Valid for models:

WB 450.22
WB 530.23
WB 610.24

SERIE WB

- GA71 -

INSTRUCTION AND WARNINGS

Valid with the serial number

G.A71.0001

Code number: **4.150.447**
Edition: **08/2006**

Realised by **Unistudio** - Modena

1 General information

1.1 - Purpose of the manual

The instructions manual contains information which is essential for the correct use of the crane (1) (hereinafter also referred to as the machine).

Its purpose is to inform the operator (2) of the instructions to follow and the fundamental criteria to apply in all machine use or maintenance operations.

Before starting up the machine for the first time, the operator must have read and understood the instructions contained in this manual, in particular those highlighted with the various symbols.

The manual is an integral part of the machine and must always be kept with it for future reference until it is scrapped.

If the machine is resold, the seller is bound to provide the new owner with the manual.

The information contained herein is arranged in chapters, in a sequential order according to subject matter.

The indexes, both alphabetic or analytic, allow the user to refer to the different subjects quickly and easily.

The original information is supplied by the manufacturer in Italian language.

In order to comply with legal and commercial requirements, original information can be translated into other languages.

It is strictly forbidden to use the manual for anything other than the machine's use and maintenance.

1.2 - Manufacturer's details and machine identification data

- Manufacturer's details

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Via Verdi, 22
41018 S. Cesario s/P - Modena (Italy)
tel. +39 059 936811
fax. + 39 059 936800
e-mail: sparepartsdept@autogrupm.com
servicedept@autogrupm.com

(1) The term "crane" refers to the trade name given to the machine (from the crane series) stated on the title page.

(2) The term "operator(s)" refers to the person(s) possessing the necessary expertise to use, inspect and carry out routine maintenance on the machine.

- **Machine identification data**

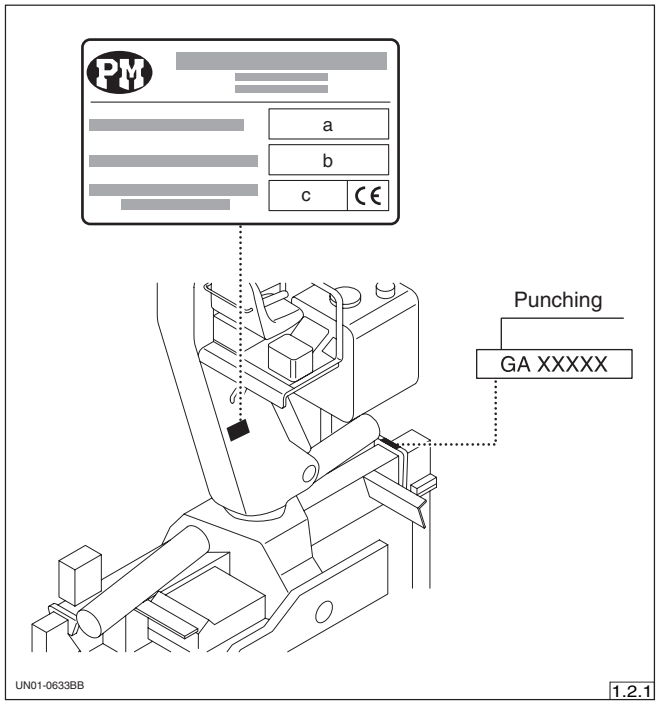


Plate details

a = Crane model
b = Serial number
c = Year of manufacture
d = CE stamp

1.3 - Symbology

The symbols used in this manual are intended to highlight potentially hazardous operations.

To guarantee safe working conditions, the instructions highlighted by these symbols must always be followed.

HAZARD !

This indicates information or procedures which, if not complied with exactly, could cause death or serious injuries.

WARNING !

This indicates information or procedures which, if not complied with exactly, could cause death or serious injuries.

CAUTION !

This indicates information or procedures which, if not complied with exactly, could cause slight injuries or damage to the machine.

Information

This indicates useful and important information or procedures.

WARNING !

For the sake of clarity when outlining procedures to carry out, some illustrations show the machine with the guards, casings or panels removed.
Never use the machine without all the casings and guards in place.

1.4 - Technical service

Technical service requests must be addressed to the manufacturer's Technical Assistance Service (T.A.S.) or to the nearest Authorised Workshop.

1.5 - Enclosed documentation

- EC conformity declaration
- Warranty booklet
- Machine certificate of origin (only for markets requiring it)

2 Technical information

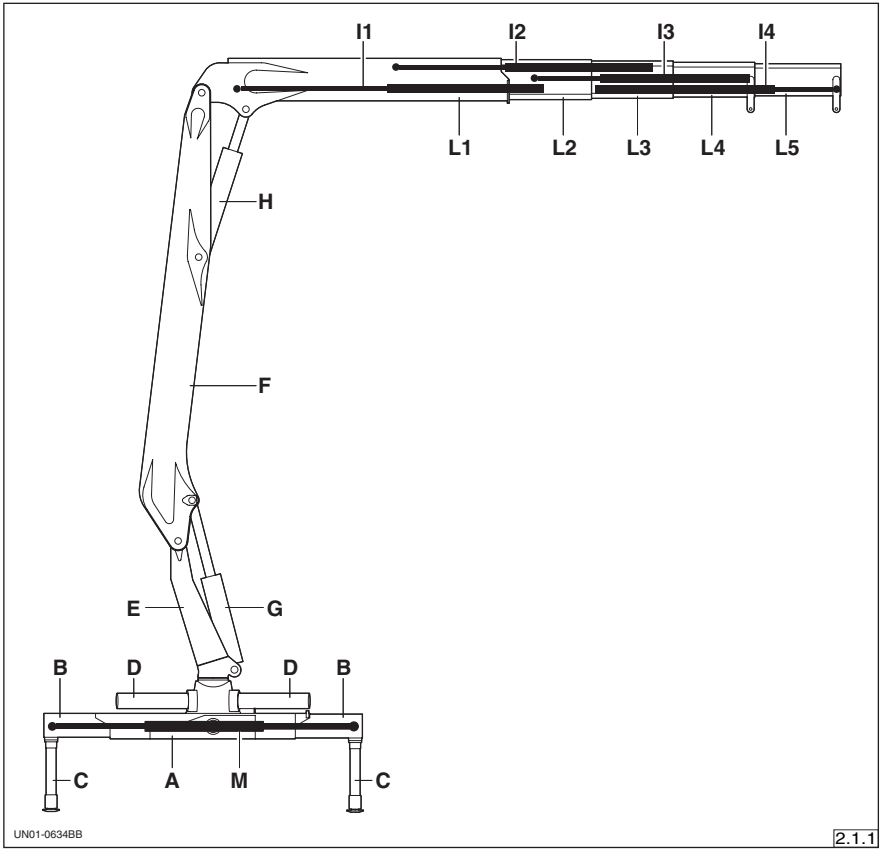
2.1 - Description of the crane

The crane is composed of a base inside which there is a rotating column with a system of articulated arms at its end.

The crane is driven by hydraulic energy generated by a motor and a pump.

This crane series is available in various models, which differ mostly in the number of extendable arms.

2.1.1 - Main parts



- Key to the main parts

Ref.	Part	WB 450.22	WB 530.23	WB 610.24
A	Base	•	•	•
B	Stabiliser arm	•	•	•
C	Stabiliser jack	•	•	•
D	Rotation jack	•	•	•
E	Column	•	•	•
F	Main arm	•	•	•
G	Main jack	•	•	•
H	Secondary jack	•	•	•
I1	1st arm extension jack	•	•	•
I2	2nd arm extension jack	•	•	•
I3	3rd arm extension jack		•	•
I4	4th arm extension jack			•
L1	Secondary arm	•	•	•
L2	1st hydraulic extension arm	•	•	•
L3	2nd hydraulic extension arm	•	•	•
L4	3rd hydraulic extension arm		•	•
L5	4th hydraulic extension arm			•
M	Stabiliser arm extension jack	•	•	•

2.2 - Conditions of use

2.2.1 - Designated use

The crane is designed for the vertical lifting, handling and positioning of free loads (3), in compliance with the values given in the capacities diagram and handling speeds not exceeding the maximum prescribed limits (see specifications).
The cranes are designed in compliance with harmonised standard EN 12999, class H1-B3, which provides for non-continuous use, with a hook, for a maximum of 400 lifting cycles per week and a load equalling ¾ of the load indicated in the relative diagram.
To use the machine with loads other than those for which it is designed, it is the user's responsibility to first contact an authorised workshop to check whether a downgrade is necessary.

2.2.2 - Inadmissible uses

It is forbidden to use the machine in areas where there is a risk of fires or explosions.
It is forbidden to use the crane to pull out poles, uproot trees and lift fixed loads.
It is forbidden to use the machine to lift people, with the exception of cases in which the crane is fitted with a specially designed operator's platform approved by the manufacturer.
It is forbidden to use the crane with fixed load-hoisting accessories such as hooks, bucket, grabs etc unless the accessories are authorised by the manufacturer.
It is forbidden to use the machine as a recovery means for towing broken-down vehicles.
It is forbidden to drag or push loads.
Before performing a rotation manoeuvre, the load must be lifted off the ground.
It is forbidden to lift the base truck with the stabilisers to change the tyres.
It is forbidden to lift the base truck with the stabilisers in order to move the vehicle if stuck in areas of loose ground.
It is forbidden to fit removable clamping accessories such as jibs, manual extensions etc if:

- they are not approved by the manufacturer;
- they are not designed specifically for the model in question.

(3) The term "free load" means loads whose movement is not limited.

2.3 - Safety devices

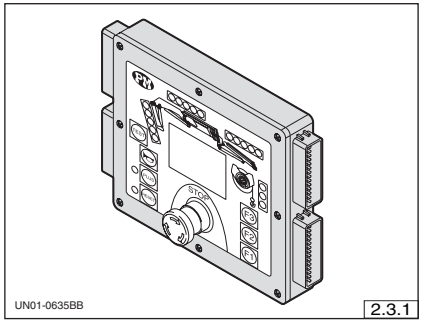
HAZARD !

Never tamper with any of the safety devices.

Information

The safety devices on the accessories are outlined in the paragraph describing each accessory.

2.3.1 - Functional control unit



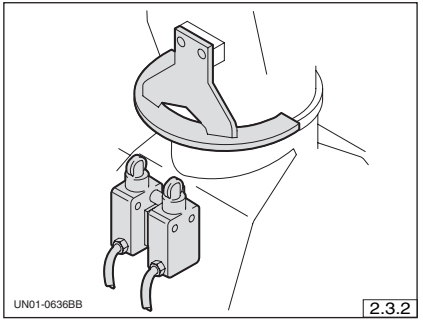
This includes:
- the crane's load limiting device;
- the rotation limiting device.

It controls:
- the thrusting pressure of the main and secondary jack;
- the oil temperature;
- the safety devices' operation;
- it advises the operator of the machine's operation status and any malfunctions.

Information

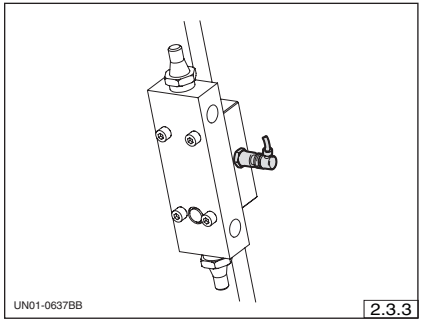
The presence of the load limiting device does not relieve the operator of the responsibility for ensuring the maximum loads are not intentionally exceeded.

2.3.2 - Rotation limiting device / Rotation lock device



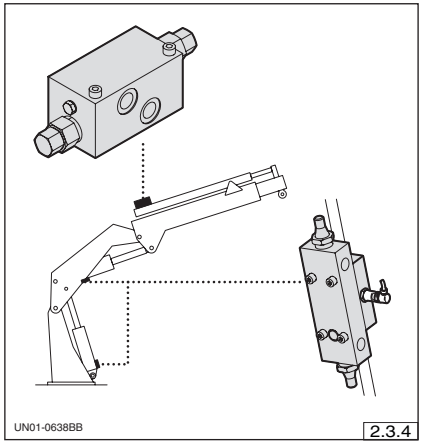
This device stops the crane rotating when it reaches the area in which the stability, with that particular load, is at risk. With the rotation limiting device, work may only be carried out in that area if the load is reduced (in relation to the nominal capacity).
The rotation lock device prevents the crane being operated in the area where the stability of the outfitting is at risk.

2.3.3 - Pressure sensor



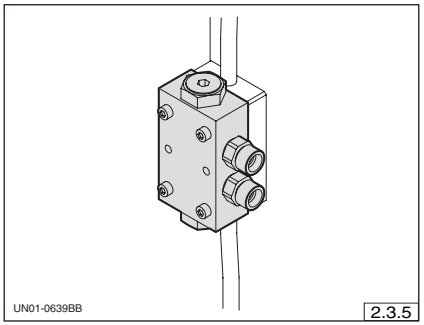
These are located on the load support valves on the secondary jack and the main jack. They signal to the functional control unit to inhibit the handling of loads exceeding the nominal loads to safeguard the machine and maintain the stability of the crane/base truck unit.

2.3.4 - Load support valves



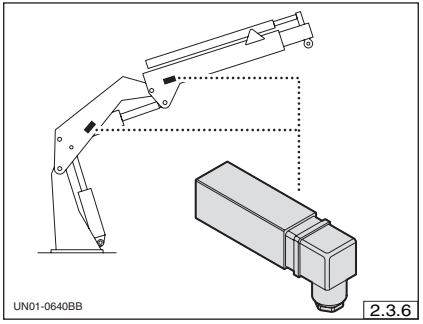
These prevent the loads dropping unexpectedly to the ground as a result of a broken line or a sudden pump failure.

2.3.5 - Stabiliser valve



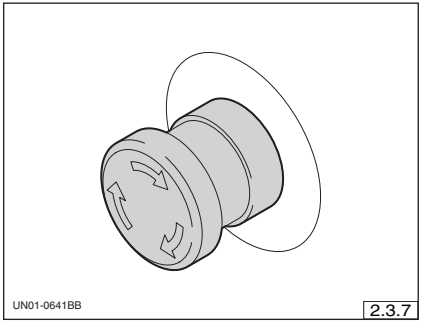
It locks the stabiliser jack (in the position it is in at that precise moment) in the event of a broken line or that the oil delivered to the jack is suddenly cut off.

2.3.6 - Sensor



This informs the functional control unit of the angle of the main arm and of the secondary arm in relation to the horizontal axis so that the controls used to move the crane safely can be enabled.

2.3.7 - Emergency stop device

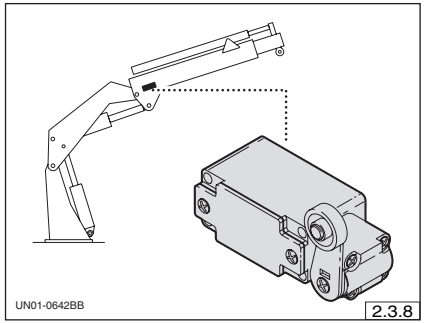


Use the device to stop all the crane's movements in the event of an emergency.
Rotate the button to activate the crane.

WARNING !

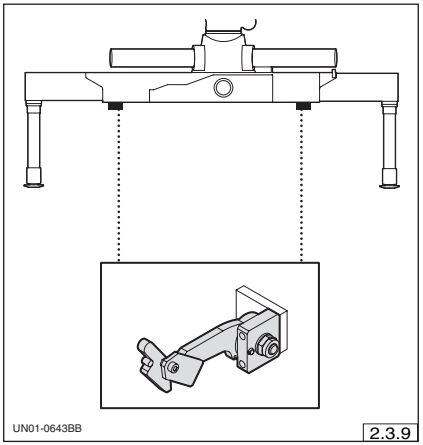
Ensure the hazardous conditions cannot persist before releasing the button.

2.3.8 - Microswitch



This signals the arm retraction stroke limit to the functional control unit.

2.3.9 - Safety device for travelling on public roads

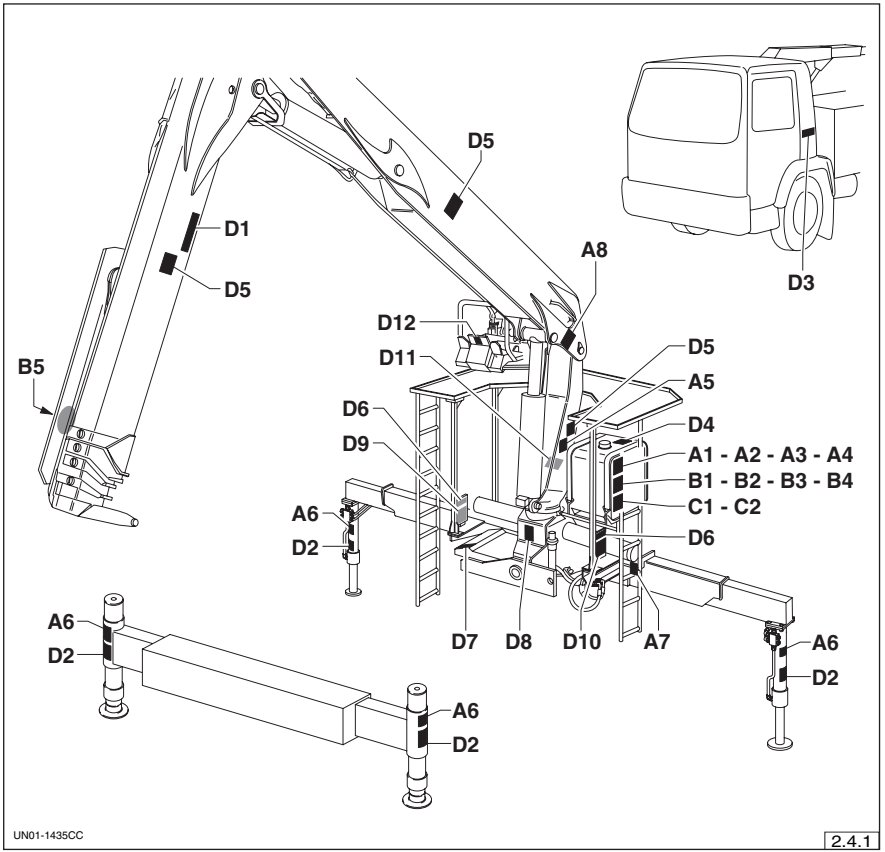


Mechanical device to prevent accidental extension of the stabiliser arms. The devices keep the stabilizer arms within the vehicle's profile when travelling on public roads.

2.4 - Safety recommendations and information

WARNING !

Always comply with the safety recommendations on the plates.
Check that the plates are always present and legible; if not replace them with new ones in the same position.



- Hazards signs

A1 = Risk of electric shocks (*).
Always keep a safe distance from electricity lines.

A2 = Risk from overhanging loads (*).
Take care not to walk or stand under overhanging loads.

A3 = Dangerous manoeuvre signal (*).
Operate the crane so that it opens and closes on the opposite side to the trajectory travelled by the main arm.

A4 = Obstacle risk signal (*).
Watch out for max. admitted heights when travelling on public roads.

(*) Signals grouped together on one plate.

A5 = Risk of falls.
Slippery surface, take care.

A6 = Risk of crushing.
Lower limbs could be crushed by stabiliser jacks when in use, take care.

A7 = Risk of lacerations signal.
This indicates a risk of lacerations to the hands caused by moving parts.

A8 = Risk of falls.
This indicates a risk of fall from the platform.

- Prohibition signs

B1 = No entry (**).
It is forbidden to both move around and stop in the crane's operating range.

B2 = Prohibited use (**).
It is forbidden for unauthorised persons to use the machine.

B3 = No water jets (**).
It is forbidden to use pressurised water on the electrical components.

B4 = Prohibited use (**).
Use of the machine is prohibited if the stabilisers have not been positioned correctly.

(**) Signals grouped together on one plate.

B5 = No entry.
It is forbidden to both move around and stop in the crane's operating range.

- Obligation signs

C1 = Instruction Manual plate (***).
This indicates that the operator must read the instruction manual carefully before using the machine.

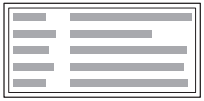
C2 = Individual safety gear plate (***).
This indicates that the user is under obligation to wear the safety helmet when operating the machine.

(***) Signals grouped together on one plate.

- Information signs

D1= Max. capacity plate.
States the max. capacity at the fixed hook.

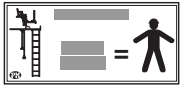
D2 = Max. stabiliser pressure signal.
Make sure the pressure on the ground does not exceed the max. limit stipulated.



D3 = Power takeoff plate.
Reminds the operator to switch off the power takeoff during transfers.

D4 = Oil tank plate.
Indicates the hydraulic oil tank.

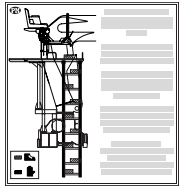
D5 = Hoisting points plate.
Indicates the hoisting hooks attachment points.



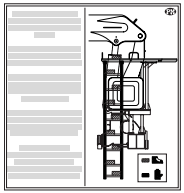
D6 = Max. capacity plate.
This shows the maximum admissible load on the raised control post.

D7 = Capacities diagram plate.
Indicates the performance limits of the machine and any accessories fitted.

D8 = Dead centre indication plate.
Shows the side at which the crane rotation, both clockwise and anti-clockwise, ends.



D9 = Platform access points.
This shows the areas where it is permitted to access the platform on that side.



D9 = Platform access points.
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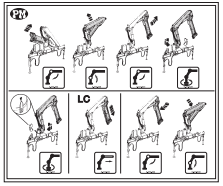
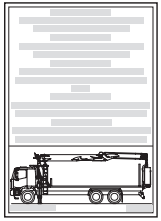


D11 = Crane opening/closing plate.
Indicates the order of the actions to set the crane in the working or resting positions.

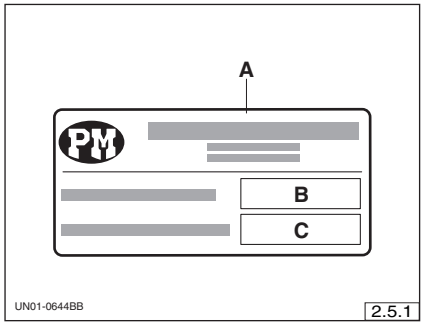


D12 = Machne idle position plate.
Indicates the operator, before leaving the raised control station, make sure the machine is in its idle position.

2.5 - Accessories

2.5.1 - Additional crossmember

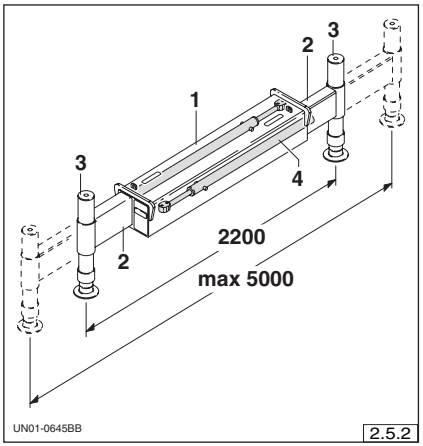
- Identification details



A) manufacturer
B) serial number
C) weight

- General description

The additional crossmember is only fitted when the crane's stabiliser jacks alone cannot guarantee the crane/truck unit's stability.



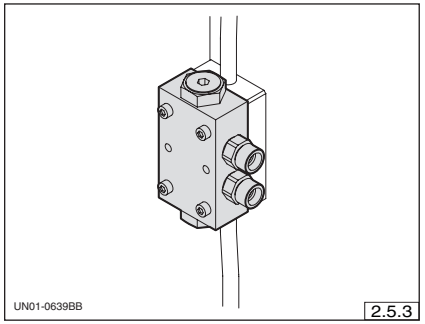
- Main parts

1 - Crossmember
2 - Extendable stabiliser arm
3 - Stabiliser jack
4 - Stabiliser arm extension jack

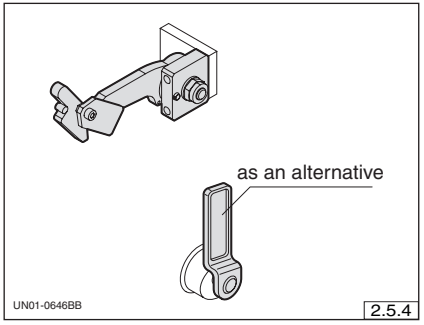
- Safety devices

Stabiliser valve (fig. 2.5.3)

In the event of a broken line or that the oil delivered to the jack is suddenly cut off, this locks the stabiliser jack (in the position it is in at that precise moment).



Safety devices for travelling on public roads



These prevent the supplementary arms extending accidentally when the vehicle is in transit.

2.6 - Noise level

The noise generated by the machine is not significant as the power source (truck's engine) is not part of the supply.

The installer should ask the truck's manufacturer for information about the noise level and transfer the said information to the operator.

2.7 - Vibrations

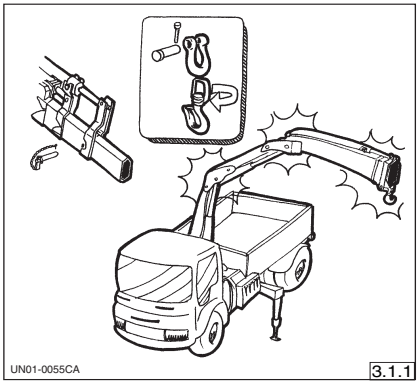
Vibration effects on the operator are considered not significant as the machine is used for short periods of time.

3 Safety

3.1 - Safety regulations

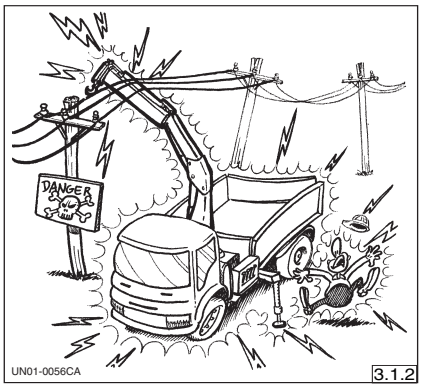
WARNING !

Read the instructions contained in this manual carefully, in particular those concerning safety and the signs affixed to the machine.


UN01-0055CA 3.1.1

Before operating the crane

- Check the degree of wear of the accessories' lock pins;
- make sure the hook is fitted with a nut and that it rotates freely without excess play;
- make sure the hook is fitted with the safety device to prevent cables being released accidentally and that the said safety device is intact;
- carefully check the load harnesses and the chains, cables and straps are in good condition and that they are suitable for the load to be lifted;
- make sure the hoses are in good condition and that no oil leaks are present.

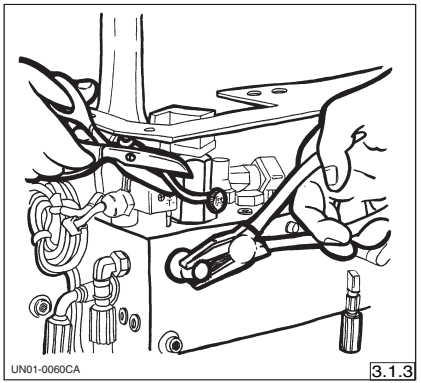


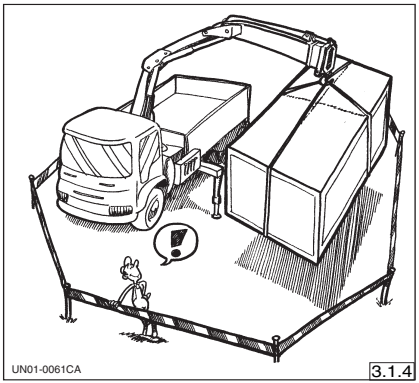
UN01-0056CA 3.1.2

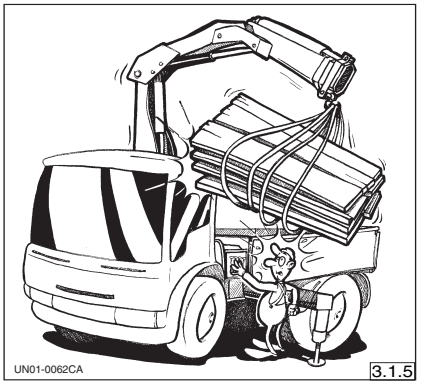
HAZARD !

Do not operate the machine in the vicinity of power lines.

To operate the crane in the vicinity of power lines, always refer to your superiors or the competent authority for special instructions.
Obtain clear instructions regarding the way in which the work must be carried out. Said procedures must be studied for each particular situation and complied with exactly.
When carrying out maintenance work on power lines, you are advised to connect the metal parts on the vehicle to the earth, observing the relative regulations in force.







WARNING !

Do not remove the lead seals on the valves.

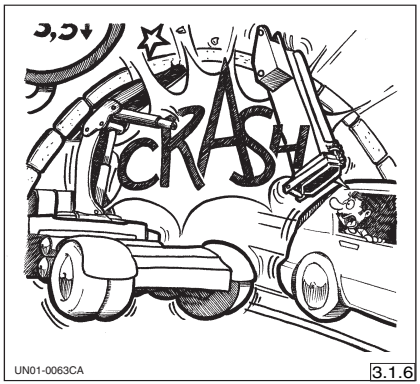
Cordon off the work area to prevent access by unauthorised persons.

The operator must ensure no-one stops or moves around in the work area.

HAZARD !

It is strictly forbidden to move the load over the vehicle's manoeuvring area.

When this is unavoidable, operate the machine using the controls on the opposite side, assisted by other personnel on the ground to perform the necessary manoeuvres, or use suitable accessories provided for this purpose, such as:
- remote controls
- raised seat
- raised control station.



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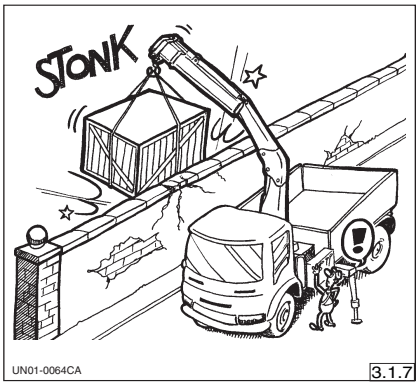

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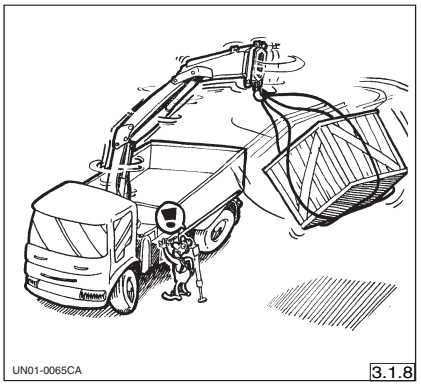


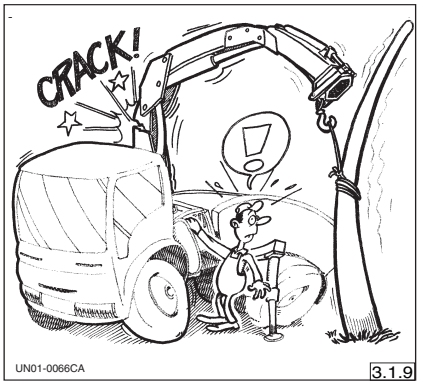
UN01-0065CA 3.1.8

WARNING !

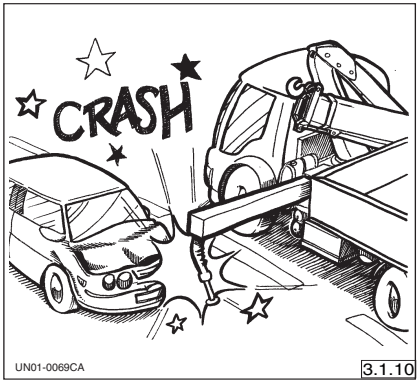
Always follow the Highway Code, in particular with regards to height limit signs.

Do not operate the crane in poor visibility conditions. The operator must always have a perfect view of the work area.

Use short harnesses and operate the levers smoothly and gently to prevent the load swinging dangerously.

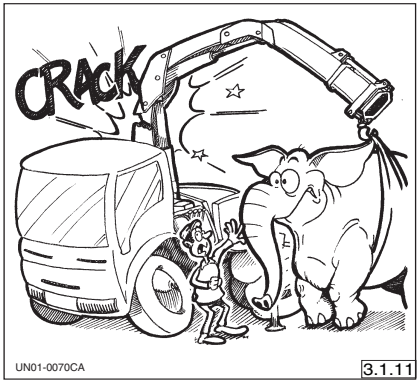


Do not use the crane to remove poles, uproot trees or lift fixed loads.



WARNING !

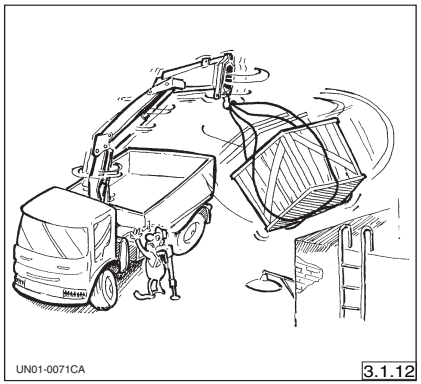
Before driving the vehicle, ensure all the lock devices are engaged.



WARNING !

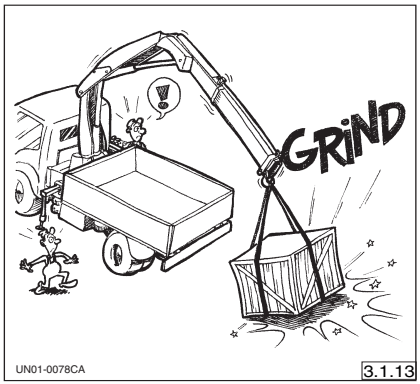
Never lift loads exceeding the limits stipulated in the loads diagrams.

Make sure the loads are less than those indicated on the diagrams in relation to the outreach.



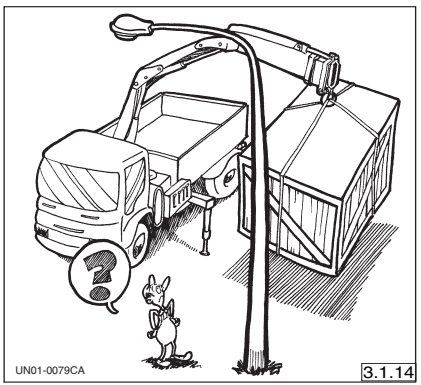
HAZARD !

Never swing the load to place it beyond the permitted outreach indicated in the load diagram.



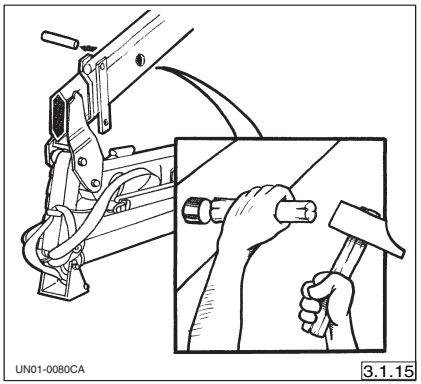
WARNING !

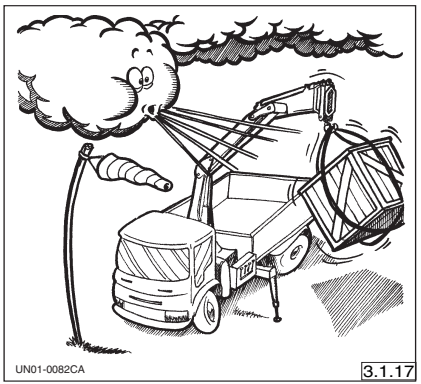
Never drag loads, lift them upwards.



WARNING !

In the presence of objects obstructing the crane's range of action, take precautions to prevent collisions.





WARNING !

When fitting and removing the accessories' lock pins, use equipment made of soft materials to prevent the risk of being hit by flying splinters caused by the striking of the tool.

WARNING !

Never use the crane during a storm.

HAZARD !

It is forbidden to operate the crane when the wind reaches a speed of 10.8 m/s (grade 6 on the Beaufort scale).

To calculate the wind speed, please refer to the table below.

- Beaufort scale -

Wind force		Wind speed		Effect of the wind on land
Beaufort number	Description of the wind	m/s	Km/h	
0	calm	da 0 a 0,2	1	Calm, smoke rises straight up
1	Light air	da 0,3 a 1,5	da 1 a 5	Wind direction indicated by the movement of smoke only, not by the weathervane
2	Light breeze	da 1,6 a 3,3	da 6 a 11	Wind can be felt on the face, leaves rustle, weathervane moves
3	Gentle breeze	da 3,4 a 5,4	da 12 a 19	Leaves and small branches move, pennants unfold
4	Moderate breeze	da 5,5 a 7,9	da 20 a 28	Wind lifts dust and loose paper, moves branches and thin poles
5	Fresh breeze	da 8,0 a 10,7	da 29 a 38	Small broadleaves begin to wave, slight foam appears on lakes
6	Strong breeze	da 10,8 a 13,8	da 39 a 49	Poles move greatly, whistling along telephone lines, use of umbrellas is difficult
7	Near gale	da 13,9 a 17,1	da 50 a 61	All the trees move, it is very difficult to move against the wind
8	Gale	da 17,2 a 20,7	da 62 a 74	Tree branches are broken, walking in the open air is particularly difficult
9	Strong gale	da 20,8 a 24,4	da 75 a 88	Slight damage to houses (chimney pots and roof tiles are blown off)
10	Storm	da 24,5 a 28,4	da 89 a 102	Trees are uprooted, considerable damage to houses

DANGER !

3.2 - Operator's qualifications and behaviour

The use of the crane is restricted solely to personnel meeting the following minimum requirements:

- specifically employed personnel;
- apprentices under direct supervision of the specifically employed personnel;
- staff members employed for the machine's maintenance and testing (when their skills are required);
- crane inspectors.

Only the persons listed above may access the crane's work area, and only for the purpose of fulfilling their functions. In any case, they must always advise the operator or person in charge of their presence.

- Operator's qualifications

To operate the crane, the following requirements must be met:

- possession of the necessary psychophysical qualities to ensure the operator is neither a risk to himself or to others;
- ability to understand the descriptions and illustrations in the instructions manual (including the figures and diagrams contained therein) and the symbols and instructions on the plates affixed to the machine;
- familiarity with and ability to implement the emergency procedures;
- ability to operate the machine as a whole, together with any accessories applied;
- experience of the applicable safety regulations.

- Operator's behaviour

The operator must not:

- engage in any other activity which may distract him while operating the crane;
- operate the machine in a state of drunkenness or when under the influence of drugs which may reduce either physical or mental abilities;
- leave the crane unattended with the load hanging;
- use the machine in the event of malfunctions.

4 Handling, lifting and fitting

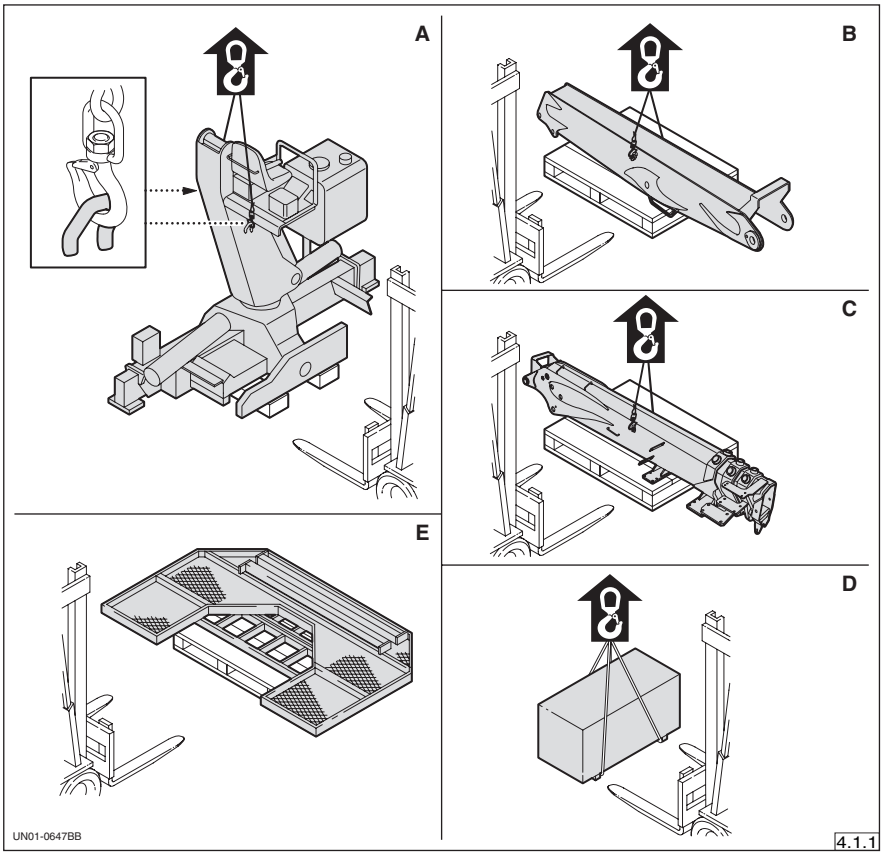
4.1 - Handling and lifting

HAZARD !

Always use lifting means which are suitable for the load to be lifted and handled.
When lifting from above be careful as, since the lifting point is never perfectly baricentric, the crane may swing.

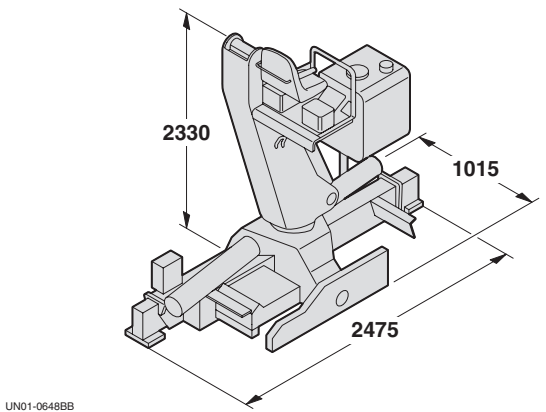
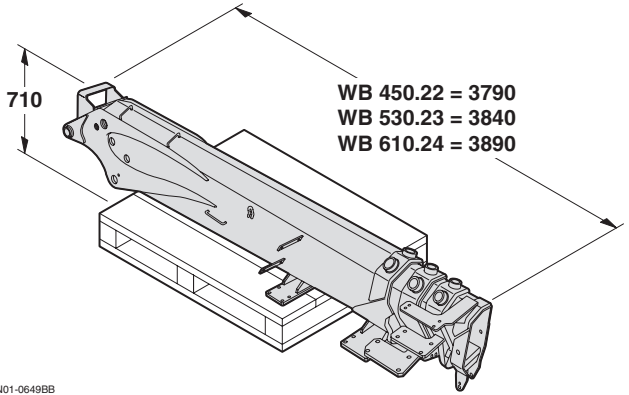
They type of packing must be chosen according to the means of transport and the destination of the goods.
The crane is normally sent separated into the units shown in fig. 4.4.1.

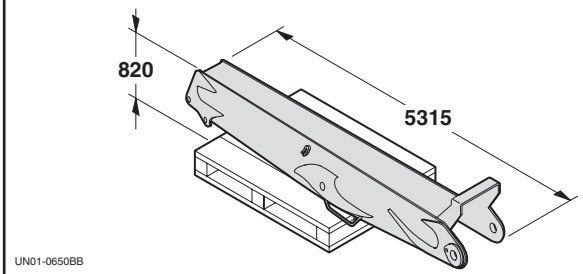
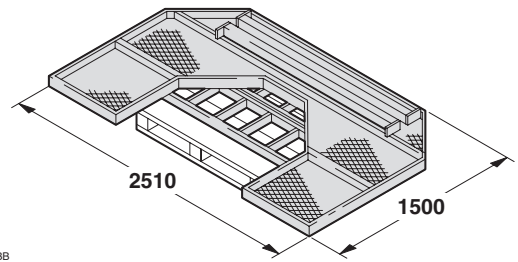
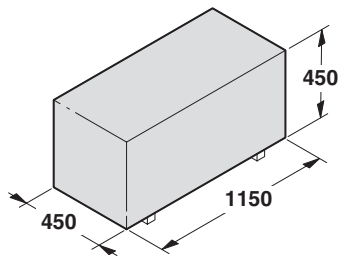
A - Column base unit.
This is fixed to two wooden joists with the outrigger facing upwards or removed.



B - Main arm
C - Secondary arm/ hydraulic extension arms
D - Crate containing the material for assembling the crane on the truck
E - Footrest (optional)

For packaging which differs from that shown in the manual, follow the instructions and the symbols applied to the packing itself.
Before raising the unit, check the weight and dimensions of the units in the following charts.

Base / Colomn  UN01-0648BB	Weight kg 2180
Secondary arm / Hydraulic extension arms  UN01-0649BB	Weight WB 450.22 kg 1230 Weight WB 530.23 kg 1380 Weight WB 610.24 kg 1530

Main arm  UN01-0650BB	Peso kg 980
Platform  UN01-0651BB	Peso kg 215
Equipment box  UN01-0651BB	Peso kg 210

4.2 - Storage

Normally, the crane accessories and other equipment supplied are dispatched wrapped in a protective sheet which must be removed before they are fitted.
However, in the event of long periods during which the unit will be not be used, provide a suitable cover and store it indoors to protect it from the weather.
The storage area must not be excessively damp or dusty. The room temperature must be between -20 °C and +70 °C with a maximum humidity level of 90%, with no condensation.

4.3 - Fitting

The crane must be fitted on the base truck and the checks established by the regulations in force in each country must be carried out afterwards solely by the authorised PM workshops.
The fitting and any alterations to the vehicle required must comply with the regulations issued by the vehicle's manufacturer.

5 Information about adjustments

All adjustments must be performed by an authorised workshop.

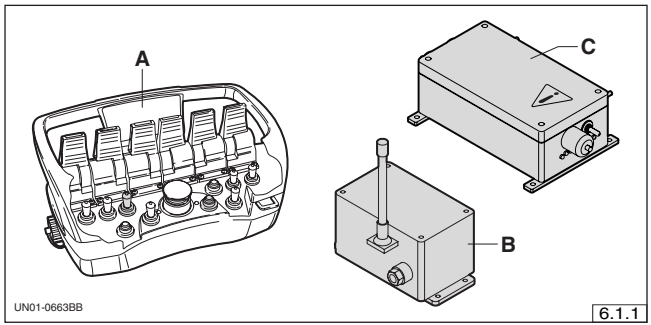
6 Usage instructions

6.1 - Controls

6.1.1 - Symbols

Crane stabilisers		Stabiliser activation
		Crane activation
Stabilisers		Stabiliser jack extension
		Stabiliser jack retraction
Column		Clockwise rotation
		Anti-clockwise rotation
Main arm		Lowering
		Lifting
Secondary arm		Lowering
		Lifting
Arms		Extension
		Retraction
Rotator		Clockwise rotation
		Anti-clockwise rotation
Implement		Opening
		Closing

6.1.2 - Remote control



The remote control is composed of a portable transmitter unit “A” for the operator, a receiver unit “B” and a ECU ”C” installed on-board the machine.

- Safety precautions

Do not operate the remote control if it is damaged or malfunctioning.

Before using the remote control, check that the batteries are charged.

Do not position the load manually.

Do not leave the remote control unattended; otherwise the crane may be used by unauthorised persons.

Keep under constant control:

- work area;
- load trajectory;
- indicator light on-board the machine or the incremental bar on the remote control, which show the lifting of 90% or 100% of the load.

Do not clean the remote control with a pressurised water jet or immerse it in water or any other type of liquid.

- Technical data

- Power voltage: 7,2 Volts.
- Battery:
  - Rechargeable “Scanreco”.
- Working range including obstacles: 100 m.
- Protection grade: IP65.

- Battery

The effective duration of a battery is approx. 8 hours.
The intermittent switching on three times of a buzzer and the intermittent switching on of the indicator light “S”, see fig. 6.1.3, indicate that the battery is nearly flat.

i Information

Only replace the battery when the flashing “S” indicator light switches off.

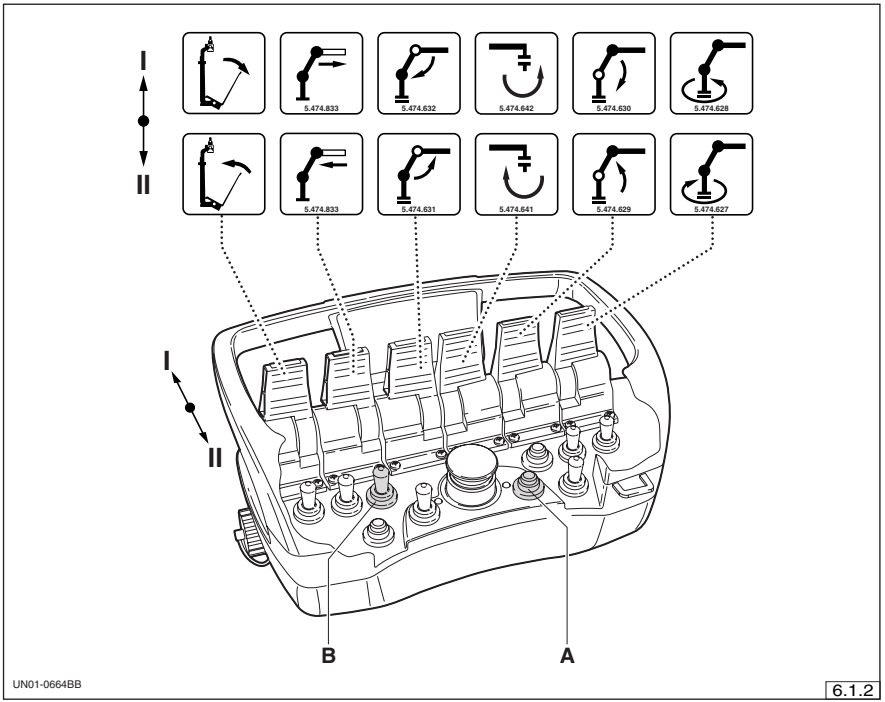
- Battery charger

Charge voltage of the battery charger supplied: 11 Vcc - 30 Vcc.

The recharging time of a completely flat battery varies from 12 to 14 hours.

- Battery charger indicator lights

- The red indicator light signals the presence of electricity supply to the charger.
- When the green indicator light is on, the battery is being recharged.



A - Switching on the transmitter unit

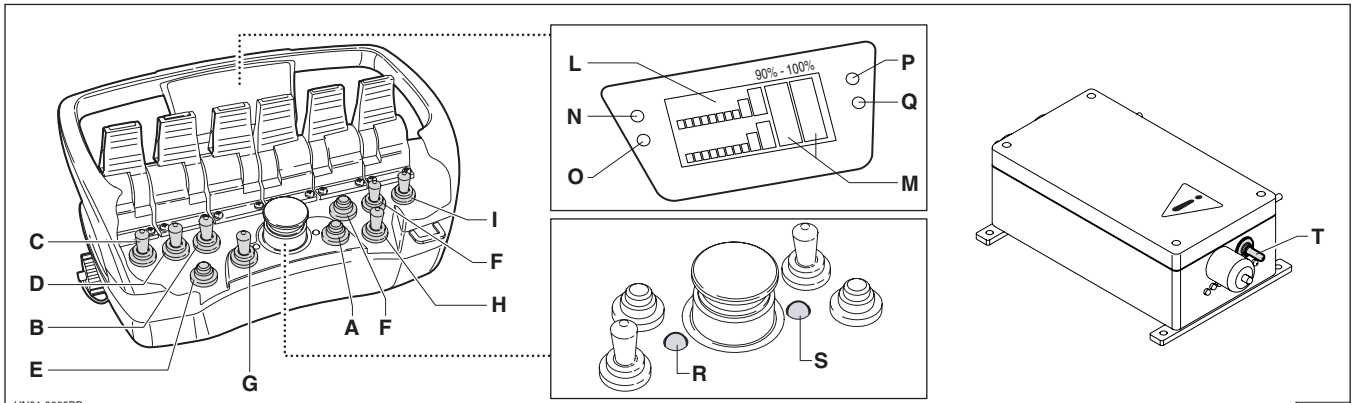
The button has two functions:

I) remote control ON;

II) buzzer.

B - Start-up/stop

Flick the switch to start up or stop the vehicle engine.



C - "RPM" activation

Flick the switch to place the engine rpm in automatic or manual mode.

D - Accelerator

Flick the switch to vary the engine rpm of the vehicle. It only works with switch "C" in manual.

E - Activation switch

This allows the alternate functioning of the activations.

F - "Reset" button

The button, used in combination with each single load lowering control command, moves the crane from a blocked situation in which all the controls are inhibited (see function reset with "5-30").

G - Speed switch

The switch activates and deactivates the functioning speed of the crane.
Press repeatedly.
Each time it is pressed corresponds to a different crane speed.
Up to five different speeds are possible.
The speed chosen is indicated by the number of flashes of the indicator light "R".
Flick the switch once only (in the OFF direction) to reset the normal functioning speed.

H - Button deactivated

I - Button

Use to switch the light for night-work on or off (when fitted).

L - Incremental bars

Incremental bars for the load percentage on the main and secondary jack.

M - Information and alarm message display

N - Button deactivated

O - Indicator light deactivated

P - Indicator light deactivated

Q - Indicator light

Yellow.
When on, it indicates that the “5-30” system is functioning to lower the load to the ground.

R - Indicator light

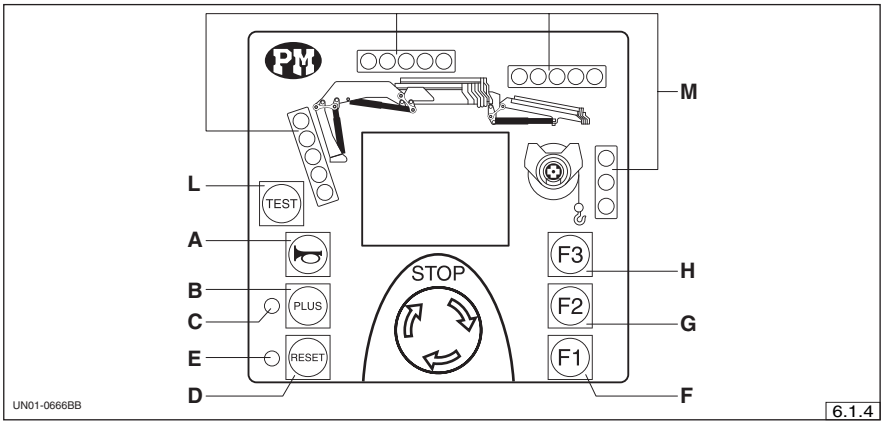
Green.
When on, it indicates the different functioning speeds of the crane (see speed switch).

S - Indicator light

Red.
When on, it indicates that the transmitter unit is switched on.

T - Three-setting switch
Remote: the ECU is activated.
Off: the ECU is switched off.
Manual: the ECU is activated, the receiving unit is switched off.

6.1.3 - Functioning control unit controls and indicators



A - Buzzer

B - “PLUS” button (deactivated)

C - Indicator light (deactivated)

D - Reset button

This has the same function as the reset button on the transmitter unit.

E - Indicator light

When on, it indicates that the movement of the load in the “5-30” mode is in progress (see function reset with “5-30”).

F - “F1” function key
Optional function.

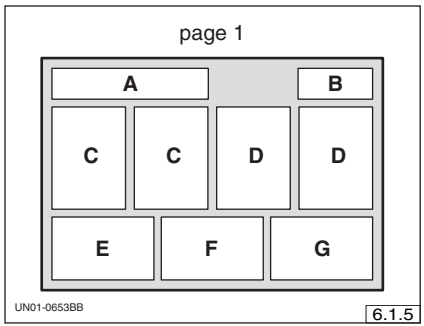
G - “F2” function key

Optional function.

H - “F3” function key
Optional function.

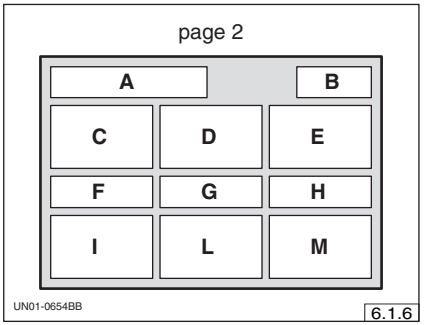
I - Display

On the display, the following information pages are shown in succession.



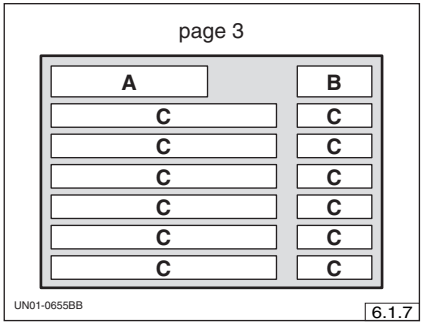
Key to page 1

A	Crane model
B	Effective time-counter
C	Alarm icon with code (see alarm messages)
D	Signal icon (see information messages)
E	Main jack pressure
F	Secondary jack pressure
G	Jib joint jack pressure (deactivated)



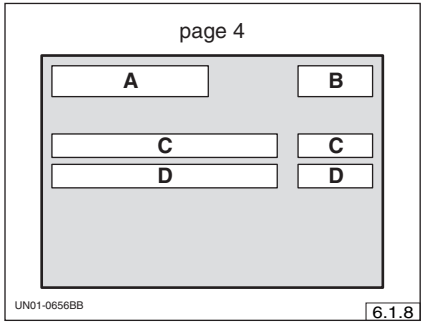
Key to page 2

A	Crane model
B	Effective time-counter
C	Main arm angle
D	Arm pack angle
E	Oil temperature
F	Necessary maintenance (0=no 1=yes)
G	Closed arm pack (0=no 1=yes)
H	Active solenoid valve (0=no 1=yes)
I	Speed reduction percentage
L	Antenna angle (deactivated)
M	Winch use time-counter (deactivated)



Key to page 3

A	Crane model
B	Effective time-counter
C	Last 6 alarms (see alarm messages)



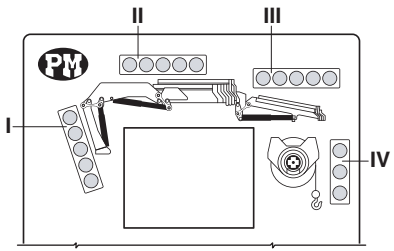
Key to page 4

A	Crane model
B	Effective time-counter
C	Hardware version
D	Software version

L - "Test" button

Press the button repeatedly to display the information pages in succession.

M - Indicator lights
These indicate the lifting capacity in use.



UN01-0657BB 6.1.8

I - Main jack indicator
II - Secondary jack indicator
III - Jib junction jack indicator (deactivated)
IV - Winch indicator (deactivated)

- *Green LEDs on:*
  normal working values.
- *Orange LEDs on:*
  limiter working with 90% of the load that can be lifted.
- *Red LEDs on:*
  blocked condition.

6.1.4 - Information and alarm messages

- Information messages

Icon	*Description*
AM	Multiple activation functioning (deactivated)
	Use of the grab
	Rotation block
	Emergency stop button pressed
	Rotation entrance in limited area
	Jib not connected to the electrical system (deactivated)
	Carry out maintenance
	Heat exchanger fan in use
	Reset: operates for 5 seconds
	Reset: does not operate for 30 seconds
	Set for the use of the crane

- Alarm messages

Icon (1)	*Code*	*Description*
	01	Filter blocked
	34	Winch lifting end stroke (deactivated)
	33	Winch lowering end stroke (deactivated)
	22	Manual extension overload (deactivated)
	02	Hydraulic oil high temperature
	03	Hydraulic oil low temperature
	45	Control unit malfunction
	46	Central remote control unit malfunction
	47	Satellite unit malfunction
	21	Crane not stabilised
	23A 23B	Main jack angular sensor *23A - sensor disconnected* *23B - sensor short circuited*
	24A 24B	Secondary jack angular sensor *24A - sensor disconnected* *24B - sensor short circuited*
	25A 25B	Jib angular sensor (deactivated) *25A - sensor disconnected* *25B - sensor short circuited*
	26A 26B	Temperature sensor *26A - sensor disconnected* *26B - sensor short circuited*
	27A 27B	Main jack pressure sensor *27A - sensor disconnected* *27B - sensor short circuited*
	28A 28B	Secondary jack pressure sensor *28A - sensor disconnected* *28B - sensor short circuited*
	29A 29B	Jib joint jack pressure sensor (deactivated) *29A - sensor disconnected* *29B - sensor short circuited*
	30A 30B	Emergency solenoid valve *30A - emergency disconnected* *30B - emergency short circuited*
	32A 32B	Multiple activation solenoid valve (deactivated) *32A - Solenoid valve disconnected* *32B - Solenoid valve short circuited*
	74	Maximum pressure safety value exceeded
	from 7 to 13	Distributor electrical module malfunction

	7	Rotation control	1st module
	8	Main jack control	2nd module
	9	Secondary jack control	3rd module
	10	Arm jack control	4th module
	11	Accessory control	5th module
	12	Accessory control	6th module
	13	Accessory control	7th module

Icon (1)	*Code*	*Description*	
	from 14A to 20B	Distributor lever active position	
	14 A	Rotation control lever (clockwise)	1st component
	14 B	Rotation control lever (anti-clockwise)	
	15 A	Main jack control lever (lowering)	2nd component
	15 B	Main jack control lever (lifting)	
	16 A	Secondary jack control lever (lowering)	3rd component
	16 B	Secondary jack control lever (lifting)	
	17 A	Arm jack control lever (extension)	4th component
	17 B	Arm jack control lever (retraction)	
	18 A	Accessory control lever **(2)**	5th component
	18 B		
	19 A	Accessory control lever **(2)**	6th component
	19 B		

(1) The icon appears together with the active control lever code.

(2) The code is associated with the distributor component and as a result the function of the lever varies in relation to the accessory assembled on that component (see accessory connection table).

- Accessory connection table

Accessory	*Code*	*Lever function*
Rotator	..A	Rotation control (clockwise)
	..B	Rotation control (anti-clockwise)
Implement	..A	Implement control (closing)
	..B	Implement control (opening)

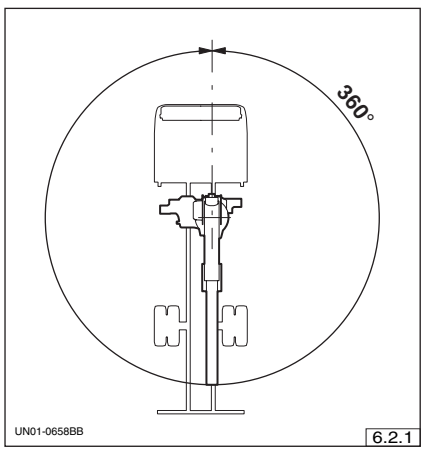
6.2 - Work sectors

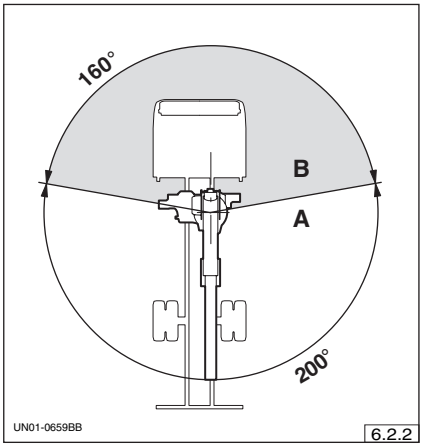
To ensure the stability of the assembly, the work sectors can be:

1) at 360° with a nominal capacity **(3)** (fig. 6.2.1).

2) With a nominal capacity in sector “A” (200°) and a reduction in capacity in sector “B” (160°) (fig. 6.2.2).

3) With a nominal capacity in sector “A” (200°) but without the possibility of rotation in sector “B” (160°) (fig. 6.2.2).





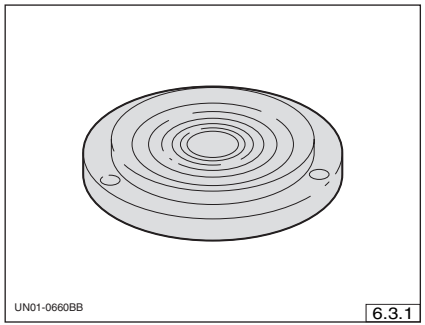
(3) Nominal capacity = load permitted in relation to a certain configuration (see capacity diagram).

6.3 - Crane stabilisation

6.3.1 - Warnings

DANGER !

The operator must know the maximum load that the stabiliser will apply to the ground (see enclosed documents) and must ensure that the ground consistency can guarantee the stability of the vehicle.
On ground that is not very solid, place the raised support plates or a hard wooden board of a suitable size between the stabiliser and the ground.
Stabilise the machine by unloading the weight of the vehicle from the suspension without lifting the wheels off the ground, as this would cancel out the elastic effect of the suspension, causing it to tip over.
Check the correct levelling using the spirit level, which must be flat (0°) with a maximum tolerance of +/-1°.



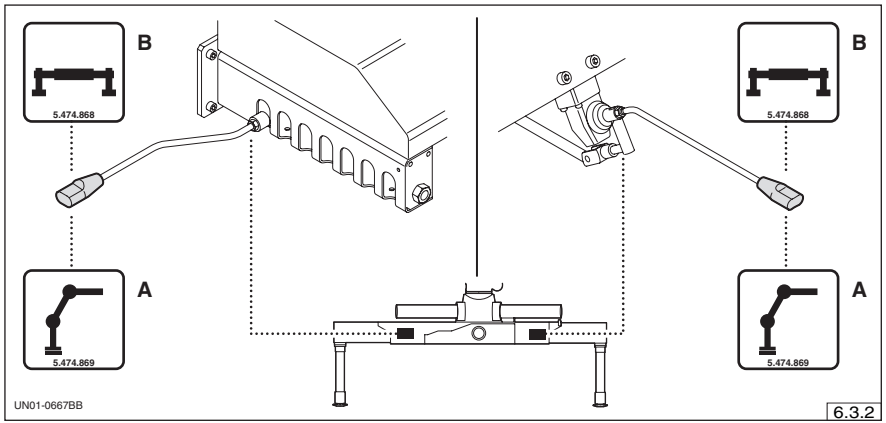
CAUTION !

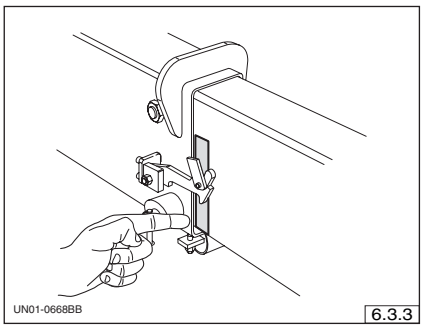
Before using the controls for the stabilisation, deactivate all the locking devices.

1 - Block the vehicle with the parking brake and place the chocks behind the wheels.

2 - Start the motor at minimum rpm and engage the power takeoff.

3 - Position the switch lever to position “B” (fig. 6.3.2).





Information

It is only possible to use the crane when the oil temperature is higher than the preset minimum.

Heating the oil:

1- turn the switch lever to position “B” and wait for the oil to heat up.

2- Turn the switch lever to position “A” and check the oil temperature in the function control unit.

6.3.2 - Stabilisation controls

Stabilisation can be controlled with the switch (fig. 6.3.4) or the distributor (fig. 6.3.5).

- Controls with switch

A1 - extension/retraction of the crane left stabiliser arm

A2 - extension/retraction of the crane left stabiliser jack

A3 - extension/retraction of the supplementary crossbeam left stabiliser arm

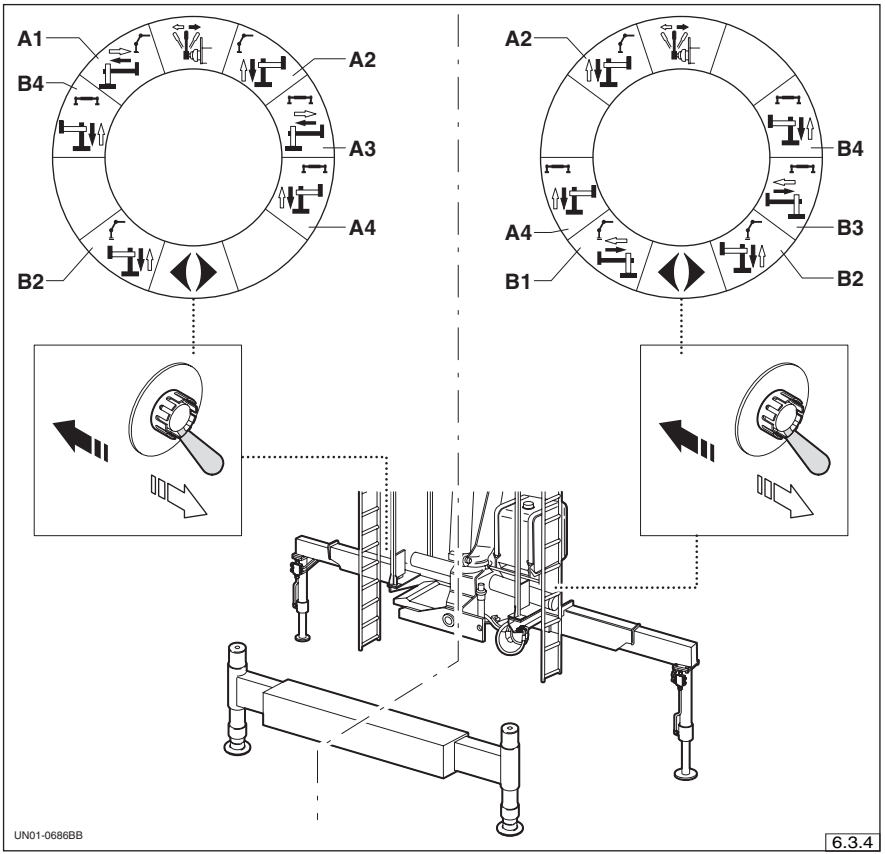
A4 - extension/retraction of the supplementary crossbeam left stabiliser jack

B1 - extension/retraction of the crane right stabiliser arm

B2 - extension/retraction of the crane right stabiliser jack

B3 - extension/retraction of the supplementary crossbeam right stabiliser arm

B4 - extension/retraction of the supplementary crossbeam right stabiliser jack.



- Controls with distributor

A1 - retraction of the crane left stabiliser jack

A2 - extension of the crane left stabiliser jack

A3 - retraction of the crane left stabiliser arm

A4 - extension of the crane left stabiliser arm

A5 - retraction of the supplementary crossbeam left stabiliser jack

A6 - extension of the supplementary crossbeam left stabiliser jack

A7 - retraction of the supplementary crossbeam left stabiliser arm

A8 - extension of the supplementary crossbeam left stabiliser arm

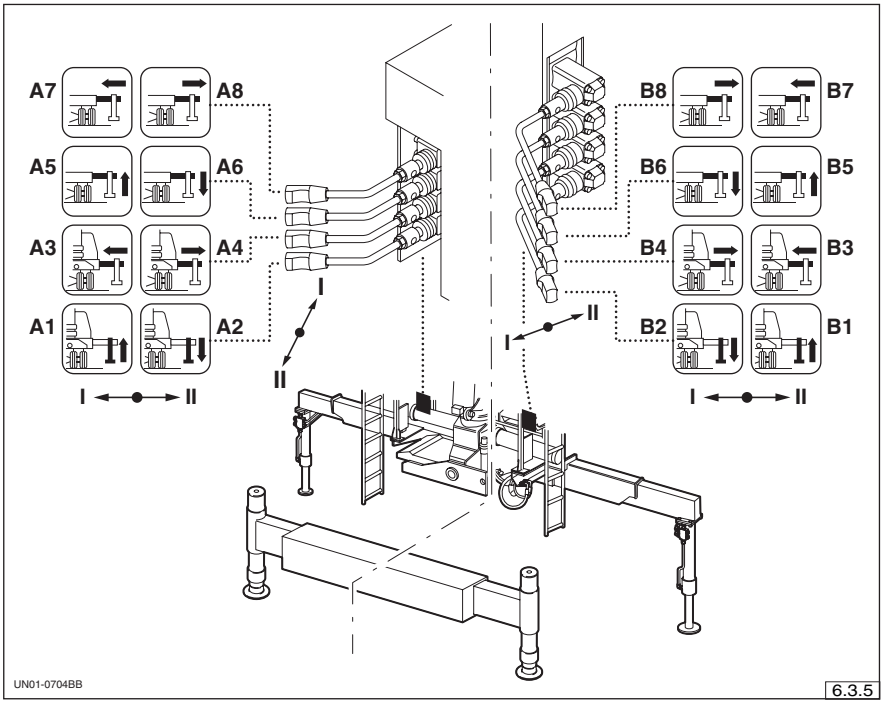
B1 - retraction of the crane right stabiliser jack

B2 - extension of the crane right stabiliser jack

B3 - retraction of the crane right stabiliser arm

B4 - extension of the crane right stabiliser arm

B5 - retraction of the supplementary crossbeam right stabiliser jack



B6 - extension of the supplementary crossbeam right stabiliser jack

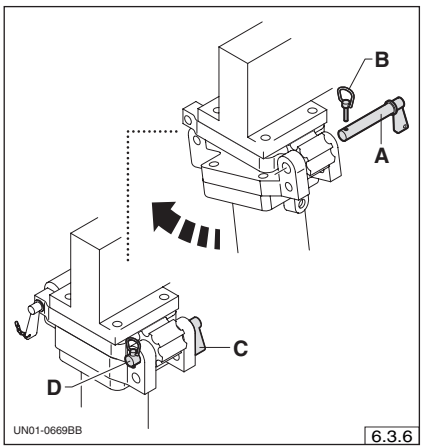
B7 - retraction of the supplementary crossbeam right stabiliser arm

B8 - extension of the supplementary crossbeam right stabiliser arm

6.3.3 - Adjustable stabilizer

WARNING !

Before removing the lock pin, support the stabiliser jack (with the force required) and accompany it through the rotation movement until it reaches the upright position (work position).



1 - Remove the lock pin “A”.
2 - Rotate the jack into the upright position.
3 - Fit the pin “C” and secure it with the safety pin “D”.

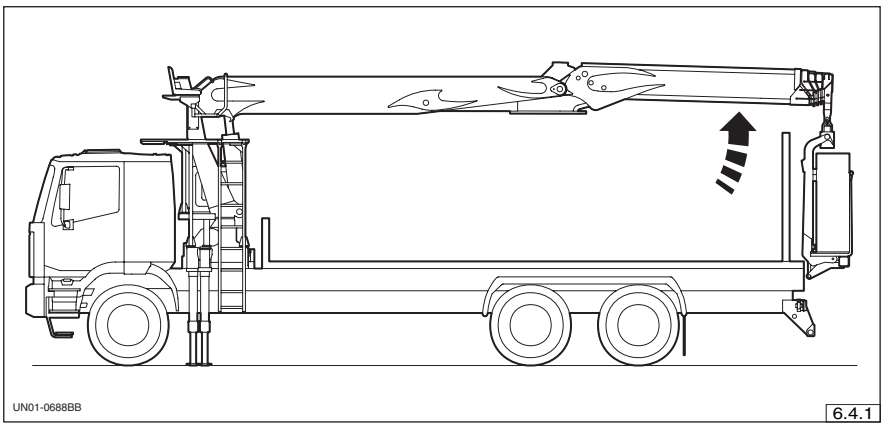
Carry out the same operations but proceeding in reverse order to return the jack to the resting position. Lock it in position with pin “A” and the relative safety pin “B”.

6.4 - Working position of the crane

CAUTION !

Before starting the manoeuvres remove the safety devices that hold the crane in position during road travel.

Before moving the crane, carefully read chapter 3 and the stabilisation instructions.
Check that the battery is charged and the remote control functions properly.
Open the main jack enough to allow the free rotation of the crane (fig. 6.4.1).



6.5 - Safety device efficiency check

On start-up, the function control device carries out a self-diagnosis (of the existing crane configuration) to check for any malfunctions.
Any anomalies are shown on the remote control and function control unit displays (see “information and alarm messages”).

6.5.1 - Checking the emergency stop button

WARNING !

Check all the emergency stop buttons individually.

With the crane open and without a load:

1) press the button;

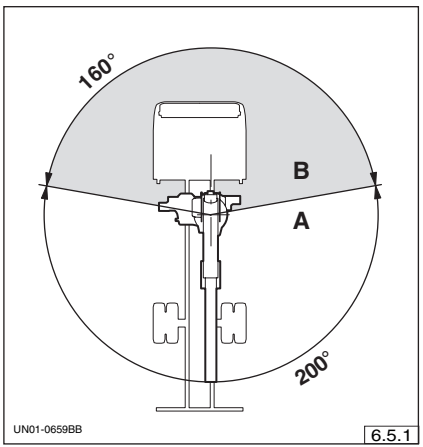
2) move the control levers in both directions and check that it is not possible to move the crane.

3) Turn the button to reset the crane functioning.

6.5.2 - Checking the rotation limiter (fig. 6.5.1)

Carry out the check with a load that is higher than what is permitted for that certain sector.
The permitted load value is provided by the authorised service centre that performed the installation and checked the stability of the assembly.

1) Turn the crane clockwise and anti-clockwise to check that the device prevents the rotation of the crane into sector “B”.



6.5.3 - Checking the rotation block (fig. 6.5.1)

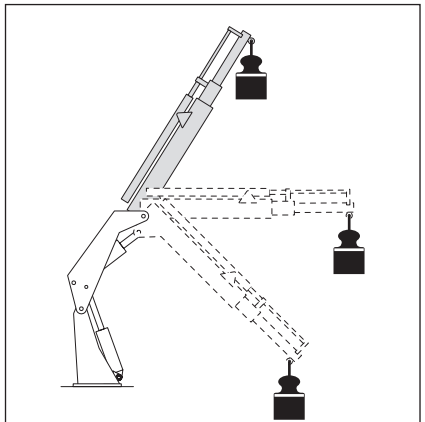
Carry out the check with the crane open and without a load.

1) Turn the crane clockwise and anti-clockwise to check that the device prevents the rotation of the crane into sector “B”.

6.5.4 - Checking the load maintenance valve

Carry out the check with a medium load.

1) Position the crane as shown in fig. 6.5.2;
2) deactivate the power takeoff;
3) remove the pressure from the system by moving the distributor lever a few times;
4) wait for a short time to check that the load does not lower.



6.6 - Lifting and moving the load

- Lifting the load

To lift large loads that require the full power of the crane, work as follows.

Zone "A":

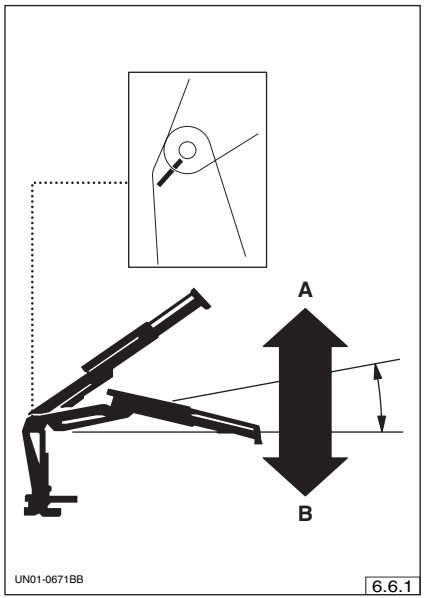
- move mainly the main jack.

Zone "B":

- use mainly the secondary jack and the arm extension jacks.

The maximum lifting capacity is determined by fitting together the tworeference points on the column and main arm.

To speed up the loading/unloading operations, it is preferable to use the main and secondary jacks, rather than the arm extension jacks.



6.7 - Crane destabilisation and circulation on the road

- Crane destabilisation

Close up the machine into the resting position.

1 - Retract all the stabiliser jacks completely;
2 - retract all the stabiliser arms completely;
3 - check that the safety devices for road travel are activated;
4 - deactivate the power takeoff;
5 - check that the crane is within the maximum outreach limits foreseen by the Highway Code.

- Circulation on the road

WARNING !

Before setting off, make sure the power takeoff is switched off to prevent serious damage to the vehicle.

Driving the vehicle and crane outfitting requires particular skill and training, in addition to a extreme awareness of the responsibility it entails, which is why only suitably trained and authorised persons may drive the machine.

Circulation on the road network is only permitted to approved machines and drivers meeting the requirements of the current highway code.
In any case, before setting off, ensure:
- the safety pins for circulation on the roads are fitted properly;
- any mobile parts which could move suddenly and unexpectedly are locked securely;
- all protruding parts are clearly marked with the relative warning plates.

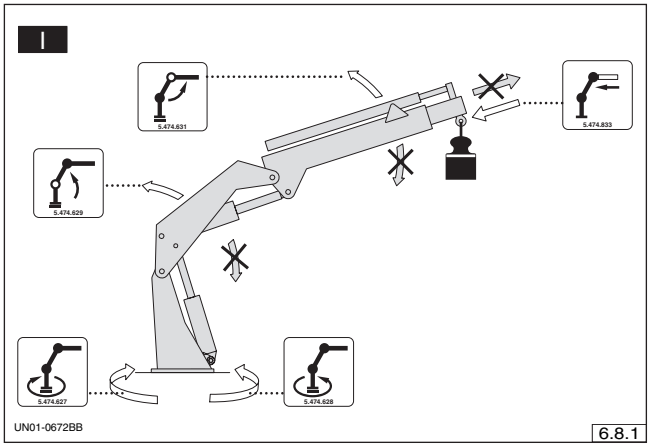
6.8 - Locking the crane

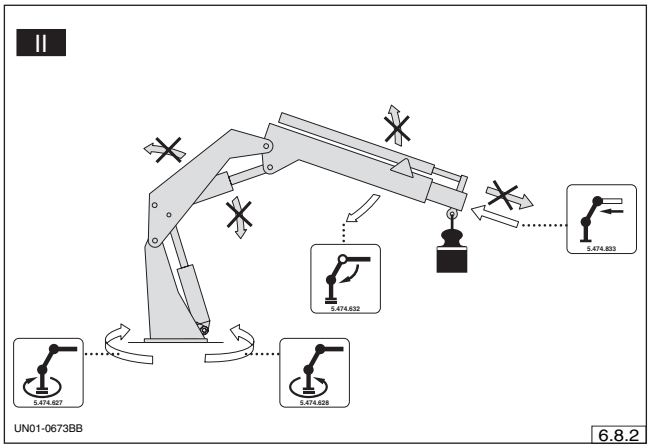
6.8.1 - Lock situations and manoeuvres permitted

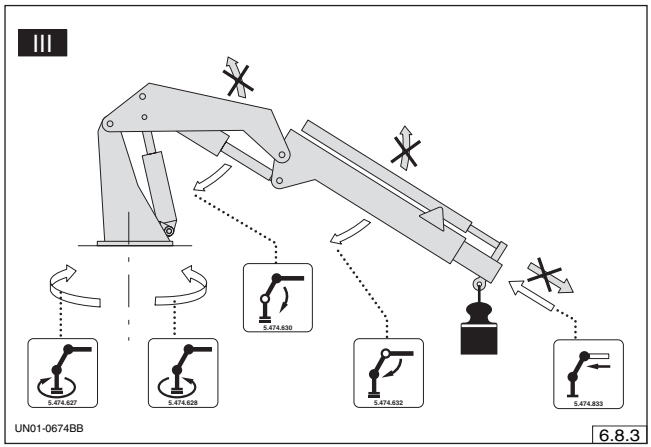
It is impossible to explain every lock situation; however, the following are illustrations of some situations in which they can occur.
As a general rule, manoeuvres that move the load towards the column are permitted.

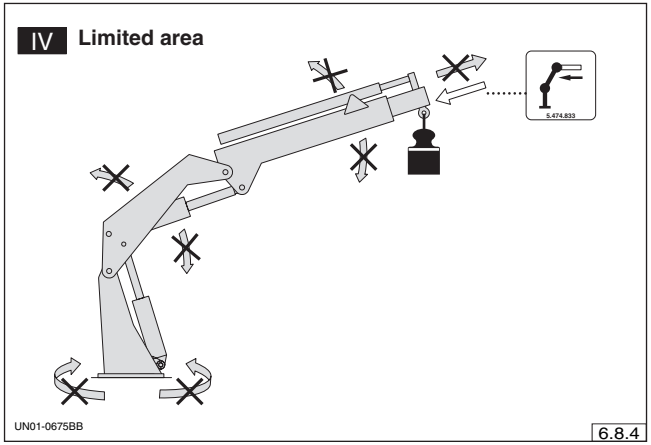
Information

The retraction of the arms is always allowed, with the exception of the particular situations in which the manoeuvre overloads the secondary jack. In these cases, the arm retraction locks and it is possible to move the load with the remaining manoeuvres permitted. If all the controls are inhibited, carry out the unlocking manoeuvres using the "5-30" system.









6.8.2 - Block for overload and reset

Information

The machine block can occur when the crane is either with or without a load.

The block situation is caused by the use of the main or secondary jack lifting control, when they have already reached the lifting end stroke.
It is determined as follows:
inside the jack used, a higher pressure than the calibrated one causes the machine to block.
Move the jack control lever that caused the block and then press the reset button “A” for seven seconds. Once this has been done, it is possible to manoeuvre the crane if a new block situation does not intervene after one second.
The operation is only possible twice.
If the block should persist, reset the functioning using the “5-30” system.

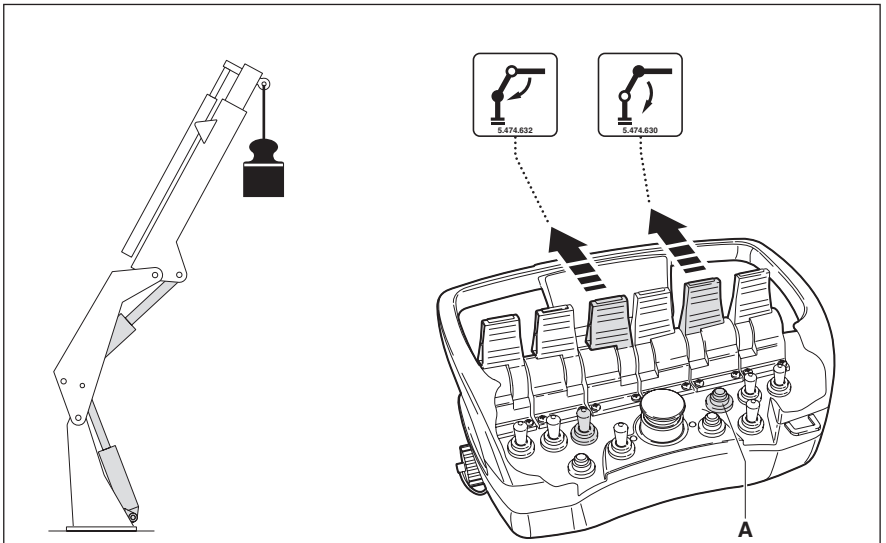
6.8.3 - Resetting the functioning using the "5-30" system) (fig. 6.8.5)

Information

It is only possible to carry out the lowering of the load with the arms completely retracted.

Use the system when all the controls are inhibited and the machine is blocked.
"5-30" means that the system imposes 5 seconds of manoeuvre for lowering the load and 30 seconds for stopping the machine. Carry the operations out repeatedly until the load is placed onto the ground.

- Press the reset button "A" and use the controls of the blocked jack to lower the load.



6.9 - Emergency situation

DANGER !

The exclusion of the function control unit makes it possible to tip the machine over, therefore operate with maximum care.
Only carry out the manoeuvres that move the load towards the column, in order to place the load on the ground.

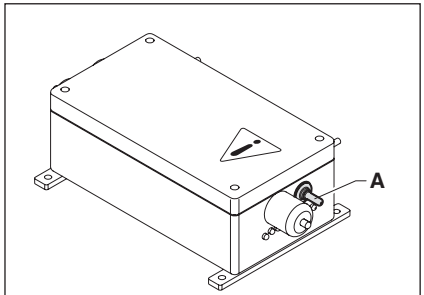
As result, the electric/electronic or remote control malfunction causes the exclusion of the function control unit and it is necessary to move the crane from the distributors.

Information

Moving the crane from the distributors with the functioning remote control causes the crane to lock.
To restart the machine restart the vehicle engine and reengage the power takeoff.

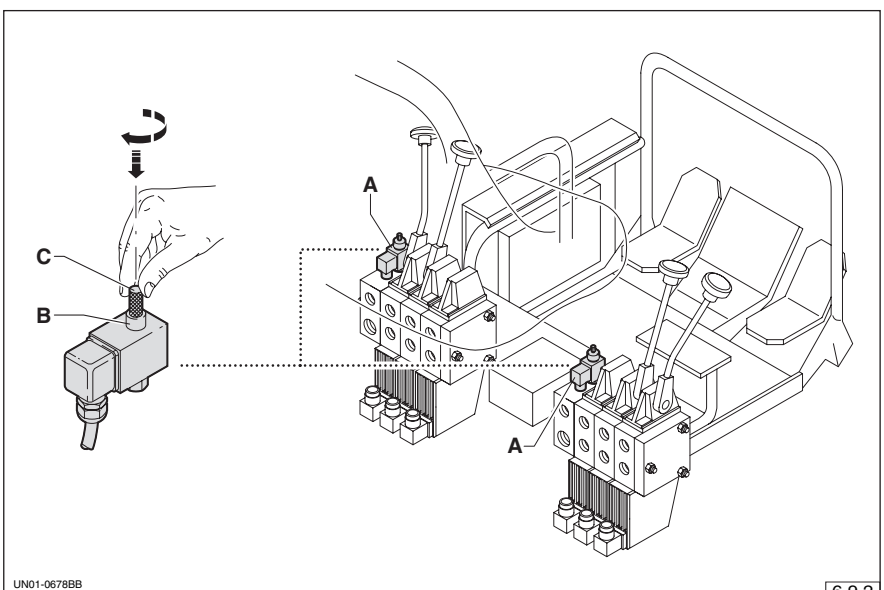
- Transmitting unit failure

In the event of a transmitting unit failure, flip the switch “A” on the ECU (fig. 6.9.1) to the “manual” position and then control the machine with the distributors.



6.9.1

-Electric - electronic failure



6.9.2

i **Information**

Carry out the operations on both the solenoid valves "A" (fig. 6.9.2).

1 - remove the seals from the exclusion device "B";
2 - press and turn the ratchet "C" until the end stroke;
3 - manoeuvre the crane from the distributors in order to place the load on the ground and close the crane in the resting position.

6.9.1 - Sensor exclusion during malfunction

If a malfunction occurs in one or more sensors, (with the exception of the pressure sensors), it is possible to exclude them and operate temporarily to complete the operation in progress and re-close the crane.
The exclusion of the sensors causes an automatic reduction of the lifting capacity by 10%.

1) Press and keep pressed the "Reset" button on the transmitter unit of the remote control or on the control panel of the function control unit.
   The intermittent buzzer informs the operator that the reset function is active.
2) Move the crane.
   If a block situation occurs, repeat the operation in point 1).
   It is possible to use the reset function three times, then only movements that bring the load closer to the column are permitted.
   If a block is caused, it is necessary to carry out the procedures described in part 6.9 "Emergency situation" to activate the crane.

6.10 - Access to the manoeuvring position

WARNING !

Use the ladder provided to access the manoeuvring post.
Do not use the controls or the hoses as footholds, but use the specially designed handles and handrails.
Always keep the manoeuvring position, the platform and access ladder clean and free from oil, mud, grease, snow and ice.
When walking across the platform, always hold firmly onto at least one of the handles or rails to avoid the risk of failing.
Always access the platform /raised manoeuvring post one at a time, as manoeuvring space is limited, and respect the platform's maximum capacity (see para. 2.4 - Safety and information signals).

7 Maintenance

7.1 - Regular checks

All the maintenance operations that are not provided for in this chapter must be carried out at an authorised PM service centre.

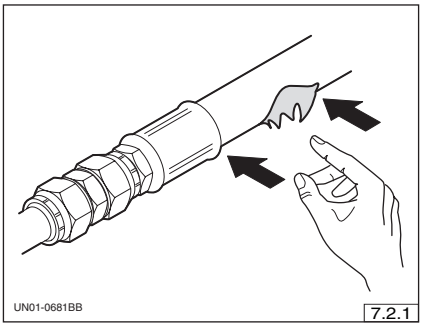
Regular checks
Checks to be carried out by the operator

Component	Operation	every 10 hours	every 100 hours	every 500 hours	every 1000 hours	Manual refer. number
Pipes and hoses	Check	•				7.2
Connections	Check for leaks	•				7.4
Plates	Check integrity	•				2.4
Hook	Check	•				3.1
Hydraulic oil	Check	•				7.5
Safety devices	Check	•				2.3
Structure	Inspection	•				7.6
Pin lock	Check		•			7.7
Crane stay rod	Check		•			7.8
Crane	Cleaning		•			7.10
Pins	Lubrication		•			7.17
Arms	Lubrication		•			7.11
Sliding blocks	Lubrication		•			7.11
Filters	Check	•				7.12
	Replacement			•		7.12
Remote control batteries	Replacement				•	6.1

Regular checks Checks that must be carried out at an authorised service centre						
Component	**Operation**	Every 200 hours	Every 500 hours	Every 1000 hours	Every 2000 hours	Every 4000 hours
Hydraulic oil	Check, replacement			•		
	Check contamination		•			
Safety devices	Check			•		
Structure	Inspection		•			
Sliding blocks	Replacement					•
Valves	Calibration		•			
Hydraulic system	Washing					•

7.2 - Checking the condition of the hoses

Check the fastening of the pipe connection and the condition of the hose. If the pipe shows any signs of ageing, breakage, bulging, abrasion, etc., it must be replaced.

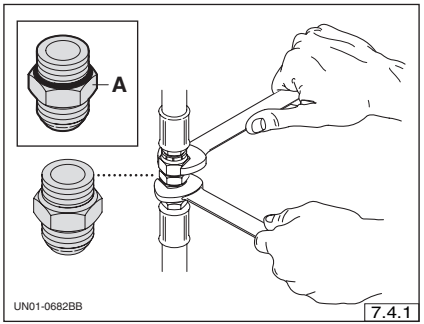


7.3 - Checking the hosing guards

These guards protect the operator from oil spurts in the event of a breakage in the hosing. If they are worn or broken, they must be replaced.

7.4 - Checking for oil leaks from the hydraulic system

Oil leaks from the connections can normally be eliminated by tightening the connections correctly. Oil leaks from connection “A”, which is supplied with an airtight washer, can only eliminated by replacing the connection.

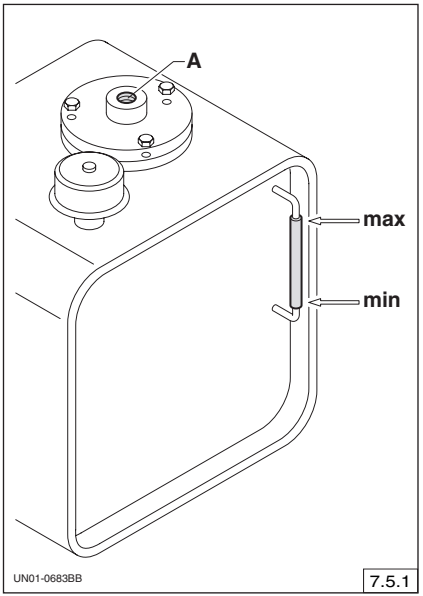


7.5 - Checking the hydraulic oil level (fig. 7.5.1)

Check the oil level daily, which must be between the minimum and maximum marks. If necessary, top up through filler “A”.
For the oil characteristics see § 7.16.

i **Information**

Carry out the check with the crane in the resting position, with all the jacks retracted and the vehicle on a flat surface.

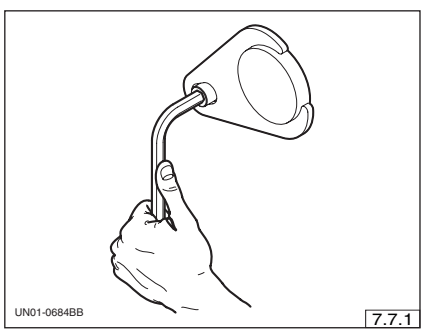


7.6 - Structure inspection

Wash the crane carefully before carrying out the checks.
Visually inspect the integrity of the structure in general and in particular the welding.

If any weakening or small cracks are noticed, immediately contact an authorised PM service centre. As stated in the regular check schedule (§ 7.1) have the structure checks carried out at an authorised PM service centre.

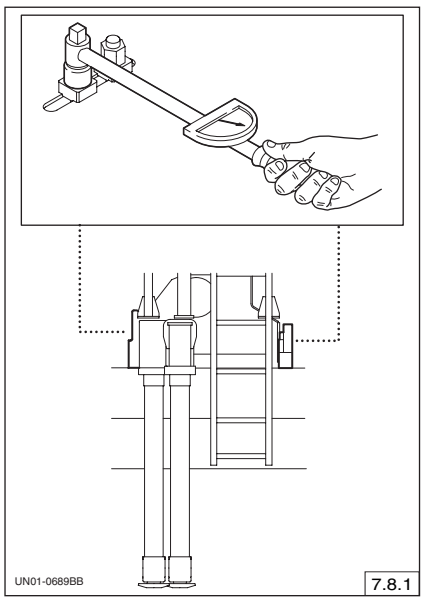
7.7 - Checking the pin locks



Check the fixing screws of the pin locks. If they have loosened, tighten the screws to the tightening torque of 18 daN.

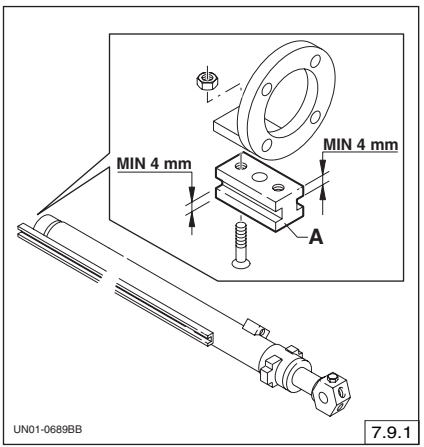
7.8 - Checking the anchorage stay rods

Check that the anchorage stay rods are tightened; if not, tighten the nuts to the tightening torque of 160 daN.



7.9 - Checking the jack sliding blocks

Check the wear of sliding blocks “A”. At an authorised service centre, have the sliding blocks replaced when the wings are less than 4 mm.



7.10 - Cleaning the machine

Clean the jack shafts to avoid dirt building up.
Clean the machine with a jet of pressurised water, using detergents that are authorised by the standards in force.

Do not orient a jet of pressurised water to electrical equipment to avoid damaging it.

7.11 - Lubrication of the crane arms and stabilisers

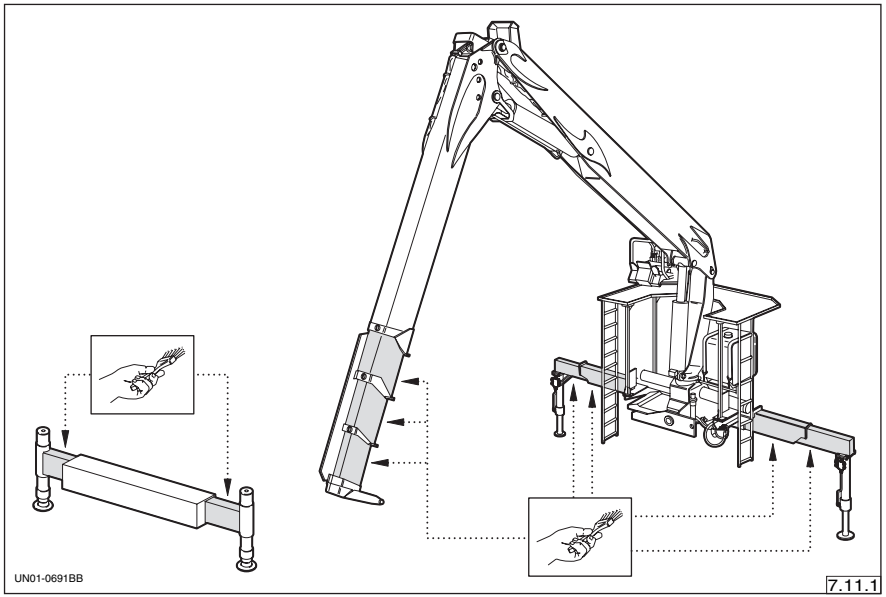
After having carried out the lubrication, carry out some arm extension manoeuvres without a load, in order to distribute the lubricant.
For the lubricant characteristics see § 7.16.

- Crane arms

Extend the arms completely and grease the upper and lower surfaces.
Grease the sides of the arms when the lateral sliding blocks are assembled.

- Stabiliser arms

Extend the arms completely and grease the lateral surfaces.



7.12 - Filters

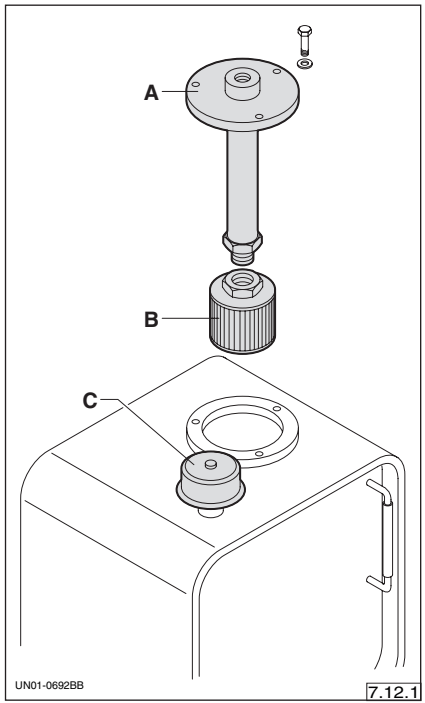
Information

After the first 20 hours of work and in general after every maintenance operation on the hydraulic system, replace the filter cartridges to ensure the efficiency of the filtering system. If there are any solid deposits inside the filtering unit, contact an authorised service centre.

When the filter cartridge is replaced, the exhaust plug “C”, equipped with a 3 micron filtering grade air filter, must also be replaced.

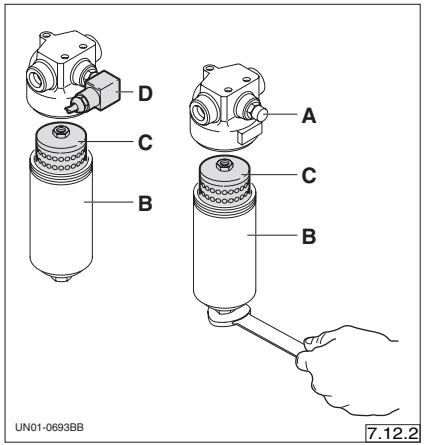
7.12.1 - Replacing the exhaust filter

Replace the filtering cartridge, as it is made of non-washable material, when the “replace the filter” alarm message is displayed.
In any case, carry out the replacement by the expiry date provided for in the planned maintenance schedule (see § 7.1).



1- Remove the cover “A” and take out filter unit;
2- unscrew the cartridge “B” from its support.
3- Replace the filter cartridge with a new;
4- reassemble the cover.

7.12.2 - Delivery filter replacement



Replace the filter cartridge when the blockage indicator “A” turns red or when the “replace the filter” alarm message is displayed (for filter with sensor “D”).
In any case, carry out the replacement by the expiry date provided for in the planned maintenance schedule (§ 7.1).
For the replacement proceed as follows:
1 - carefully clean the external surfaces of the filter;
2 - turn off the tank tap;
3 - unscrew the filter unit “B” and drain the oil inside it;
4 - replace the filter cartridge “C”.

To reassemble the filter, carry out the disassembly operations in reverse.
Tighten the filter unit to a tightening torque of 10daNm.
Turn on the tank tap.

7.13 - Long periods of machine inactivity

If the crane has to remain inactive for a long period of time, it is necessary to:
1) wash it and fold it back into the resting position with all the jacks closed. If this is not possible, clean and lubricate the part of the jackshafts that remains exposed to the atmospheric agents.
2) park the machine in a sheltered area, which can only be accessed by authorised personnel;

3) check and replace the damaged and worn components;
4) check and remove any fluid leaks;
5) check and top up all the fluid levels if necessary.

7.14 - Starting the machine up again

Before starting the machine up again after a long period of inactivity, carry out the following checks and operations:
1) wash the machine completely;
2) grease all the components that are subject to lubrication;
3) check and top up all the fluid levels if necessary;
4) check and remove any fluid leaks;
5) check the integrity of the pipes and hoses;
6) check and replace any damaged components;
7) check the correct functioning of the controls and visual indicators;
8) check the correct functioning of all the safety devices;
9) carry out the maintenance operations in accordance with the planned maintenance schedule (see § 7.1).

7.15 - Scrapping

The scrapping of the machine must be entrusted to personnel that are specialised in such work and have the necessary hydraulic and mechanical skills.
The components must be separated, depending on the nature of the material they are composed of, and sent to authorised collection centres.

7.16 - Oils and lubricants

Never mix oils of different types together, in order to avoid machine malfunctions.
For top ups, only use preventively filtered oils (maximum filtration grade, class 9, in accordance with Nas 1638-18/14 ISO 4406).

i Information

Do not dispose of the oil in the environment, as it causes pollution.

- Environmental temperature 0 ÷ 50 °C

Lubricant	ESSO	MOBIL	SHELL	TOTAL	AGIP
Hydraulic oil	NUTO H46	DTE OIL 25	TELLUS OIL 46	AZOLLA ZS 46	OSO 46
Grease	GP grease	MOBILFLEX 47	SUPER GREASE EP 2	MULTIS 2	GR CC2

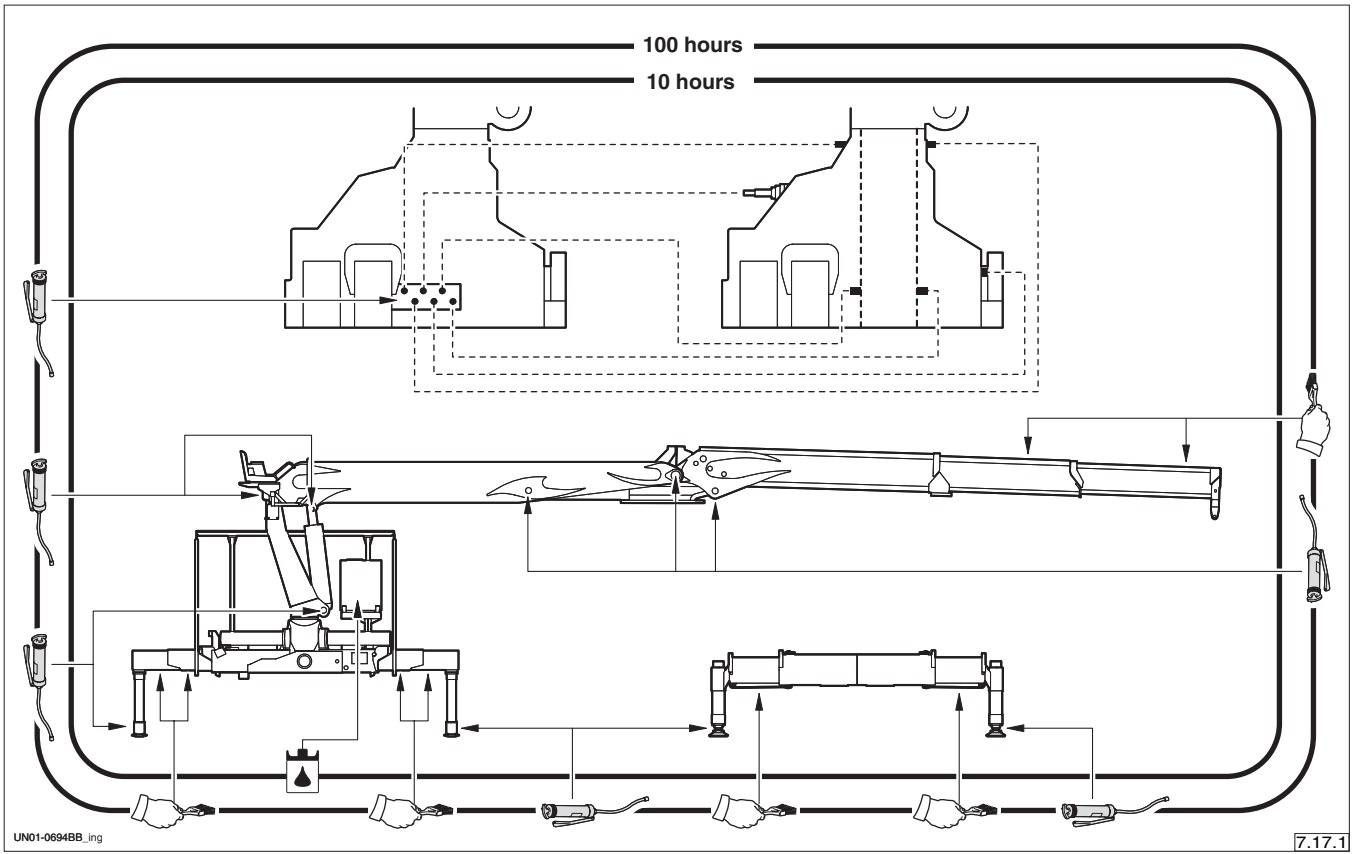
- Environmental temperature -15 ÷ 20 °C

Lubricant	ESSO	MOBIL	SHELL	TOTAL	AGIP
Hydraulic oil	NUTO H 32	DTE OIL 24	TELLUS OIL 32	AZOLLA ZS 32	OSO 32
Grease	GP grease	MOBILFLEX 47	SUPER GREASE EP 2	MULTIS 2	GR CC2

- For lower temperatures

Lubricant	ESSO	MOBIL	SHELL	TOTAL	AGIP
Hydraulic oil	NUTO H 22	DTE OIL 22	TELLUS OIL 22	AZOLLA ZS 22	OSO 32
Grease	BEACON EP 0	MOBILFLEX EP 0	SUPER GREASE EP 0	MULTIS EP0	GR LP 0

7.17 - Greasing and lubrication diagram



Symbols = Hydraulic oil Grease Grease

8 Fault, cause, remedy

Fault	Cause possible	Remedy
The crane is completely stopped	Emergency buttons pressed	Release the emergency stop buttons
	The load control device has come into operation	See “Block situation and manoeuvres allowed”
	The P.T.O is not engaged correctly	Engage the P.T.O
	P.T.O. engagement malfunctioning	Repair the P.T.O. engagement.
	Electrical system malfunctioning	Check signals on push-button panel or electronic control unit displays
	Low temperature of hydraulic oil	Let the oil flow through the system until the working temperature is reached
	Crane/stabilizer control switch on stabilisers	Position the switch on crane
	There may be a lever switch for a dump body located on the latter	Position the switch on crane
	Radio control malfunctioning	Check radio control devices

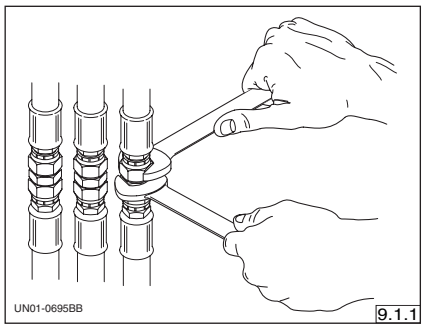
Fault	Cause possible	Remedy
The crane boom cannot hold the load and kreep down considerably	The pilot operated check valve fitted on the lift cylinder in question leaks	Have the valve checked and/or replaced by an authorized repair workshop.
	Oil leakage inside the cylinder concerned	Have the seals inside the cylinder replaced by an authorised repair workshop
Permanent vibrations while operating on all the movements	Insufficient hydraulic oil	Add hydraulic oil to the tank (see § 7.5)
	Clogging of hydraulic oil filter	Replace the filter cartridge (see § 7.12)
	Suction hose obstructed	Locate the cause of the obstruction and remove it
	Inefficient pump	Check the pump flow; if it is not regular replace the pump
Considerable reduction in the speed of the movements	Low speed of the engine	Check the exact speed of the vehicle's engine on the basis of the hydraulic boom extension time
	Radio and/or distributor system malfunctioning	Check signals on push-button panel or electronic control unit displays
	Inefficient pump	Check the pump flow; if it has decreased, replace the pump

Fault	Cause possible	Remedy
It is hard to engage the P.T.O.	If pneumatic: the air into the appropriate vehicle system is insufficient If mechanical: the control cable is obstructed	Check the pressure of the air in the vehicle's pneumatic system; stop any leaks Free the control cable
Vibrations in the arm unit during load translation	Sliding pads insufficiently lubricated Sliding pads too worn Insufficient hydraulic oil	Lubricate the sliding pads according to the relative instructions Consult an authorised workshop Check the level of the hydraulic oil
Lack of tension on the whole crane	Interrupted fuses P.T.O. relay malfunctioning	Replace the fuses Replace the relais
Electronic control unit off and crane not working	Control unit malfunctioning	Consult an authorised workshop

Fault	Cause possible	Remedy
Radio control off or not working	Interrupted radio fuse	Replace the fuse (see § 9.2)
	Radio unit malfunctioning	Consult an authorised workshop
	Push-button panel battery exhausted	Recharge the battery
	Interferenced radio transmission	Connect via cable the push-button panel to the receiver on the crane
	Receiver antenna malfunctioning	Consult an authorised workshop
	Emergency stop push-button pressed	Release the emergency stop push-button
Heat exchanger not working	Exchanger activation device malfunctioning	Have the device replaced by an authorized repair workshop
	Exchanger electrical connections cut-off	Check all electrical contacts
	Fan motor not working	Have the device replaced by an authorized repair workshop
	Satellite electronic control unit malfunctioning	Have the device replaced by an authorized repair workshop

9 Spare part replacement

9.1 - Hose replacement



DANGER !

Hose replacement must be performed with the hydraulic system depressurised.

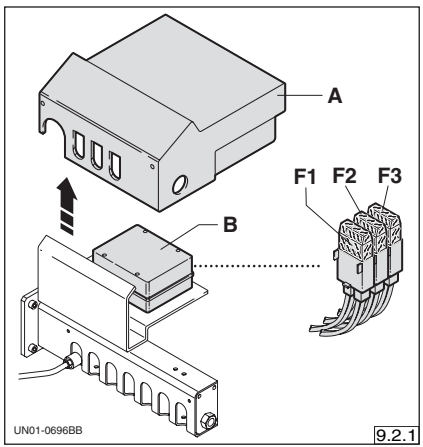
To depressurise the system, disconnect the power take off, stop the truck engine and move the control levers back and forwards.
Unscrew the joints and collect oil into a suitable tank.
Replace the hose and tighten the joints.

9.2 - Fuse replacement

Before replacing the interrupted fuse, remove the cause of its blowing up.
Replace the blown fuse with a new one having the same characteristics.

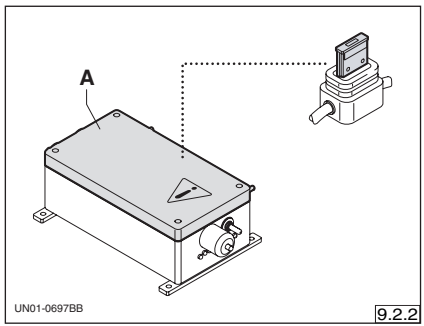
Pos.	Protected circuit	Ampére
F1	Main circuit (electronic control units, radio)	15
F2	Secondary circuit (operating control unit)	5
F3	Aux. circuit	10

9.2.1 - Connector block fuse replacement



Remove the casing “A” which covers the dual control post.
Remove the cover “B” and replace the interrupted fuse.

9.2.2 - Radio receiver fuse replacement



Remove the cover “A” and replace the interrupted fuse with a 10 A new one.

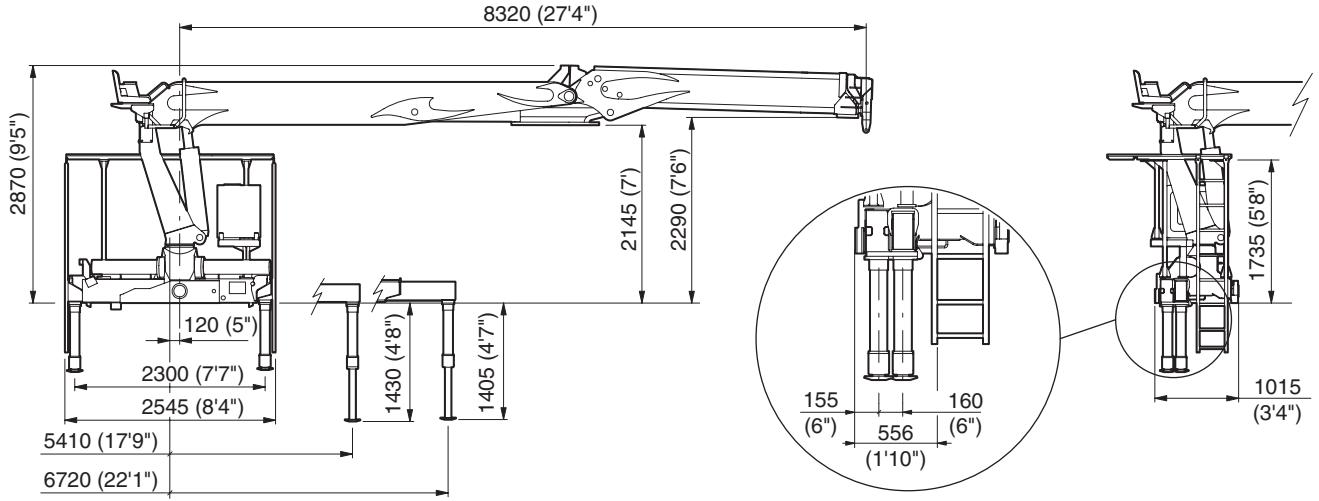
PM WB 450.22

Max. lifting momentum	kNm	255	ft lbs	188078
	tm	26	/	/
Hydraulic outreach:				
Horizontal	m	13,85	ft	45'5"
Vertical	m	17,10	ft	56'1"
Hydraulic system:				
Recommended capacity	l/min	45	gals/min	12
Maximum pressure	Mpa	24,5	psi	3553
Oil tank capacity	l	200	gals	53
Rotation unit:				
Rotation angle	°	410	°	410
Rotation torque	kNm	38	ft lbs	28027
Weight of standard crane with tank empty	kg	4040	lbs	8907
Maximum power absorbed by the hydraulic pump	kW	20,4	HP	27
Maximum force exerted on ground by stabilisers	kN	125	lbs	28101
Specific operating pressure of each stabiliser with Ø 185 mm disk	Mpa	4,7	psi	682
Arm pack extension time for unit	sec.	13	sec.	13

(*) With double pump = l/min 45 + 45 / gals/min 12 + 12

- Overall dimensions

PM WB 450.22



Pos.	Description	Stroke
A	1st arm extension jack	2400 (7’10”)
B	2nd arm extension jack	2400 (7’10”)

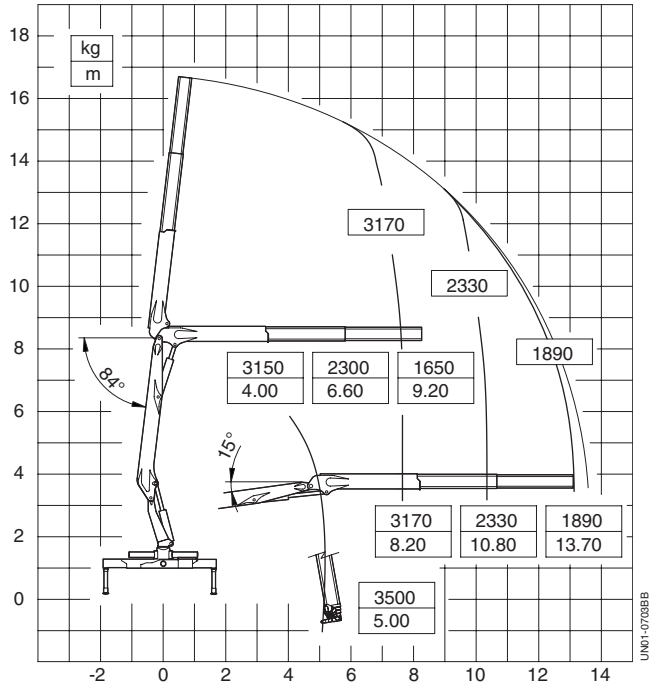
UN01-0739CB

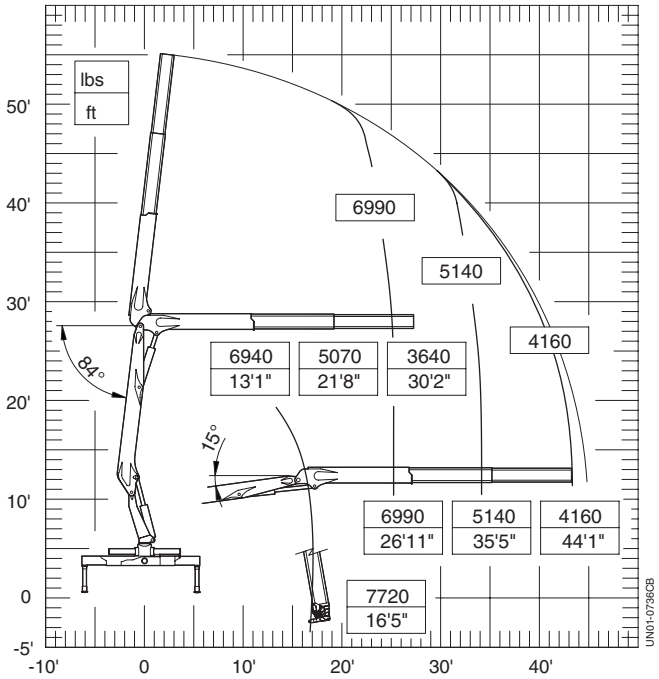
A.1

- Capacities diagram

PM WB 450.22

(USA)



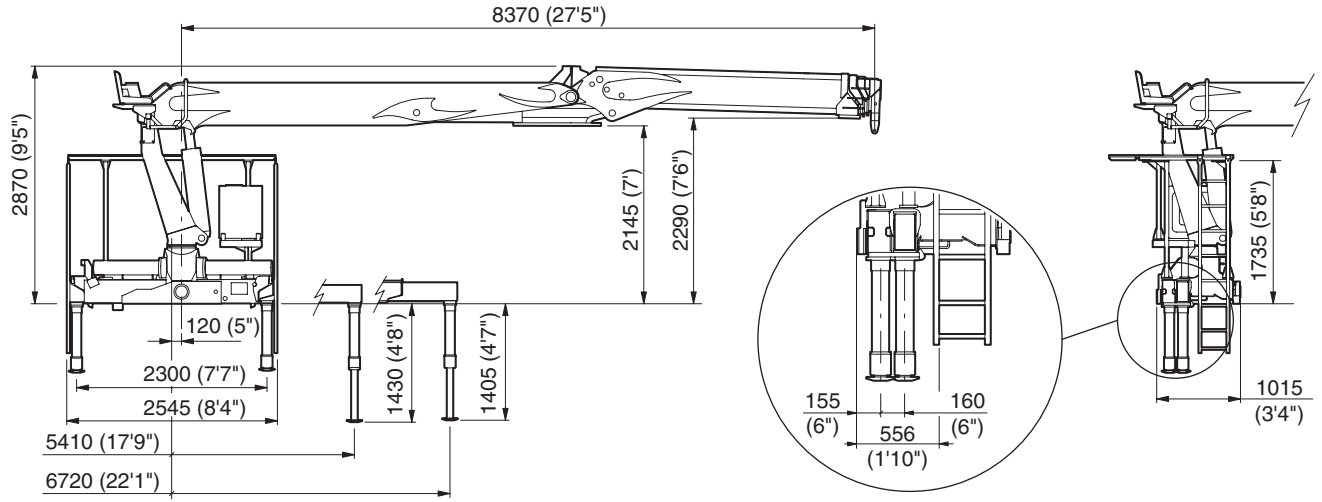


PM WB 530.23

Max. lifting momentum	kNm tm	239 24,3	ft lbs	176277
/ /				
Hydraulic outreach:				
Horizontal	m	16	ft	52’6”
Vertical	m	14,70	ft	48’3”
Hydraulic system:				
Recommended capacity	l/min	45	gals/min	12
Maximum pressure	Mpa	24,5	psi	3553
Oil tank capacity	l	200	gals	53
Rotation unit:				
Rotation angle	°	410	°	410
Rotation torque	kNm	38	ft lbs	28027
Weight of standard crane with tank empty	kg	4260	lbs	9392
Maximum power absorbed by the hydraulic pump	kW	20,4	HP	27
Maximum force exerted on ground by stabilisers	kN	125	lbs	28101
Specific operating pressure of each stabiliser with Ø 185 mm disk	Mpa	4,7	psi	682
Arm pack extension time for unit	sec.	20	sec.	20

(*) With double pump = l/min 45 + 45 / gals/min 12 + 12

- Overall dimensions



Pos.	Description	Stroke
A	1st arm extension jack	2400 (7’10”)
B	2nd arm extension jack	2400 (7’10”)
C	3rd arm extension jack	2400 (7’10”)

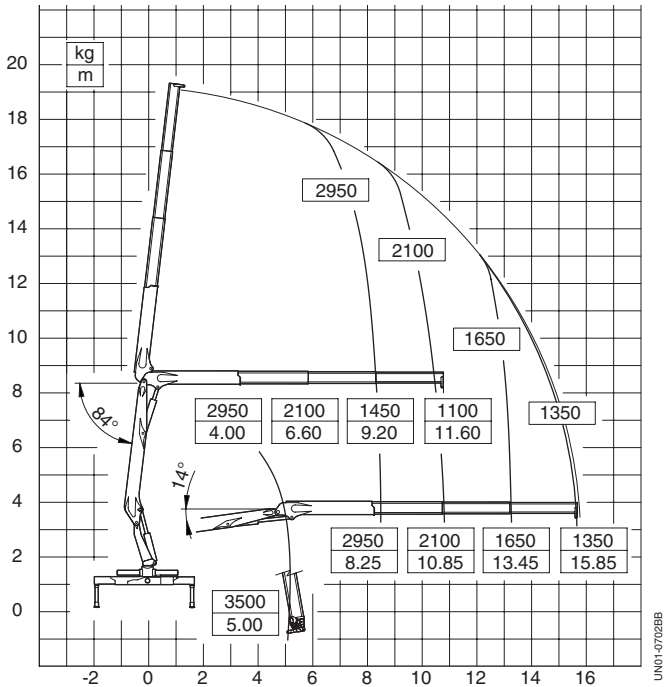
UN01-0737CB

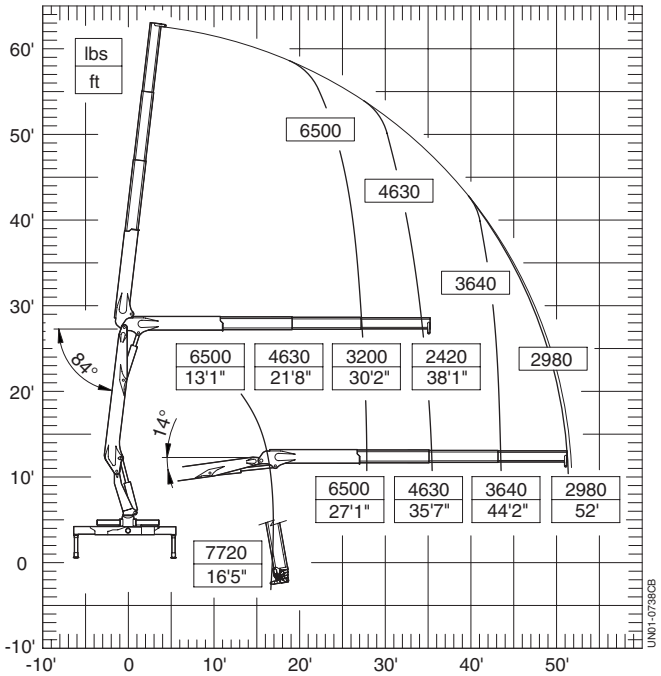
A.2

PM WB 530.23

- Capacities diagram

(USA)





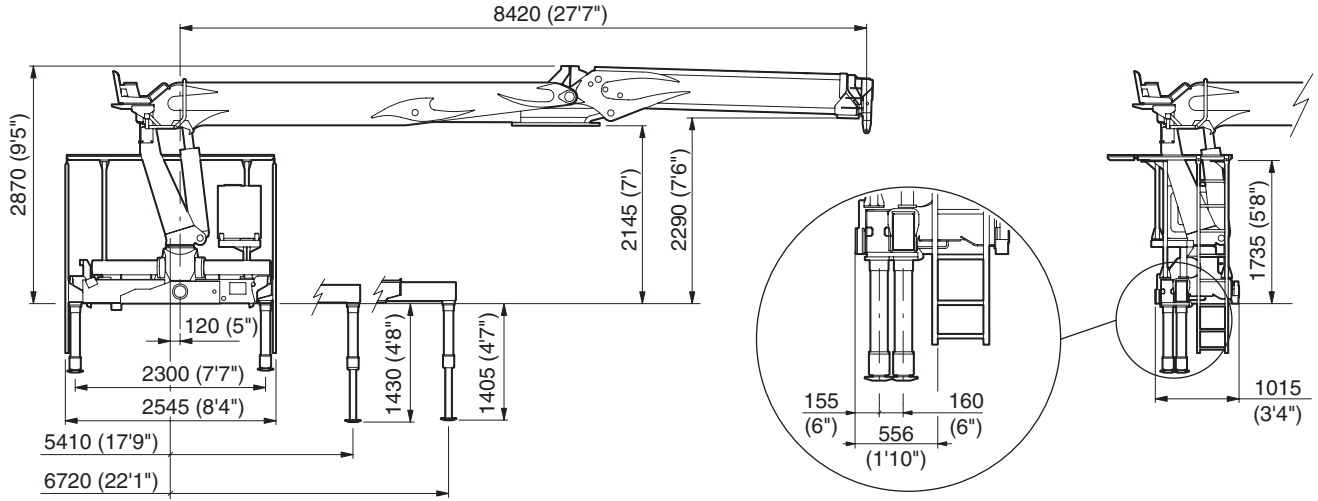
- Specifications and performances

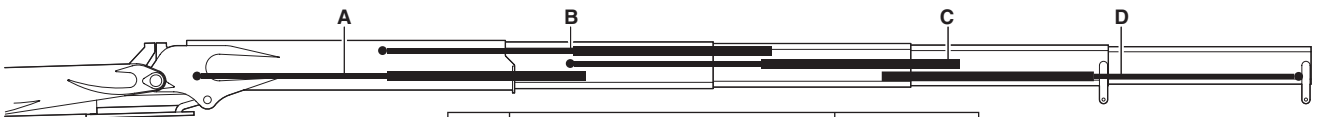
Max. lifting momentum	kNm	228	ft lbs	168164
	tm	23,2		
/ /				
Hydraulic outreach:				
Horizontal	m	18,45	ft	60'6"
Vertical	m	21,80	ft	71'6"
Hydraulic system:				
Recommended capacity	l/min	45	gals/min	12
Maximum pressure	Mpa	24,5	psi	3553
Oil tank capacity	l	200	gals	53
Rotation unit:				
Rotation angle	°	410	°	410
Rotation torque	kNm	38	ft lbs	28027
Weight of standard crane with tank empty	kg	4500	lbs	9921
Maximum power absorbed by the hydraulic pump	kW	20,4	HP	27
Maximum force exerted on ground by stabilisers	kN	125	lbs	28101
Specific operating pressure of each stabiliser with Ø 185 mm disk	Mpa	4,7	psi	682
Arm pack extension time for unit	sec.	26	sec.	26

(*) With double pump = l/min 45 + 45 / gals/min 12 + 12

- Dimensioni d'ingombro

PM WB 610.24



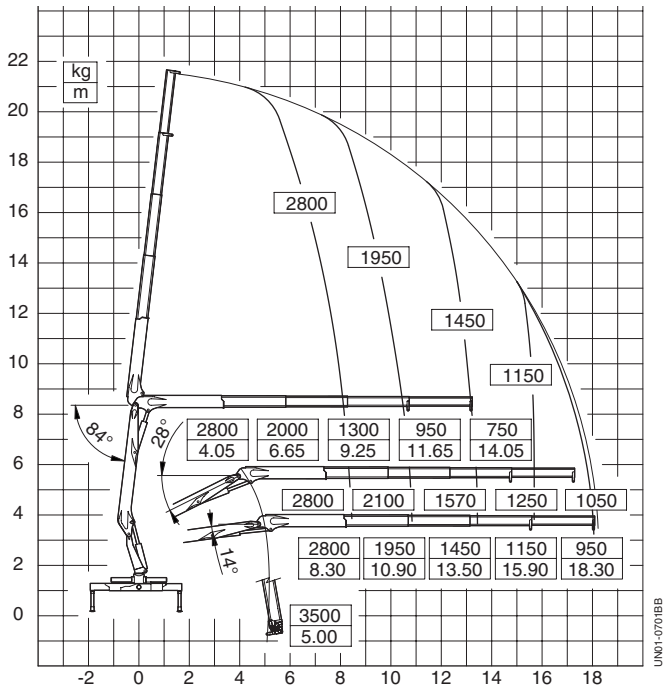


Pos.	Description	Stroke
A	1st arm extension jack	2400 (7'10")
B	2nd arm extension jack	2400 (7'10")
C	3rd arm extension jack	2400 (7'10")
D	4th arm extension jack	2400 (7'10")

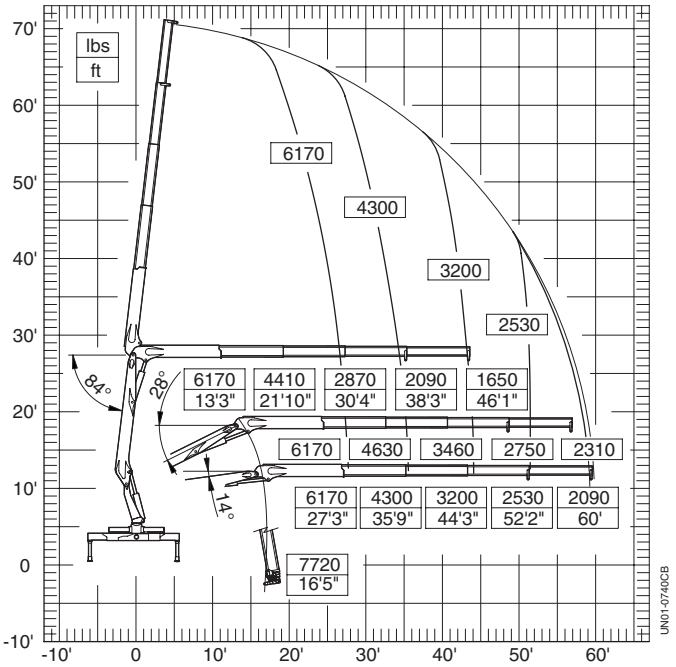
UN01-0735CB

A.3

- Capacities diagram



(USA)



- Record of the periodical technical inspections of the safety devices

Crane model		Year of manufacture	
Serial number		Year of installation	

Safety device inspected	Kind of inspection performed	Inspection result	Date	Date of next inspection	Name, businnes name and signature of the person responsible for inspection

Safety device inspected	Kind of inspection performed	Inspection result	Date	Date of next inspection	Name, businnes name and signature of the person responsible for inspection

Safety device inspected	Kind of inspection performed	Inspection result	Date	Date of next inspection	Name, businnes name and signature of the person responsible for inspection

Safety device inspected	Kind of inspection performed	Inspection result	Date	Date of next inspection	Name, businnes name and signature of the person responsible for inspection

Safety device inspected	Kind of inspection performed	Inspection result	Date	Date of next inspection	Name, businnes name and signature of the person responsible for inspection

NOTES

- Maintenance intervention confirmation

The service interventions must be carried out in series respecting the schedule.
Interventions must be marked with a cross.

At 500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐

stamp signature

At 1500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐

stamp signature

At 1000 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. Safety devices check ☐

stamp signature

At 2000 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. Safety devices check ☐

stamp signature

At 2500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐

stamp signature

At 3500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐

stamp signature

At 3000 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. Safety devices check ☐

stamp signature

At 4000 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. Safety devices check ☐
. Runner replacement ☐
. Hydraulic system washing ☐

stamp signature

At 4500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐

stamp signature

At 6500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐

stamp signature

At 6000 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. Safety devices check ☐

stamp signature

At 7000 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. Safety devices check ☐

stamp signature

At 7500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐

stamp signature

At ..... hours

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stamp signature

At 8000 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. Safety devices check ☐
. Runner replacement ☐
. Hydraulic system washing ☐

stamp signature

At ..... hours

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stamp signature