

OPERATOR'S MANUAL



HA130JRT

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Why use only Haulotte original spare-parts ?

1. RECALLING THE EEC DECLARATION OF CONFORMITY IN QUESTION

Components, substitutions, or modifications other than the ones recommended by **Haulotte** may recall in question the initial security conditions of our **Haulotte** equipment. The person who would have intervened for any operation of this kind will take responsibility and recall in question the EEC marking validity granted by **Haulotte**. The EEC declaration will become null and void and **Haulotte** will disclaim regulation responsibility.

2. END OF THE WARRANTY

The contractual warranty offered by **Haulotte** for its equipment will no longer be applied after spare-parts other than original ones are used.

3. PUBLIC AND PENAL LIABILITY

The manufacture and unfair competition of fake spare-parts will be sentenced by public and penal law. The usage of fake spare-parts will invoke the civil and penal liability of the manufacturer, of the retailer, and, in some cases, of the person who used the fake spare-parts.

Unfair competition invokes the civil liability of the manufacturer and the retailer of a “slavish copy” which, taking unjustified advantage of this operation, distorts the normal rules of competition and creates a “parasitism” act by diverting efforts of design, perfection, research of best suitability, and the know-how of **Haulotte**.

FOR YOUR SECURITY, REQUIRE HAULOTTE ORIGINAL SPARE-PARTS



4. QUALITY

Using **Haulotte** original spare-parts means guarantee of :

- High quality parts
- The latest technological evolution
- Perfect security
- Peak performance
- The best service life of your **Haulotte** equipment
- The **Haulotte** warranty
- **Haulotte** technicians' and repair agents' technical support

5. AVAILABILITY

Using Haulotte original spare-parts allows you to take advantage of 40 000 references available in our permanent stock and a 98% service rate.

WHY NOT TAKE ADVANTAGE ?



IMPORTANT

READ, UNDERSTAND, AND OBEY THESE SAFETY RULES AND OPERATING INSTRUCTIONS BEFORE OPERATING THIS MACHINE.

ONLY TRAINED AND AUTHORIZED PERSONNEL SHALL BE PERMITTED TO OPERATE THIS MACHINE.

THIS MANUAL SHOULD BE CONSIDERED A PERMANENT PART OF YOUR MACHINE AND SHOULD REMAIN WITH THE MACHINE AT ALL TIMES.

IF YOU HAVE ANY QUESTIONS, CALL 1-877-HAULOTTE.

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This machine complies with ANSI/SIA A92.5-1992 and CAN3-B354.4-M82.

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1 - SAFETY RULES

**DANGER !**

***FAILURE TO OBEY THE
INSTRUCTIONS AND SAFETY
RULES IN THIS MANUAL WILL
RESULT IN DEATH OR SERIOUS
INJURY.***

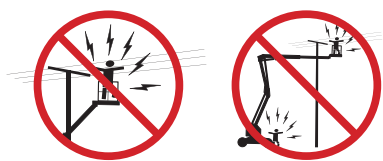
DO NOT OPERATE UNLESS:

- You learn and practice the principles of safe machine operation contained in this operator's manual.
 - **Avoid hazardous situations.**
 - **Know and understand the above principle before going on to the next section.**
 - **Always perform a pre-operation inspection.**
 - **Always perform function tests prior to use.**
 - **Inspect the work place.**
 - **Only use the machine as it was intended.**
- You read, understand and obey:
 - **Manufacturer's instructions and safety rules-safety and operator's manuals and machine decals**
 - **Employer's safety rules and worksite regulations**
 - **Applicable governmental regulations.**
- You are properly trained to safety operate the machine.

**DANGER !**

***DO NOT READ ANY FURTHER
UNTIL YOU HAVE VERIFIED
THAT THIS IS THE CORRECT
OPERATOR'S MANUAL FOR
THIS MACHINE. SEE FACING
PAGE. CONTACT HAULOTTE IF
YOU HAVE ANY QUESTIONS.***

1.1 - ELECTROCUTION HAZARDS



- This machine is not electrically insulated and will not provide protection from contact with or proximity to electrical current.
- Maintain safe distances from electrical power lines and apparatus in accordance with applicable governmental regulations and the following chart.

Voltage	Minimum safe approach distance	
	Feet	Meters
Phase to phase		
0 to 300 V	Avoid contact	
300 V to 50 kV	10	3.05
50 kV to 200 kV	15	4.60
200 kV to 350 kV	20	6.10
350 kV to 500 kV	25	7.62
500 kV to 750 kV	35	10.67
750 kV to 1000 kV	45	13.72

- Allow for platform movement, electrical line sway or sag and beware of strong or gusty winds.
- Keep away from the machine if it contacts energized power lines. Personnel on the ground or in the platform must not touch or operate the machine until energized power lines are shut off.
- Do not use the machine as a ground for welding.



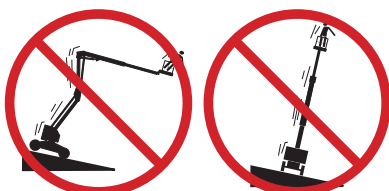
DANGER !

**RISK OF UNCERTAIN
MOVEMENTS OF THE MACHINE
WHEN STANDING NEAR TO
HIGH-VOLTAGE LINES OR
MAGNETICS FIELDS.**

1.2 - TIP-OVER HAZARDS

Occupants and equipment shall not exceed the maximum platform capacity.

	HA130JRT	
Maximum platform capacity	230 kg	507 lbs
Maximum occupants	2	



- Do not raise or extend the boom unless the machine is on a firm level surface.
- Do not depend on the tilt alarm as a level indicator. Tilt alarm sounds only when machine is on a severe slope.

If machine in a slope :



- Do not extend, rotate or raise boom above horizontal. Move machine to a firm, level surface before raising platform. If tilt alarm sounds when platform is raised, use extreme caution to retract boom and lower platform. Do not rotate boom while lowering. Move machine to a firm, level surface before raising platform.
- Do not operate the machine in strong or gusty winds. Do not increase the surface area of the platform or the load. Increasing the area exposed to the wind will decrease machine stability.
- Use extreme care and slow speeds while driving the machine in stowed position across uneven terrain, debris, unstable or slippery surfaces and near holes and drop-offs.
- Do not drive the machine on or near uneven terrain, unstable surfaces or other hazardous conditions with the boom raised or extended.
- Do not push off or pull toward any object outside the platform.

Maximum allowable side force - ANSI & CSA	150 lbs 670 N
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Maximum allowable manual force - CE	90 lbs 400 N
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- Do not alter or disable machine components that in any way affect safety and stability.
- Do not replace items critical to machine stability with items of different weight or specification.
- Do not modify or alter an aerial work platform. Mounting attachments for holding tools or other materials onto the platform, toeboards or guard rail system can increase the weight in the platform and the surface area of the platform or the load.
- Do not place or attach overhanging loads to any part of this machine.

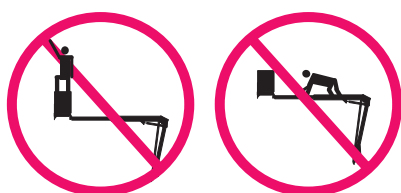


- Do not place ladders or scaffolds in platform or against any part of this machine.
- Do not use machine on a moving or mobile surface or vehicle.
- Be sure all tires are in good condition.

1.3 - FALL HAZARDS



- Occupants must wear a safety belt or harness in accordance with governmental regulations. Attach lanyard to anchor provided in platform.
- It is recommended that operators wear an approved hard hat when operating the machine.
- Do not sit, stand or climb on the platform guard rails. Maintain a firm footing on the platform floor at all times.

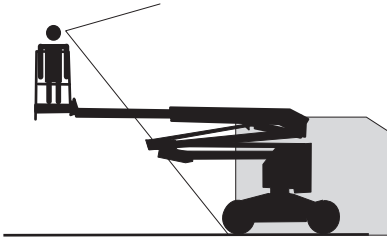


- Do not climb down from the platform when raised. If a power failure should occur, ground personnel should use the manual controls to lower platform.
- Keep the platform floor clear of debris.
- Lower the platform entry mid-rail or close the entry gate before operating.

1.4 - EXPLOSION AND FIRE HAZARDS

- Do not operate machine if you smell or detect liquid petroleum gas (LPG), gasoline, diesel fuel or other explosive substances.
- Do not refuel machine with engine running.
- Refuel machine and charge batteries only in an open, well-ventilated area away from sparks, flames and lighted tobacco.
- Do not operate engine unless in a well-ventilated area to avoid carbon monoxide poisoning.

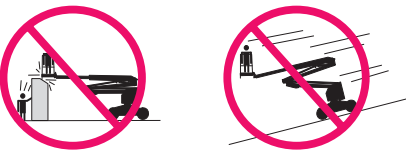
1.5 - COLLISION HAZARDS



- Be aware of limited sight distance and blind spots when driving.
- Be aware of primary and secondary boom and platform position when rotating turntable.
- Check work area for overhead obstructions or other possible hazards.



- Be aware of crushing hazard when grasping the platform guard rail.
- Observe and use color-coded direction arrows on the platform controls and drive chassis for drive and steer functions.
- Do not lower the boom unless the area below is clear of personnel and obstructions.



- Limit travel speed according to ground surface condition, congestion, slope, location of personnel and any other factors which may cause collision.
- Do not operate a boom in the path of an overhead bridge crane unless the controls of the overhead bridge crane have been locked out and/or precautions have been taken to prevent any potential collision.
- When driving down the ramp of a truck, ensure sufficient space is available for safe unloading.
- Check brake pad wear regularly to avoid all risk of collision.

1.6 - COMPONENT DAMAGE HAZARD

- Do not use any battery or charger greater than 12V to jump-start engine.
- Do not use machine as a ground for welding.
- Be sure hydraulic shut-off valves (located by hydraulic tank) are open before starting engine.

1.7 - DAMAGED MACHINE HAZARDS

- Do not use a damaged or malfunctioning machine.
- Conduct a thorough pre-operation inspection of the machine and test all functions before each work shift. Immediately tag and remove from service a damaged or malfunctioning machine.
- Be sure all decals are in place and legible.
- Be sure safety, responsibility and operator's manual are legible and in a storage box located on the platform.

1.8 - BODILY INJURY HAZARD

- Do not operate the machine with a hydraulic oil leak or air leak. An air or hydraulic leak can penetrate and/or burn skin.

1.9 - DECAL LEGEND

- HAULOTTE product decals use color coding and signal words to identify the following.



Red - used to indicate the presence of a hazard that will cause death or serious injury.



Orange - used to indicate the presence of a hazard that may cause death or serious injury.



Yellow - used to indicate the presence of a hazard that will or may cause serious injury or damage to the machine.



Green - used to indicate operation or maintenance information.

1.10 - BATTERY SAFETY

1.10.1 -Burn hazards



- Batteries contain acid. Always wear protective clothing and eyewear when working with batteries.
- Avoid spilling or contacting battery acid. Neutralize battery acid spills with baking soda or water.
- Battery pack must remain in upright position.
- Do not expose battery or charger to water and/or rain.

1.10.2 -Explosion hazards



- Keep sparks, flames and lighted tobacco away from batteries. Batteries emit explosive gas.
- The battery pack cover must remain off during charging.
- Do not contact battery terminals or cable clamps with tools that may cause sparks.

1.10.3 -Component damage hazards

- Disconnect battery pack plug before removing battery pack.

1.10.4 -Electrocution hazards



- Inspect daily for damaged cord, cables and wires.
- Replace damaged items before operating.
- Avoid electrical shock from contact with battery terminals. Remove all rings, watches and other jewelry.
- Remove any tools or any metal items that may fall from your pockets.

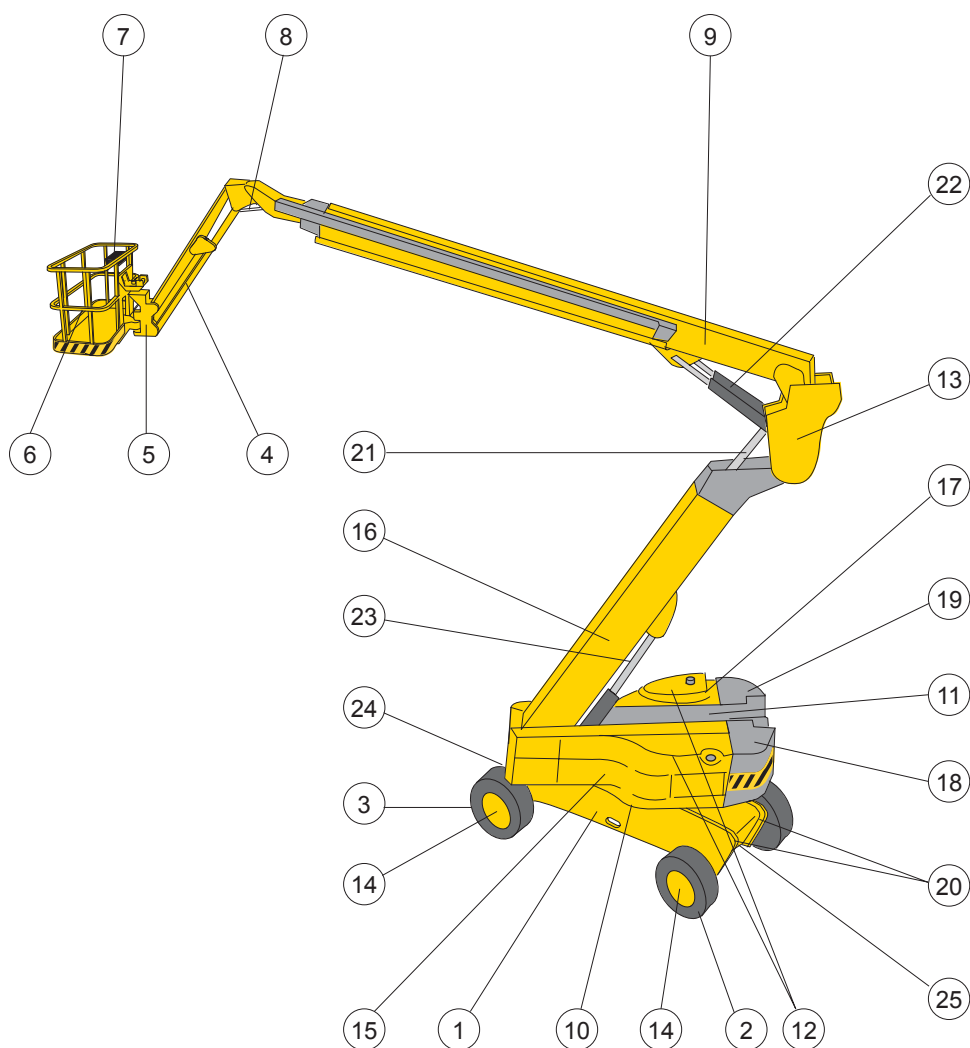
1.11 - BEAUFORT SCALE

The Beaufort Scale of wind force is accepted internationally and is used when communicating weather conditions. It consists of number 0 - 17, each representing a certain strength or velocity of wind at 10m (33 ft) above ground level in the open.

Description of Wind		Specifications for use on land	MPH	m/s
0	Calm	Calm; smoke rises vertically	0-1	0-0.2
1	Light Air	Direction of wind shown by smoke	1-5	0.3-1.5
2	Light Breeze	Wind felt on face; leaves rustle; ordinary vanes moved by wind	6-11	1.6-3.3
3	Gentle Breeze	Leaves and small twigs in constant motion; wind extends light flag	12-19	3.4-5.4
4	Moderate Breeze	Raises dust and loose paper; small Branches are moved	20-28	5.5-7.9
5	Fresh Breeze	Small trees in leaf begin to sway; crested wavelets form on inland waterways	29-38	8.0-10.7
6	Strong Breeze	Large branches in motion; whistling heard in telephone wires; umbrellas used with difficulty	39-49	10.8-13.8
7	Near Gale	Whole trees in motion; inconvenience felt when walking against wind	50-61	13.9-17.1
8	Gale	Breaks twigs off trees; generally impedes progress	62-74	17.2-20.7
9	Strong Gale	Slight structural damage occurs (chimney pots and slates removed)	75-88	20.8-24.4

2 - LEGEND

1 - Rolling frame	14 - Hydraulic motors for transfers + reduction gear
2 - Driving wheels and forward steering	15 - Right Compartment (hydraulic reservoirs and diesel, control panel)
3 - Driving wheels and rear steering	16 - Arm 3 elements
4 - Suspension platform	17 - Left Compartment (driving + pump + starter battery)
5 - Rotary Jack	18 - Right Counterweight
6 - Platform	19 - Left Counterweight
7 - Control panel platform	20 - Anchor points
8 - Compensation jack	21 - Compensation jack linkage component
9 - 3 fly jib elements	22 - Fly jib lifting jack
10 - Steering crown	23 - Arm lifting jack
11 - Turret	24 - Fixed extensible Axle
12 - Caps	25 - Turning extensible Axle
13 - Part of connection arm/beam	

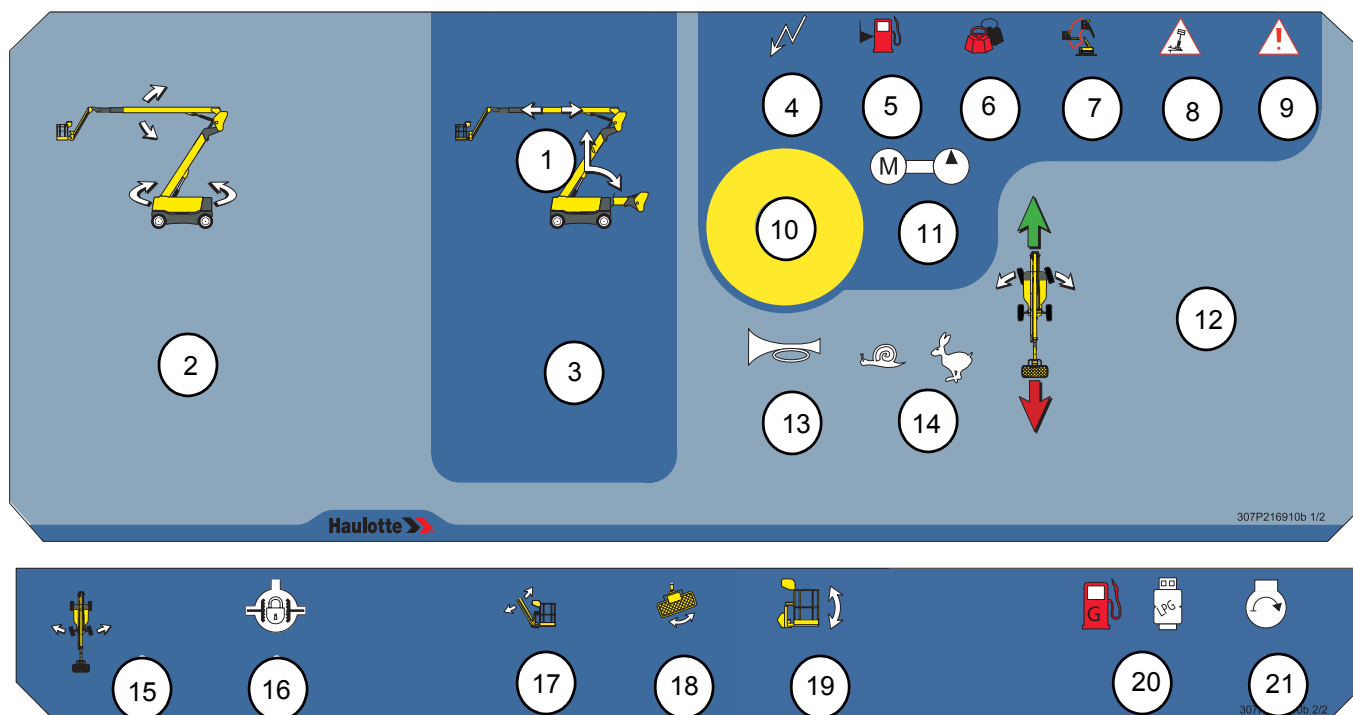


3 - CONTROLS

3.1 - PLATFORM CONTROL PANEL

NOTE : When you wish to move, it is important to raise the suspension platform a few meters in order to prevent the platform touching the ground during displacement

Photo 1 Platform control panel

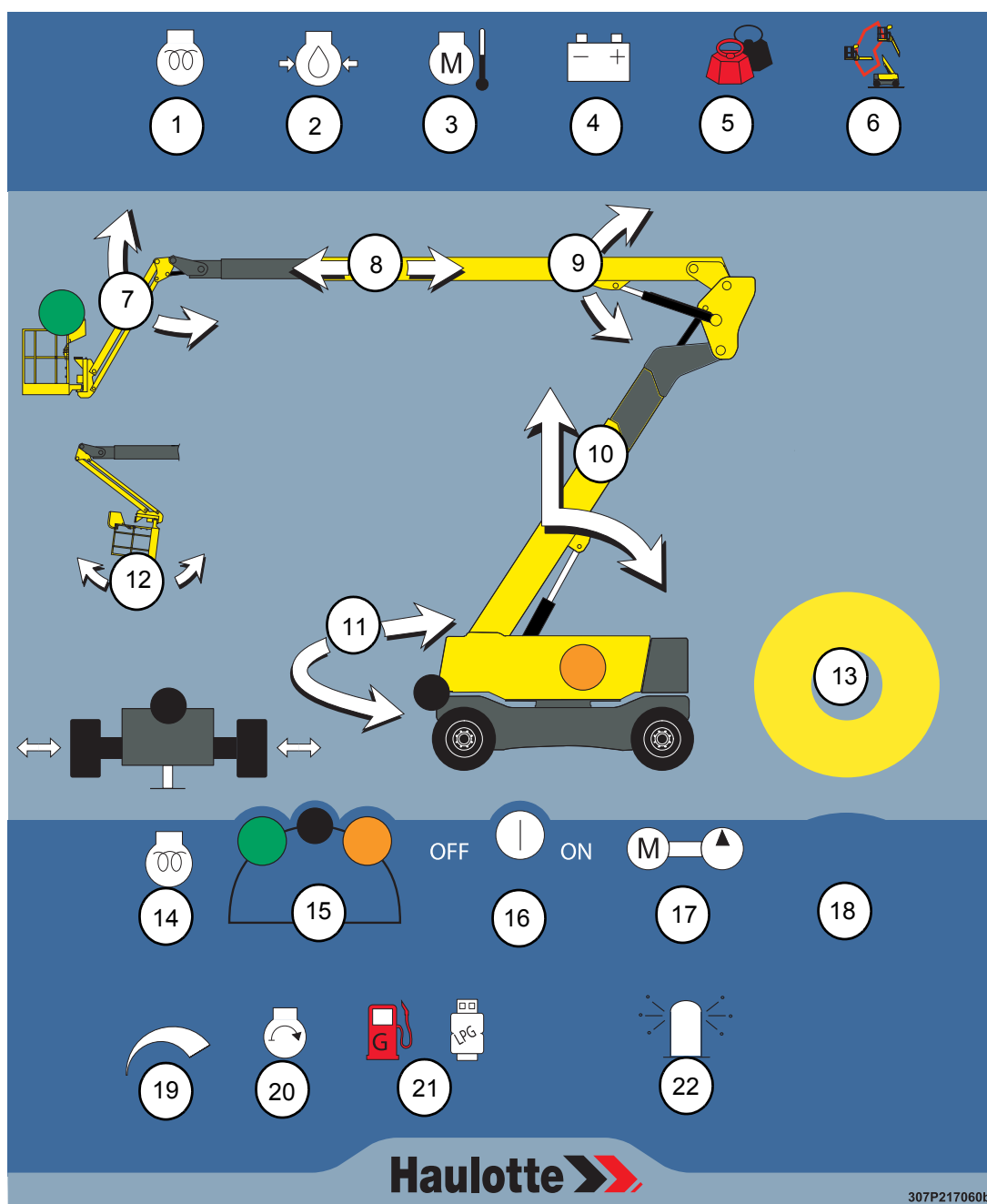


1 - Arm or fly jib position selector	12 - Movement control, forward axle direction
2 - Arm lifting, fly jib raising and turret turning control	13 - Horn
3 - Arm and fly jib telescopic control	14 - Low and high speed movement selector
4 - Power indicator	15 - Rear axle direction control
5 - Fuel level indicator	16 - Differential jacking control
6 - Overload indicator	17 - Suspension platform control
7 - Range limit Indicator	18 - Platform rotation control
8 - Warp/slope Indicator	19 - Correction and compensation control
9 - Error indicator	20 - Fuel Selector /LPG
10 - Emergency stop key	21 - Ignition
11 - Emergency safety control	

NOTE : When there is a problem on the machine, the operator in the platform is warned by the defect indicator (rep. 9, Photo. 1, page 17) which emits flashes. The number of flashes identifies the problems (Chapter 11, page 57)

3.2 - GROUND CONTROL PANEL

Photo 2 Ground control panel



1- Electrical pre-heating indicator	12- Platform compensation /transport position
2 - Oil pressure indicator	13 - Emergency stop button
3 - Engine temperature indicator	14 - Electrical pre-heating
4 - Battery load meter	15 - Turret/axle/platform control panel selector
5 - Overload Indicator	16 - Machine power
6 - Range limit indicator	17 - Emergency power unit control
7 - Suspension platform control	18 - Hour meter
8 - Telescopic fly jib control	19 - Engine acceleration control
9 - Raising beam control	20 - Ignition control
10 - Arm lifting control	21 - Fuel Selector- LPG
11 - Turret turning control	22 - Gyro-light control

3.3 - OPERATING SAFETY SYSTEMS

3.3.1 - General information

The electric power used for the controls and the ignition of the thermal engine, is provided by a 12 V battery.

In order to prevent the use of the machine over and above its capabilities, the safety measures are provided in order to protect personnel and the machine. They immobilise the machine or disable its movements.



DANGER !

Do not to carry out operations before having read and understood the instructions in Chapter 3, page 17, Chapter 5, page 25 and Chapter 7, page 37.

In this case, insufficient knowledge of the characteristics and operation of the machine can make one believe there is a breakdown, when it is only a correct operation of the safety measures. It is thus essential to read and understand all of the instructions in the following chapters.

When you need to carry out a breakdown or rescue operation, the safety measures are disabled.

3.3.2 - Automatic engine stop

The engine is automatically cut off when:

- the alternator does not function any more,
- the engine temperature is too high,
- the oil pressure is too low,
- a malfunction of the machine is detected.



DANGER !

In the event of a malfunction of the safety measures, only specialised personnel may carry out the necessary adjustments.

3.3.3 - Control of the platform load

If the platform load exceeds the maximum authorised load, no movement is not possible from the platform control unit. The overload indicator is an alarm which alerts the operator.



To return to normal configuration, it is necessary either:

- - lighten the platform to return to a permitted working load
- - use the turret control unit, knowing that the movements will be slowed down

3.3.4 - Slope Control

If the machine is located on a slope greater than the acceptable cant, the tilt indicator on the platform lectern/panel and the alarm alert the operator and any movement is cut. Nevertheless, the controls of the upper lectern/control panel are not all cut.

Only movements making it possible to fold the machine are allowed in order to recover from the transfer:

- retrieve the telescopic fly jib
- raise/lower the arm/fly jib to recover the horizontal position,
- lower the arm,
- lower the suspension platform until just below the horizontal.

Move the machine to a flat and horizontal surface.



NOTE :

When the machine is deployed, the slippage control box emits an audible signal as long as the slope is higher than the acceptable threshold, indicating to the operator that it will be impossible to deploy the platform any further



3.3.5 - Lateral movement speed

The two lateral movement speeds are useable when the platform is completely folded up.



DANGER !

When the machine is at the limit of its range, lateral movement is prohibited (the range limit indicator is lit). It is necessary to bring in the telescope to recover the lateral movement function.

When the fly jib is raised, or the arm deployed, or the telescope extended, or the suspension platform above the horizontal, only the micro speed is possible for lateral movement.

3.3.6 - Hour meter

An hour meter indicates the operating life of the thermal engine.

3.3.7 - Equipment Operating Rules

- The lowering of the fly jib below the horizontal is authorised only when the arm is raised at more than 60°.
- The arm cannot be lowered below 60° when the beam is below the horizontal.

Whilst raising the arm, the system automatically manages the necessary combination the movements for lifting and telescoping the arm. The machine itself carries out a complementary movement to the controlled movement, in order to keep the machine within the limits of the stability zone. The arm and the fly jib are equipped with length and angle sensors to fulfil these functions.

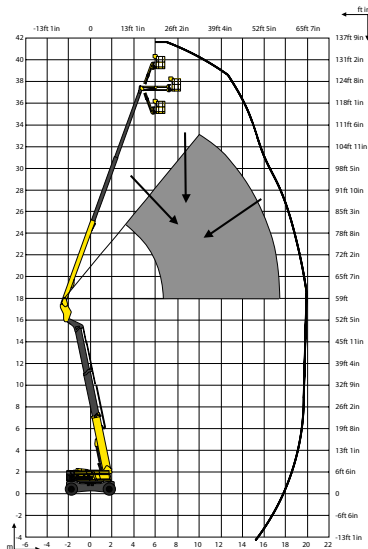
3.3.8 - Defects



DANGER !

When the machine is deployed, it must always remain under power so that the safety systems are active. The machine must be stored in retracted position. The only movement that is permitted is the lifting of the fly-jib, with the telescope retracted.

The machine is equipped with internal defect detection systems. The number of flashes (1 to 9) of the defect indicator indicates to the user the nature of the anomaly: refer to the table "Operating incidents" in Chapter 11, page 57 for the description of each type of defect. According to the nature of the anomaly, the machine may switch to BASIC MODE : certain movements may be limited or prohibited by the system to keep the user safe.



Procédure :

- note the number of flashes emitted by the defect indicator, if any other indicators are lit, and the state of the machine at the time that the defect occurs
- use the controls to retract the telescope and fly jib lift to bring the platform back inside the grey zone (see diagramme).
- fold the machine.
- forbid its use until the defect is repaired
- refer to Chapter 11, page 57 to remedy the defect.

NOTE :

If the user presses on the emergency stop during a movement of the telescopic arm or fly jib, this may be in BASIC MODE upon restarting the machine. In this case, fold the machine completely, switch it off, and restart to re-initialise the machine.

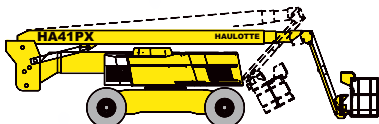
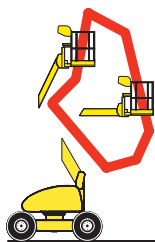
NOTE :

If lowering is carried out with the sealed electric safety pump, refer to Chapter 5.9, page 32.

3.3.9 - Range limits

The range limit indicator (orange) on the platform lectern is there for your use as a visual indicator.

- This indicator flickers to indicate that the machine is executing a movement complementary to a required movement in order to keep the platform within the limits of the stability zone. For example: the machine may retract the telescope when you ask for the fly jib to be lowered. For extra safety, any accumulation of other movements is prohibited during these phases. Lateral movement is prohibited within this zone.
- This indicator remains lit when the operator asks for a movement which would make the platform extend beyond its working area. .



Transport position Idle position

3.3.10 -Transport positioning control switch

This switch (control no. 12, Photo. 2, page 18) located on the turret lectern/panel when activated, allows the platform to be folded back under the fly jib. It is active only when the arm is lowered, the fly jib retracted and raised less than 5°. The platform must be empty of personnel and material when this command is carried out.

3.3.11 -HEAD calculator

Each machine is equipped with a specific calculator calibrated for the functions of this machine. Replacing or exchanging this calculator without the prior agreement of a HAULOTTE technician can generate serious malfunctions of the machine.

A tamper-proof seal is affixed on the calculator. If we notice that the seal is torn off or that it is defective or that it does not correspond to this machine when the machine is returned to After Sales Service, or when a technician or Haulotte agent service it, we will not be able to apply the manufacturer's guarantee for the calculator nor for the machine.



DANGER !

It is forbidden to exchange the calculator of your machine with that of another machine.

**DANGER !**

The flickering of each indicator may stop if this must resume its initial function and indicate a malfunction.

3.3.11.1 -HEAD calculator battery

The wear on the HEAD calculator battery is indicated by simultaneous flickering of the 3 indicators on the lower control panel, as soon as the machine is powered up.

These indicators are:

- Engine oil pressure
- Engine temperature
- Warping indicator

As soon as the battery is flat, please contact our After Sales Service immediately.

**DANGER !**

Do not use the machine as long as the calibrations have not been carried out.

3.3.12 -Length and angle sensors

Each machine is equipped with sensors (angle, length, pressure) for which the calculator was specifically gauged. Any work on these components requires calibration carried out by a HAULOTTE technician. All new calibration must be mentioned in the "inspection and repair register" of the machine.

4 - PRE-OPERATION INSPECTION

DO NOT OPERATE UNLESS:

- You learn and practice the principles of safe machine operation contained in this operator's manual.
 - **Avoid hazardous situations.**
 - **Always perform a pre-operation inspection.**
- Know and understand the above principles before going on to the next section.
 - **Inspect the work place.**
 - **Only use the machine as it was intended.**

4.1 - FUNDAMENTALS

It is the responsibility of the operator to perform a Pre-operation inspection.

The pre-operation inspection is a visual inspection performed by the operator prior to each work shift.

The inspection is designed to discover if anything is apparently wrong with a machine before the operator tests it.

Refer to the list on § 4.2, page 23 and check each of the items and locations for modifications, damage or loose or missing parts.

A damage or modified machine must never be used. If damage or any variation from factory delivered condition is discovered, the machine must be tagged and removed from service.

Repairs the machine may only be made by a qualified service technician, according to the manufacturer's specifications. After repairs are completed, the operator must perform a pre-operation inspection again before going on to the function tests.

Scheduled maintenance inspections shall be performed by qualified service technicians, according to the manufacturer's specifications and the requirements listed in the responsibilities manuals.

4.2 - PRE-OPERATION INSPECTION

- Be sure that the operator's, the safety and the responsibilities manuals are legible and in the storage container located on the platform.
- Be sure that all decals are legible and in place (see Chapter 8, page 41).
- Check the engine oil, hydraulic oil, coolant and fuel levels. Check for leaks.
- Check the following components or areas for damage and improperly installed or missing parts:
 - **Electrical components, wiring and electrical cables.**
 - **Hydraulic power units, hoses, fittings, cylinders and manifolds.**
 - **Fuel and hydraulic tanks.**
 - **Drive and turntable motors and torque hubs.**
 - **Boom wear pads.**
 - **Tires and wheels.**
 - **Engine and related components.**
 - **Limit switches.**
 - **Alarms, horn and beacon.**
 - **Nuts, bolts and other fasteners.**
 - **Platform entry mid-reil/gate.**

- Check entire machine for:
 - **Cracks in welds or structural components.**
 - **Dents or damage to machine.**
- Be sure that all structural and other critical components are present and all associated fasteners and pins are in place and properly tightened.
- After you complete your inspection, be sure that all compartment covers are in place and secured.

5 - MACHINE OPERATION

DO NOT OPERATE UNLESS:

- You learn and practice the principles of safe machine operation contained in this operator's manual.
 - **Avoid hazardous situations.**
 - **Always perform a pre-operation inspection.**
 - **Always perform function tests prior to use.**
- Know and understand the above principles before going on to the next section.
 - **Inspect the work place.**
 - **Only use the machine as it was intended.**

5.1 - FUNDAMENTALS

The tests are designed to discover any malfunctions before the machine is put into service.

A malfunctioning machine must never be used. If malfunctions are discovered, the machine must be tagged and removed service. Repairs to the machine may only be made by a qualified service technician, according to the manufacturer's specifications.

After repairs are completed, the operator must perform a pre-operation inspection before putting the machine into service.

5.2 - SAFETY MEASURES

To prevent use of the machine over and above its limits, safety measures are provided in order to protect personnel and the machine.

WHEN THE MACHINE IS DEPLOYED, IT MUST ALWAYS REMAIN ON POWER SO THAT THE SAFETY SYSTEMS ARE ACTIVE.

THIS MEANS THAT THE MACHINE MUST BE PARKED IN RETRACTED POSITION. ONLY THE LIFTING OF THE FLY-JIB, WITHOUT TELESCOPING MOVEMENT, IS PERMITTED. THEREFORE, WE WOULD STRICTLY ADVISE YOU NOT TO STORE AND SECURE THE MACHINE WITH THE FLY-JIB OUT, IN ORDER TO AVOID ANY DANGER TO PEOPLE AND GOODS.

Therefore, it is absolutely vital that you should adhere to these safety rules.

To remind the operator that the machine must be switched on for the safety mechanisms to be operational, the alarm signal on the upper control panel (on the platform) remains continuously activated when the electrical power supply is interrupted, with the telescoping arm not retracted.

To acquit the alarm signal, the machine must be switched back on.

In the same way, the alarm signal on the turret control-panel remains continuously activated when the electrical power supply is interrupted, with the telescoping arm not retracted.

This reminds the operator that this storage position is not permitted.

To acquit the alarm signal, the arm must be retracted and descended completely before cutting off the power supply.


DANGER !

These immobilise the machine, modify or disable its movements.

In this case, insufficient knowledge of the characteristics and operation of the machine can make one believe there is a breakdown whereas it is a correct operation of the safety measures. It is thus essential to read and understand all of the instructions of the following chapters.

5.3 - DISPLACEMENT (CONTROLLED FROM THE PLATFORM PANEL)


DANGER !

Do not carry out operations before having read and understood the instructions in chapter 5.

To move the machine, it is necessary to activate the "dead man" safety by keeping your foot pressed on the pedal.

NOTE : *If the user presses the pedal for more than 8 seconds without making any movement, the system will become inoperative. It is then necessary to release the pedal and press it again.*

- The release of the "dead man" pedal causes any lateral movement to stop.
- Lateral movement is possible with the machine unfolded on a level area only (or a slope lower than 4°).


DANGER !

During lateral movement, movements such as raising the fly jib, raising the arm or turning the turret are not possible.

NOTE : *The high and low speed of lateral movement are only possible if the telescope is retracted and the fly jib lowered to its horizontal position. Otherwise, its micro speed is automatically selected.*


DANGER !

It is forbidden to drive on the public highway.

- Firmly adhere to traffic regulations and instructions in working areas.
- On rough ground, make a preliminary reconnaissance of the area before beginning work at height
- always drive while maintaining a sufficient distance from unstable edges or slope
- make sure that nobody is in immediate vicinity of the machine before carrying out a movement or displacement.

5.4 - FILLING THE FUEL TANK

- Before any filling operation, make sure that the fuel is clearly what recommended and that it is properly stored in order not to be polluted
- Do not draw from a barrel if this has not been decanted and never use fuel at its bottom.

Because of fire hazard during the filling of the tank, take the following precautions:

- do not smoke
- turn off the engine if it is on
- stand upwind so as not to be sprinkled with fuel
- touch the outside of the opening of the tank with the spout of the pump before starting to fill the tank in order to avoid the risk of static electricity sparks
- close the stopper of the tank properly and clean off any fuel which may have run out from the tank.

5.5 - AT THE GROUND CONTROLS

Select a test area that is firm, level and free of obstruction.

5.5.1 - Starting the engine

- Make sure that the emergency stop keys are pulled out
- Switch the machine power key (control rep. 16, Photo. 2, page 18) to ON.
- Turn the control panel selector key (control rep. 15, Photo. 2, page 18) to the "turret" position (pictograms - orange round). In this position the "platform" panel and "axles" controls are cancelled.
- Engine oil pressure (control rep. 2, Photo. 2, page 18) and battery load (control rep. 4, Photo. 2, page 18) indicators are lit.
- Press the starter button (control rep. 20, Photo. 2, page 18), the engine starts, the indicators (control rep. 2 and 4, Photo. 2, page 18) switch off :
 - If the ambient temperature is lower than 0°C, proceed to preheat the engine by pressing the selector (control rep. 14, Photo. 2, page 18). The corresponding indicator (control rep. 1, Photo. 2, page 18) ignites and cuts out after ten seconds. You can then start the engine by pressing the starter button (control rep. 20, Photo. 2, page 18).

NOTE : *If the engine does not start, switch it off by pressing on the emergency stop key and start the operation again .*

- Allow the engine to warm up, and check the correct operation of the hour meter (control rep. 18, Photo. 2, page 18) and of the engine while it warms up.

5.5.2 - Extending the axles

In order to increase the stability of the machine, it is necessary to extend its width by extending the axles. This operation is only possible if the machine is completely folded, the suspension platform is below horizontal and the turret is aligned along the axis.

If the axles are retracted, the capabilities of the machine are reduced. Only the following movements are possible :

- rotation of the turret with the fly jib horizontal
- raising the fly jib if the turret is aligned along the axis.

All the other movements are disabled.

If the axles are extended, all movements are possible.

The levers for extending the axles are located at the rear of the machine (Photo 3, page 28).

The long levers, rep. 1 and 2, Photo. 3, page 28, correspond to the solid axle (rear of the machine) and the short levers, rep. 3 and 4, Photo. 3, page 28, correspond to the swivelling axle (front of machine).

Levers rep. 1 and 3, Photo. 3, page 28 cause the jacks to descend and thus the frame to rise.



DANGER !

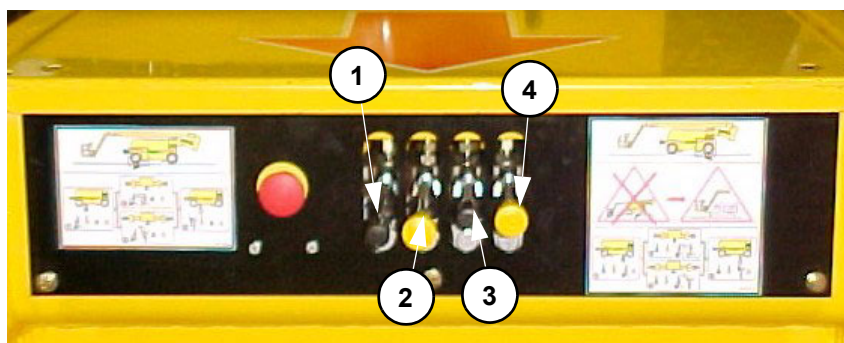
If the axles are not completely extended or retracted, the buzzer will sound continuously and movement will be disabled.

Levers rep. 2 and 4, Photo. 3, page 28 control the extension and retraction of the axles.

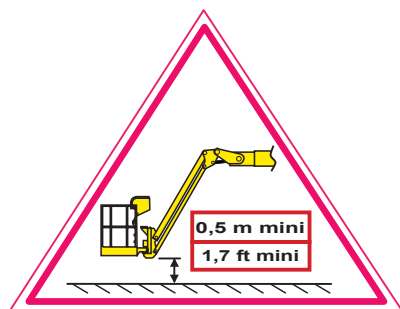

DANGER !

If the two chock jacks are extended, the axle extension controls are temporarily disabled.

Photo 3


DANGER !

Make sure that the platform cannot touch the ground when the front axles are raised (lever rep. 3, Photo. 3, page 28).


DANGER !

Make sure before proceeding with the retraction of the axles that the machine is completely folded, that the suspension platform is below horizontal and that the turret is aligned along the axis.

Axles extension:

- Start the machine, switch the control panel position selector key (control rep. 15, Photo. 2, page 18) to "axles" (pictograms - black circle). In this position, the controls of the "platform" and "turret" panels are disabled.
- lower lever rep. 1, Photo. 3, page 28, to make raise the rear of the chassis
- When the axle wheels do not touch the ground anymore, lower lever rep. 2, Photo. 3, page 28 to activate the extension of the axle, while holding lever rep. 1, Photo. 3, page 28 abaissée.
- Once the axle is completely extended (the alarm stops sounding), release lever rep. 2, Photo. 3, page 28 then raise lever rep. 1, Photo. 3, page 28 until the chassis hydraulic jack is completely retracted.
- proceed in the same way with levers rep. 3 and 4, Photo. 3, page 28.

Retracting the axles:

- With the machine folded, switch the control panel position selector key (control rep. 15, Photo. 2, page 18) to "axles" (pictograms - black circle). In this position, the "platform" and "turret" controls panels are disabled.
- lower lever rep. 3, Photo. 3, page 28, page 34, to raise the front chassis.
- When the wheels of the axle do not touch the ground anymore, raise lever rep. 4, Photo. 3, page 28 thus activating the retraction of the axle, while keeping lever rep. 3, Photo. 3, page 28 lowered.
- Once the axle is completely retracted (the alarm stops sounding), release lever rep. 4, Photo. 3, page 28 puis lever la manette rep. 3, Photo. 3, page 28 then to raise the lever No. 3, Photograph 7, page 34 until the chassis hydraulic jack is completely retracted.
- proceed in the same way with levers rep. 1 and 2, Photo. 3, page 28.

5.5.2.1 -Check jacking of the compensation arm

With the arm in its lowered position, check that the linkage component is correctly positioned: when the machine is positioned on horizontal ground, the higher stop of the linkage component must be horizontal.


DANGER !

Make sure before any movement that no obstacle will obstruct the manoeuvres.

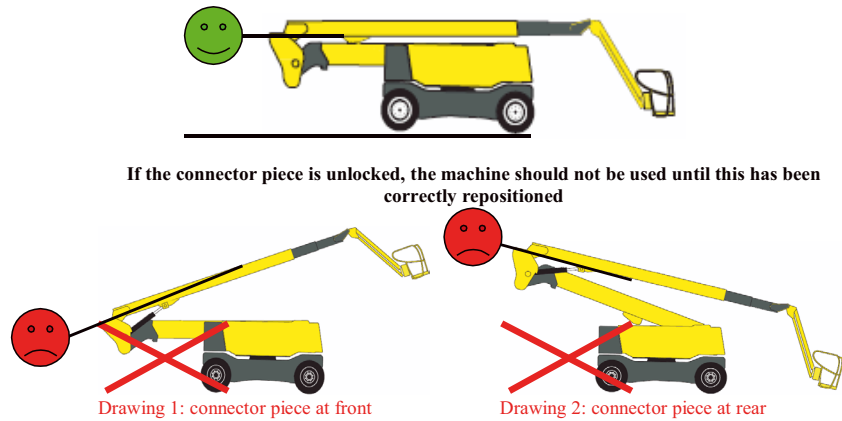


Photo 4



If the linkage component is unlocked in AR (sketch 2), relocking is automatic when the machine is entirely folded, at the end of the descent of the arm.

If the linkage component is unfurled in AV (sketch 1), apply the following procedure from the turret :

- 1° lower the arm to mechanical thrust.
- 2° lift the beam by approximately 10°.
- 3° activate the descending arm control while simultaneously pressing on the black button on the top of the PVG (see Photo 4) : this action effectively corrects the linkage component at the same time as the arm goes down.
- 4° Repeat operations 2 and 3 as many times as necessary until the compensating jack is clearly in its mechanical thrust.
- 5° carry out a raising-lowering cycle of the arm to check correct purging of the circuit.



DANGER !

If correct repositioning is not possible, forbid further use of the machine until repaired by Haulotte After Sales Service.

Photo 5



5.5.2.2 -Procedure for checking the fly jib control system :

- With the machine folded, check the extension of the telescope from the turret controls.
- Check that the extension of the telescope stops in accordance with Photo. 5, page 29.
- If telescope continues to extend, immediately shut off the telescopic extension control. The system must be repaired by Haulotte maintenance personnel before the machine may be used.

5.5.2.3 -Main movement controls

- test the movement by raising the fly jib in the direction it is mounted then lowering it (control rep. 9, Photo. 2, page 18).
- stop the descent of the fly jib when it is in the horizontal position.

- then test the turret orientation movement in both directions (control rep. 11, Photo. 2, page 18) and the fly jib's telescopic extension and retraction (control rep. 8, Photo. 2, page 18).
- test the movement of the suspension platform (control rep. 7, Photo. 2, page 18) then lower the arm completely again (so that the platform is close to the ground).

5.5.3 - Stopping the engine

Push in red emergency stop button.

5.6 - OPERATIONS STARTING FROM THE PLATFORM

NOTE : *When you wish to move, it is important to raise the suspension platform in order to prevent the platform from touching the ground during movement.*

(Photo 1, page 17)

- Get on the platform, respecting the instructions on maximum load, and, if necessary, redistribute the load across the whole platform.

 **DANGER !**
MAXIMUM LOAD: HA130JRT :
230 kg (i.e. 2 people).

NOTE : *If the load on the platform exceeds the authorised maximum load, no movement is possible from the platform control unit. The overload indicator on the platform control panel and the alarm will alert the operator. It is then necessary to lighten the load. There is no load restriction within the range.*

5.6.1 - Control Panel Test

 **DANGER !**
High and low speeds are only possible if the machine is folded. When even slightly deployed, only micro speed is possible.

- make sure before all manoeuvres that the green indicator (control rep. 4, Photo. 1, page 17) is lit, check that the machine is under power and that the selector is in the "platform" position.
- make sure that the emergency stop key (control rep. 10, Photo. 1, page 17) is unlocked.
- make sure that the error indicator (control rep. 9, Photo. 1, page 17) is switched off.
- check the correct operation of the warning signal (control rep. 13, Photo. 1, page 17).

Work can then start.

5.6.2 - Test of the movements

To carry out a movement, it is necessary to press on the "dead man" pedal to activate the desired control.

The selector (control rep. 1, Photo. 1, page 17) makes it possible to choose the control assignment (control rep. 3, Photo. 1, page 17) to raise the arm or operate the fly jib's telescopic functions.

The speed and the angle of inclination of the controls correspond to its direction, speed of movement and acceleration. If the floor is not horizontal, correct the position of the platform by activating the compensation selector of the platform (control rep. 19, Photo. 1, page 17).

Test the movements of the telescopic function, suspension platform and platform rotation with the associated selector.

Test the rotational movement of the turret by activating the control handle (control rep. 2, Photo. 1, page 17) towards the left then towards the right.

Test the directional movement of the front axle using the selector placed on the handle of the movement control (contr rep. 12, Photo. 1, page 17), and test that of the rear axle by using the selector located on the platform control panel (control rep. 15, Photo. 1, page 17).

The direction of movement is indicated by blue arrows.

Test the 2 movement speeds by activating the low or high speed selector.

5.6.3 - Stopping the engine

Push in red emergency stop button.

5.6.4 - Managing reach limitations

A -FRONT Limitation:



DANGER !

When the machine is at the limit of its reach, lateral movement is forbidden (the reach limit light will light). The telescopic arm must be lowered to regain the use of lateral movement.

With the fly jib at a descending angle and the telescopic arm extended:

- When the platform approaches the limit of its reach, the control system automatically returns the telescopic arm to keep the user within the stable operation range.

NOTE : The reach limit indicator (orange) flashes to indicate the change in trajectory to the user. Movement speeds are automatically reduced.



DANGER !

If an anomaly is detected in the reach limit management system, the ERROR indicator lights and the machine switches to basic mode (see Chapter 3.3.8, page 20).

Extending the telescopic arm :

- The movement of the telescopic arm is automatically stopped when it approaches its reach limit.

NOTE : The reach limit indicator (orange) lights to indicate to the user that he is requesting a forbidden movement.

B - REAR Limitation :

With the fly jib at an upward angle, regardless of the length of the telescopic fly jib:

- When the arm is raised to an angle of less than 60°, the lift angle of the fly jib is limited to 48°. The reach limit indicator lights if the lifting the fly jib is requested.
- As soon as the arm lift angle exceeds 60°, the fly jib can then be raised to 70°.

Raising the arm at a descending angle :

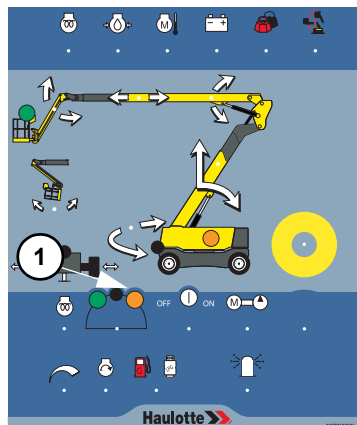
- If the fly jib is raised at an angle exceeding 48°, when the arm reaches and angle of 60°, the descent will stop: the reach limit indicator lights. The fly jib must be lowered to an angle of less than 48° before continuing lowering the arm.
- If the fly jib is raised at an angle of less than 48°, the arm lowering control acts directly on the arm hydraulic jack.

5.7 - AFTER EACH USE

- Select a safe parking location-firm level surface, clear of obstruction and traffic.
- Lower boom to stowed position.
- Turn key switch to the OFF position and remove key to secure from unauthorized use.
- Chock wheels.

5.8 - EMERGENCY DESCENT

Photo 6



There may be cases where the operator in the platform is no longer able to control its movement, even though the machine is functioning normally. An able-bodied operator on the ground can use the "turret" lectern with main diesel power source to retrieve the operator on the platform.

Procedure :

- Switch the driving position selector key (rep. 1, Photo 6) to the "turret" position (orange circle). In this position the controls in the "platform" lectern are disabled.
- Carry out the desired movements using the controls as you would normally.



DANGER !

Only a skilled operator may perform emergency or rescue operations.

5.9 - BREAKDOWN DESCENT



DANGER !

Use of the emergency set is only for the rescue of personnel if there is a breakdown in the main power supply. Any other usage may cause damage to it.

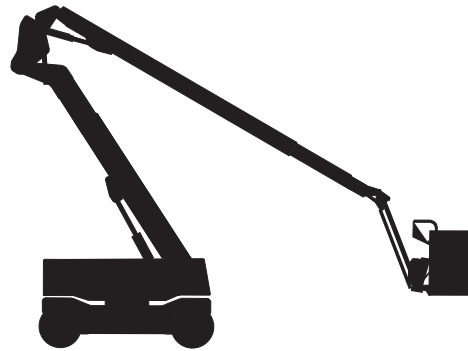
5.9.1 - Breakdown rescue with the emergency electropump set

There is a way to carry out movements when there is a malfunction of the main power source. This is the electro-pump set power by the starter battery. This can be controlled equally from the turret lectern or the platform lectern.

Operating time using the emergency set is limited, so you are advised to return to the ground by the most direct means possible (see drawing).

**DANGER !**

If an operator at height must abandon the platform for a solid and safe structure, the transfer should only be done with the following recommendations: - The operator must secure himself using 2 belts. - One belt must be fastened to the platform, the other to the structure. - The operator must only leave the platform through the access trapdoor. - The operator must not unfasten the belt fastened to the platform before the transfer is completed, or if there is still a risk of danger.



- Procedure :
- Using the selected control position, press and hold down the emergency control positioning interrupter (control rep 17, Photo. 2, page 18 and control rep 11, Photo. 1, page 17).
 - If required, move away from obstacles using platform and direction movements.
- Press and hold down the interrupters for the movements required in the following order:
 - Partially retract the telescopic arm and fly jib (so that no red area is visible on the side),
 - Lower the fly jib fully,
 - Lower the arm to return the platform to the ground.

6 - WORK PLACE OPERATION

DO NOT OPERATE UNLESS :

- You learn and practice the principles of safe machine operation contained in this operator's manual.
 - **Avoid hazardous situations.**
 - **Always perform a pre-operation inspection.**
 - **Always perform function tests prior to use.**
- Know and understand the above principles before going on to the next section.
 - **Inspect the work place.**
 - **Only use the machine as it was intended.**

6.1 - FUNDAMENTALS

The Work Place Inspection helps the operator determine if the work place is suitable for safe machine operation. It should be performed by the operator prior to moving the machine to the work place.

It is the operator's responsibility to read and remember the work place hazards, then watch for and avoid them while moving, setting up and operating the machine.

6.2 - WORK PLACE INSPECTION

Be aware of and avoid the following hazardous situations :

- Drop-offs or holes.
- Bumps, floor obstructions or debris.
- Overhead obstructions and high voltage conductors.
- Hazardous locations.
- Inadequate surface support to withstand all load forces imposed by the machine.
- Wind and bad weather conditions.
- The presence of unauthorized personnel.
- Other possible unsafe conditions.

7 - TRANSPORT INSTRUCTIONS

7.1 - TRANSPORT INSTRUCTION

Observe and obey :

- Common sense and planning must be applied to control the movement of the machine when lifting it with a crane or forklift.
- Transport vehicle must be parked on a level surface.
- Transport vehicle must be secured to prevent rolling while machine is being loaded.
- Be sure vehicle capacity, loading equipment and surfaces are sufficient to withstand machine weight (see Chapter 9.1, page 43).
- Always transport the machine with the boom in the stowed position.
- Be sure the turntable is secured with the turntable rotation lock before transporting. Be sure to unlock the turntable for operation.

7.2 - SECURING TO TRUCK OR TRAILER FOR TRANSIT

- Always chock machine wheels in preparation for transport.
- Use tie points on drive chassis for anchoring down to transport surface.
- Use chains or straps of ample load capacity.
- Turn key switch to the OFF position and remove key before transporting.
- Inspect entire machine for loose or unsecured items.
- When transporting the machine, it is compulsory to lock the turret by means of the locking rod situated under the turret.
- Perform unloading manoeuvres on terrain that is stable, sufficiently resistant, flat and uncongested.

7.2.1 - Unloading with ramps



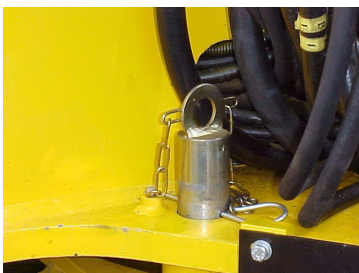
DANGER !

During transportation of the machine, the turret must be chocked using the rotation pin stop located under the turret Photo. 7, page 37.

Precautions: make sure that the ramps can support the load, that they are correctly fixed and that there is sufficient grip to avoid any risk of slippage during the manoeuvre.

Select low travel speed.

Photo 7



DANGER !

Never get under or too close to the machine during the manoeuvres.

NOTE :

As the slope of the ramp is almost always higher than the maximum slope of work (4°), it is necessary to have the fly jib and arms lowered to allow the movement. In this case, the sound-effects function but movement is possible.

If the slope is higher than the maximum slope during movement (See Chapter 9.1, page 43), use a winch in addition to traction.


DANGER !

This method requires the machine to be started, see Chapter 5.5.1, page 27 to avoid all risks of false movement.

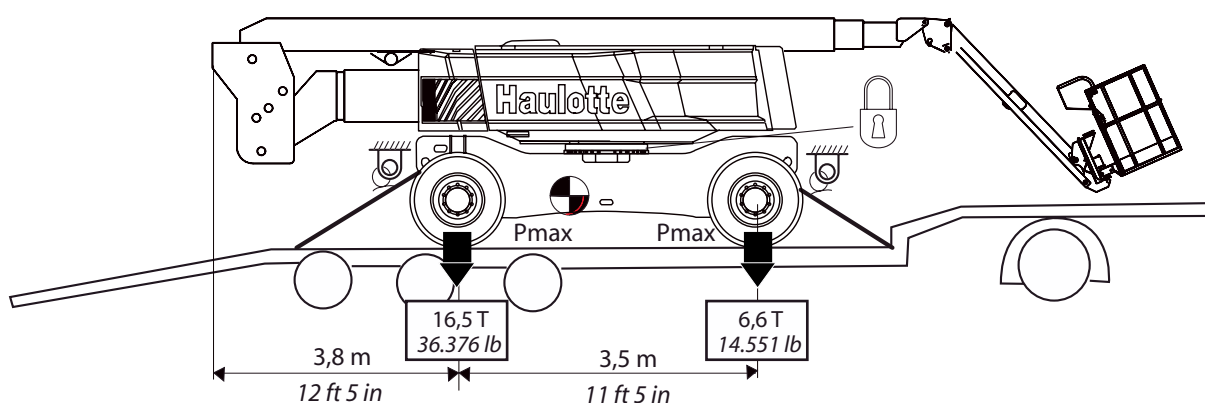
7.2.2 - Loading

The precautions are identical to those for unloading.

Stowing must be ensured in accordance with the sketch below :

- the machine must be in its folded position
- the anchoring points provided for this purpose must be used
- the turret must be blocked with the pin.

To climb the ramps of a truck, select low movement speed.



7.3 - UNCOUPLING



DANGER !

It is preferable to carry out this operation on a flat and horizontal area of ground. At the very least, you should chock the wheels to ensure that the machine is immobilised.

Instructions :

- Remove the transmission panel (rep. 1, Photo 8) by unscrewing the 2 holding screws (rep. 2, Photo 8).

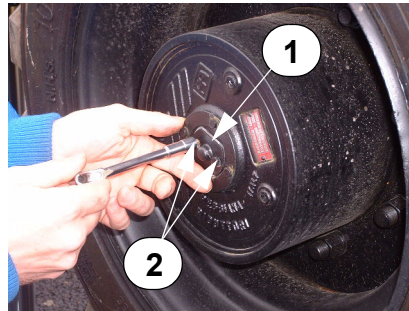


Photo 8

- The central axle will then be visible (rep. 3, Photo 9).



Photo 9



DANGER !

In this configuration the machine no longer has brakes. When towing the machine, always use a rigid towbar and do not exceed 5 km/h.

- Replace the transmission panel, in such a way that its bulged surface faces into the interior of the gearbox. The machine is then disengaged.



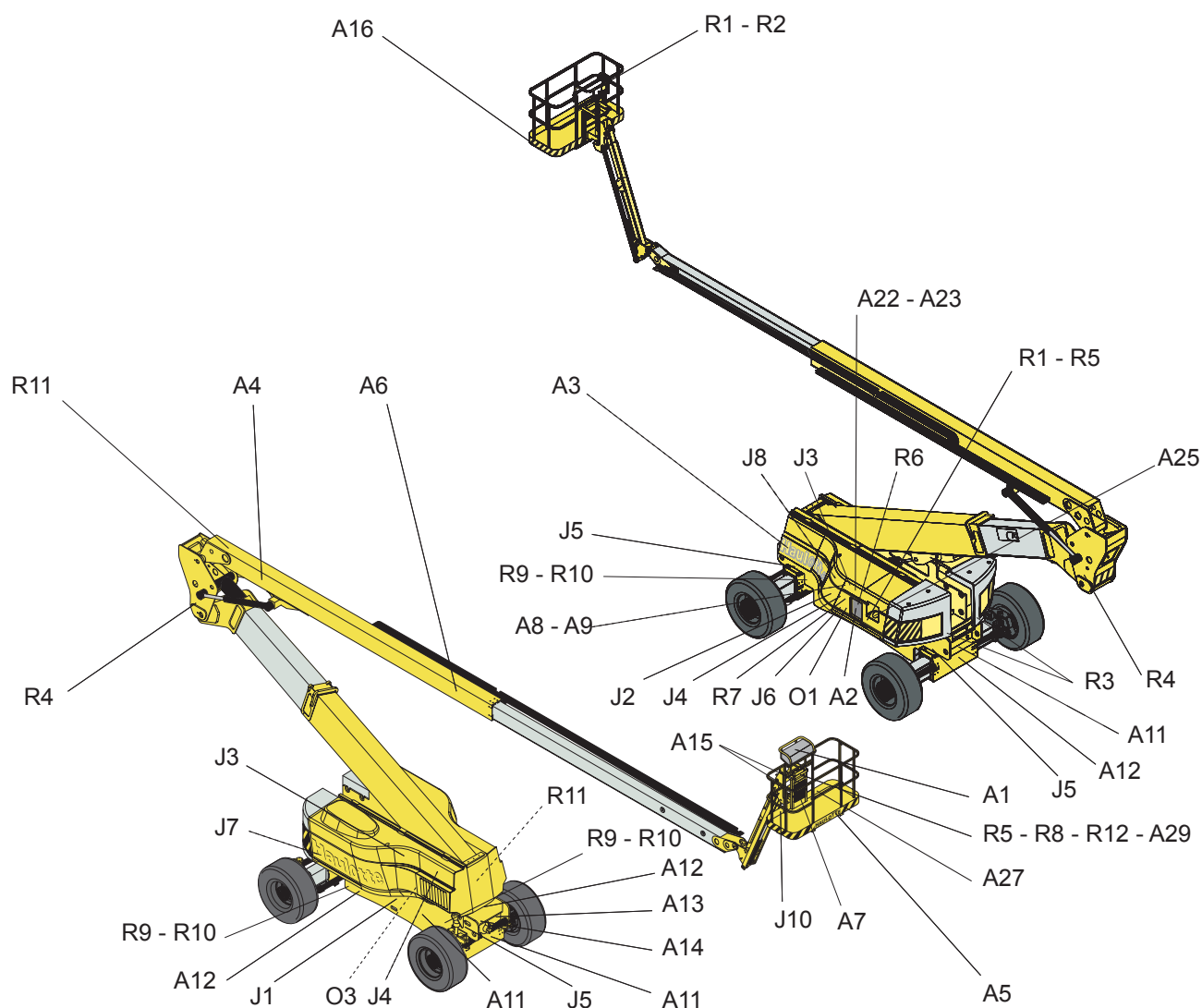
Photo 10

8 - DECALS

Index	Part No. Decal description	Qty
A1	307P216910 - Platform control panel	1
A2	307P217060 - Ground platform panel	1
A3	307P218170 - Name plate	1
A4	307P219510 - HA130JRT	1
A5	307P217080 - HAULOTTE	1
A6	307P217220 - HAULOTTE	1
A7	3078147290 - Read operating manual	1
A8	3078147140 - Hydraulic oil	1
A8	3078148920 - Biodegradable hydraulic oil	1
A9	3078147210 - High and low level hydraulic oil	1
A11	3078143930 - Green arrow	4
A12	3078143940 - Red arrow	4
A13	307P215380 - Rear axle in/out	1
A14	307P215370 - Front axle in/out	1
A15	3078147950 - Harness load rating position	2
A16	2421808660 - Safety tape - Black/Yellow striped	1
A22	3078147890 - Voltage label	1
A23	3078147960 - Summary label	1
A25	3078150020 - Gas oil machine	1
A27	3078150030 - Working load HA130JRT	1
A30	3078147930 - Lanyard anchorage point	1
R1	307P218840 - Danger HA130JRT load capacity	2
R2	3078147300 - Danger: direction of travel	1
R3	3078147240 - Risk of crushing (hands and fingers)	2
R4	3078147260 - Risk of crushing of body	2
R5	307P215330 - Risk of electrocution	2
R6	3078147320 - Multi-language, do not interchange	1
R7	307P215340 - Do not park in the area in which the machine is working	1
R8	3078153630 - Close the gate	1
R9	307P219500 - Wheel load	4
R10	307P219890 - Max. impact on stabiliser	4
R11	307P218880 - Safety components	2
R12	307P220320 - Active safety measures	1
J1	3078147190 - Greasing of the rotation ring	1
J2	3078147700 - Before slewing, remove the rod	1
J3	3078147270 - Do not climb on to the hood	1
J4	3078147220 - « Welding earth » label	2
J5	3078150780 - Uncoupling	1
J6	3078147090 - Slope	1
J7	307P215290 - Pivoting cradle	1
J8	307P215320 - Cylinder reset	1
J10	3078147580 - 110V socket position	1

O1	3078147050 - Operating instruction	1
O3	3078148030 - Risk of explosion	1

8.1 - LABEL POSITIONS



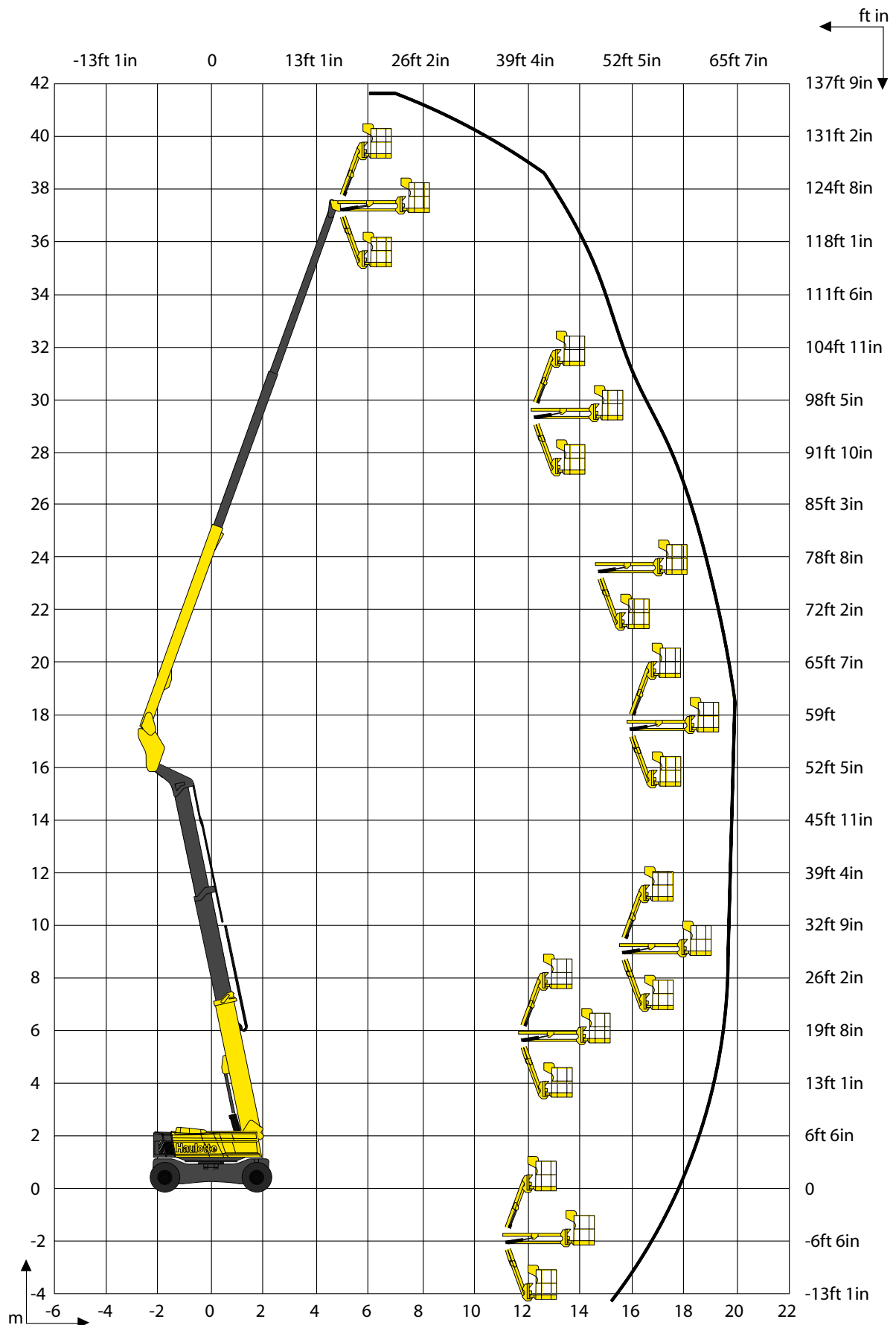
9 - SPECIFICATIONS

9.1 - TECHNICAL CHARACTERISTICS

DESIGNATION	HA130JR1	
Overall length	12,60 m	41 ft 4 in
Overall width	2,53 m	8 ft 3 in
Overall height	2,99 m	9 ft 9 in
Ground clearance	0,38 m	1 ft 2 in
Height in transport position	3,70 m	12 ft 1 in
Length in folded position	12,60 m	41 ft 4 in
Height in folded position	2,99 m	9 ft 9 in
Working Height	41,50 m	136 ft 1 in
Floor Height	39,50 m	129 ft 7 in
Maximum Offset	19,80 m	64 ft 11 in
Maximum Range	19,30 m	63 ft 3 in
Turret rotation angle	360°	
Fly jib clearance angle	+ 70° / -40°	
Suspension platform clearance angle	+ 65° / -65°	
Length of the platform	0,80 m	2 ft 7 in
Width of the platform	2,44 m	8 ft
Rotation angle of the platform	+ 87° / -87°	
External steering radius without chocks, axles retracted	5,10 m	16 ft 8 in
Interior steering radius without chocks, axles retracted	2,70 m	8 ft 10 in
Distance between centres of the wheels	3,50 m	11 ft 5 in
Overall width without extended axles	3,30 m	10 ft 9 in
Tilt CE + AS	4°	
Maximum forward speed	45 km/h	28 mph
Front axle loading	16530 kg	36442 lb
Rear axle loading	6570 kg	14484 lb
Total weight	23100 kg	50927 lb
Maximum load capacity	230 kg	507 lb
Engine	Diesel - Perkins	
Engine Power	64 kW	
Idling engine power	34 kW	
Consumption during idle	240 g/kwh	
Sound Level at 10 m	108 db (A)	
Vibrations to hands	< 2,5 m/s ²	
Vibrations to feet	< 0,5 m/s ²	
Reserve fuel tank capacity	140 l	37 gallons
Hydraulic reserve tank capacity	240 l	63 gallons
Starting battery	12V - 135 Ah	
Differential gearing	Hydraulic	
Maximum climbing slope	40%	
Tyres	Inflated foam tyres OTR - 445 / 65D22,5	
Tightening torque of the wheel nuts	57 mdaN	
Tightening torque of directional crowns	21,5 mdaN	
Maximum ground pressure		
-hard ground	12,5 daN/cm ²	181,29 PSI
-soft ground	6,1 daN/cm ²	88,4 PSI

Speed of transfer		
-Micro speed	0,5 km/h	0.31 mph
-Top speed	5 km/h	3.10 mph

9.2 - HA130JRT - RANGE OF MOTION



10 - MAINTENANCE

10.1 - GENERAL RECOMMENDATIONS

The maintenance operations given in this manual are intended for normal usage conditions.

In difficult conditions: extreme temperatures, high levels of humidity, polluted air, high altitude, etc... Certain operations must be carried out more frequently and particular precautions must be taken : consult the engine manufacturer's notice and your local HAULOTTE agent on this subject.

Only competent HAULOTTE trained personnel should work on the machine and these should follow safety requirements for the protection of Personnel and the Environment.



DANGER !

Refer to the instructions on the manufacturer's notice covering the engine section.



DANGER !

Do not use the machine as a welding weight. Do not carry out welding without disconnecting the (+) and (-) terminals of the batteries. Do not start other vehicles with the batteries connected.

Thoroughly check the proper operation of the safety mechanisms as shown in bold in the summary table in Chapter 10.3.1, page 50.

10.2 - MAINTENANCE SCHEDULE

The schedule on the next page indicates the intervals, the maintenance points (parts) and the ingredients to be used.

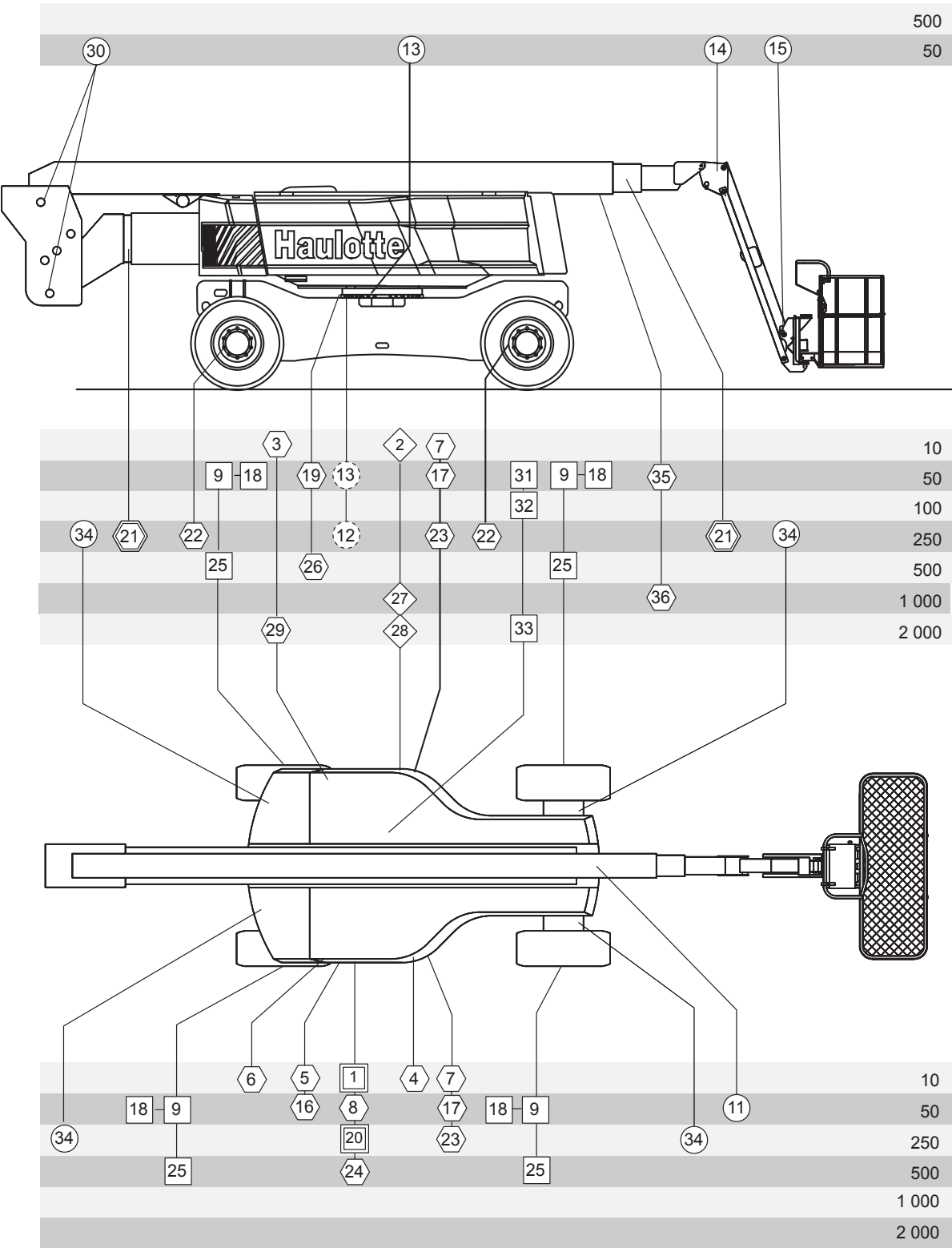
- The mark in the symbol indicates the maintenance point depending on the interval.
- The symbol represents the consumable to be used (or the operation to be carried out).

10.2.1 -Consumables

ITEM	SPECIFICATION	SYMBOL	Lubricants used by PINGUELY HAULOTTE	ELF	TOTAL
Motor oil	SAE 15W40		SHELL RIMULAX		
Gearbox oil	SAE 80W-90		SHELL SPIRAXA EP80W90	TRANSELF EP 80 W 90	TM 80 W/90
Hydraulic oil	AFNOR 48602 ISO VG 46 category HV		SHELL T46	HYDRELF DS 46	EQUIVIS ZS 46
Biodegradable hydraulic oil (optional)			SHELL Natural HF-E46		
High pressure grease with lithium	KP 2 K		ESSO Beacon EP2	Epaxa 2	
Unleaded grease	Grade 2 ou 3		BARDAL Super Teflub + PTFE	Multimove 2	MULTIS EP 2
Replacement or specific operation					

10.2.2 -Maintenance diagram

HOURS



10.3 - OPERATIONS

10.3.1 -Summary table

FREQUENCY	OPERATIONS	NUM-BERS
Daily or before each use	• Check the levels of the : - engine oil - coolant - hydraulic oil - fuel - electric batteries • Check the cleanliness of the : - fuel pre-filter - engine air filter - machine (specifically check the water-tightness of the connections and flexible components), and take the opportunity to check the state of the tyres, cables and all accessories and equipment - Check the status of the hydraulic oil filters; there is an indicator to show this, change the cartridge if the visible indicator appears - Check the degree of usage of the articulated axles - Check the main safety items : - When the machine is powered up, all of the indicator lights should light momentarily - Tilt: with the machine unfolded, tilt the support panel beyond an angle of 4°, at which point the alarm will sound, and any lateral movements or extension of the telescopic arms will be prohibited - Speed limiter: only slow speeds are possible if the arm or fly jib are raised, the telescopic arms extended or if the suspension platform is beyond the horizontal - Check and if required readjust the setting of the connection point (see the procedure in Chapter 5.5.2.1, page 28) - After a complete deployment of the arm and fly jib of the machine, the error indicator should remain unlit	1 2 3 4 5 6 7
Every 50 hrs	• Engine: see manufacturer's notice • Check the level of the reduction gear of the powered wheels (see Chapter 10.3.2.2, page 52) • Check the level of the steering reduction gear (see Chapter 10.3.2.2, page 52) • Grease the: - steering axle, central pivot and clevis pin: 10 points - steering crown wheel: the teeth (with a brush) - pendular articulation axle: 2 points - pendular articulation axle connecting piece: 4 points - fly jib base axle: 1 point • Clean the fuel pre-filter:	8 9 31 11 13 14 15 30 16
50 first hours	• Change the hydraulic filter cartridges (see 250 hr frequency) • Drain the reduction gears of the powered wheels (see 500 hr frequency) • 4 points on the 4x4 model • Check the tightness of the steering crown wheel screws (torque 21.5 mdaN) • Check the tightness of the fly jib telescopic action chains	17 18 19 35
100 first hours	• Drain the steering gear (see 2000 hr frequency)	32
Every 250 h	• Engine: see manufacturer's notice • Grease the chafing portions of the telescopic arms • Grease the steering crown wheel: 2 rolling points • Check the state of the telescopic action friction pads • Check the tightness of the wheel bolts (torque 57 mdaN) • Changer the hydraulic filter cartridge • Grease the chafing portions of the telescopic axles (with a spatula)	20 21 12 22 23 34

Every 500 hours or every 6 months	• Engine: see manufacturer's notice	24
	• Drain the wheel reduction gear. Refill: 4 x 1,4l capacity.	25
	• Check the play between crown wheel and reduction gear teeth (this should be between 0.3 and 0.6 mm)	26
OPTIONAL: Every 500 hours or every 6 months	• Check the tightness of the crown wheel screws (torque 21.5 mdaN)	26
	• Check the proper calibration of the weighing system in different suspension positions.	
	• Carry out a static test of the jacks (rod movement < 3mm / 30 min)	
Every 1000 hours or every year	• Drain : hydraulic oil reservoir (if optional biodegradable oil is used)	27
Every 1000 hours or every year	• Engine: see manufacturer's notice	27
	• Drain : hydraulic oil reservoir	36
	• Check the tightness of the fly jib telescopic action chains.	
	• Using the Optimiser console, in the Failures menu, check that the record of errors is 100% OK (consult the After Sales Service)	
	• Check the play in the crown wheel roll path (< 1.6mm)	

REMINDER: All these intervals must be reduced if working in difficult conditions (refer to the After-Sales Department if necessary).

10.3.2 -Procedure

⚠ DANGER !
FOR FILLING AND LUBRICATION,
USE ONLY THE LUBRICANTS
RECOMMENDED IN THE TABLE OF
CHAPTER 10.2, PAGE 48

NOTE : Collect the drained oils so as not to pollute the environment.

10.3.2.1 -Hydraulic oil filters

Photo 11 Hydraulic oil filter equipment circuit

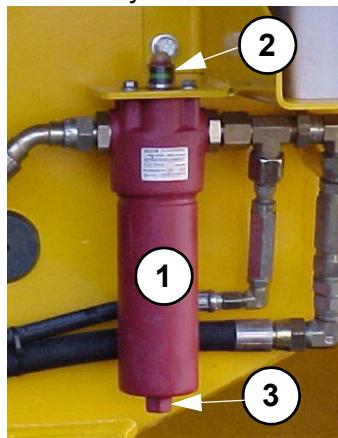


Photo 12 Hydraulic oil filter lateral movement circuit



- Change the cartridge (1) if the red light appears on the indicator (2).
- Unscrew the base (3), remove the cartridge and screw in a new cartridge.
- Rearm the chock indicator (2) by pressing this so that it turns back to green.

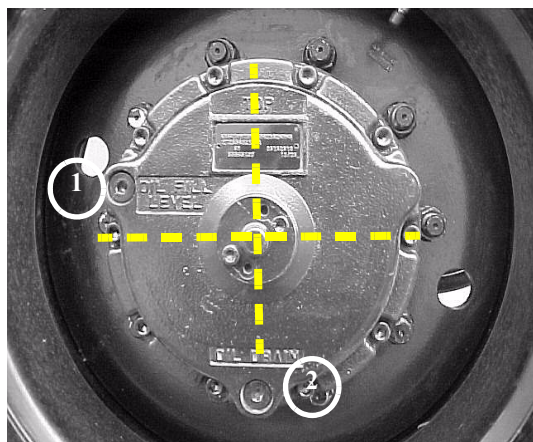
NOTE : The jacking check must be done when warm - in cold conditions the indicator may light due to the viscosity of the oil.


DANGER !

Before dismantling, ensure that the oil circuit is not pressurised and that the oil is not too hot.

10.3.2.2 -Powered wheel reduction gear

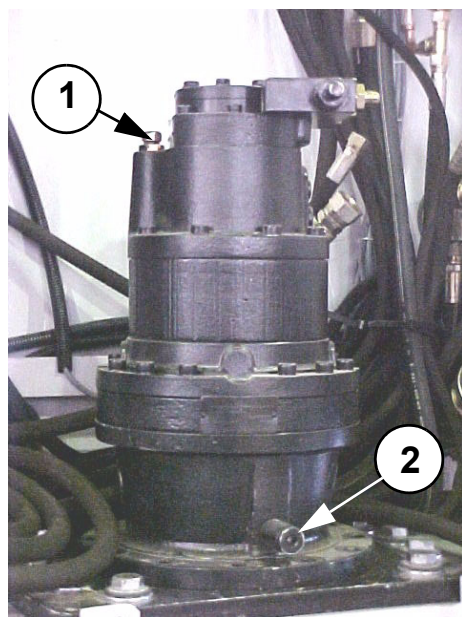
Photo 13 Wheel reduction gear



- Checking the level :
 - Rotate the wheel so that you place 1 stopper (1) on a horizontal line and 1 stopper (2) on a vertical line.
 - Unscrew the stopper (1) and check the level, which should be at the height of the orifice, and if necessary refill the level after unscrewing stopper (2).
 - Retighten the stopper.
- Drainage :
 - Rotate the wheel until stopper (2) faces downward. Unscrew the 2 stoppers and allow the oil to drain.
 - Replace the wheel in the position indicated above to check the level and refill.
 - Retighten the stoppers

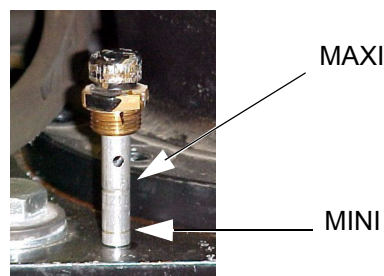
10.3.2.3 -Steering reduction gear

Photo 14 Steering reduction gear



Checking and drainage require that the machine is positioned on smooth horizontal ground.

- Checking the level :
 - Unscrew the refill stopper (rep. 1, Photo 14).
 - Remove this and check that the oil level is between the minimum and maximum levels indicated.



- Refill the level if required.
- Retighten the refill stopper.
- Drainage:
 - Unscrew the refill stopper (rep. 1, Photo 14).
 - Unscrew the drainage stopper (rep. 2, Photo 14).
 - Allow the oil to drain.
 - Retighten the drainage stopper, and refill as shown above.
 - Retighten the refill stopper.

**DANGER !**

Check the correct jacking of the machine, that you have sufficient capacity and the good condition of the lifting equipment.

**DANGER !**

The service operation of a machine with a crown wheel which is badly maintained or in bad condition creates dangerous operating conditions which can cause serious or fatal injury and damage to components.

10.3.2.4 -Steering crown wheel

The periodic inspection of the condition of the steering crown wheel is essential to ensure safe use and the machine's lifespan.

Greasing :

- Grease the teeth of the crown wheel using a paintbrush, while visually checking the wear on the teeth.
- Grease the travel path using the 2 greasers accessible through the holes in the turret until the grease comes out of the crown wheel lip seal. Carry out complete rotations of the crown wheel before and after greasing. Any hard point or squeaking during the rotation, or metallic particles in the drained grease are signs of abnormal use of the travel path: contact Haulotte service.

The tasks below must be carried out by trained competent personnel : contact Haulotte Services.

Tightening screws :

- Tightening torque: check the values given in Table 10.3.1, "Summary table", page 50.

Checking play :

- Gear teeth play: Check that the play between teeth meets the values given in Table 10.3.1, "Summary table", page 50.
- Travel path play: Check that the play meets the values given in Table 10.3.1, "Summary table", page 50.

10.3.2.5 -Static checks of the jacks

The periodic inspection of the condition of the jacks is essential to ensure safe use and the machine's lifespan.

After carrying out any work on any part of the hydraulic circuit of the machine, a static test should always be carried out before returning the machine into service. The tasks below must be carried out by trained competent personnel: contact Haulotte Services.

**DANGER !**

The service operation of a machine with one or more jacks in bad condition creates dangerous operating conditions which can cause serious or fatal injury and damage to components.

NOTE : *Periodic testing of the jacks is a regulatory requirement in certain countries.*

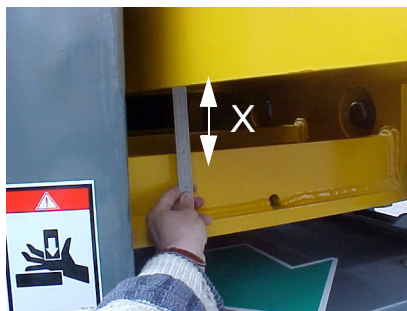
Before starting the static tests, check that the hydraulic circuit is correctly purged (run several cycles for each movement) and that the jacking of the connecting piece is correct (Chapter 5.5.2.1, page 28). All of the operations below must be carried out on flat ground, in an open area, with a 290 kg load in the platform (1, 25x of the nominal permitted load).

Fig. 1 - Configuration 1


Configuration 1 (Fig. 1, page 54) :

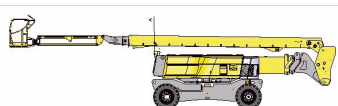
- With the arm gently raised, the fly jib raised to its cutoff point, with the fly jib telescopic arm extended.
- Measure side X1 between the underside of the arm and the turret reinforcement (Photo 15).

Photo 15



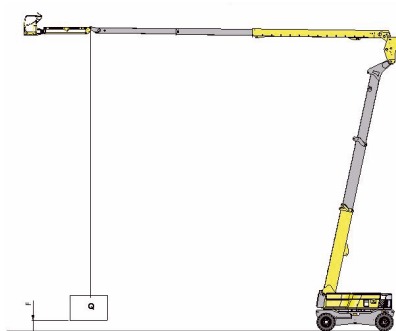
- Leave the machine to stand for 30 min.
- Measure side X2 between the underside of the arm and the turret reinforcement.
- If $X2 - X1 > 13 \text{ mm}$, the hydraulic jack should be replaced.
- Make a telescopic movement with the fly jib extended: the telescopic arms should not extend.

Fig. 2 - Configuration 2


Configuration 2 (Fig. 2, page 54) :

- With the arm in its lowered position, the fly jib raised a few degrees, with the telescopic arms retracted, and the suspension platform horizontal. Attach a lead line approx. 17.5m in length along the axis to the extremity of the telescopic arms to be able to measure any variation in height when the machine is deployed.
 - Length of the extended fly jib hydraulic jack rod : B1
 - Length of the extended platform compensation receptor jack rod : C1
 - Length of the extended suspension platform hydraulic jack rod : D1

Fig. 3 - Configuration 3



- Raise the arm then extend the telescopic fly jib until the cutoff point (without making any other movement): configuration 3 (Fig. 3, page 54) :
- Measure the height between the lead line and the ground : F1
 - Leave the machine to stand for 60 min
- Measure the height between the lead line and the ground : F2
 - Retract the fly jib telescopic arm
- Lower the arm to its lowered position (Fig. 2, page 48), then raise it again:
 - Length of the extended fly jib hydraulic jack rod : B2
 - Length of the extended platform compensation receptor jack rod : C2
 - Length of the extended suspension platform hydraulic jack rod : D2

Report the measured values in a copy of the table below :

	Meas- red va- lues 1	Meas- red va- lues 2	Displacement = 2-1		Max ac- ceptable value in mm	Corresponds to the positioning of the jacks
X			dX		13	Arm raised
B			dB		6	Fly jib raised
C			dC		6	Platform compensation receiver
D			dD		6	Suspension platform
F			dF		170	Télescopic arm and/or connector piece and /or fly jib raised compen- sation

If one of the values measured is higher than the maximum acceptable value, contact Haulotte Services for repair of the affected jack(s) before returning the machine to service.

10.3.3 -List of consumer items

- Hydraulic filter cartridge
- Air filter element
- Fuel pre-filter
- Fuel filter
- Engine oil filter
- Fuses

11 - OPERATING FAULTS

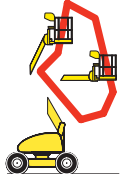
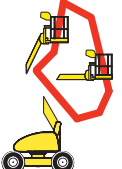
REMINDER: Obeying the machine's usage and maintenance instructions will help to avoid the majority of incidents. Nevertheless these may happen, and before any work is carried out, it is vital to check the table in chap. 6, page 51 to see if these are reported. In this case, you simply need to follow the instructions. If not, you should contact your HAULOTTE agent or the After Sales Service of the manufacturer.

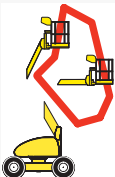
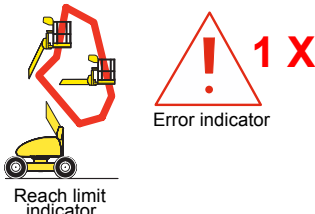
Before diagnosing the breakdown, you should check that:

- the fuel tank is not empty,
- the batteries are correctly charged,
- the emergency stop punch buttons on the turret and the platform are unlocked,
- the relays (platform control lectern - turret cabinet) are correctly inserted into their socket,
- the fuses are not defective or incorrectly inserted.

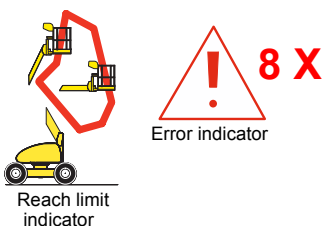
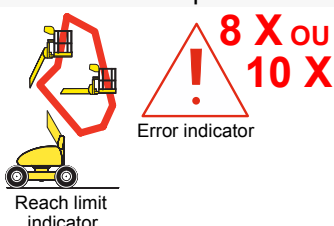
NOTE : *In the turret cabinet, LEDs show the status of each extension to check that this is properly activated.*

INCIDENTS		PROBABLE CAUSE	SOLUTIONS
The engine stops		• Leak or air bubble in the fuel circuit • Blocked fuel filter • Dead battery • Defective printed circuit fuse (in the electrical cabinet) • Punch buttons are depressed • Engine in "safe" mode : oil pressure, overheating, alternator charging • Burnt-out load indicator bulb • Defective engine safety relays (KP1) • Bad battery and terminal cable contacts	• Call in After Sales Service • Change the fuel filter • Recharge the battery • Replace defective fuses • Reset • See the manufacturer's notice or call in After Sales Service • Change the bulb • Replace the relay(s) • Unscrew the terminals and clean these
The engine stops	Fuel reserve light is on  Fuel reserve indicator	• fuel tank is empty	• Fill the tank
The engine stops	Error indicator flashes in 4 flash sequences  Error indicator	• Break in one of the fly jib telescopic arm chains	• Evacuate the user from the machine and call in After Sales Service

INCIDENTS		PROBABLE CAUSE	SOLUTIONS
The engine stops, no movement is possible, even using the emergency set	Error indicator flashes in 5 flash sequences  Error indicator	Emergency stop line fault	Evacuate the user from the machine and call in After Sales Service
The engine stops during movement of the fly jib, and does not restart	Continuous alarm, error indicator flashes in 8 flash sequences and reach limit indicator lit  Reach limit indicator  Error indicator	Extension 100 cm beyond the normal reach limit of the fly jib: serious failure in the jib fly raising or telescopic hydraulic controls	Evacuate the user from the machine and call in After Sales Service
The engine stops while moving the arm, and does not restart.	 Reach limit indicator  Error indicator	Serious failure in the arm raising or telescopic hydraulic controls	Evacuate the user from the machine and call in After Sales Service
Low pressure or pump power		- Weak engine power - Leak or air bubble in the fuel circuit - Blocked fuel filter - Hydraulic oil leak on a connector, flexible or other component - Faulty accelerator bobine - Faulty accelerator relays and/or fuse	- Adjust engine speed (see After Sales Service) - Call in After Sales Service - Change the fuel filter - Repair or replace (see After Sales Service) - Change the bobine (YA2) - Replace the accelerator relays and/or fuse (KM6, FU14)
No platform movement		- Turret selector key in the wrong position "Dead man" safety switch not activated - Control function error - Error in the electro-valve of the requested movement - Low hydraulic oil	- Switch to "platform" position - Press the "dead man" pedal and hold this down during the entire movement - Replace the control (see After Sales Service) - Replace the electro-valve or its bobine (see After Sales Service) - Refuel

INCIDENTS		PROBABLE CAUSE	SOLUTIONS
No platform movement	Reach limit indicator lights when a movement is requested  Reach limit indicator	The movement requested is not permitted in this context	Return to the base position (retract the telescopic arms, lower the fly jib or arms) so that the the movement will be permitted again
No platform movement	Alarm, overload indicator  Overload indicator	- Overloaded platform - Platform leaning on the ground - Suspension platform jack on high or low mechanical stop setting - Suspension platform is in "transport" position - Error in the weighing system	- Lighten the load - Raise the suspension platform from the turret position - Control the suspension platform from the turret position - Control the suspension platform from the turret position - Call in After Sales Service
No platform movement	Alarm, tilt indicator lit  Tilt indicator	Slope or tilt > 4° and the machine is deployed	Retract the machine and return to flat ground (see Ch 3.2.4)
No platform movement	Alarm, overload indicator, error indicator flashes in 9 flash sequences  Overload indicator Error indicator	Error in the platform overload circuit	- Restart - If the problem persists, check the weighing electrical circuit (see After Sales Service)
No platform movement	Alarm	- Axles are not entirely extended or not entirely retracted - Chocking jack not entirely retract	- Extend or retract the axles completely - Retract the chocking jack completely
No platform movement	Error indicator flashes (1 flash) and the reach limit indicator remains lit.  Reach limit indicator Error indicator	- Press the emergency stop button while carrying out a movement. - Failure in one or several safety sensors controlling the base limits of the machine (SL1 to SL8, SQ11, SQ3, SQ9, SQ10, SQ43 to 45)	- Note the configuration of the machine then fold it - From the turret control position, restart the machine - If the error reappears on start-up or during a complete extension-retraction cycle controlled from the turret position, call in After Sales Service
No platform movement	The error indicator flashes in 2 flash sequences  Error indicator	Failure of one of the platform position controls	Replace the affected control (see After Sales Service)

INCIDENTS		PROBABLE CAUSE	SOLUTIONS
No platform movement	The error indicator flashes in 6 flash sequences  Error indicator	Failure of one or more fuses (FU7, 8, 5, 6 or 2)	Replace the defective fuse. If the problem persists, call in After Sales Service
Impossibility of lowering the telescopic arms to its resting point		The arm compensator is unlocked	fold the machine, then re-lock the compensation (see Ch 4.4.1.3)
arm compensator unlocks frequently		Watertightness or operating problem with the arm compensator raising circuit	Fold and immobilise the machine until a complete check of the circuit has been carried out (see After Sales Service)
No movement of the telescopic arms or fly jib	Error indicator flashes in 7 flash sequences  Error indicator	Error in the arm and fly jib function coordination relays: KA50	Replace the KA50 relays
No movement of the telescopic arms or fly jib	Error indicator flashes in 7 flash sequences  Error indicator	Error in the arm and fly jib function coordination relays: KA51	Replace the KA51 relays
No movement of the fly jib telescopic arms and the fly jib lowering action is disabled	Continuous alarm and error indicator flashes in 8 flash sequences  Error indicator	70 cm extension beyond the normal fly jib reach limit range: serious malfunction of the fly jib lift or telescopic hydraulic controls	Evacuate the user from the machine and call in After Sales Service
Ditto, + the engine stops, and will not restart.	Continuous alarm and reach limit indicator lit  Reach limit indicator	Ditto, but more serious: 100 cm extension beyond the normal fly jib reach limit range	Evacuate the user from the machine and call in After Sales Service
While running an arm command	Continuous alarm and error indicator flashes in 8 flash sequences  Error indicator	Serious malfunction of the arm lift or telescopic hydraulic controls	Evacuate the user from the machine and call in After Sales Service

INCIDENTS		PROBABLE CAUSE	SOLUTIONS
While running an arm command, the engine stops and will not restart.	Ditto + reach limit indicator lit  Reach limit indicator Error indicator	Ditto, but more serious	Evacuate the user from the machine and call in After Sales Service
Without making any request to the arm, or upon starting up the machine	Discontinuous alarm, the reach limit indicator flashes, the error indicator flashes in 8 or 10 flash sequences.  Reach limit indicator Error indicator	Arm maintenance error (problem with purging or watertightness)	Fold the machine immediately and call in After Sales Service
La turret will not turn		The blocking tool is still inserted into the chassis	Remove the tool
The hydraulic pump is making noise		- Lack of oil in the reservoir - Aspiration pump vanes are closed or not completely open - Oil too viscous	- Return to level position - Open completely the aspiration vanes - Drain the circuit and replace with recommended oil
No lateral movement	Reach limit indicator is lit  Reach limit indicator	The platform is at its reach limit	Gently retract the fly jib telescopic arm
No lateral movement	Error indicator flashes in 3 flash sequences  Error indicator	Error in the lateral movement control circuit (YV30a, YV30b, YV10)	Check the components of the lateral movement control circuit (see After Sales Service)
Lateral movement disabled while at micro-speed		The platform is deployed	Retrieve the telescopic arms, lower the fly jib and arm, lower the suspension platform
While making a lateral movement, the machine stops		- Insufficient load on one wheel - No grip on a driving wheel	Press the differential jacking button
No axle retraction/extension		- Wrong control position selected - Emergency stop engaged	- Switch the selector key to the "axle" position - Check the three emergency stop buttons

INCIDENTS		PROBABLE CAUSE	SOLUTIONS
No axle retraction/extension	Alarm	The machine is not in the right configuration	Switch the selector key to the turret position, fold the machine completely, align the turret along the axis
Alarm is set off		- Chassis hydraulic jack is not completely retracted - Hydraulic oil temperature too high.	- Completely insert the blockage jack - Allow to cool
Only the error indicator flashes (1 flash)  Error indicator		Malfunction of one or several safety sensors monitoring axle extension and the alignment of the turret (SQ30 to 33, SQ36 to 39, SQ40, SQ42)	Note the configuration of the machine then fold it. Check the condition of the sensors. If the problem persists, call in After Sales Service

12 - SAFETY SYSTEM

12.1 - TURRET CABINET RELAY AND FUSE FUNCTIONS

(see Chapter 13, page 65)

FU1-10A	Engine power supply fuse
FU2-3A	"Chassis" position movement fuse
FU3-80A	Pre-heating fuse
FU4-30A	Weak power control fuse, calculators
FU5-3A	"Turret" position movement fuse
FU6-3A	"Platform" position movement fuse
FU7-20A	Electrical vane power supply
FU8-5A	Permanent power supply fuse
FU9-20A	Injection pump fuse
FU10-3A	LS valve fuse
FU11-25A	Optional cooler fuse
FU13-250A	Emergency pump fuse
FU14-15A	Accelerator fuse
FU15-25A	Optional rotating beacon/horn fuse
KA2	Thermic engine ignition
KA37	Accessories power supply
KA43	Emergency pump cutoff relays
KA50	Fly jib/arm raising relays
KA51	Arm/fly jib raising telescopic function relays
KM4	Emergency pump contact
KM5	Preheating
KM6	Accelerator
KM8	Horn
KMG	General power supply
KP1	Engine power supply

12.2 - SAFETY CONTACT FUNCTIONS

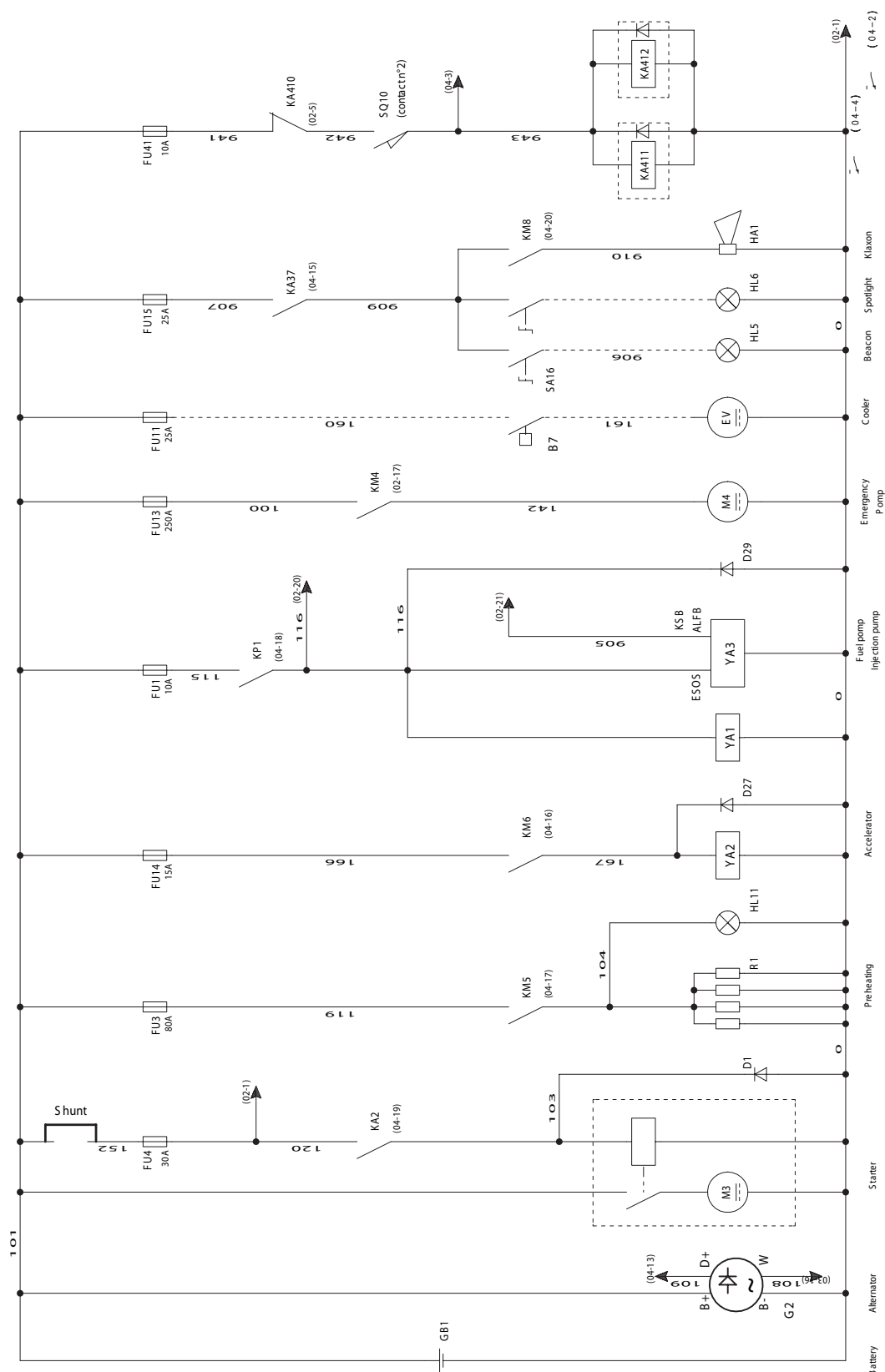
(see Chapter 13, page 65)

B2	Engine overheating contact
B3	Engine oil pressure contact
B4	Hydraulic oil overheating contact
B7	Optional hydraulic oil overheating cooler contact
B8	Hydraulic high speed lateral movement contact
SB0	Emergency stop punch button (chassis)
SB1	Emergency stop punch button (turret)
SB2	Emergency stop punch button (platform)
SQ1	Tilt
SQ2	Raised suspension platform position switch
SQ3	Folded position switch
SQ9	Telescopic fly jib retraction position switch
SQ10	Telescopic arm retraction position switch
SQ11	Fly jib turret position switch
SQ12	Chain break no. 1 position switch
SQ13	Chain break no. 2 position switch
SQ30/31	Extended front track position switch
SQ32/33	Extended front track position switch
SQ34	ILS receivers - front jacking retracted

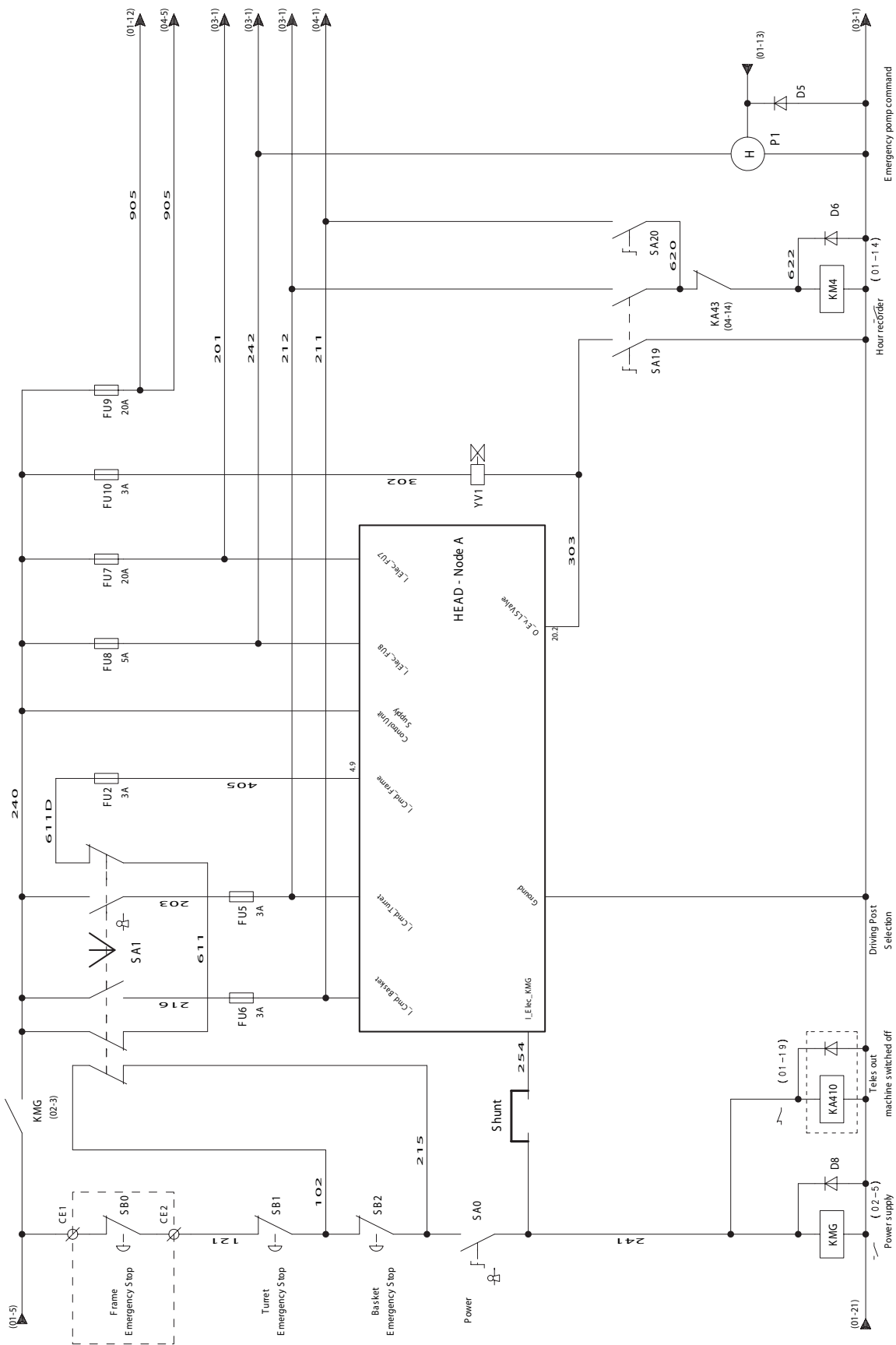
SQ35	ILS receivers - rear jacking retracted
SQ36/37	ILS switches - axle track extended
SQ38/39	ILS switches - axle track retracted
SQ40	Turret chassis axis alignment position switch
SQ41	Fuel reserve position switch
SQ42	Turret chassis axis alignment position switch
SQ43	ILS detector - telescopic fly jib arms
SQ44/45	ILS detector - telescopic arms
SL1/SL2	Fly jib angle gauge
SL3/SL4	Fly jib length gauge
SL5/SL6	Arm angle gauge
SL7/SL8	Arm length gauge
G1	Small chamber pressure gauge
G3	Wide chamber pressure gauge
A1	Weight relative angle gauge
A2	Weight absolute angle gauge

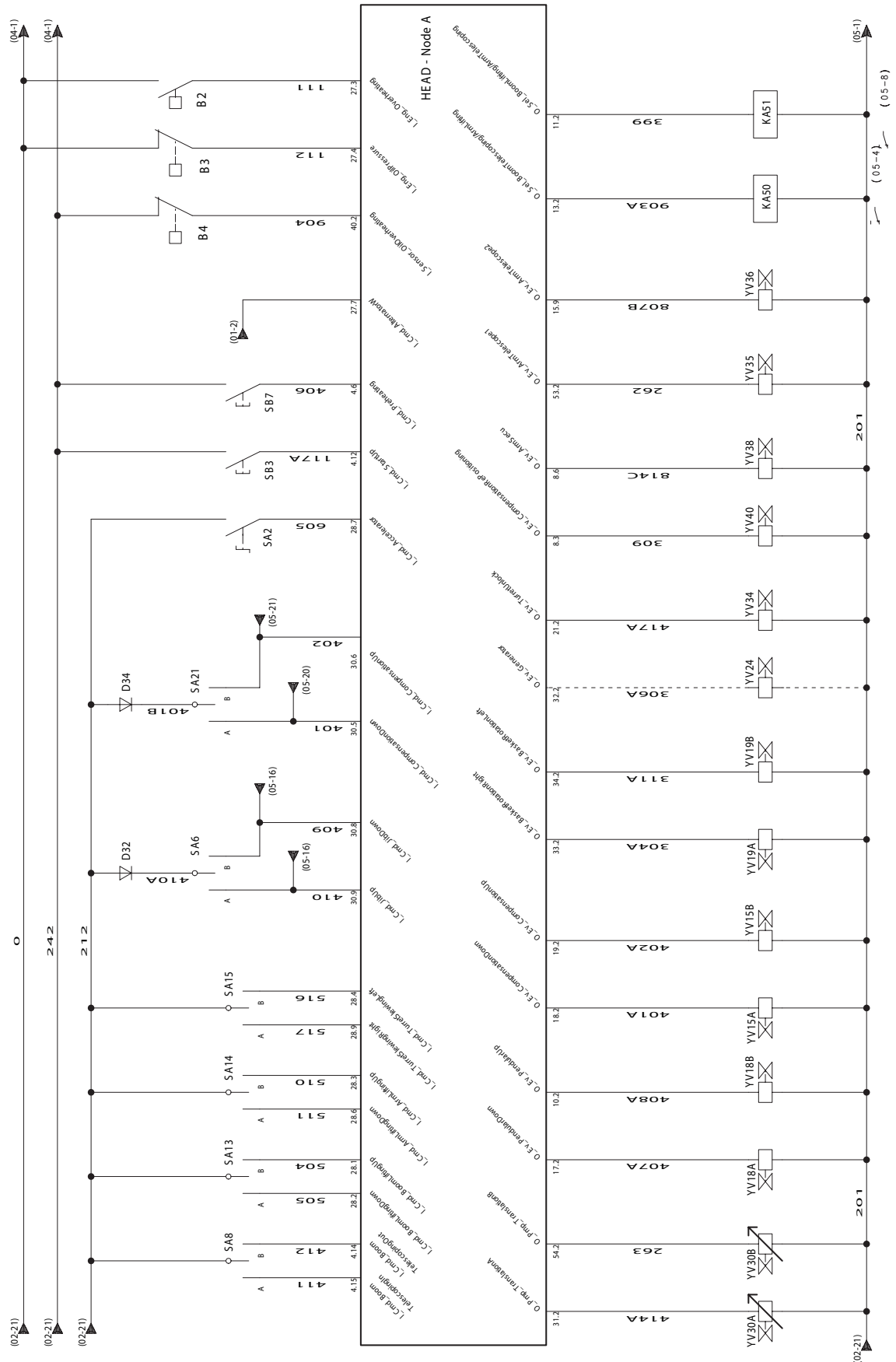
13 - ELECTRICAL DIAGRAM

13.1 - 159P240710 DIAGRAM - SHEET 01/06

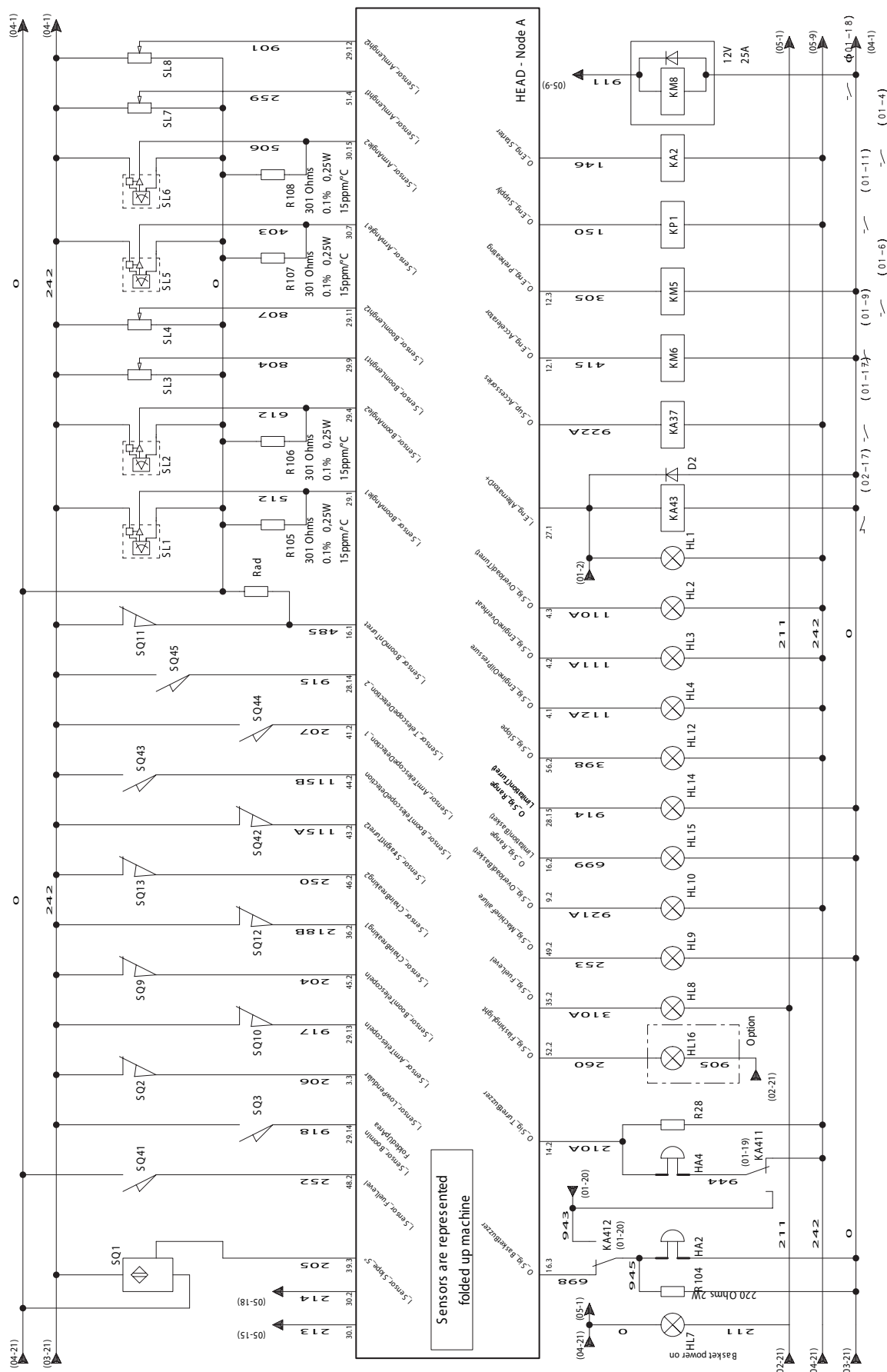


13.2 - 159P240710 DIAGRAM - SHEET 02/06

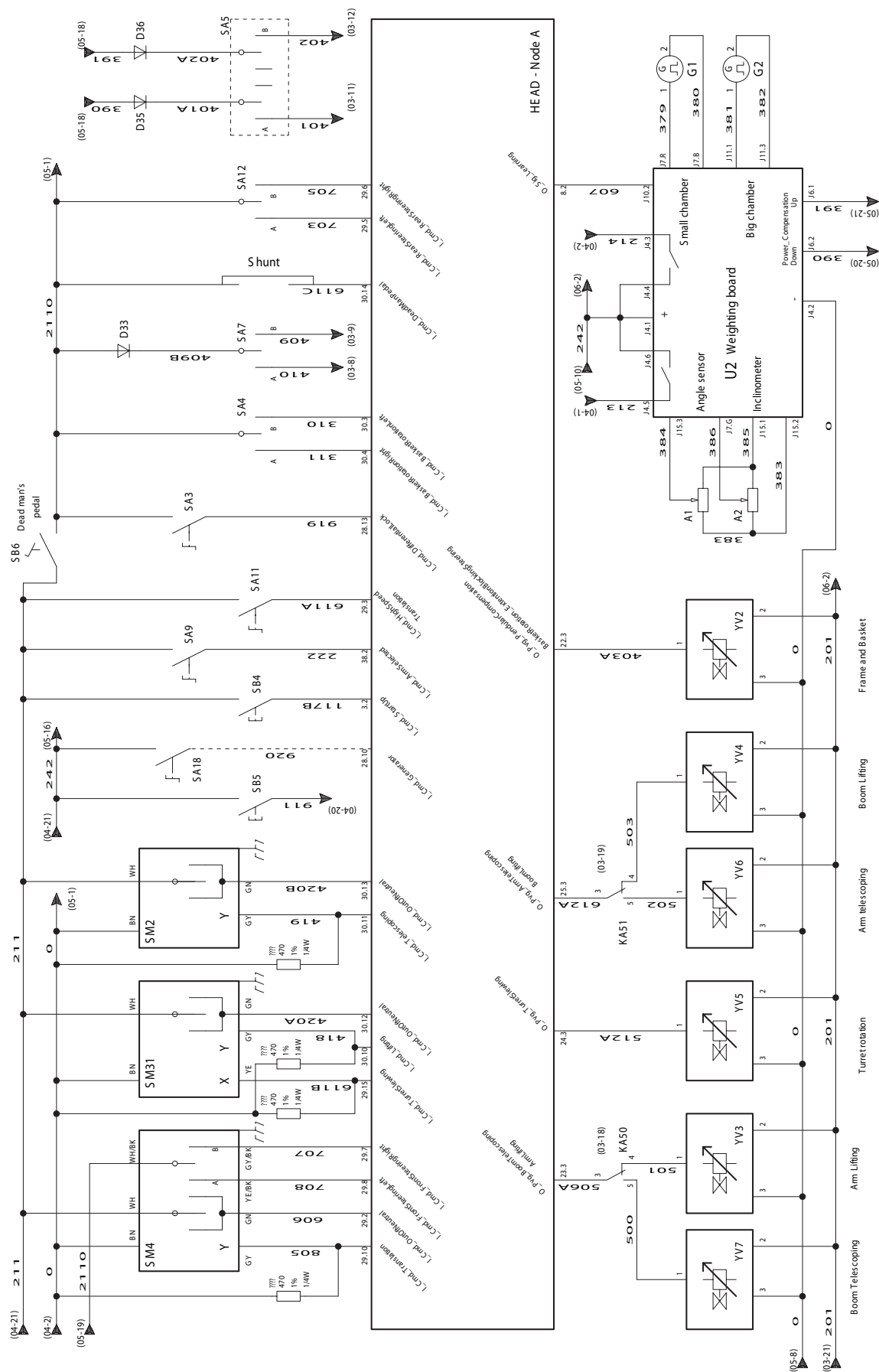




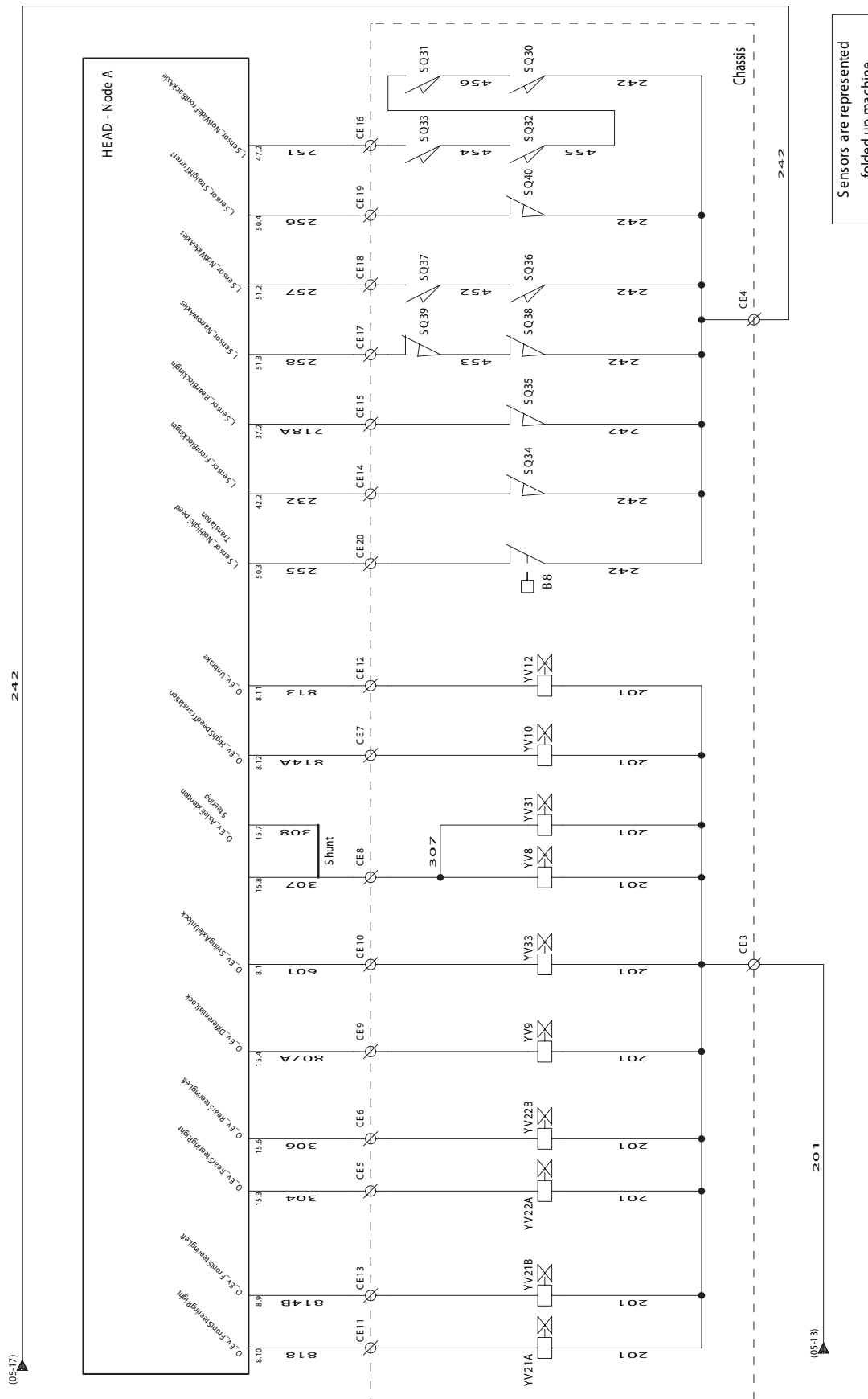
68



13.5 - 159P240710 DIAGRAM - SHEET 05/06



13.6 - 159P240710 DIAGRAM - SHEET 06/06



13.7 - NOMENCLATURE

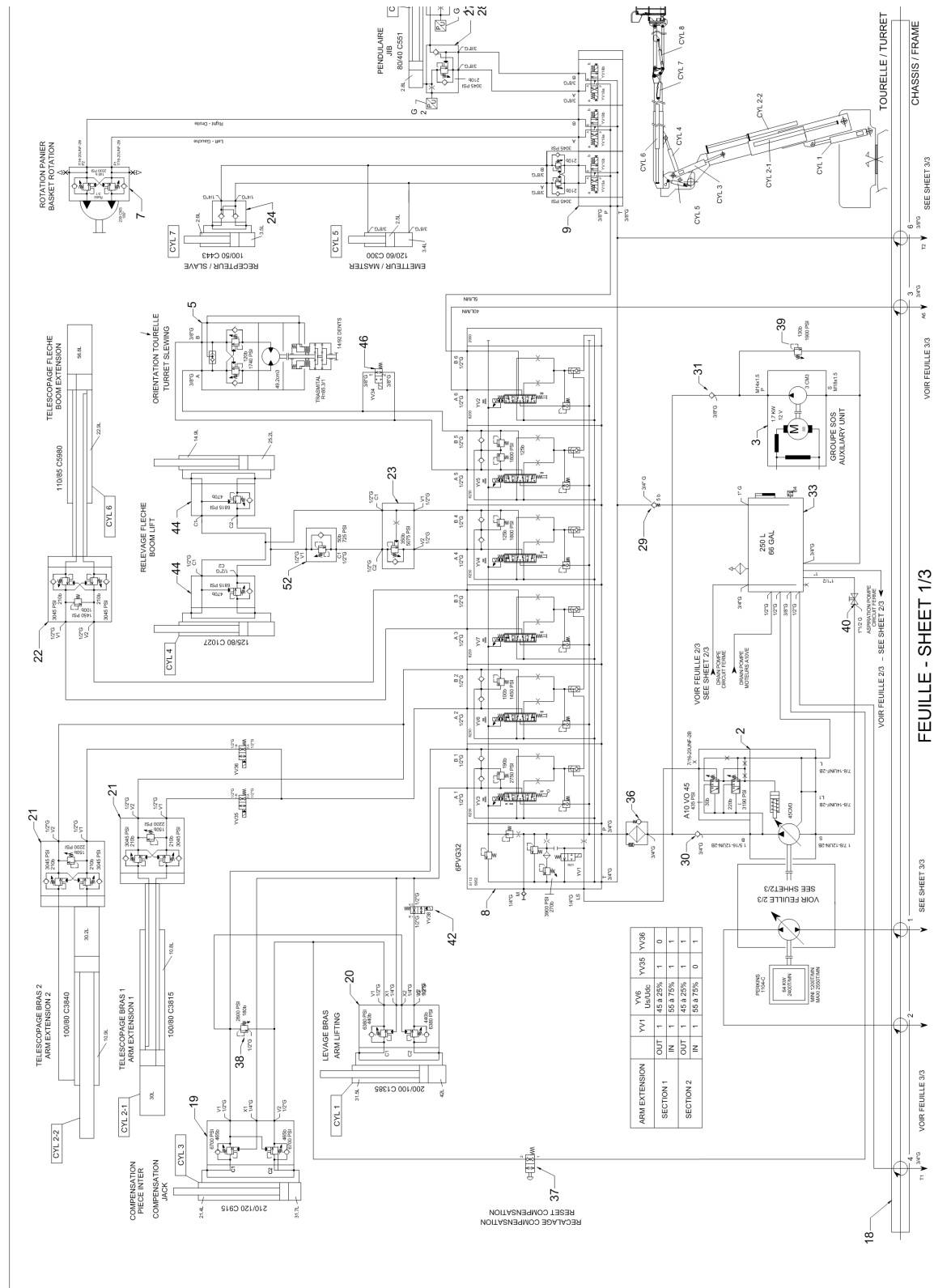
REP	FOLIO-COL	DESIGNATION
A1	05 - 14	Weight relative angle gauge
A2	05 - 14	Weight absolute angle gauge
B2	03 -20	Engine overheat manifold
B3	03 -19	Engine low oil pressure manifold
B4	03 -18	Hydraulic oil overheat manifold
B7	01 -17	Optional hydraulic oil overheating cooler thermostat
B8	06 -13	Hydraulic high speed lateral movement manifold
EV	01 -17	Optional engine cooler
FU1	01 -13	Engine power supply fuse
FU2	02 - 9	"Chassis" position movement fuse
FU3	01 - 7	Pre-heating fuse
FU4	01 - 5	Weak power control fuse, calculators
FU5	02 - 8	"Turret" position movement fuse
FU6	02 - 6	"Platform" position movement fuse
FU7	02 -12	Electrical vane power supply
FU8	02 -11	Electrical vane power supply
FU9	02 -15	Injection pump fuse
FU10	02 -14	LS valve fuse
FU11	01 -17	Optional cooler fuse
FU13	01 - 16	Emergency pump fuse
FU14	01 - 9	Accelerator fuse
FU15	01 -19	Accelerator fuse
G1	05 - 20	Small chamber pressure gauge
G2	05 - 20	Wide chamber pressure gauge
GB1	01 - 1	12V battery
HA1	01 -20	Alarm
HA2	04 - 7	Platform alarm
HA4	04 - 2	turret alarm
HL1	04 -12	Battery charge indicator
HL2	04 - 11	Turret overload indicator
HL3	04 - 11	Engine overheating indicator
HL4	04 - 10	Oil pressure indicator
HL5	01 -19	Optional rotating beacon
HL6	01 -19	Optional work light
HL7	04 - 1	Power on indicator
HL8	04 - 4	Fuel reserve indicator
HL9	04 - 5	Error indicator
HL10	04 - 7	Platform overload indicator
HL11	01 - 8	Pre-heating indicator
HL12	04 - 9	Tilt indicator
HL14	04 - 8	Turret reach limit indicator
HL15	04 - 7	Platform reach limit indicator
KA2	04 -19	Ignition relays
KA37	04 -15	Accessories power supply relays
KA43	04 -13	Emergency pump cutoff relays
KA50	05 -18	Arm/fly jib raising telescopic function relays
KA51	05 -19	Fly jib/arm raising relays
KM4	02 -16	Emergency pump relays
KM5	04 -17	Preheating relays
KM6	04 -16	Accelerator relays
KM8	04 - 20	Horn relays
KMG	02 - 2	General relays
KP1	04 -18	Engine power supply relays

REP	FOLIO-COL	DESIGNATION
M3	01 - 3	Ignition
M4	01 -16	Emergency pump
P1	02 -18	Hour meter
R1	01 - 7	Preheating Resistor
SA0	02 - 2	Power-on selector
SA1	02 - 7	Position selector key
SA2	03 -13	Accelerator switch
SA3	05 -13	Differential jacking switch
SA4	05 -15	Platform rotation switch
SA5	05 -20	Platform compensation switch
SA6	03 - 8	Turret suspension platform switch
SA7	05 -16	Platform suspension platform switch
SA8	03 - 2	turret fly jib telescopic action switch
SA9	05 - 11	Platform arm/fly jib selector switch
SA11	05 -12	Lateral movement high speed selector switch
SA12	05 -18	Platform forward direction switch
SA13	03 - 3	Turret fly jib extension switch
SA14	03 - 5	Turret arm extension switch
SA15	03 - 6	Turret rotation switch
SA16	01 -18	Optional rotating beacon interrupter
SA18	05 - 10	Optional generator ignition
SA19	02 -15	Turret emergency pump switch
SA20	02 -17	Platform emergency pump switch
SA21	03 -11	Turret compensation interrupter
SB0	02 - 3	Chassis punch button
SB1	02 - 3	Turret punch button
SB2	02 - 3	Platform punch button
SB3	03 -14	Turret ignition switch
SB4	05 - 11	Platform ignition switch
SB5	05 - 9	Horn switch
SB6	05 -13	Dead Man Pedal
SB7	03 -15	Preheating switch
SL1/SL2	04-13	Fly jib angle gauge
SL3/SL4	04 - 15	Fly jib length gauge
SL5/SL6	04 - 17	Arm angle gauge
SL7/SL8	04 - 18	Arm length gauge
SM2	05 - 7	Telescopic action manipulator
SM4	06 -15	Lateral movement manipulator
SM31	05 - 5	rotation and lifting manipulator
SQ1	04 - 2	Tilt
SQ2	04 - 5	Suspension platform position switch
SQ3	04 - 4	Fly jib retraction area position switch
SQ9	04 - 6	Retracted telescopic fly jib arm position switch
SQ10	04 - 5	Retracted telescopic arm position switch
SQ11	04 -11	Fly jib turret position switch
SQ12	04 -7	Chain break no. 1 position switch
SQ13	04 -8	Chain break no. 2 position switch
SQ30/31	06 -20	Extended front track position switch
SQ32/33	06 -19	Extended front track position switch
SQ34	06 -14	ILS receivers - front jacking retracted
SQ35	06 -15	ILS receivers - rear jacking retracted
SQ36/37	06 -17	ILS receivers - axle track extended
SQ38/39	06 -16	ILS receivers - axle track retracted
SQ40	06 -18	Turret right-angle position switch
SQ41	04 - 3	Fuel reserve indicator

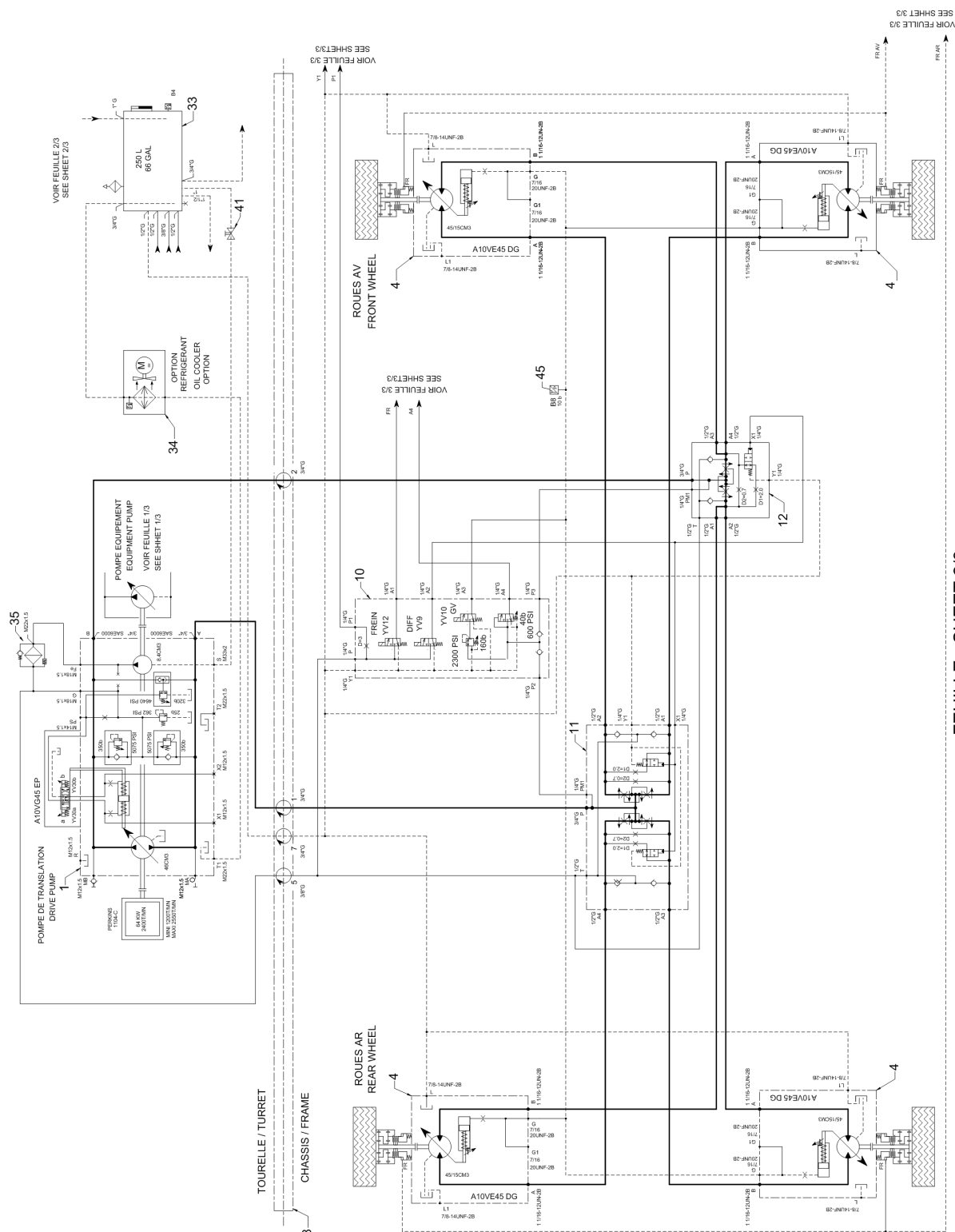
REP	FOLIO-COL	DESIGNATION
SQ42	04 - 8	Turret right-angle redundant position receiver
SQ43	04 - 9	Fly jib telescopic arm ILS detector
SQ44/45	04 - 10	Telescopic arm ILS detector
U1	02/03/04/05/06	HEAD calculator
U2	05 - 15	Weighing card
YA1	01 - 11	Fuel pump
YA2	01 - 9	Accelerator
YA3	01 -13	Injection pump
YV1	02 - 14	Load sensing solenoid valve
YV2	05 -11	Solenoid valve - PVG suspension platform, axle extension, jacking, direction
YV3	05 -4	Arm raising control solenoid valve
YV4	05 -9	Fly jib raising control solenoid valve
YV5	05 -5	Turret orientation solenoid valve
YV6	05 - 7	Arm telescopic action control solenoid valve
YV7	05 - 1	Fly jib telescopic action control solenoid valve
YV8/31	06 - 9	Axle extension, jacking and direction solenoid valve
YV9	06 - 6	Jacking differential control solenoid valve
YV10	06 - 10	Lateral high speed movement control solenoid valve
YV12	06 - 11	Brake release control solenoid valve
YV15A/B	03 - 7	Compensation control solenoid valve
YV18A/B	03 - 4	Suspension platform control solenoid valve
YV19A/B	03 - 9	Platform rotation control solenoid valve
YV21A/B	06 - 2	Forward direction control solenoid valve
YV22A/B	06 - 4	Rear direction control solenoid valve
YV24	03 - 11	Optional generator control solenoid valve
YV30A	03 - 2	Section A lateral movement control pump solenoid valve
YV30B	03 - 2	Section B lateral movement control pump solenoid valve
YV33	06 -7	Oscillating axel unblocking control solenoid valve
YV34	03 -12	turret unblocking control solenoid valve
YV35	03 - 14	Telescopic arm barrel 1 control solenoid valve
YV35	03 - 13	Arm raising safety solenoid valve
YV36	03 - 16	Telescopic arm barrel 2 control solenoid valve
YV38	03 - 13	Arm raising safety solenoid valve
YV40	03 - 13	Compensation jack solenoid valve

14 - HYDRAULIC DIAGRAMS

14.1 - HA130JRT DIAGRAM - REFERENCE 159P252360 1/3



14.2 - HA130JRT DIAGRAM - REFERENCE 159P252360 2/3



FEUILLE - SHEET 2/3

FEUILLE - SHEET 3/3

14.4 - NOMENCLATURE

NUMBER	DESIGNATION	SCHEMA SHEET No N°
1	LATERAL MOVEMENT PUMP	2
2	EQUIPMENT PUMP	1
3	EMERGENCY GROUPE	1
4	LATERAL MOVEMENT HYDRAULIC MOTOR	2
5	DIRECTION REDUCTION MOTOR	1
7	PLATFORM ROTATION JACK	1
8	EQUIPMENT DISTRIBUTOR	1
9	PLATFORM FUNCTIONS HYDRAULIC BLOCK	1
10	LATERAL MOVEMENT DRIVING BLOCK	2
11	LATERAL MOVEMENT BLOCK 2 DIVIDERS	2
12	LATERAL MOVEMENT BLOCK 1 DIVIDERS	2
13	ELECTRONIC PARALLEL DISTRIBUTOR	3
14	BRAKE RELEASE CONTROL BLOCK	3
16	PATH END HYDRAULIC ROLLER	3
18	HYDRAULIC SWIVEL JOINT	1,2,3
19	JACK COMPENSATION SAFETY BLOCK	1
20	ARM LIFTING JACK SAFETY BLOCK	1
21	ARM TELESCOPIC ACTION JACK SAFETY BLOCK	1
22	FLY JIB TELESCOPIC ACTION JACK SAFETY BLOCK	1
23	EQUIPMENT PUMP	1
24	FLY JIB LIFTING JACK SAFETY BLOCK	1
25	PILOT ANTI-RETURN VALVE BLOCK	3
26	PILOT ANTI-RETURN VALVE BLOCK	3
27	PILOT ANTI-RETURN VALVE BLOCK E	1
28	BALANCING VALVE	1
29	PILOT ANTI-RETURN VALVE (cartridge)	1
30	ANTI-RETURN VALVE 5 b - 3/4"G	1
31	ANTI-RETURN VALVE 0.5 b - 3/4"G	1,3
33	ANTI-RETURN VALVE 0.5 b - 3/8"G	1
34	HYDRAULIC RESERVOIR ASSEMBLY 250 L	2
35	OPTIONAL HYDRAULIC REFRIGERATION	2
36	PRESSURE FILTER WITH INDICATOR	1
37	PRESSURE FILTER WITH INDICATOR	1
38	MANUAL CONTROL DISTRIBUTOR	1
39	LINE PRESSURE LIMITER 1/2"G	1
40	LINE PRESSURE LIMITER 3/8"G	1
41	ISOLATOR VALVE 1"1/2	2
42	ISOLATOR VALVE	1
44	SOLENOID VALVE 2V/2P	1
45	FLY JIB RAISING SAFETY VALVE	2
46	CONTACT MANIFOLD 10 BARS / NF	1
49	ELECTRO 2V/2P	3
52	SOLENOID VALVE 3V/2P	1