur tournant).
8- Indication – Maintenance operation required.
9- Menu / function selection buttons.
10- Scroll (up / down) buttons / Validation.
11- Setting menu access button.
12- Back to previous screen button.

## 8.2. MENUS



### 8.2.1 ENGINE / TRANSMISSION (F1)


1- Entry parameters – Drive / steering Joystick.


The arrows light up when the corresponding movement is controlled

Joystick set point value – Drive movement

2- Variable flow pump control value.

3- Parameters – Steering movement.


The arrows light up when the corresponding movement is controlled

Proportional valve control setpoint

Steering Hydraulic circuit pressure

4- Light – Parking brake : the icon turns grey when the brake is deactivated.

5- Light – Drive speed selection.
The icon corresponding to the drive speed selected on the platform control station is displayed :

 Slow speed

 Ramp speed (Max. torque)

 High speed

6- Hydraulic oil temperature.

7- Transmission hydraulic circuit pressure.

8- Light – Diesel engine start authorised.

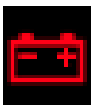
9- Light – Preheating / Start countdown.

10- Engine Regime (RPM)

11- Light – Diesel engine faults.

 Engine oil pressure fault

 Engine temperature fault

 Alternator fault

12- Light – Oscillating axle Locking / Unlocking.
- Green light : Oscillating axle unlocked
- Red light : Oscillating axle locked

### 8.2.2 CONTROL STATUS (F2 – FROM THE HOME SCREEN)

By default, the platform control station's status screen is displayed.
The (F2) and (F3) buttons are used to switch from the platform control station status screen to the ground control station screen.

**PLATFORM COMMAND STATUS (F2).**


1- Entry parameters – Joystick Orientation.


Joystick setpoint value - Orientation movement

The arrows light up when the corresponding movement is controlled.

Status light – Structure position sensor (the light is on when the jib is between the rear wheels).

Proportional valve control value

2- Entry parameters – Joystick Jib 2.


Joystick setpoint value - Orientation movement

The arrows light up when the corresponding movement is controlled.

Status light – Structure position sensor (the light is on when the jib is between the rear wheels).

Proportional valve control value

3- Entry parameters – Jib 1.


The arrows light up when the corresponding movement is controlled.

Status light - Jib 1 position sensor (the light is on when the jib is lowered).

Proportional valve control value

4- Entry parameters – Telescope.


The arrows light up when the corresponding movement is controlled.

Status light - Telescope position sensor (the light is on when the telescope is retracted).

Proportional valve control value

5- Entry parameters – Levelling.

The arrows light up when the corresponding movement is controlled.

6- Entry parameters – Jib 3.

The arrows light up when the corresponding movement is controlled.

7- Entry parameters – Platform rotation.

The arrows light up when the corresponding movement is controlled

8- Proportional valve control value.


Proportional valve control value.
(Movements levelling, Jib 3, Platform Rotation / Generator (Option))

9- Elevation manifold pressure value.


Pressure value in the hydraulic circuit

10- Light – Supply to the pressure relief valve electrically controlled : the light is on when the pressure relief valve is actuated.

11- Light - Overload
Green light: acceptable load not reached.
Red light: acceptable load exceeded

12- Light - Tilt / Tilt angle values.
Green light: acceptable tilt not reached.
Red light: acceptable tilt exceeded

13- Engine speed selector position for the structure movements.

 Idle.

 High regime.

14- Light – Enable pedal actuated.

15- Light – Auxiliary hydraulic group control actuated.

16- Light – Diesel engine start button actuated.

## GROUND CONTROL STATUS (F3).


1- Entry parameters - Structure orientation.


The arrows light up when the corresponding movement is controlled.

Status light – Structure position sensor (the light is on when the jib is between the rear wheels).

Proportional valve control value

2- Entry parameters – Jib 2


The arrows light up when the corresponding movement is controlled.

Status light – Structure position sensor (the light is on when the jib is between the rear wheels).

Proportional valve control value

3- Entry parameters – Jib 1


The arrows light up when the corresponding movement is controlled.

Status light - Jib 1 position sensor (the light is on when the jib is lowered).

Proportional valve control value

4- Entry parameters – Telescope


The arrows light up when the corresponding movement is controlled.

Status light - Telescope position sensor (the light is on when the telescope is retracted).

Proportional valve control value

5- Entry parameters – Levelling

The arrows light up when the corresponding movement is controlled

6- Entry parameters – Jib 3

The arrows light up when the corresponding movement is controlled

7- Entry parameters – Platform rotation

The arrows light up when the corresponding movement is controlled

8- Proportional valve control value.


Proportional valve control value.
(Movements levelling, Jib 3, Platform Rotation / Generator (Option))

9- Elevation manifold pressure value.


Pressure value in the hydraulic circuit

10- Light – Supply to the pressure relief valve electrically controlled : the light is on when the pressure relief valve is actuated.

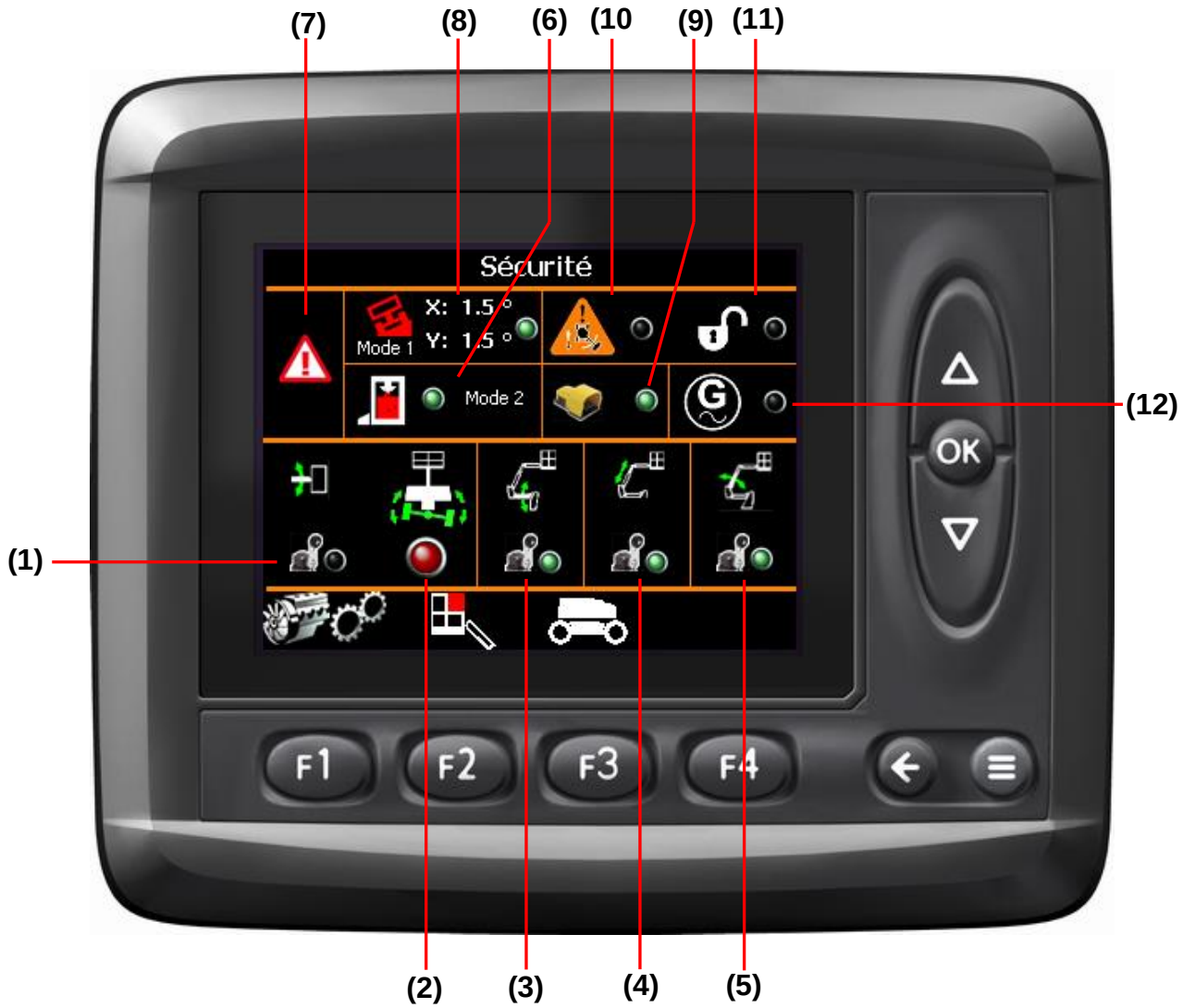
11- Light - Overload.
Green light: admissible load not reached
Red light: admissible load exceeded

12- Light – Tilt / Tilt angle values.
Green light: admissible tilt not reached
Red light : admissible tilt not exceeded

13-Light – Enable button / auxillary group light actuated – Diesel engine start button actuated.

14- Light - Diesel engine start button activated.

### 8.2.3 SAFETIES (F4)




1- Status light- Structure position sensor (the light is on when the tower is in line with the chassis).

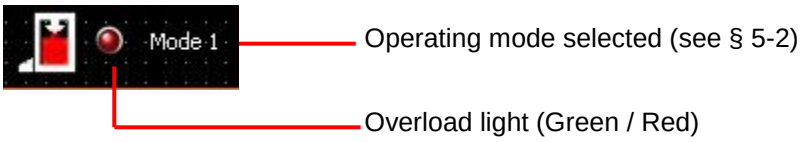
2- Status light - Oscillating axle unlocking valve control
Green light - unlocking valve piloted / oscillating axle unlocked
Red light - unlocking valve not piloted / oscillating axle locked

3- Status light - Jib 1 position sensor (the light is on when the arm is lowered).

4- Status light - Telescope position sensor (the light is on when the telescope is retracted).

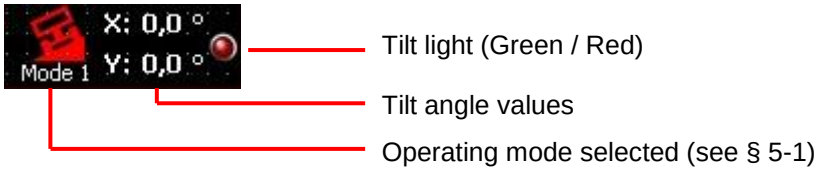
5- Status light - Jib 2 position sensor (the light is on when the arm is lowered).

6- Light - Overload / Operating mode:




7- Light – System fault.

8- Light – Tilt / Tilt angle values / Operating mode:




9- Light – Enable pedal actuated.

10-Light – Drive direction warning (Option : see § 4-3).

11-Light – Drive enable button actuated (Option : see § 4-3)

12-Light – Generator button on ON (Option).

### 8.2.4 REVISION (F4 – FROM THE HOME SCREEN)

The indications for the revision/maintenance operations are programmed to correspond to the intervals indicated in the table in chapter 7.2.2. When a maintenance operation is required, the maintenance light flashes slowly.

Once the maintenance operation has been carried out, it must be "validated" in the system to launch a new countdown:

From the home screen, press [F4].


Press [F2].

Use the right hand side arrows to display the access code digits.
Press [OK] to validate each digit and move onto the next one.
Once the last digit has been entered, press [OK] then [F2] (or [OK] again)..


Press [F4].


Press [F2].


Press [F2].



Note: the revision/maintenance operations may be carried out and validated early.

If the machine is used very intensively or in a harsh environment, the intervals may be reduced. It is preferable to only modify the revision interval when the revision is carried out.

Press [F1].


Press [F3].


Use the right hand side arrows to display the access code digits.
Press [OK] to validate each digit and move onto the next one.
Once the last digit has been entered, press [OK].


Use the right hand side arrows to modify the interval between each revision.
Press [OK] to validate.


Press [OK] again to validate the new interval.

Press [F3] to confirm the setting
then press [F4] to finish.

In the example above, the interval has been modified after the maintenance operation has been validated. The new interval value is not automatically reflected on the number of hours when the next maintenance will have to be done. Only a maintenance validation modifies the number of hours when the next revision must be carried out:

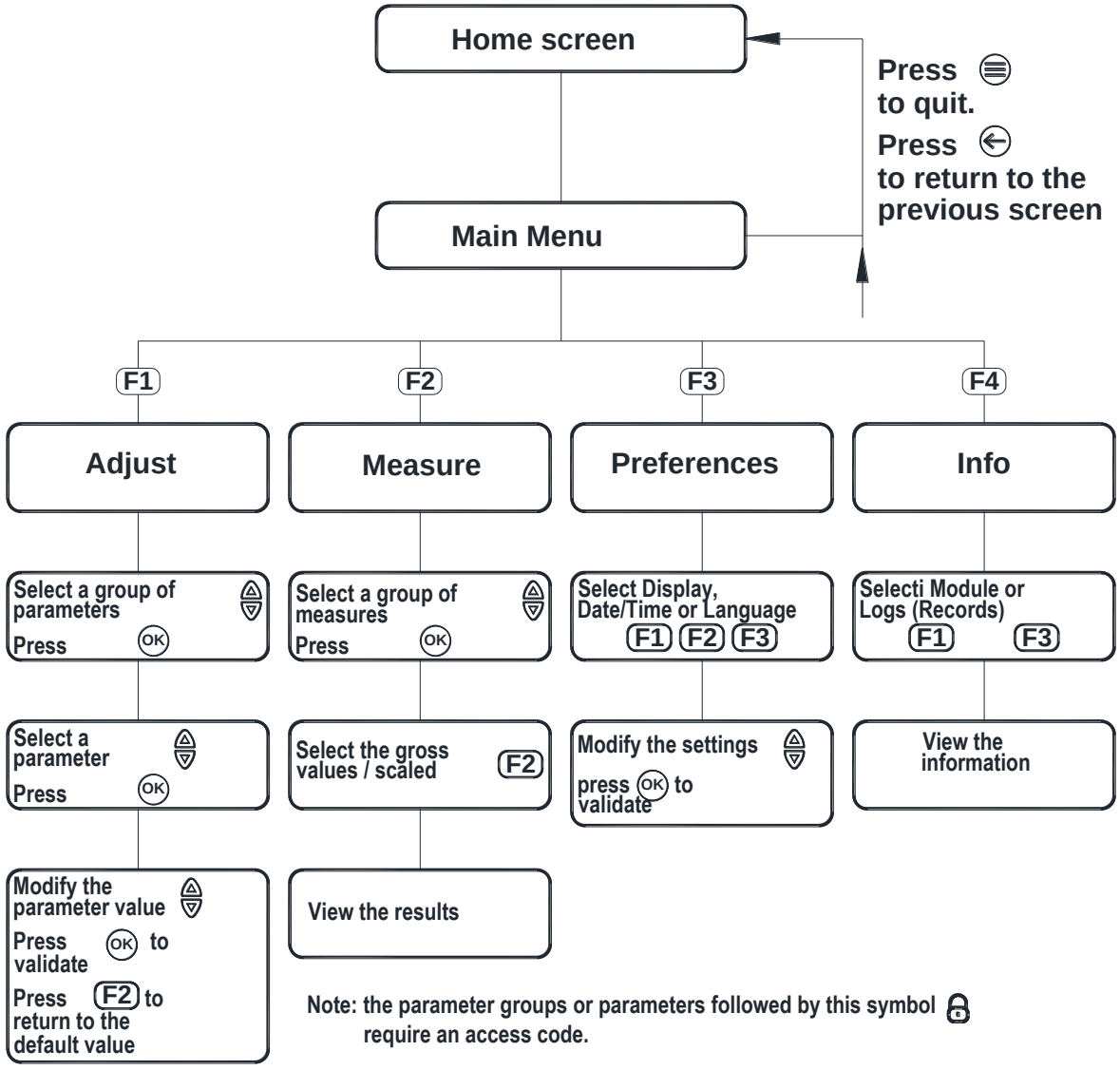
Press « back to previous screen » arrow :


Press [F2].


Press [F2] to confirm


The number of hours is updated function of the new interval:

## 8.3. SETTINGS – LOGS




### 8.3.1 *SETTINGS (ADJUST)*

- **Movement speeds**
  - Jib 1 elevation
  - Jib 1 lowering
  - Jib 2 elevation
  - Jib 2 lowering
  - Telescope extension
  - Telescope retraction
  - Jib 3 elevation
  - Jib 3 lowering
  - Platform rotation
  - Levelling – Elevation Ground controls
  - Levelling – Lowering Ground controls
  - Levelling – Elevation Upper controls
  - Levelling – Lowering Upper controls
  - Orientation

- **Speeds Drive / Steering**
  - Slow speed FWD Elevated
  - Slow speed REV Elevated
  - Slow speed Lowered
  - Slope speed
  - High Speed
  - Left steering
  - Right steering
  - Reduction Steering – Fast speed

- **Safety device settings**
  - Overload mode (see § 5-2)
    - Mode 1 (lowering with auxiliary group tolerated)
    - Mode 2 (Movement total cut out)
  - Tilt mode (See § 5-1)
    - Mode 1
    - Mode 2
    - Mode 3
  - Movement alarm Mode (See § 5-4)
    - No alarm
    - Alarm on drive movement
    - Alarm on movements
    - Alarm on drive + movements
  - Drive steering Validation
    - Active
    - Inactive
  - Levelling – elevated position
    - Authorised
    - Prohibited
  - Drive reduction when tilted.

- **Option Settings**
  - Generator
    - Active
    - Inactive
  - Flashing light
    - Inactive
    - Machine powered up
    - Engine running
    - During drive
    - During drive + movements
  - Particle filter
    - Active
    - Inactive

- **Speed reductions**
  - Jib 1 End of course Reduction
  - Jib 2 End of course Reduction
  - Jib 2 – Telescope extended Reduction
  - Reduction Jib 2 + Orientation
  - Reduction Orientation + Jib 2
  - Reduction Jib 1/2 – Telescope extended
  - Reduction Orientation + drive

- **Service**
  - New hourmeter
  - Revision intervals


**-NOTE-**

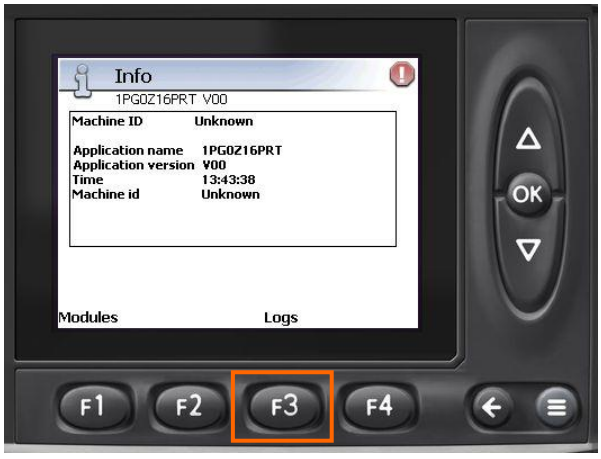
**The factory-set value for each parameter can be restored with the RESET (F2) function.**

### 8.3.2 INFO – RECORDS (LOGS)

The system records each control and each "system fault".
Certain data on the machine's usage rate or certain functions are also saved to help planning any preventive maintenance operations.

Press [F4].


Press [F3].



Use the arrows on the right hand side to select the record group to be viewed then press [OK].

- **System log MD3**
  - Records / system faults relating to the MD3 module.

- **System log MC3**
  - Records / system faults relating to the MC3 module.

- **Hydraulic oil temperature**
  - Time during which the hydraulic oil temperature was measured at the intervals indicated.

- **Revisions**
  - Date and number of hours (hourmeter running) when the pre-programmed maintenance operations were validated..

- **Diesel engine**
  - Engine usage time at high speed
  - Engine usage time on idle speed
  - Accelerations (number of changes to high speed)
  - Number of engine starts

- **Usage**
  - Inactivity time (engine running)
  - Elevation function usage time
  - drive function usage time

- **Auxiliary group**
  - Date and usage duration of the auxiliary group

- **Auxiliary group (Total)**
  - Total duration and date of last use of the auxiliary group

## 8.4. TILT SENSOR CALIBRATION

A calibrationof the sensor is necessary to define the 0° position on both axis in case of a calibration fault or if the componant has been replaced.

- Drive the machine on a flat and horizontal ground.
- Fully lower the structure.
- Swing the structure in line (jib above the rear axle).
- Check the horizontality of the chassis using a level (preferably digital) placed lengthways then sideways on the turntable attachment plate, on the chassis.

From the home screen, press [F4].


Press [F2].



Use the arrows on the right hand side to display the access code digits.
Press [OK] to validate each digit and move to the next one.
Once the last digit has been entered, press [OK] then [F2] (or [OK] again).

Press [F4].


Press [F1].

Press [F4].


Press [F2] to confirm.

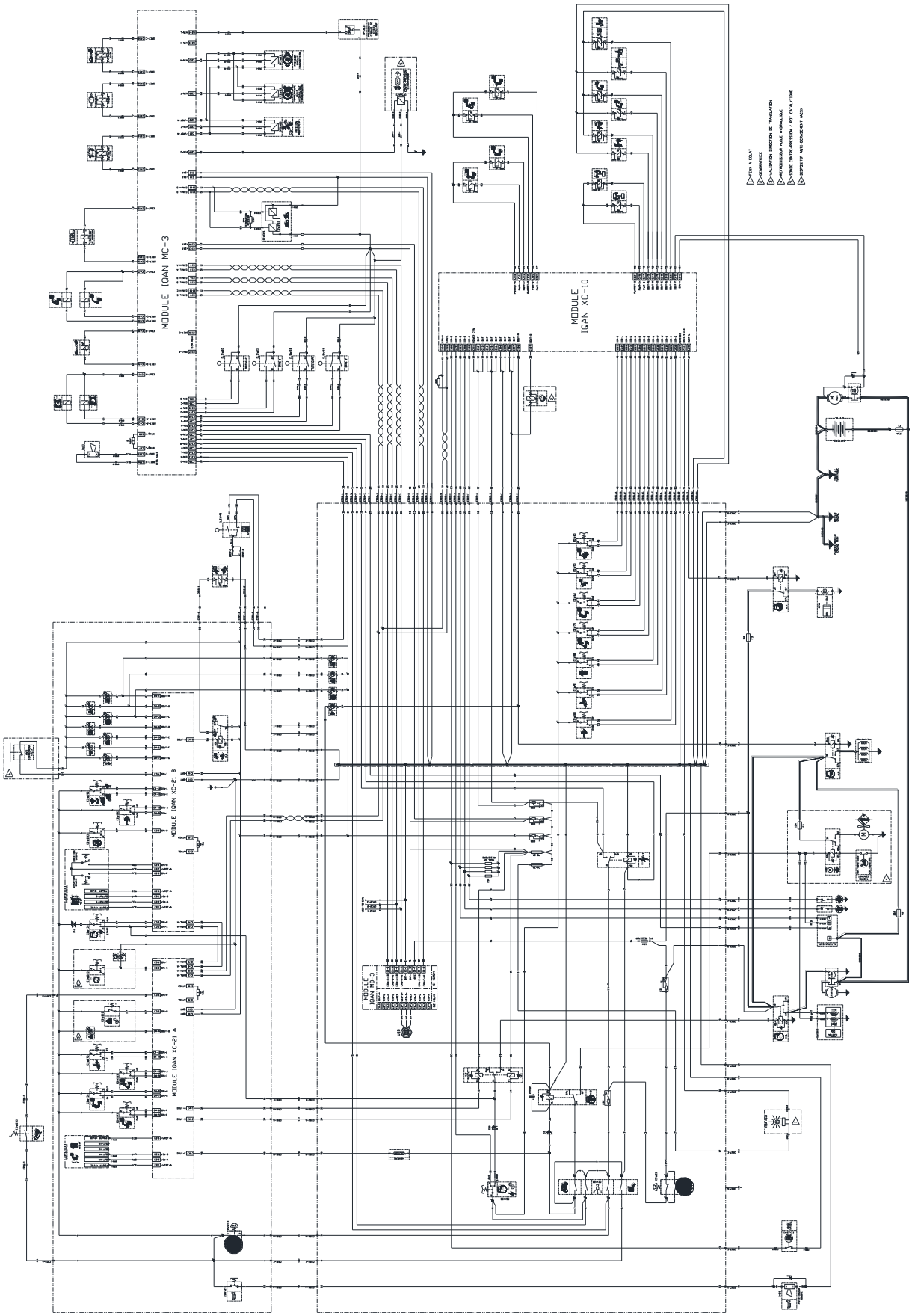
## 8.5. REGENERATION OF THE PARTICLE FILTER (Option)

When a too high counterpressure is detected on the outlet of the exhaust manifold, the maintenance lights flash on the control stations and the following message is displayed on the control module screen.
Even if the filter regeneration operation can be punctually postponed by pressing [F4], it is recommended to carry it out at the earliest possible time : if the clogging in the filter becomes too important, the filter regeneration may be not perfect if not impossible.

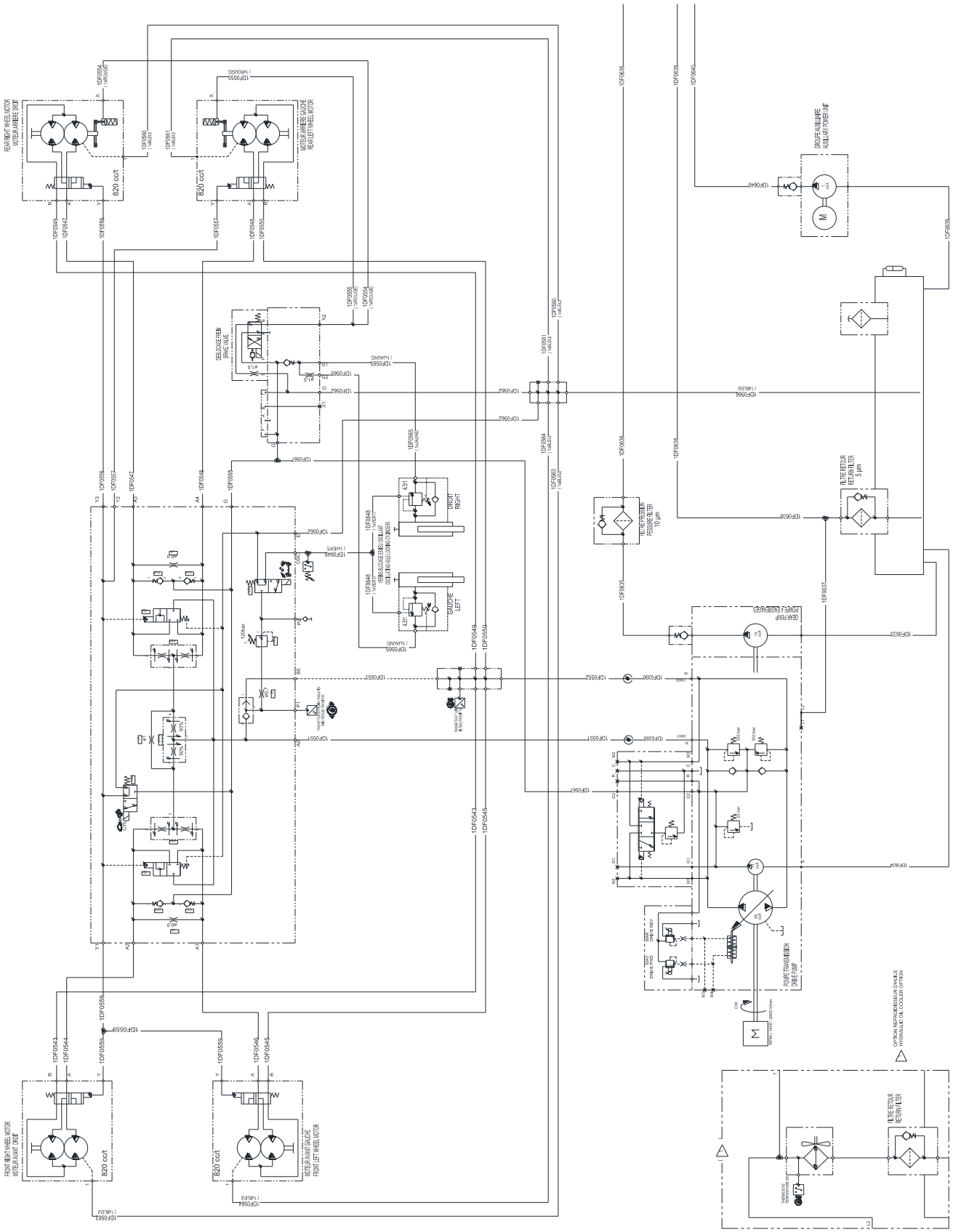

- Drive the machine outside or in a well-ventilated area..
- Fully lower the structure.
- Press [F2] to start the operation : the diesel engine switches to high speed for a 15 minute period.

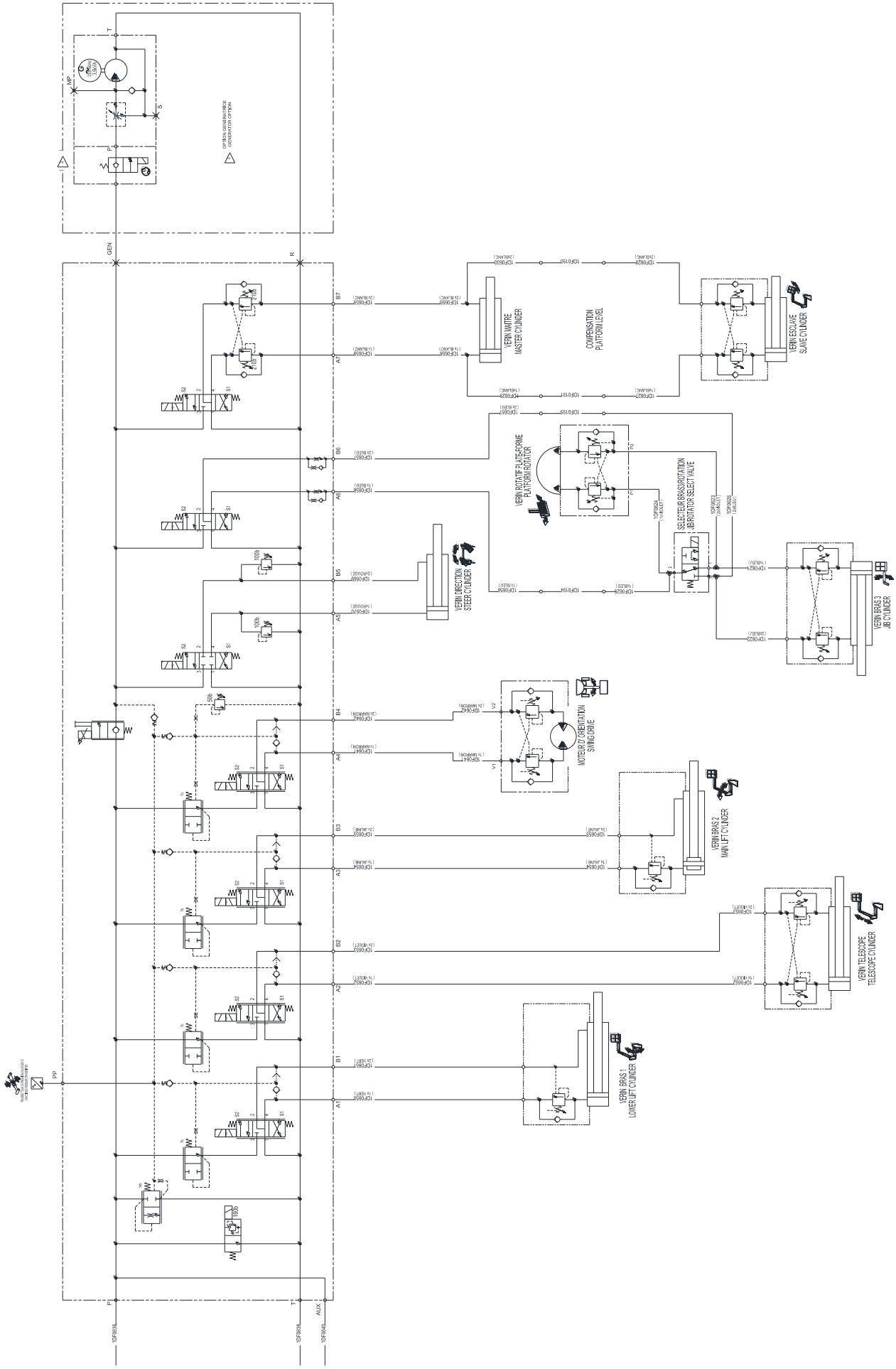
# Section 9. SCHEMATICS

## 9.1. ELECTRICAL SCHEMATIC



## 9.2. HYDRAULIC SCHEMATIC




VERIN MATTRE
MASTER CYLINDER
COMPENSATION
PLATFORM LEVEL
VERIN ESCLAVE
SLAVE CYLINDER
VERIN ROTATE PLATE-FORME
PLATFORM ROTATOR
SELECTEUR BRAS/ROTATION
JIB/ROTATOR SELECT VALVE
VERIN DIRECTION
STEER CYLINDER
VERIN BRAS 3
JIB CYLINDER
MOTEUR D'ORIENTATION
SWING DRIVE
VERIN BRAS 2
MAIN LIFT CYLINDER
VERIN TELESCOPE
TELESCOPE CYLINDER
VERIN BRAS 1
LOWER LIFT CYLINDER