Valid for models:

PM 32522 S PX
PM 32523 S PX
PM 32524 S PX
PM 32525 S PX

SERIE 32.5 S PX

- G145 -

INSTRUCTION AND WARNINGS

Valid with the serial number

G.145.0001

Code number: **4.152.028**
Edition: **04/2014**

Original instructions in English

Realised by **Unistudio** - Modena

1 General information

1.1 - Purpose of the manual

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

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

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

The manual is an integral part of the machine and must be kept, for future reference, until the machine 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 instructions are supplied by the manufacturer in english language.

To fulfil legal or commercial requirements, the original instructions may be supplied by the manufacturer in 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.

- Machine identification data

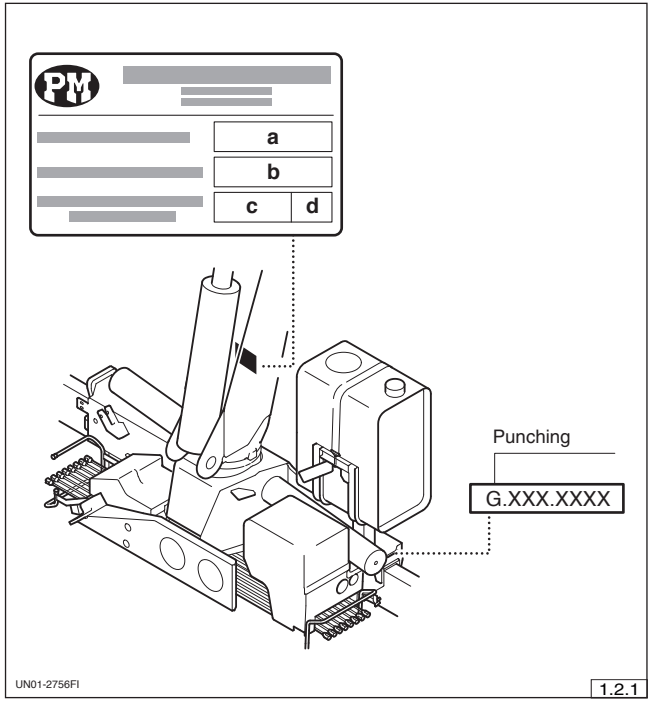


Plate details
a = Crane model
b = Serial number
c = Year of manufacture
d = Conformity "CE" stamp

1.3 - Symbology

The symbols used in this manual are intended to highlight potentially hazardous operations.
To guarantee safe working conditions, the instructions highlighted by these symbols must always be followed.

HAZARD !

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

WARNING !

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

CAUTION !

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

Information

This indicates useful and important information or procedures.

WARNING !

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

1.4 - Technical service

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

1.5 - Enclosed documentation

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

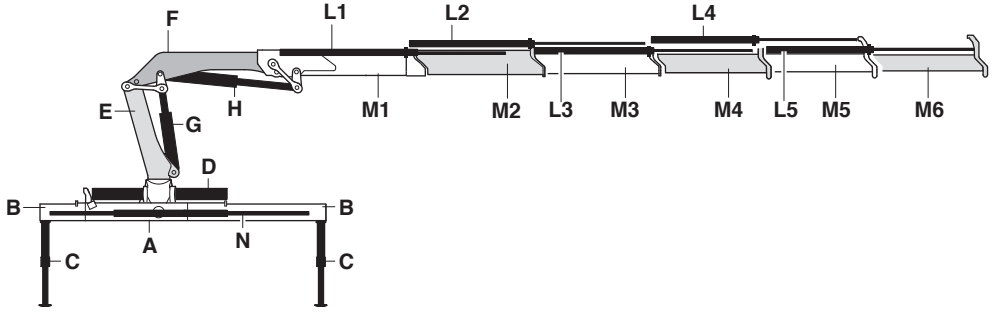
1.6 - Disclaimer

The manufacturer cannot be held responsible for any occurrence arising from the following:
- total or partial failure to comply with instructions herein;
- misuse of the machine;
- unauthorised alterations or work carried out on the machine;
- failure to comply with the highway code and regulations concerning transportation when moving the machine from one site to another;
- lack of maintenance;
- use of non-original spare parts or those which are not designed specifically for the model;
- exceptional weather conditions.

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



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2.1.1

Key to the main parts

Ref.	Part	32522 S PX	32523 S PX	32524 S PX	32525 S PX
A	Base	•	•	•	•
B	Stabiliser arm	•	•	•	•
C	Stabiliser jack	•	•	•	•
D	Rotation jack	•	•	•	•
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				•
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				•
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 or they are not designed specifically for the model in question.

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

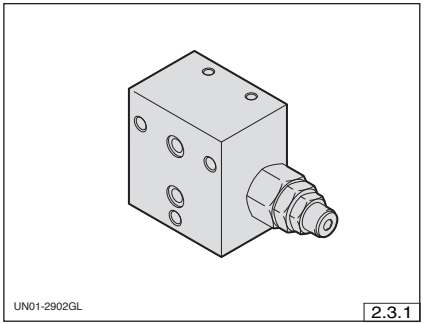
HAZARD !

On no account must you tamper with the control and limiting devices.

Information

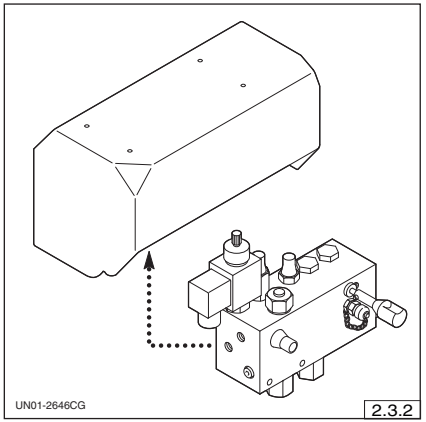
The control and limiting devices for the accessories are outlined in the section describing each accessory.

2.3.1 - Overload valve



The valve prevents operation with loads greater than the limit allowed; it slowly decreases the load if maximum pressure is reached.

2.3.2 - Hydraulic moment limiter

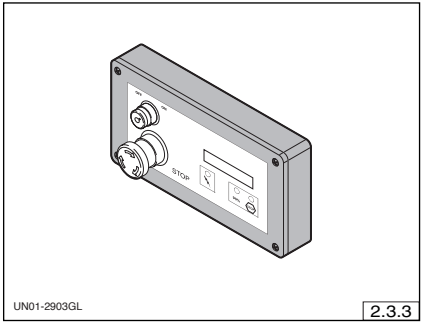


The moment limiter automatically prevents loads exceeding the nominal load to be handled in order to safeguard the crane/truck structure and stability.
Only manoeuvres to bring the load nearer to the column axis are permitted.

Information

The moment limiter does not relieve the operator of liability if the maximum loads allowed are intentionally exceeded.

2.3.3 - Tecs electronic moment limiter

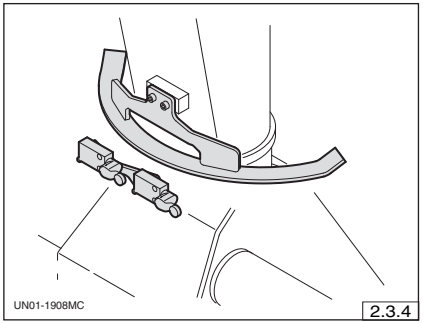


The functional control unit:
- checks the delivery pressure in the primary and secondary jack;
- indicates the machine's operating status and any malfunctions.

Information

The moment limiter does not relieve the operator of liability if the maximum loads allowed are intentionally exceeded.

2.3.4 - Rotation locking and limiting device



- Rotation limiting device

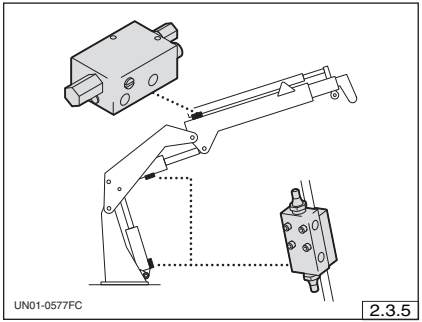
The rotation limiting device stops the crane rotating when it reaches the area in which the stability, with that particular load, is at risk.

Work may only be carried out in that area if the load is reduced (in relation to the nominal capacity) (see "Work sectors").

- Rotation lock device

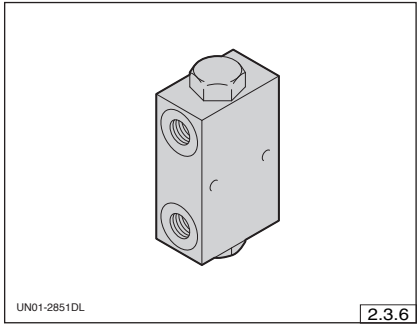
The device prevents the crane being operated in the area where the stability of the outfitting is at risk (see "Work sectors").

2.3.5 - Load support valves



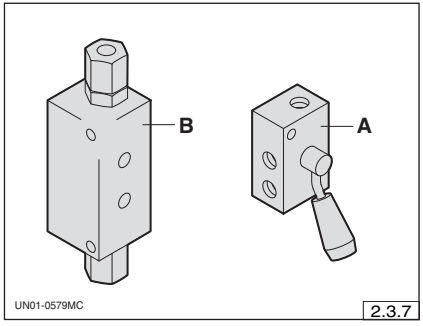
The valves prevent the loads dropping unexpectedly to the ground as a result of a broken line or a sudden pump failure.

2.3.6 - Outrigger arm extension lock valve



The valve locks the outrigger arm extension jack (in the position it is at that moment) in case of rupture of a hose or due to the sudden lack of supply of oil to the jack.

2.3.7 - Stabiliser valve

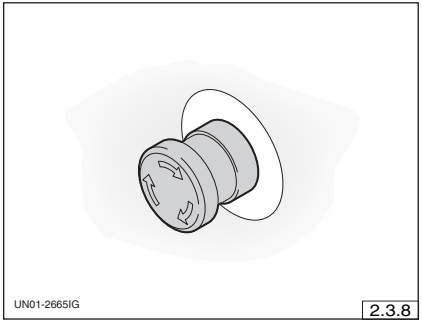


Alternatively, two types of valve can be fitted on the outriggers.

A - Lock-out valve with cock
B - Lock-out valve

The valve 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.

2.3.8 - Emergency stop device

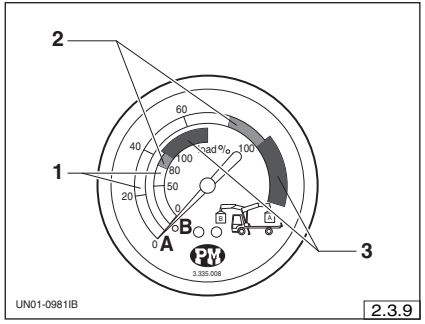


Use the device to stop all the crane's movements in the event of an emergency.
Rotate the button to activate the crane.

WARNING !

Ensure the hazardous conditions cannot persist before releasing the button.

2.3.9 - Load gauge (crane with hydraulic moment limiter)



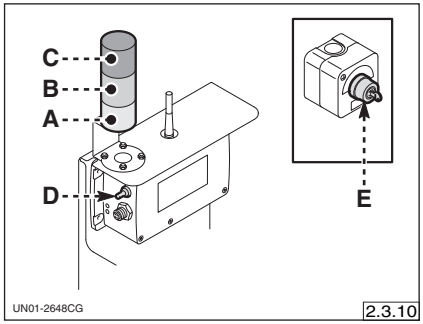
This displays the correct load in all the work areas.

A) Scale for work area with full load
B) Scale for work area with limited load (not active on this model).

The scales are subdivided into coloured sectors showing:

1) green section = loads within the values stated on the load diagrams
2) orange section = load limit
3) red section = load exceeds load diagram values - crane lock.

2.3.10- Signal lights

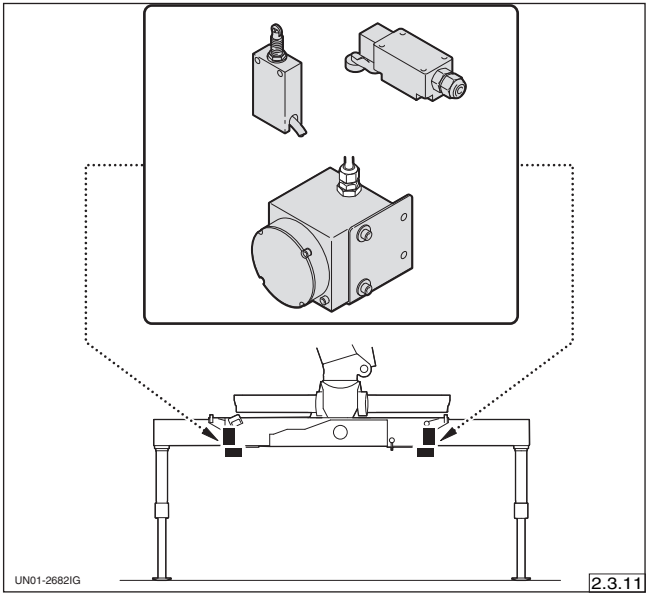


A) Green light (if featured).
This signals that the receiver unit has been activated (see “Radio control”):
- with selector “D” in “REMOTE” position for radio controls “SCANRECO”;
- with switch “E” in “Radio” position for radio control “HETRONIC”.

B) Orange light.
This signals that 90% of the load that can be lifted is reached.

C) Red light.
This signals that 100% of the load that can be lifted is reached.

2.3.11- Stabilisation controller



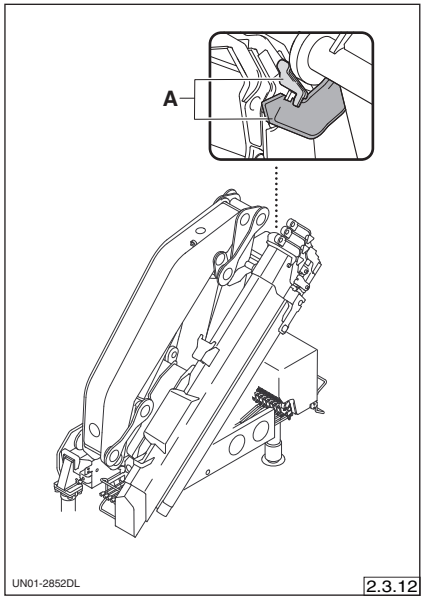
Information

If featured, the device is also installed on the supplementary crossmember.

The device consists of microswitches and sensors that signal the position of the jacks and the outrigger arms to the functional control unit in order to ensure safe operation.

- These detect when the outrigger jacks are resting properly on the ground.
- These detect the extension of the outriggers; if they are not completely extended the crane may operate with reduced lifting capacity.

2.3.12- Locking devices for transit on the roads



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

A) Arm pack extension lock device. This integrates the arm pack with the main arm. The device must be manually engaged and disengaged during the crane opening and closing operations.

2.3.13- Control devices for transit on roads

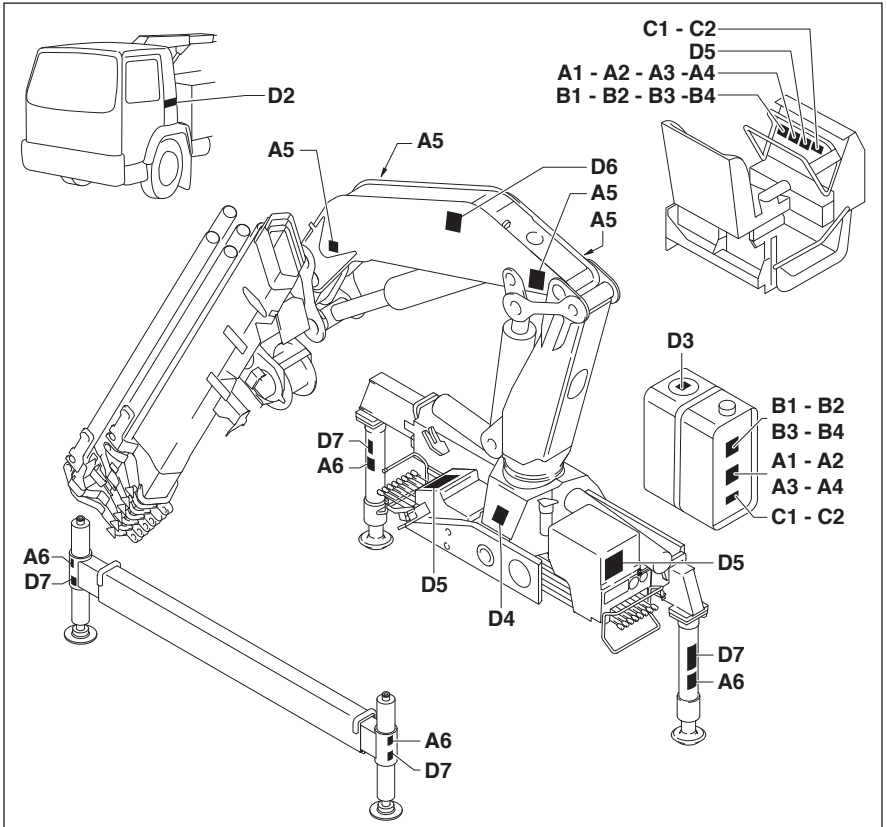
The devices check that the crane is within the outer profile of the vehicle in order to be allowed to transit on roads.

The following devices activate the signal lights and/or acoustic signals in the driver's cab:

- outriggers arms closure control device;
- crane height control device.

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

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

- Prohibition signs

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

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

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

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

(**) Signals grouped together on one plate.

B5 = Do not close the crane.
It is forbidden to close the crane from the raised control station.

- Obligation signs

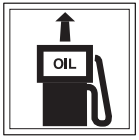
C1 = Instruction Manual plate (***).
This indicates that the operator must read the instruction manual carefully before using the machine.

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

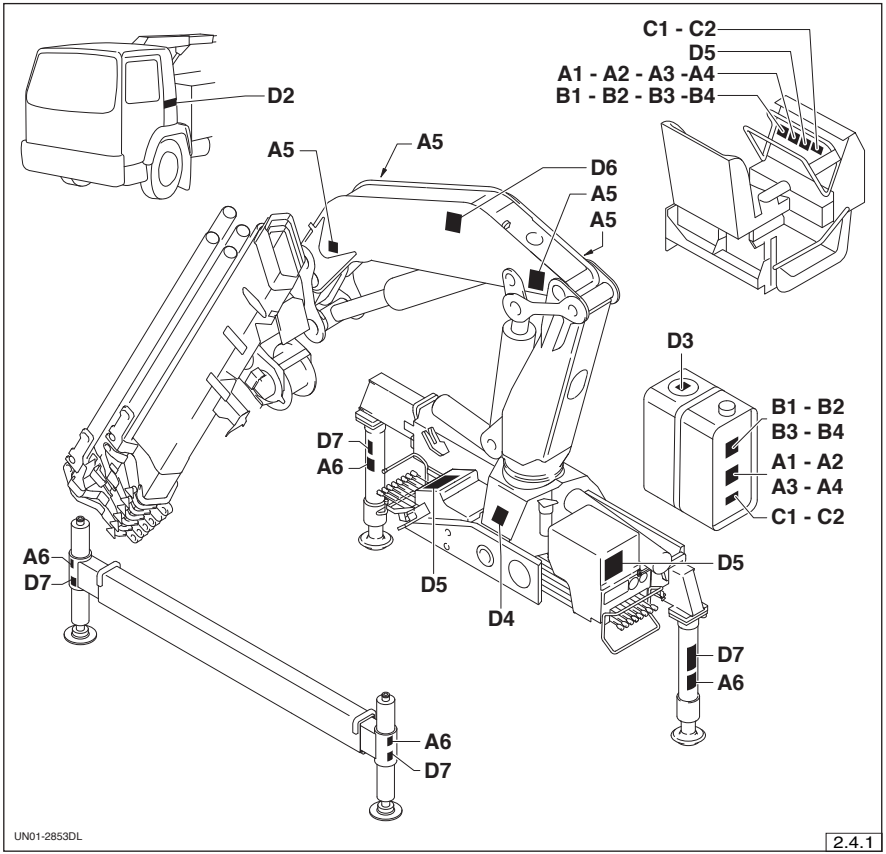
(***) Signals grouped together on one plate.

- Information signs

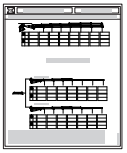
D2 = Power takeoff plate.
Reminds the operator to switch off the power takeoff during transfers.



D3 = Oil tank plate.
Indicates the hydraulic oil tank.



D4 = Dead centre indication plate.
The position of the plate indicates the side on which the rotation, clockwise and anticlockwise, of the crane ends.



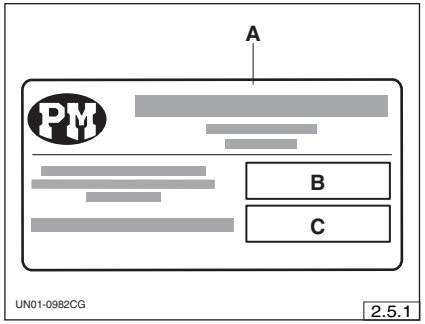
D5 = Capacities diagram plate.
This shows the performance of the machine and accessory when present.

D6 = Hoisting points plate.
Indicates the hoisting hooks attachment points.

D7 = Max. stabiliser pressure signal.
Make sure the pressure on the ground does not exceed the max. limit stipulated.

2.5.1 - Additional crossmember

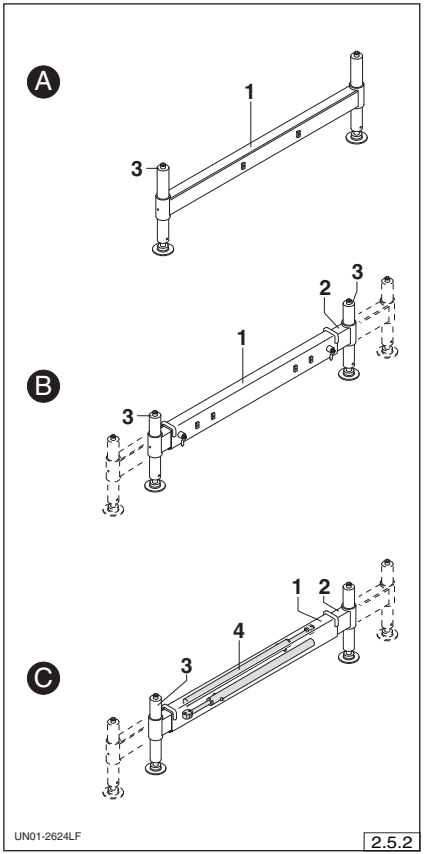
- Identification detail



A) Manufacturer code
B) Supplementary crossbeam model
C) Serial number

- 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

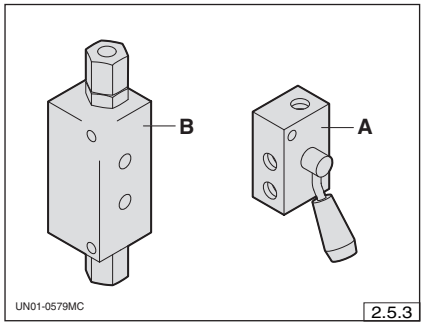
1 - Crossbeam
2 - Extendable stabiliser arm
3 - Stabiliser jack
4 - Stabiliser arms extension jack

- Installable crossbeams

A - Fixed crossbeam
B - Crossbeam with manually extended outriggers arms
C - Crossbeam with hydraulically extended outriggers arms

- Locking devices

Stabiliser valve

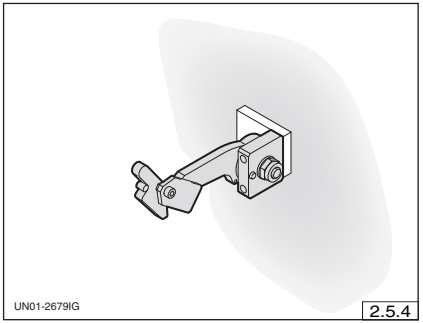


Alternatively, two types of valve can be fitted on the outriggers.

A) Lock-out valve with cock
B) Lock-out valve

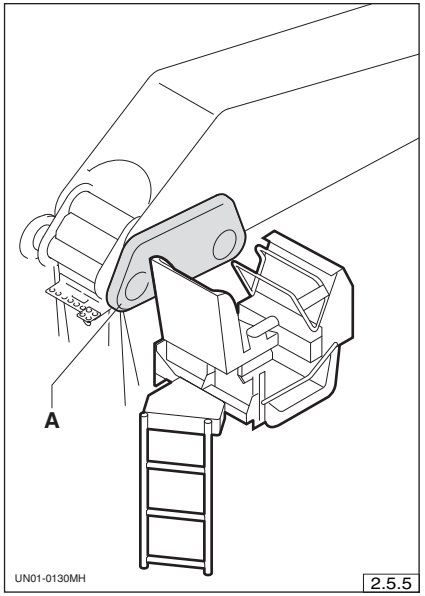
The valve locks the stabiliser jack (in the position it is in at that precise moment) in the event of a broken line or that the oil delivered to the jack is suddenly cut off.

Locking devices for transit on roads



These prevent the supplementary arms extending accidentally when the vehicle is in transit.
The devices must be manually disconnected before extending the outrigger arms; closure is automatic once the arms are retracted.

2.5.2 - 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.

- Access to the top control position

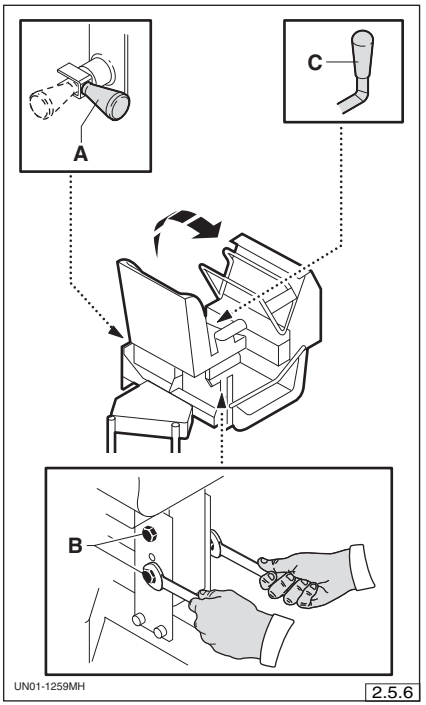
WARNING !

Use the special ladder to reach the control positions.
Do not hold onto controls or flexible piping but use the special handles and handrails foreseen for this purpose.
Always keep the control position and access ladders free from oil, mud, grease, snow and ice.

1 - The control position must be accessed from behind seat.
Release lever “A” and turn the seat.
2 - Turn the seat into working position and lock it with lever “A”.

Before operating the machine adjust the seat for maximum personal comfort and better control of the crane.

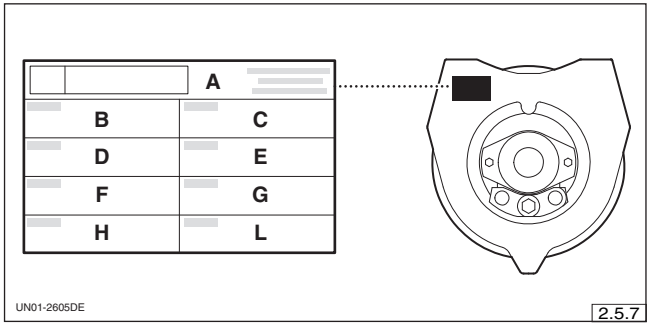
- Adjust seat height by moving screws “B” into the holes positioned at different heights and at the same time move the seat.
- Adjust the seat horizontally using lever “C” and check that it remains locked in the selected position.



2.5.3 - Winch

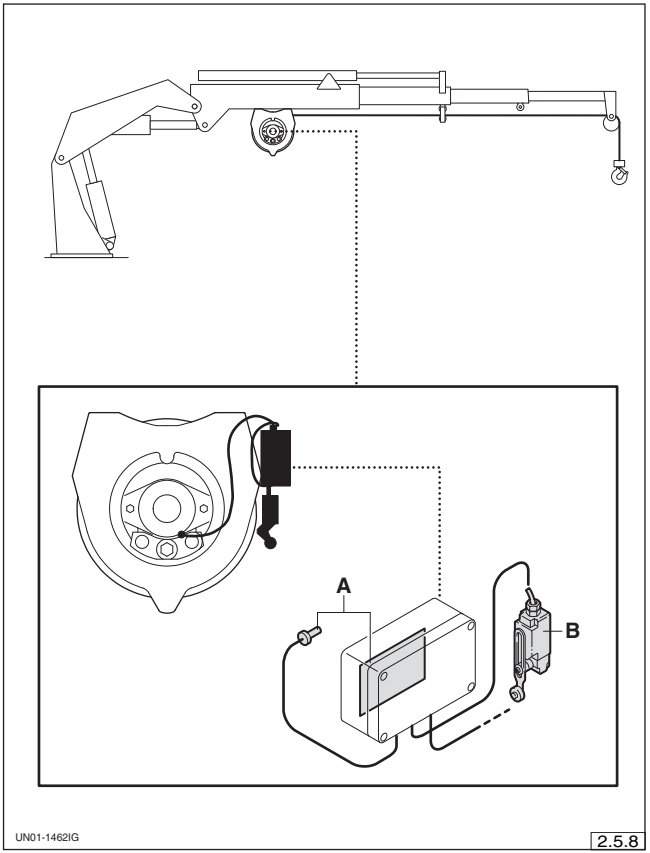
The winch is composed of a drum, driven by a hydraulic motor, around which the load lifting cable is wound.
At the end of the last extendable arm there is a lifting tackle fitted.

- Identification details



A) Manufacturer details
B) Winch model
C) Identification code
D) Serial number
E) Year of manufacture
F) Maximum capacity
G) Maximum speed
H) Maximum pull
L) Maximum pressure (bar)

- Locking and limiting devices



A) Moment limiter

This is comprised of a pressure sensor and a circuit board.

It stops the machine when:

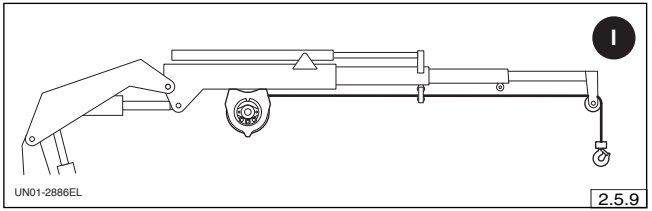
the lifted load exceeds the maximum;

the lower block reaches the upper stroke limit switch.

B) Down stroke limit switch

The limit switch stops the load travelling downwards to prevent the cable on the drum unwinding fully.

- Assembly type



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

Crane model	Winch model - (I)
	P15
PM 32.5 S PX	•

- Specifications

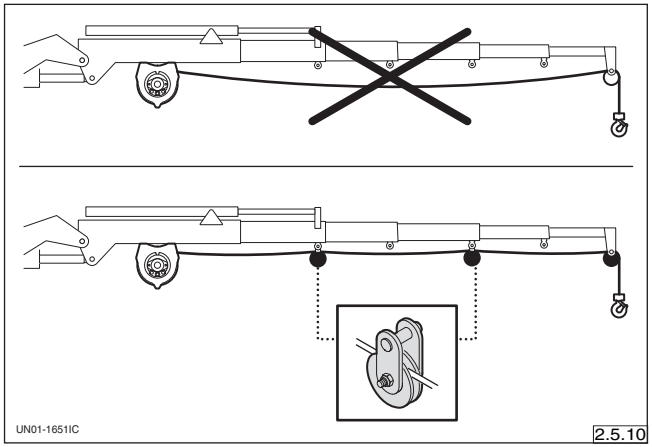
Winch model ..... Dinamic Oil P15/E

Cable diameter .....ø mm 10 ..... in. 0,39”
Minimum cable breaking load .....kN 94,5 ..... lbs 21244
Maximum cable length.....m 50 ..... ft 164
Maximum cable pull
load (last layer) .....kN 19,5 ..... lbs 4384
Maximum cable pull
load (first layer).....kN 24 ..... lbs 5395
Maximum cable speed .....m/min 30..... ft/min. 170
Mass without cable .....kg 79 ..... lbs 174
Mass with cable .....kg 102 ..... lbs 225
Mechanism class according to
UNI ISO 4301/1 ..... M3

- Use of the winch

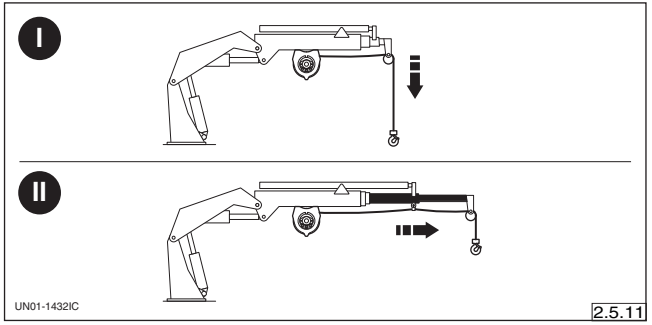
CAUTION !

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.



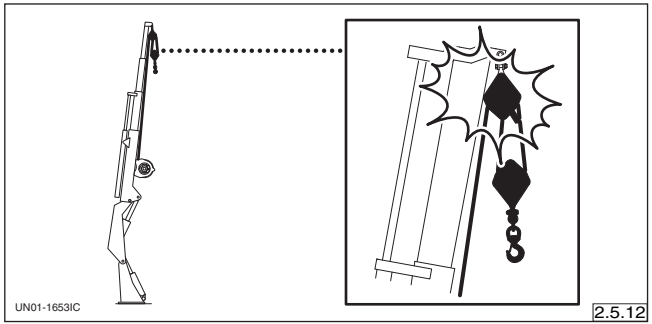
To prevent further damage to the cable, the hook must be lowered before the arm is extended.

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.

CAUTION !

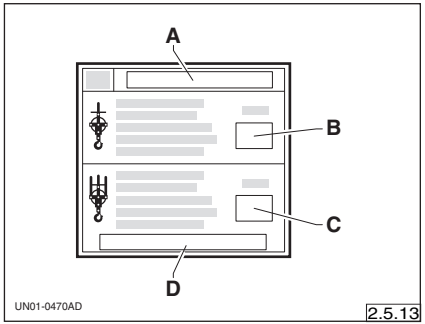
During the winding/unwinding operations check that the cable is always taut, so that it positions itself correctly on the winch drum.



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

2.5.4 - Lifting tackle

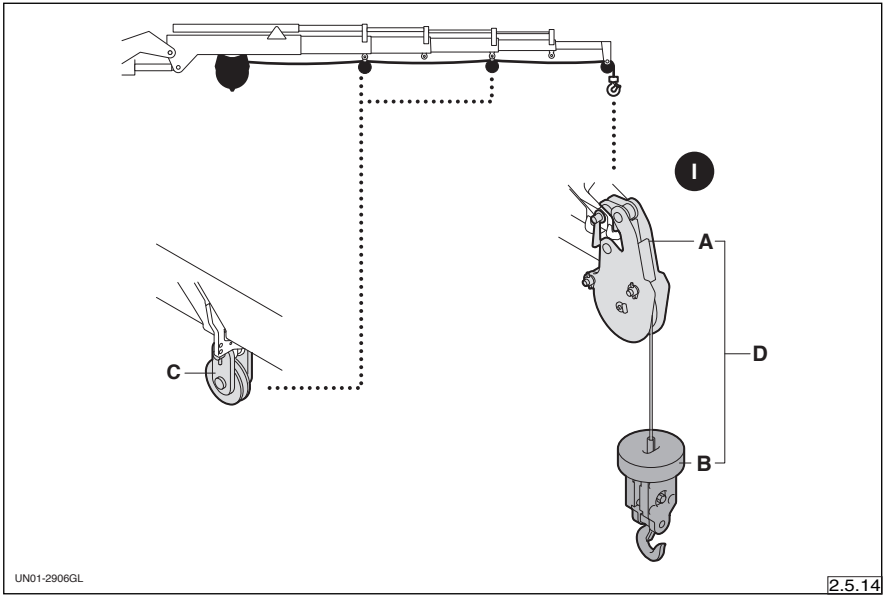
- Identification details



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

A) Manufacturer details
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 direct pull for crane

A) Upper block
B) Lower block for single pull on crane
C) Driving pulley
D) Full tackle for single pull line on crane

Crane tackle weights

Machine model	Part (kg - lbs)			
	A	B	C	D
32.5 S PX	25 (55)	35 (77)	5 (11)	60 (132)

2.6 - Noise level

Tests carried out have measured a sound pressure level below 70 Db(A).
The tests have been carried out without considering the power source (vehicle's engine) as it 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.

2.8 - Gas emissions

- Gases produced by the combustion of the fuel used by the truck endothermic engine.
- Fuel vapours emitted during refuelling.

2.9 - Electromagnetic compatibility

All the machine's components subject to the European directives 95/54/CEE (and subsequent modifications) and 2004/108/CE on electromagnetic compatibility conform to the aforesaid directives.

2.10 - Residual dangers

Dangers of a mechanical nature.
Contact with the articulated parts of the machine could result in limbs being crushed or lacerated.

Dangers of thermal nature.
Contact with the machine's hot parts could result in burns.

Fire hazard.
Fuel leaking from the tank, during use or when refilling, can create a fire hazard.

Risk of fluid ejection at high pressure.
The breakage of a pipe or blow-by under oil pressure could create risk of lesions and skin infections.

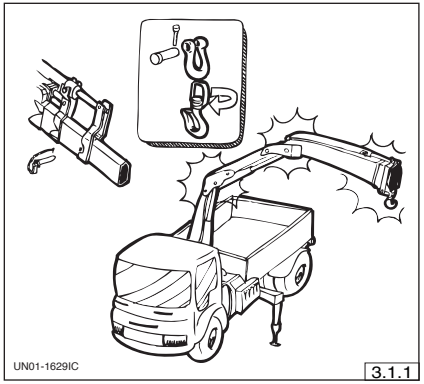
Risk of slipping and falling.
Oil, grease, snow and ice on the entrance steps of the maneuvering stations and on the work platform floor can cause the operator to slip and fall.

3 Safety

3.1 - Safety regulations

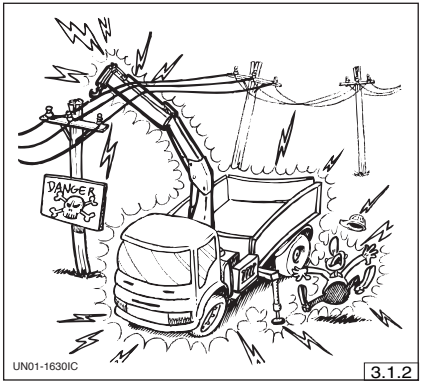
WARNING !

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.

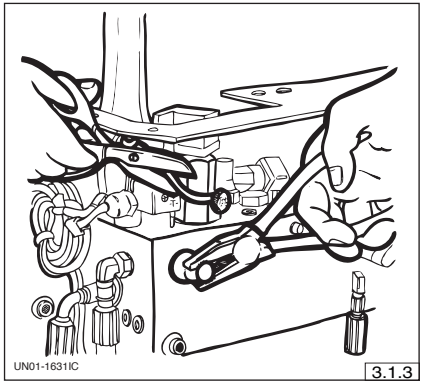


HAZARD !

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

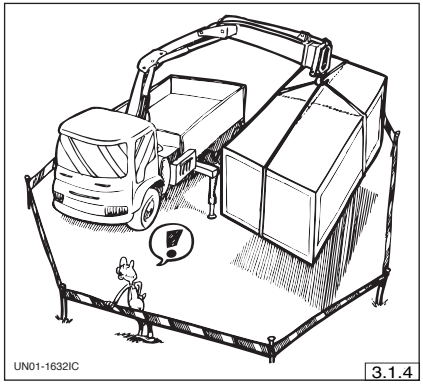
To operate the crane in the vicinity of power lines, always refer to your superiors or the competent authority for special instructions.
Obtain clear instructions regarding the way in which the work must be carried out. Said procedures must be studied for each particular situation and complied with exactly.
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.

01-GB-A3-194LF



WARNING !

Do not remove the lead seals on the valves.

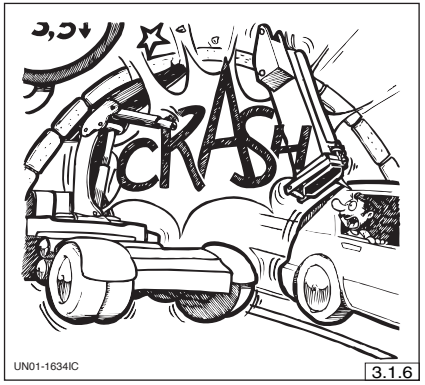


Cordon off the work area to prevent access by unauthorised persons.
The operator must ensure no-one stops or moves around in the work area.

HAZARD !

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

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



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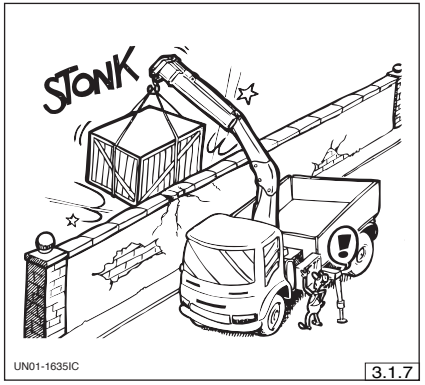

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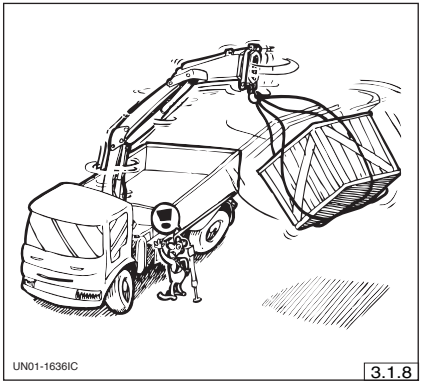
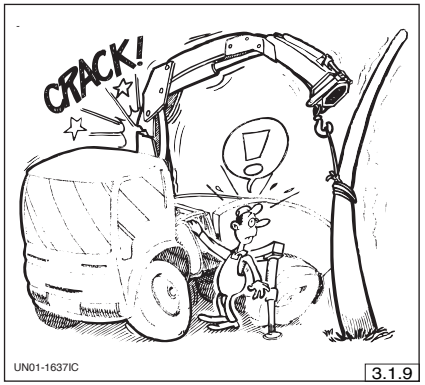

UN01-1636IC 3.1.8

WARNING !

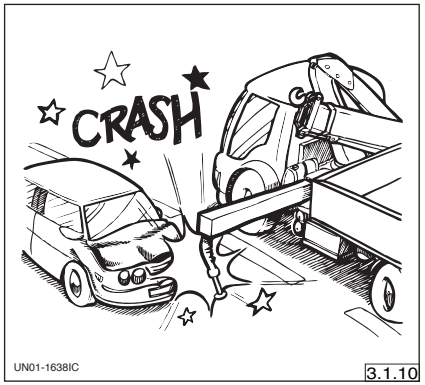
Always follow the Highway Code, in particular with regards to height limit signs.

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

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

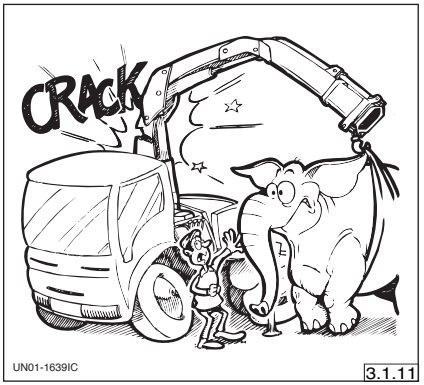


Do not use the crane to remove poles, uproot trees or lift fixed loads.



WARNING !

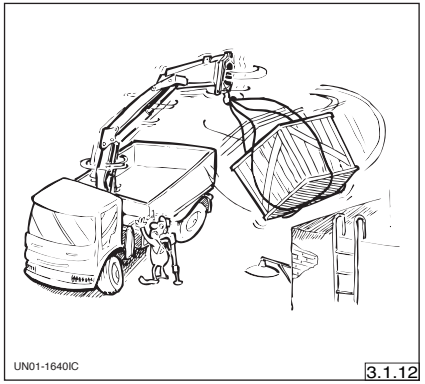
Before driving the vehicle, ensure all the lock devices are engaged.



WARNING !

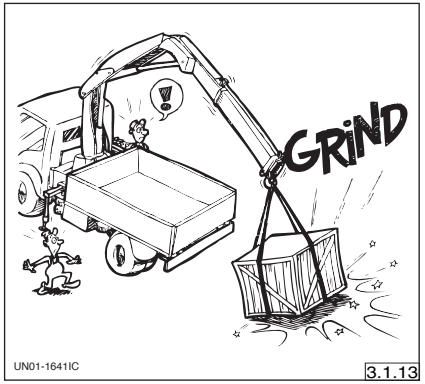
Never lift loads exceeding the limits stipulated in the loads diagrams.

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


UN01-1640IC
3.1.12

HAZARD !

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



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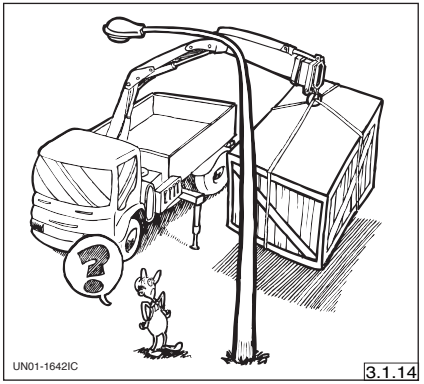
3.1.13

WARNING !

Never drag loads, lift them upwards.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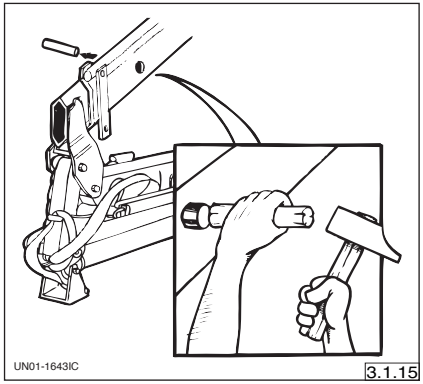
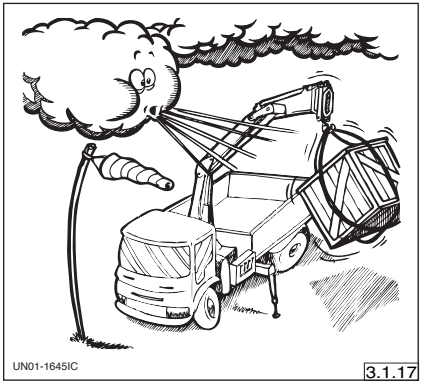
3.1.14

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
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

HAZARD !

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

WARNING !

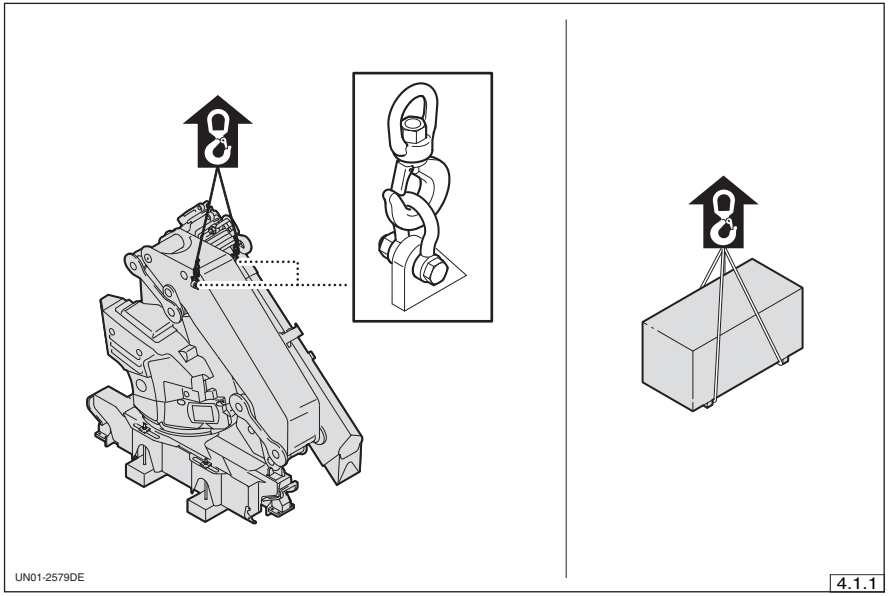
Always use lifting means which are suitable for the load to be lifted and handled.
Chains and cables must always be in good condition, never worn or frayed as this would seriously prejudice the operators' safety.
Always keep the load as low as possible when moving to guarantee better stability and visibility.
Always work with great care and carry out very slow manoeuvres for the safety of the operators present and to safeguard the good working condition of the crane.

WARNING !

If the crane is used without the locking devices (e.g. wooden beams, threaded bars, tie rods, screws, pins, etc.) the machine may overturn.

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.
The wooden beams must be removed during the installation of the crane on a 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 crane always check the weight on the technical information sheets.

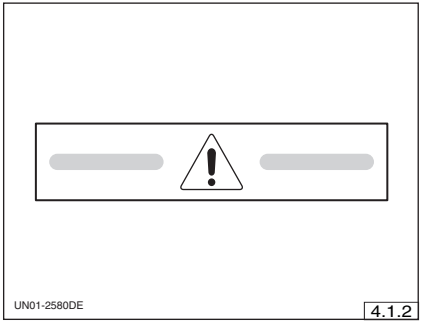
4.1.1 - Lifting the crane with a hook



Lift the crane using the special lifting points positioned on the main arm of the crane.
If the crane is fitted with accessories such as antenna, winch, manual extensions, etc., the barycentre of the machine will be different each time.
When lifting from above pay attention to the crane swinging movement as the lifting point is never perfectly barycentric.

4.1.2 - Locking devices

PM cranes are fitted with locking devices to avoid hazardous situations during handling of the machine (e.g.: arm pack or swinging support lock) highlighted with the following sticker (fig. 4.1.2).



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

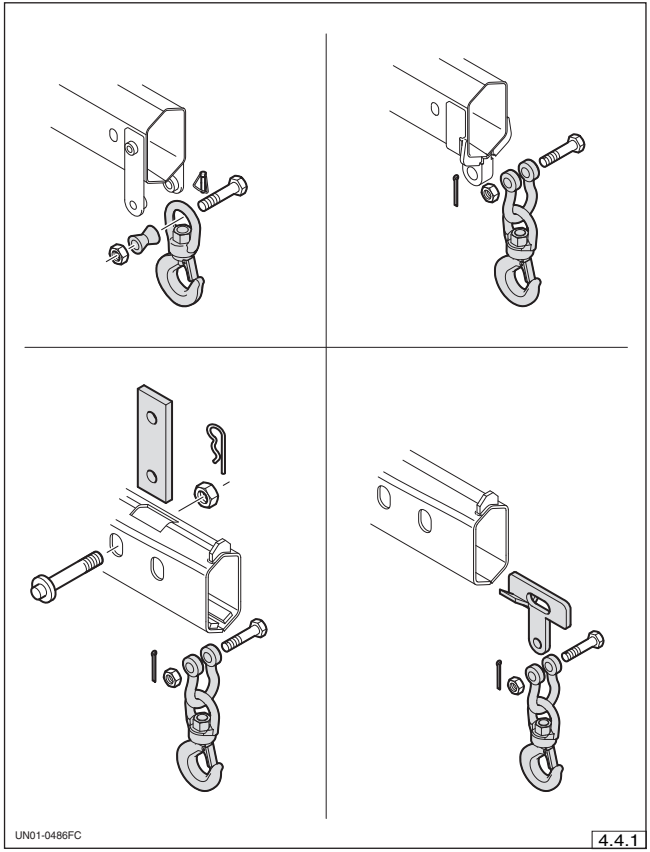
The installation of the crane on the vehicle and the inspections following installation required by the local regulations in force in each country must be carried out carefully following the information contained in the “Instruction and warnings manual for the installation of the crane on a truck” written by the company PM Group S.p.A.
All necessary information, including the “Instruction and warnings manual for the installation of the crane on a truck” is supplied to the crane owner only upon request sent by email to:

info@pm-group.eu

The fitting and any alterations to the vehicle required must comply with the regulations issued by the vehicle’s manufacturer.

4.4 - Fitting the hook

Assembly type



WARNING !

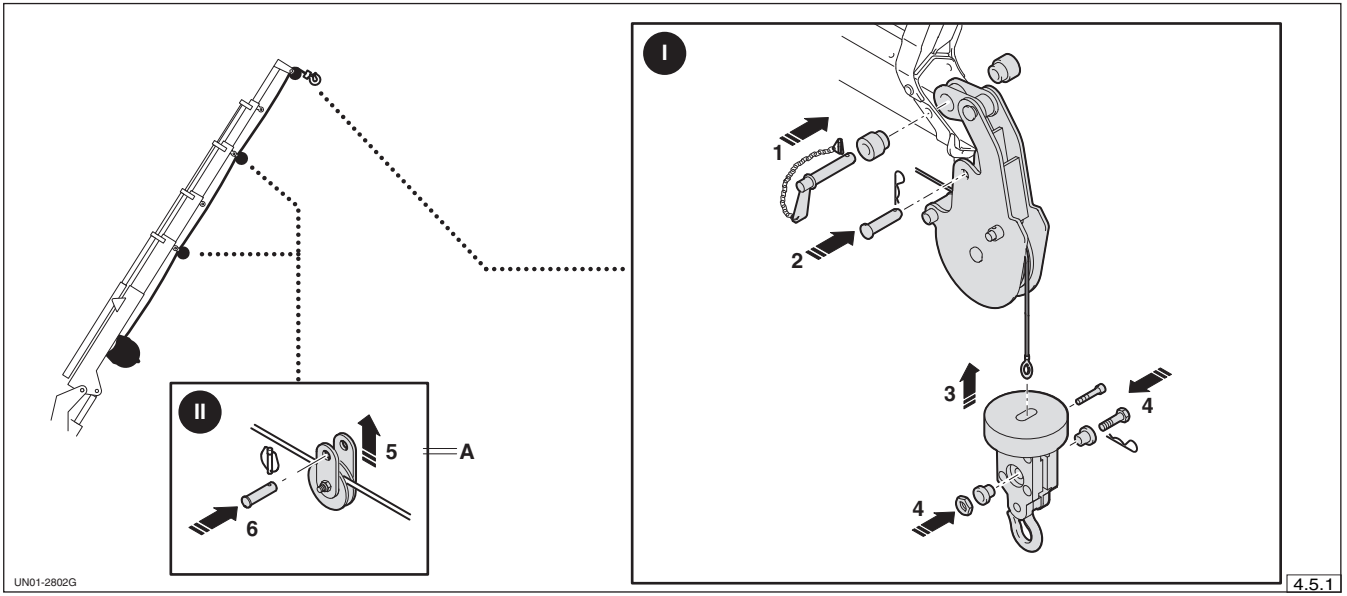
The hook can only be fitted onto the last arm or the manual extension when extended.

4.5 - Tackle installation

4.5.1 - 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.

- Assembly sequence for tackle with direct pull



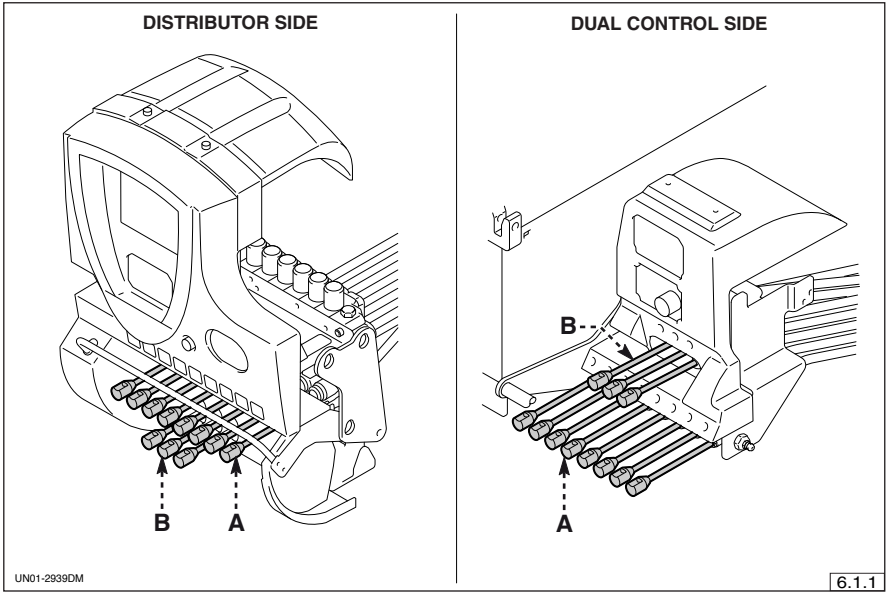
A = driving pulley

5 Information about adjustments

All adjustments must be performed by an authorised workshop.

6.1 - Controls

6.1.1 - Control posts on board the machine



Information

According to the equipment fitted on the crane the control devices and/ or commands of the control posts on board may vary.

Key

A - Crane controls
B - Outriggers controls

6.1.2 - Crane control symbols


Clockwise rotation.


Lower main arm.


Lower secondary arm.


Arm extension.


Lower jib.


Jib arm extension.


Lower winch cable.


Rotator clockwise rotation.


Grab opening.


Outriggers activation.

- Multiple activation device controls


Jib arm extension / Open grab.


Lower jib / lower winch cable.

- Outrigger distributor controls


Jack extension or retraction control selection.


Enable outrigger or supplementary crossmember outrigger arm.

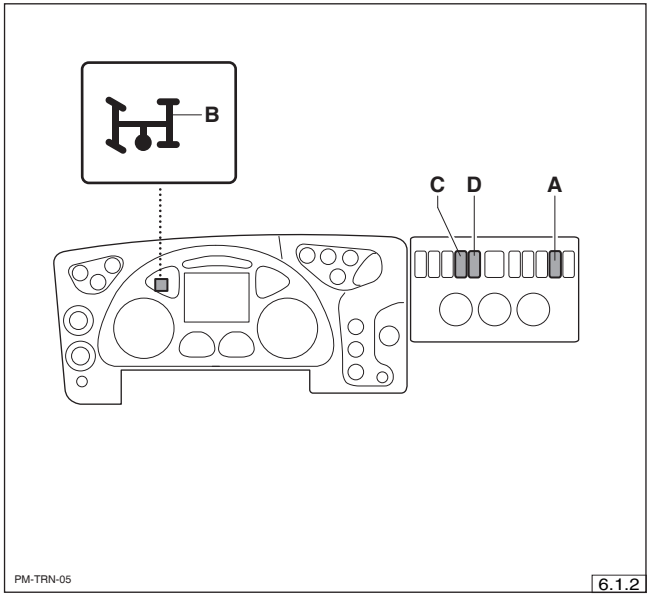

Enable crane outrigger or outrigger arm.

Information

The plates on the control protective casing show just one movement of the crane, which is carried out by moving the lever in the direction of the arrow. For the opposite movement, move the lever in the opposite direction to the arrow.

6.1.3 - Controls and signals/gauges located in the truck cab

Controls, signal lights and warning buzzers that may be installed in the truck cab are listed below; the figure and position of the controls and signals/gauges are indicative.



A - PTO switch
This engages and disengages the PTO.

B - Signal light
When lit, this shows the power take-off (PTO) is engaged.

C - Signal light
When lit, this shows that the outriggers are not in the correct resting position. The buzzer will sound when the signal lights light up.

D - Signal light
When lit, this shows that the crane is not in the correct resting position. The buzzer will sound when the signal lights light up.

Information

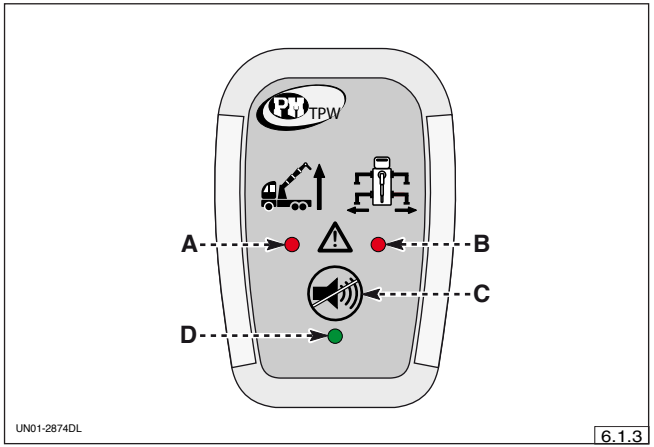
For all other vehicle controls and signals/gauges, please refer to the instructions provided by the vehicle's manufacturer.

Information

In some cases a control to temporarily disable the warning buzzer can be installed.

6.1.4 - PM panel for per driver's cab

PM supplies a panel to be installed in the cab, which is designed for the following indicators.



A - Red signal light
When lit, this shows that the crane is not in the correct resting position. The buzzer will sound when the signal lights light up.

B - Red signal light
When lit, this shows that the outriggers are not in the correct resting position. The buzzer will sound when the signal lights light up.

C - Button to temporarily disable the warning buzzer

D - Green signal light
This signals that the system is running

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 MINI" 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, indicate that the battery is nearly flat.

i **Information**

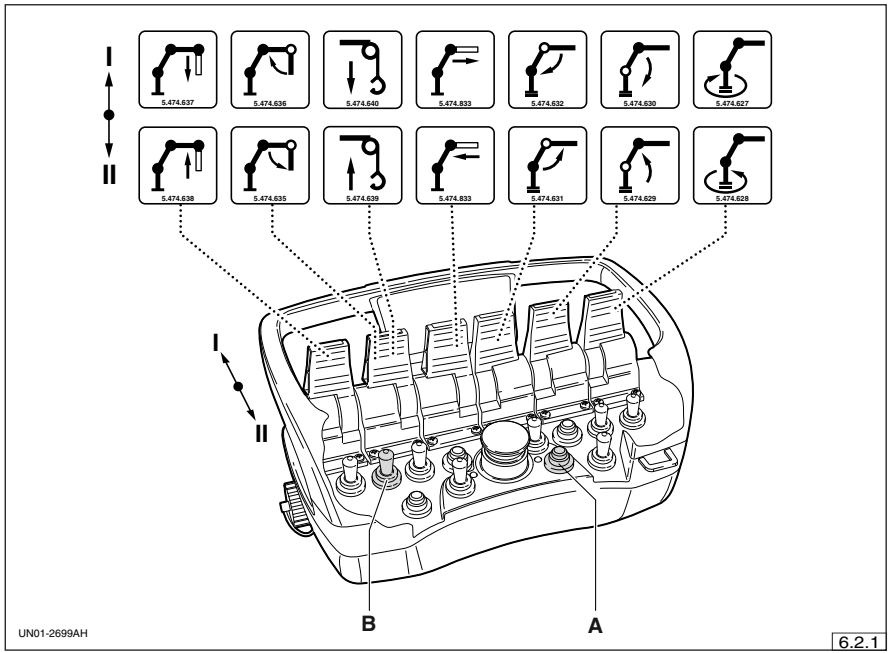
Only replace the battery when the flashing indicator light switches off.

- Battery charger

Charge voltage of the battery charger supplied: 11 Vcc - 30 Vcc.
The recharging time of a completely flat battery varies from 12 to 14 hours.

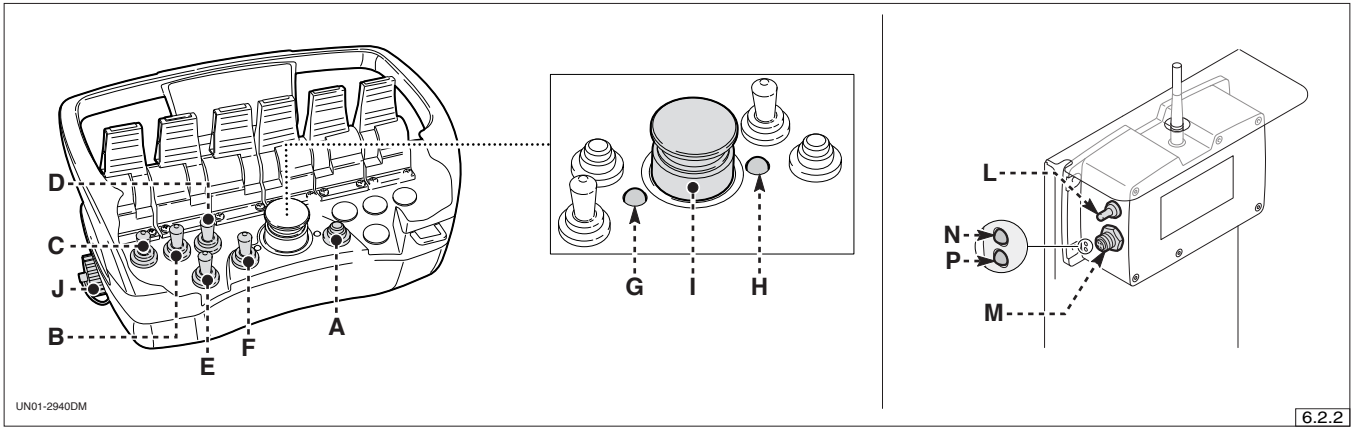
- Battery charger indicator lights

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



A - Switching on the transmitter unit
The button has two functions:
I) radio control ON;
II) buzzer.

B - Start-up/stop
Flick the switch to start up or stop the vehicle engine.



C - "RPM" activation

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

D - Accelerator

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

E - Activation switch

This allows the alternate functioning of the activations:

- from the jib joint to the winch and vice versa;
- from jib arms extension with possible further accessories.

F - 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 "G".
Flick the switch once only (in the off direction) to reset the normal functioning speed.

G - Indicator light

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

H - Indicator light

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

I - Emergency stop button

See "Control and limiting devices".

J - Cable connector

Connection for use of the transmitter as a cable control.

L - Three stable position switch

This switches on and off the receiver unit.
REMOTE position: the receiver unit is on.
OFF position: the receiver unit is off.
MANUAL position: the receiver unit is on and the transmitter unit is by-passed.

M - Socket

To connect the configuration unit of the receiver unit (only to be used by specialised personnel).

N - (DV) signal light

This indicates the state of operation of the wireless control.

P - (Status) signal light

This indicates the state of operation of the wireless control.

- Signal light signals

System on and transmitter unit off

Position selector "D"	Signal lights on
REMOTE	“Status” (red light)
MANUAL	“DV” (red light)

System on and transmitter unit on

Position selector "D"	Signal lights on
REMOTE (no button is pressed on transmitter unit)	“Status” (green light)
REMOTE (a button is pressed on transmitter unit)	“Status” (green light) “DV” (red light)

- Switching on the radio control

- Press button “A”, fig. 6.2.2.

- Switching off the radio control

- Press button “I”, fig. 6.2.2.

6.2.2 - HETRONIC radio control

- Technical data

- Power voltage: 3 (V)
- 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 features two devices that are automatically activated 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.

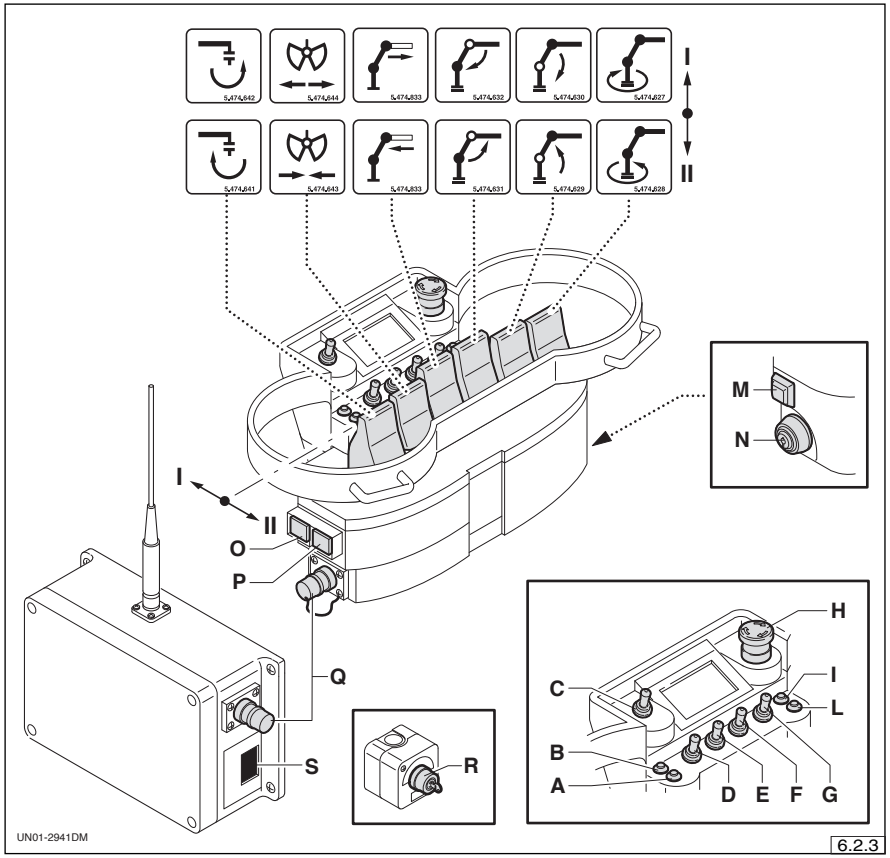
Battery charger

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 - Signal light (fitting only)
Not active.

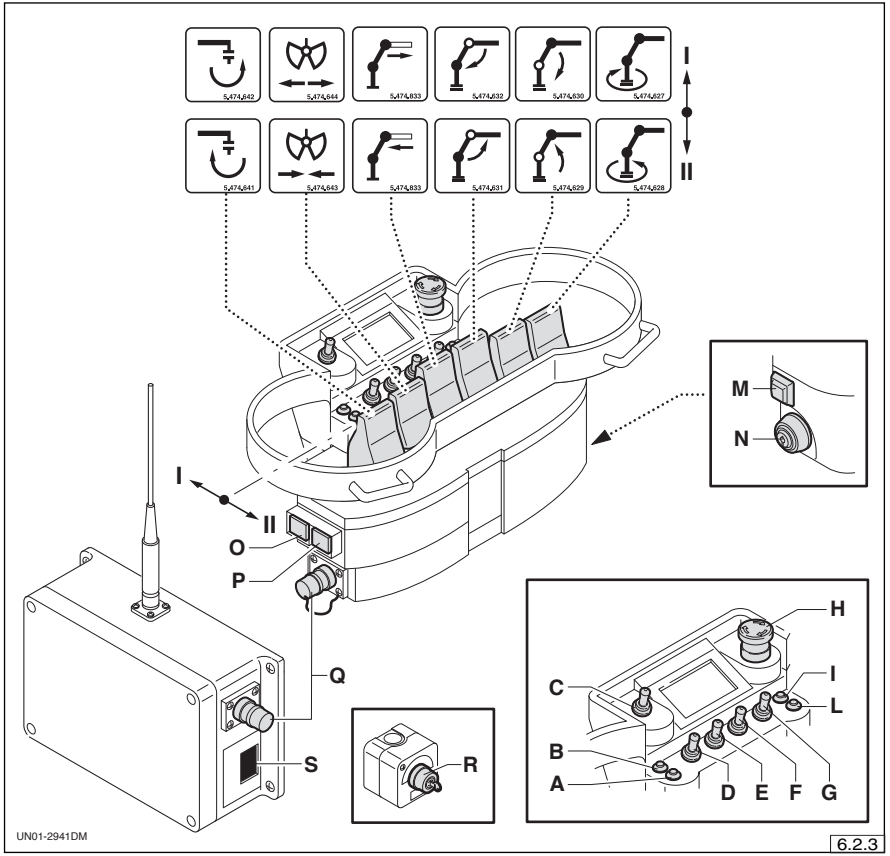
B - Signal light (fitting only)
Not active.

C - Control commutation switch
Not active.

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
Activate to enable or disable the optional F1 or F2 functions.

H - Emergency stop button
See “Control and limiting devices”.

I - Indicator light
Not active.

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 - Button
Not active.

P - “Reset” button
The button, used in combination with each single load lowering control command, moves the crane from a blocked situation in which all the controls are inhibited (see function reset with “3-30”).

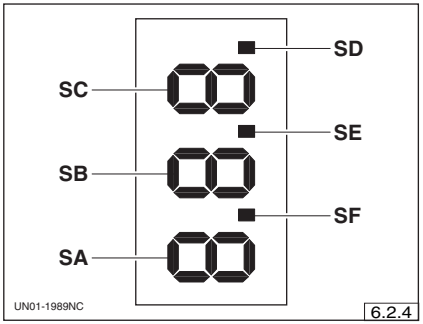
Q - Cable connector
Connection for use of the transmitter as a cable control.

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).

- Key

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	Joysticks = control levers, labelled in ascending order from left to right (see fig. 6.2.3). For example: Joystick 3 = third lever from the left
	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).	

- Points:

SD - flashing: correct radio signal reception.

SE - not active.

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

- 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 “M” 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 “0”.
- 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 emergency stop button, move the levers on the radio control in both directions and check that no crane manoeuvres are possible. Rotate the button to restore normal crane operation.

6.2.4 - Radio control stop due to power failure

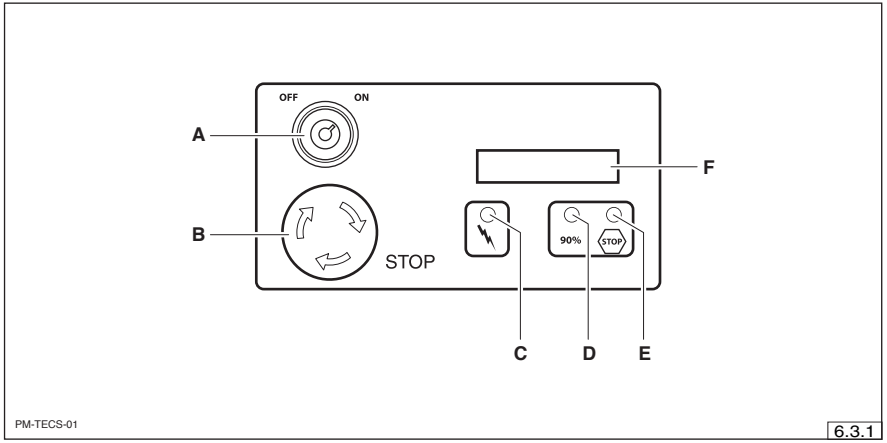
In the event that the "crane locks" due to a flat battery, proceed as follows:

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.

6.3 - Tecs electronic limiter



A - On / off key
B - Emergency stop button
C - Green LED: this shows the device is on.
D - Orange LED: this indicates that 90% of the load has been reached.
E - Red LED: this indicates that 100% of the load has been reached.
F - Display: this shows the operating status of the crane and the percentage of load lifted.

Information

Alongside the Tecs limiter there is also an overload valve.

6.4 - Work sectors

Different devices to check the work sectors can be installed to guarantee the stability of the equipment.

Information

Machines fitted with the Power Tronic Advance control panel can perform small manoeuvres near the column axis, for example opening and closing the crane even when the outrigger jacks are not resting on the ground.

Information

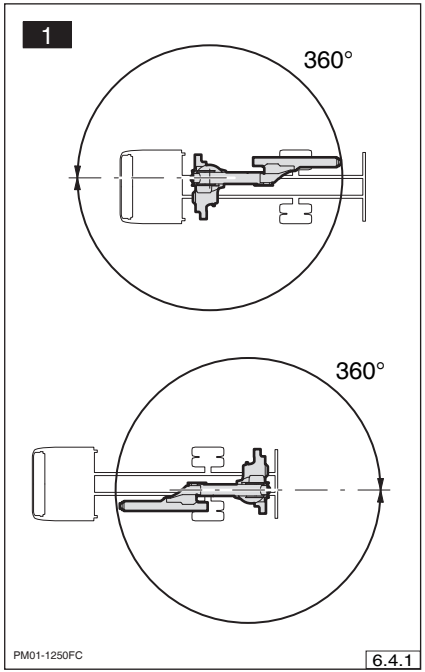
The values of the angles that determine the work sectors and the outrigger extension percentages are indicative; they may vary according to the crane and type of equipment.

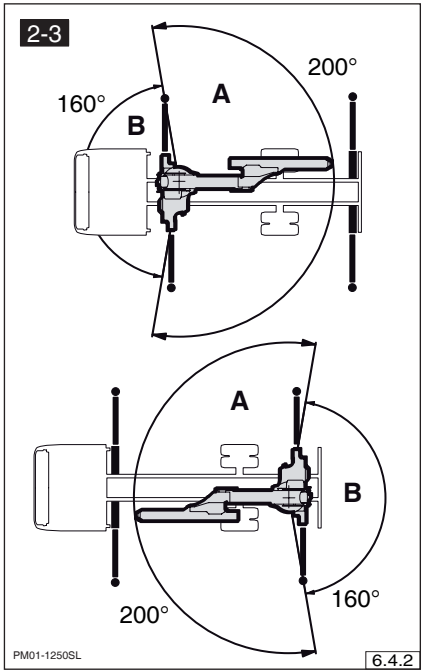
6.4.1 - Electrical and mechanical rotation control devices

1) At 360° with a nominal capacity **(*)** (fig. 6.4.1).

2) With a nominal capacity **(*)** in sector “A” (200°) but without the possibility of rotation in sector “B” (160°) (fig. 6.4.2).

3) With a nominal capacity **(*)** in sector “A” (200°) and a reduction in capacity in sector “B” **(**)** (160°) (fig. 6.4.2).





(*) nominal capacity = max. load permitted in relation to a certain configuration (see "Capacity diagram").
(**) with a crane behind the truck bed, in some cases, the same load capacity of the sector “A” can be applied to sector "B".

6.4.2 - Stabilisation control device (TYPE 1)

This device makes it possible to work with two sectors (A - B).

- **Sector A** (rated load capacity) (*) outriggers arms fully extended and outrigger jacks resting correctly on the ground.

- **Sector B** (reduced load capacity) (**) outrigger jacks resting correctly on the ground.

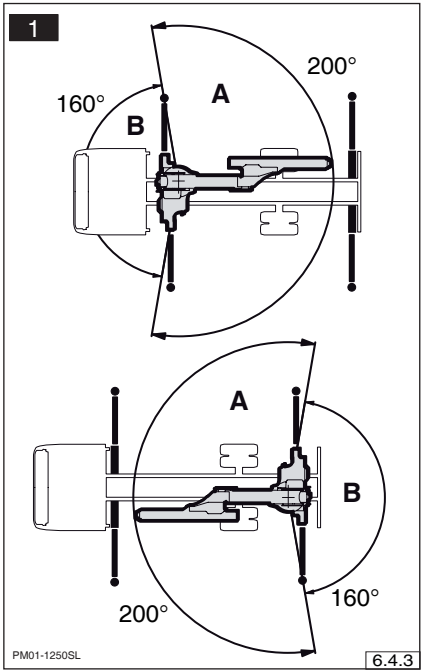


Fig. 1: outriggers arms fully extended.

(*) Nominal capacity = max. load permitted in relation to a certain configuration (see "Capacity diagram").
(**) The sector "B" can be disabled according to the type of equipment. With a crane behind the truck bed, in some cases, the same load capacity of the sector “A” can be applied to sector "B".

6.4.3 - Stabilisation control device (TYPE 2)

This device makes it possible to work with 3 sectors (A - B - C).

- **Sector A** (rated load capacity) (*) outriggers arms fully extended and outrigger jacks resting correctly on the ground.
- **Sector B** (reduced load capacity) (**) outrigger jacks resting correctly on the ground.
- **Sector C** (reduced load capacity) outriggers arms not fully extended and stabiliser jacks resting correctly on the ground.

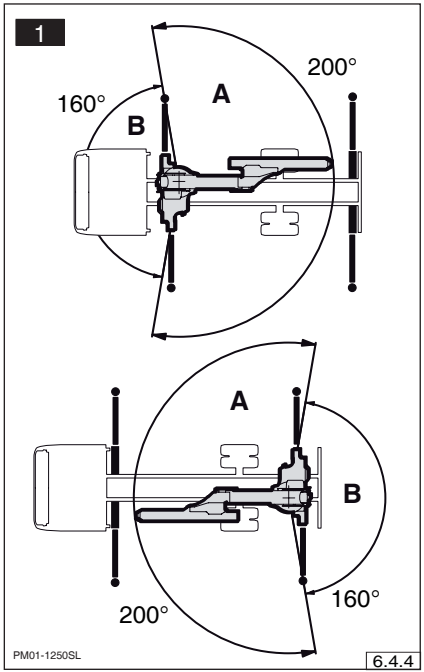


Fig. 1: outriggers arms fully extended.

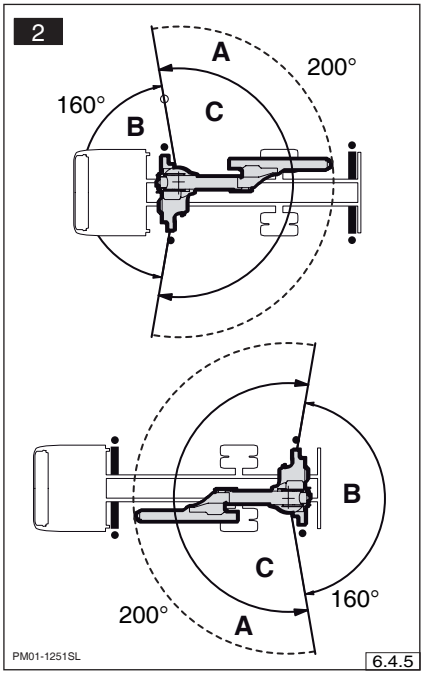


Fig. 2: outriggers arms not fully extended.

(*) Nominal capacity = max. load permitted in relation to a certain configuration (see "Capacity diagram").
(**) The sector "B" can be disabled according to the type of equipment. With a crane behind the truck bed, in some cases, the same load capacity of the sector “A” can be applied to sector "B".

6.4.4 - Stabilisation control device (TYPE 3)

This device makes it possible to work with 3 sectors (A - B - C) differentiating the right side and the left side.

- **Sector A** (rated load capacity) (*) outriggers arms fully extended and outrigger jacks resting correctly on the ground.

Information

With this type of device there is a sector "A", rated load capacity, where only the outrigger jacks are resting correctly on the ground (fig. 4).

- **Sector B** (reduced load capacity) (**) outrigger jacks resting correctly on the ground.
- **Sector C** (reduced load capacity) outriggers arms not fully extended and stabiliser jacks resting correctly on the ground.

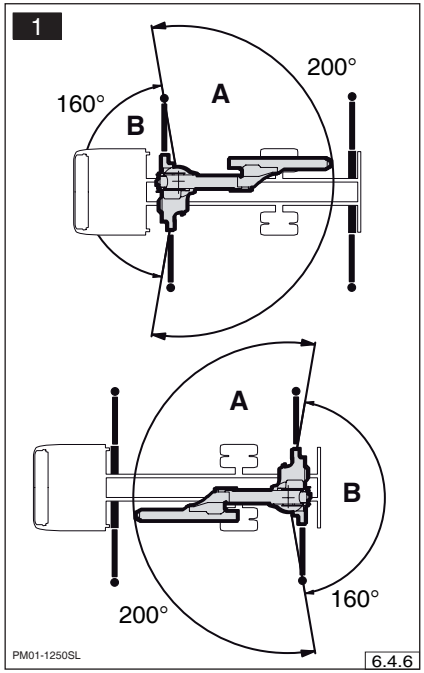


Fig. 1: outriggers arms fully extended.

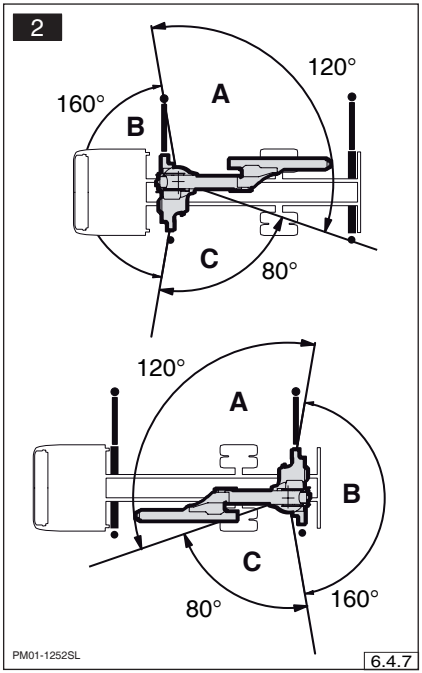
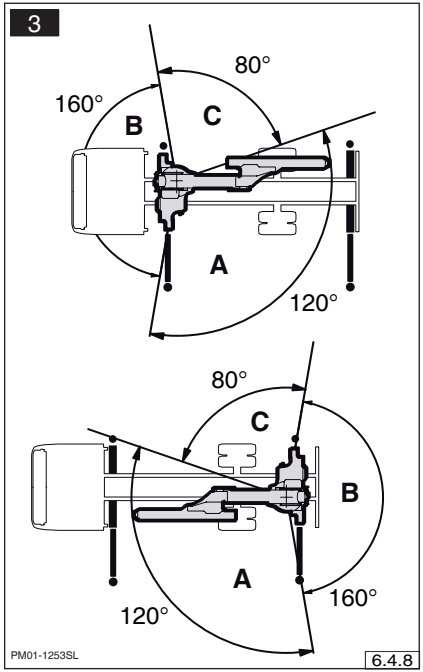


Fig. 2: outriggers arms not fully extended.

(*) Nominal capacity = max. load permitted in relation to a certain configuration (see "Capacity diagram").
(**) The sector "B" can be disabled according to the type of equipment. With a crane behind the truck bed, in some cases, the same load capacity of the sector “A” can be applied to sector "B".



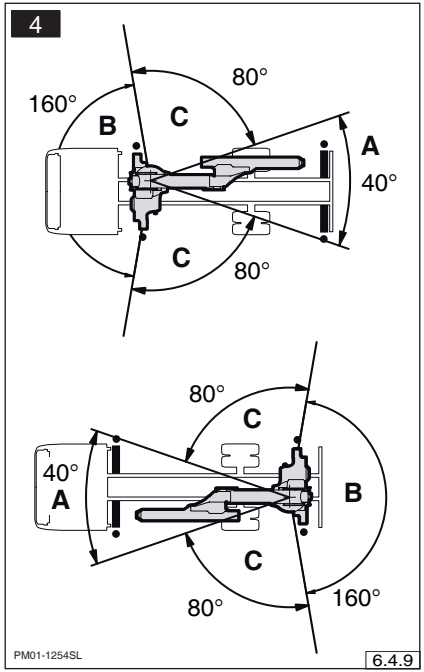


Fig. 3 - 4: outriggers arms not fully extended.

6.4.5 - Stabilisation control device (TYPE 4)

This device makes it possible to work with 4 sectors (A - B - C - D) differentiating the right side and the left side, and also differentiating the position of the outriggers arms in two intervals.

- **Sector A** (rated load capacity) (*) outriggers arms fully extended and outrigger jacks resting correctly on the ground.

Information

With this type of device there is a sector "A", rated load capacity, where only the outrigger jacks are resting correctly on the ground (fig. 4).

- **Sector B** (reduced load capacity) (**) outrigger jacks resting correctly on the ground.
- **Sector C** (reduced load capacity) outrigger jacks resting correctly on the ground and at least one outrigger arm with an extension of about less than 50% compared to the maximum extension.

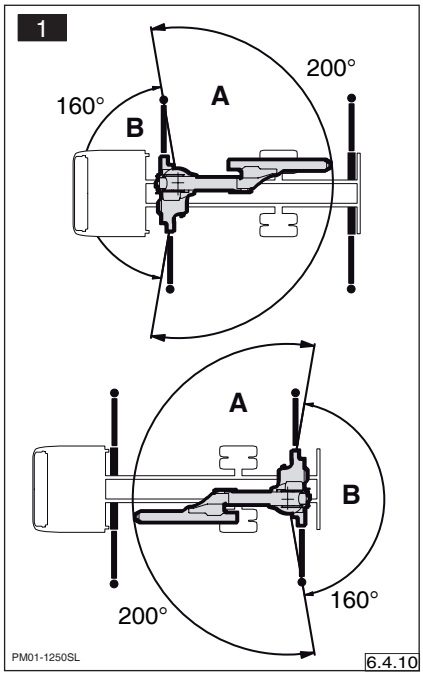


Fig. 1: outriggers arms fully extended.

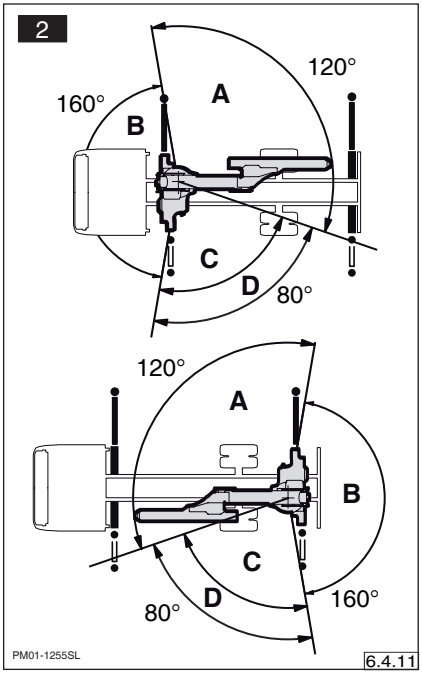
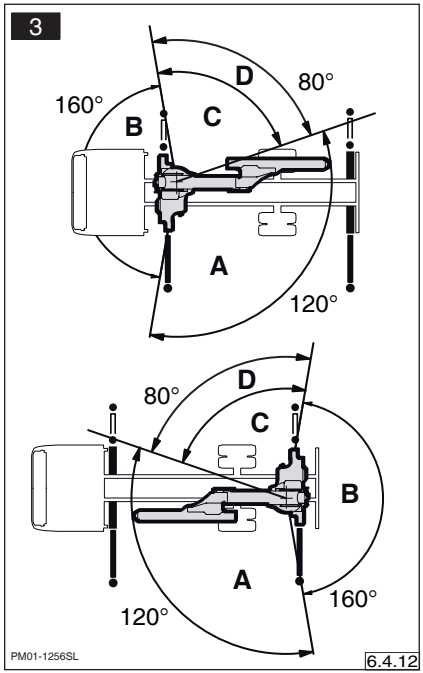


Fig. 2: outriggers arms not fully extended.

(*) Nominal capacity = max. load permitted in relation to a certain configuration (see "Capacity diagram").
(**) The sector "B" can be disabled according to the type of equipment. With a crane behind the truck bed, in some cases, the same load capacity of the sector “A” can be applied to sector "B".



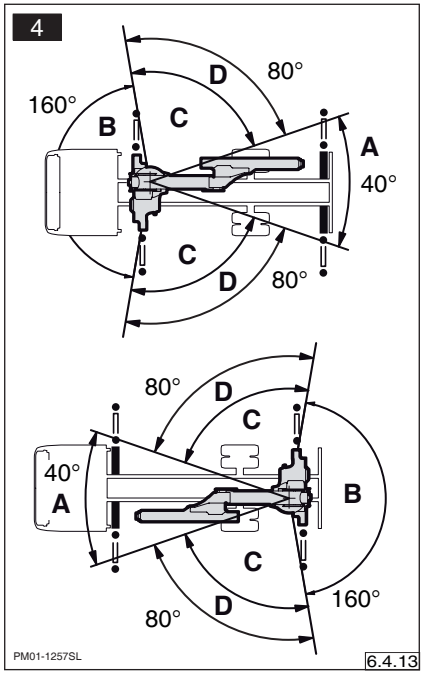


Fig. 3 - 4: outriggers arms not fully extended.

- **Sector D** (reduced load capacity) outrigger jacks resting correctly on the ground and both outriggers arms with an extension of about more than 50% compared to the maximum extension, but not fully extended.

6.4.6 - Stabilisation control device (TYPE 5)

This device makes it possible to work with 6 sectors (A - B - C1 - C2 - C3 - C4) differentiating the right side and the left side, and also differentiating the position of the outriggers arms in 4 intervals for the crane and 3 intervals for the supplementary crossmember.

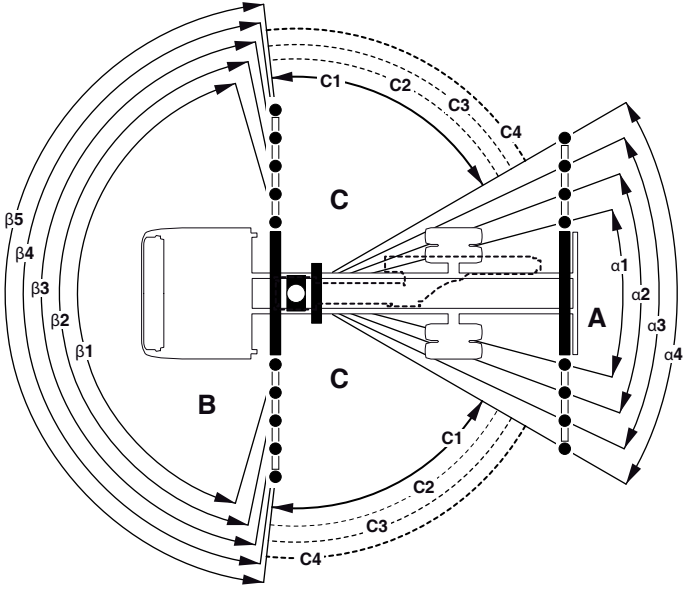
- **Sector A** (rated load capacity) (*)
  outriggers arms fully extended and outrigger jacks resting correctly on the ground.

Information

With this type of device there is a sector "A", rated load capacity, where only the outrigger jacks are resting correctly on the ground (fig. 1).

- **Sector B** (reduced load capacity) (**)
  outrigger jacks resting correctly on the ground.
- **Sectors C1, C2, C3, C4** (reduced load capacity)
  outrigger jacks resting correctly on the ground and outriggers arms extended as shown in the table.

1



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6.4.14

(*) Nominal capacity = max. load permitted in relation to a certain configuration (see "Capacity diagram").
(**) The sector "B" can be disabled according to the type of equipment. With a crane behind the truck bed, in some cases, the same load capacity of the sector “A” can be applied to sector "B".

- Stabilisation combinations between the crane and the supplementary crossmember

		α1	α2	α3	α4
		0% - 32%	33% - 65%	66% - 99%	100%
β1	0% - 24 %	C1	C1	C1	C1
β2	25% - 49%	C2	C2	C2	C2
β3	50% - 74%	C2	C3	C3	C3
β4	75% - 99%	C2	C3	C4	C4
β5	100%	C2	C3	C4	A

(α) sector width given by the extension of the supplementary crossmember outriggers arms.
(β) sector width given by the extension of the crane outriggers arms.

6.5 - Crane stabilisation

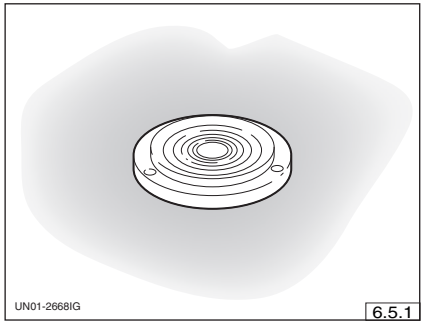
6.5.1 - Stabilisation procedure

HAZARD !

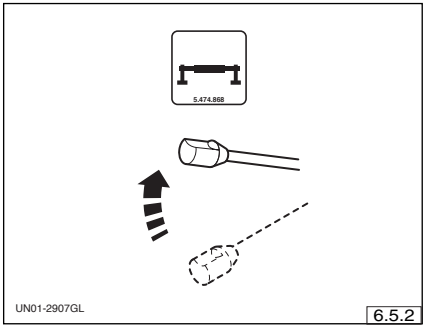
The operator must know the maximum load that the stabiliser will apply to the ground (see "Enclosures") and must ensure that the ground consistency can guarantee the stability of the vehicle.
On ground that is not very solid, place the raised support plates or a hard wooden board of a suitable size between 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. 6.5.1), which must be flat (0°) with a maximum tolerance of +/-1°.

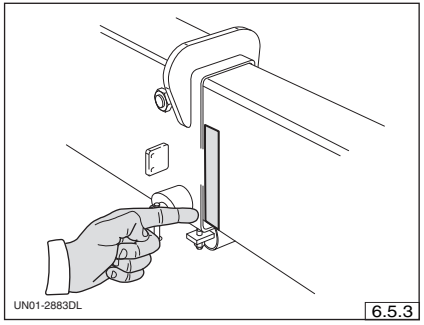
CAUTION !

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



1 - Block the vehicle with the parking brake and place the chocks behind the wheels.
2 - Start the motor at minimum rpm and engage the power takeoff.
3 - Make sure the distributor lever is in the “stabiliser enabling” position (fig. 6.5.2).
4 - Extend the stabiliser arms to the maximum open position signalled by the yellow indicator light (fig. 6.5.3).
5 - Extend the outrigger jacks and position them correctly on the ground.

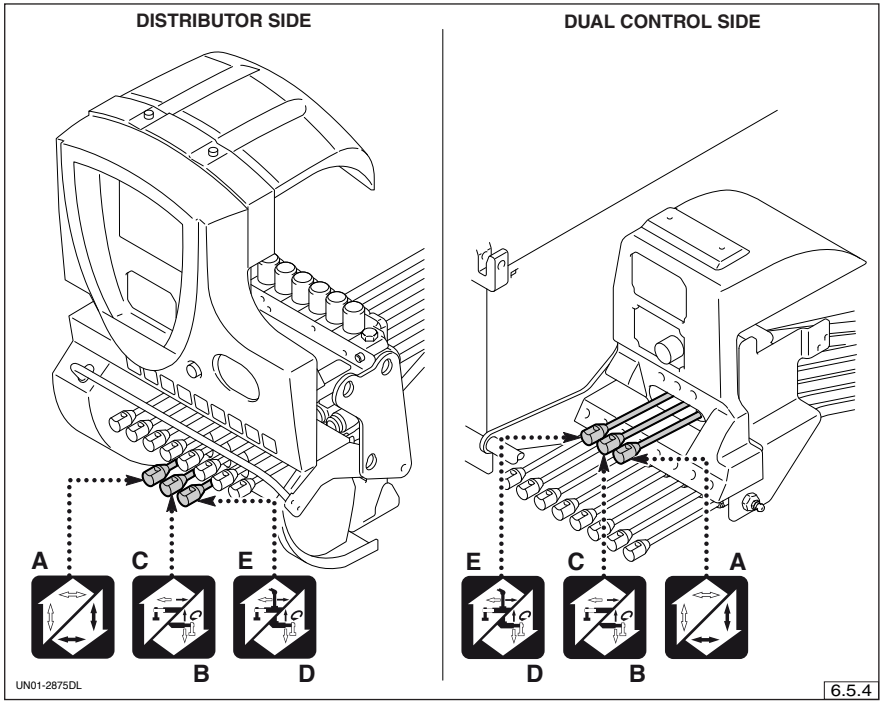




Information

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.

6.5.2 - Stabilisation using the controls on board the machine



A - Control activation

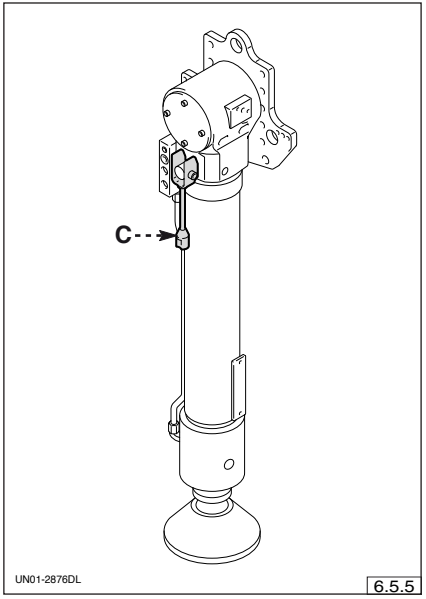
B - Enable rotation, extension and retraction of outrigger jack on supplementary crossmember

C - Enable extension and retraction of outrigger arm on supplementary crossmember

D - Enable rotation, extension and retraction of crane outrigger jack

E - Enable extension and retraction of crane outrigger arms.

6.5.3 - Adjustable outrigger rotation mode - manual



To rotate the outriggers, in the working position, carry out the following operations.

1 - Turn lever "C" to release the outrigger jack from the resting position.

2 - Turn the outrigger jack, accompanying it until the working position is reached.

3 - Move lever "C" to lock the jack in the working position.

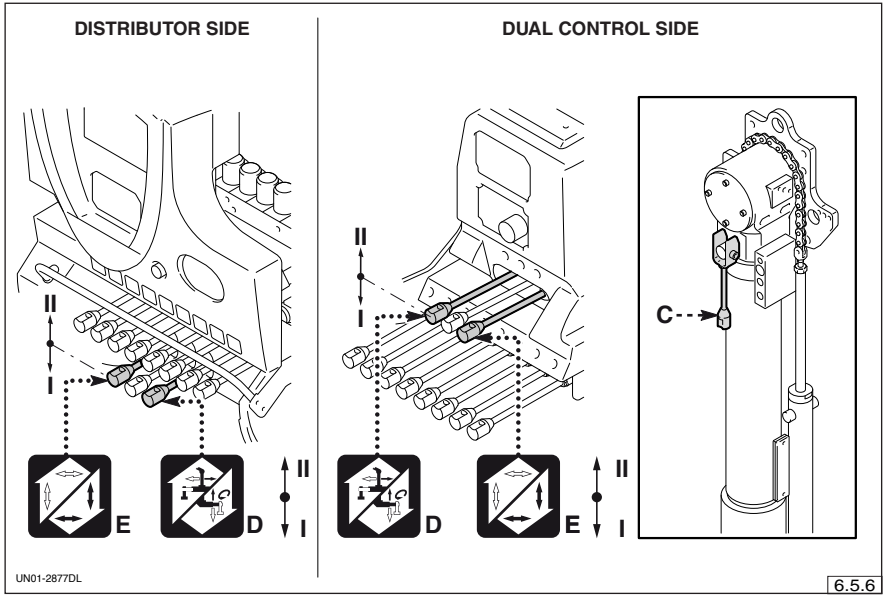
To rotate the outrigger jack when in the resting position, carry out the procedure for rotation in the working position in reverse.

6.5.4 - Adjustable outrigger rotation mode - hydraulic

- Screw-on check valve on rotary outrigger jack

HAZARD !

Check in which direction the jack rotates and do not stand in that area until the jack has not been blocked with lever "C".



To rotate the outriggers, in the working position, carry out the following operations.

1 - Turn lever "C" to release the outrigger jack from the resting position.

2 - Move lever "D" to position "I" to select outrigger jack rotation.

3 - Move lever "E" to position "II" to rotate the jack from the resting position to the working position.

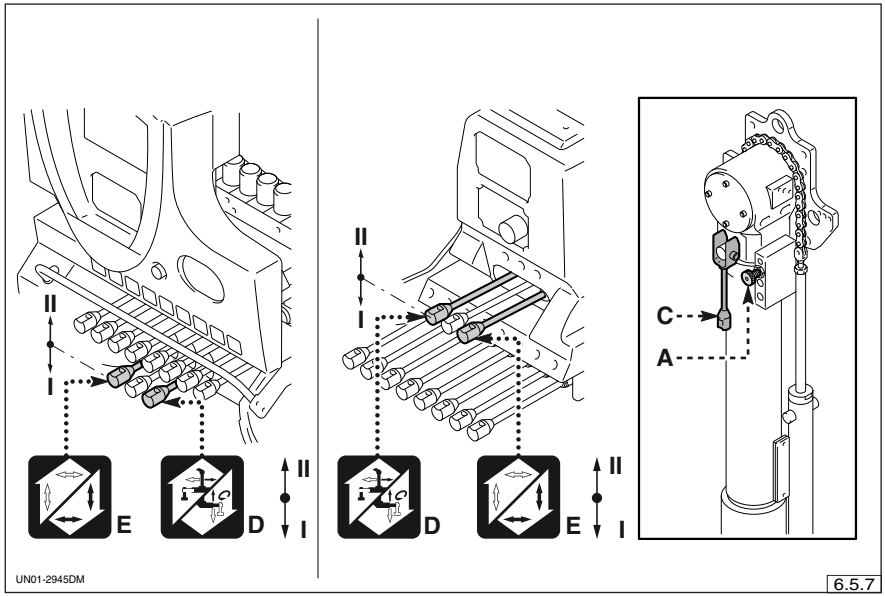
4 - Move lever "C" to lock the jack in the working position.

To rotate the outrigger jack when in the resting position, carry out the procedure for rotation in the working position in reverse.

- Screw-on turn valve on rotary outrigger jack

HAZARD !

Check in which direction the jack rotates and do not stand in that area until the jack has not been blocked with lever "C".



To rotate the outriggers, in the working position, carry out the following operations.

1 - Turn lever "C" to release the outrigger jack from the resting position.

2 - Move lever "D" to position "I" to select outrigger jack rotation.

3 - Move lever "E" to position "II" to rotate the jack from the resting position to the working position.

4 - Move lever "C" to lock the jack in the working position.

5 - Open the turn valve “A” (unscrew to limit).

WARNING !

When rotating the jack or when the jack is in the rest position, the screw-on turn valve must always be closed (screwed to limit).

To rotate the outrigger jack when in the resting position, carry out the procedure for rotation in the working position in reverse.

6.6 - 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.

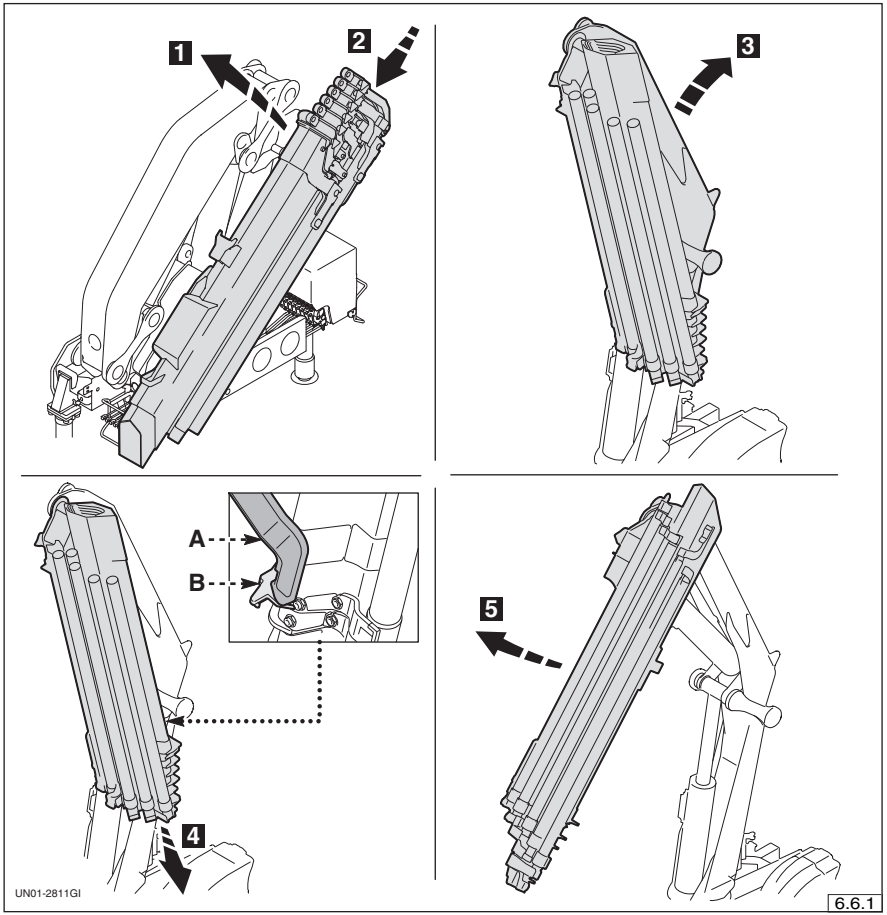
CAUTION !

Before starting any manoeuvres remove the mechanical locking devices:

- ***that hold the crane in position during road transit;***
- ***that stop the crane rotating and the arm pack extending during road transit.***

WARNING !

All crane opening and closing manoeuvres must be performed very slowly, taking into account the spaces occupied by moving parts.



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 arm jacks at stroke limit, without forcing the manoeuvre.

WARNING !

If the hook "B" remains engaged in the support "A", open the main jack further and repeat the closure of the secondary jack then extend the arms.

3 - Open the main jack until the hook "B" disengages the support "A".
4 - Extend the arm jacks slightly so the hook “B” goes beyond the support “A” without knocking it.
5 - Open the secondary jack.

The main and secondary jacks must be open to allow the crane to rotate freely.

6.7 - Checking the efficiency of the control and limiting devices

6.7.1 - Checking the emergency stop button

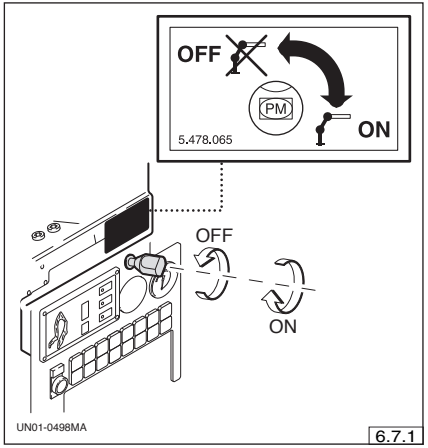
WARNING !

Check all the emergency stop buttons individually.

Conduct a test with the crane open and unloaded.

1) Press the emergency button.
2) Move the control levers in both directions and check that no crane manoeuvres are possible.
3) Turn the button to reset the crane functioning.

6.7.2 - Checking the hydraulic moment limiter



Conduct the test with the crane open and unloaded.

1) Turn the lever to pos. “OFF”; the sound signal indicates that the machine is in the “lock” condition.
2) Move the control lever in both directions to check that all movements are inhibited except for the arm retraction.
3) Turn the lever to pos. “ON” and retract the arms to restore the normal operation of the crane.

6.7.3 - Checking the rotation limiter (fig. 6.7.2)

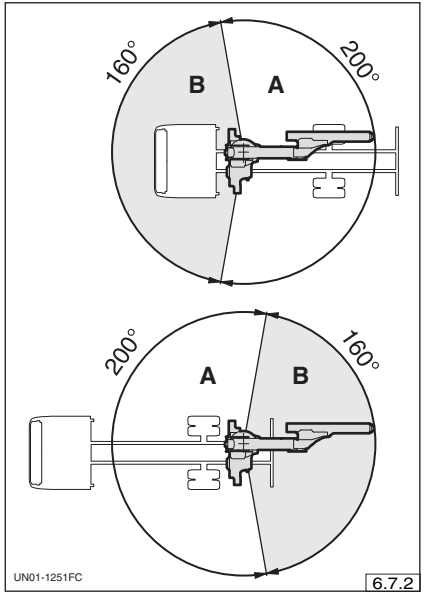
Carry out the check with a load that is higher than what is permitted for that certain sector.
The permitted load value is provided by the authorised service centre that performed the installation and checked the stability of the assembly.

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

6.7.4 - Checking the rotation block (fig. 6.7.2)

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

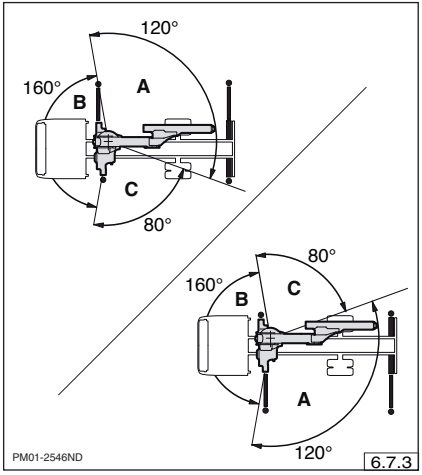
1) Turn the crane clockwise and anticlockwise to check that the device prevents the rotation of the crane into sector “B”.



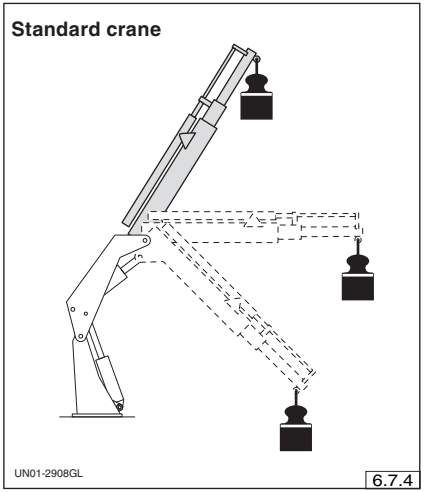
6.7.5 - Checking the rotation limiter with stabilisation control device

Carry out the test, starting from sector "A" on the right, with a load exceeding the permissible load for work sectors "B" and "C" at a certain distance (see capacities diagram).

1) Stabilise the machine.
2) Turn the crane clockwise and anticlockwise to make sure the devices prevent crane rotation in the sectors that are off-limits, i.e. "B" and "C", fig. 6.7.3).
   Repeat the test, starting from sector "A" on the left.



6.7.6 - Checking the load maintenance valve

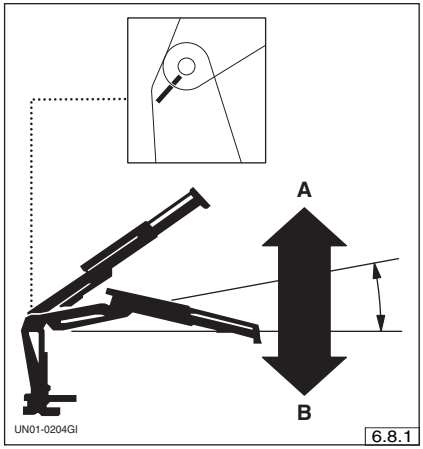


Carry out the check with a medium load.

1) Position the crane as shown in fig. 6.7.4.
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.

6.8 - Lifting and moving the load

- Lifting the load



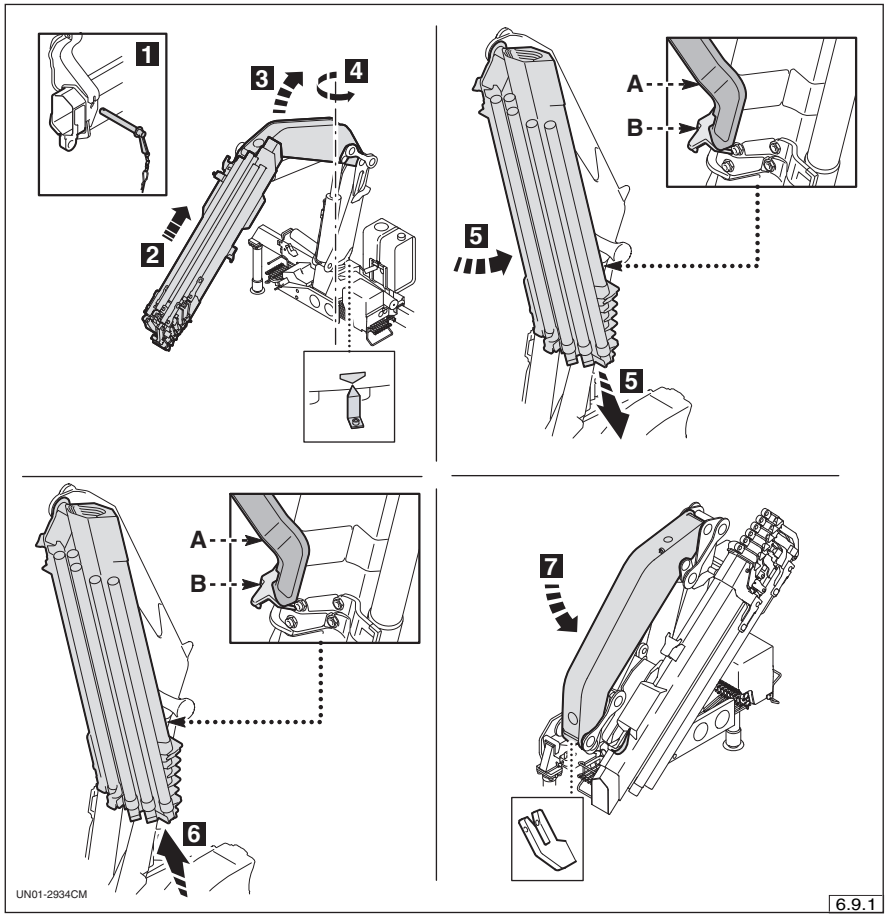
To lift large loads that require the full power of the crane, work as follows.

Zone "A":
- move mainly the main jack.

Zone "B":
- use mainly the secondary jack and the arm extension jacks.

Maximum lifting capacity is achieved with the main arm at an angle of 8° above the horizontal, as shown in the capacities diagrams.
The value of this angle can be obtained by making the two references on the column and on the main arm coincide.
To speed up the loading/unloading operations, it is preferable to use the main and secondary jack, rather than the arm extension jacks.

6.9 - Crane resting position



To place the crane in the resting position, carry out the following manoeuvres (fig. 6.9.1).

1 - Retract the manual extensions (if present) and lock them with the pin and safety plug in the minimum outreach position.
2 - Retract the crane arms.
3 - Open the main jack (almost to the limit of the stroke).
4 - Turn the crane until it fits the reference points located on the column and base.
5 - Then alternately perform the closing of the secondary jack and the extension of the arm jack so that the hook “B” goes beyond the support “A” without knocking it.

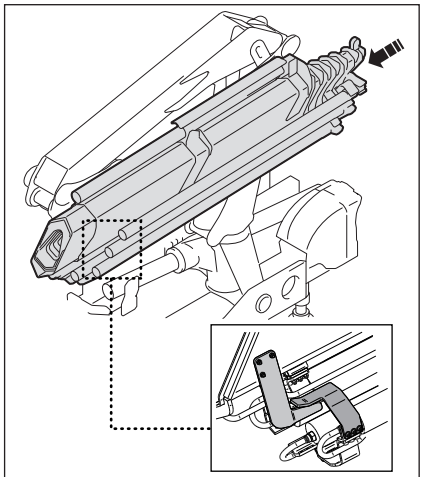
WARNING !

For the LC models: check that the LC secondary arm is fully extended.

6 - Close the extension jacks to fit the hook “B” into the support “A” in the resting position of the arm pack.
7 - Close the main jack ensuring that the main arm of the crane is positioned in the special rotation lock supports on the base.

CAUTION !

Do not perform the extension jack closing manoeuvre with the arm pack in a negative position.This may cause incorrect closing or damage to the jack supports.



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6.10 - Crane destabilisation and circulation on the roads

6.10.1- Crane destabilisation

1 - Close up the machine into the resting position.
2 - Retract all the stabiliser jacks completely.
3 - Retract all the stabiliser arms completely.
4 - Engage all the locking devices for road transit.
5 - Deactivate the power takeoff.
6 - Check that the crane is within the maximum outreach limits foreseen by the Highway Code.

6.10.2- 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.

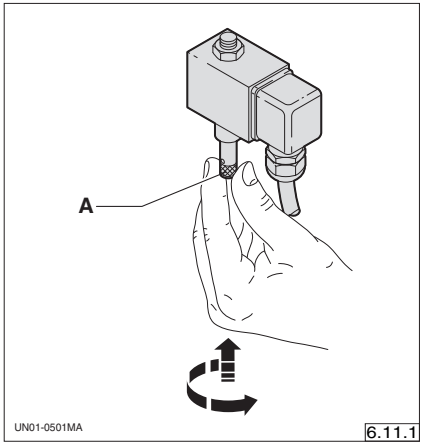
WARNING !

Check the signal lights and acoustic signals in the driver's cab to make sure that the crane is within the vehicle's outer profile.

6.11 - Lock situations and manoeuvres permitted

It is impossible to explain every lock situation that can be verified during the use of the machine.
As a general rule, manoeuvres that are permitted are those which bring the load towards the column.

6.11.1- Crane lock due to moment limiting device trigger



Moment limiting device activation causes a crane block. Manoeuvre the load to bring it closer to the column and in doing so unlock the machine.

Information

With the Tecs electronic limiter, the only manoeuvre allowed is the retraction of the hydraulic arm pack.

If the machine is locked with the hydraulically extended arms completely retracted, proceed as follows.

1 - Switch off the radio control (if featured).
2 - Remove the seals from the moment limiter shut-off device.
3 - Press and turn pawl “A” until the limit switch is reached to switch off the momentum limiter.

HAZARD !

Shutting off the moment limiter involves the risk of the truck/equipment combination tipping over, so proceed with the utmost caution. Only carry out the manoeuvres that move the load towards the column, in order to place the load on the ground.

4 - Set the load down on the ground and close the crane up into the resting position.

Information

The seals on the load limiter’s cut-off device must be replaced by an authorised workshop.

6.11.2- Winch lock

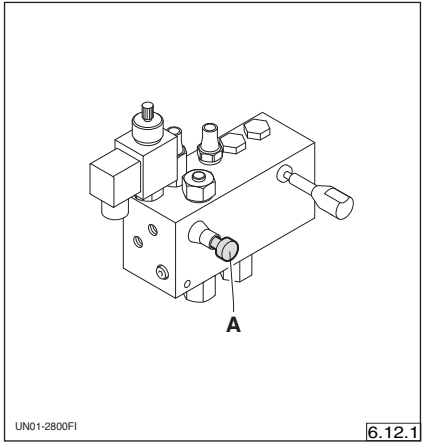
Lifting a load that exceeds the maximum allowed by the winch causes the current manoeuvre to lock.
Lower the load to get out of the lock situation and return the equipment to the starting position.
In the event that the reversal of the manoeuvre is not enough to unlock the winch, retract the crane’s arms while carrying out the reversed manoeuvre with the winch at the same time.

HAZARD !

Shutting off the moment limiter involves the risk of the truck/equipment combination tipping over, so proceed with the utmost caution. Only carry out the manoeuvres that move the load towards the column, in order to place the load on the ground.

6.12.1- Hydraulic power failure

- Hydraulic moment limiter



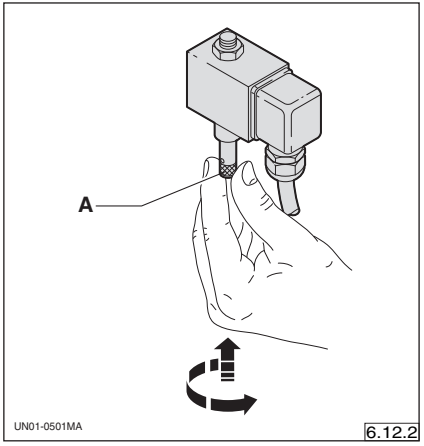
If the hydraulic power supply to the moment limiting device is cut off, proceed as follows.

1 - Remove the seals from the moment limiter shut-off device.
2 - Tighten the screw "A" fully.
3 - Set the load down on the ground and close the crane up into the resting position.

6.12.2- Electric power failure

- Hydraulic moment limiter

- Tecs electronic moment limiter



If the electric power supply to the moment limiting device is cut off, proceed as follows.

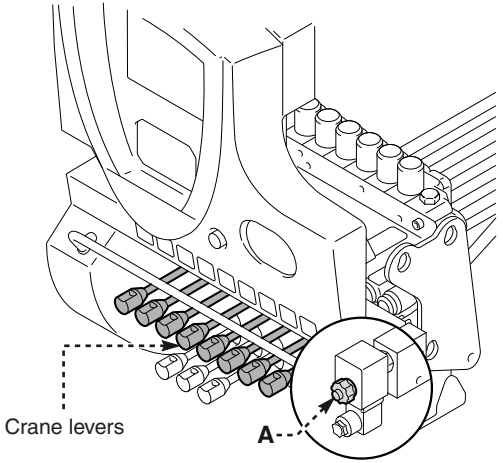
1 - Remove the seals from the moment limiter shut-off device.
2 - Press and turn pawl “A” until the limit switch is reached to switch off the moment limiter.
3 - Set the load down on the ground and close the crane up into the resting position.

Information

The seals on the momentum limiter’s cut-off device must be replaced by an authorised workshop.

6.12.3- Radio control malfunctioning

In case of electrical-electronic failure of the radio control the crane must be manoeuvred from the control post on board the machine.



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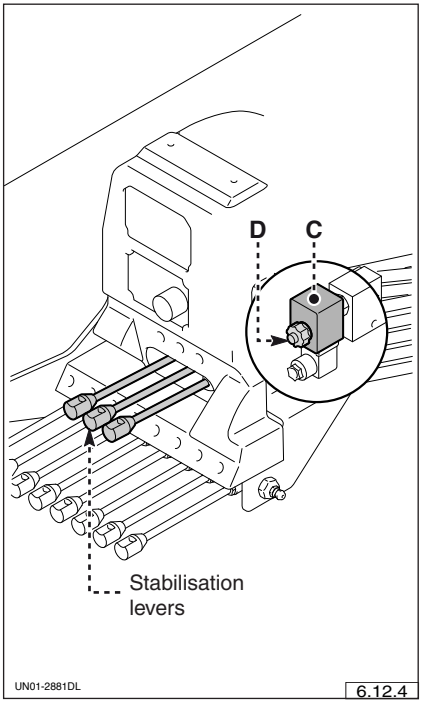
6.12.3

In the event of a radio control failure, proceed as follows to set the load down on the ground.

1 - Remove the seals from the momentum limiter shut-off device.
2 - Press and turn pawl “A” until the limit switch is reached to switch off the momentum limiter.
3 - Carry out the necessary manoeuvres to place the load on the ground from the control post on board the machine.

6.12.4- Closing the outriggers



Proceed as outlined below.

1 - Remove the seals from shut-off device “C”.
2 - Press and turn the pawl “D” until reaches the stroke limit.
3 - Close the jacks and outrigger arms.

HAZARD !

Crane use with device shut off is prohibited.
The seal on the shut off device must be replaced by the authorised service centre.

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.

CAUTION !

Before carrying out any maintenance operation check that the oil has completely cooled down.

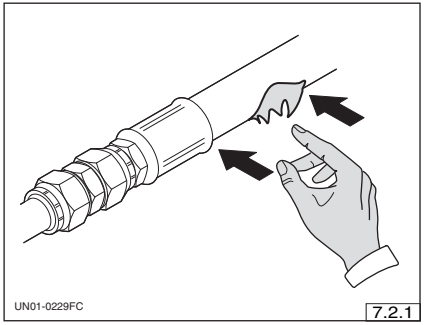
Regular checks Checks to be carried out by the operator						
Component	Operation	Every 10 hours	Every 100 hours	Every 500 hours (6 months)	Every 1000 hours (1 year)	Para.
Pipes and hoses	Check	•				7.2
Hosing guard	Check integrity	•				7.3
Connections	Check for leaks	•				7.4
Plates	Check integrity	•				2.4
Hook	Check	•				3.1
Hydraulic oil	Check	•				7.5
Control and limiting devices	Check	•				2.3
Structure	Inspection	•				7.6
Winch cable	Check	•				7.8
	Lubrication		•			7.9
Pulleys	Check integrity	•				7.7
	Running check	•				7.7
	Lubrication		•			7.21
Pin lock	Check		•			7.10
Crane stay rod	Check		•			7.11
Supplementary crossmembers	Check					7.13
Crane	Cleaning		•			7.16
Pins	Lubrication		•			7.21
Arms	Lubrication		•			7.15
Sliding blocks	Lubrication		•			7.21
Rotation block	Lubrication		•			7.21
Control levers	Lubrication		•			7.21
Jack sliding blocks	Check		•			7.12

Regular checks Checks to be carried out by the operator						
Component	Operation	Every 10 hours	Every 100 hours	Every 500 hours (6 months)	Every 1000 hours (1 year)	Para.
Filters	Check	•				7.14
	Replacement			•		7.14
Radio control batteries	Replacement				•	6.2

Regular checks Checks that must be carried out at an authorised service centre						
Component	Operation	Every 200 hours	Every 500 hours (6 months)	Every 1000 hours (1 year)	Every 2000 hours (2 years)	Every 4000 hours (4 years)
Hydraulic oil	Check, replacement			•		
	Check contamination		•			
Control and limiting devices	Check			•		
Supplementary cross-smembers	Nut and bolt tightness test		•			
Structure	Inspection		•			
Sliding blocks	Replacement					•
Valves	Calibration		•			
Manual extensions	Adjustment		•			
Winch	Lubrication check	•				
	Lubrication replacement (*)		•			
	Check brake			•		
Hydraulic system	Washing					•

(*) For oil bath lubricated winches

7.2 - Checking the condition of the hoses

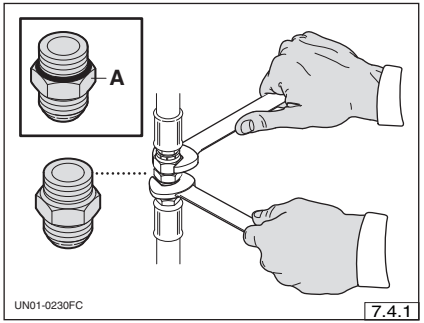


Check the fastening of the pipe connection and the condition of the hose. If the pipe shows any signs of ageing, breakage, bulging, abrasion, etc., it must be replaced.

7.3 - Checking the hosing guards

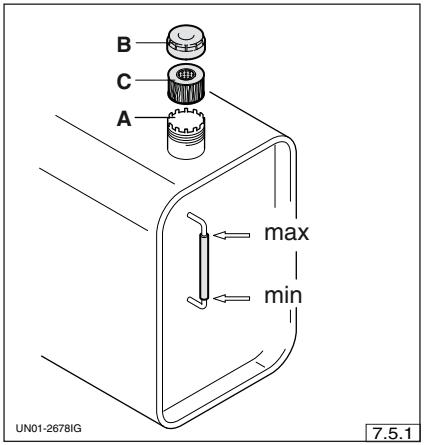
These guards protect the operator from oil spurts in the event of a breakage in the hosing.
If they are worn or broken, they must be replaced.

7.4 - Checking for oil leaks from the hydraulic system



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

7.5 - Checking the hydraulic oil level



Check the oil level daily, which must be between the minimum and maximum marks.
If necessary top up via inlet "A" , remembering to first remove cap "B" and breather filter "C".
Replace breather filter “C” as regularly as the oil filters (as specified in the maintenance schedule (see “Routine checks”).
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.

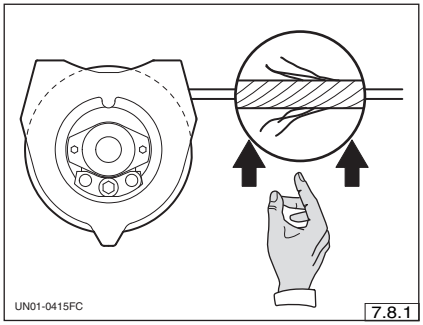
7.6 - Structure inspection

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

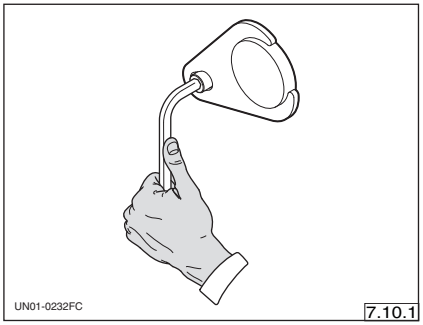


According to the law, the cables must be checked every three months by expert personnel unless otherwise specified by the manufacturer. The results of these checks must be recorded in the special check register in the appendix of this manual. The cable must be carefully examined for any wear which could 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

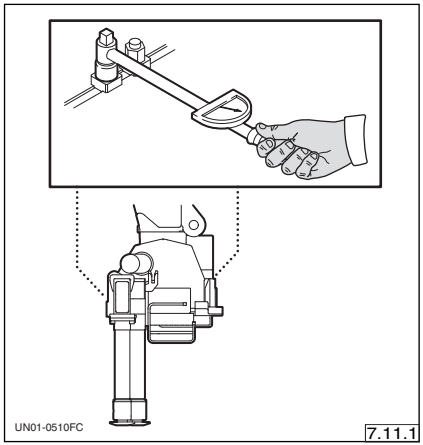
The lubrication must be carried out with particular care to protect the cable from corrosive external elements and to reduce the friction with the pulleys.
For lubricant specifications, see para. “Oils and lubricants”.

7.10 - Checking the pin locks



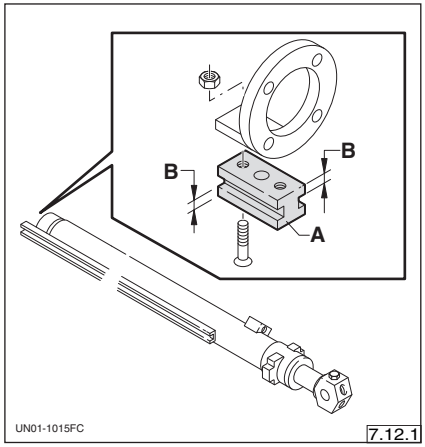
Check the fixing screws of the pin locks. If they have loosened, tighten the screws to the tightening torque of 4 daNm (30 lbf - ft).

7.11 - Checking the anchorage stay rods



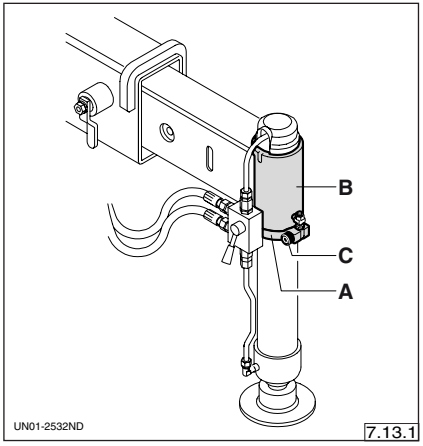
Check that the anchorage stay rods are tightened; if not, tighten the nuts to the tightening torque of 70 daNm (516 lbf - ft).

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 - Checking the supplementary crossmember



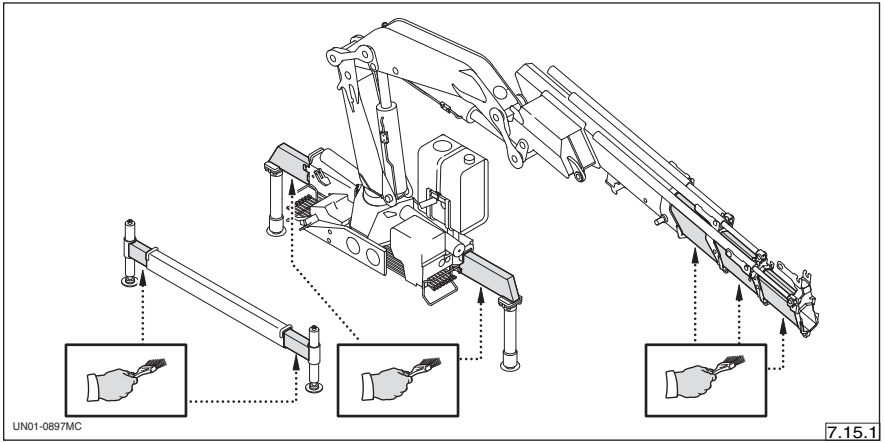
Check visually that the outrigger jacks have not moved upwards and that, with the jacks at rest, there is no play between locking collar "A" and sleeve "B". If this is not the case, contact an authorised service centre.
Periodically check fastening screws "C" on the outrigger jacks.
If loose, tighten the screws with a torque of 20 daNm (147 lbf - ft).

7.14 - Filters

Information

Carry out the clogging check and replace filter cartridges at the intervals specified in the maintenance schedule and in general after any maintenance on the hydraulic system (see "Filters replacement").

7.15 - Lubrication of the crane arms and stabilisers



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

- Lubricating the crane arms
Extend the outrigger arms fully and grease all the upper, lower and side surfaces.

- Lubricating the outrigger arms
Extend the outrigger arms fully and grease all the side surfaces.

7.16 - 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.

7.17 - 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.

7.18 - 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 that all the control and limiting devices work properly;
9) carry out the maintenance operations in accordance with the planned maintenance schedule (see para. “Regular checks”).

7.19 - Scrapping and disposal

The demolition of the machine must be carried out by specifically qualified personnel with the necessary hydraulic and mechanical skills.
The components removed must be sorted according to the type of materials they contain and in compliance with the laws in force concerning waste collection, sorting and disposal.
With reference to European directives 2002/95 EC, 2002/96 EC, and 2003/108 EC (Waste from Electrical and Electronic Equipment), the electric and electronic parts, marked with the relative symbol, must be disposed of via a specific collection centre or returned to the dealer, still fitted, when purchasing a new machine.
Waste from electrical and electronic equipment can contain substances which may be environmentally hazardous and pose health risks, therefore you are advised to dispose of it correctly.
Illegal disposal of electric and electronic components is punishable by law with sanctions applicable according to the law in force where the parts are dumped.

7.20 - Oils and lubricants

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

i **Information**

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

Oil working temperature -30 ÷ +140 °C (-22 °F ÷ 284 °F)

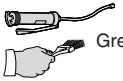
Lubricant	**AGIP** (1)	**MOBIL**	**SHELL**	**TOTAL**	**ESSO**
Hydraulic oil	OSO 32	DTE OIL 24	TELLUS OIL 32	AZOLLA ZS 32	NUTO H 32
Grease	GREASE PV 2	-	RETINAX HD 2	-	-

(**1**) Lubricant used by the manufacturer the first time the system is filled.

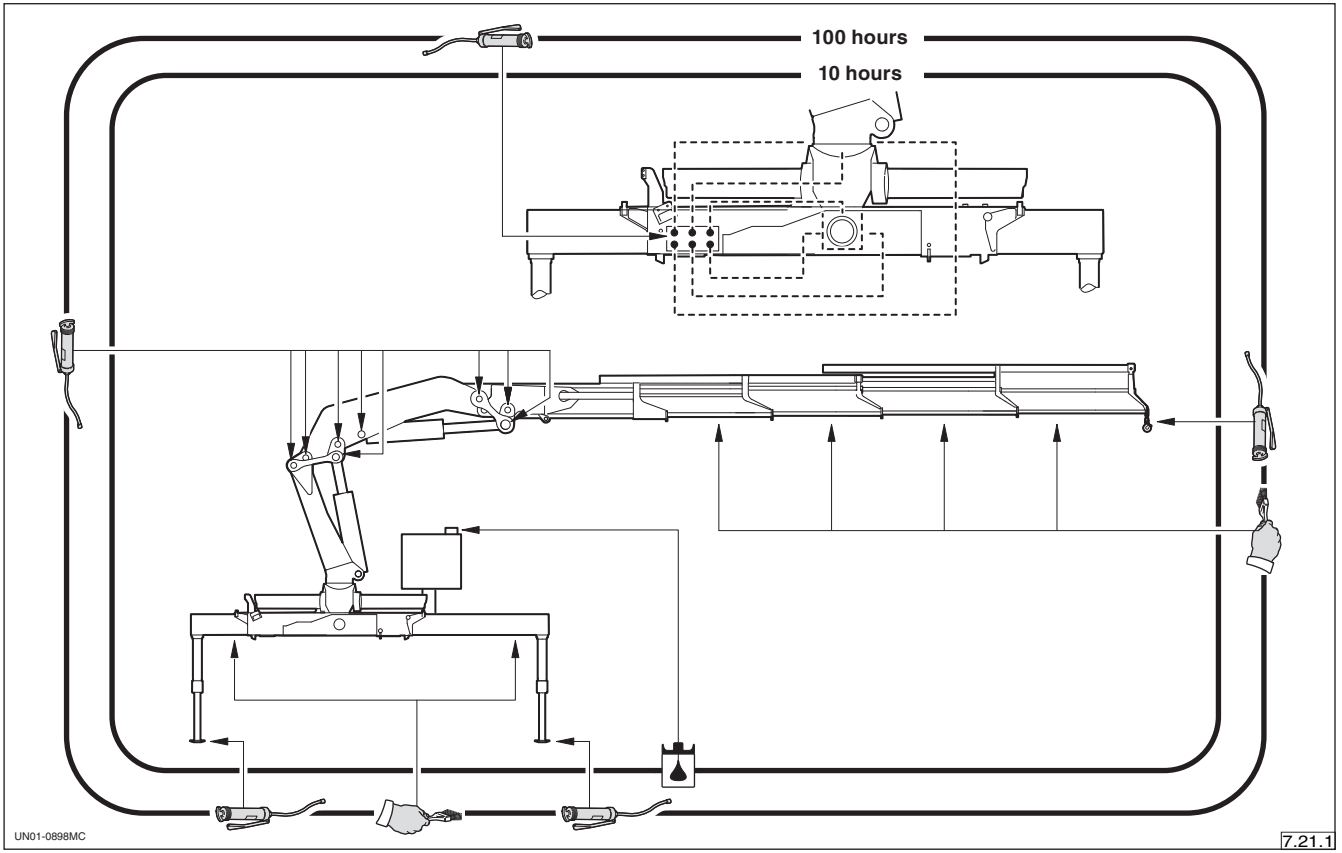
Intensive use (saline environment)
oil working temperatures -30 ÷ +140 °C (-22 °F ÷ 284 °F)

Lubricant	**AGIP**	**MOBIL**	**SHELL**	**TOTAL**	**ESSO**
Hydraulic oil	OSO 32	DTE OIL 22	TELLUS OIL 22	AZOLLA ZS 22	NUTO H 22
Grease	RACOL SHAPPIRE AQUA2	-	-	-	-

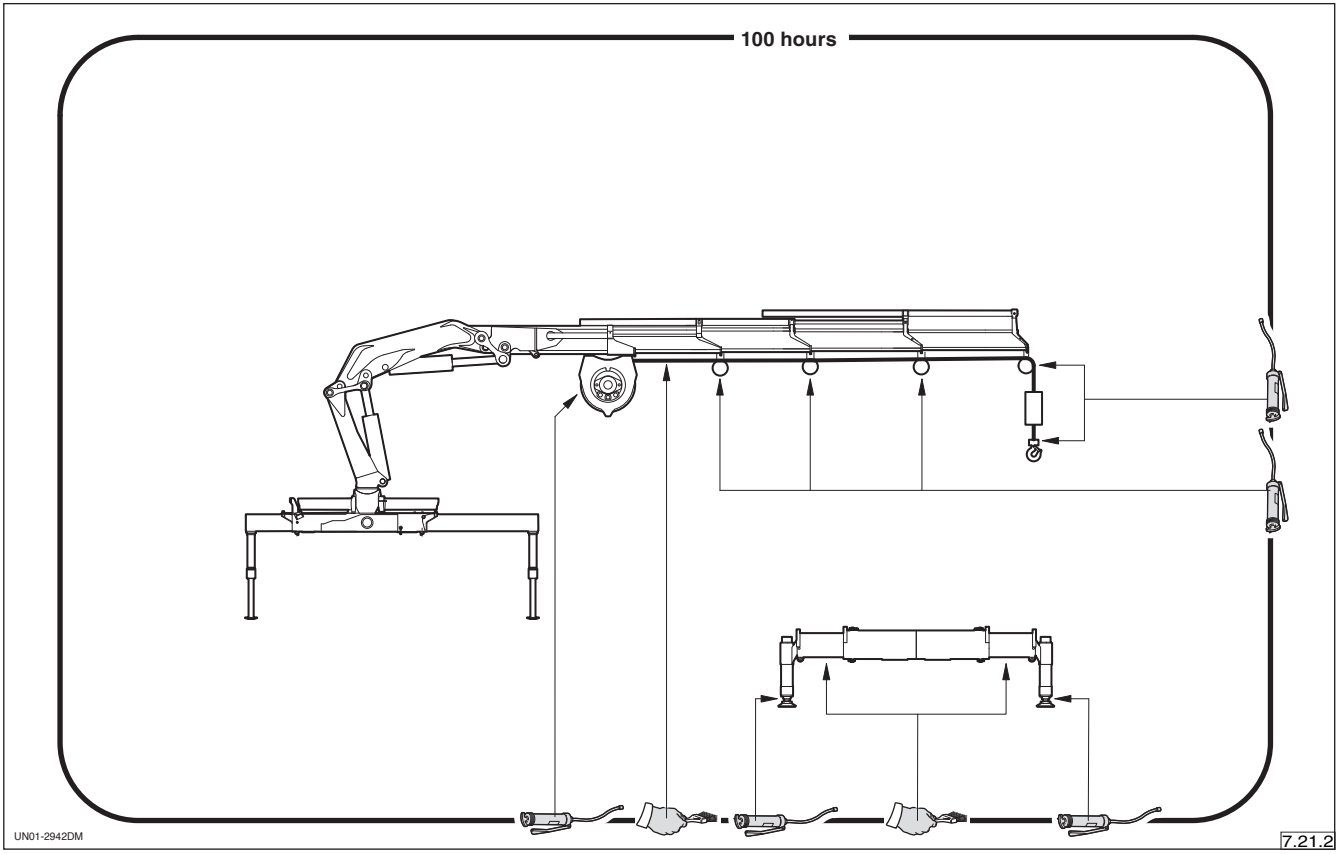
7.20.1- Lubricant comparison table

Lubricant		Oil working temperatures		
		-30 ÷ +140 °C		
Hydraulic oil	ISO 3348	ISO VG 32	ISO VG 46	ISO VG 22
 Grease	NLGI 2 calcium/lithium			

7.21 - Greasing and lubrication diagrams



Symbols = Hydraulic oil Grease Grease



Symbols = Hydraulic oil Grease Grease

8 Fault, cause, remedy

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

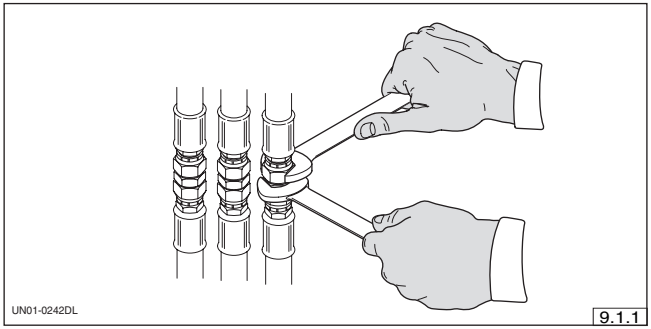
Fault	Cause possible	Remedy
The crane boom cannot hold the load and kreep down considerably	The pilot operated check valve fitted on the lift cylinder in question leaks	Have the valve checked and/or replaced by an authorized repair workshop
	Oil leakage inside the cylinder concerned	Have the seals inside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

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

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

9 Spare part replacement

9.1 - Hose replacement



HAZARD !

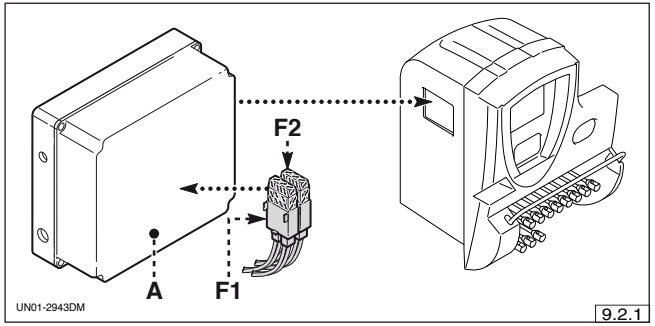
The hosing must be replaced with the hydraulic system depressurised and when the oil has completely cooled down.

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.

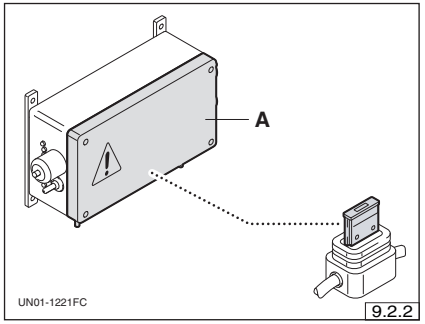
9.2.1 - Connector block fuse replacement



Remove the cap “A” and replace the interrupted fuse.

Pos.	Protected circuit	Ampére
F1	Main circuit (electronic control units, radio)	15
F2	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.

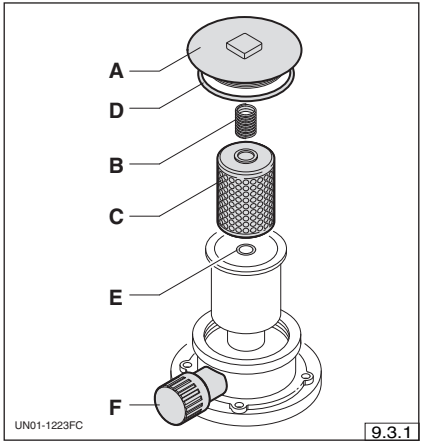
9.3 - Filters replacement

CAUTION !

The filters must be replaced with the hydraulic system depressured and the oil completely cooled.

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

9.3.1 - Replacing the exhaust filter

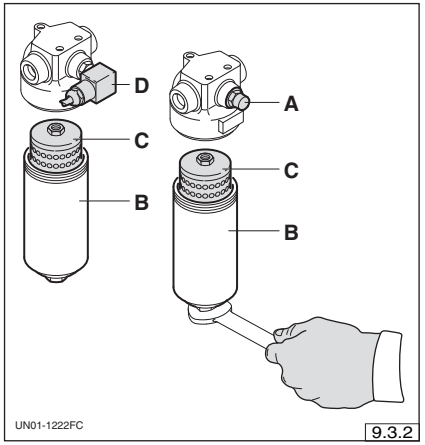


Replace the filtering cartridge, as it is made of non-washable material, by the expiry date provided for in the planned maintenance schedule (see para. “Regular checks”).

1 - Carefully clean the external surfaces of the filter;
2 - unscrew the cap “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.

9.3.2 - Delivery filter replacement



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.

1 - Turn off the tank tap.
2 - Carefully clean the external surfaces of the filter;
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 (73,7 lbf - ft).
Turn on the tank tap.

- Overall dimensions

A	mm	ft
Vers.22	2505	8'2"
Vers.23	2505	8'2"
Vers.24	2505	8'2"
Vers.25	2520	8'3"

B	mm	ft
Vers.22	2370	7'9"
Vers.23	2370	7'9"
Vers.24	2370	7'9"
Vers.25	2370	7'9"

C	mm	ft
Fissi	2250	7'5"
Rotanti	2300	7'7"

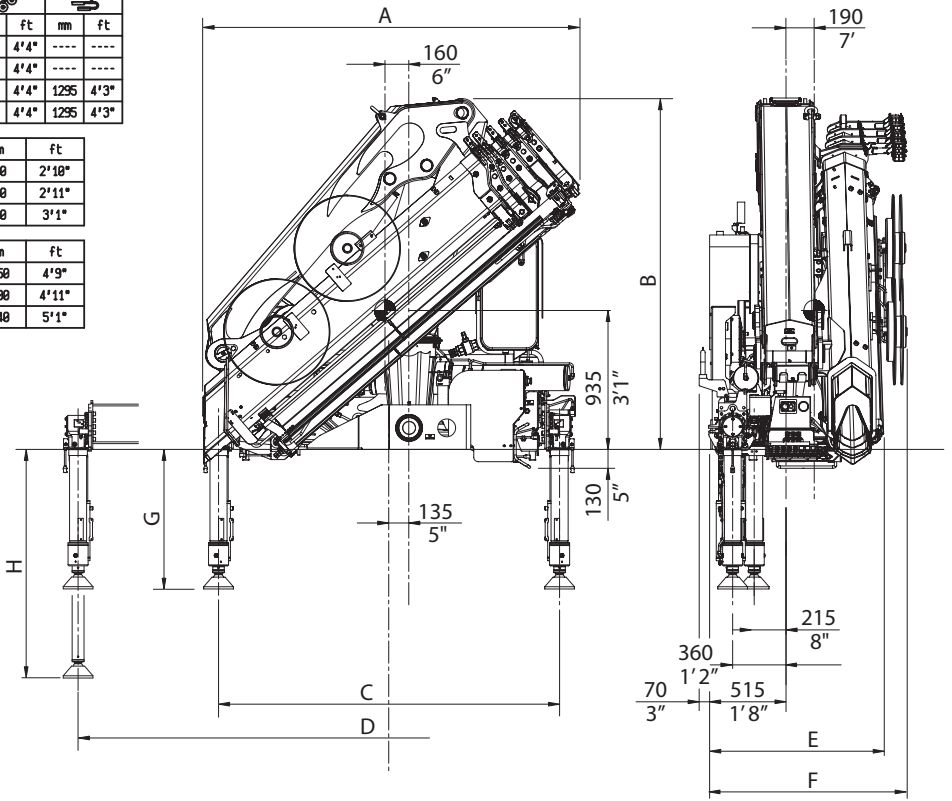
D	mm	ft
STD	5465	17'11"
STD+ROT	5520	18'1"
XL	6545	21'6"
XL+ROT	6600	21'8"
SXL	7345	24'1"
SXL+ROT	7400	24'3"

E	mm	ft
Vers.22	1125	3'8"
Vers.23	1125	3'8"
Vers.24	1125	3'8"
Vers.25	1175	3'10"

F	mm	ft	mm	ft
Vers.22	1330	4'4"	----	----
Vers.23	1330	4'4"	----	----
Vers.24	1330	4'4"	1295	4'3"
Vers.25	1330	4'4"	1295	4'3"

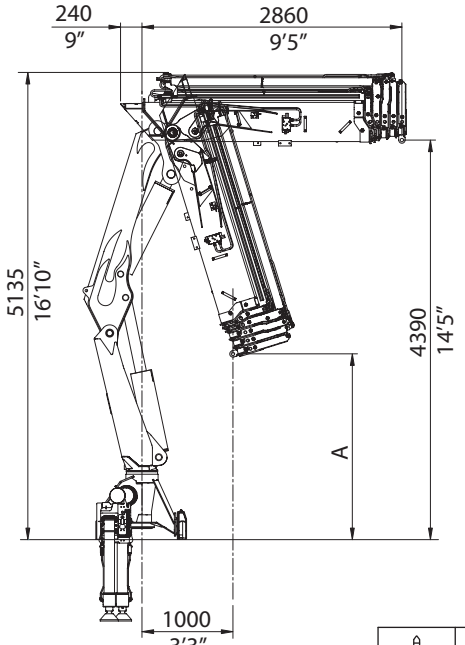
G	mm	ft
Fissi A	860	2'10"
Fissi B	900	2'11"
Rotanti	940	3'1"

H	mm	ft
Fissi A	1460	4'9"
Fissi B	1500	4'11"
Rotanti	1540	5'1"



5.188.335

- Overall dimensions of standard basic machine



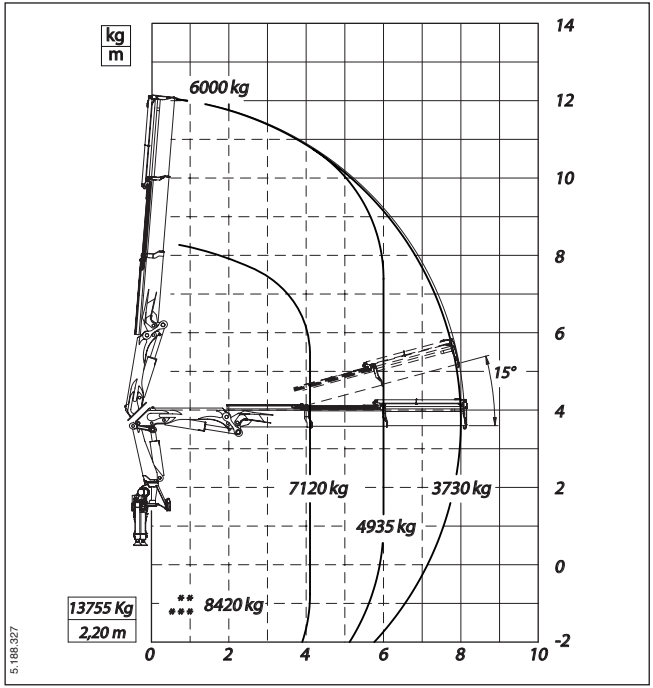
A	mm	ft
Vers.22	2300	7′7"
Vers.23	2255	7′5"
Vers.24	2155	7′1"
Vers.25	2045	6′9"

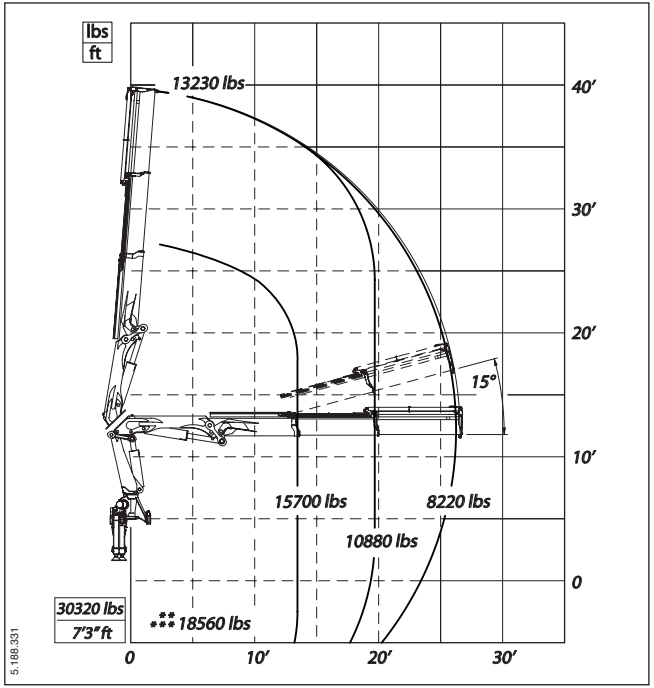
5.188.336

Max. lifting momentum	kNm	298	ft lbs	219880
	tm	30,4	/	/
Hydraulic outreach:				
Horizontal	m	8,10	ft	26'7"
Vertical	m	12,10	ft	39'8"
Outreach with manual extensions:				
Horizontal	m	-	ft	-
Vertical	m	-	ft	-
Hydraulic system:				
Recommended capacity	l/min	80	gals/min	21
Maximum pressure	Mpa	33,5	psi	4860
Oil tank capacity	l	150	gals	40
Rotation unit:				
Rotation angle	°	410	°	410
Rotation torque	kNm	44,0	ft lbs	32450
Weight of standard crane without oil tank	kg	2930	lbs	6460
Weight of LC crane without oil tank	kg	-	lbs	-
Maximum power absorbed by the hydraulic pump	kW	49,6	HP	67
Maximum force exerted on ground by stabilisers	kN	145	lbs	32600
Specific operating pressure of each stabiliser with Ø 200 mm (8") disk	Mpa	4,6	psi	675
Arm pack extension time for standard machine (Plus device off)	sec.	32	sec.	32
Arm pack extension time for LC machine (Plus device off)	sec.	-	sec.	-
“Mobile” hook maximum load capacity - Hook capacity	kg	11500	lbs	25350

- Capacities diagram

PM 32522 S PX





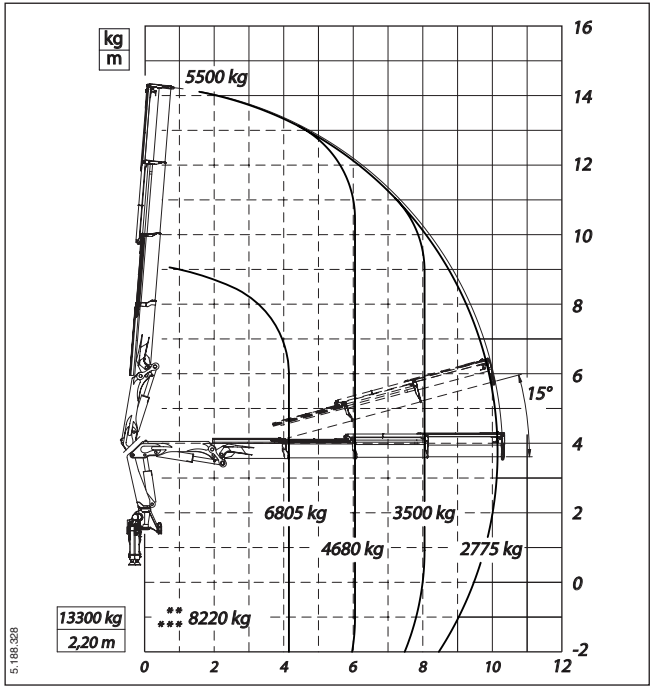
** Maximum capacity at mobile hook
*** Maximum capacity from horizontal to vertical
Note: the performances stated are obtained with the main arm inclined to 8°

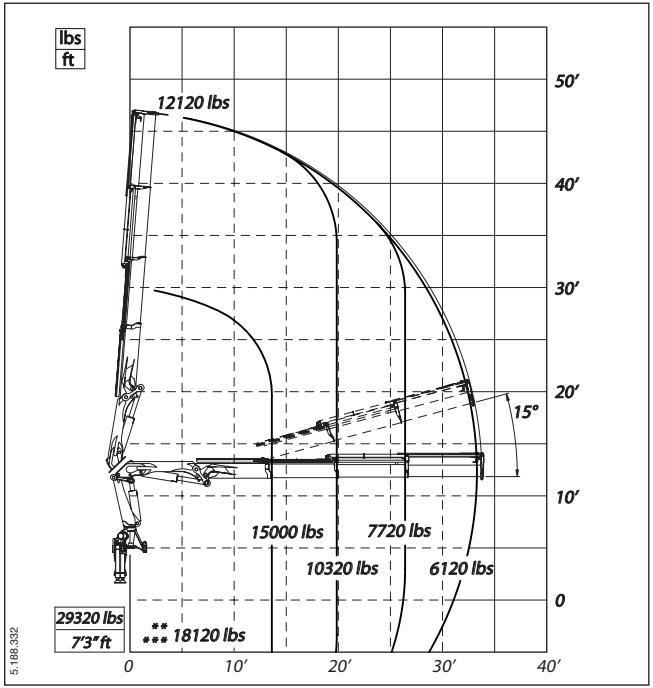
** Maximum capacity at mobile hook
*** Maximum capacity from horizontal to vertical
Note: the performances stated are obtained with the main arm inclined to 8°

Max. lifting momentum	kNm	287	ft lbs	211650
	tm	29,3	/	/
Hydraulic outreach:				
Horizontal	m	10,30	ft	33'10"
Vertical	m	14,25	ft	46'9"
Outreach with manual extensions:				
Horizontal	m	-	ft	-
Vertical	m	-	ft	-
Hydraulic system:				
Recommended capacity	l/min	80	gals/min	21
Maximum pressure	Mpa	33	psi	4790
Oil tank capacity	l	150	gals	40
Rotation unit:				
Rotation angle	°	410	°	410
Rotation torque	kNm	44,0	ft lbs	32450
Weight of standard crane without oil tank	kg	3115	lbs	6870
Weight of LC crane without oil tank	kg	-	lbs	-
Maximum power absorbed by the hydraulic pump	kW	48,9	HP	66
Maximum force exerted on ground by stabilisers	kN	145	lbs	32600
Specific operating pressure of each stabiliser with Ø 200 mm (8") disk	Mpa	4,6	psi	675
Arm pack extension time for standard machine (Plus device off)	sec.	39	sec.	39
Arm pack extension time for LC machine (Plus device off)	sec.	-	sec.	-
“Mobile” hook maximum load capacity - Hook capacity	kg	11500	lbs	25350

- Capacities diagram

PM 32523 S PX





** Maximum capacity at mobile hook

*** Maximum capacity from horizontal to vertical

Note: the performances stated are obtained with the main arm inclined to 8°

** Maximum capacity at mobile hook

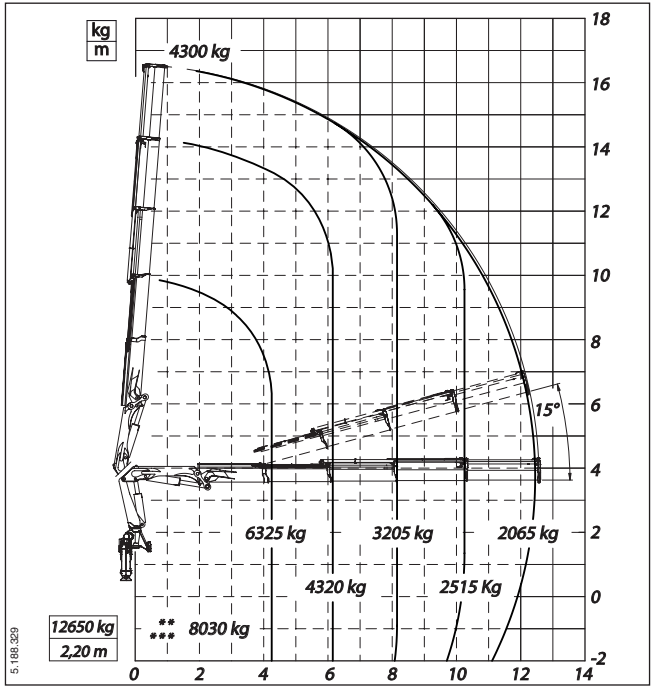
*** Maximum capacity from horizontal to vertical

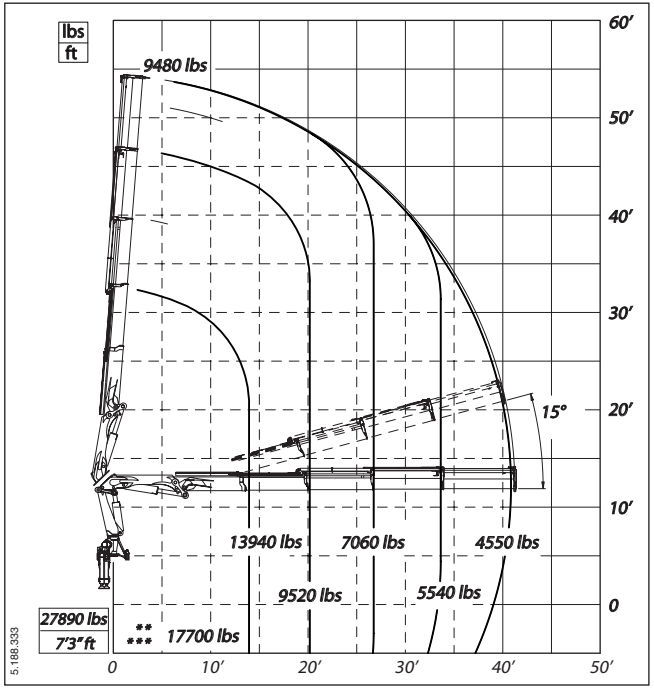
Note: the performances stated are obtained with the main arm inclined to 8°

Max. lifting momentum	kNm	273	ft lbs	201290
	tm	27,8	/	/
Hydraulic outreach:				
Horizontal	m	12,65	ft	41'6"
Vertical	m	16,50	ft	54'2"
Outreach with manual extensions:				
Horizontal	m	-	ft	-
Vertical	m	-	ft	-
Hydraulic system:				
Recommended capacity	l/min	80	gals/min	21
Maximum pressure	Mpa	32	psi	4640
Oil tank capacity	l	150	gals	40
Rotation unit:				
Rotation angle	°	410	°	410
Rotation torque	kNm	44,0	ft lbs	32450
Weight of standard crane without oil tank	kg	3285	lbs	7245
Weight of LC crane without oil tank	kg	-	lbs	-
Maximum power absorbed by the hydraulic pump	kW	47,4	HP	64
Maximum force exerted on ground by stabilisers	kN	145	lbs	32600
Specific operating pressure of each stabiliser with Ø 200 mm (8") disk	Mpa	4,6	psi	675
Arm pack extension time for standard machine (Plus device off)	sec.	46	sec.	46
Arm pack extension time for LC machine (Plus device off)	sec.	-	sec.	-
“Mobile” hook maximum load capacity - Hook capacity	kg	11500	lbs	25350

- Capacities diagram

PM 32524 S PX





** Maximum capacity at mobile hook

*** Maximum capacity from horizontal to vertical

Note: the performances stated are obtained with the main arm inclined to 8°

** Maximum capacity at mobile hook

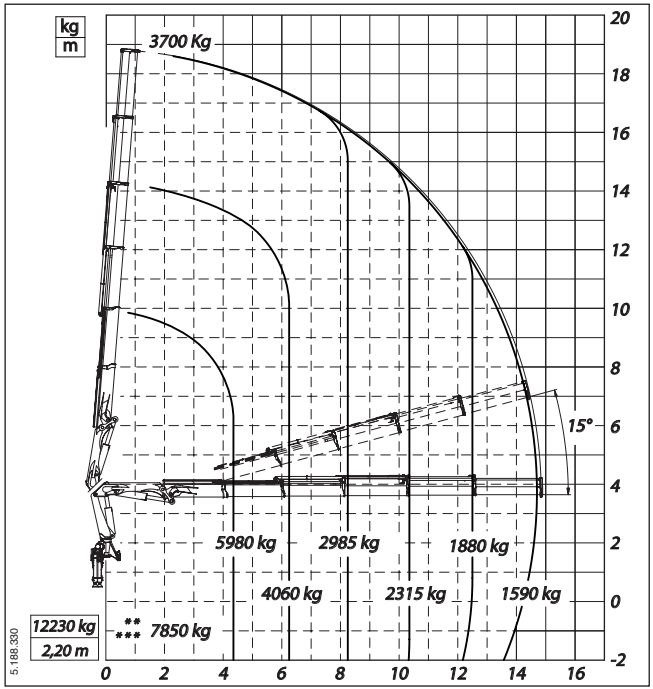
*** Maximum capacity from horizontal to vertical

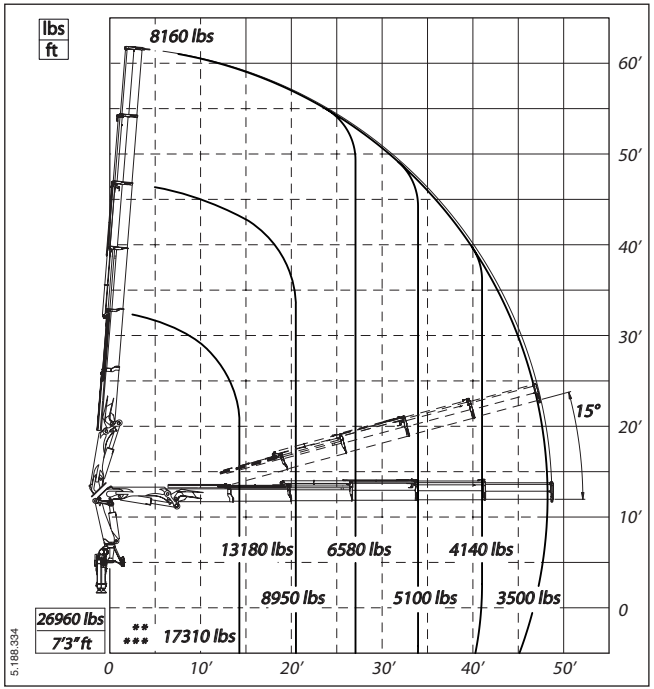
Note: the performances stated are obtained with the main arm inclined to 8°

Max. lifting momentum	kNm	264	ft lbs	194640
	tm	26,9	/	/
Hydraulic outreach:				
Horizontal	m	14,85	ft	48'9"
Vertical	m	18,75	ft	61'6"
Outreach with manual extensions:				
Horizontal	m	-	ft	-
Vertical	m	-	ft	-
Hydraulic system:				
Recommended capacity	l/min	80	gals/min	21
Maximum pressure	Mpa	31,5	psi	4570
Oil tank capacity	l	150	gals	40
Rotation unit:				
Rotation angle	°	410	°	410
Rotation torque	kNm	44,0	ft lbs	32450
Weight of standard crane without oil tank	kg	3445	lbs	7595
Weight of LC crane without oil tank	kg	-	lbs	-
Maximum power absorbed by the hydraulic pump	kW	46,7	HP	63
Maximum force exerted on ground by stabilisers	kN	145	lbs	32600
Specific operating pressure of each stabiliser with Ø 200 mm (8") disk	Mpa	4,6	psi	675
Arm pack extension time for standard machine (Plus device off)	sec.	53	sec.	53
Arm pack extension time for LC machine (Plus device off)	sec.	-	sec.	-
“Mobile” hook maximum load capacity - Hook capacity	kg	11500	lbs	25350

- Capacities diagram

PM 32525 S PX





** Maximum capacity at mobile hook
*** Maximum capacity from horizontal to vertical
Note: the performances stated are obtained with the main arm inclined to 8°

** Maximum capacity at mobile hook
*** Maximum capacity from horizontal to vertical
Note: the performances stated are obtained with the main arm inclined to 8°

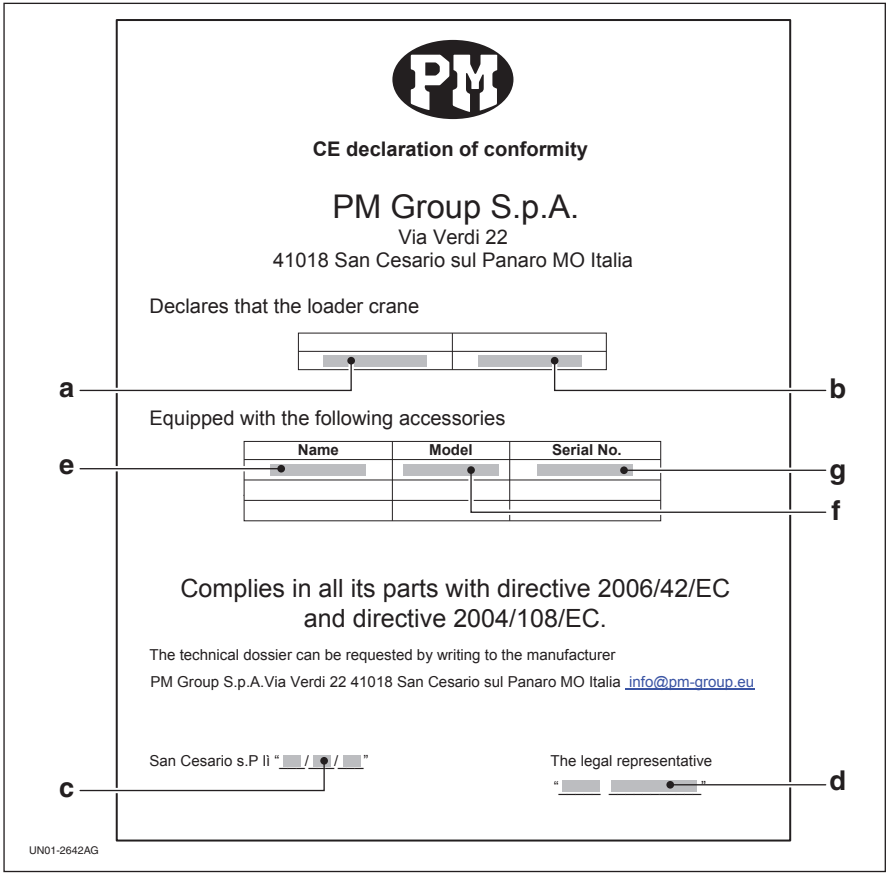
- “CE” declaration of conformity of the machine

The figure shows a copy of the “CE” declaration of conformity; the original is issued by the manufacturer together with this manual.

a) Crane model
b) Serial number
c) Date of declaration
d) Signature of the person authorised to write the declaration

If the machine is equipped with accessories.

e) Accessory name
f) Accessory model
g) Accessory serial number



- Register of the periodic technical inspections of the control and limiting devices

Crane model		Year of manufacture	
Serial number		Year of installation	

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

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

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

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

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

- EXTRAORDINARY MAINTENANCE check register

Description of the operations carried out and/or parts replaced	Actual hours of work (hour meter)	Servicing date	Stamp and signature of authorised service centre

NB: after servicing make sure that this register has been correctly filled in and stamped by the PM GROUP authorised service centre.

Description of the operations carried out and/or parts replaced	Actual hours of work (hour meter)	Servicing date	Stamp and signature of authorised service centre

NB: after servicing make sure that this register has been correctly filled in and stamped by the PM GROUP authorised service centre.

Description of the operations carried out and/or parts replaced	Actual hours of work (hour meter)	Servicing date	Stamp and signature of authorised service centre

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Description of the operations carried out and/or parts replaced	Actual hours of work (hour meter)	Servicing date	Stamp and signature of authorised service centre

NB: after servicing make sure that this register has been correctly filled in and stamped by the PM GROUP authorised service centre.

- CABLES AND CHAINS quarterly check register

Conditions	Inspector's observations	Inspection date	Inspector's signature

Conditions	Inspector's observations	Inspection date	Inspector's signature

Conditions	Inspector's observations	Inspection date	Inspector's signature

Conditions	Inspector's observations	Inspection date	Inspector's signature

NOTES

- Maintenance intervention confirmation

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

At 500 hours

. Hydraulic oil pollution check ☐
. Structural inspection ☐
. Valves calibration ☐
. 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 ☐
. Inspection of control and limiting devices ☐

stamp signature

At 2000 hours

. Hydraulic oil replacement ☐
. Structural inspection ☐
. Valves calibration ☐
. Manual extension adjustments ☐
. Reduction gears oil replacement ☐
. Inspection of control and limiting devices ☐

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 ☐
. Inspection of control and limiting devices ☐

stamp signature

At 4000 hours

. Hydraulic oil replacement ☐
. Structural inspection ☐
. Valves calibration ☐
. Manual extension adjustments ☐
. Reduction gears oil replacement ☐
. Inspection of control and limiting devices ☐
. 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 ☐
. Inspection of control and limiting devices ☐

stamp signature

At 7000 hours

. Hydraulic oil replacement ☐
. Structural inspection ☐
. Valves calibration ☐
. Manual extension adjustments ☐
. Reduction gears oil replacement ☐
. Inspection of control and limiting devices ☐

stamp signature

At 7500 hours

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

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At ..... hours

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At 8000 hours

. Hydraulic oil replacement ☐
. Structural inspection ☐
. Valves calibration ☐
. Manual extension adjustments ☐
. Reduction gears oil replacement ☐
. Inspection of control and limiting devices ☐
. Runner replacement ☐
. Hydraulic system washing ☐

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At ..... hours

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