

Valid for models:

PM 65024 SP PT
PM 65026 SP PT
PM 65028 SP PT
PM 65029 SP PT

SERIE 65

- GA78 -

INSTRUCTION AND WARNINGS

Valid with the serial number

G.A78.0001

Code number: **4.150.558**

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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

PM Group S.p.A.

Via Verdi, 22

41018 San Cesario sul Panaro - Modena (Italy)

tel. +39 059 936811

fax. + 39 059 936800

e-mail: info@pm-group.eu

(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.

PM

a	
b	
c	d

Punching

GA XXXXX

UN01-2164BD

1.2

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

HAZARD !

This indicates information or procedures which, if not complied with exactly, 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.

i 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).

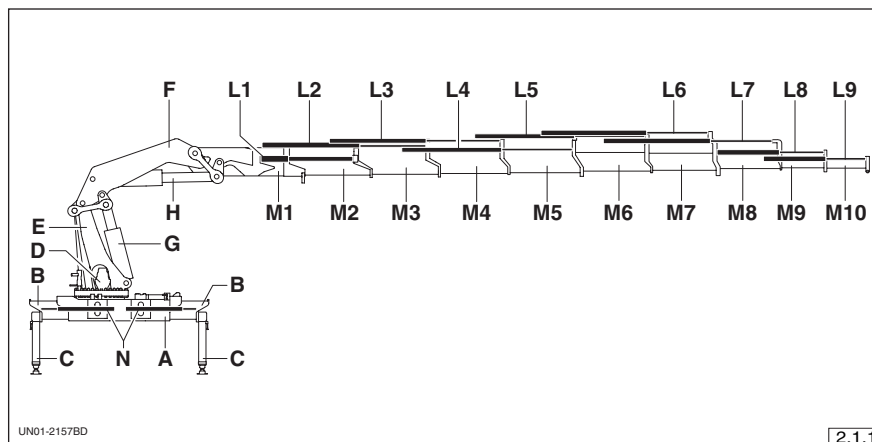
2.1 - Description of the crane

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 - Basic crane main parts



Key to the main parts

Ref.	Part	65024 SP PT	65026 SP PT	65028 SP PT	65029 SP PT
A	Base	•	•	•	•
B	Stabiliser arm	•	•	•	•
C	Stabiliser jack	•	•	•	•
D	Rotation reduction gear	•	•	•	•
E	Column	•	•	•	•
F	Main arm	•	•	•	•
G	Main jack	•	•	•	•
H	Secondary jack	•	•	•	•
L1	1st arm extension jack	•	•	•	•
L2	2nd arm extension jack	•	•	•	•
L3	3rd arm extension jack	•	•	•	•
L4	4th arm extension jack	•	•	•	•
L5	5th arm extension jack		•	•	•
L6	6th arm extension jack		•	•	•
L7	7th arm extension jack			•	•
L8	8th arm extension jack			•	•
L9	9th arm extension jack				•
M1	Secondary arm	•	•	•	•
M2	1st hydraulic extension arm	•	•	•	•
M3	2nd hydraulic extension arm	•	•	•	•
M4	3rd hydraulic extension arm	•	•	•	•
M5	4th hydraulic extension arm	•	•	•	•
M6	5th hydraulic extension arm		•	•	•

Ref.	Part	65024 SP PT	65026 SP PT	65028 SP PT	65029 SP PT
M7	6th hydraulic extension arm		•	•	•
M8	7th hydraulic extension arm			•	•
M9	8th hydraulic extension arm			•	•
M10	9th hydraulic extension arm				•
N	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 3/4 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 !

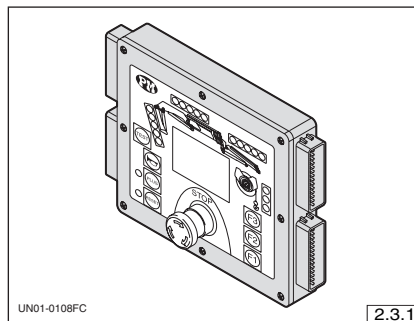
Never tamper with any of the safety devices.



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 articulated extension's load limiting device;
- the winch's load limiting device;
- the rotation limiting device.

It controls:

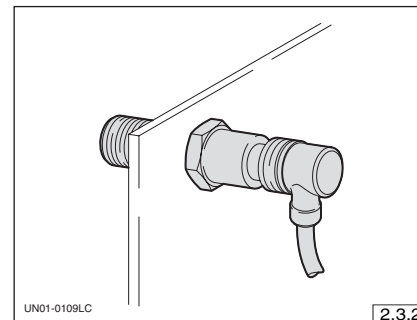
- the thrusting pressure of the main and secondary jack;
- the oil temperature;
- the safety devices' operation;
- it advises the operator of the machine's operation status and any malfunctions.



Information

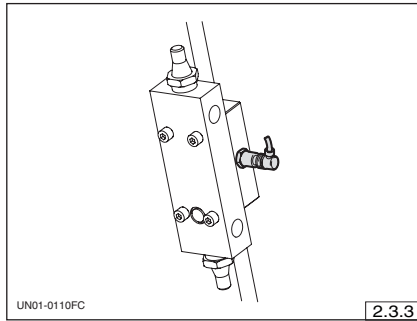
The presence of the load limiting device does not relieve the operator of the responsibility for ensuring the maximum loads are not intentionally exceeded.

2.3.2 - Rotation sensor



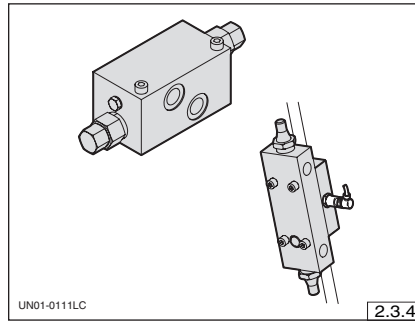
This informs the functional control unit to stop the crane when in the area in which the crane's stability, with that particular load, is jeopardised. Work may only be carried out in that area if the load is reduced (in relation to the nominal capacity).

2.3.3 - Pressure sensors



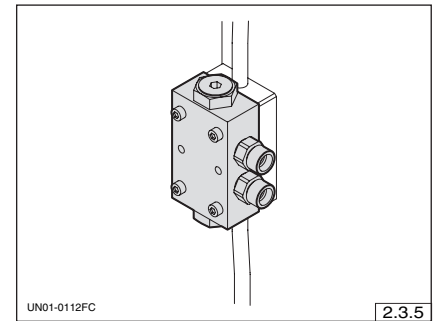
These are located on the load support valves on the secondary jack and the main jack. They signal to the functional control unit to inhibit the handling of loads exceeding the nominal loads to safeguard the crane structure and maintain the stability of the crane/base truck unit.

2.3.4 - Load support valves



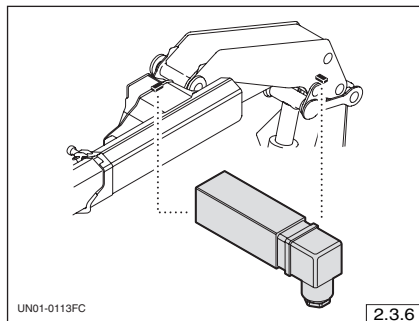
These prevent the loads dropping unexpectedly to the ground as a result of a broken line or a sudden pump failure.

2.3.5 - Stabiliser valve



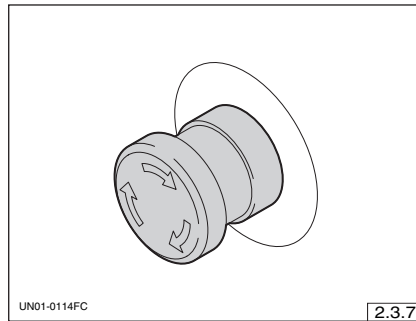
It locks the stabiliser jack (in the position it is in at that precise moment) in the event of a broken line or that the oil delivered to the jack is suddenly cut off.

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



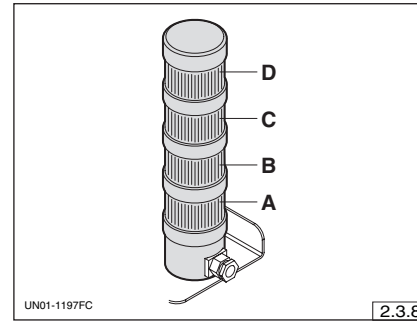
Use the device to stop all the crane's movements in the event of an emergency. Release the button to activate the crane.



WARNING !

Ensure the hazardous conditions cannot persist before releasing the button.

2.3.8 - Signal lamp and buzzer

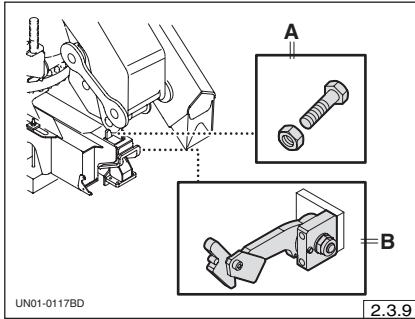


- A** - buzzer
- B** - white light
- C** - yellow light
- D** - orange light

This signals:

- ◆ with the buzzer: the lock state as a result of an overload;
- ◆ with white light: remote control activation;
- ◆ with orange light: 90% of the admissible load limit has been reached;
- ◆ with yellow light: "PLUS" device activation.

2.3.9 - Safety devices for travelling on public roads



A - anti-rotation device for crane

B - mechanical device to prevent accidental extension of the stabiliser arms.

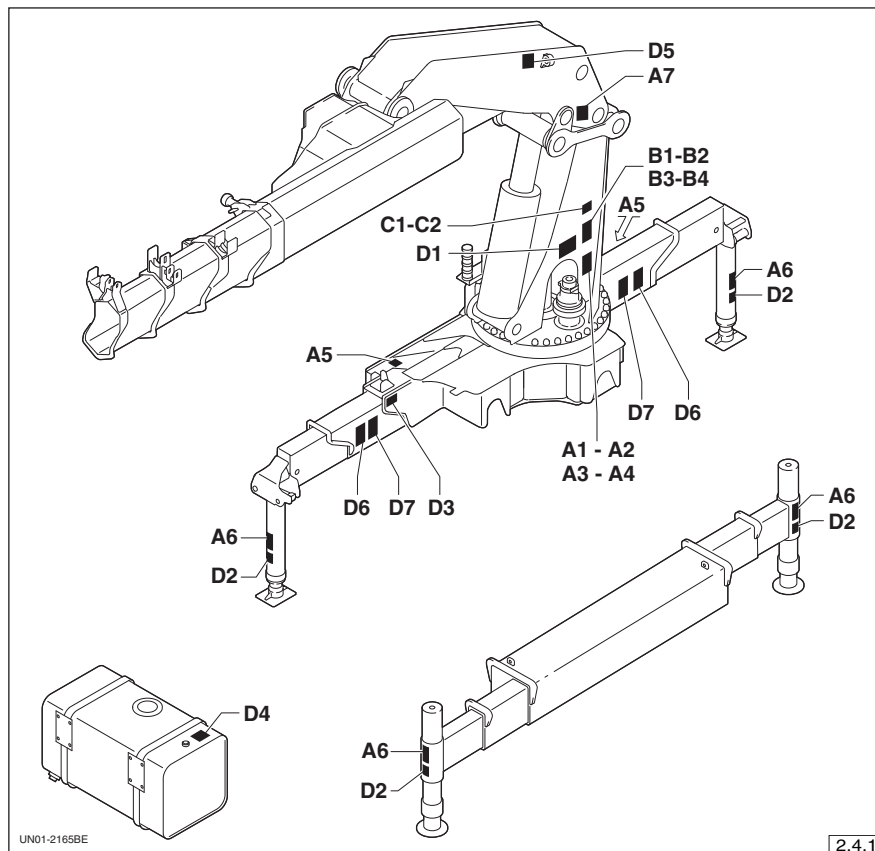
The devices keep the crane within the vehicle's profile when travelling on public roads.

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.

- 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.

- Obligation sign



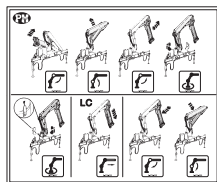
C1 = Instruction Manual plate (*)**.
This indicates that the operator must read the instruction manual carefully before using the machine.



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



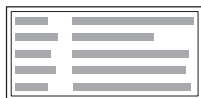
D1 = Crane opening/closing plate.

Indicates the order of the actions to set the crane in the working or resting positions.



D2 = Max. stabiliser pressure signal.

Shows the maximum force that the crane exerts on the ground



D3 = Power takeoff plate.

Reminds the operator to switch off the power takeoff during transfers.

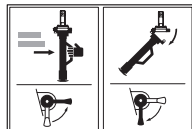


D4 = Oil tank plate.

Indicates the hydraulic oil tank.

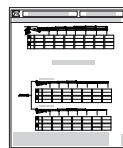


D5 = Hoisting points plate.
Indicates the hoisting hooks attachment points.



D6 = Rotary stabilisers plate.

Indicates the position of the stabiliser lock/unlock levers.



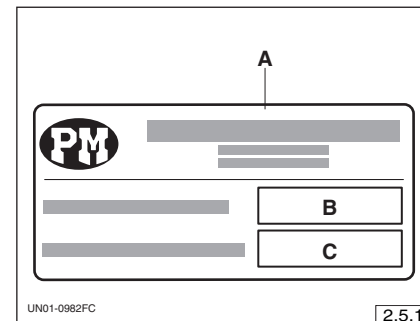
D7 = Capacities diagram plate.

Indicates the performance limits of the machine and any accessories fitted.

2.5 - Accessories

2.5.1 - Additional crossmember

- Identification details

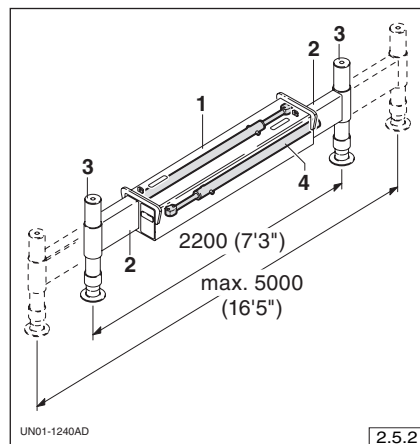


- A) manufacturer
- B) serial number
- C) weight

- 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



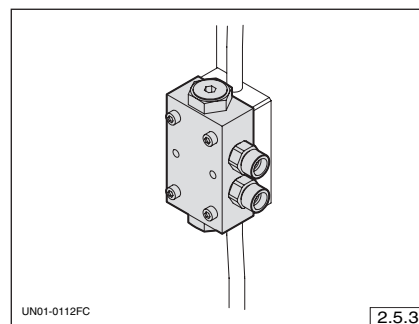
- 1 - Crossmember
- 2 - Extendable stabiliser arm
- 3 - Stabiliser jack
- 4 - Stabiliser arm extension jack

- Installable crossbeams

Type	Code	Weight kg (lbs)
14.00T - SI5.0	470213	515 (1135)

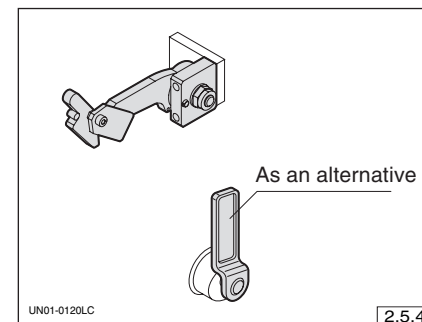
- Safety devices

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.

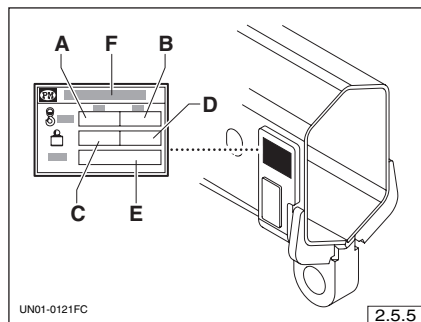
Safety devices for travelling on public roads



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

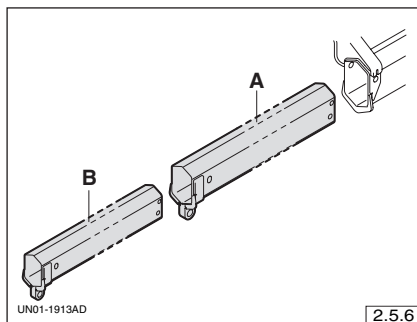
2.5.2 - Manual extensions

- Identification details



- A) Max. admissible design capacity (kg)
- B) Max. admissible design capacity (lbs)
- C) Extension weight (kg)
- D) Extension weight (lbs)
- E) Identification code
- F) Manufacturer

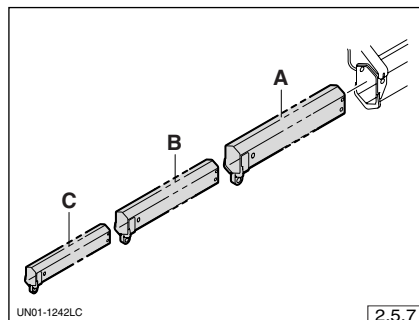
- Installable extensions



Manual extensions on basic machine

Pos.	Model				Code	Weight kg (lbs)
	65024 SP PT	65026 SP PT	65028 SP PT	65029 SP PT		
A				•	470387	75 (165)
B				•	470388	65 (143)

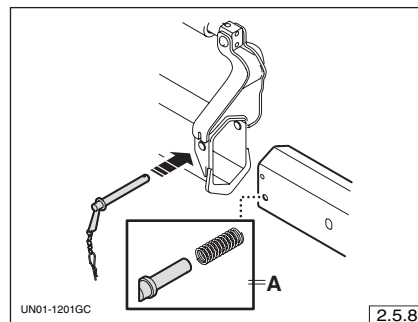
Manual extensions on jib



Pos.	Code	Weight kg (lbs)	Model of the jib		
			J 714.20	J 903.20	J 904.20
A	370745	35 (77)		•	
B	370746	30 (66)		•	•
C	370747	22 (49)	•	•	•

- Safety devices

Safety pin



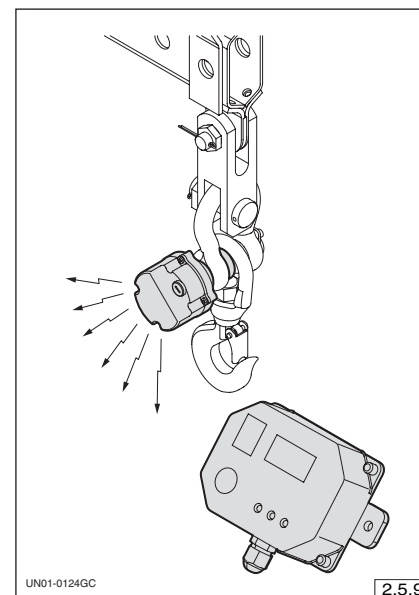
Device “A” prevents the extension dropping to the ground accidentally during its extension.



WARNING !

The device is not scaled to withstand hoisting loads, therefore each extension must be locked in position (extended or retracted) with the relative safety pin.

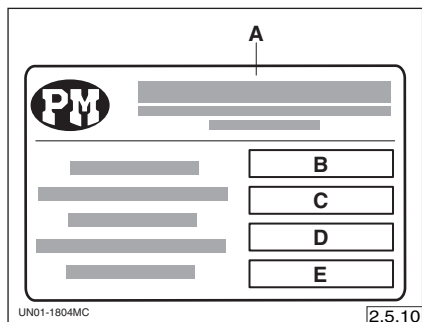
Manual extension load limiting device (available on request)



This prevents manual extension overloading (see para. “Use of the load limiter for manual extensions”).

2.5.3 - Jibs

- Identification details



- A) Manufacturer code
- B) Jib model
- C) Serial number
- D) Weight
- E) Year of manufacture

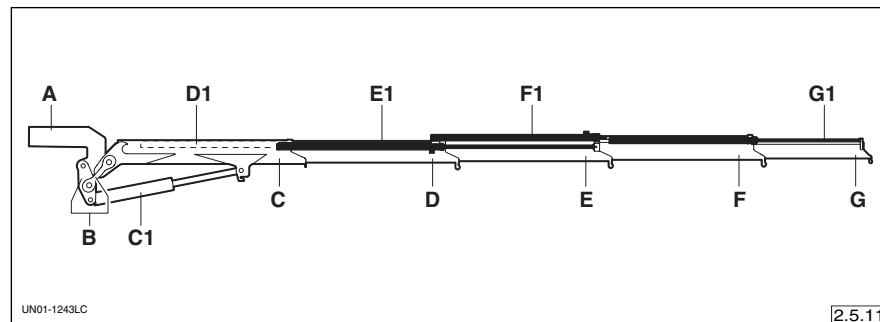
- General description

The jib is fitted on the crane's last hydraulic extension arm for the purposes of placing loads whose positioning requires both depth and height.

- Jibs that can be fitted

Crane model	J 714.20	J 903.20	J 904.20
65024 SP PT			
65026 SP PT		•	•
65028 SP PT	•		
65029 SP PT			

- Main parts



Key to main parts

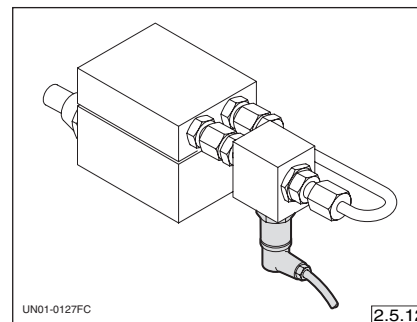
Pos.	Part	J 714.20	J 903.20	J 904.20
A	Tooth	•	•	•
B	Connecting rods	•	•	•
C	Articulated arm	•	•	•
C1	Articulation jack	•	•	•
D	First arm hydraulic extension	•	•	•
D1	First arm extension jack	•	•	•
E	Second arm hydraulic extension	•	•	•
E1	Second arm extension jack	•	•	•
F	Third arm hydraulic extension	•	•	•
F1	Third arm extension jack	•	•	•
G	Fourth arm hydraulic extension	•		•
G1	Fourth arm extension jack	•		•

Weights

Model of the jib	Weight kg (lbs)
J 714.20	630 (1390)
J 903.20	670 (1477)
J 904.20	750 (1653)

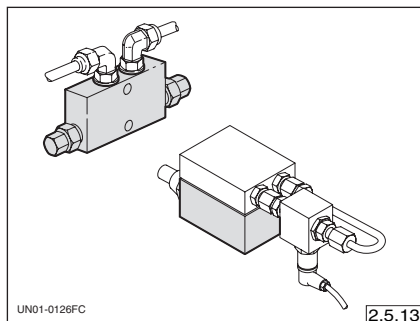
- Safety devices

Overload sensor



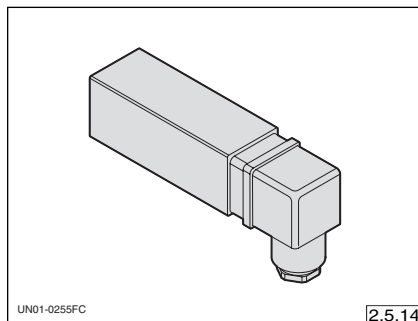
This signals to the functional control unit to inhibit the handling of loads exceeding the nominal loads.

Load support valves



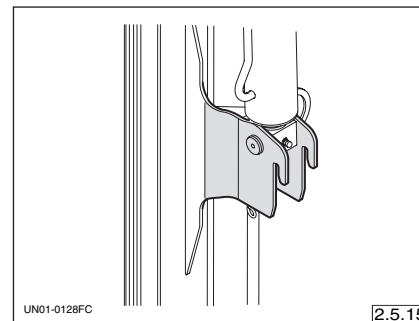
These prevent the loads dropping to the ground unexpectedly as a result of a broken line or a sudden pump failure.

Sensor



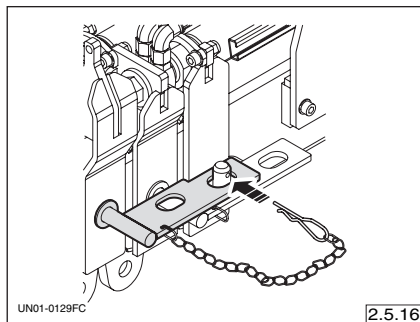
This informs the functional control unit of the angle of the jib in relation to the horizontal axis so that the controls used to move the crane safely can be enabled.

Clamping device for jib in the resting position



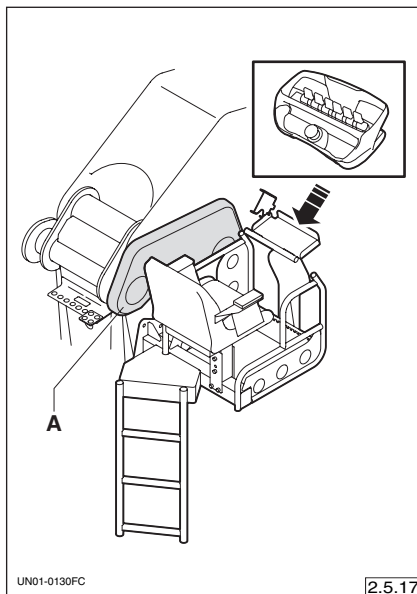
This prevents the jib arm pack swinging dangerously when the vehicle is moving.

Anti-extension device for jib arms



This prevents the jib arms extending accidentally when the vehicle is in transit.

2.5.4 - Overhead manoeuvring post



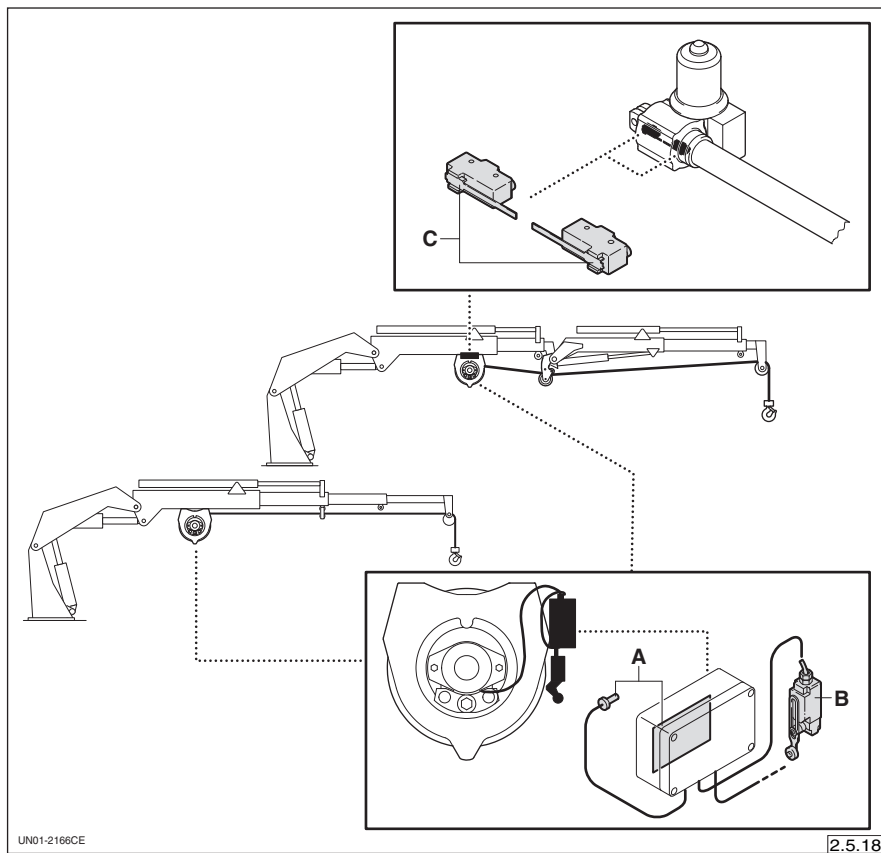
- Guards

A - Anti-cutting guard

- Safety regulations

Access to the seat in the overhead manoeuvring post is only permitted via the ladder provided for the purpose.
Place the radio control on its stand.

2.5.5 - Winch



The winch is composed of a drum, driven by a hydraulic motor, around which the load lifting cable is wound. At the end of the last extendable arm there is a lifting tackle fitted.

- Safety devices

A - Load limiter.

This is comprised of a pressure sensor and a circuit board. It stops the machine when:
the load exceeds the permitted maximum;
the lower block reaches the upper stroke limit.

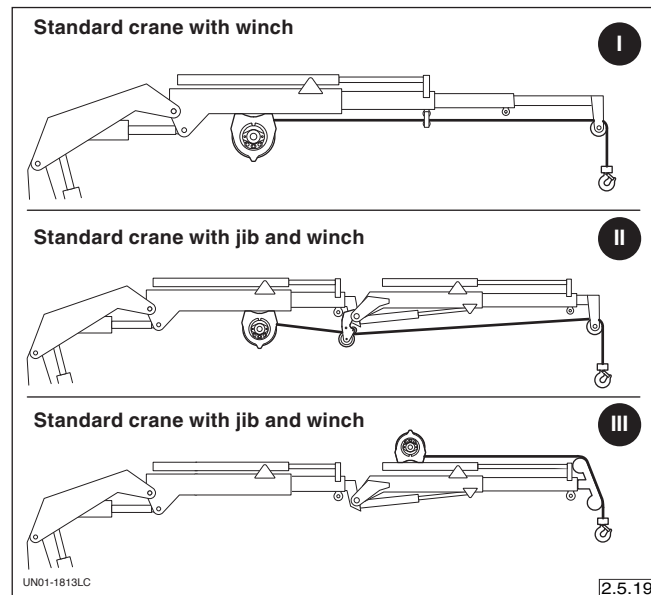
B - Downwards stroke limit

This stops the load's downwards stroke to prevent the cable around the drum being completely unwound.

C - Stroke limit micro-switches

Signal the position of the winch to the functional control unit, preventing loads to be lifted when the winch is in a rest position.

- Assembly type



Winches installable on the standard machine and on the standard machine with the jib

Crane model	Winch model	Jib model	Winch model		
			TC3 - (I)	TC3 - (II)	TC3 - (III)
65024 SP PT	•	J 714.20			•
65026 SP PT	•	J 903.20	•	•	
65028 SP PT	•	J 904.20	•	•	
65029 SP PT	•				

(I) = On standard crane

(II) = On standard crane with jib

(III) = On jib

- Specifications

Winch model TC3

Cable diameter ø mm 14 ... in. 0,55"

Minimum cable breaking load kN 151 lbs 33946

Maximum cable length m 65..... ft 213'

Maximum cable pull

load (last layer) kN 30 lbs 6744

Maximum cable speed m/min 59... ft/min. 194

Weight..... kg 191..... lbs 421

Mechanism class according to

UNI ISO 4301/1 M3

Winch model TC2

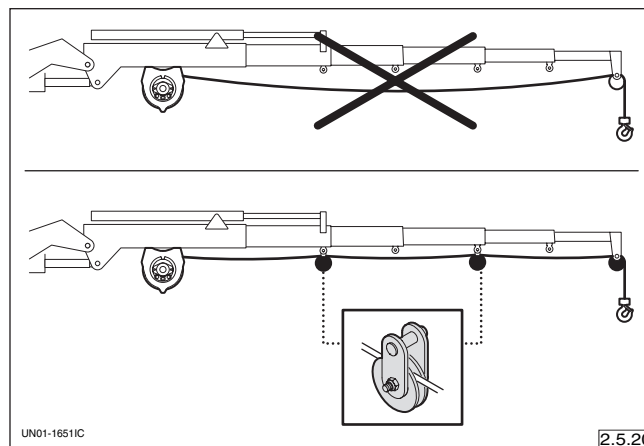
Cable diameter $\varnothing$ mm 10 in. 0,39"
 Minimum cable breaking load..... kN 95,4 lbs 21447
 Maximum cable length m 61 ft 200'
 Maximum cable pull
 load (last layer) kN 18 lbs 4047
 Maximum cable speed m/min 52... ft/min. 170
 Weight kg 70..... lbs 154
 Mechanism class according to
 UNI ISO 4301/1 M3

Winch model TC1

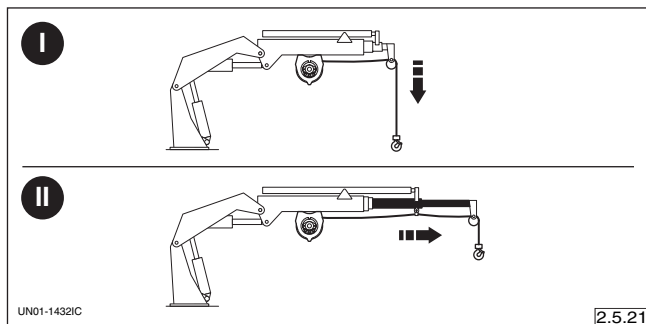
Cable diameter $\varnothing$ mm 8 in. 0,31"
 Minimum cable breaking load..... kN 43,3 lbs 9734
 Maximum cable length m 58..... ft 190'
 Maximum cable pull
 load (last layer) kN 9 lbs 2023
 Maximum cable speed m/min 53... ft/min. 174
 Weight kg 50..... lbs 11
 Mechanism class according to
 UNI ISO 4301/1 M3

- Use of the winch**CAUTION !**

The section of cable between the winch and the block must remain in contact with the arms. If this is not the case, fit the driving pulley (see "Tackle installation").

**HAZARD !**

It is forbidden to lift objects at an angle.

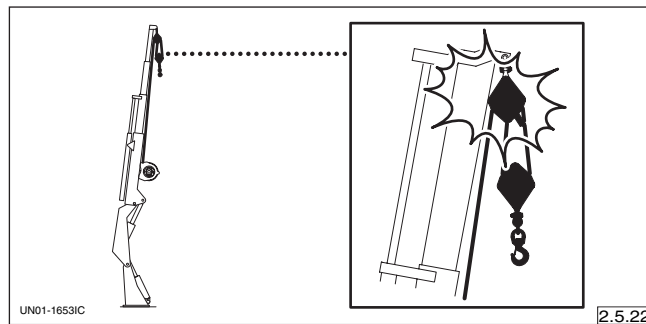


To prevent further damage to the cable, the hook must be lowered before the arm is extended.



CAUTION !

***Do not use the winch when the crane arms are fully closed.
To wind the cable around the winch drum properly, extend
at least two arms.***



In order not to damage the machine, avoid contact between upper block and the arms when the latter are vertically tilted.

Movable winch

- Description

The movable winch is mounted on machines equipped with an articulated extension, in order to allow for the extension to be closed in a rest position.

- Use of the movable winch



CAUTION !

The winch must not be translated with the articulated extension in a rest position.

A - Winch in rest position

- Controls permitted

1. Winch translation

2. Lifting and lowering hook without applied load

- Controls prohibited

3. Lifting and lowering hook with applied load

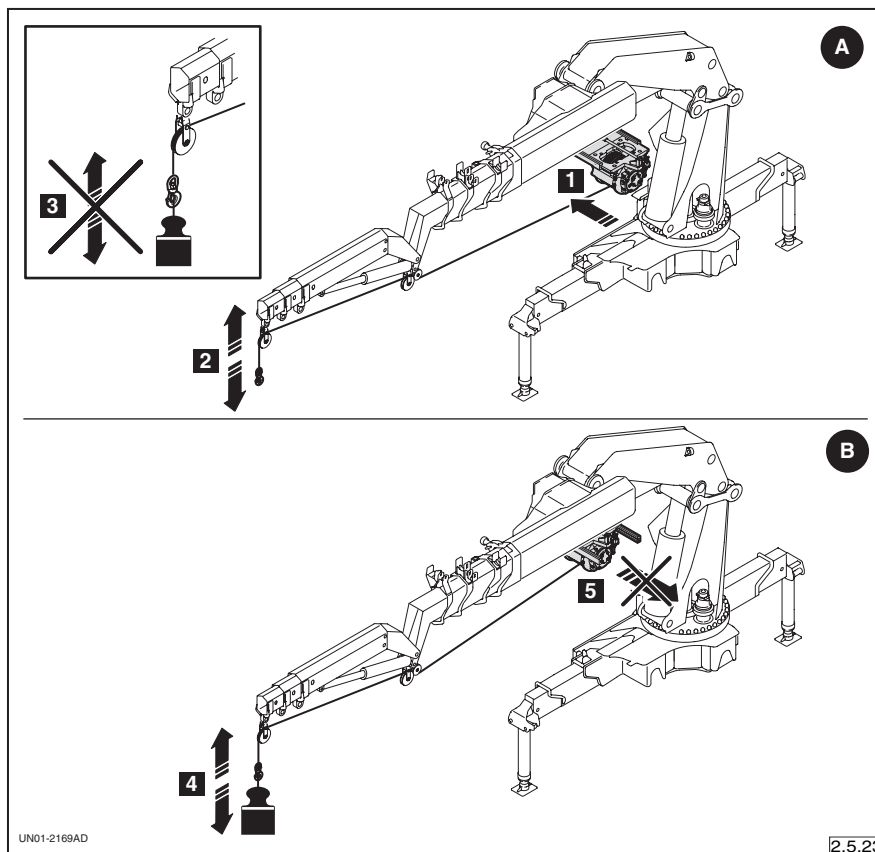
B - Winch in working position

- Controls permitted

4. Lifting and lowering hook with load applied

- Controls prohibited

5. Winch translation



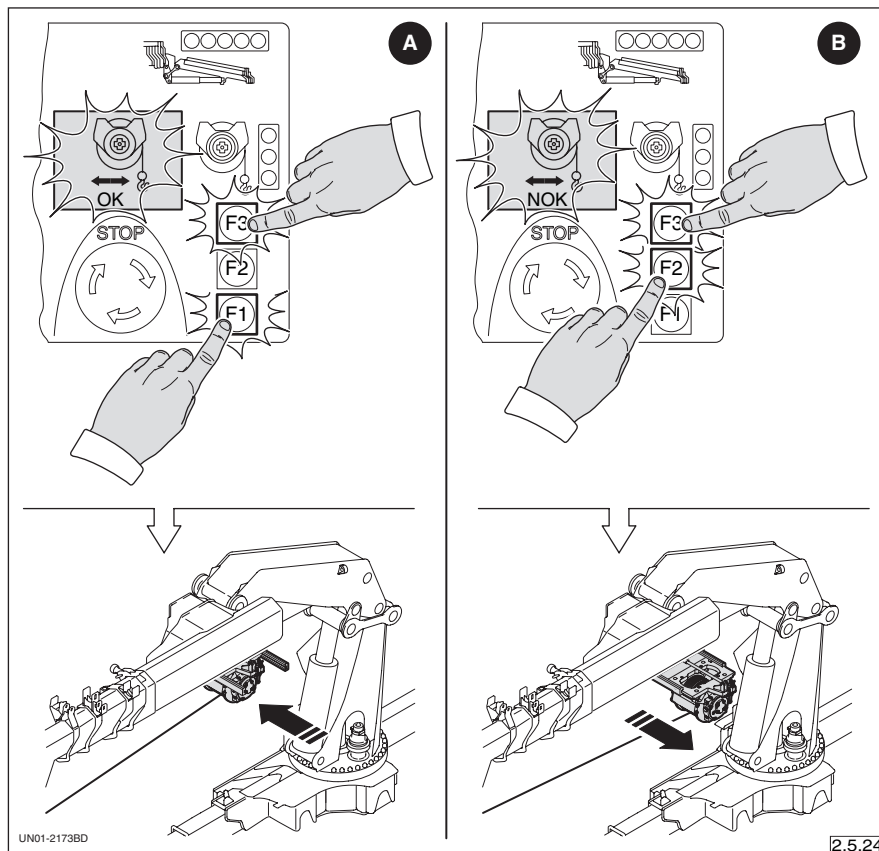
- Controls

The winch translation can be controlled through the functional control unit or the transmitter.

- Controls from the function control unit

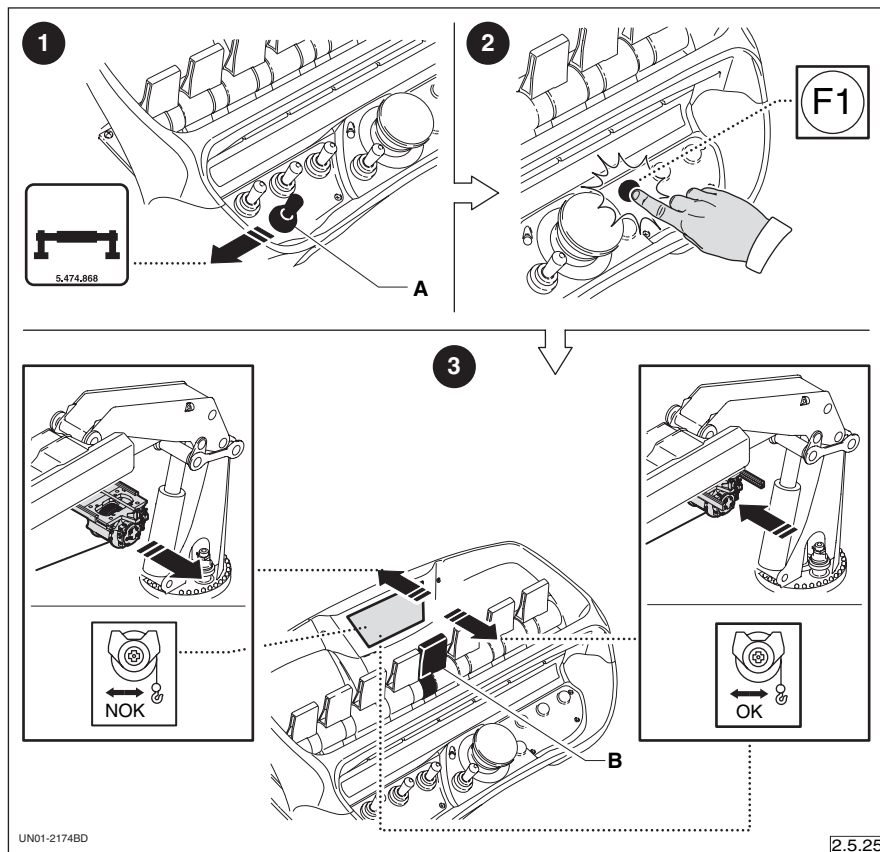
- Working position - press key "F3" and keep pressed, then press key "F1".
On the display is visualised:
MOD (translation mode)
OK (winch in working position).

- Rest position - press key "F3" and keep pressed, then press key "F2".
On the display is visualised:
MOD (translation mode)
NOK (winch in rest position).



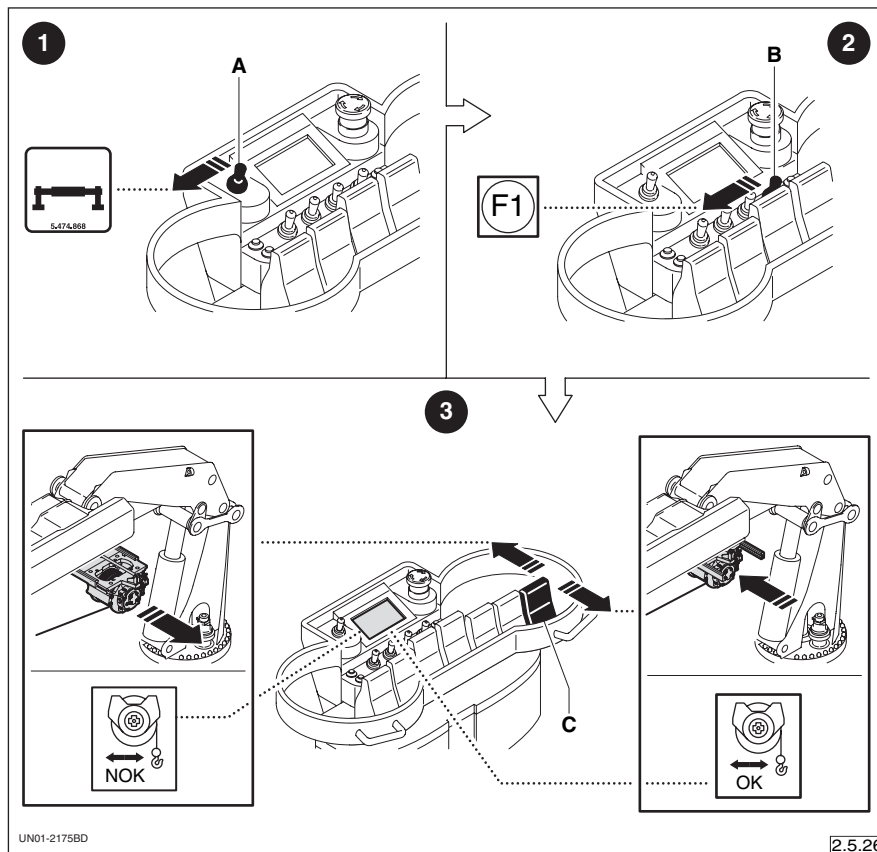
- Command from "Scanreco" transmitter unit

- 1 - Press switch "A" to position "I".
- 2 - Press button "F1" and keep pressed.
- 3 - Then use lever "B" to control the winch translation.
 - Working position - on the display is visualised:
MOD (translation mode)
OK (winch in working position).
 - Rest position - on the display is visualised:
MOD (translation mode)
NOK (winch in rest position).



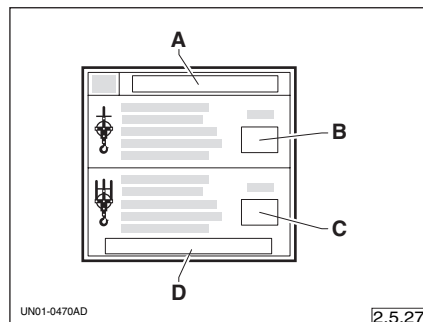
- Command from "Hetronic" transmitter unit

- 1 - Press switch "A" to position "I".
- 2 - Press switch "B" and keep pressed in pos. "F1".
- 3 - Use lever "C" to control the winch translation.
 - Working position - on the display is visualised:
MOD (translation mode)
OK (winch in working position).
 - Rest position - on the display is visualised:
MOD (translation mode)
NOK (winch in rest position).



2.5.6 - Lifting tackle

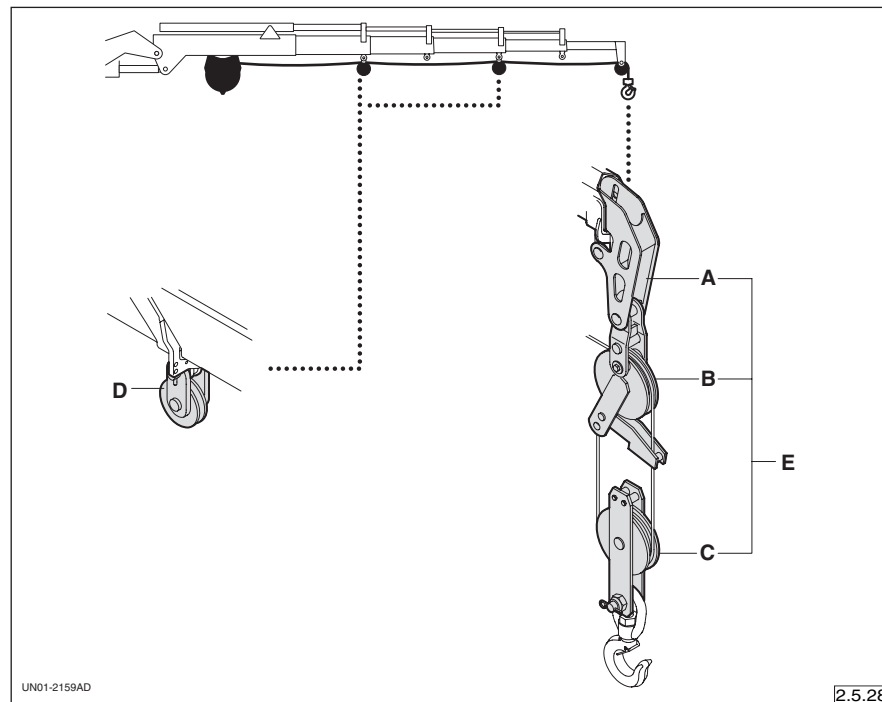
- Identification details



The tackle is composed of a system of pulleys located at the end of the last arm.

- A - Manufacturer
- B - Tackle capacity with direct pull (kg/lb)
- C - Tackle capacity with double pull (kg/lb)
- D - Cable diameter

- Tackle types for each crane



I) Tackle with double pull

- A - Arm
- B - Upper block
- C - Lower block

- D - Driving pulley
- E - Complete tackle for double pull

Crane tackles weights

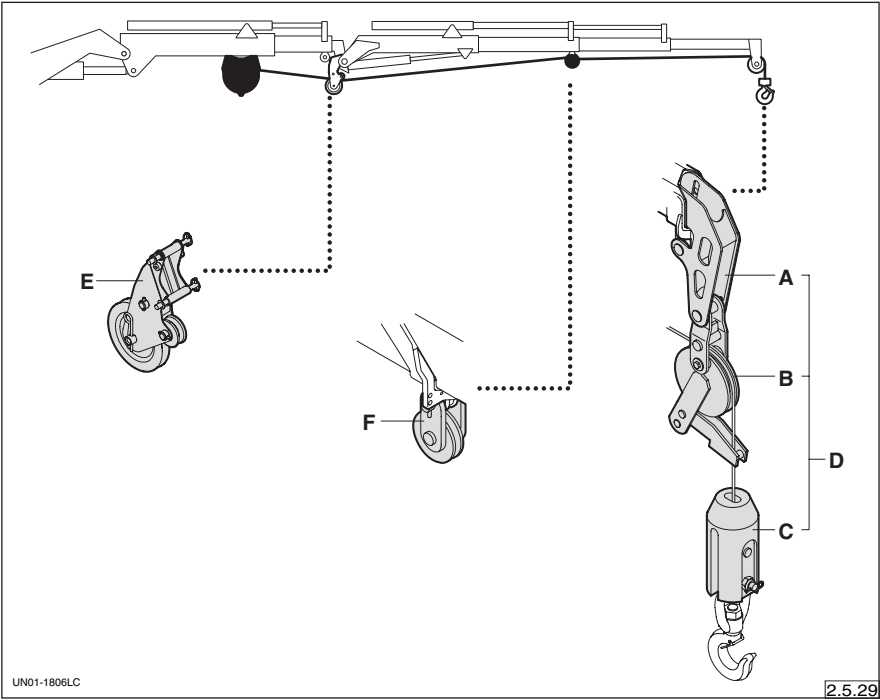
Crane model	Part kg - (lbs)				
	A	B	C	D	E
65024 SP PT					
65026 SP PT	40	55	35	3	130
65028 SP PT	(88)	(121)	(77)	(7)	(287)
65029 SP PT					

Jib tackles weights

Jib model	Part kg - (lbs)					
	A	B	C	D	E	F
J 714.20	15	40	25	80	15	3
	(33)	(88)	(55)	(176)	(33)	(7)
J 903.20	30	55	35	120	15	3
J 904.20	(66)	(121)	(77)	(265)	(33)	(7)

- Tackle types on jib

Winch fitted on standard machine



- A** - Arm
- B** - Upper block
- C** - Counterweight
- D** - Complete tackle for direct pull
- E** - Joint driving pulley
- F** - Driving pulley on jib

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.

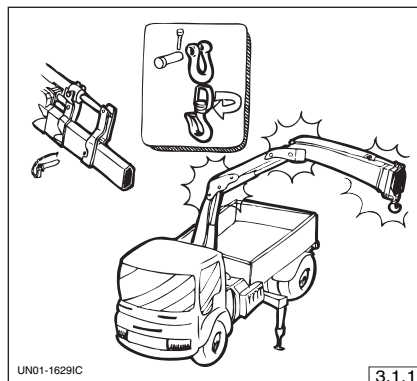
3 Safety

3.1 - Safety regulations



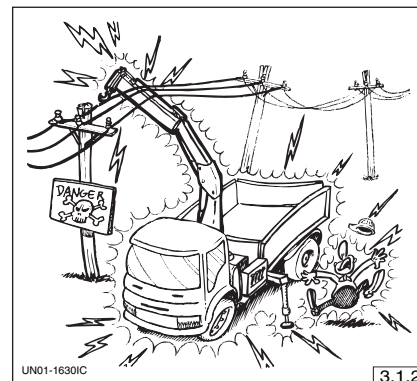
WARNING !

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



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.



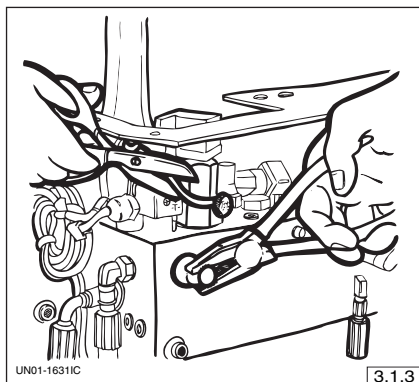
HAZARD !

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.

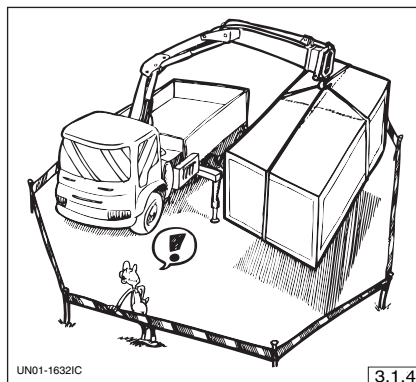
Obtain clear instructions regarding the way in which the work must be carried out. Said procedures must be studied for each particular situation and complied with exactly.

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.

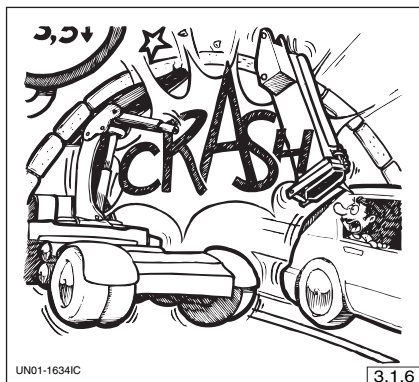


HAZARD !

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

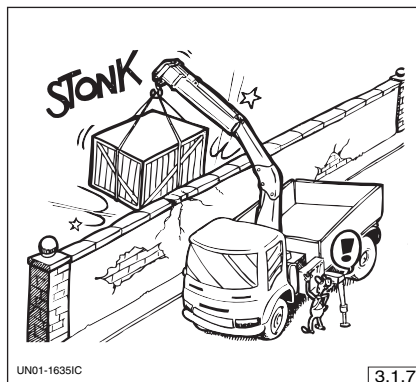
When this is unavoidable, operate the machine using the controls on the opposite side, assisted by other personnel on the ground to perform the necessary manoeuvres, or use suitable accessories provided for this purpose, such as:

- remote controls
- raised seat
- raised control station.

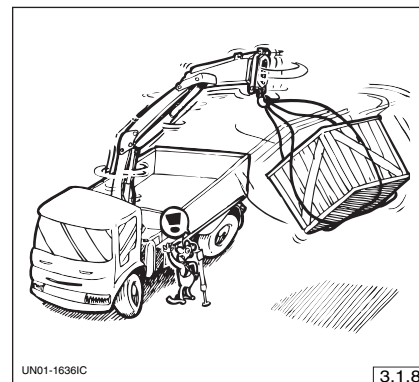


WARNING !

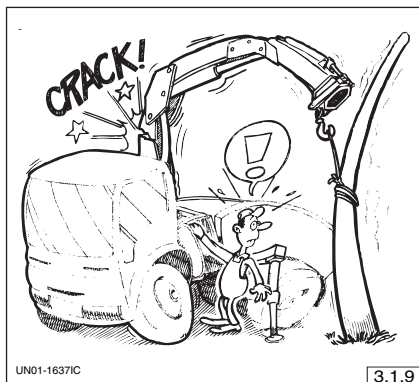
Always follow the Highway Code, in particular with regards to height limit signs.



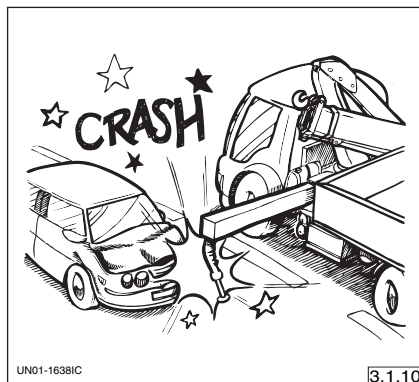
Do not operate the crane in poor visibility conditions. The operator must always have a perfect view of the work area.



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

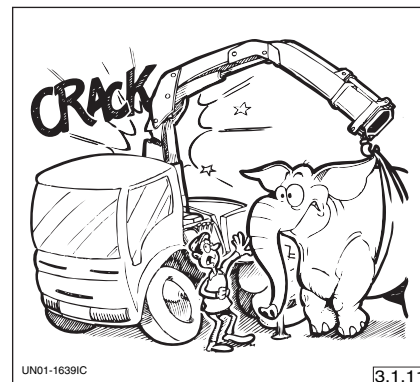


Do not use the crane to remove poles, uproot trees or lift fixed loads.



WARNING !

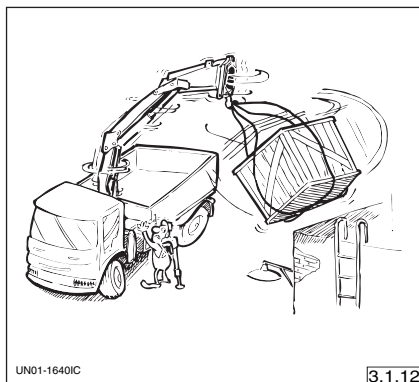
Before driving the vehicle, ensure all the lock devices are engaged.



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.



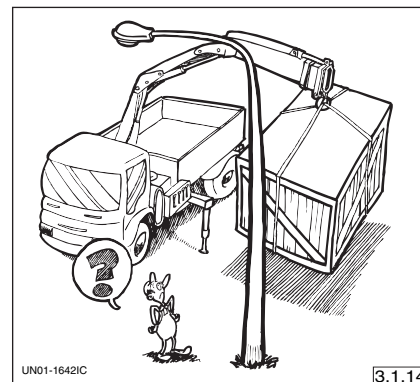
HAZARD !

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



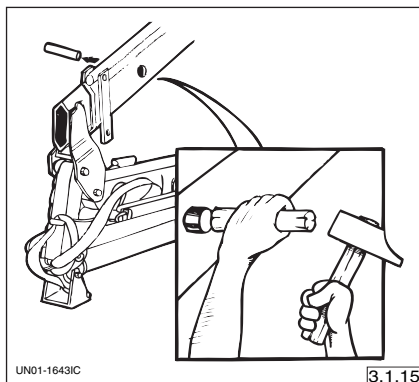
WARNING !

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 (Mp/h)		
0	Calm	from 0 to 0,2	1 (0)	Calm, smoke rises straight up	
1	Light air	from 0,3 to 1,5	from 1 to 5 (from 1 to 3)	Wind direction indicated by the movement of smoke only, not by the weathervane	
2	Light breeze	from 1,6 to 3,3	from 6 to 11 (from 4 to 7)	Wind can be felt on the face, leaves rustle, weathervane moves	
3	Gentle breeze	from 3,4 to 5,4	from 12 to 19 (from 8 to 12)	Leaves and small branches move, pennants unfold	
4	Moderate breeze	from 5,5 to 7,9	from 20 to 28 (from 13 to 18)	Wind lifts dust and loose paper, moves branches and thin poles	
5	Fresh breeze	from 8,0 to 10,7	from 29 to 38 (from 19 to 25)	Small broadleaves begin to wave, slight foam appears on lakes	
HAZARD !	6	Strong breeze	from 10,8 to 13,8	from 39 to 49 (from 25 to 31)	Poles move greatly, whistling along telephone lines, use of umbrellas is difficult
	7	Near gale	from 13,9 to 17,1	from 50 to 61 (from 32 to 38)	All the trees move, it is very difficult to move against the wind
	8	Gale	from 17,2 to 20,7	from 62 to 74 (from 39 to 46)	Tree branches are broken, walking in the open air is particularly difficult
	9	Strong gale	from 20,8 to 24,4	from 75 to 88 (from 47 to 55)	Slight damage to houses (chimney pots and roof tiles are blown off)
	 10	Storm	from 24,5 to 28,4	from 89 to 102 (from 56 to 64)	Trees are uprooted, considerable damage to houses

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



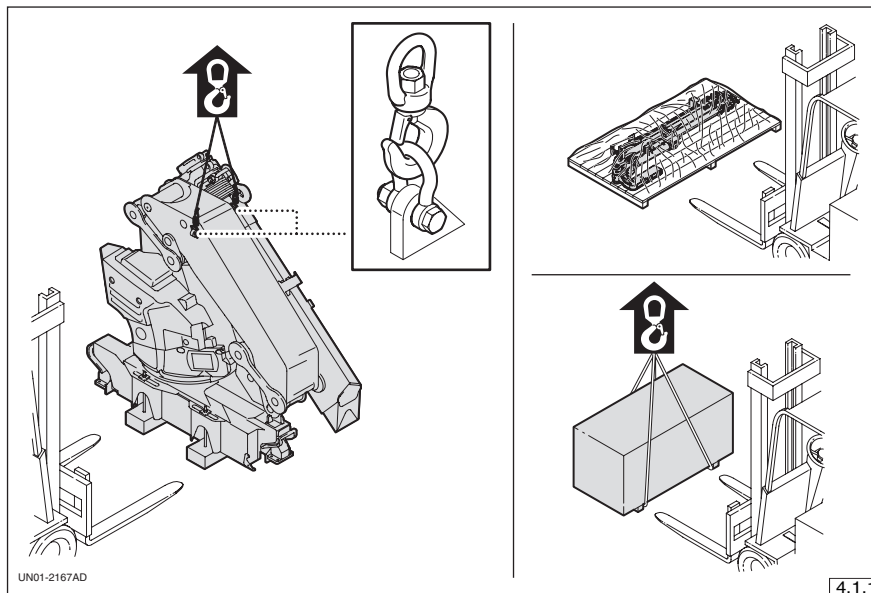
HAZARD !

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 dispatched placed on two wooden beams with the stabilisers facing upwards or disassembled and placed in a box with the equipment used to fit the crane on the base truck.



For packaging which differs from that shown in the manual, follow the instructions and the symbols applied to the packing itself.

Before lifting the packed unit, check the weight of the crane in the “Enclosures” section.

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 (-4 °F) and +70 °C (+158 °F) 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.

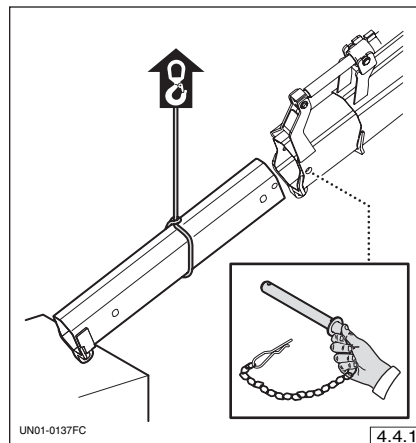
4.4 - Fitting the manual extension



WARNING !

The manual extensions must be fitted and removed one at a time in a sequential order.

After fitting, ensure the safety devices prevent the extension sliding out uncontrolled.

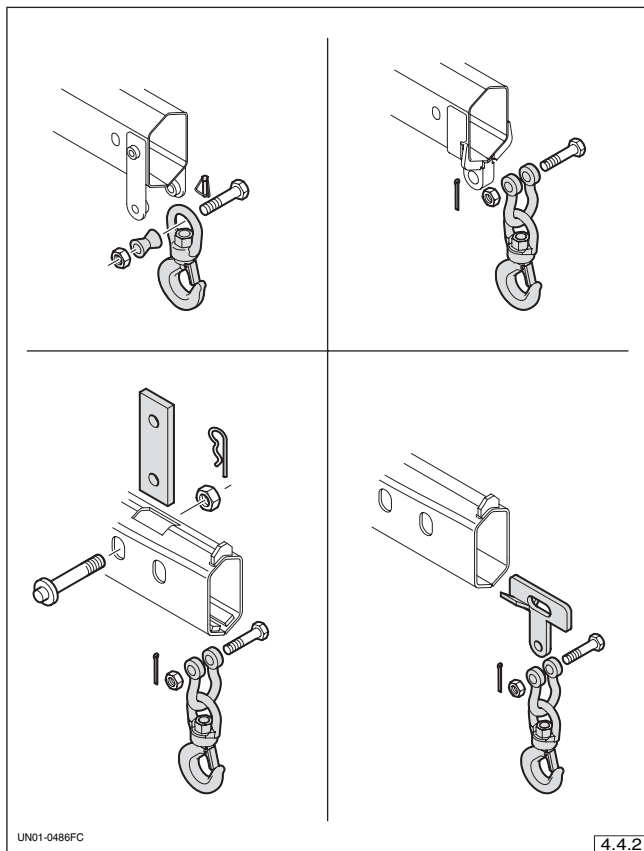


- 1 - Harness a lifting means to the extension the said means must be suitable in relation to the extension's weight.
Rest the extension on a steady surface.
- 2 - Slide out the arms and insert the extension and so the pin holes are aligned.
- 3 - Lock the extension in position (either open or closed) with the relative safety pin.

To disassemble the extension, proceed as described for the assembly but in the reverse order. Whenever possible, keep the arm pack angled towards the ground.

4.4.1 - Fitting the hook

Assembly type



WARNING !

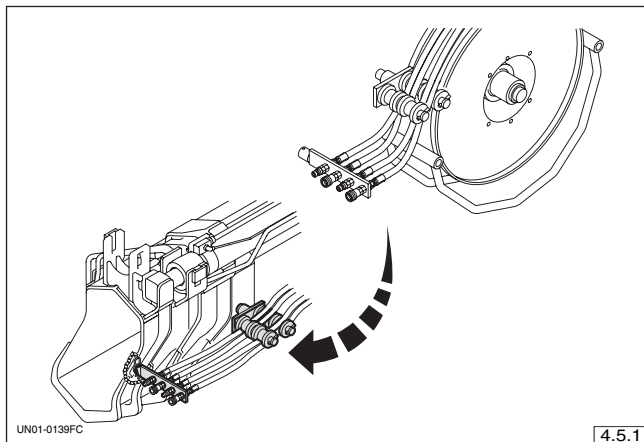
The hook can only be fitted on the last extension extended.

4.5 - Fitting the jib

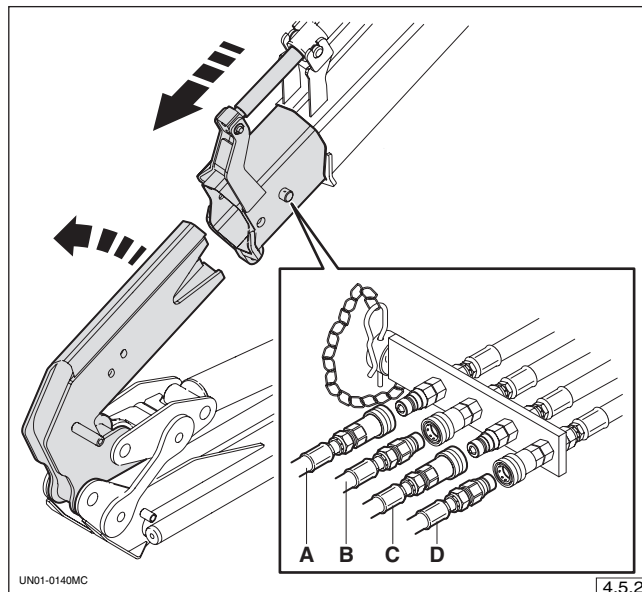


WARNING !

To prevent the risk of the unit overturning, ensure the extension is always stable, resting on the ground or on suitable supports.



For the cranes equipped with a hose reel, fit the quick coupling mount at the end of the last arm and the pipe track on the main arm.



- 1 - Place the jib on the ground; if the crane is equipped with a winch, place it safely on suitable supports.
- 2 - Extend the arms until they are near the tooth.
- 3 - Connect the hoses to the unions in the following order:
 - A - jib opening
 - B - jib closing
 - C - arm jack extension
 - D - arm jack retraction

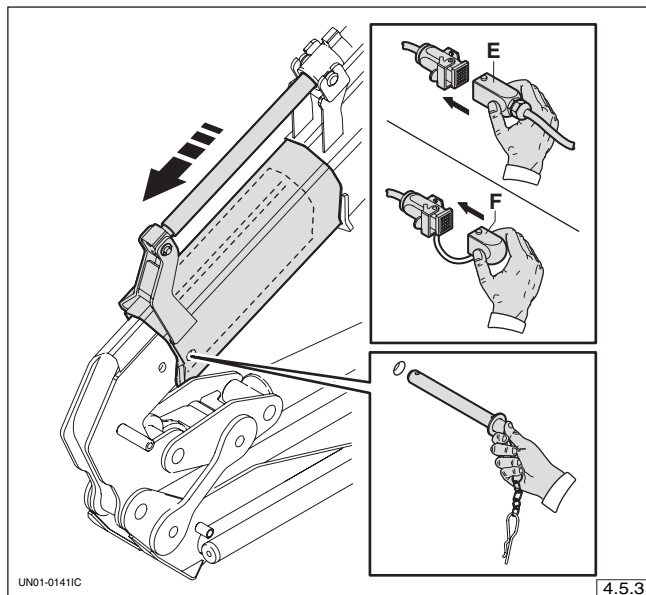
- 4 - Open the articulated joint jack to align the tooth with the crane.
- 5 - Extend the crane arms to insert the tooth and secure it with the safety pin.



Information

In the crane with the pipe track, connect the hoses from the jib in the same order as the crane with the hose reel.

If the extension is fitted with a load limiting device, connect the electrical pin “E”.



- Jib removal

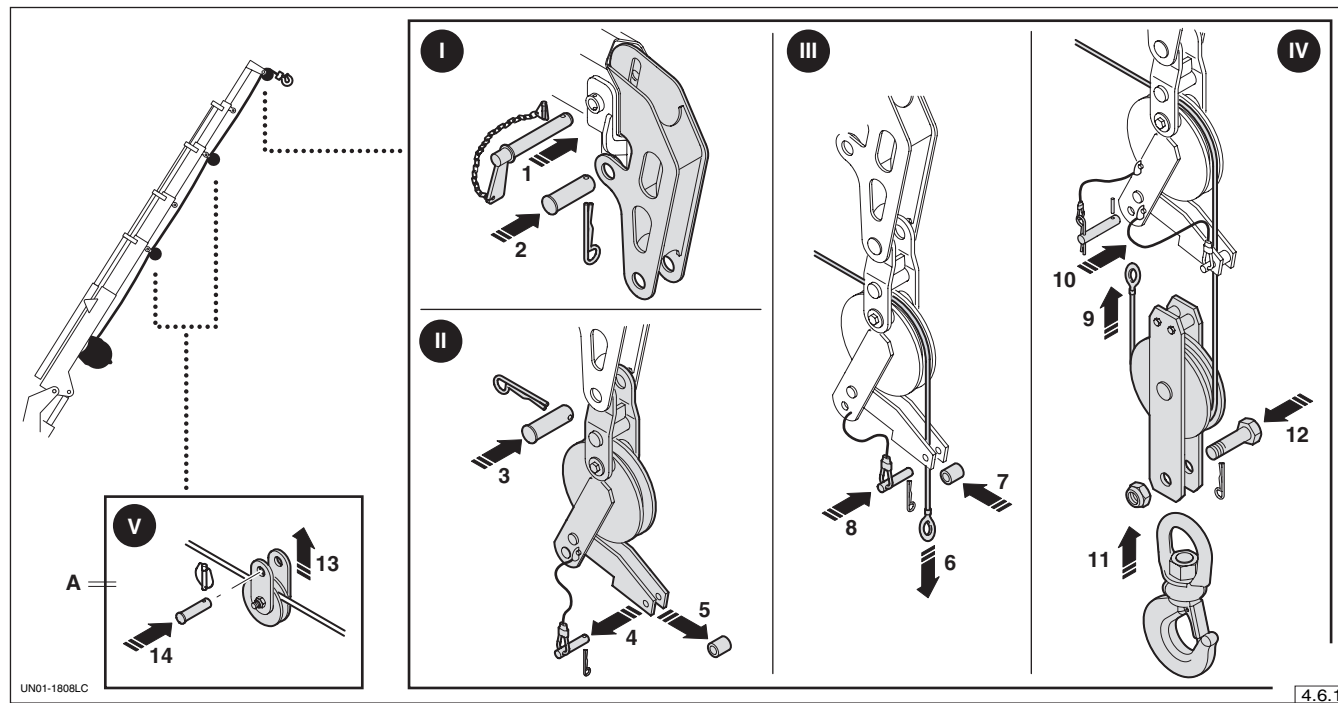
For the disassembly, proceed as for the assembly but in the reverse order.

Connect the pin to terminal “F” to be able to use the crane without the jib.

4.6 - Tackle installation

4.6.1 - Fitting the tackle on the crane

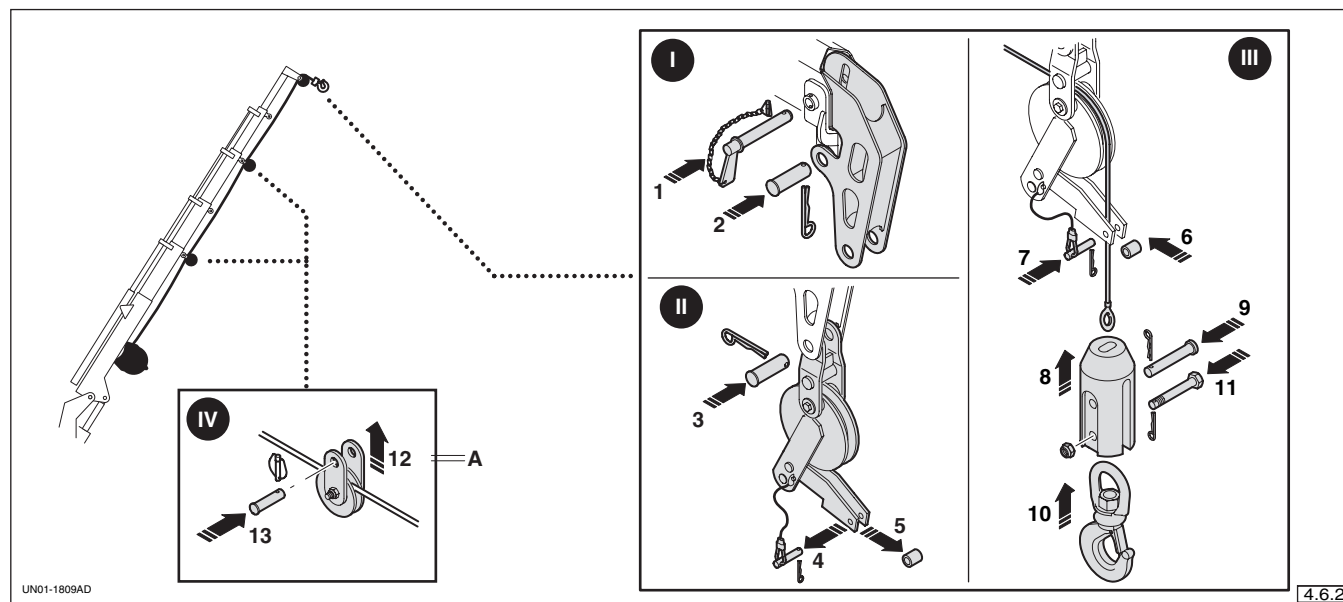
Fit the pulley “A” to support the cable if there are long sections between the winch and the block.



A = driving pulley

4.6.1

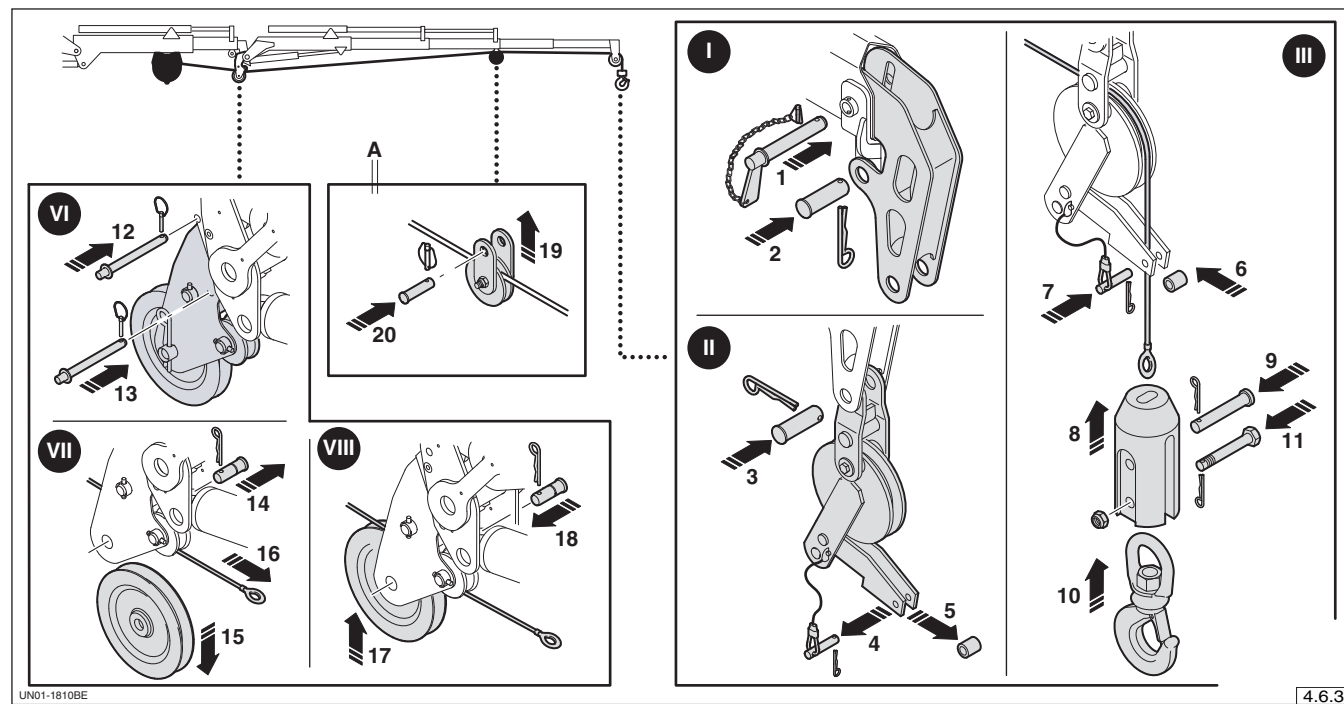
- Assembly sequence for tackle with direct pull



A = driving pulley

4.6.2 - Fitting the tackle on the jib

- Assembly sequence for tackle with direct pull (winch on base crane)



A = driving pulley

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

Jib		Lowering
		Lifting
		Extension
		Retraction
Rotator		Clockwise rotation
		Anti-clockwise rotation
Grab		Grab opening
		Grab closing
Jib arms/winch (with multiple activate device)		- Jib lifting - Winch lowering
		- Jib lowering - Winch lifting

6.2 - Radio control

The radio control is composed of a portable transmitter unit for the operator and a receiver unit installed on-board the machine.

- Safety precautions

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

Before using the radio 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 radio 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.

6.2.1 - "SCANRECO" radio control

- Technical data

- Power voltage: 7,2 Volts
- Battery:
 - Rechargeable "Scanreco".
- Working range including obstacles: 100 m (ft 328').
- 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 "M", indicate that the battery is nearly flat.



Information

Only replace the battery when the flashing "M" indicator light switches off.

Battery charger

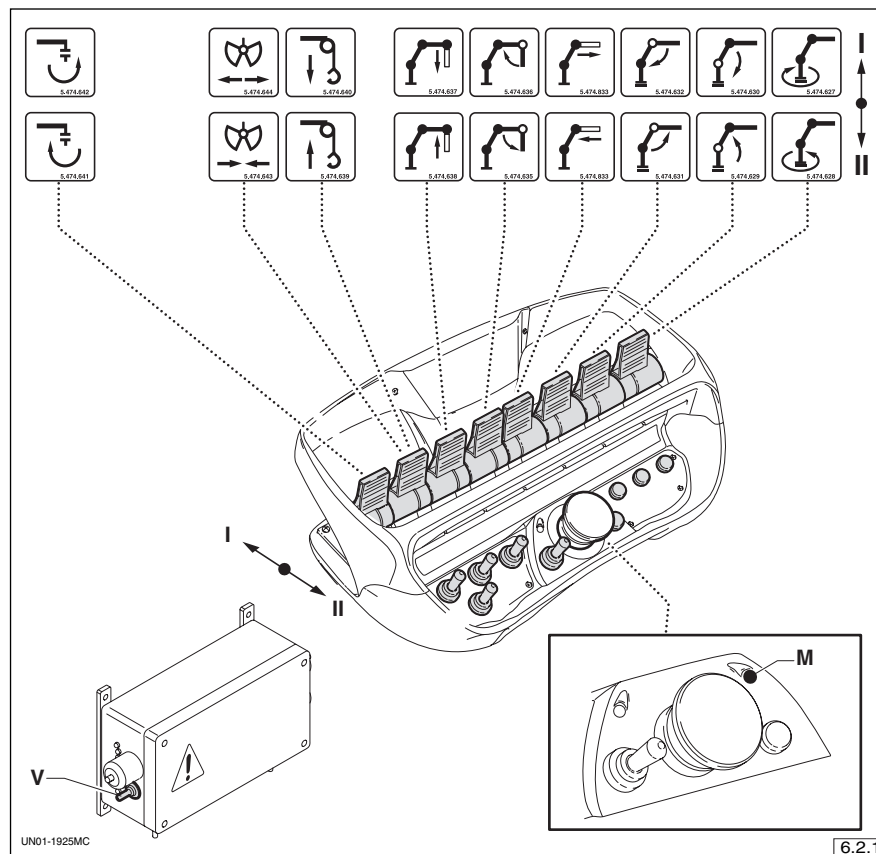
Charge voltage of the battery charger supplied: 11 Vcc - 30 Vcc.

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

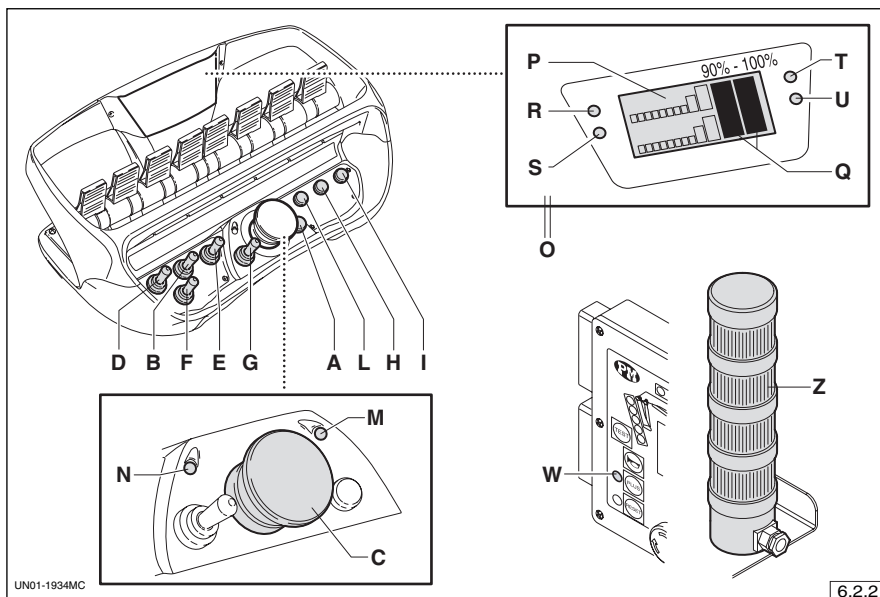
Battery charger indicator lights

- 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.

- Controls



6.2.1



A - Switching on the transmitter unit

The button has two functions:

- I) radio control ON;
- II) buzzer.

B - Start-up/stop

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

C - Emergency stop button

See para. "Safety devices".

D - "RPM" activation

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

E - Accelerator

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

F - Control commutation switch

This enables the stabilisation controls or those used for load handling.

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 "N".

Click the switch once only (in the "off" direction) to reset the normal functioning speed.

H - "Reset" button / "Quick reset"

- "Reset" function.

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 "3-30").

- *“Quick reset” function.*

This function allows the operator to reset any temporary errors the system may detect.

The “Quick Reset” function is activated by long-pressing the “F1” and the “RESET” keys on the function control unit at the same time, or long-pressing the “F1” and “RESET” buttons on the transmitter unit.

If the error icon / code clears, normal operation can resume.

If the alarm persists, the power take-off must be switched off and then on, otherwise see the section “Alarm messages”.

I - “Plus” - “Regenerative” reset button / Function (F2)

- *Reset “Plus” - “Regenerative”.*

Push and keep pushed throughout machine operation to activate and deactivate the “regenerative” function (speed increase without load applied), when featured.

The “PLUS” device reduces the working speed and increases the lifting capacity when, due to the effect of the load in relation to the arm, the pressure reaches the calibration value of the device.

Push briefly to activate or deactivate the “PLUS” device.

The “PLUS” device can only be switched off when

- indicator “S”
- indicator “Z”
- indicator “W”

of the functioning control unit are illuminated with a fixed light.

- *Function (F2).*

Push briefly on starting up the machine to select the operation mode with the hydraulic tools attached (bucket, claw, etc.).

L - Function button (F1) / function (F3)

- Push briefly on starting up the machine to select the operation mode with the hook attached.
- Push when machine is in use to select alternately and exclusively (with the same control lever) the functioning of the following accessories:
 - from the jib arms extension with winch to the base crane and vice versa (“multiple activation” function).

M - Indicator light

Red.

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

N - Indicator light

Green.

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

O - Display

P - Incremental bars

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

Q - Information and alarm message display

R - Indicator light

Red.

When on, it indicates that 100% of the load that can be lifted with the winch has been reached.

S - Indicator light

Yellow.

When on, it indicates that 90% of the load that can be lifted with the winch has been reached.

T - Indicator light

Yellow.

When on:

- with an intermittent light, it indicates that the crane functioning is in the "PLUS" mode;
- with a fixed light, it indicates that the crane functioning is in the "PLUS" mode, but with the possibility of deactivating it and returning to the normal mode.

U - Indicator light

Yellow.

When on, it indicates that the "3-30" system is functioning to lower the load to the ground.

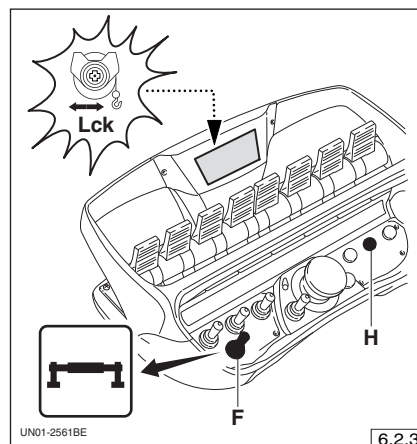
V - Two-setting switch

Remote: the ECU is activated.

Manual: the ECU is activated, the receiving unit is switched off.

- Supplementary transmitter unit functions

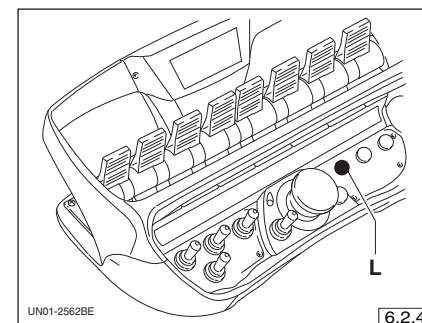
Winch shut-off



To disable winch operation:

- 1 - press switch "F" to the "stabilisation" position;
 - 2 - press the button "H" (Reset) until the "winch lock" icon appears on the display.
- Quick-press button "H" quickly to reactivate the winch (the icon disappears).

Work light



Long-press button "L" (F1) to switch the work light (where featured) on or off.

- Switching on the radio control

- Press button "A", fig. 6.2.2.

- Switching off the radio control

- Press button "A", fig. 6.2.2.

6.2.2 - "HETRONIC" radio control

- Technical data

- Power voltage: 3 Volts
- Batteries:
 - Rechargeable with Ni-Mh or Ni-Cd accumulators, 3,9 Volts;
 - Stylus/miniature type alkaline 2x1,5 Volts or 3x1,5 Volts.
- Working range including obstacles: 100 m (ft 328).
- Protection grade: IP65.

The radio control is equipped with two safety devices which are automatically triggered in the following cases:

- a) if the work area is disturbed by a signal which effects the radio control's frequency range;
- b) the radio control is out of the transmitting unit's range.
In this case, the radio control switches to emergency mode and stops the crane operating.

Battery



Information

Use alkaline batteries only.

The power supplied by zinc-carbon batteries is insufficient.

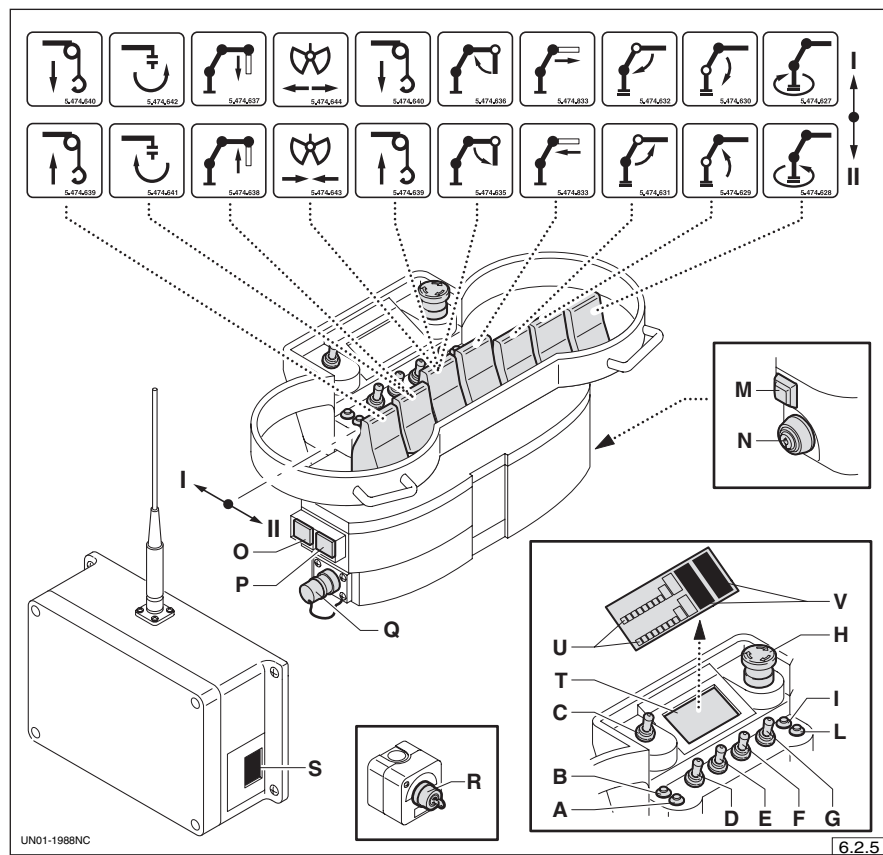
Battery charger

Charge voltage of the battery charger supplied: 12 V / 24 V.

Battery charger indicator lights

- When the signal light is switched on, this means the battery charger is live.
- When charging, the signal light should always remain on.
- As soon as the battery charging is complete, the signal light will flash.

- Controls



Information

The fig. 6.2.3 simbology illustrated controls order can be on request inverted.

A - Indicator light

Yellow.

When on, it indicates that 90% of the load that can be lifted with the winch has been reached.

B - Indicator light

Red.

When on, it indicates that 100% of the load that can be lifted with the winch has been reached.

C - Controls commutation switch

This enables the stabilisation controls or those used for load handling.

D - Switch ("RPM + / RPM -")

Flick the switch to vary the engine rpm of the vehicle.

E - Speed/"F3" function key switch

Activate to enable or disable the crane operating speed or the optional "F3" function key.

F - Start/stop switch

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

G - "F1" and "F2" functions switch

When starting the machine

- position "F1": machine function with hook;
- position "F2": machine function with hydraulic equipment (bucket, claw, etc).

H - Emergency stop button

See para. "Safety devices".

I - Indicator light

Yellow.

When on:

- with an intermittent light, it indicates that the crane functioning is in the "PLUS" mode;
- with a fixed light, it indicates that the crane functioning is in the "PLUS" mode, but with the possibility of deactivating it and returning to the normal mode.

L - Indicator light

When on:

- with a green light, this shows the radio-control is operating normally;
- with a red light, this shows the transmitter unit batteries are flat.

M - Remote control enable

The button has two functions:

- 1) enables the radio control operation;
- 2) sounds to alert the operator that the radio control is switched on.

N - On switch

O = Transmitter unit is switched off

I = Transmitter unit is live

P = Programming accessible by specialised technical staff only.

O - Multi-function button

The button has two functions:

- short press: enables / disables the "PLUS" device;
- long press: enables/disables the "Regenerative" device (increases speed with no load applied) when fitted.

The "PLUS" device reduces the work speed and boosts hoisting capacity when the effect of the load on the outreach causes the pressure level to reach the maximum work limit and the crane locks.

The device cannot be switched off

when signal light "I" is flashing.

To switch it off, the pressure must be brought down below the maximum work limit (signal light "I" on constantly).

P - "Reset" button / "Quick reset"

- *"Reset" function.*

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 "3-30").

- *"Quick reset" function.*

This function allows the operator to reset any temporary errors the system may detect.

The "Quick Reset" function is activated by pressing the "F1" and the "RESET" keys on the function control unit at the same time, or by pressing the "F1" switch and the "RESET" button on the transmitter unit.

If the error icon / code clears, normal operation can resume.

If the alarm persists, the power take-off must be switched off and then on, otherwise see the section "Alarm messages".

Q - Cable connector

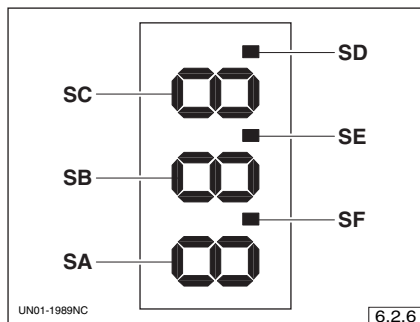
Connection for use of the transmitter as a cable control.

R - Receiver unit ON switch

Hand/Manual position = manual control function activated;

Radio position = radio-control function activated.

S - Display



The display shows all the radio-control operation information.

- Alphanumeric fields

SA: shows which lever on the transmitter unit has been operated;

SB: only active during system programming carried out by specialised personnel;

SC: displays the radio-control operating status (see chart below).

Pos.	Code	Description
SA	E	Transmitter unit lever operating error. Switch the transmitter unit off then on again; if the code is still displayed, operation is inhibited
	1	Joystick 1 operation
	2	Joystick 2 operation
	3	Joystick 3 operation
	4	Joystick 4 operation
	5	Joystick 5 operation
	6	Joystick 6 operation
	7	Joystick 7 operation
	8	Joystick 8 operation
SB		System codes: these are only displayed during system programming. For use by specialised personnel only
SC	0	Radio-control activated: all manoeuvres are enabled.
	1	Receiver unit powered correctly. Radio signal present but radio-control not yet active.
	2	Emergency stop button pressed on transmitter unit.
	3	Warning message: insufficient radio signal reception.
	4	Receiver unit powered correctly but no radio signal: - transmitter unit switched off; - programming error (wrong radio channel or serial number).

Joysticks = control levers, labelled in ascending order from left to right (see fig. 6.2.5).
For example:
Joystick 3 = third lever from the left

- Points:

SD - flashing: correct radio signal reception.

SE - not active.

SF - flashing in conjunction with SD: during programming stage only.

T - Display

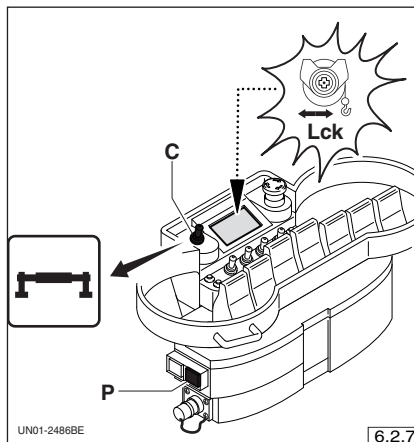
U - Incremental bars

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

V - Information and alarm message display

- Supplementary transmitter unit functions

Winch shut-off

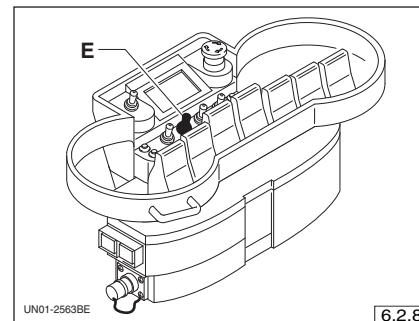


To disable winch operation:

- 1 - press switch "C" to the "stabilisation" position;
- 2 - press the button "P" (Reset) until the "winch lock" icon appears on the display.

Quick-press button "P" quickly to reactivate the winch (the icon disappears).

Work light



Set switch "E" to position "F3" to switch the work light (if featured) on or off.

- Switching on the radio control

- Turn the key on the receiver unit ON switch "R" (fig. 6.2.3) to the "RADIO" position.
- Turn the key on the transmitter unit ON switch "N" (fig. 6.2.3) to the "I" position.
- Press button "B" to activate the transmitter/receiver unit functions.

- Switching off the radio control

- Turn the key on the ON switch "N" on the transmitting unit (fig. 6.2.3) to position "O".
- Turn the key on the receiver unit switch "R" to the "HAND / MANUAL" position.

6.2.3 - Radio control operation check

Before starting to work:

- check the batteries are charged;
 - check the radio control is in good condition;
 - check the rubber guards around the levers are in good condition;
 - check the receiving unit connections are in good condition;
 - check the connection pins on the receiving unit are tightened properly.
- Checking emergency stop device operation.
Press the button "H", move the radio control levers in both directions and make sure that the crane movement is disabled.
Rotate the button to restore normal crane operation.

6.2.4 - Radio control stop due to power failure

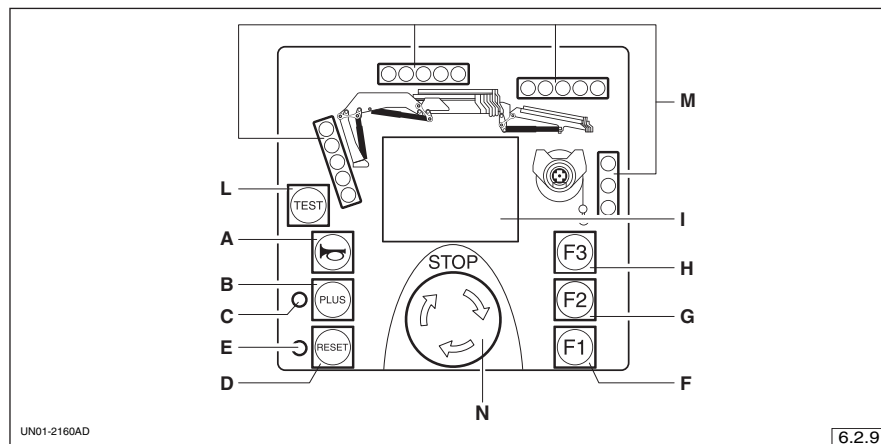
In the event that the crane locks due to a flat battery, proceed as follows:

- I) switch off the transmitting unit
- II) replace the battery
- III) carry out the receiving unit start-up procedure.

6.2.5 - Radio control maintenance

For radio control maintenance, please refer to the instructions contained in the instruction manual provided by the radio control's manufacturer.

6.2.6 - Functioning control unit controls and indicators



A - Buzzer

Activating it and returning to the normal mode.

B - "PLUS" button

This has the same function as the "PLUS" button on the transmitter unit.

C - Indicator light

Yellow.

When on:

- with an intermittent light, it indicates that the crane functioning is in the "PLUS" mode;
- with a fixed light, it indicates that the crane functioning is in the "PLUS" mode, but with the possibility of deac-

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 "3-30" mode is in progress (see function reset with "3-30").

F - "F1" function button

This performs the same function as the "F1" button on the transmitter unit.

G - "F2" function button

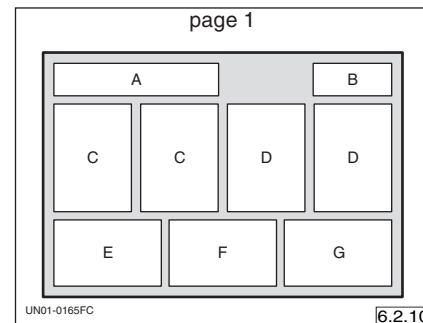
This performs the same function as the "PLUS" switch when pushed at machine start-up.

H - "F3" function button

Optional function.

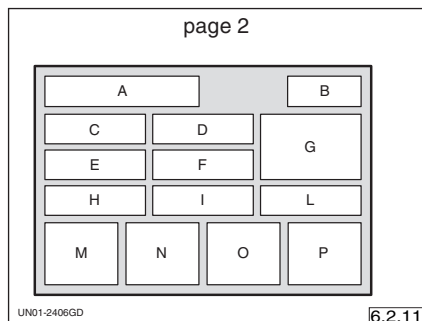
I - Display

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



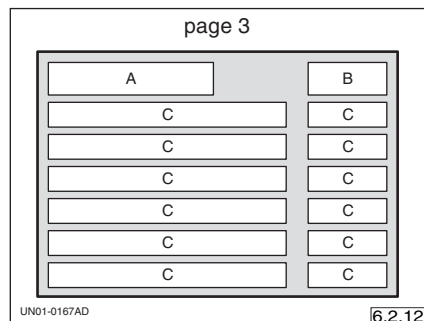
Key to page 1

A	Crane model
B	Partial timer
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



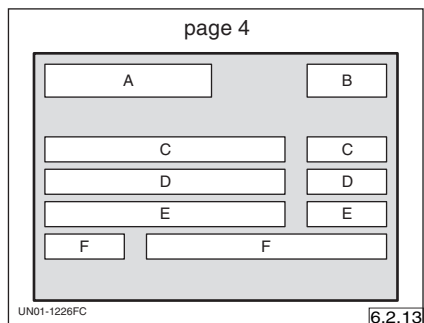
Key to page 2

A	Crane model
B	Effective time-counter
C	Transversal tilt
D	Longitudinal tilt
E	Main arm angle
F	Arms pack angle
G	Oil temperature
H	Necessary maintenance (0 = no 1 = yes)
I	DV from radio (0 = no 1 = yes)
L	Active solenoid valve (0 = no 1 = yes)
M	Speed reduction percentage
N	Jib angle (when featured)
O	Winch load percentage
P	Winch use time-counter



Key to page 3

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



Key to page 4

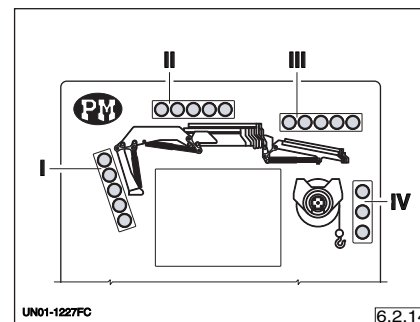
A	Crane model
B	Effective time-counter
C	Hardware version
D	Loader version
E	Software version
F	Series number

L - "Test" button

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

M- Indicators light

These indicate the lifting capacity in use.



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

- 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.

N - Emergency stop button

See para. "Safety devices".

6.2.7 - Information and alarm messages

- Information messages

Icon	Description
	Multiple activation functioning
	Use of the grab
	Rotation block
	Emergency button pressed
	Active limited area
	Jib not connected to the electrical system
	Carry out maintenance
	Heat exchanger fan in use
	Reset: operates for 3 seconds
	Reset: does not operate for 30 seconds
	Set for the use of the crane
	Facility for use with outriggers
	Active "regenerative" function
	Activated PLE speed

Icon	Description
	Stabilized crane
	Crane thrust check
	Crane maximum lifting
	Jib thrust check
	Jib maximum lifting
	MOD: translation mode OK: winch in work position NOK: winch not in work position Lck: winch locked
	Block lower limit
	Block upper limit

(*) Icon

- Icon not associated with numerical code; perform maintenance available to operator
- Icon associated with numerical code; have machine serviced at authorised centre
- Numerical codes:
 - 60 - carry out maintenance every 500 hours
 - 61 - carry out maintenance every 1000 hours

- Alarm messages

Icon	Code	Description
	01	Filter blocked
	34	Winch lifting end stroke
	33	Winch lowering end stroke
	22	Manual extensions overload
	02	Hydraulic oil high temperature
	03	Hydraulic oil low temperature
	21	Crane not stabilised
	45	Control unit malfunction
	46	Central remote control unit malfunction
	47	LG / IO card failure
	48	Satellite unit malfunction
	49A	MCS card failure (MASTER)
	49B	MCS card failure (SLAVE)

Icon	Code	Description
	23A 23B	Main jack angular sensor <i>23A - sensor disconnected</i> <i>23B - sensor short circuited</i>
	24A 24B	Secondary jack angular sensor <i>24A - sensor disconnected</i> <i>24B - sensor short circuited</i>
	25A 25B	Jib angular sensor <i>25A - sensor disconnected</i> <i>25B - sensor short circuited</i>
	26	Temperature sensor <i>sensor failure</i>
	27A 27B	Main jack pressure sensor <i>27A - sensor disconnected</i> <i>27B - sensor short circuited</i>
	28A 28B	Secondary jack pressure sensor <i>28A - sensor disconnected</i> <i>28B - sensor short circuited</i>
	29A 29B	Jib joint jack pressure sensor <i>29A - sensor disconnected</i> <i>29B - sensor short circuited</i>
	30A 30B 30C 30D 30E 30F 30G 30H 30I	Emergency solenoid valve <i>30A - emergency disconnected</i> <i>30B - emergency short circuited</i> <i>30C, 30D, 30E, 30F, 30G, 30H, 30I - generic alarm</i>

Icon (1)	Code	Description
	31A 31B	Regenerative solenoid valve <i>31A - solenoid valve disconnected</i> <i>31B - solenoid valve short circuited</i>
	32A 32B	Multiple activation solenoid valve <i>32A - solenoid valve disconnected</i> <i>32B - solenoid valve short circuited</i>
	37A 37B	Rotation solenoid valve <i>37A - Solenoid valve disconnected</i> <i>37B - Solenoid valve short circuited</i>
	38A 38B	Capacity reduction solenoid valve <i>38A - solenoid valve disconnected</i> <i>38B - solenoid valve short circuited</i>
	39A 39B	Spare 1 solenoid valve <i>39A - solenoid valve disconnected</i> <i>39B - solenoid valve short circuited</i>
	41A 41B	Spare 2 solenoid valve <i>41A - solenoid valve disconnected</i> <i>41B - solenoid valve short circuited</i>
	42A 42B	Winch analogic sensor <i>42A - sensor disconnected</i> <i>42B - sensor short circuited</i>
	44A 44B	Spare 3 solenoid valve <i>44A - solenoid valve disconnected</i> <i>44B - sensor short circuited</i>
	51A 51B	Spare 4 solenoid valve <i>51A - solenoid valve disconnected</i> <i>51B - sensor short circuited</i>
	64A 64B	<i>64A - satellite not found</i> <i>64B - satellite detected but not configured</i>

Icon (1)	Code	Description	
	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	Arms jack control	4th module
	11	Accessory control	5th module
	12	Accessory control	6th module
	13	Accessory control	7th module

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

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	Arms jack control lever (extension)	4th component
	17 B	Arms jack control lever (retraction)	
	18 A	Accessory control lever (2)	5th component
	18 B		
	19 A	Accessory control lever (2)	6th component
	19 B		
	20 A	Accessory control lever (2)	7th component
	20 B		

- Accessory connection table

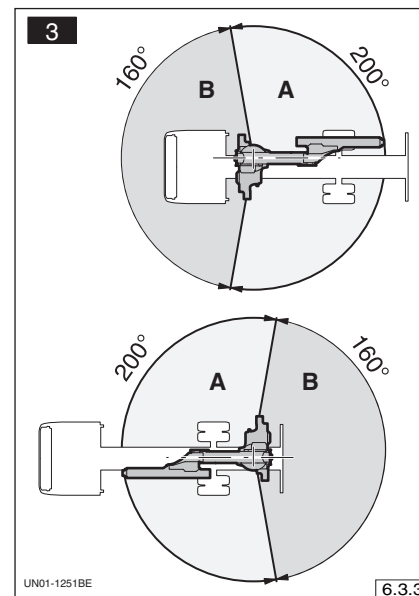
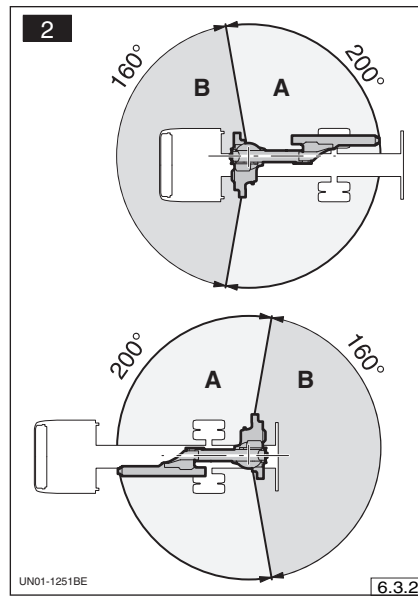
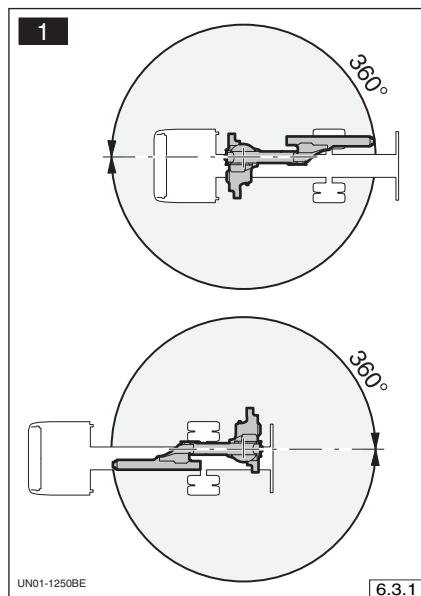
<i>Accessory</i>	<i>Code</i>	<i>Lever function</i>
Jib	..A	Articulation jack control (lowering)
	..B	Articulation jack control (lifting)
	..A	Arms jack control (extension)
	..B	Arms jack control (retraction)
Winch	..A	Winch control (lowering)
	..B	Winch control (lifting)
Rotator	..A	Rotation control (clockwise)
	..B	Rotation control (anti-clockwise)
Grab	..A	Grab control (closing)
	..B	Grab control (opening)

- (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).

6.3 - Work sectors

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

- 1) at 360° with a nominal capacity (4) (fig. 6.3.1).
- 2) With a nominal capacity in sector "A" (200°) and a reduction in capacity in sector "B" (160°) (fig. 6.3.2).
- 3) With a nominal capacity in sector "A" (200°) but without the possibility of rotation in sector "B" (160°) (fig. 6.3.3).



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

6.4 - Crane stabilisation

6.4.1 - Warnings



HAZARD !

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.

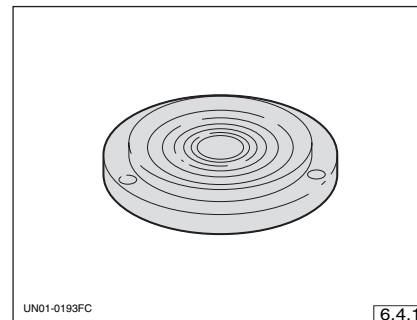
Check the correct levelling using the spirit level (fig. 6.4.1), which must be flat (0°) with a maximum tolerance of $\pm 1^\circ$.



HAZARD !

Always consider the movements the moving parts, such as the booms and outrigger cylinders, will accomplish with great care.

By doing so, you will prevent the parts from hitting against objects or causing bodily harm.



CAUTION !

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

- Stabilisation procedure

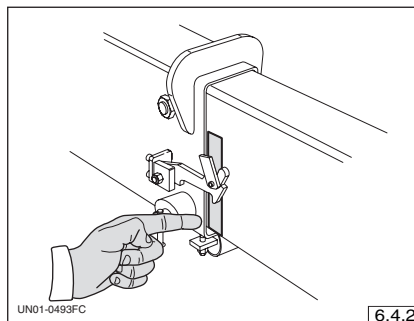
- 1 - Block the vehicle with the parking brake and place the chocks behind the wheels.
- 2 - Start the motor at minimum rpm and engage the power takeoff.
- 3 - The function control unit initialises the software and runs a status check on the connected devices.
If no error or alarm messages appear, the software prompts the user to select (using either the functional control unit or the transmitter unit) the machine's operating mode:
 - operation with load hoisting hook attached ("F1" key);
 - operation with hydraulic tool (bucket, claw, etc) attached. ("F2" key).



Information

*The crane cannot be used until the operation mode is selected.
If hydraulic tool use is not featured, the software automatically sets the machine in the load hoisting mode with hook.*

- 4 - Extend the stabiliser arms to the maximum open position signalled by the yellow indicator light.



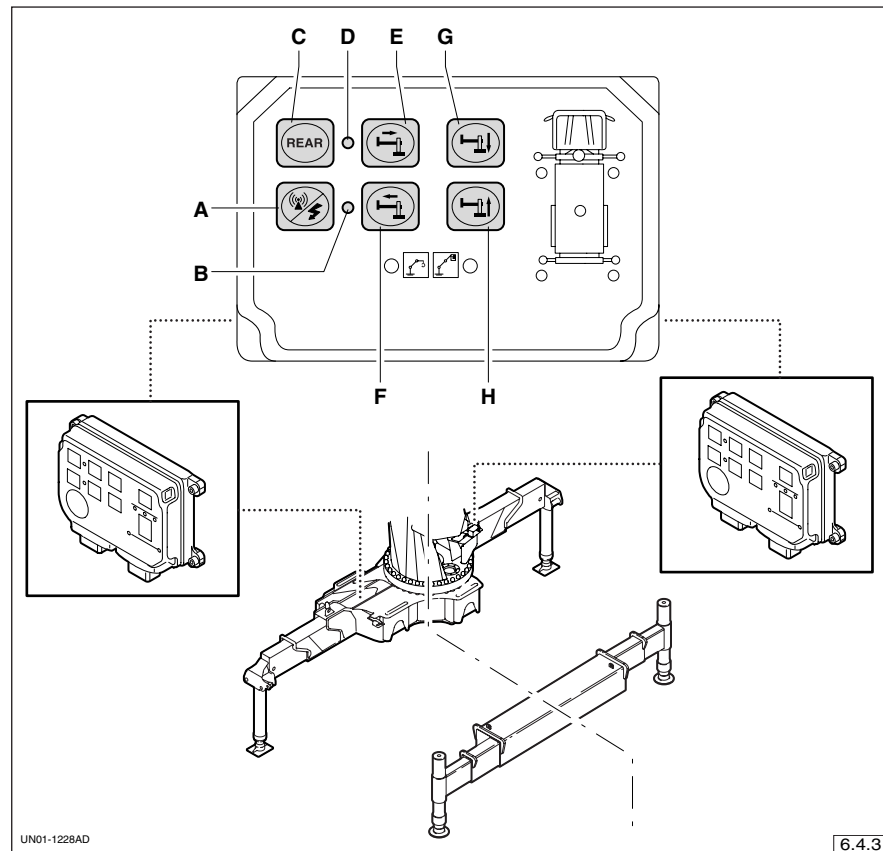
Information

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

*In cold climates, allow the pump to run for a few minutes before manoeuvring the crane to ensure the hydraulic oil reaches the operating temperature.
Check the oil temperature in the functional control unit.*

6.4.2 - Stabilisation controls

Stabilisation can be controlled with the “MCS” keyboard, the transmitter unit or the distributors.



- Controls and signals on the “MCS” keyboard

The keyboard is used to control the outrigger arm and the outrigger jack on the side of the upper keyboard.

A - activation button for transmitter unit controls

The stabilisation must be performed using the transmitter unit within three seconds, otherwise the keyboard controls are re-enabled.

B - Signal light
ON = transmitter unit controls active;
OFF = keyboard controls active.

C - Supplementary crossbeam/crane selection button

D - Signal light
ON = outrigger crossbeam selected.

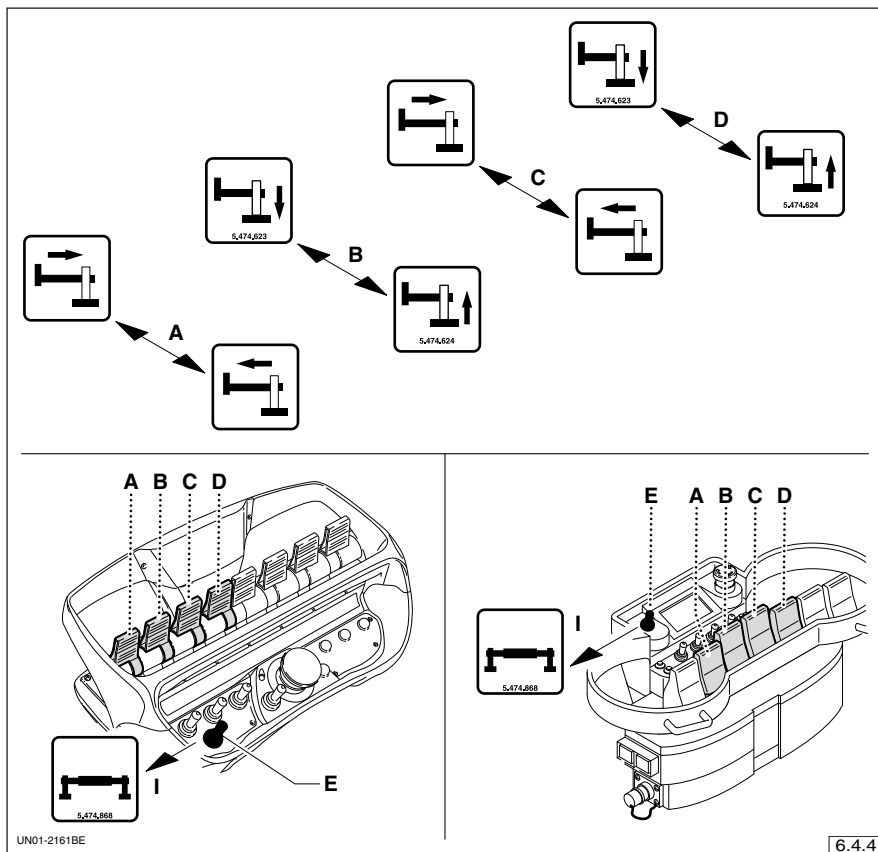
E - Outrigger arm extension

F - Outrigger arm retraction

G - Outrigger jack extension

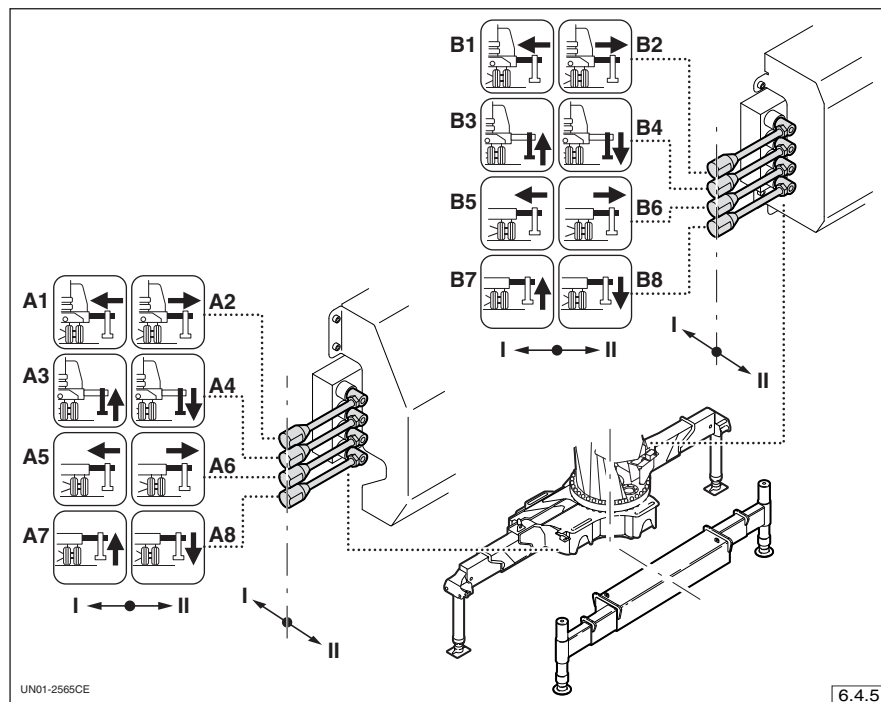
H - Outrigger jack retraction

- Transmitter unit controls



- A - extension/retraction - crane outriggers arms
- B - extension/retraction - crane outriggers jacks
- C - extension/retraction - supplementary crossbeam outriggers arms
- D - extension/retraction - supplementary crossbeam outriggers jacks
- E - control commutation switch
This enables the stabilisation controls (pos. I).

- Controls on the distributors



- A1** - retraction of the crane left stabiliser arm
- A2** - extension of the crane left stabiliser arm

- A3** - retraction of the crane left stabiliser jack
- A4** - extension of the crane left stabiliser jack

- A5** - retraction of the supplementary crossbeam left stabiliser arm
- A6** - extension of the supplementary crossbeam left stabiliser arm
- A7** - retraction of the supplementary crossbeam left stabiliser jack
- A8** - extension of the supplementary crossbeam left stabiliser jack
- B1** - retraction of the crane right stabiliser arm
- B2** - extension of the crane right stabiliser arm
- B3** - retraction of the crane right stabiliser jack
- B4** - extension of the crane right stabiliser jack
- B5** - retraction of the supplementary crossbeam right stabiliser arm
- B6** - extension of the supplementary crossbeam right stabiliser arm
- B7** - retraction of the supplementary crossbeam right stabiliser jack
- B8** - extension of the supplementary crossbeam right stabiliser jack.

6.4.3 - Revolving stabilisers

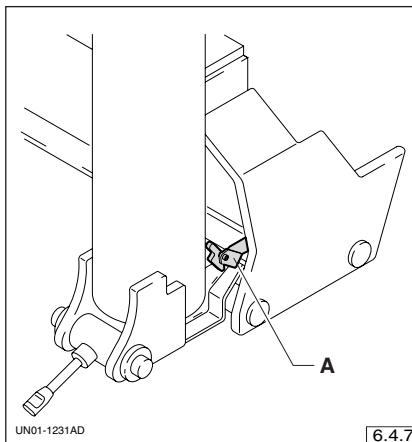
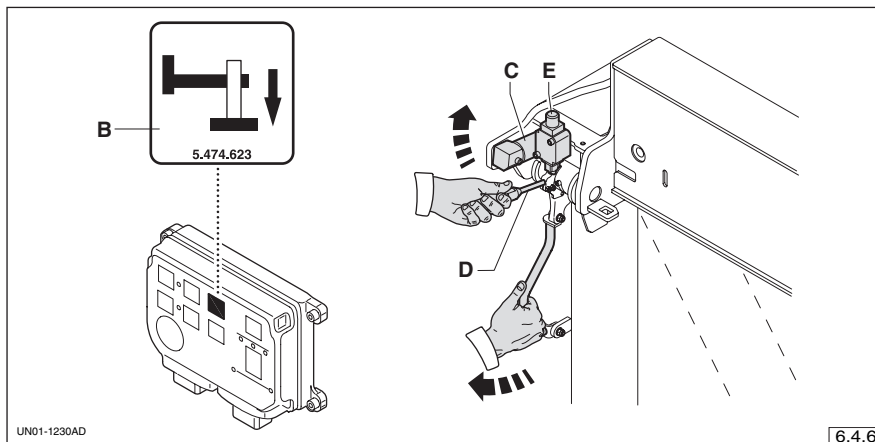


CAUTION !

Extend the stabiliser arms until allowing the free rotation of the stabiliser jack into the vertical position.

- 1 - Deactivate the safety device "A" that prevents the uncontrolled rotation of the stabiliser jack.
- 2 - Push button "B" until rotation jack "C" reaches its stroke limit
- 3 - Manually complete the vertical positioning of the stabiliser and at the same time lock it into position using the lever "D".
Check that the lever engages the switch "E", in order to activate the lowering of the stabiliser jack.

To place the stabiliser in the resting position, carry out the start-up operations in reverse order.



CAUTION !

Check that the safety device "A" is activated.

6.5 - Working position of the crane

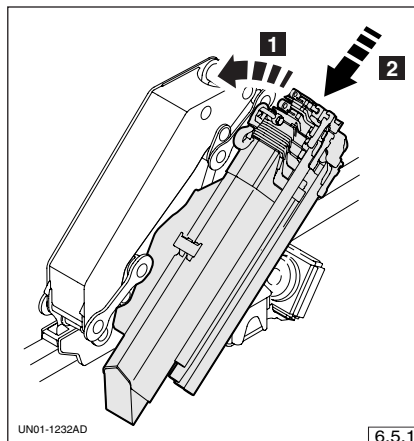
Before moving the crane, carefully read the section on “Safety” and the stabilisation instructions.

Check that the battery is charged and the radio control functions properly.



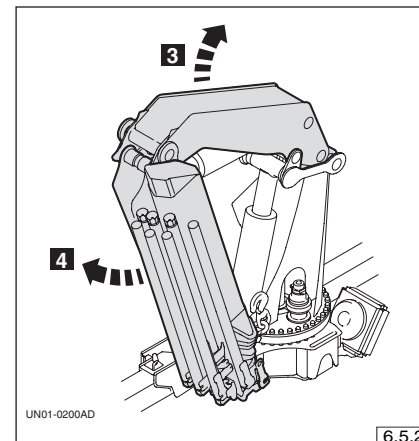
CAUTION !

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



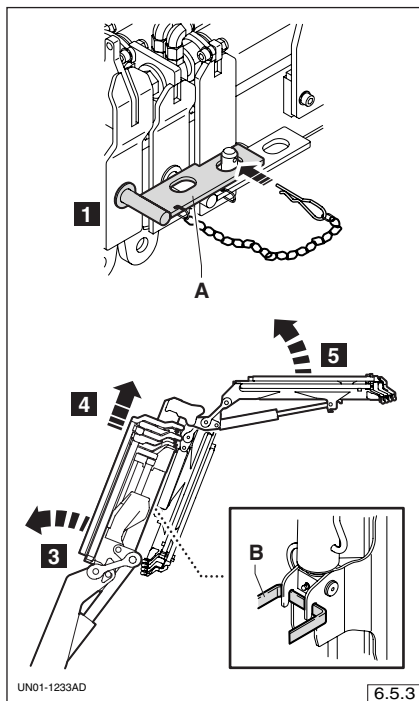
To place the crane into the working position, carry out the following manoeuvres:

- 1 - close the secondary jack to the end stroke;
- 2 - close the jack or the arm extension jacks to the end strokes;
- 3 - open the main jack;
- 4 - open the secondary jack.



The main and secondary jacks must be open enough to allow the free rotation of the crane.

6.5.1 - Working position of the jib



To place the jib into the working position, carry out the following manoeuvres:

- 1 - remove the arms anti-extension device "A";
- 2 - carry out the crane opening manoeuvre described in para. "Working position of the crane";
- 3 - open the secondary jack to allow the rotation of the jib;
- 4 - extend the crane arms enough to free the extension from the lock "B";
- 5 - open the articulation jack.

6.6 - 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").

6.6.1 - 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.

6.6.2 - Checking the rotation limiter (fig. 6.6.1)

Carry out the check with a load that is higher than what is permitted for that certain sector.

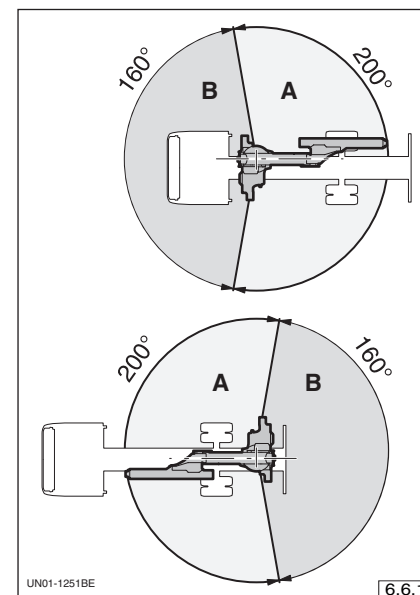
The permitted load value is provided by the authorised service centre that performed the installation and checked the stability of the assembly.

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

6.6.3 - Checking the rotation block (fig. 6.6.1)

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

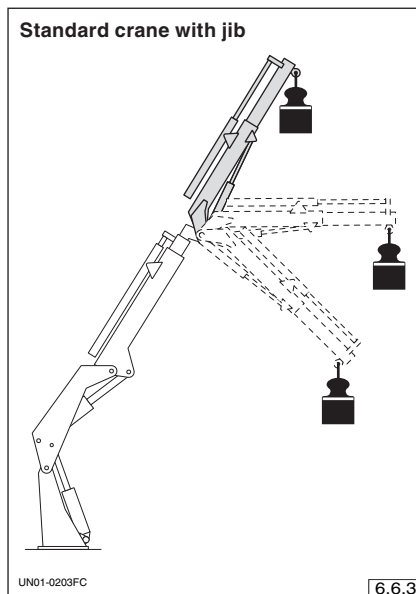
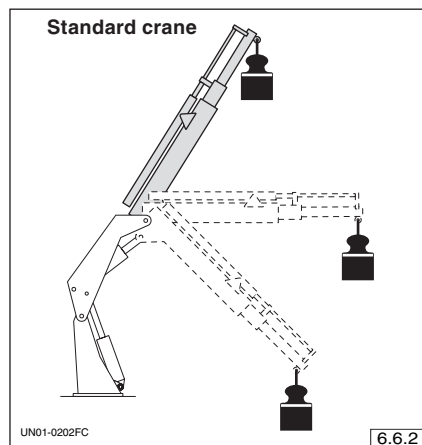
- 1) Turn the crane clockwise and anti-clockwise to check that the device prevents the rotation of the crane into sector "B".



6.6.4 - Checking the load maintenance valve

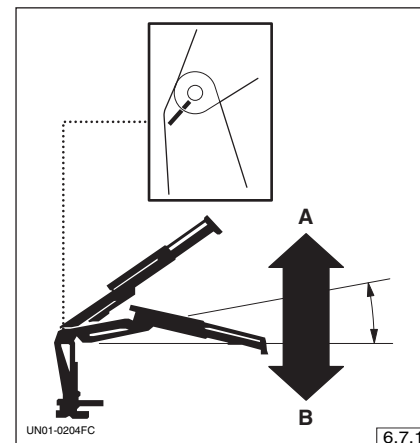
Carry out the check with a medium load.

- 1) Position the crane as shown in fig. 6.6.2 or fig. 6.6.3;
- 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.



6.7 - 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 two reference points on the column and main arm.

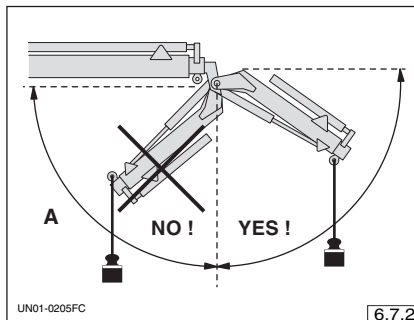
To speed up the loading/unloading operations, it is preferable to use the main and secondary jack, rather than the arm extension jacks.

- Moving the load with the jib



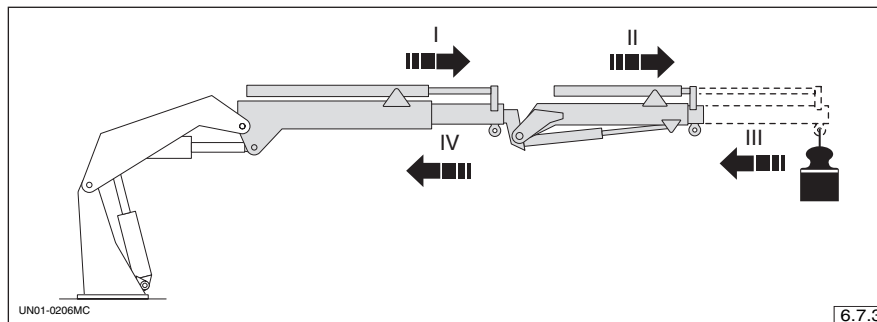
WARNING !

It is prohibited to move loads in the negative sector "A" (see fig. 6.7.2).

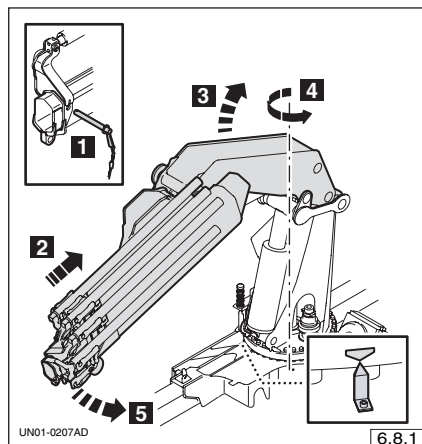


The appropriate manoeuvres to transfer the load (crane and jib arms horizontally), fig. 6.7.3, are:

- 1 - first extend the crane arms and then the jib arms;
- 2 - retract the jib arms and then the crane arms.

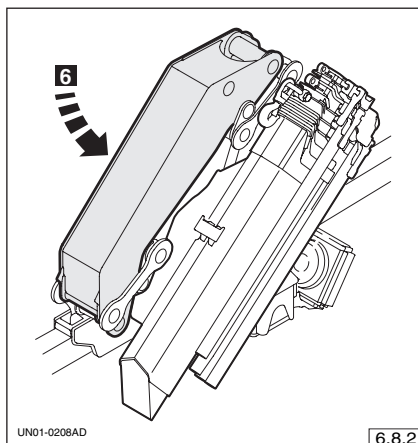


6.8 - Crane resting position



HAZARD !

To avoid the risk of accidents, manoeuvre the crane from the opposite side to the main arm closing.

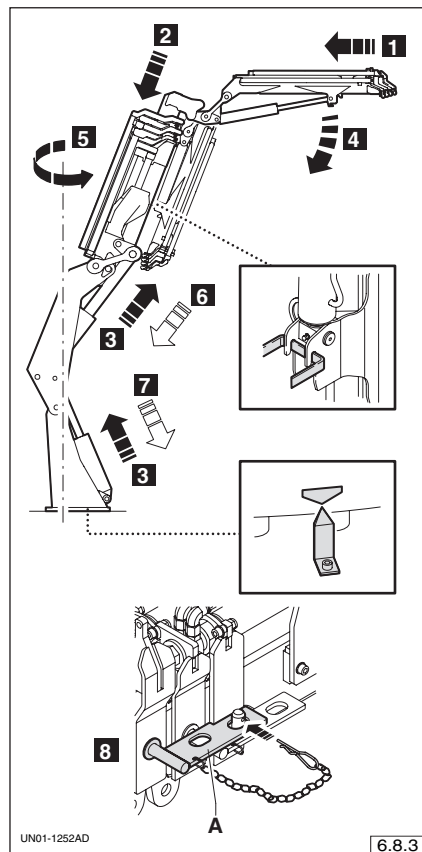


To place the crane in the resting position, carry out the following manoeuvres (fig. 6.8.1 - 6.8.2):

- 1 - retract the manual extensions and lock them with the pin and safety plug in the minimum outreach position.
- 2 - Retract the crane arms;
- 3 - open the main jack;
- 4 - turn the crane until it fits the reference points located on the column and base;
- 5 - close the secondary jack;

- 6 - close the main jack making sure that the main arm of the crane fits into the special anti-rotation supports.

6.8.1 - Crane resting position with jib



CAUTION !

Bring the winch (if present) to its rest position before bringing the articulated extension to its rest position (see para. “Accessories - Movable winch”).

To place the crane in the resting position, carry out the following manoeuvres:

- 1 - retract the jib arms;
- 2 - retract the crane arms;
- 3 - open the main and secondary jacks, in order to be able to work without obstacles;
- 4 - close the jib joint jack by attaching it to the support located on the secondary arm (extending and/or retracting with the crane extensions if necessary);
- 5 - turn the crane until it fits into the reference points located on the column and base;
- 6 - close the secondary jack;
- 7 - close the main jack, making sure that the main crane arm fits into the special anti-rotation supports;

8 - activate the safety device “A”.

6.9 - Crane destabilisation and circulation on the roads

- Crane destabilisation



Information

The signal lights “B” and “D” start flashing simultaneously (fig. 6.4.3), indicating that the crane is not in the resting position and the stabilisation controls are locked.

Close the crane up into the resting position and then destabilise it.

- 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 roads



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.

6.10- Locking the crane

6.10.1- 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.

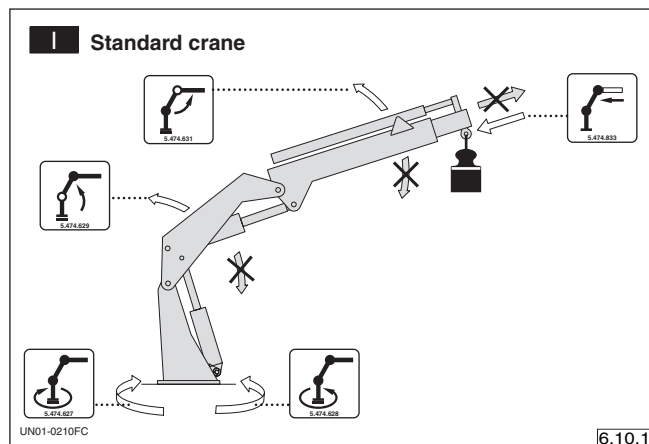


Information

The retraction of the arms is always allowed, with the exception of the particular situations in which the manoeuvre overloads the column jack.

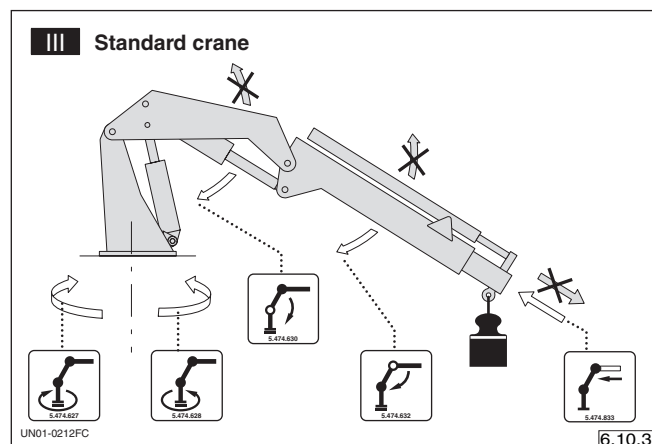
In these cases, the arm retraction locks and it is possible to move the load with the remaining manoeuvres permitted.

If all the controls are inhibited, carry out the unlocking manoeuvres using the “3-30” system.



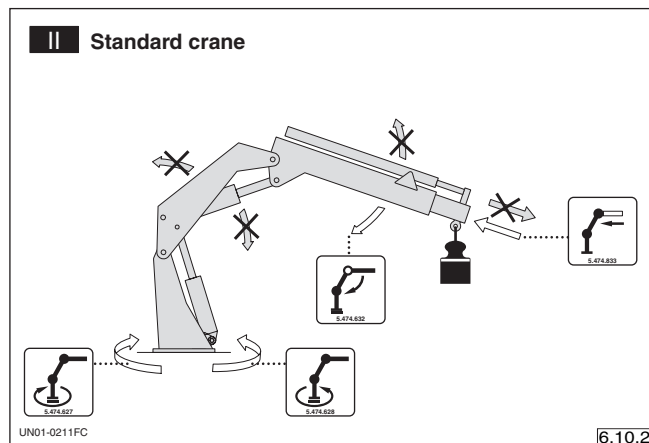
Rotation inhibited in limited area

6.10.1



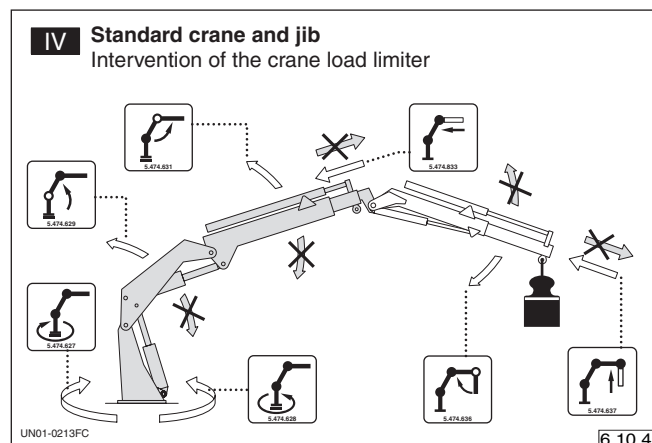
Rotation inhibited in limited area

6.10.3



Rotation inhibited in limited area

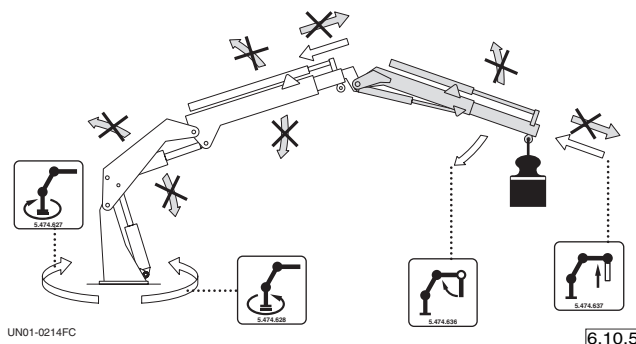
6.10.2



Rotation inhibited in limited area

6.10.4

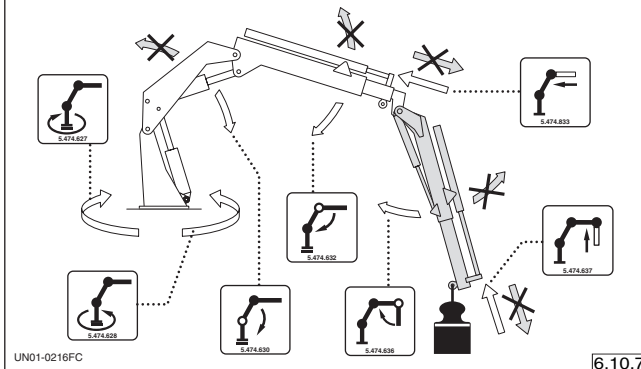
V Standard crane and jib Intervention of the jib load limiter



6.10.5

Rotation inhibited in limited area

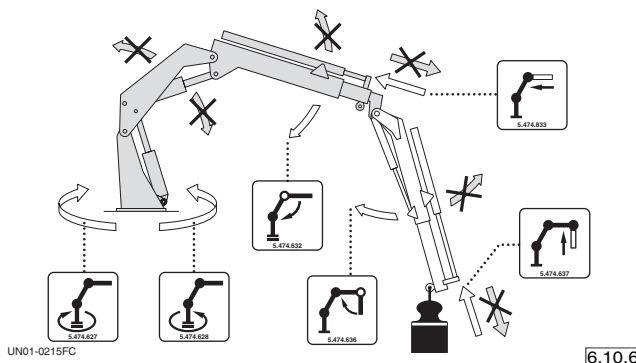
VII Standard crane and jib Intervention of the jib load limiter



6.10.7

Rotation inhibited in limited area

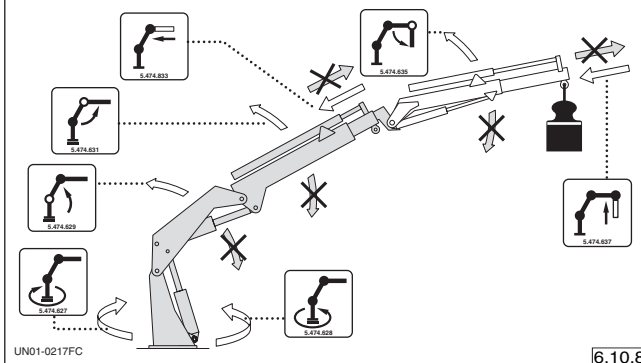
VI Standard crane and jib Intervention of the crane load limiter



6.10.6

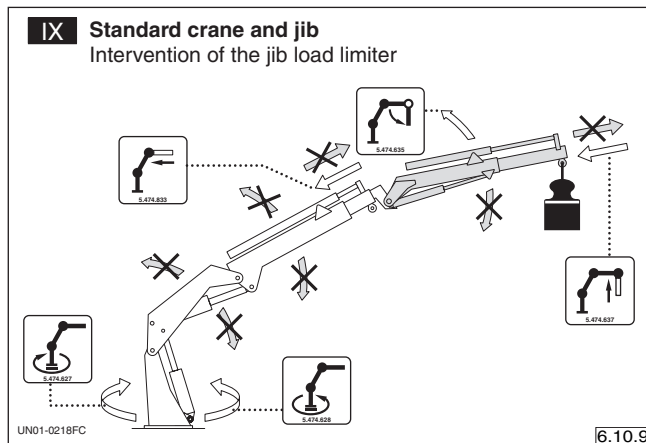
Rotation inhibited in limited area

VIII Standard crane and jib Intervention of the crane load limiter

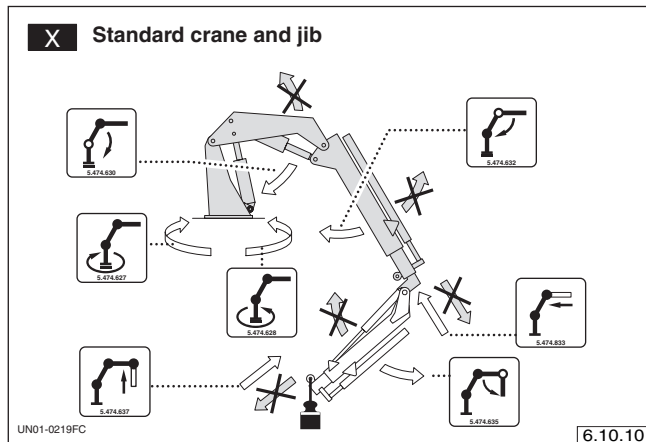


6.10.8

Rotation inhibited in limited area



Rotation inhibited in limited area



Rotation inhibited in limited area

6.10.2- Resetting the functioning using the “3-30” system

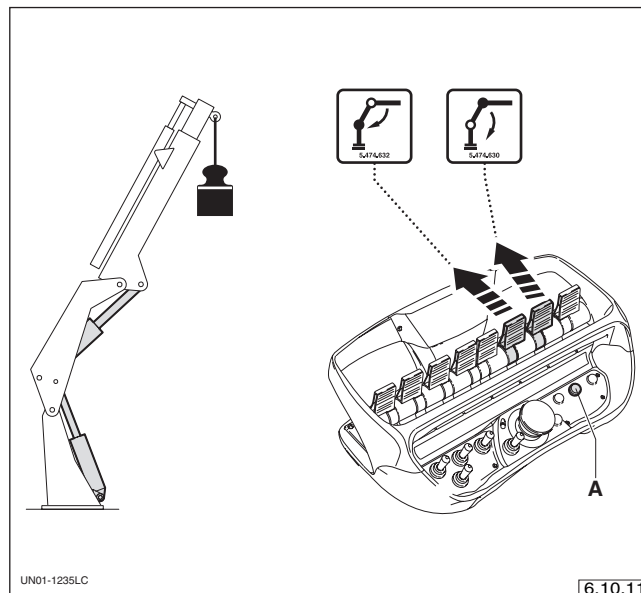


Information

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

Use the system when the manoeuvres necessary to get out of the emergency situation are inhibited.

“3-30” means that the system imposes a timing of 3 seconds of manoeuvre followed by 30 seconds of machine stoppage.



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

6.10.3- Winch lock

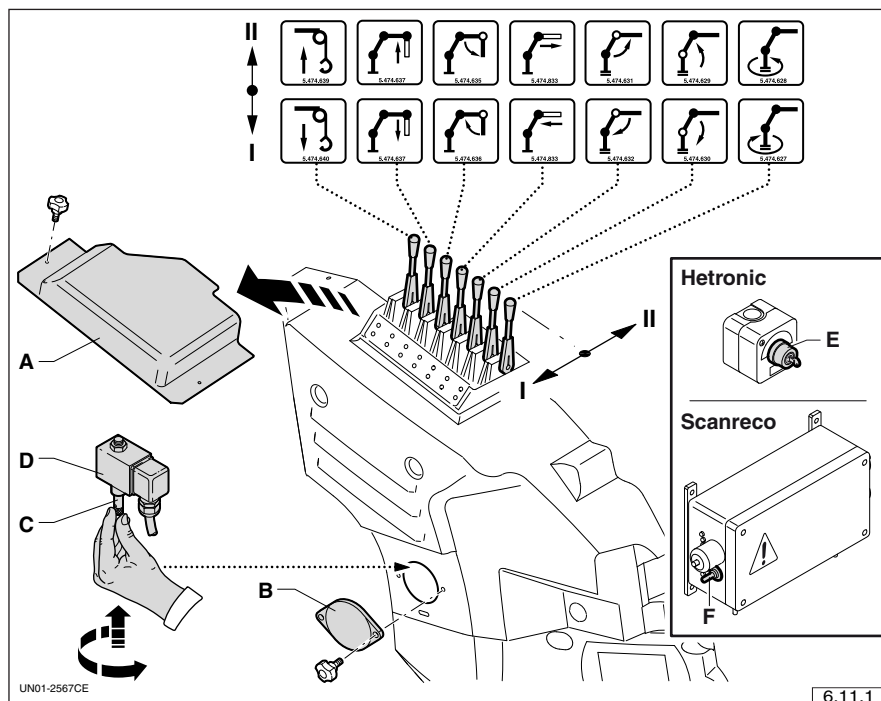
Handling loads which exceed the winch's maximum limit will cause the winch to lock, therefore stopping mid-manoeuvre. Invert the manoeuvre to unlock the winch, then replace the load in its initial position.

In the event that that reversal of the manoeuvre is not enough to unlock the winch, retract the crane's arms while carrying out the reversed manoeuvre with the winch at the same time.

6.11 - Emergency situation

6.11.1- Crane resting position

As result, the electric/electronic or radio control malfunction causes the exclusion of the function control unit and it is possible to move the crane from the distributor.



HAZARD !

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.



Information

Distributor manoeuvres are only permitted in an emergency.

Moving the crane from the distributor with the functioning radio control causes the crane to lock.

To restart the machine restart the vehicle engine and reengage the power takeoff.

If the communication network between the radio control and the function control unit fails or the radio control experiences an electrical/electronic failure, carry out the following manoeuvres to set the load down on the ground.

- Network failure situation

Scanreco" radio control

- Set switch "F" to the "Manual" position.

"Hetronic" radio control

- Turn the switch "E" to the "Hand/Manual" position.

- 1 - Remove the cover "A";
- 2 - manoeuvre the crane from the distributor in order to place the load on the ground and close the crane in the resting position.

- Power failure situation

- 1 - Remove the cover "A";
- 2 - open the hatch "B";
- 3 - remove the seals from the shut-off device "D";
- 4 - press and turn the pawl "C" fully;
- 5 - manoeuvre the crane from the distributor in order to place the load on the ground and close the crane in the resting position.



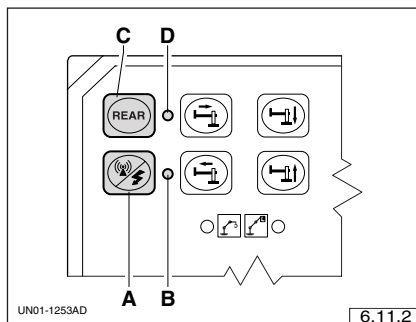
Information

The seals on the shut-off devices must be replaced by the authorised service centre.

6.11.2- Destabilisation

- Destabilising machine equipped with the "MCS" keyboard

Network failure situation



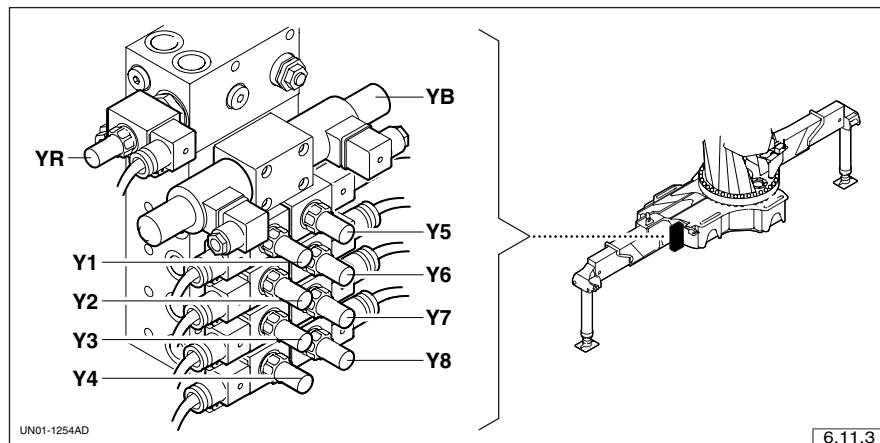
- 4 - Use the controls to retract first the outrigger jacks and then the outriggers on the supplementary cross-beam.

In the event of a failure involving the communication network between the control unit and the stabilisation controls, destabilise the machine as outlined below:

- 1 - push button "A" and keep it pushed throughout the operations (signal light "B" = ON).
- 2 - Use the "MCS" keyboard controls to retract first the outrigger jacks and then the crane outriggers.
- 3 - Push button "C" (signal light "D" = ON).

II° - Power failure situation

In case of electric trouble, operate on the stabilising solenoid valves (fig. 6.11.3).



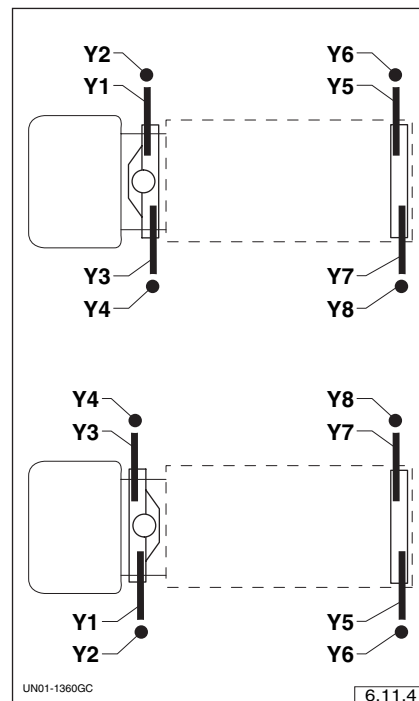
Solenoid valves legend

- YR:** hydraulic power supply
YB: jacks retraction
Y1: crane outrigger arm
Y2: crane outrigger jack
Y3: crane outrigger arm
Y4: crane outrigger jack
Y5: supplementary crossbeam outrigger arm
Y6: supplementary crossbeam outrigger jack
Y7: supplementary crossbeam outrigger arm

- Y8:** supplementary crossbeam outrigger jack

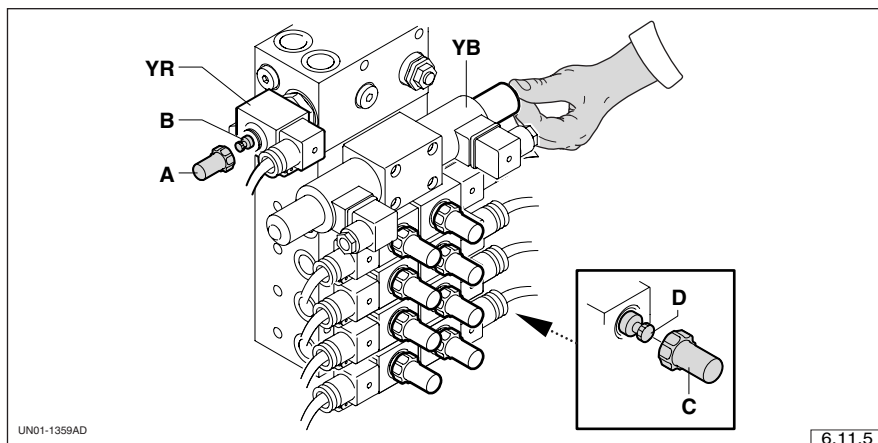
The solenoid valves are associated with the outrigger jacks (fig. 6.11.4) differently depending on the type of installation:

- crane outriggers arms - facing cabin;
- crane outriggers arms - facing body.



WARNING !

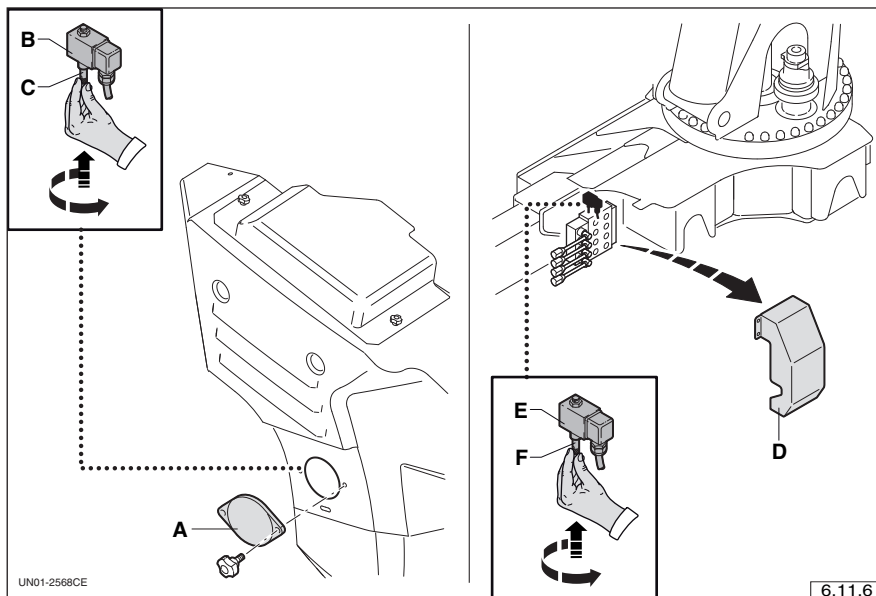
**Retract first the outrigger jacks and then the outrigger arms.
Do not operate several jacks at once.**



- 1 - Unscrew cover “A” on the solenoid valve “YR” and unscrew pawl “B” fully.
- 2 - Unscrew cover “C” of the solenoid associated with the manoeuvre to perform separately, then unscrew pawl “D” fully.
- 3 - Push the slider on the solenoid valve “YB” to the stroke limit from the retraction manoeuvre.
- 4 - Screw the pawl at the stroke limit and fit the cover.

Repeat the operations for every single outrigger jack.

- Destabilising machine equipped with distributors



Information

The seals on the shut-off devices must be replaced by the authorised service centre.

In the event of a power failure, proceed as follows:

- 1 - remove the cover "A";
- 2 - remove the seals from the shut-off device "B";
- 3 - press and turn the pawl "C" fully;
- 4 - remove the cover "D";
- 5 - remove the seals from the shut-off device "E";
- 6 - press and turn the pawl "F" fully;
- 7 - retract all the stabiliser jacks completely;
- 8 - retract all the stabiliser arms completely.

6.11.3- 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 para “Locking the crane”.

6.12- Access to the manoeuvring positions



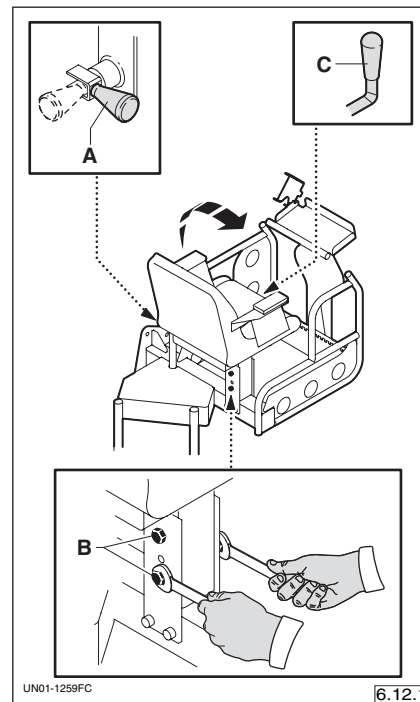
WARNING !

Climb up to the manoeuvring positions using the special ladder.

Do not use the controls or the hoses as footholds, but use the specially designed handles and handrails.

Always keep the manoeuvring position and access ladder clean and free from oil, mud, grease, snow and ice.

6.12.1- Access to the high manoeuvring position



1 - Climb up to the manoeuvring posi-

tion from the back of the seat. Unblock the lever “A” and turn the seat (fig. 6.12.1).

- 2 - Turn the seat into the working position and lock it with the lever “A”.

Before operating with the machine, adjust the seat to the most comfortable individual position and for better control of the crane.

- Adjust the seat up or down by moving the screws “B” in the special holes to different heights, at the same time moving the seat.
- Adjust the seat horizontally using the lever “C”, ensuring that it stays locked into the chosen position.

6.13- Use of the load limiter for manual extensions



WARNING !

Before moving the load with the extensions, check that the transmitter pin is working and that it is mounted onto the extension that you wish to use.

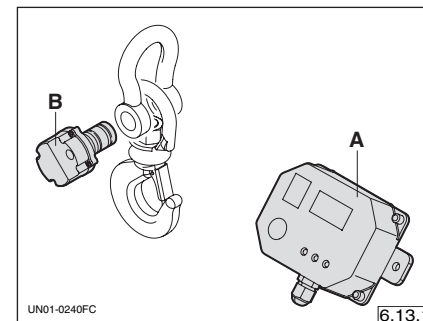
Always select the number relating to the extension in use.

During movement of the load, do not for any reason change the number of the extension in use. It is prohibited to lift loads larger than those indicated on the capacity diagrams (whatever the geometric configuration of the crane is).

In any case, never exceed the load value indicated on the plate attached to the extension.

The limiter informs the operator of the weight lifted by the extension in use.

On reaching the preset value (depending on the extension in use), all the load lifting manoeuvres stop immediately and so the overloading of the extension is avoided.



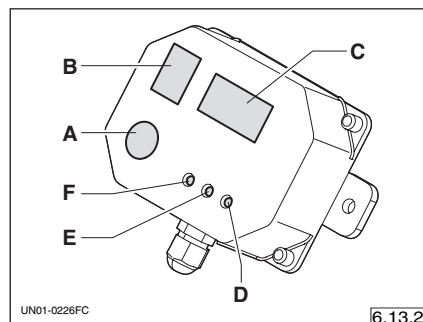
- Main parts

- A - Receiver unit
- B - Transmitter pin

- Technical data

Power voltage	from 12 to 24 V dc
Absorption	100 mA max.
Protection	IP 67
Emission frequency	FM 868,3 Mhz (CEPT SRD 1FI)
Battery	Ni-Mh 3,6V
Indicative battery duration	30 hours

- Controls and indicators



- A** - selection key for the extension in use;
- B** - display for the extension selected;
- C** - display for the weight in kg lifted by the extension in use;
- D** - indicator light:
when on, it indicates that
- the preset weight for the extension in use has been exceeded;

6.46

- there is no transmitter unit radio signal (in this case the message “ERR” appears on the display “C”).

E - Indicator light.

When on, it indicates that the limiter is switched on.

F - Indicator light.

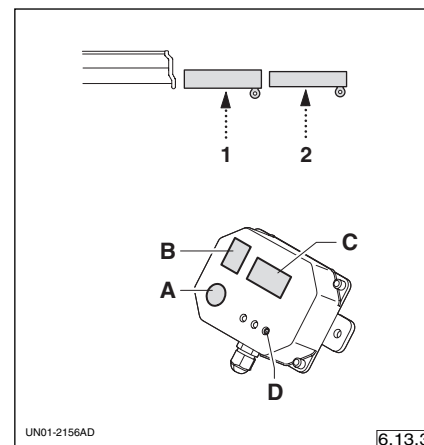
When on it indicates that the transmitter unit battery is nearly flat. When the battery is totally flat, the “ERR” message appears on the display “C”.

- Functioning

- 1 - Using button “A”, select the manual extension that you wish to use, in accordance with the diagram in fig. 6.13.3 (max. 2 extensions). The number of the extension appears on the display “B”.
- 2 - Install the hook/transmitter onto the selected extension.
- 3 - Lift the load.
On reaching the maximum load that can be lifted by the extension in use, the crane buzzer is activated, the indicator light “D” switches on. The corresponding icon appears on the remote control and the control unit displays.

All the lifting manoeuvres by the crane are blocked and only lowering movements to place the load on the ground are permitted.

With the load on the ground, the alarm stops and it is possible to start work again.




WARNING !

If all the controls are inhibited, press the button "A" until a flashing cursor that indicates the deactivation of the load limiter appears on the display "B". The operator has to manoeuvre with maximum care and place the load on the ground in order to avoid any accidents.

- Displaying the maximum preset values (fig. 6.13.3)

- 1 - Using button "A", select the number of the extension for which you wish to know the maximum preset load; the number of the extension appears on the display "B";
- 2 - keep button "A" pressed for at least 5 seconds; the load value flashes on the display "C";
- 3 - release the button to return to normal functioning.

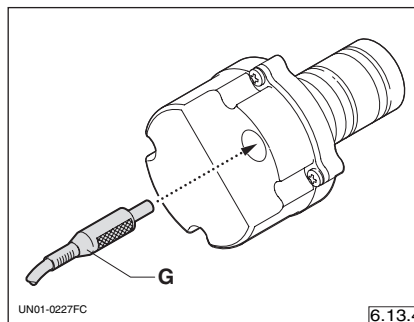

WARNING !

The values for the maximum loads of the manual extensions were originally preset by PM Autogru or at an authorised service centre. Any re-calibrations may only be carried out at an authorised service centre.

The maximum preset values are slightly higher than those indicated in the load diagrams, due to the tolerance of the device.

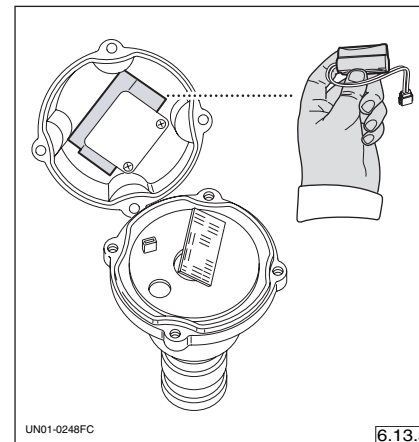
- Charging the battery

Connect the cable "G" of the battery charger to the transmitter unit and the 12 - 24 V dc vehicle socket.



- Replacing the battery

- 1 - Unscrew the four screws and open the case;
- 2 - tip the case up and unscrew the two battery fixing screws;
- 3 - extend the connector to the card and replace the batteries.


Information

Do not use lithium batteries, as they are not suitable.

Only use batteries of the type indicated by the manufacturer.

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.

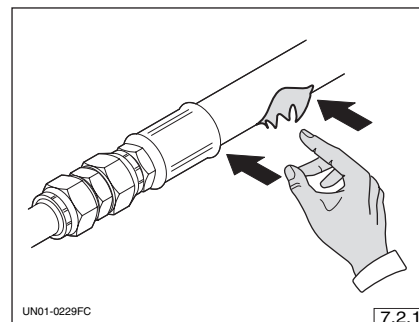
Regular checks Checks to be carried out by the operator						
Component	Operation	Every 10 hours	Every 100 hours	Every 500 hours	Every 1000 hours	Manual reference number - para -
Pipes and hoses	Check	•				7.2
Connections	Check for leaks	•				7.3
Plates	Check integrity	•				2.4
Hook	Check	•				3.1
Hydraulic oil	Check	•				7.4
Safety devices	Check	•				2.3
Structure	Inspection	•				7.6
Winch cable	Check	•				7.8
	Lubrication		•			7.9
Pulleys	Check integrity	•				7.8
	Running check	•				7.8
	Lubrication		•			7.20
Pin lock	Check		•			7.10
Crane stay rod	Check		•			7.11
Crane	Cleaning		•			7.13
Pins	Lubrication		•			7.20
Arms	Lubrication		•			7.14
Sliding blocks	Lubrication		•			7.20
Fifth wheel	Lubrication					7.20
Jack sliding blocks	Check					7.12
Reduction gears oil	Check					7.5
Filters	Check					9.3
	Replacement					9.3
Radio control batteries	Replacement					6.1
Manual extension limiter batteries	Replacement					6.12

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		•			
Reduction gears oil	Replacement				•	
Safety devices	Check			•		
Structure	Inspection		•			
Sliding blocks	Replacement					•
Valves	Calibration		•			
Manual extensions	Adjustment		•			
Winch	Lubrication check	•		•		
	Lubricant replacement (*)		•			
	Check brake			•		
Hydraulic system	Washing					•

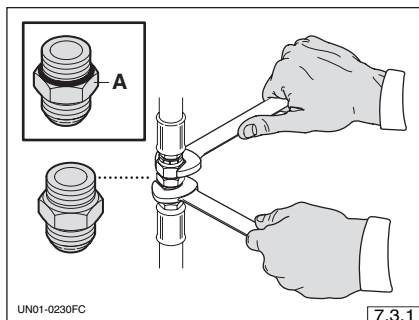
(*) For oil bath lubricated winches

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.



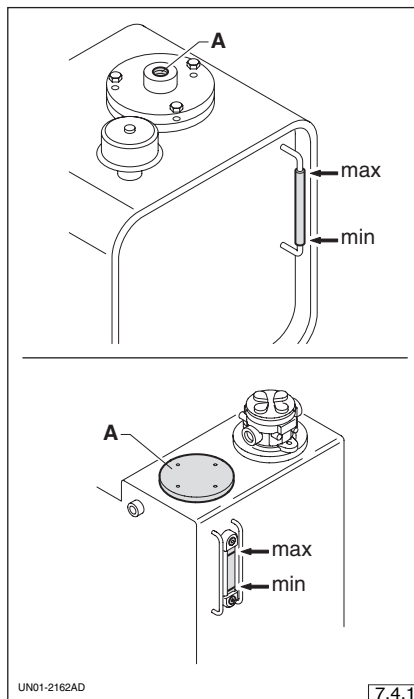
7.3 - Checking for oil leaks from the hydraulic system



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 be eliminated by replacing the connection.

7.4 - Checking the hydraulic oil level



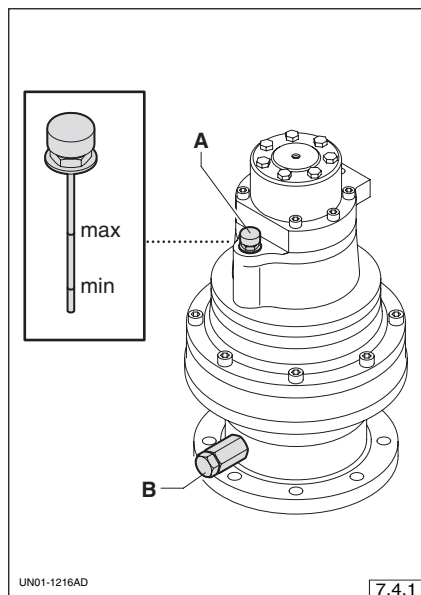
Check the oil level daily, which must be between the minimum and maximum marks.

If necessary, top up from mouth "A". For the oil characteristics see para "Oils and lubricants".

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.

7.5 - Checking the oil level in the rotation reduction gears



A - Air vent stopper
B - Exhaust stopper

To check the level, clean and insert the dipstick.

Top up until the level is between the

7.4

minimum and maximum marks on the dipstick.

For the oil characteristics see para "Oils and lubricants".

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.

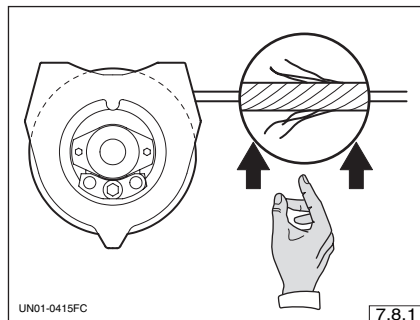
If any weakening or small cracks are noticed, immediately contact an authorised PM service centre.

As stated in the regular check schedule (para. "Regular checks") have the structure checks carried out at an authorised PM service centre.

7.7 - Pulley check

- Check that the pulley races and flaps are in good condition; if they are worn or broken, they must be replaced.
- Check that they run smoothly when rotating and if they do not, contact an authorised PM workshop.

7.8 - Cable check



The cable must be carefully examined for any wear which could alter its technical features.

The cable must be replaced when:

- the quantity of the broken wires (in a section whose length is equal to four times the screw pitch of the elementary wire in the strand) is over 10% of the total wires making up the cable;
- the wire wear is extremely visible (10% reduction in the diameter of the elementary wire);
- the cable is permanently warped with slackening of the trefoils;
- the cable has considerable dents or permanent twisting, has been crushed, its core is coming out or has any other significant signs of wear;

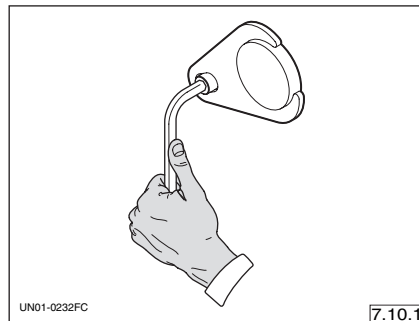
- the sealing on the cable ends is damaged.

7.9 - Cable lubrication

The lubrication must be carried out with particular care to protect the cable from corrosive external elements and to reduce the friction with the pulleys.

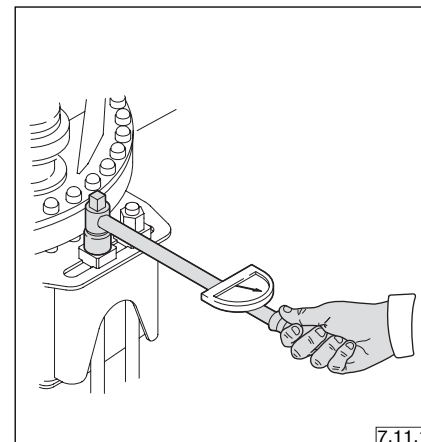
For lubricant specifications, see para. "Oils and lubricants".

7.10 - Checking the pin locks



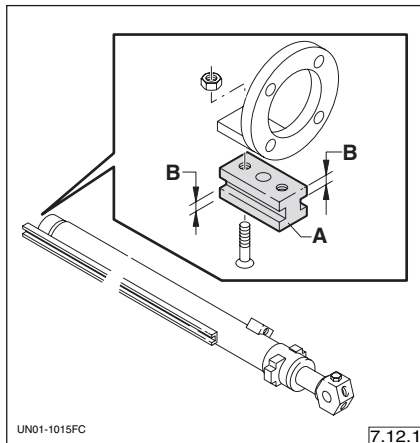
Check the fixing screws of the pin locks. If they have loosened, tighten the screws to the tightening torque of 4 daNm (30 lbf - ft).

7.11 - Checking the anchorage stay rods



Check that the anchorage stay rods are tightened; if not, tighten the nuts to the tightening torque of 160 daNm (1180 lbf - ft).

7.12 - 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 “B” are less than 4 mm (0.157”).

7.13 - 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.

7.14 - Lubrication of the crane arms and stabilisers

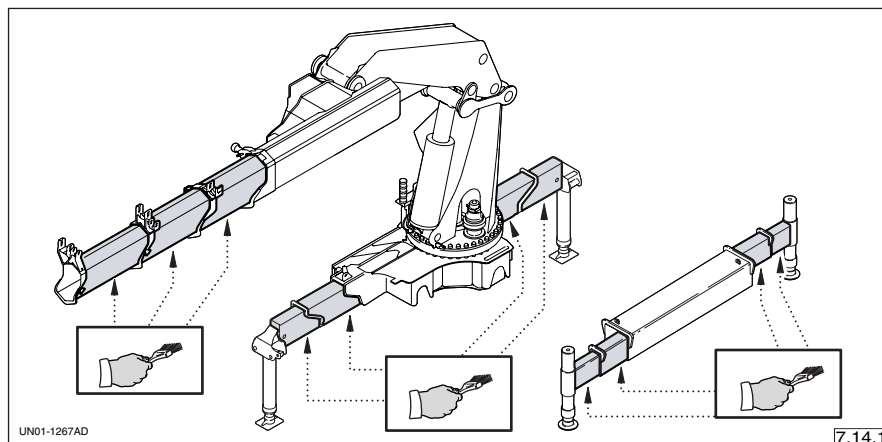
After having carried out the lubrication, carry out some arm extension manoeuvres without a load, in order to distribute the lubricant.
For the lubricant characteristics see para. “Oils and lubricants”.

- 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.



7.15 - Filters

i 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 (see "Filters replacement").

If there are any solid deposits inside the filtering unit, contact an authorised service centre.

7.16 - 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.

7.17- 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 para. "Regular checks").

7.18- Scrapping and disposal

The machine must be scrapped through companies specialised in these activities.

The dismantled components must be separated in relation to the nature of the materials from which they are comprised, in compliance with current laws in force relevant to "differentiated waste collection and scrapping".

In reference to European Directives EC 2002/95, EC 2002/96, EC 2003/108 (electrical and electronic equipment waste), the electrical and electronic components, marked by symbols, must be disposed in special authorised collection centres, or delivered, installed on the machine, to the dealer when re-purchasing new equipment.

Electrical and electronic waste can contain substances that are potentially toxic for the environment and for human beings, therefore, they should be disposed of properly.

Abusive disposal of electrical and electronic components is punishable by current laws in force in the territory where the infringement was committed.

7.19- 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).



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

Environmental temperature 0 ÷ 50 °C (32 ÷ 122 °F)

Lubricant	AGIP ⁽¹⁾	MOBIL	SHELL	TOTAL	ESSO	TAMOIL
Hydraulic oil	OSO 46	DTE OIL 25	TELLUS OIL 46	AZOLLA ZS 46	NUTO H46	HVI 46
Grease	GR CC2	MOBIL-FLEX 47	SUPER GREASE EP 2	MULTIS 2	GP grease	--

(1) Lubricant used by the manufacturer to fill the tank for the first time

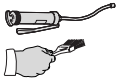
Environmental temperature -15 ÷ 20 °C (-5 ÷ 68 °F)

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

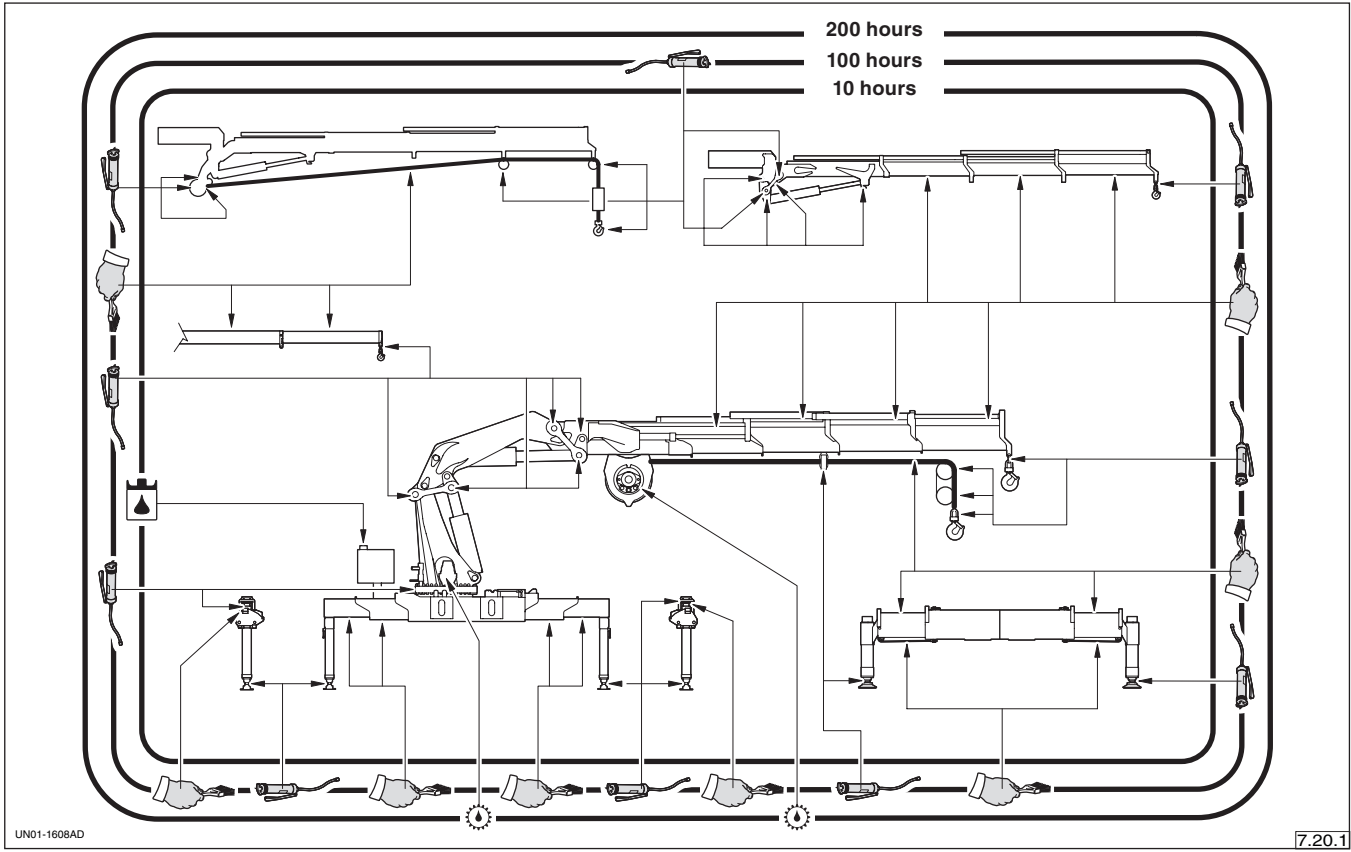
For lower temperatures

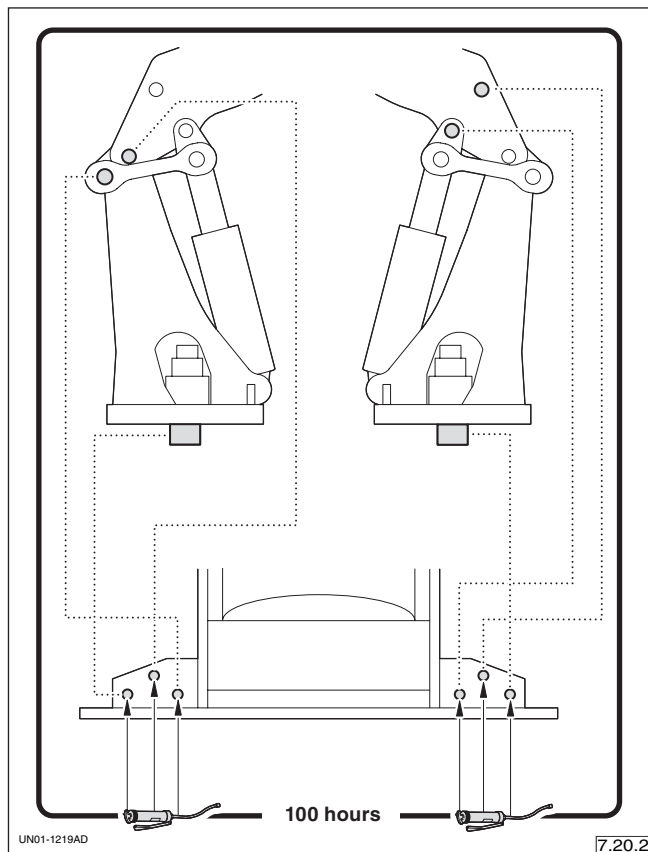
Lubricant	AGIP	MOBIL	SHELL	TOTAL	ESSO
Hydraulic oil	OSO 32	DTE OIL 22	TELLUS OIL 22	AZOLLA ZS 22	NUTO H 22
Grease	GR LP0	MOBIL-FLEX EP 0	SUPER GREASE EP 0	MULTIS EP0	BEACON EP 0

7.19.1- Lubricant comparison tab

Lubricant		Environmental conditions		
		0÷40 °C	20÷50 °C	-10÷20 °C
Hydraulic oil	ISO 3348	ISO VG 32	ISO VG 46	ISO VG 22
 Grease		NLGI 2 calcium/lithium	NLGI 2 calcium/lithium	NLGI 0 calcium/lithium

7.20 - Greasing and lubrication diagrams





Symbols key

 Hydraulic oil

 Grease

 Grease

 Hydraulic oil

Fault	Cause possible	Remedy
The crane is completely stopped	Emergency buttons pressed	Release the emergency stop buttons
	The moment 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
	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

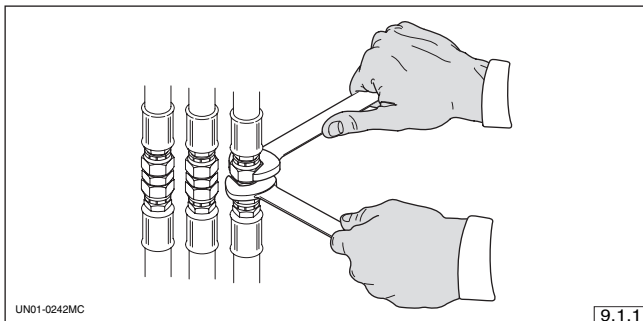
Fault	Cause possible	Remedy
The crane boom cannot hold the load and creep down considerably	The pilot operated check valve fitted on the lift cylinder in question leaks Oil leakage inside the cylinder concerned	Have the valve checked and/or replaced by an authorized repair workshop Have the seals inside the cylinder replaced by an authorised repair workshop
Permanent vibrations while operating on all the movements	Insufficient hydraulic oil Clogging of hydraulic oil filter Suction hose obstructed Inefficient pump	Add hydraulic oil to the tank (see para. "Checking the hydraulic oil level") Replace the filter cartridge (see para. "Filters replacement") Locate the cause of the obstruction and remove it 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 Radio and/or distributor system malfunctioning Inefficient pump	Check the exact speed of the vehicle's engine on the basis of the hydraulic booms extension time Check signals on push-button panel or electronic control unit displays 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 relay
Electronic control unit off and crane not working	Control unit malfunctioning	Consult an authorised workshop
Radio control off or not working	Interrupted radio fuse Radio unit malfunctioning	Replace the fuse (see para."Fuse replacement") Consult an authorised workshop

Fault	Cause possible	Remedy
Radio control off or not working	Push-button panel battery exhausted Interferenced radio transmission Receiver antenna malfunctioning Emergency stop push-button pressed “Scanreco” radio control: switch on electronic control unit in the “Manual” position “Hetronic” radio control: receiver unit switch to the “hand/manual” position	Recharge the battery Connect via cable the push-button panel to the receiver on the crane Consult an authorised workshop Release the emergency stop push-button Set the switch to the “remote” position Turn the switch to the “radio” position
Heat exchanger not working	Exchanger activation device malfunctioning Exchanger electrical connections cut-off Fan motor not working Satellite electronic control unit malfunctioning	Have the device replaced by an authorized repair workshop Check all electrical contacts Have the device replaced by an authorized repair workshop Have the device replaced by an authorized repair workshop

9 Spare part replacement

9.1 - Hose replacement



HAZARD

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.

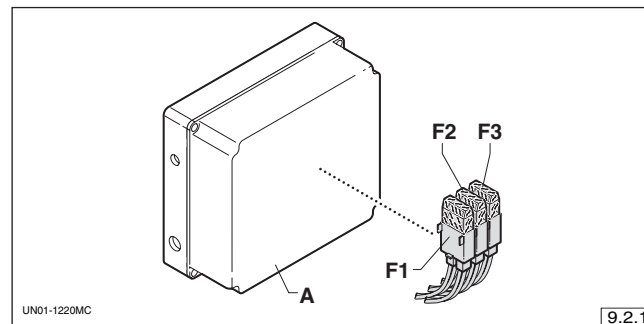
Unscrew the joints and collect oil into a suitable tank.
Replace the hose and tighten the joints.

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.

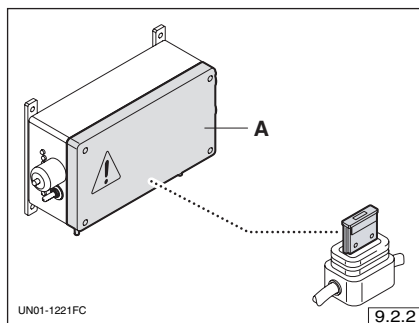
9.2.1 - Connector block fuse replacement



Remove the cap "A" and replace the interrupted fuse.

Pos.	Protected circuit	Ampère
F1	Main circuit (electronic control units, radio)	15
F2	Secondary circuit (operating control unit)	5
F3	Heat exchanger circuit	20

9.2.2 - Radio receiver fuse replacement



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

9.3 - Filters replacement

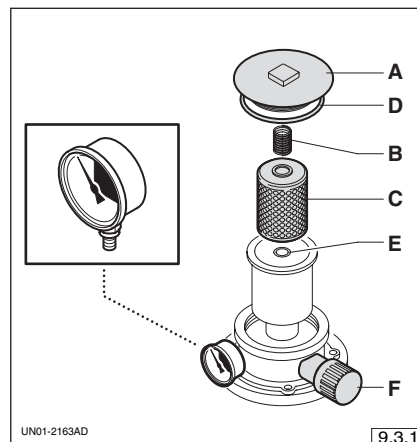
9.3.1 - Replacing the exhaust filter

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

Replace the filtering cartridge, when the pressure gauge needle is in the red section (filter clogged) as it is built of non-washable material.

In any case, carry out the replacement by the expiry date provided for in the planned maintenance schedule (see para. "Regular checks").

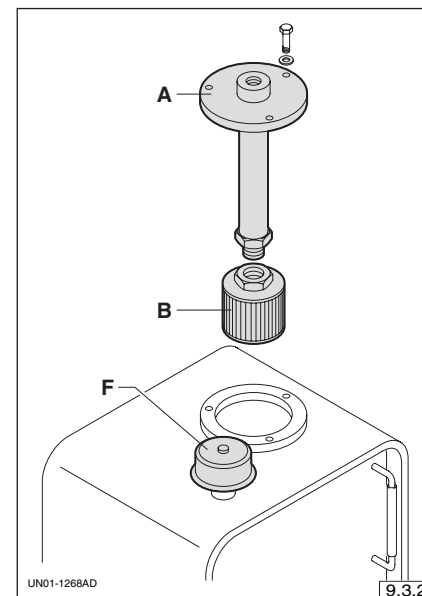
- Standard tank filter



- 1 - Carefully clean the external surfaces of the filter;
- 2 - unscrew the screws on the lid "A";
- 3 - remove the spring "B" and the filtering cartridge "C";
- 4 - check the condition of the washers "D" and "E", if they are damaged replace them.

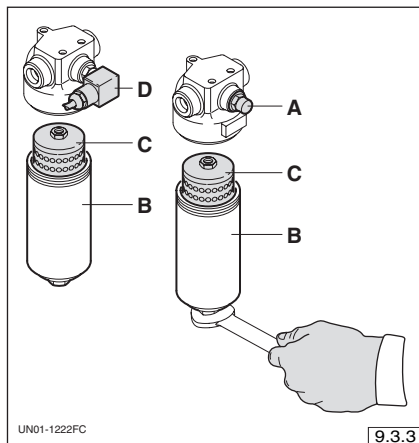
To reassemble the filter, carry out the disassembly operations in reverse.

- Separate tank filter



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

9.3.2 - Delivery filter replacement



- 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 10 daNm (74 lbf - ft).
Turn on the tank tap.

For machines fitted with a delivery filter, replace the filter cartridge when the clogging signal light "A" turns red or when the "filtered clogged" alarm message is displayed (for filters fitted with sensor "D").

In any case, carry out the replacement by the expiry date provided for in the planned maintenance schedule (see para. "Regular checks").

For the replacement proceed as follows:

- Specifications and performances

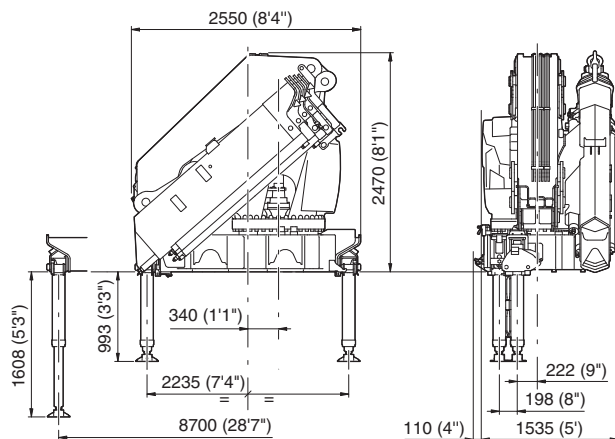
65024 SP PT

Max. lifting momentum	kNm	583.....	ft lbs	429640
	tm	59,4.....	/	/
Hydraulic outreach:				
Horizontal	m	11,30.....	ft	37'1"
Vertical	m	15,30.....	ft	50'2"
Outreach with manual extensions:				
Horizontal	m	/.....	ft	/
Vertical	m	/.....	ft	/
Hydraulic system:				
Recommended capacity.....	l/min	80 / 100.....	gals/min	21 / 26
Maximum pressure.....	MPa	31,5.....	psi	4570
Oil tank capacity.....	l	305.....	gals	81
Rotation unit:				
Rotation angle	°	cont.....	°	cont.
Rotation torque.....	kNm	65.....	ft lbs	47940
Weight of standard crane with tank empty.....	kg	6095.....	lbs	13437
Maximum power absorbed by the hydraulic pump	kW	58.....	HP	78
Maximum force exerted on ground by stabilisers	kN	170.....	lbs	38218
Specific operating pressure of each stabiliser with Ø 185 mm (7") disk	MPa	6,3.....	psi	914
Arm pack extension time for standard unit (with plus disabled).....	sec.	40.....	sec.	40
Supplied shackle for capacity "fixed" hook (optional) - Capacity.....	kg	25000.....	lbs	55115
Supplied hook for capacity "mobile" hook - Capacity.....	kg	16000.....	lbs	35275

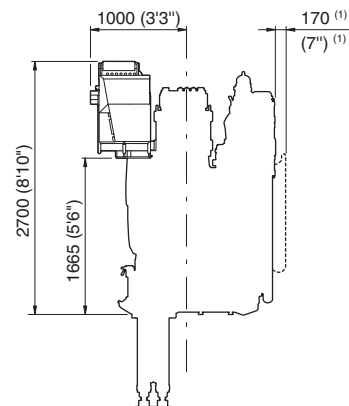
- Overall dimensions

65024 SP PT

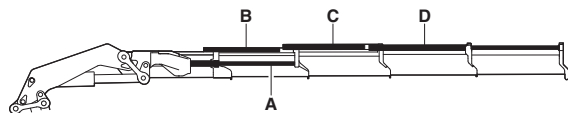
Basic machine



Basic machine with seat raised



(1) Hose reel



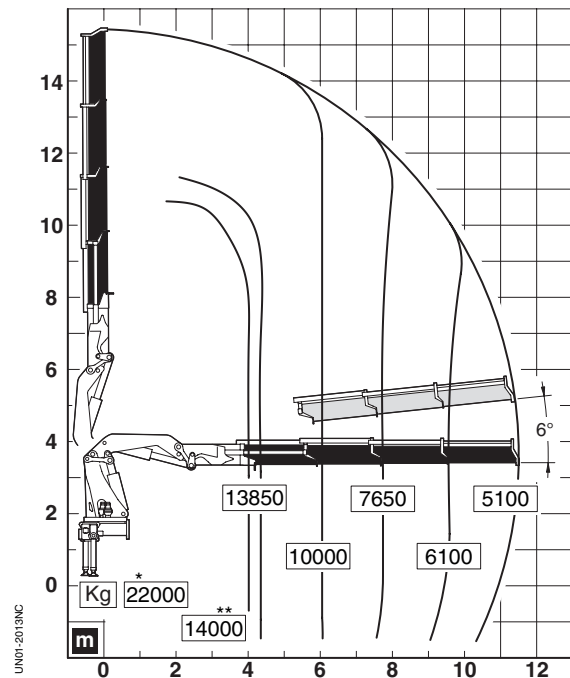
Pos.	Description	Stroke
A	1 st arm extension jack	1600 (5'3")
B	2 nd arm extension jack	1700 (5'7")
C	3 rd arm extension jack	1800 (5'11")
D	4 th arm extension jack	1800 (5'11")

UN01-2044CE

- Capacities diagram

65024 SP PT

Basic machine



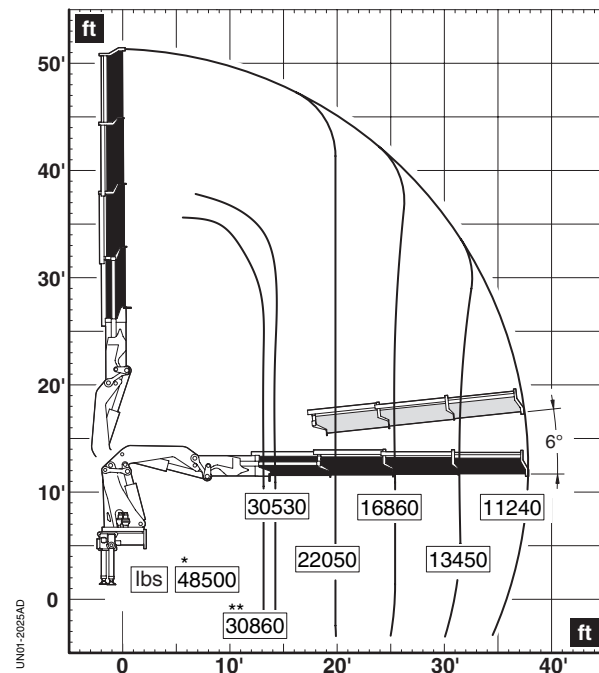
Note: assemble a lifting hook suitable to the load to lift.

* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine (USA)



Note: assemble a lifting hook suitable to the load to lift.

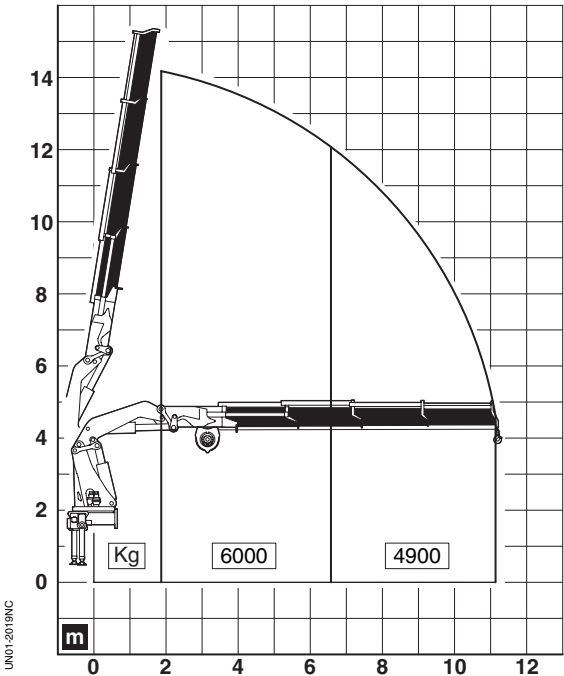
* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

65024 SP PT

Basic machine with winch



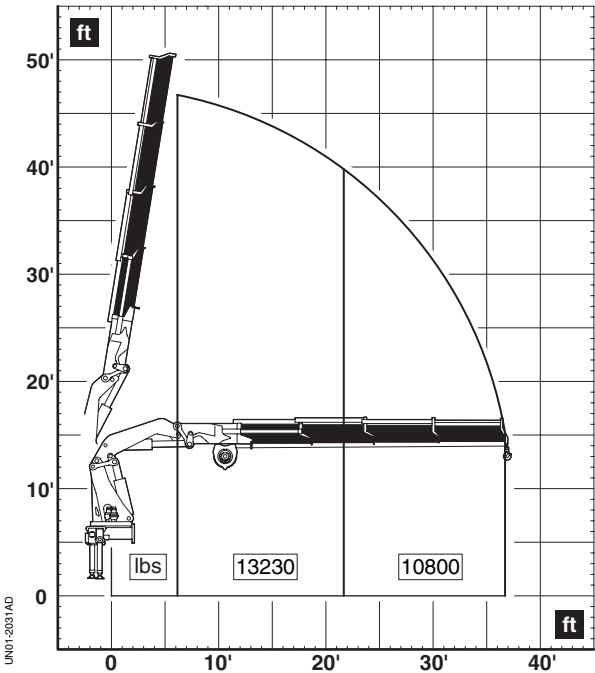
Note: assemble a lifting hook suitable to the load to lift.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity kg	Pull	Winch work range
1°	3800	n = 2	MAX. MIN.
2°	3500		
3°	3200		
4°	3000		

65024 SP PT

Basic machine with winch (USA)



Note: assemble a lifting hook suitable to the load to lift.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	8380	n = 2	MAX. MIN.
2°	7715		
3°	7055		
4°	6615		

- Specifications and performances

65026 SP PT

Max. lifting momentum	kNm	553.....	ft lbs	408000
	tm	56,4.....	/	/
Hydraulic outreach:				
Horizontal	m	15,40.....	ft	50'6"
Vertical	m	19,60.....	ft	64'4"
Outreach with manual extensions:				
Horizontal	m	/.....	ft	/
Vertical	m	/.....	ft	/
Hydraulic system:				
Recommended capacity.....	l/min	80 / 100.....	gals/min	21 / 26
Maximum pressure.....	MPa	31,5.....	psi	4570
Oil tank capacity.....	l	305.....	gals	81
Rotation unit:				
Rotation angle	°	cont.....	°	cont.
Rotation torque.....	kNm	65.....	ft lbs	47940
Weight of standard crane with tank empty.....	kg	6580.....	lbs	14506
Maximum power absorbed by the hydraulic pump	kW	58.....	HP	78
Maximum force exerted on ground by stabilisers	kN	170.....	lbs	38218
Specific operating pressure of each stabiliser with Ø 185 mm (7") disk.....	MPa	6,3.....	psi	914
Arm pack extension time for standard unit (with plus disabled).....	sec.	66.....	sec.	66
Supplied shackle for capacity "fixed" hook (optional) - Capacity.....	kg	25000.....	lbs	55115
Supplied hook for capacity "mobile" hook - Capacity.....	kg	16000.....	lbs	35275

- Specifications and performances

65026 SP PT - with jib J 903.20

Max. lifting momentum	kNm	553.....	ft lbs	408000
	tm	56,4.....	/	/
Hydraulic outreach:				
Horizontal	m	23,50.....	ft	77'1"
Vertical	m	27,40.....	ft	89'11"
Outreach with manual extensions:				
Horizontal	m	/.....	ft	/
Vertical	m	/.....	ft	/
Hydraulic system:				
Recommended capacity.....	l/min	80 / 100.....	gals/min	21 / 26
Maximum pressure.....	MPa	31,5.....	psi	4570
Oil tank capacity.....	l	305.....	gals	81
Rotation unit:				
Rotation angle	°	cont.....	°	cont.
Rotation torque.....	kNm	65.....	ft lbs	47940
Weight of standard crane with tank empty.....	kg	7630.....	lbs	16821
Maximum power absorbed by the hydraulic pump	kW	58.....	HP	78
Maximum force exerted on ground by stabilisers	kN	170.....	lbs	38218
Specific operating pressure of each stabiliser with Ø 185 mm (7") disk.....	MPa	6,3.....	psi	914
Arm pack extension time for standard unit (with plus disabled).....	sec.	66.....	sec.	66
Supplied shackle for capacity "fixed" hook (optional) - Capacity.....	kg	25000.....	lbs	55115
Supplied hook for capacity "mobile" hook - Capacity.....	kg	16000.....	lbs	35275
Jib hook - Capacity	kg	5000.....	lbs	11025

- Specifications and performances

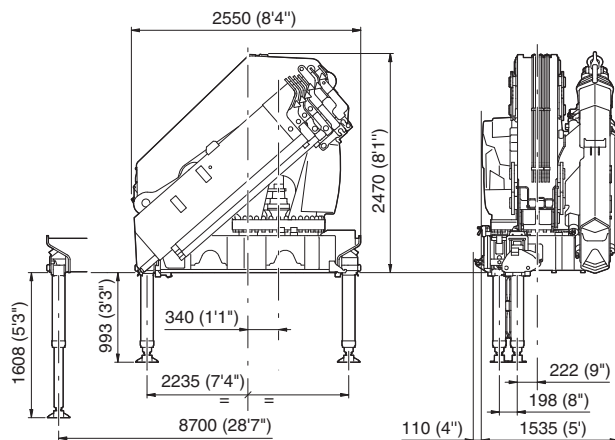
65026 SP PT - with jib J 904.20

Max. lifting momentum	kNm	553.....	ft lbs	408000
	tm	56,4.....	/	/
Hydraulic outreach:				
Horizontal	m	25,30.....	ft	83'0"
Vertical	m	29,10.....	ft	95'6"
Outreach with manual extensions:				
Horizontal	m	/.....	ft	/
Vertical	m	/.....	ft	/
Hydraulic system:				
Recommended capacity.....	l/min	80 /100.....	gals/min	21 / 26
Maximum pressure.....	MPa	31,5.....	psi	4570
Oil tank capacity.....	l	305.....	gals	81
Rotation unit:				
Rotation angle.....	°	cont.....	°	cont.
Rotation torque.....	kNm	65.....	ft lbs	47940
Weight of standard crane with tank empty.....	kg	7710.....	lbs	16998
Maximum power absorbed by the hydraulic pump	kW	58.....	HP	78
Maximum force exerted on ground by stabilisers	kN	170.....	lbs	38218
Specific operating pressure of each stabiliser with Ø 185 mm (7") disk.....	MPa	6,3.....	psi	914
Arm pack extension time for standard unit (with plus disabled).....	sec.	66.....	sec.	66
Supplied shackle for capacity "fixed" hook (optional) - Capacity.....	kg	25000.....	lbs	55115
Supplied hook for capacity "mobile" hook - Capacity.....	kg	16000.....	lbs	35275
Jib hook - Capacity.....	kg	5000.....	lbs	11025

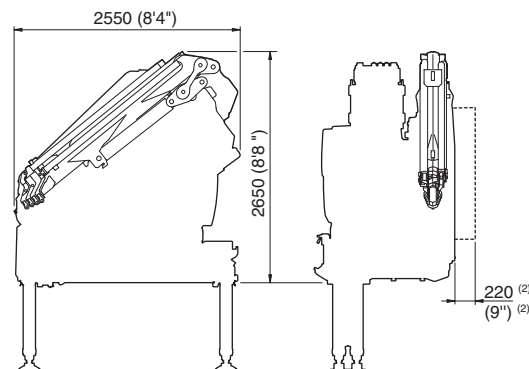
- Overall dimensions

65026 SP PT

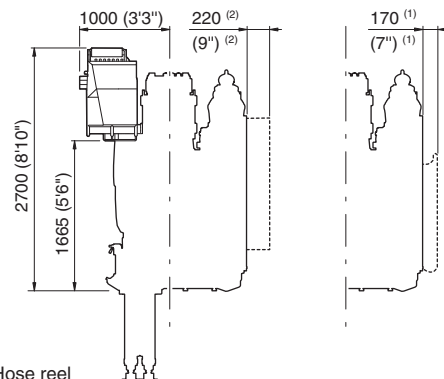
Basic machine



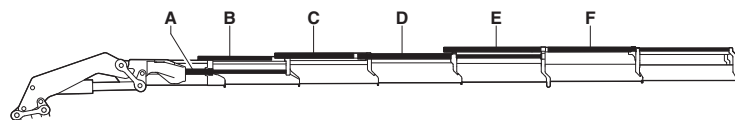
Basic machine with jib



Basic machine with seat raised



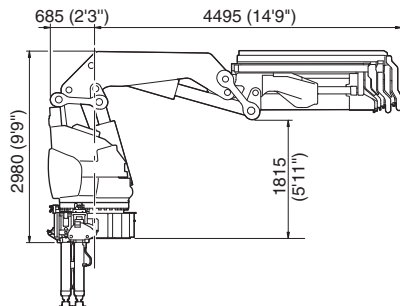
- (1) Hose reel
(2) Pipe holder



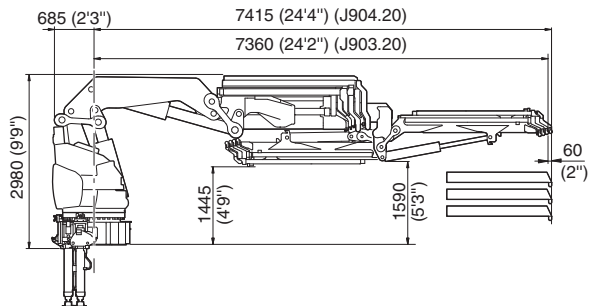
Pos.	Description	Stroke
A	1 st arm extension jack	1600 (5'3")
B	2 nd arm extension jack	1700 (5'7")
C	3 rd arm extension jack	1800 (5'11")
D	4 th arm extension jack	1800 (5'11")
E	5 th arm extension jack	2000 (6'7")
F	6 th arm extension jack	2000 (6'7")

UN01-2045CE

Basic machine



Basic machine with jib J 903.20 - J 904.20

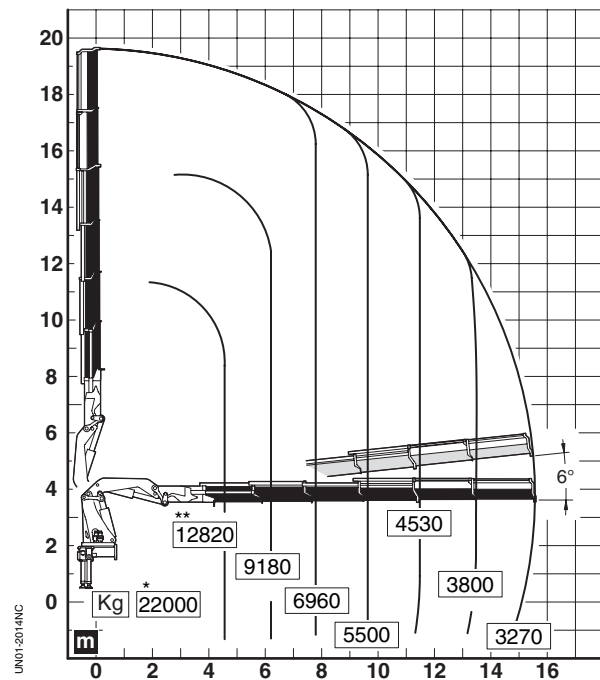


UN01-2046CE

- Capacities diagram

65026 SP PT

Basic machine



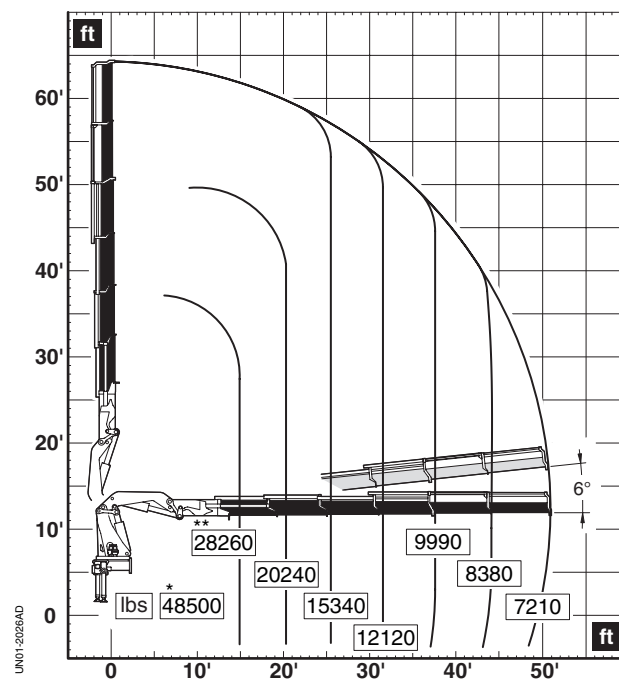
Note: assemble a lifting hook suitable to the load to lift.

* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine (USA)



Note: assemble a lifting hook suitable to the load to lift.

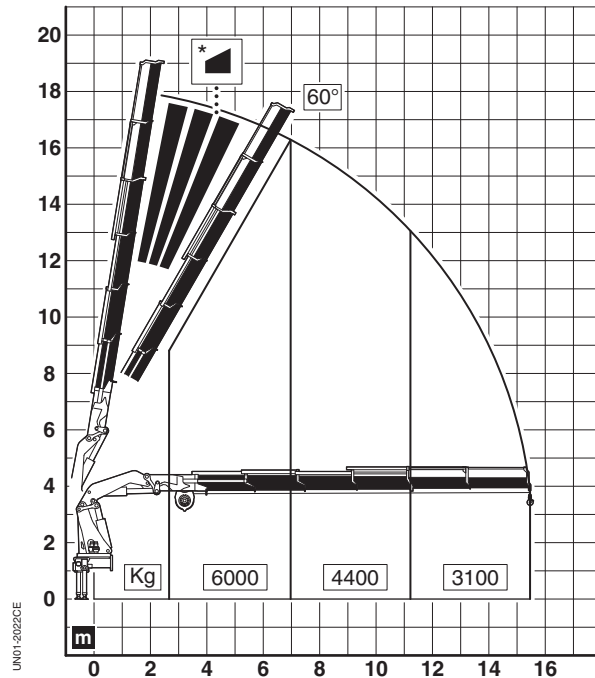
* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

65026 SP PT

Basic machine with winch



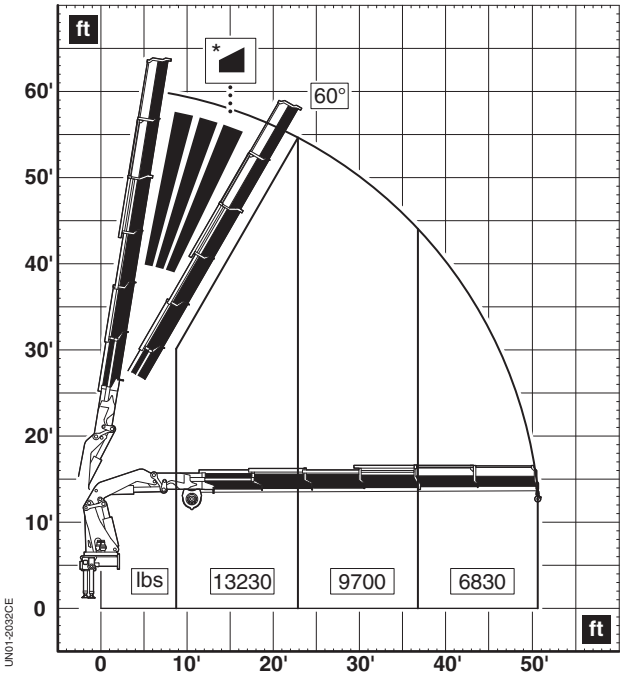
Note: assemble a lifting hook suitable to the load to lift.

Note: maximum performance is obtained with the secondary arm tilting upwards at an angle of up to 60° (see diagram) and is gradually reduced (*) as the secondary arm nears the maximum vertical position.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity kg	Pull	Winch work range
1°	3800	$n = 2$ 	
2°	3500		
3°	3200		
4°	3000		

Basic machine with winch (USA)

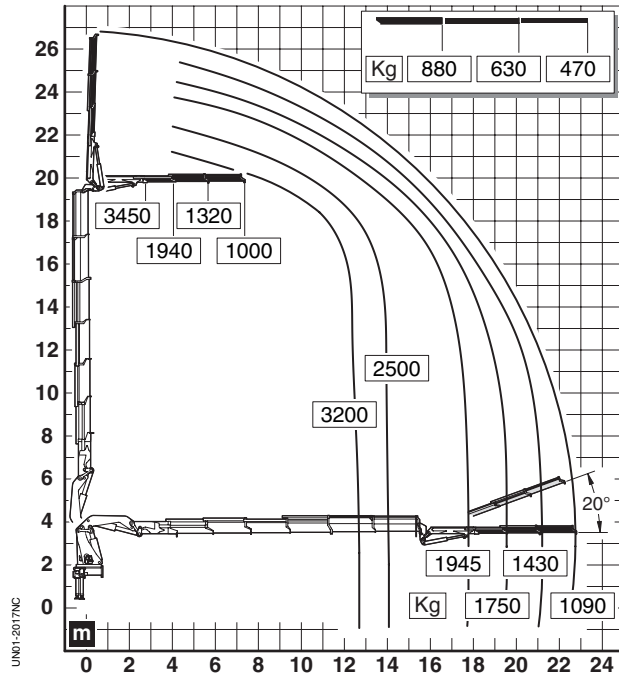


- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the secondary arm tilting upwards at an angle of up to 60° (see diagram) and is gradually reduced (*) as the secondary arm nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	8380	n = 2	MAX. 85° MIN. 30°
2°	7715		
3°	7055		
4°	6615		

65026 SP PT

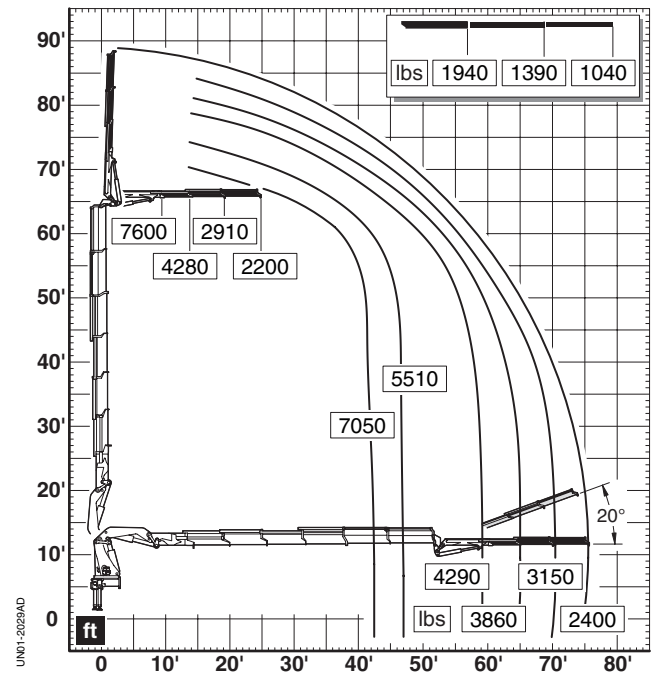
Basic machine with jib J 903.20



Note: assemble a lifting hook suitable to the load to lift.

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine with jib J 903.20 (USA)

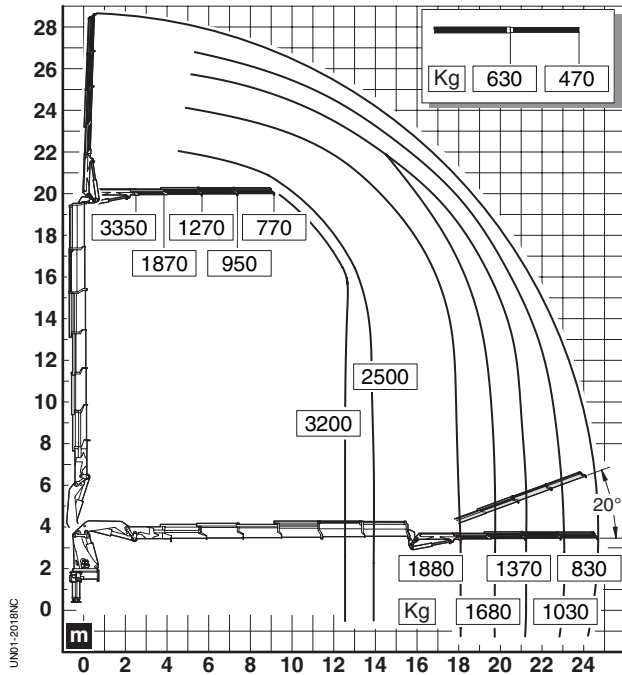


Note: assemble a lifting hook suitable to the load to lift.

Note: the performances stated are obtained with the main arm inclined to 15°

65026 SP PT

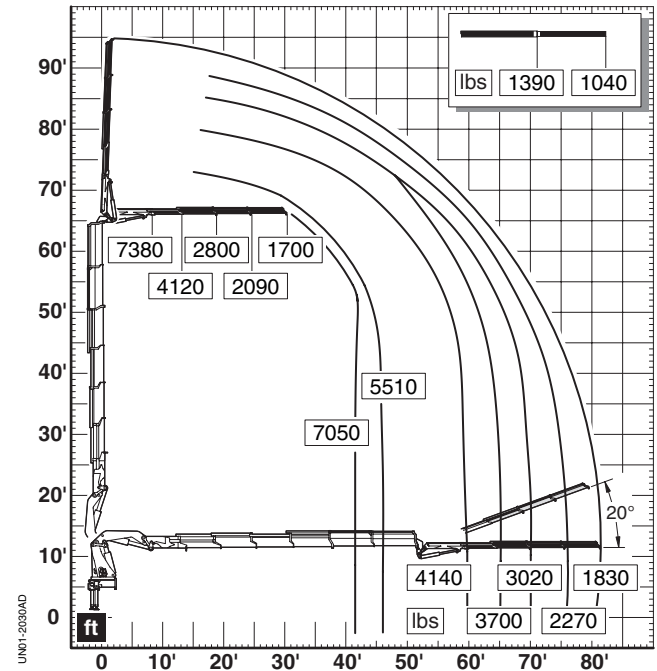
Basic machine with jib J 904.20



Note: assemble a lifting hook suitable to the load to lift.

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine with jib J 904.20 (USA)

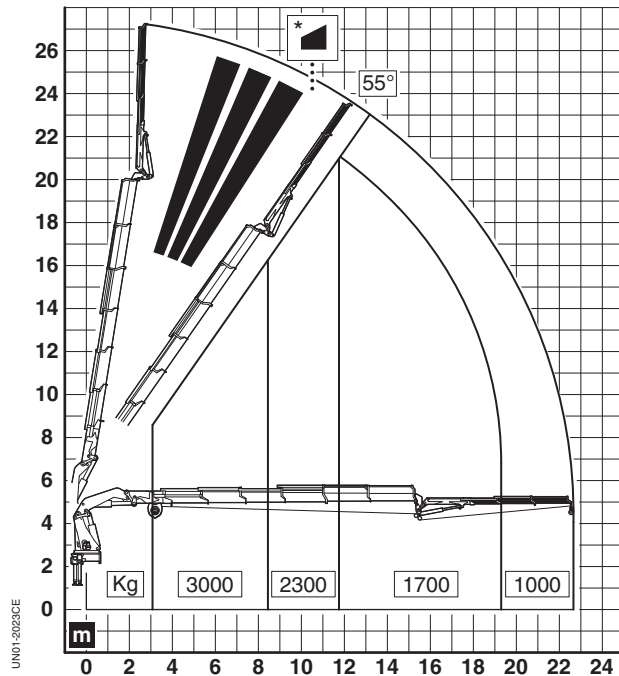


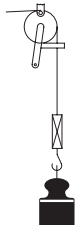
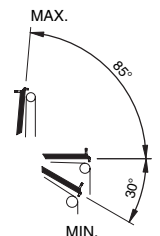
Note: assemble a lifting hook suitable to the load to lift.

Note: the performances stated are obtained with the main arm inclined to 15°

65026 SP PT

Basic machine with winch and jib J 903.20



Cable layer	Capacity kg	Pull	Winch work range
1°	3800	$n = 1$ 	
2°	3500		
3°	3200		
4°	3000		

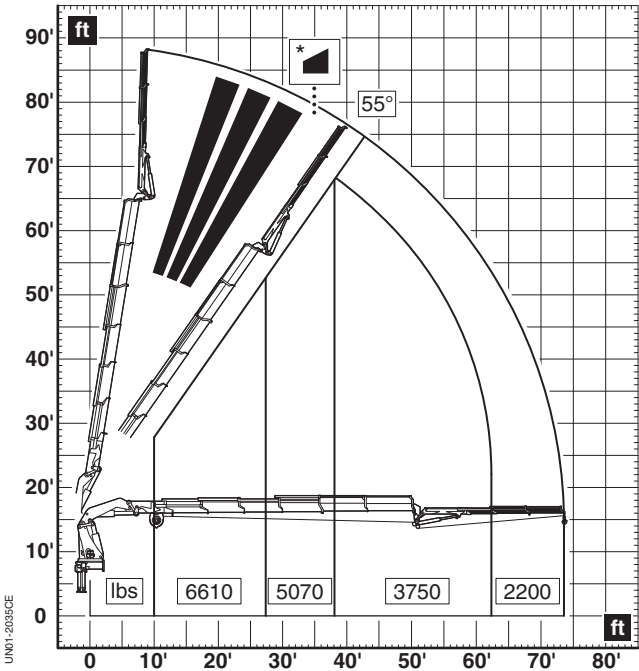
Note: assemble a lifting hook suitable to the load to lift.

Note: maximum performance is obtained with the jib tilting upwards at an angle of up to 55° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

65026 SP PT

Basic machine with winch and jib J 903.20 (USA)

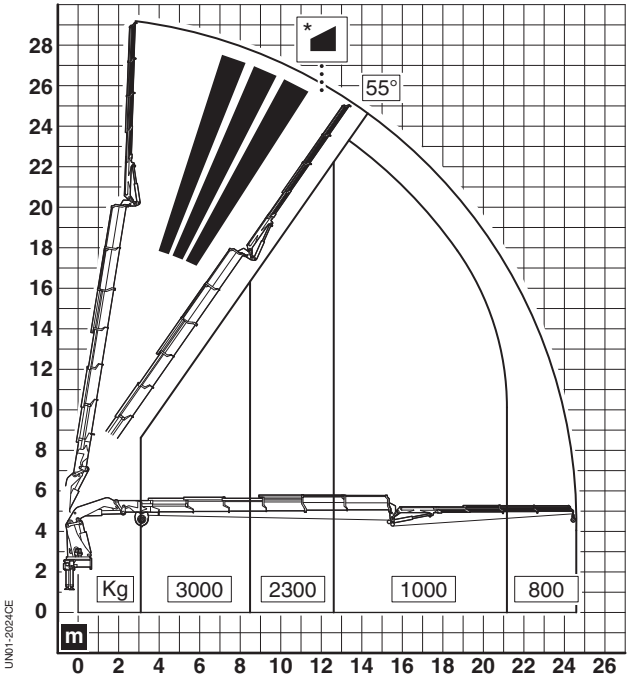


- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the jib tilting upwards at an angle of up to 55° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	8380	n = 1	MAX. MIN.
2°	7715		
3°	7055		
4°	6615		

65026 SP PT

Basic machine with winch and jib J 904.20

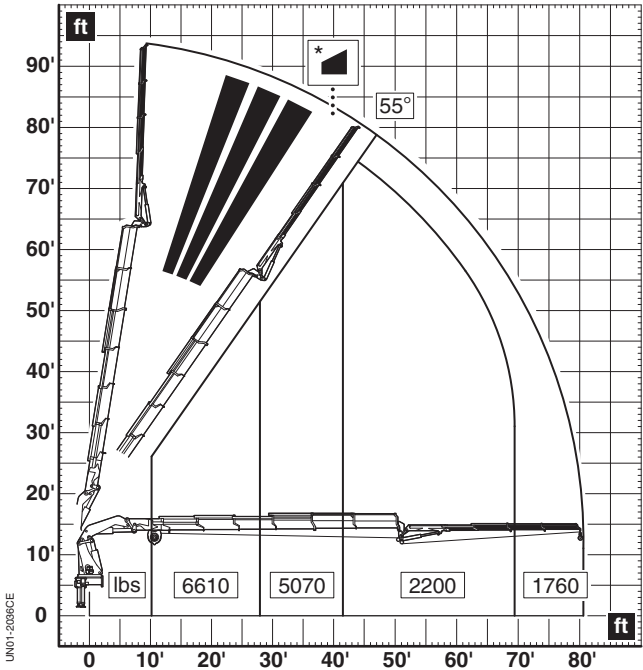


Cable layer	Capacity kg	Pull	Winch work range
1°	3800	n = 1	MAX. MIN.
2°	3500		
3°	3200		
4°	3000		

- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the jib tilting upwards at an angle of up to 55° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

65026 SP PT

Basic machine with winch and jib J 904.20 (USA)

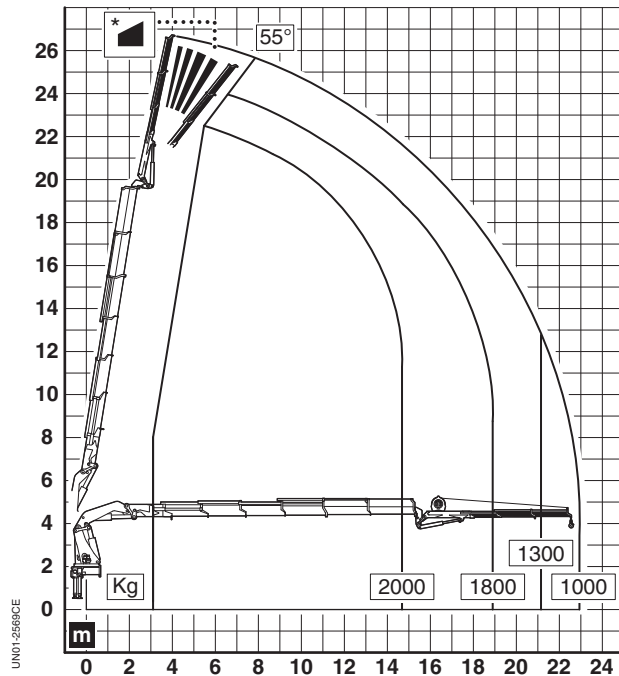


- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the jib tilting upwards at an angle of up to 55° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	8380	n = 1	MAX. MIN.
2°	7715		
3°	7055		
4°	6615		

65026 SP PT

Basic machine with jib J 903.20 and winch



Cable layer	Capacity kg	Pull	Winch work range
1°	1250		
2°	1150		
3°	1050		
4°	1000		
5°	900		

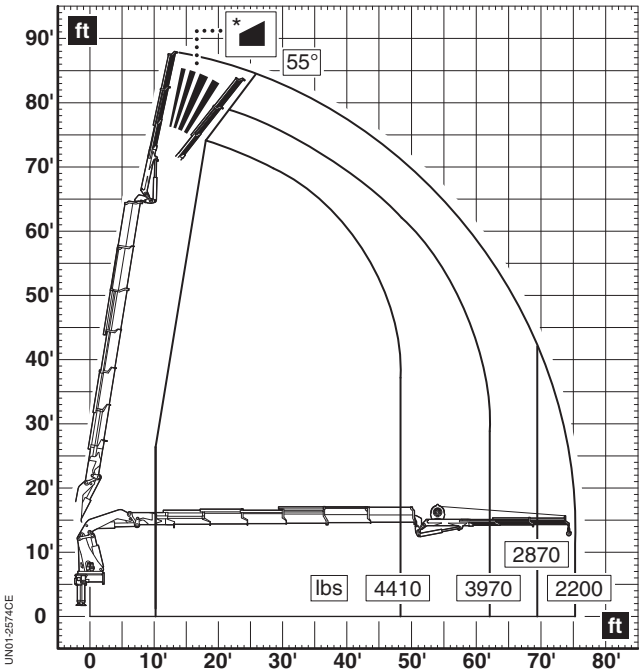
Note: assemble a lifting hook suitable to the load to lift.

Note: maximum performance is obtained with the jib tilting upwards at an angle of up to 55° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

65026 SP PT

Basic machine with jib J 903.20 and winch (USA)

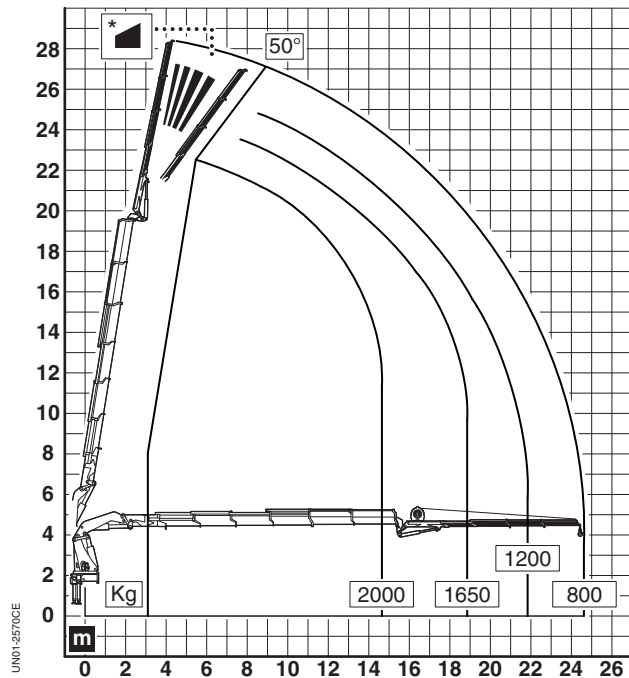


- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the jib tilting upwards at an angle of up to 55° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	2755	n = 1	MAX. MIN.
2°	2535		
3°	2315		
4°	2205		
5°	1985		

65026 SP PT

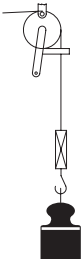
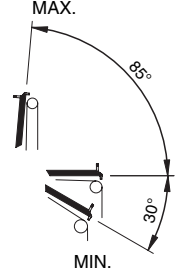
Basic machine with jib J 904.20 and winch



Note: assemble a lifting hook suitable to the load to lift.

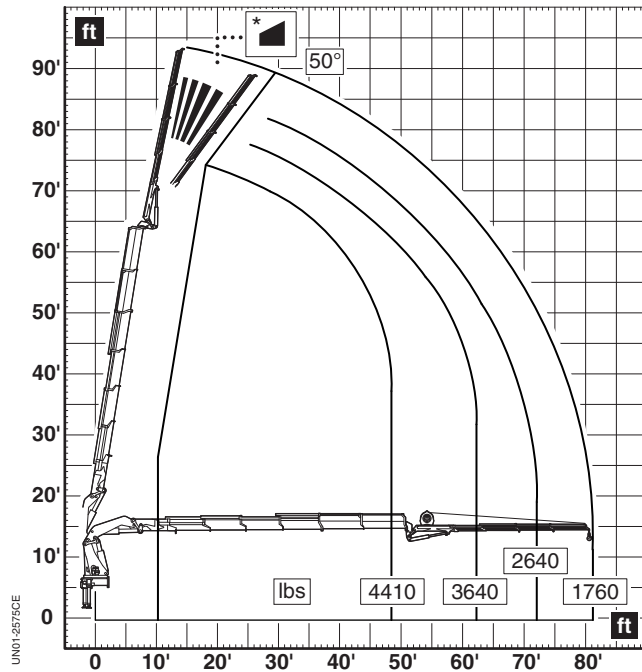
Note: maximum performance is obtained with the jib tilting upwards at an angle of up to 50° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity kg	Pull	Winch work range
1°	1250	$n = 1$ 	
2°	1150		
3°	1050		
4°	1000		
5°	900		

65026 SP PT

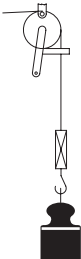
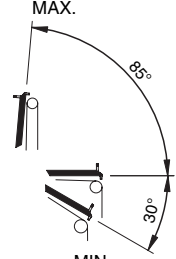
Basic machine with jib J 904.20 and winch (USA)



Note: assemble a lifting hook suitable to the load to lift.

Note: maximum performance is obtained with the jib tilting upwards at an angle of up to 50° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	2755	$n = 1$ 	
2°	2535		
3°	2315		
4°	2205		
5°	1985		

- Specifications and performances

65028 SP PT

Max. lifting momentum	kNm	536.....	ft lbs	395470
	tm	54,7.....	/	/
Hydraulic outreach:				
Horizontal	m	19,70.....	ft	64'8"
Vertical	m	23,90.....	ft	78'5"
Outreach with manual extensions:				
Horizontal	m	/.....	ft	/
Vertical	m	/.....	ft	/
Hydraulic system:				
Recommended capacity.....	l/min	80 / 100.....	gals/min	21 / 26
Maximum pressure.....	MPa	31,5.....	psi	4570
Oil tank capacity.....	l	305.....	gals	81
Rotation unit:				
Rotation angle	°	cont.....	°	cont.
Rotation torque.....	kNm	65.....	ft lbs	47940
Weight of standard crane with tank empty.....	kg	7000.....	lbs	15432
Maximum power absorbed by the hydraulic pump	kW	58.....	HP	78
Maximum force exerted on ground by stabilisers	kN	170.....	lbs	38218
Specific operating pressure of each stabiliser with Ø 185 mm (7") disk.....	MPa	6,3.....	psi	914
Arm pack extension time for standard unit (with plus disabled).....	sec.	84.....	sec.	84
Supplied shackle for capacity "fixed" hook (optional) - Capacity.....	kg	25000.....	lbs	55115
Supplied hook for capacity "mobile" hook - Capacity.....	kg	16000.....	lbs	35275

- Specifications and performances

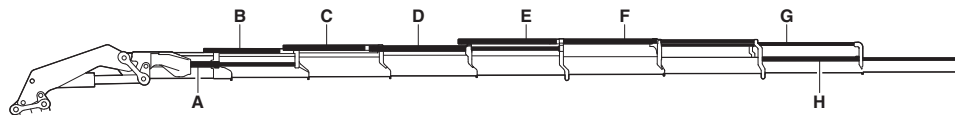
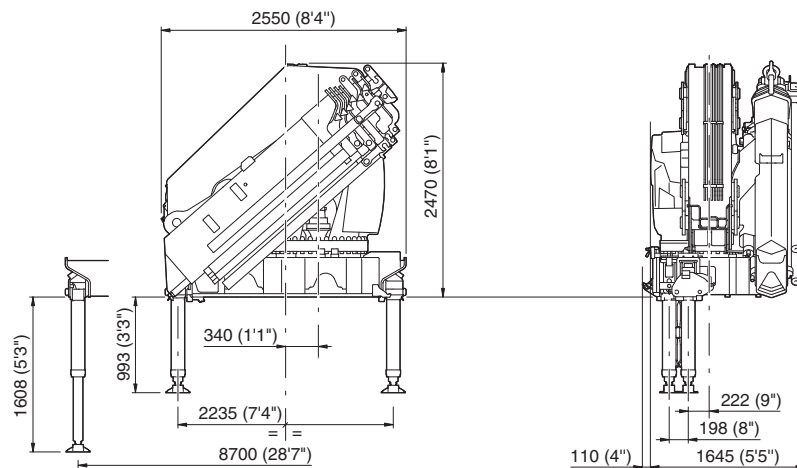
65028 SP PT - with jib J 714.20

Max. lifting momentum	kNm	536.....	ft lbs	395470
	tm	54,7.....	/	/
Hydraulic outreach:				
Horizontal	m	29,30.....	ft	96'2"
Vertical	m	32,45.....	ft	106'6"
Outreach with manual extensions:				
Horizontal	m	/.....	ft	/
Vertical	m	/.....	ft	/
Hydraulic system:				
Recommended capacity.....	l/min	80 / 100.....	gals/min	21 / 26
Maximum pressure.....	MPa	31,5.....	psi	4570
Oil tank capacity.....	l	305.....	gals	81
Rotation unit:				
Rotation angle.....	°	cont.....	°	cont.
Rotation torque.....	kNm	65.....	ft lbs	47940
Weight of standard crane with tank empty.....	kg	7875.....	lbs	17361
Maximum power absorbed by the hydraulic pump	kW	58.....	HP	78
Maximum force exerted on ground by stabilisers	kN	170.....	lbs	38218
Specific operating pressure of each stabiliser with Ø 185 mm (7") disk.....	MPa	6,3.....	psi	914
Arm pack extension time for standard unit (with plus disabled).....	sec.	84.....	sec.	84
Supplied shackle for capacity "fixed" hook (optional) - Capacity.....	kg	25000.....	lbs	55115
Supplied hook for capacity "mobile" hook - Capacity.....	kg	16000.....	lbs	35275
Jib hook - Capacity.....	kg	5000.....	lbs	11025

- Overall dimensions

65028 SP PT

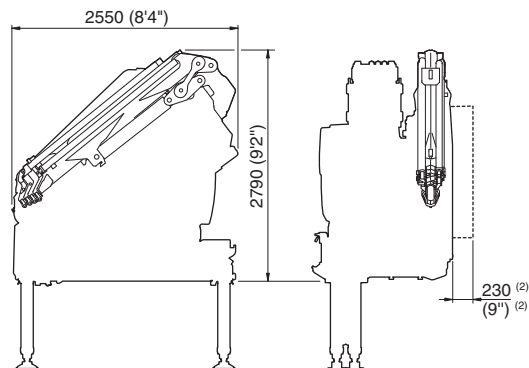
Basic machine



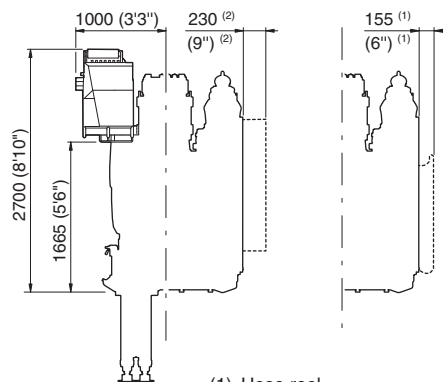
Pos.	Description	Stroke
A	1 st arm extension jack	1600 (5'3")
B	2 nd arm extension jack	1700 (5'7")
C	3 rd arm extension jack	1800 (5'11")
D	4 th arm extension jack	1800 (5'11")
E	5 th arm extension jack	2000 (6'7")
F	6 th arm extension jack	2000 (6'7")
G	7 th arm extension jack	2100 (6'11")
H	8 th arm extension jack	2100 (6'11")

UN01-2047CE

Basic machine with jib J 714.20



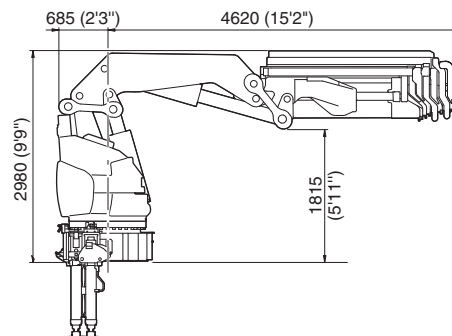
Basic machine with seat raised



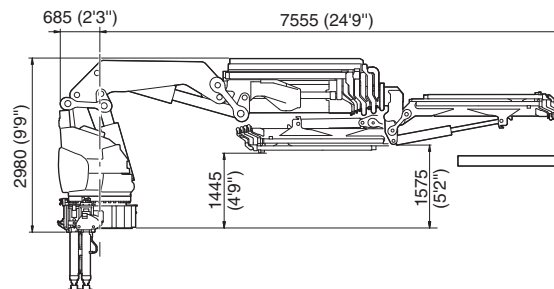
- (1) Hose reel
- (2) Pipe holder

UN01-2576CE

Basic machine



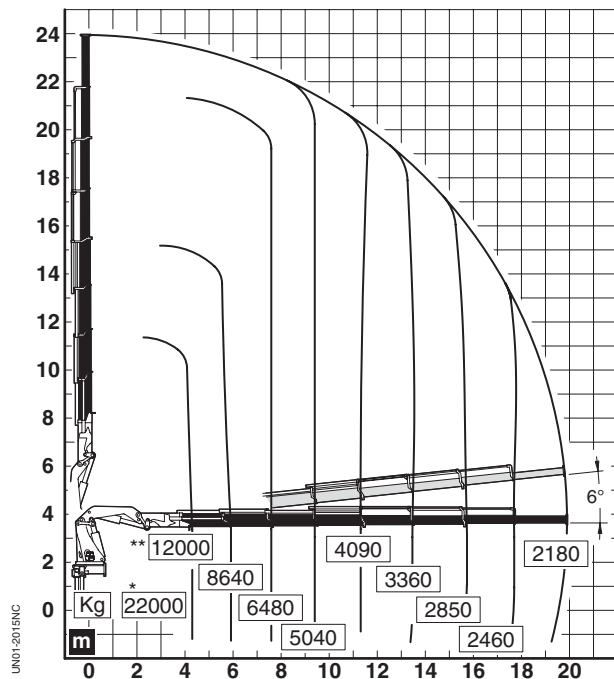
Basic machine with jib J 714.20



- Capacities diagram

65028 SP PT

Basic machine



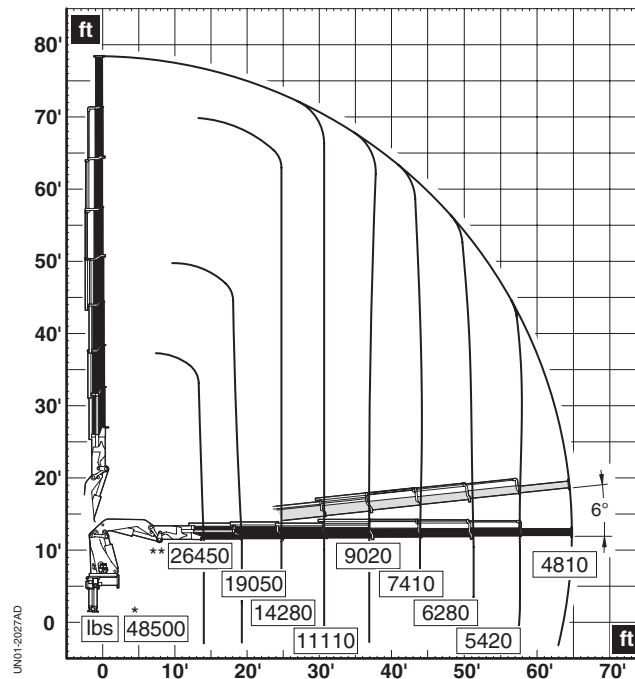
Note: assemble a lifting hook suitable to the load to lift.

* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine (USA)



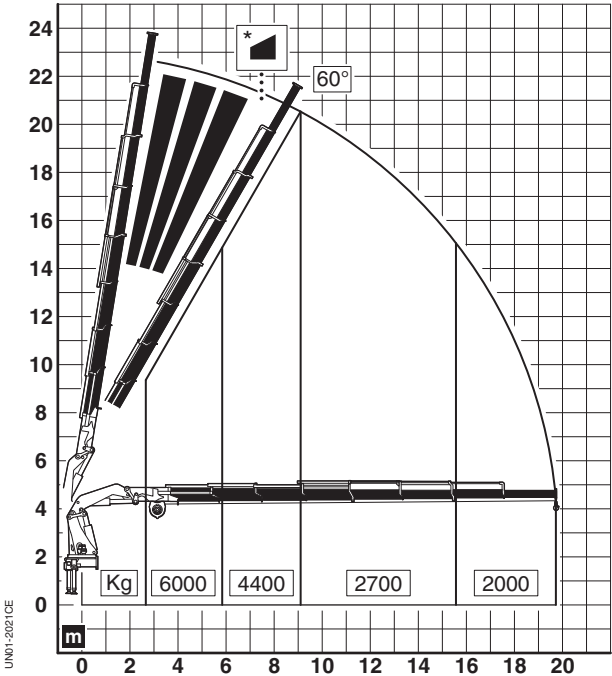
Note: assemble a lifting hook suitable to the load to lift.

* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine with winch

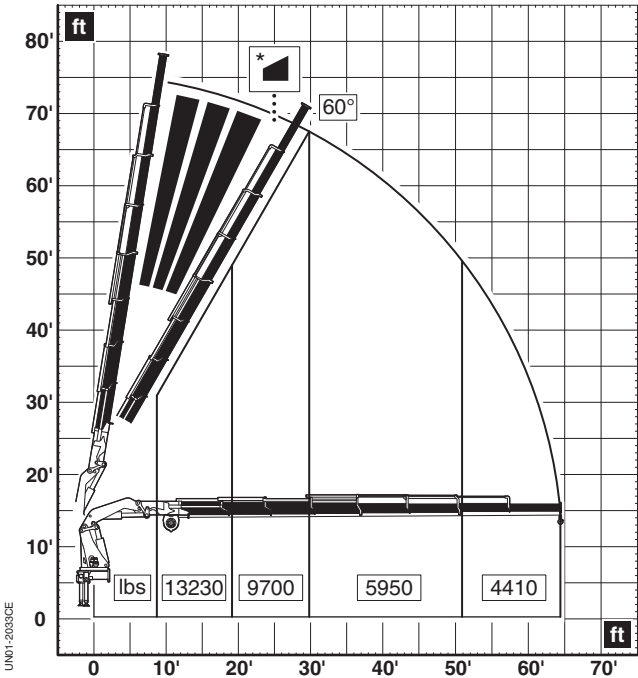


- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the secondary arm tilting upwards at an angle of up to 60° (see diagram) and is gradually reduced (*) as the secondary arm nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity kg	Pull	Winch work range
1°	3800	$n = 2$ 	
2°	3500		
3°	3200		
4°	3000		

65028 SP PT

Basic machine with winch (USA)

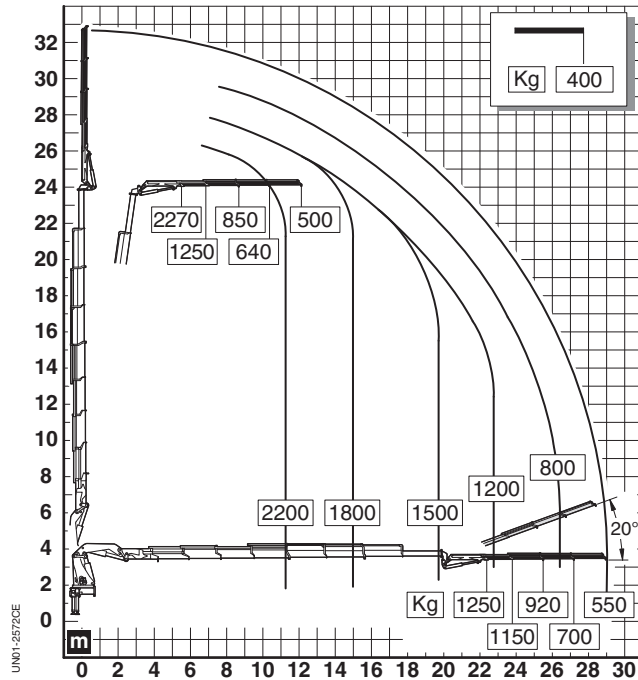


- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the secondary arm tilting upwards at an angle of up to 60° (see diagram) and is gradually reduced (*) as the secondary arm nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	8380	n = 2	MAX. MIN.
2°	7715		
3°	7055		
4°	6615		

65028 SP PT

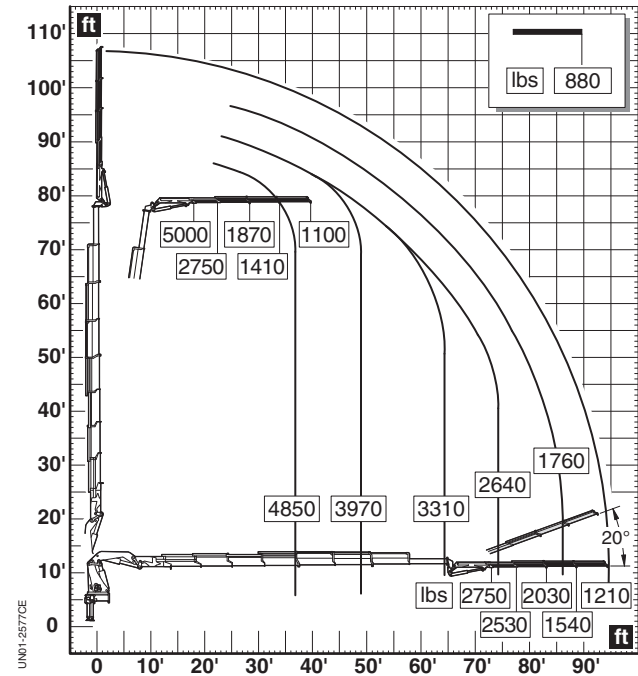
Basic machine with jib J 714.20



Note: assemble a lifting hook suitable to the load to lift.

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine with jib J 714.20 (USA)

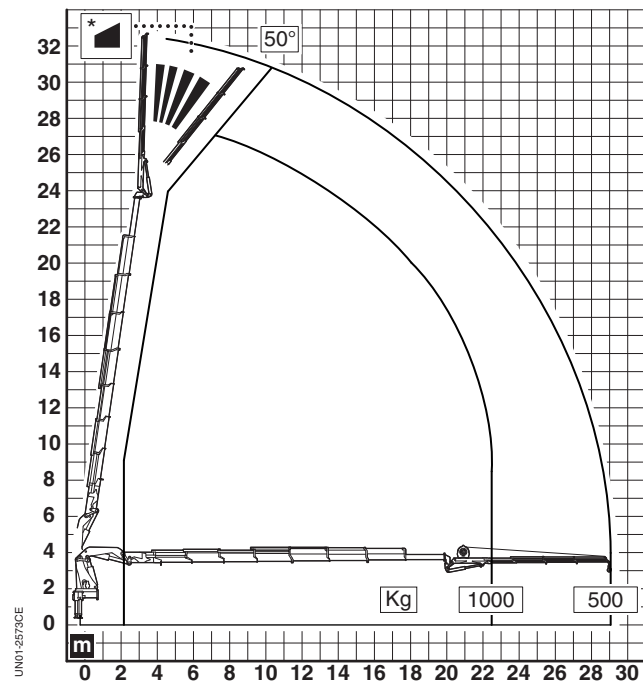


Note: assemble a lifting hook suitable to the load to lift.

Note: the performances stated are obtained with the main arm inclined to 15°

65028 SP PT

Basic machine with jib J 714.20 and winch



Note: assemble a lifting hook suitable to the load to lift.

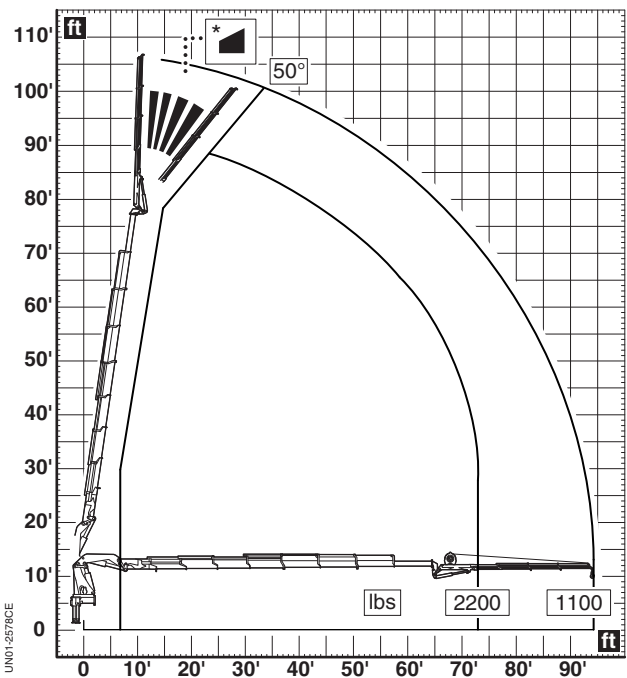
Note: maximum performance is obtained with the jib tilting upwards at an angle of up to 50° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity kg	Pull	Winch work range
1°	1250	$n = 1$ 	
2°	1150		
3°	1050		
4°	1000		
5°	900		

65028 SP PT

Basic machine with jib J 714.20 and winch (USA)



- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the jib tilting upwards at an angle of up to 50° (see diagram) and is gradually reduced (*) as the jib nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	2755	$n = 1$	
2°	2535		
3°	2315		
4°	2205		
5°	1985		

- Specifications and performances

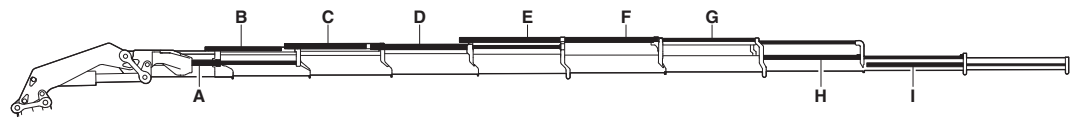
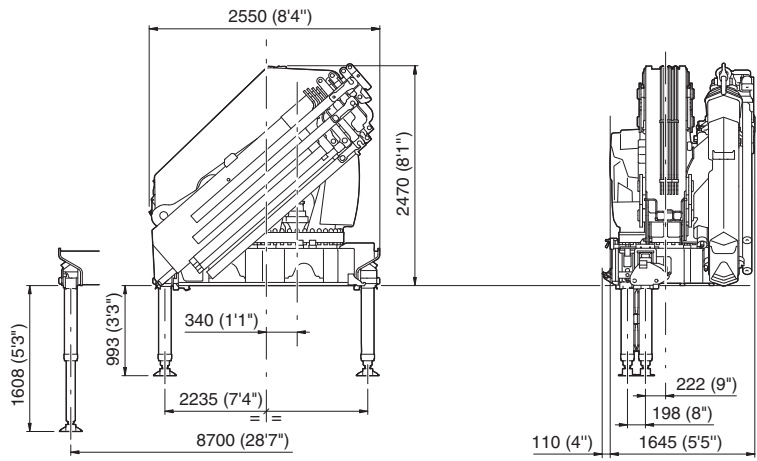
65029 SP PT

Max. lifting momentum	kNm	532.....	ft lbs	392610
	tm	54,3.....	/	/
Hydraulic outreach:				
Horizontal	m	21,90.....	ft	71'10"
Vertical	m	26,10.....	ft	85'8"
Outreach with manual extensions:				
Horizontal	m	25,70.....	ft	84'4"
Vertical	m	30,15.....	ft	98'11"
Hydraulic system:				
Recommended capacity.....	l/min	80 / 100.....	gals/min	21 / 26
Maximum pressure.....	MPa	31,5.....	psi	4570
Oil tank capacity.....	l	305.....	gals	81
Rotation unit:				
Rotation angle.....	°	cont.....	°	cont.
Rotation torque.....	kNm	65.....	ft lbs	47940
Weight of standard crane with tank empty.....	kg	7195.....	lbs	15862
Maximum power absorbed by the hydraulic pump	kW	58.....	HP	78
Maximum force exerted on ground by stabilisers	kN	170.....	lbs	38218
Specific operating pressure of each stabiliser with Ø 185 mm (7") disk.....	MPa	6,3.....	psi	914
Arm pack extension time for standard unit (with plus disabled).....	sec.	93.....	sec.	93
Supplied shackle for capacity "fixed" hook (optional) - Capacity.....	kg	25000.....	lbs	55115
Supplied hook for capacity "mobile" hook - Capacity.....	kg	16000.....	lbs	35275

- Overall dimensions

65029 SP PT

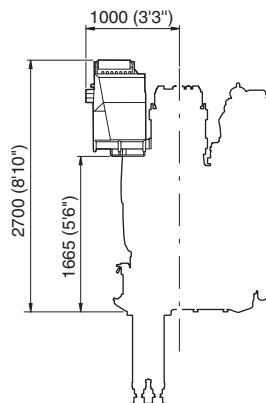
Basic machine



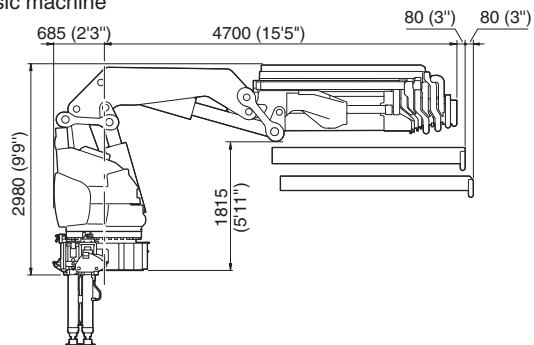
Pos.	Description	Stroke
A	1 st arm extension jack	1600 (5'3")
B	2 nd arm extension jack	1700 (5'7")
C	3 rd arm extension jack	1800 (5'11")
D	4 th arm extension jack	1800 (5'11")
E	5 th arm extension jack	2000 (6'7")
F	6 th arm extension jack	2000 (6'7")
G	7 th arm extension jack	2100 (6'11")
H	8 th arm extension jack	2100 (6'11")
I	9 th arm extension jack	2100 (6'11")

UN01-2049CE

Basic machine with seat raised



Basic machine

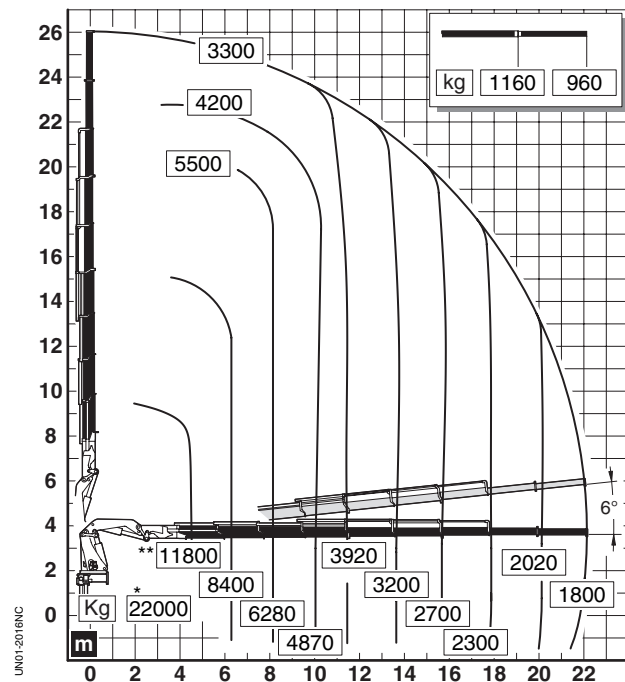


UN01-2050CE

- Capacities diagram

65029 SP PT

Basic machine



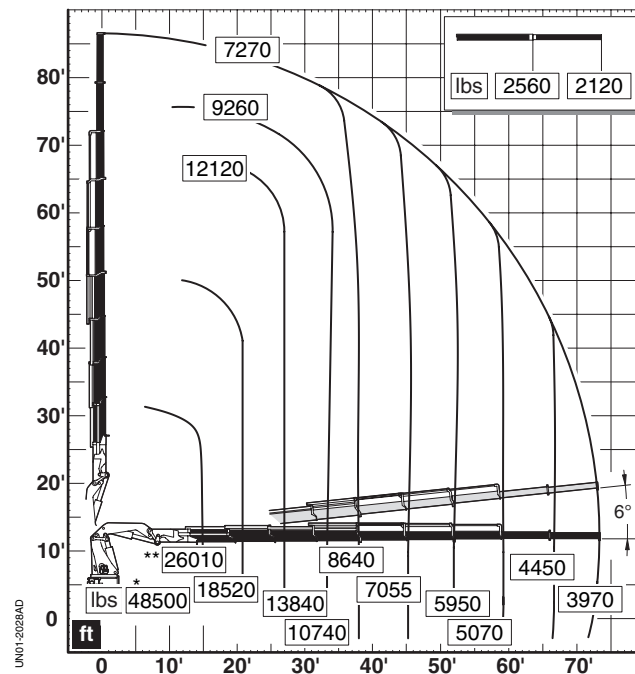
Note: assemble a lifting hook suitable to the load to lift.

* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

Basic machine (USA)



Note: assemble a lifting hook suitable to the load to lift.

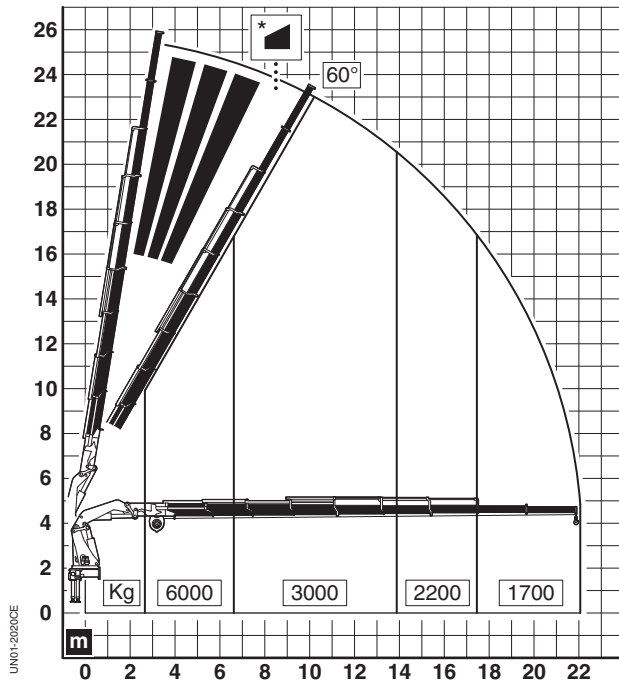
* Maximum capacity at fixed hook

** Maximum capacity at mobile hook

Note: the performances stated are obtained with the main arm inclined to 15°

65029 SP PT

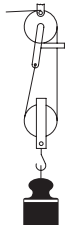
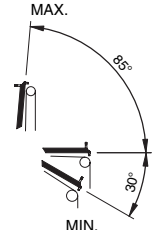
Basic machine with winch



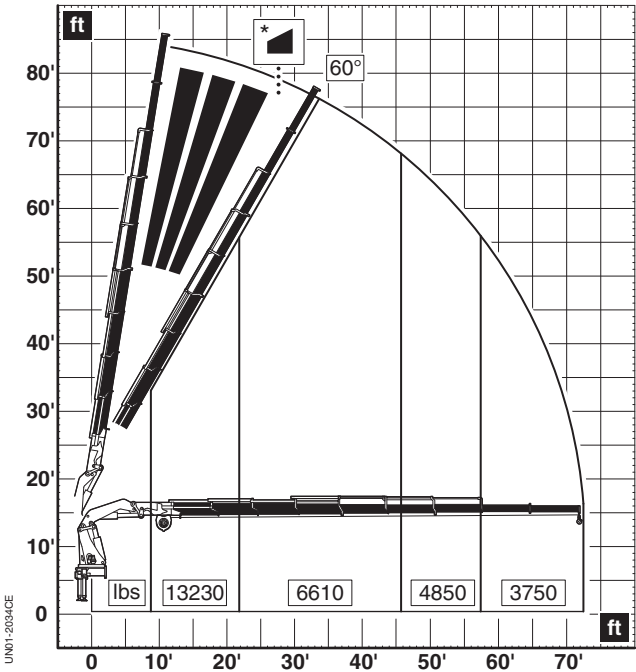
Note: assemble a lifting hook suitable to the load to lift.

Note: maximum performance is obtained with the secondary arm tilting upwards at an angle of up to 60° (see diagram) and is gradually reduced (*) as the secondary arm nears the maximum vertical position.

Note: the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity kg	Pull	Winch work range
1°	3800	$n = 2$ 	
2°	3500		
3°	3200		
4°	3000		

Basic machine with winch (USA)



- Note:** assemble a lifting hook suitable to the load to lift.
- Note:** maximum performance is obtained with the secondary arm tilting upwards at an angle of up to 60° (see diagram) and is gradually reduced (*) as the secondary arm nears the maximum vertical position.
- Note:** the capacities inside each field progressively increase from a minimum value to a maximum value when moving towards the column.

Cable layer	Capacity lbs	Pull	Winch work range
1°	8380	$n = 2$ 	 MAX. 85° MIN. 30°
2°	7715		
3°	7055		
4°	6615		

- 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

ENCLOSURES

01-GB-AA-191DE

- 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 ☐
- . Manual extension adjustments ☐

.....
stamp

.....
signature

At 1500 hours

- . Hydraulic oil pollution check ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐

.....
stamp

.....
signature

At 1000 hours

- . Hydraulic oil replacement ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐
- . Reduction gears oil replacement ☐
- . Safety devices check ☐

.....
stamp

.....
signature

At 2000 hours

- . Hydraulic oil replacement ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐
- . Reduction gears oil replacement ☐
- . Safety devices check ☐

.....
stamp

.....
signature

At 2500 hours

- . Hydraulic oil pollution check ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐

.....
stamp

.....
signature

At 3500 hours

- . Hydraulic oil pollution check ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐

.....
stamp

.....
signature

At 3000 hours

- . Hydraulic oil replacement ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐
- . Reduction gears oil replacement ☐
- . Safety devices check ☐

.....
stamp

.....
signature

At 4000 hours

- . Hydraulic oil replacement ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐
- . Reduction gears oil replacement ☐
- . Safety devices check ☐
- . Runner replacement ☐
- . Hydraulic system washing ☐

.....
stamp

.....
signature

At 4500 hours

- . Hydraulic oil pollution check ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐

.....
stamp

.....
signature

At 6500 hours

- . Hydraulic oil pollution check ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐

.....
stamp

.....
signature

At 6000 hours

- . Hydraulic oil replacement ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐
- . Reduction gears oil replacement ☐
- . Safety devices check ☐

.....
stamp

.....
signature

At 7000 hours

- . Hydraulic oil replacement ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐
- . Reduction gears oil replacement ☐
- . Safety devices check ☐

.....
stamp

.....
signature

At 7500 hours

- . Hydraulic oil pollution check ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustment ☐

.....
stamp

.....
signature

At hours

.....
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.....

.....
stamp

.....
signature

At 8000 hours

- . Hydraulic oil replacement ☐
- . Structural inspection ☐
- . Valves calibration ☐
- . Manual extension adjustments ☐
- . Reduction gears oil replacement ☐
- . Safety devices check ☐
- . Runner replacement ☐
- . Hydraulic system washing ☐

.....
stamp

.....
signature

At hours

.....
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.....

.....
stamp

.....
signature

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