7/A
Accessories
Winch

The winch is an accessory that may be applied to the crane (or to the fly-jib) making it possible to move loads by winding/unwinding a cable around a rotating drum equipped with a hydraulic safety brake. The accessory thereore makes it possible to improve the possibilities movements of the crane. Since it is a hydraulic device, its application requires that the crane be equipped to support it and it must be connected to rapid fittings and electric.

The fitting of this accessory onto the crane must be carried out according to general safety rules stated in chapter "2 - Safety rules and notes".

The accessories described in this section are **a general list.** Refer to the specific instructions according to the crane model, version and configuration purchased.

In case of difficulties in identifying the exact configuration purchased or for explanations regarding the instructions for use, **do not hesitate to contact** your dealer / or your service network.

General description

The main installation elements include:

winch (**A**)

transmissions (**B**): applied in cetain points of the crane to guide the cable correctly **(ThEY MAY NOT BE pROVIDED)**

transmission head (**c**): applied to the end ofe the crane, to transmit the crane cable vertically to the load

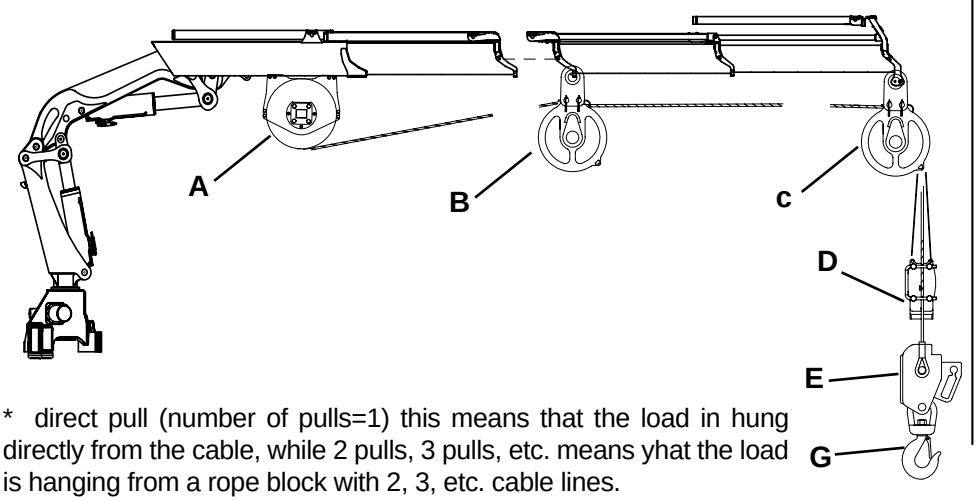
electric and-stroke device (**D**): fitted on EEC-cranes only

counter-weight (**E**): applied to the end of the cable, to keep yhe cable under constant tension so prevent it from being damaged while winding/unwinding, and especially in the absence of handing load

rope block (**F**): this allows lifting with a number of pulls* greater yhan one

hook (**G**)

Transmission head, transmissions and rope block are all marked with their own weight if greater than 30Kg.



* direct pull (number of pulls=1) this means that the load in hung directly from the cable, while 2 pulls, 3 pulls, etc. means yhat the load is hanging from a rope block with 2, 3, etc. cable lines.

Driving on roads

Before driving on roads, make sure the end of the cable is acrefully fastened to a sufficient support, and slightly taut.

Rope block, transmission head, transmissions and pins must be positioned and carefully fastened to avoid creating a hazard. The possibility of keeping these parts connected to the crane while driving depends on the configuration and the maximum overall dimensions allowed by current regulatons. It is the operator's responsability to ensure compliance with these regulations and make sure that the driving configuration is correct and safe.

Movement

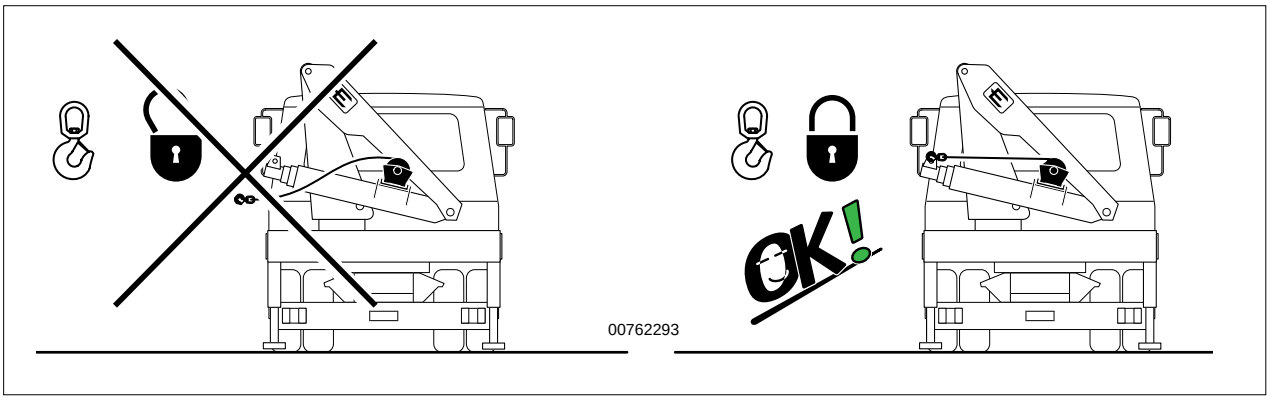
The choice of lifting means to be used is up to the operator, and depends on the weight of the parts (rope block, transmissions, etc.). For connection points, you may use hoks and rings provided on the part as long as you use protective gloves.

Controls description

The logic and function of each lever is indicated by schematic symbols at each control station (chapter "**4 - controls and instruments**"). For a description, refer to chapter "**4 - controls and instruments**".

Opening and closing the crane with winch

The operations for opening and closing the crane remain the same, the only thing to keep in mind is to make sure that there is no interference between the crane and the various winch components. In addition, once the extensions have been retracted, you must fasten the end of the rope to an appropriate support and keep it slightly taut.

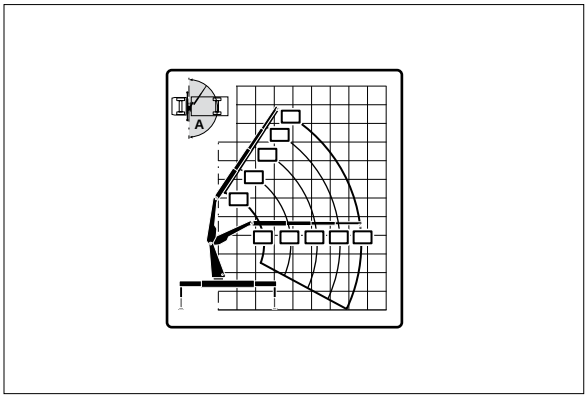


Working conditions

Loading diagram and configurations

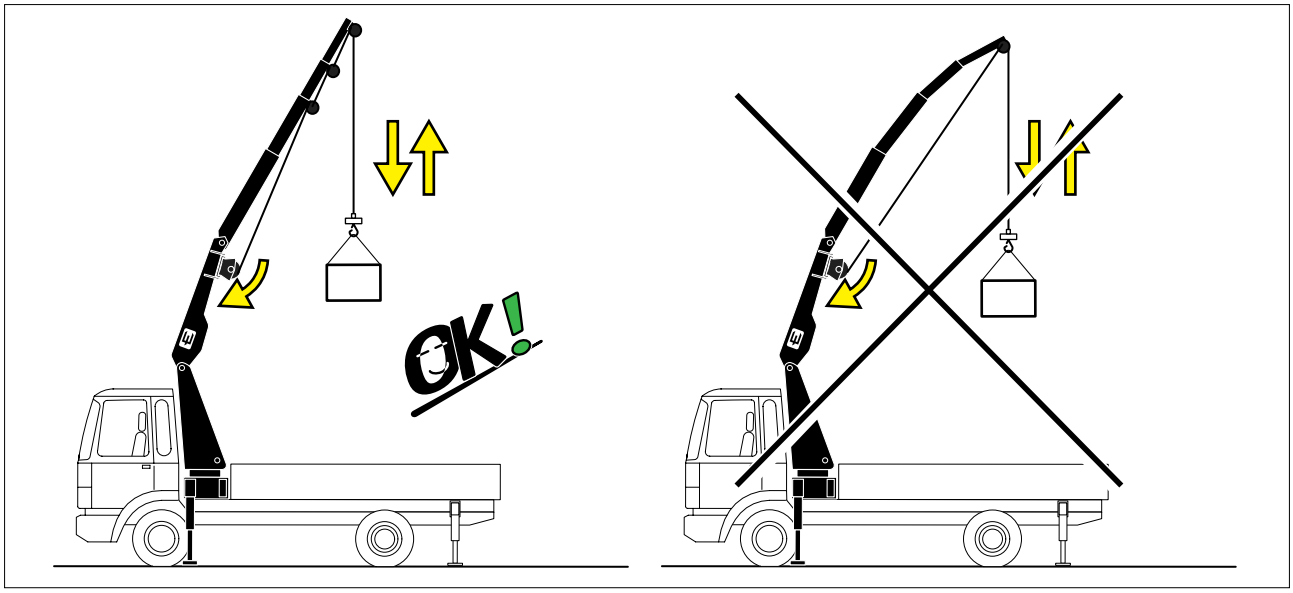
It is necessary to observe the loading diagram for lifting with winch, in particular as concerns the number of the pulls of the cable, the position of the transmissions, the configuration and the outreaches allowed.

It is the operator's responsability to ensure that the configuration with winch coincides with the requirements given.



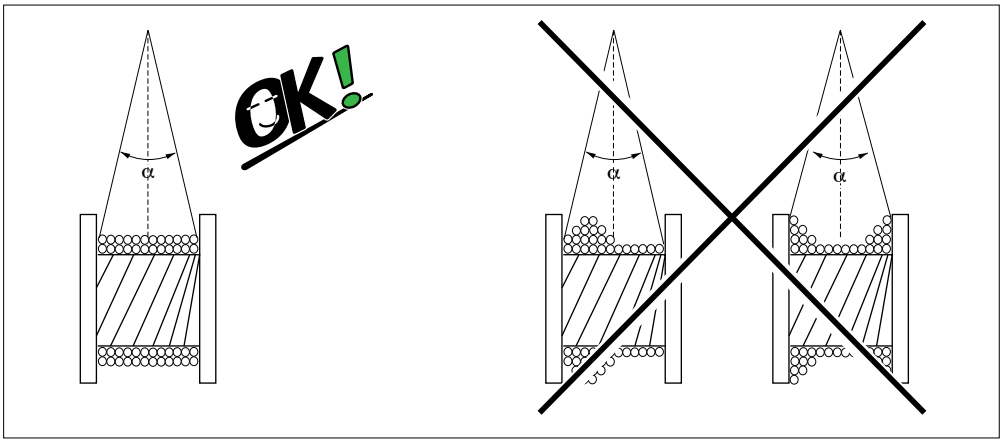
CAUTION

You may cause structural demage if you fail to respect the configurations, number of pulls, position and number of transmissions described.



CAUTION

You may cause malfunctions in winding/unwinding the cable, with possible damage caused by an incorrect angle, if you fail to observe the out reach described.

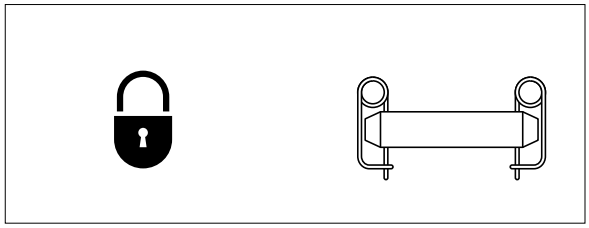


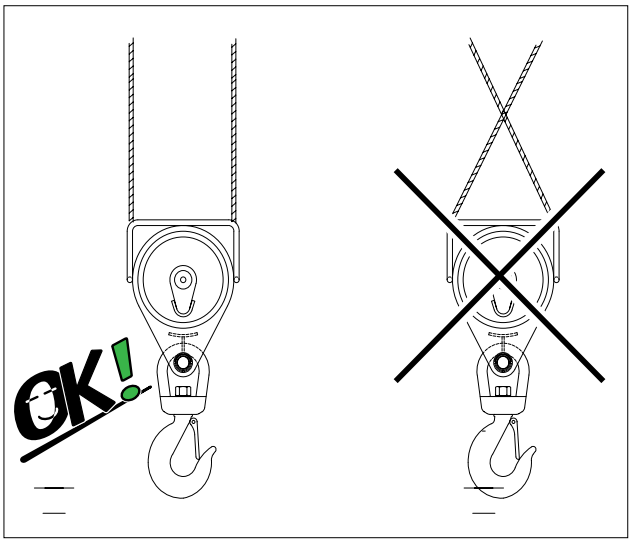
Preliminary checks

Check the efficiency and function of the transmissions, rope block, hook. In particular, the lines of the cable holding the rope block must be as vertical as possible, without crossing or hitting each other.

Check the efficiency of split-pins and locks in general.

Check the safety devices on the winch.





CAUTION

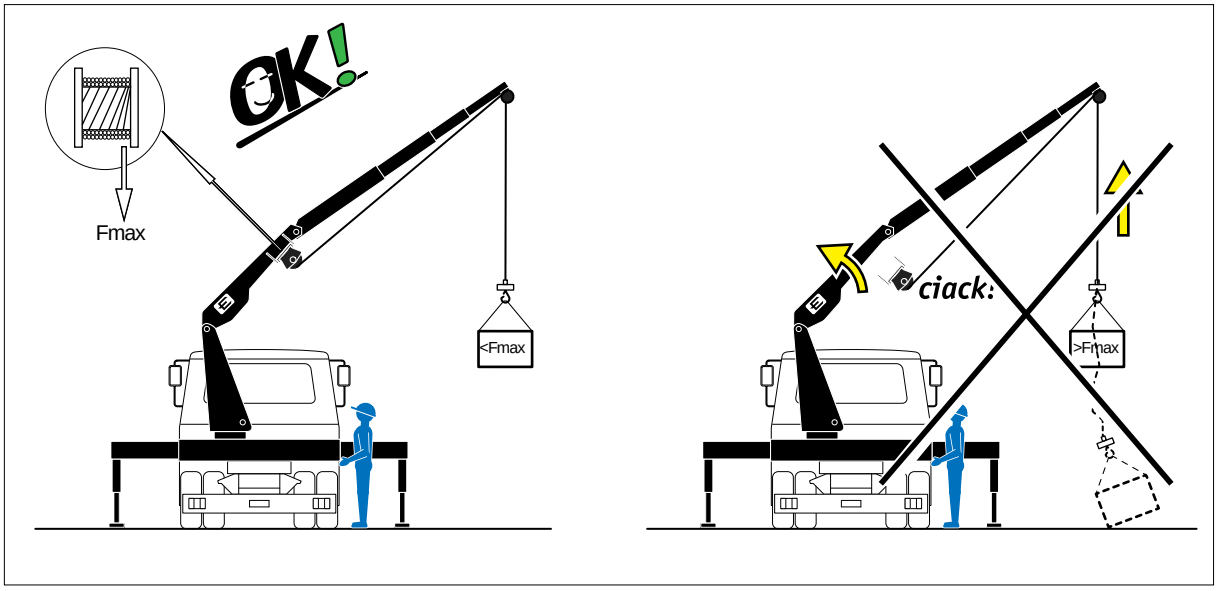
Should you find any malfunctions, it is strictly forbidden to proceed with running.

Operating instructions

PROHIBITION

Use thew crane to lift loads greater than those allowed by the winch capacity.

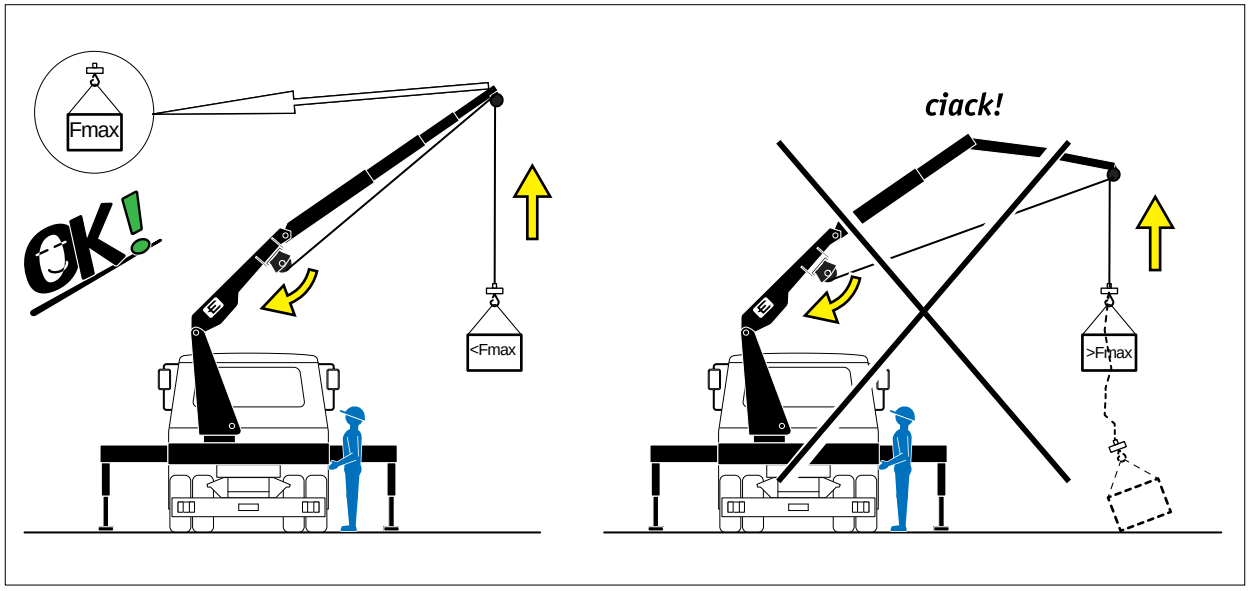
These situations are supervised by safety devices (if fitted).



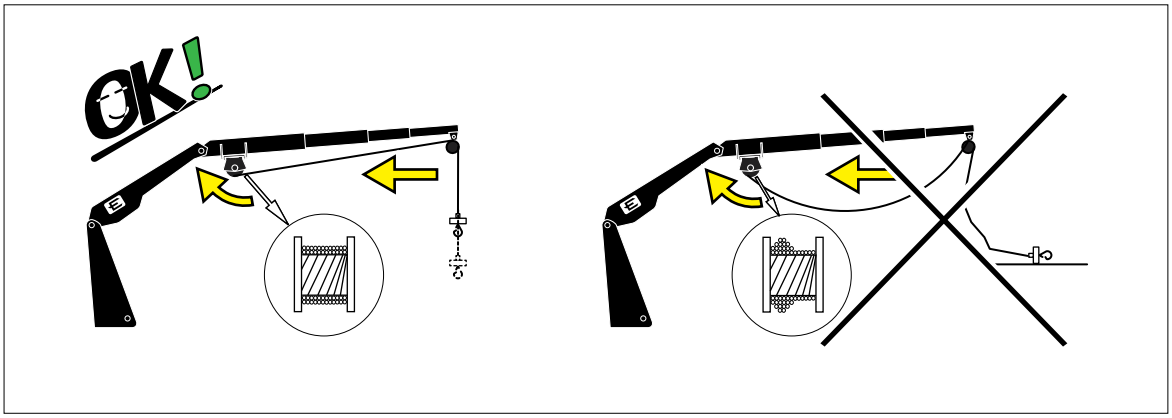
PROHIBITION

Use the winch to lift loads greater than the maximum crane capacity according to the loading diagram.

These situations are supervised by safety devices (if fitted).



When winding the cable around the drum, make sure that it winds smoothly without crossing over itself. Also avoid winding if the cable is not tout.

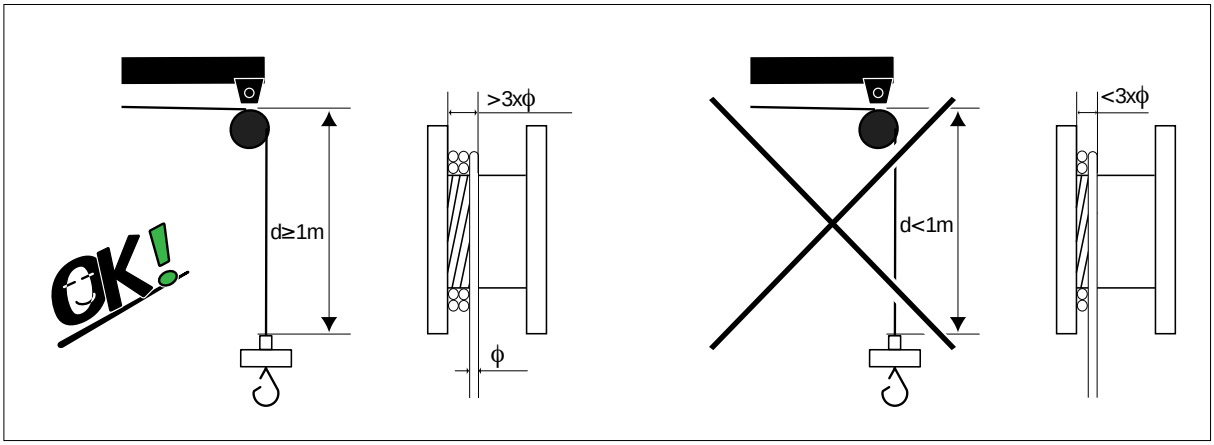


CAUTION

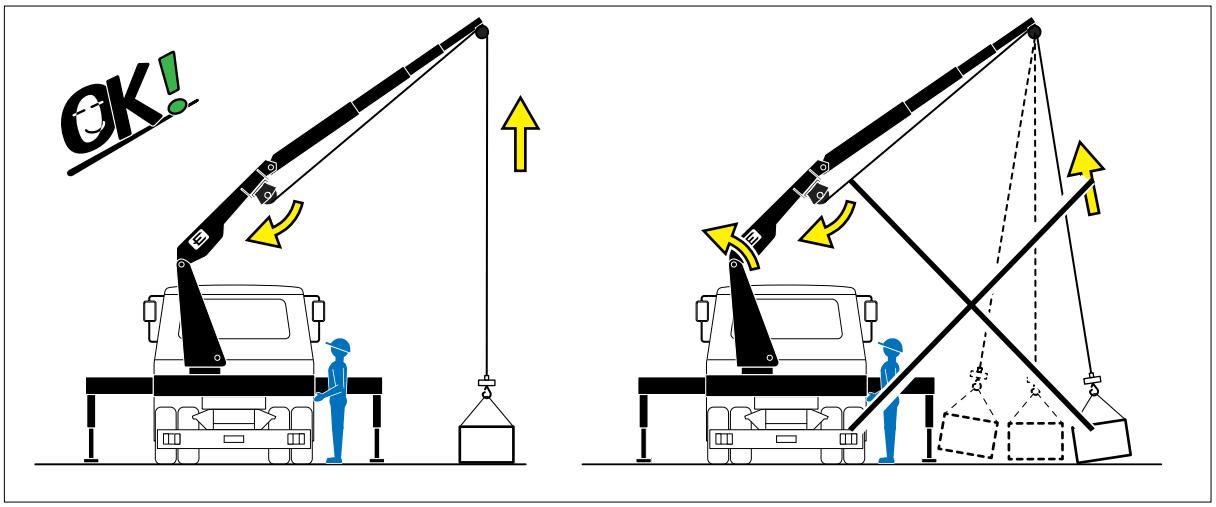
Abnormal wear and sudden settling may occur on the cable if you fail to observe this restriction, leading to rapid damage to the clable itself. The drum may also wear out the cable.

While winding the cable, we recommend that the distance **d** between the end of the crane and the counter-weight non be below 1 meter, and while unwinding not be below 3 wrapped wires.

These situations are supervised by safety devices (if fitted).

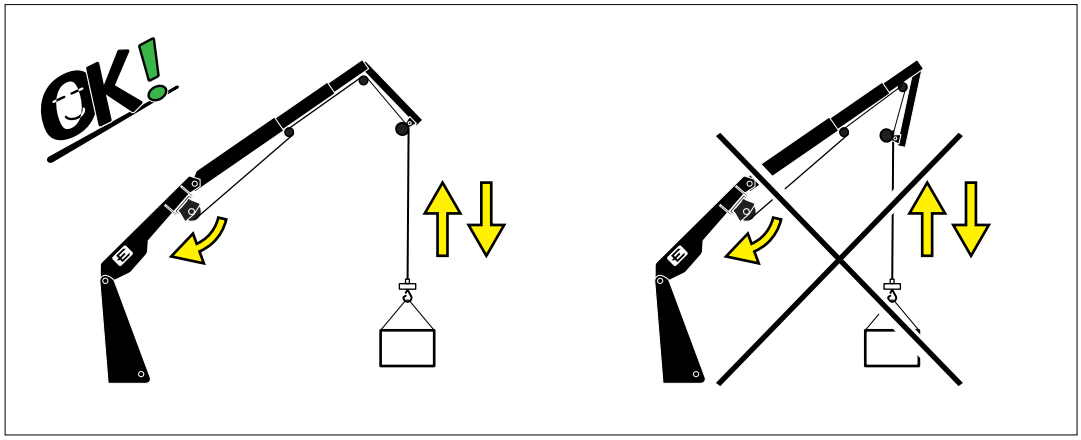


Before lifting with winch, position the crane so that the cable is vertical over the load under tensive stress. Lifting from ground must be carried out slowly and preferably by means of the winch. Avoid such movement through crane booms and extensions. This could lead to dangerous side shiftings of the load, particulary with crane in vertical position, and to unforeseen stresses to stability.



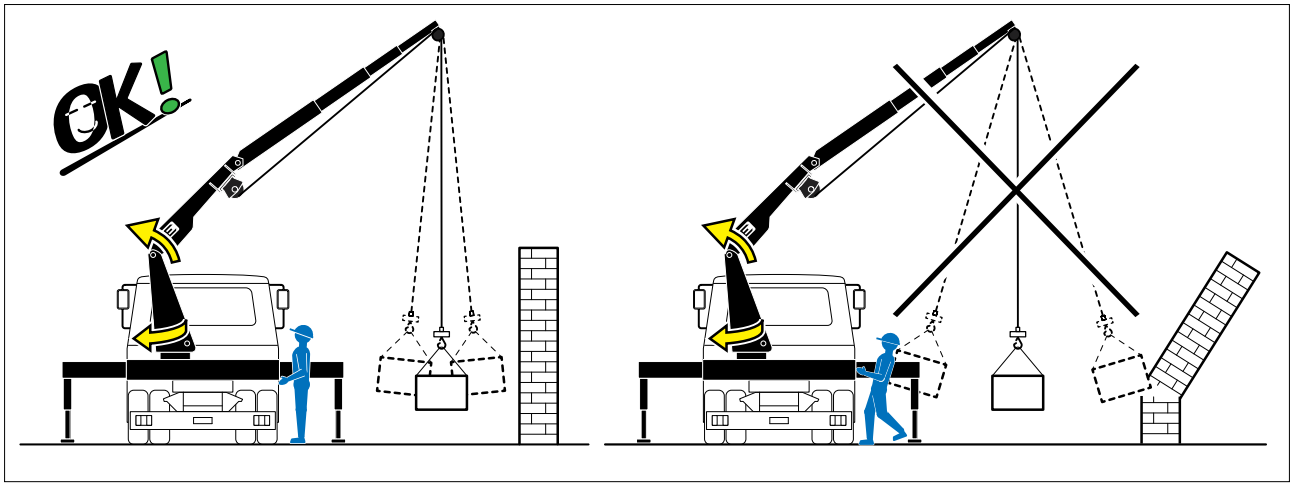
PROHIBITION

To lift with the winch with the crane arms bent backwards.



When working with the winch, with or without an attached load, to avoid swinging the cable you must move the crane at very low speeds and the utmost caution, especially while slewing.

When is possible, we recommend to limit the distance between crane end part and the load, to reduce oscillations as much as possible.



Avoid moving to close to the winch, cable and other moving parts during operation. This could lead to dangerous for the operator. In particular, aviod loose sleeves or unbuttoned coveralls or aprons, as these could get caught in the cable or moving parts, dragging the person wearing them.

The loads lifted by winch stated in the lifting diagram are guaranteed when the crane is first put in the correct position and then loads are lifted by winch.

With mainly vertical configurations, lifting the loads may not be assured, if the loads are connected to the rope in extending motion.

Safety device

Overload device

In case of winch fitted, the overload function remains operative through **DMU3000** device, should it be installed on the crane -for cranes equipped with this device).

Load limiter

This is a device to impede overloading the winch if its maximum allowed pull is exceeded. This can be checked by using the winch or carne to lift a load not allowed in the corresponding diagram.

Operation

When the maximum pull is reached in the cable connected to the winch causing all overload movements to stop. In particular, the crane cannot be moved nor the winch lifted. The only allowed movement which makes it possible to reset the others is to lower the winch.

Once the device has been tripped, immediately remove the causes of the overload block. Pay colser attention to the loading diagram on the machine.

Deactivating the device

If the crane remains stuck due to a breakdown in this device, it may be deactivated (refer to **DMU3000** Manual - -for cranes equipped with this device).

All lifting operations are strictly forbidden after the device has been tripped. The crane and winch wouldd then be running without this important device. After deactivation, the only allowed movements are those necessary to return the machine to its resting position and remove it from the work area.

Thereafter, consultan EFFER service center immediatly. The manufacturer shall not be held responsible for damages caused by failure to heed this warning.

Rope limit stop device

The purpose of this device is to prevent impact and interference while winding the cable between its two ends (hook or rope block) around the crane transmission head. In the same way, it prevents the cable from being unwound too far, ensuring a minimum number of loops around the drum. We recommend avoiding tripping the device uselessly, as this leads to oscillation and stress.

Operation

When winding (lifting), when the counter-weight controls the microswitch, the device is tripped and drains out the oil, preventing all movement of the crane and cable winding. The only allowed movement which makes it possible to reset the others is to unwind (lower) the cable.

When unwinding (lowering), when the roller controls the microswitch, the device is tripped, preventing all movement of the crane and cable unwinding. The only allowed movement which makes possible to reset the others is to wind the cable.

Functional check

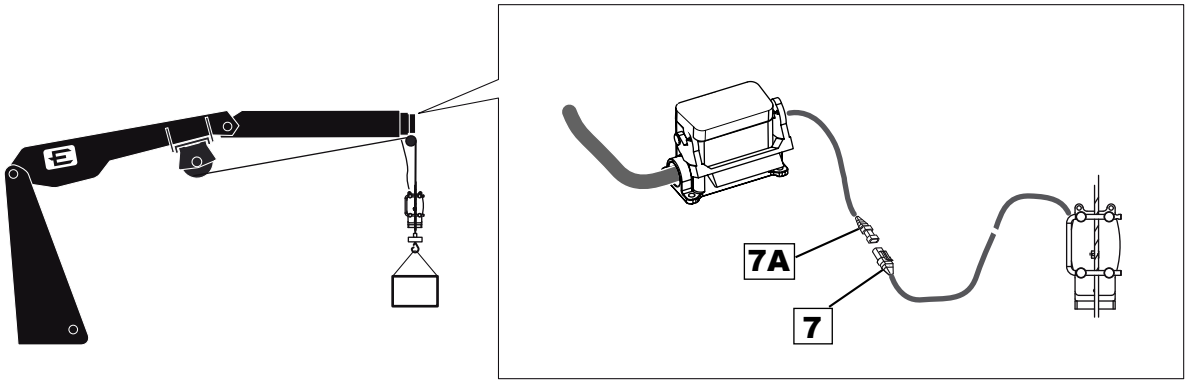
Without a load, trip the device during winding and unwinding, making sure that it works as described above.

Deactivation

For instructions on deactivating the device and related requiements, refer to **DMU3000** Manual -for cranes equipped with this device).

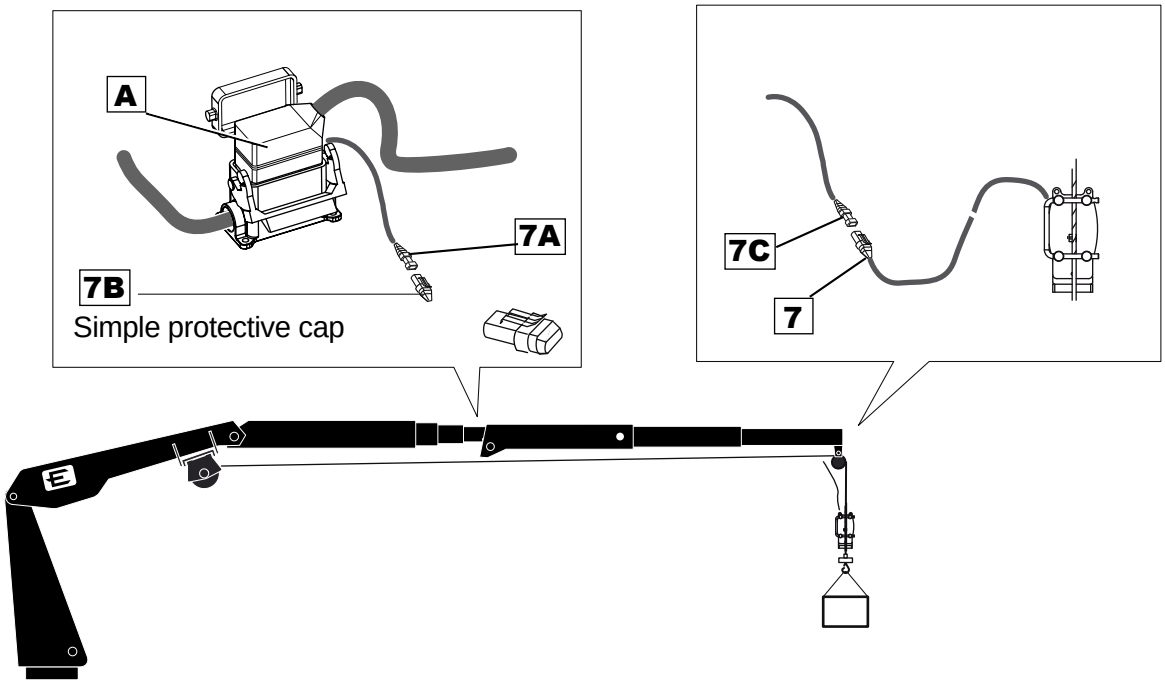
1.0 Electrical connection of the rope up limit switch device

1.1 Use of the winch with fall of headpulley on basic crane



The plug (7) of the electric winch limit switch must be connected to the socket of the electrical cable (7A) located on crane extensions.

1.2 Use of the winch with fall of headpulley on supplementary jib



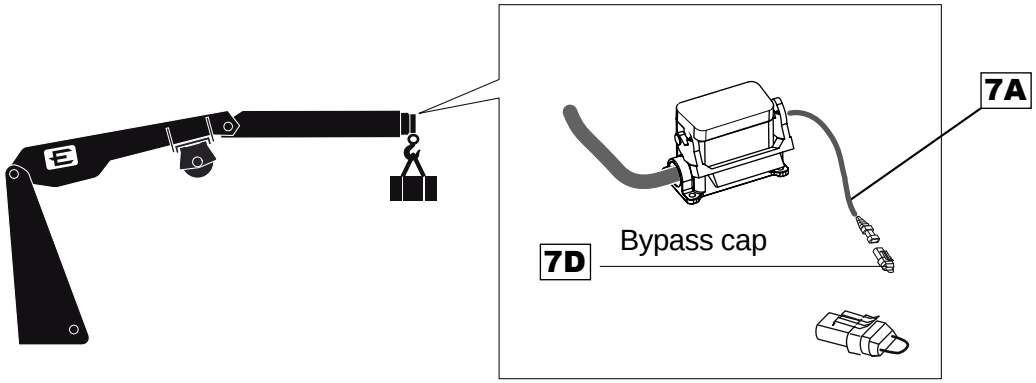
On the basic crane: Connect the jib electrically through the connector (A).

Fit the simple safety cap (7B) into the socket (7A) on the basic crane extensions .
On the supplementary jib: The plug (7) of the electric winch limit switch must be connected to the socket of the electrical cable (7C) located on extensions of the supplementary jib.

2.0 Use of the crane to work with the hook without using a winch

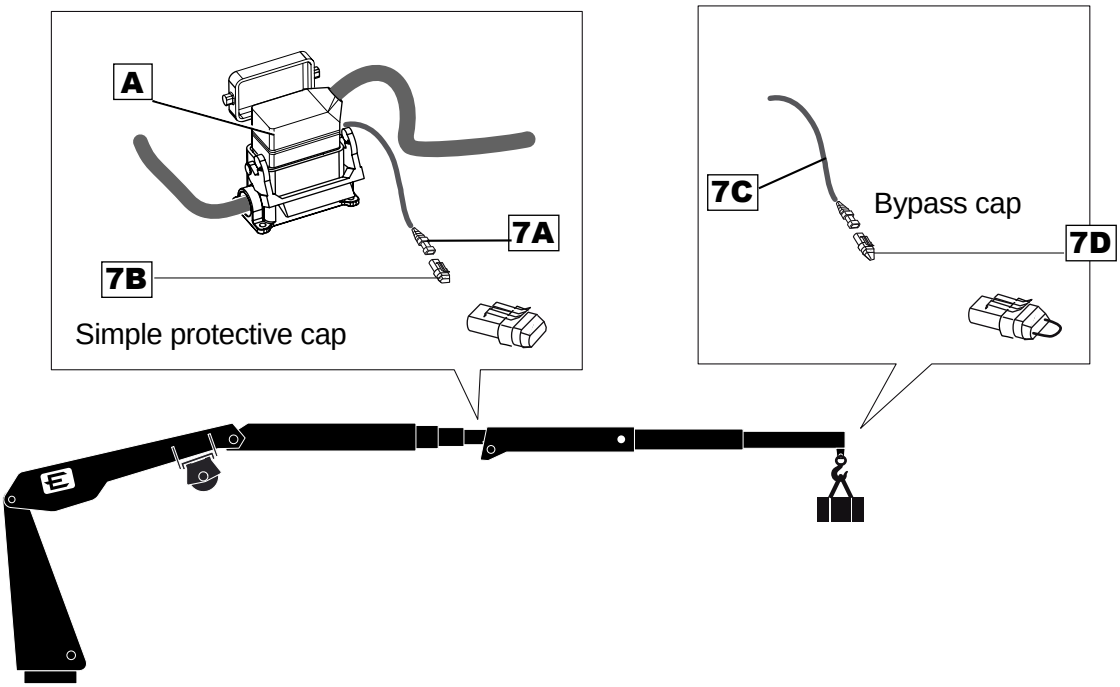
To use the crane for work with the hook and without the up limit stop winch, apply the bypass cap on the socket of the limit stop winch.

2.1 Work with the hook with the basic crane



Fit the by-pass (7D) cap into the socket (7A) on the extensions of the basic crane.

2.2 Work with the hook with supplementary jib



On the basic crane: Connect the jib electrically through the connector (A).

Fit the simple safety cap (7B) into the socket (7A) on the basic crane extensions .
On the supplementary jib: Fit the by-pass (7D) cap into the socket (7C) on the extensions of the supplementary jib

3.0 Winch with headpulley at basic crane's extensions

3.1 Winch with one fall of headpulley
Follow the assembly instructions stated below (refer to picture 1):

Fasten the headpulley to crane lifting lugs by means of pin (1) and related cotter-pins (2).

Insert the rope from the headpulley by removing the cotter-pins (3) and the pin (4). Mount everything together once finished.

Connect the rope weight (5) to rope end by means of the delivered pin (6) and fix it with cotter-pins.

Connect the socket (7) of electric end stroke device to the electric cable socket (7A) placed on the crane extensions (see also section 1.0).

Unblock the handle (8) positioned on the end stroke device and let the rope go through the internal part of the end stroke itself.

Put again the handle in the appropriate place.

To dismount it, kindly follow the same instructions in the opposite way.

⚠ CAUTION

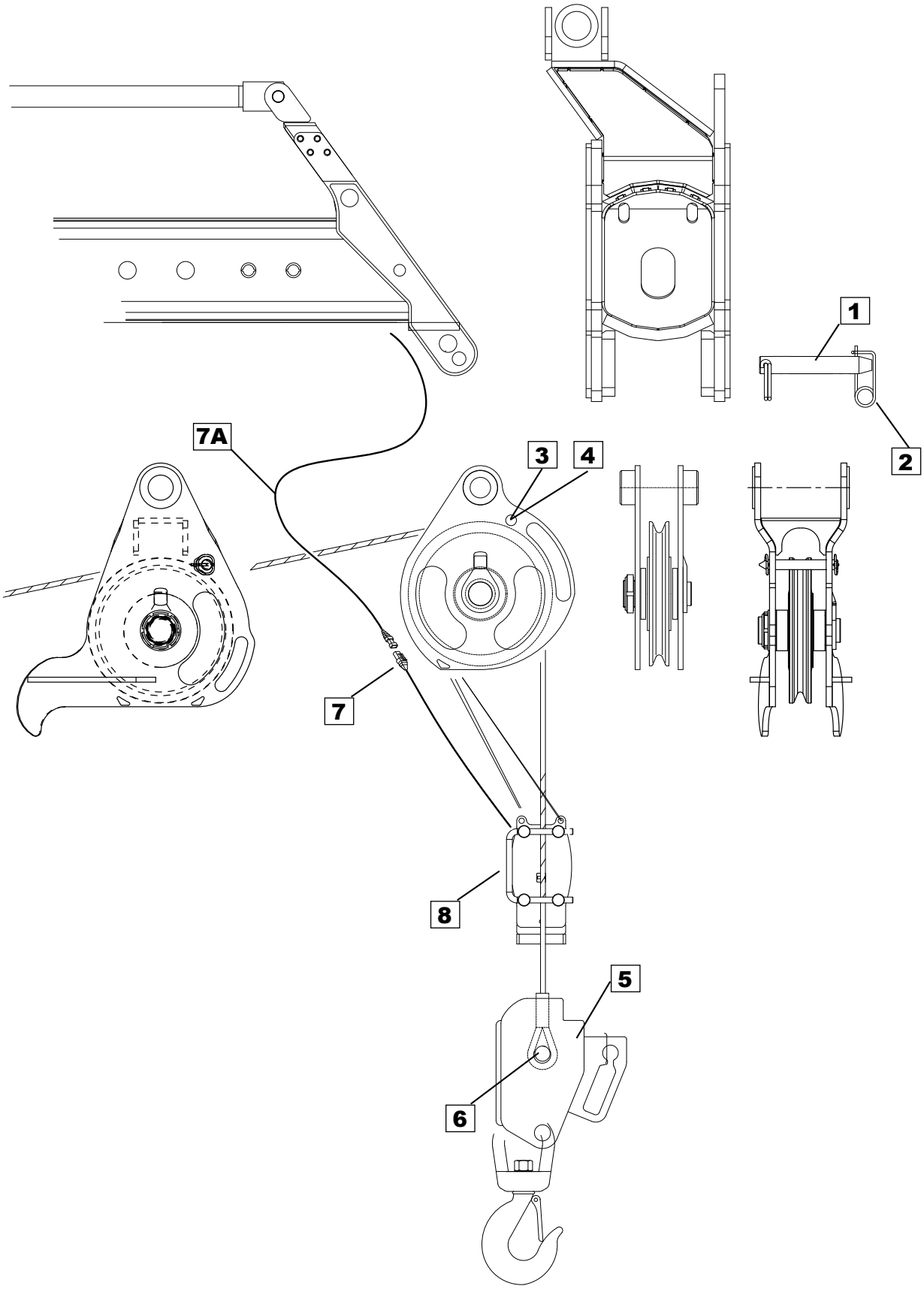
Headpulley must be taken away when folding the crane.

⚠ CAUTION

When folding the crane on truck, after dismantling the winch limit stop, use the by-pass cap to move the crane. (see instructions in section 2.0).

Winch

Picture 1



3.2 Winch with two falls of headpulley

Follow the assembly instructions stated here below (refer to picture 2) :

Fasten the headpulley to crane lifting lugs by means of pin (1) and related cotter-pins (2).

Remove the cotter-pins and the pin (3-4), rotate the link (5) and introduce the rope. Replace the cotter-pins and the pin.

Remove the cotter-pins and the pin (6-7), on the block and introduce the rope. Replace the cotter-pins and the pin.

Connect the rope to the link of the headpulley, by employing the delivered pin (8) and fix it with cotter-pins.

Fasten the hook to the rope block by means of the pin (9) and related cotter-pins.

Connect the socket of electric end stroke device to the electric cable socket (7A) placed on the crane extensions. (see also section 1.0).

Unlock the handle positioned on the end stroke device and let the rope go through the internal part of the end stroke itself.

Put again the handle in the appropriate place.

To dismount it, kindly follow the same instructions in the opposite way.

CAUTION

Headpulley and rope block must be taken away when folding the crane.

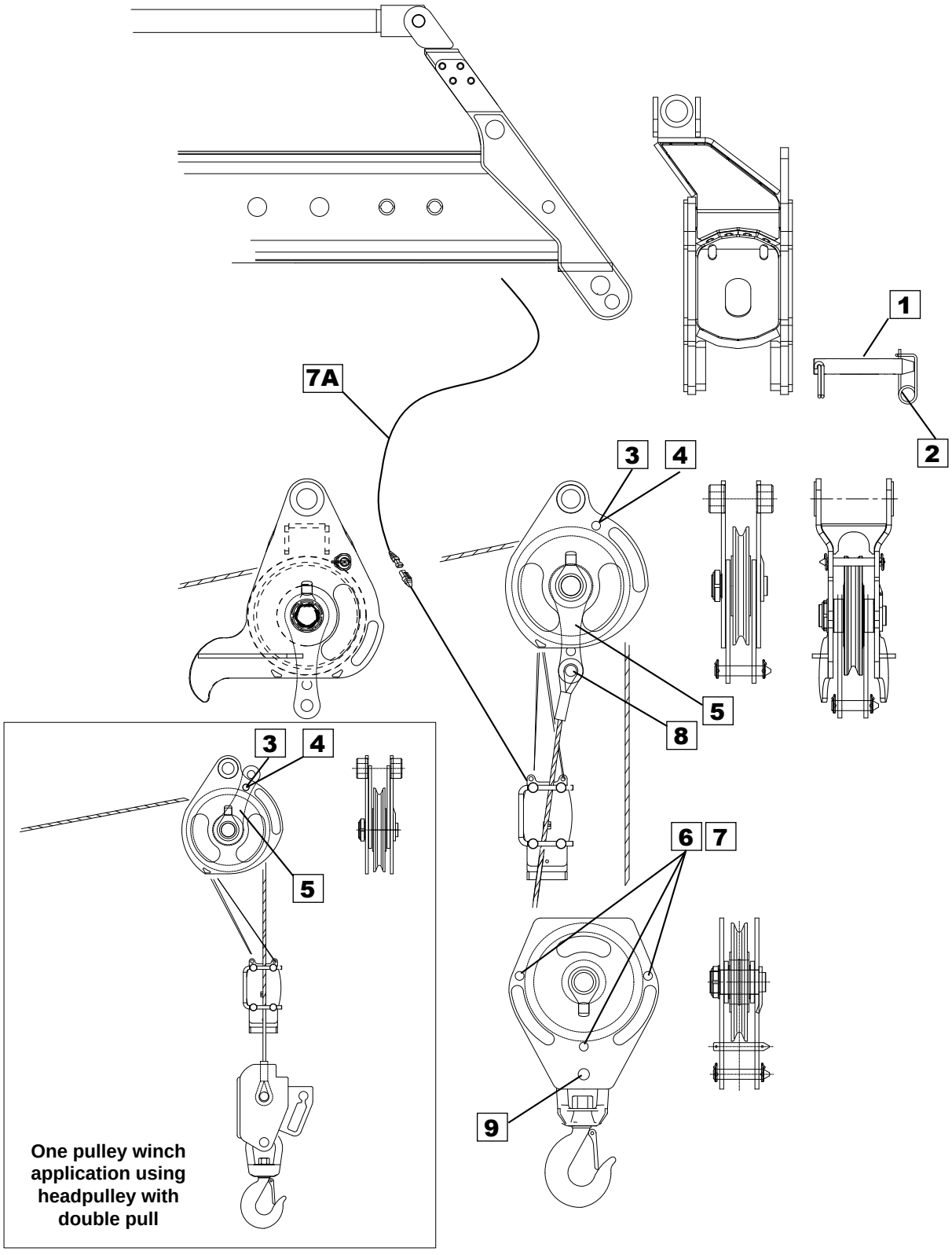
Note	***The double pull winch application is suitable for the single pulley as well. The mounting detail is indicated on figure 2. In particular: the link put inside the headpulley must remain fixed to the pin.***

CAUTION

When folding the crane on truck, after dismantling the winch limit stop, use the by-pass cap to move the crane (see instructions in section 2.0).

Winch

Picture 2



4.0 Winch with headpulley at end of fly-jib's extensions

4.1 Description of supply

Should a winch be ordered, the winch rope is supplied already mounted on the crane. Headpulleys are delivered mounted onto the fly-jib, in case this device is fitted.

The following components are part of the supply (refer to picture 3):

1- winch

2- 1st sheave on jib attachment part

3- 2nd sheave on jib cylinder attachment part

4- headpulley located at end of fly-jib

5- rope weight

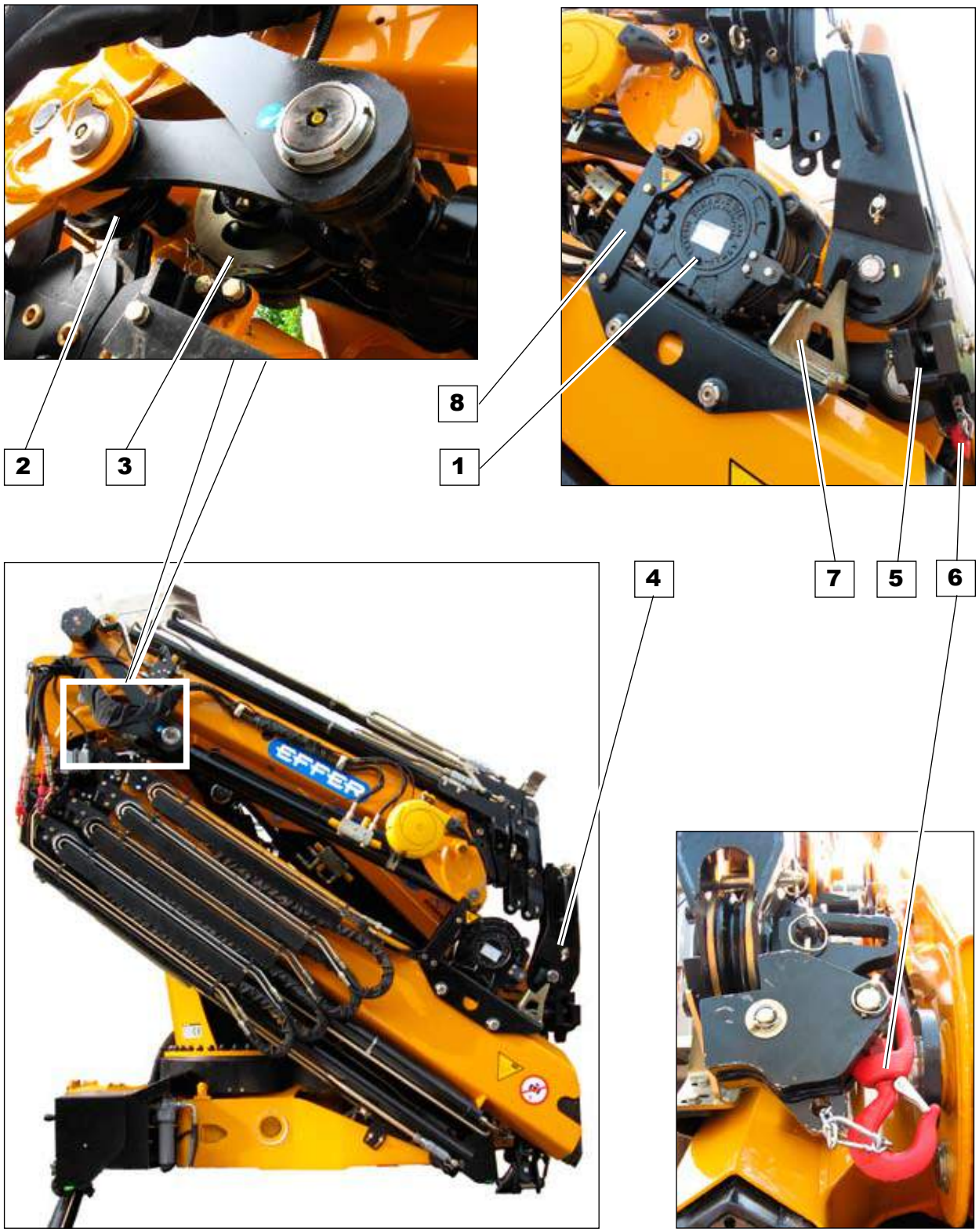
6- hook

7- extensions outlet retainer

8- jib support

Winch

Picture 3



4.2 Rope assembly on pulleys at fly-jib's extensions

Any time the crane is equipped with winch, kindly follow the instructions specified below :

CAUTION

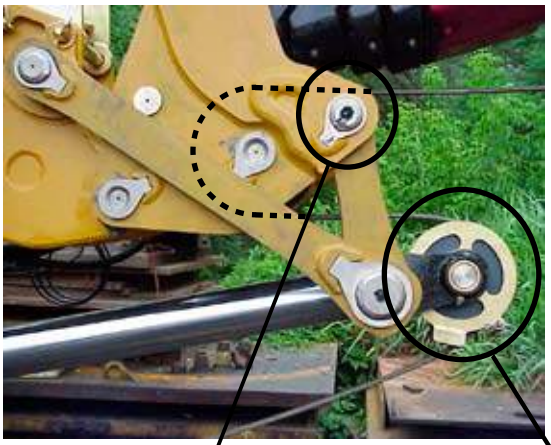
Check the correct positioning of the electrical connections on the crane basic extensions and the additional extensions of the supplementary jib (see instructions in section 1.0).

Openthecraneaswellasthefly-jib,inordertoreachthesheavesandtheheadpulleyeasily.Itis not always necessary to extend the hydraulic extensions.

Unwind the rope from the winch for 6-8 m approximately, by paying attention to keep the end part well stretched, to ensure a correct rope winding up.

The rope shall follow its route on the fly-jib. To accomplish this, unblock and dismount the pins of 1st sheave on the jib attachment and let the socket pass on the sheave. Then, place again the pins in the appropriate seats and block them (refer to pictures 1 and 2).

Unblock and dismount the pin on the 2nd sheave on the jib cylinder and let the socket pass on the sheave. Then, place again the pin and block it (refer to pictures 1 and 3).



Picture 1

Picture 2

Picture 3

Winch

Unblock and dismount the pin (1) on the jib headpulley and let the socket pass on the sheave. Then, block the pin in the appropriate seat (refer to picture 4).

Unblock and dismount the pin (2) on the rope weight. Insert the socket, place the pin again and block it (refe to picture 5).

The following instructions will be helpful when installing an electric end stroke device (refer to picture 4):

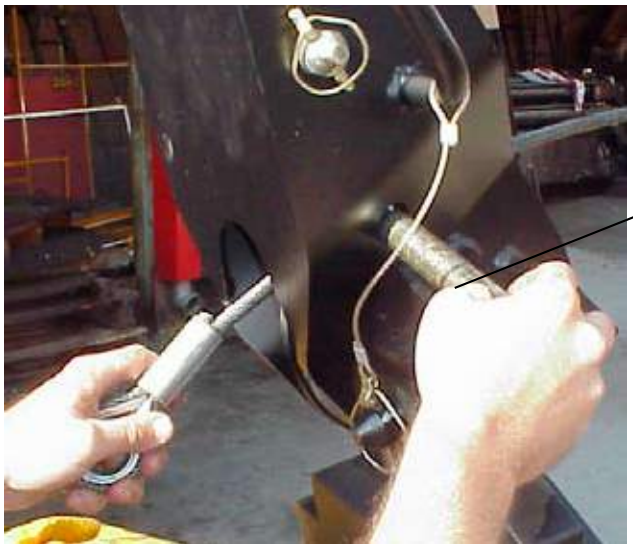
- lower the crane until the rope weight is almost laied on the ground,

- remove the cotter-pin from the pin on the headpulley and take away the rope weight (picture 6),

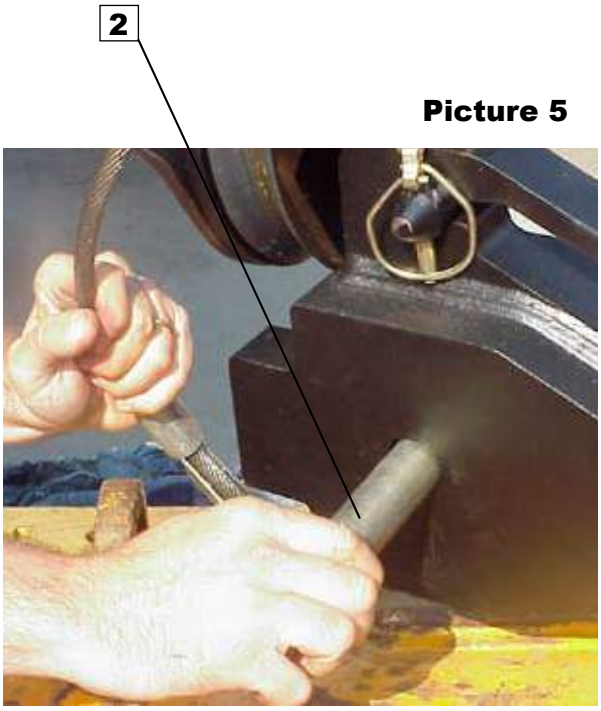
- lift the crane boom up to reach the headpulley easily,

- leave about 1,5 m of free rope between rope weight and headpulley itself,

Picture 4



Picture 5

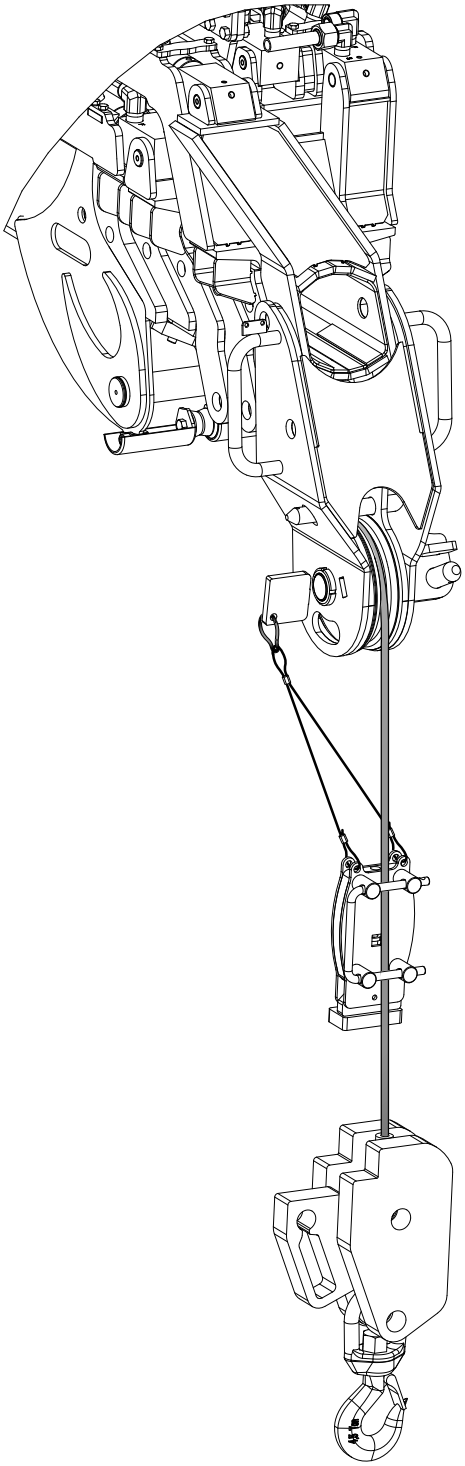


Picture 6

Winch

- mount the electric end stroke device and connect the electric cable to the socket on the headpulley,
- unblock the handle on the end stroke and let the rope pass inside the end stroke itself,
- place again the handle in the appropriate seat,

Follow the above mentioned procedure when the crane is on job site.



Picture 4

CAUTION

To operate the winch limit stop, fit the safety simple cap (do not fit the by-pass cap) on the socket located on the extension ends of the BASIC CRANE (see instructions in section 1.0).

CAUTION

When folding the crane on truck, after dismantling the winch limit stop, use the by-pass cap to move the crane (see instructions in section 2.0).

4.3 Rope diassembly on headpulleys at fly-jib's extensions

Follow above procedure in the opposite way

4.4 Crane folding

To bring back the crane in rest position, follow this sequence :

Close the extensions, both of basic crane and of fly-jib, by always keeping the horizontal position.

Extend the rope from the winch end stroke device, by opening the appropriate handle. Position the electric torque limiter on the headpulley (kindly refer to picture 8). Fasten it by means of the appropriate handle reference "A" as shown in the picture 9.

Lower the crane until the rope weight is laied down on the gruond. Rotate it by 90°, through the help of the appropriate handle.

Bring the headpulley next to the rope weight, place it vertically and keep the fly-jib in sloped position.

Insert the rope weight in the appropriate headpulley pin (picture 6) and block it with the cotter-pin. Thus, the rope weight is fastened to the headpulley.

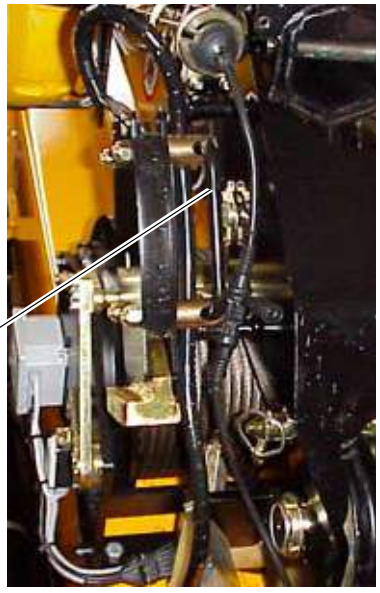
Take away the socket blocking pin (2) from the rope weight and extend the rope. Then, put again the pin in the proper place (picture 5).

Rotate the swivelling hook attachment part, after removing the pin (1) (picture 4) and pin (3) (picture 7) on the headpulley. Put the socket inside and place the pins again.

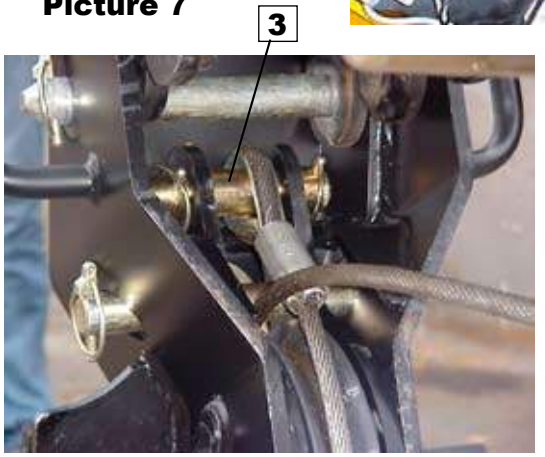
Fasten the hook to the rope weight by means of the fixing chain (picture 10).

Picture 8

Picture 9



Picture 7

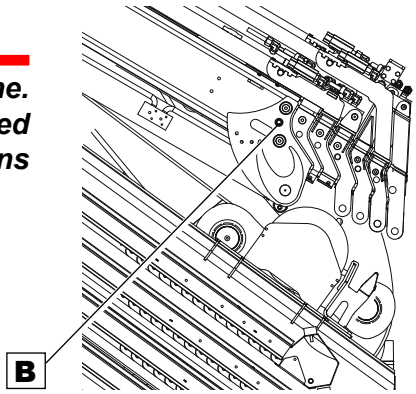


Winch

Picture 10

CAUTION

Do not take the headpulley away when closing the crane. During the folding operation without head pulley mounted on crane, fit a pin in the hole B to block the extensions out.



IMPORTANT

Liftings by hook are permitted, without dismounting the headpulley. Connect the hook with its spacer, to the swivelling lugs inside the headpulley. Dismount the pins (1) (picture 4) and (3) (picture 7).
With the 4S jib version, being this hook attachment advanced of approx. 0,25 m. and staying the head pulley mass linked to the booms, then the lifting loads in this kind of configuration are lower of about 70 kg compared to the ones shown in the lifting diagram.
With the 6S jib version, being this hook attachment in the same position as the std. one, then the lifting loads in this kind of configuration are lower of approx. 35 kg compared to the ones shown in the lifting diagram.

Note	***At this stage, wind again the winch, to keep the rope straight enough. Ensure that the rope is kept in this position, even during folding phase, until rest position is reached.***

4.5 Crane unfolding

Follow the instructions indicated in the Manual to open the crane, when a fly-jib is fitted.

Note	***Unwinding the rope is absolutely necessary in case of winch use on crane equipped with fly-jib, to adapt the winch to new booms configuration***

⚠ CAUTION

Be careful with rope ! Wind the rope again, because it tends to become loose during folding phase. Unwind the rope when opening the crane and try to keep it straight as much as possible

8
User instructions

General warnings

Before using the crane it is obligatory to have read and understood the foregoing chapters, especially chapter "**2 - Safety regulations and warnings**". If any doubts remain, contact an EFFER technician directly.

Pre start-up checks and verifications

For correct use and observance of the safety parameters, each working operation must be preceded by the following checks:

- correct tightening of the crane/chassis/sub-chassis anchoring tie-rods;
- free movement of the control levers;
- correct connection between quick couplings and electrical connections;
- check of hydraulic system;
- check for any oil leaks from pipes, joints and valves;
- intactness of valves and pipes;
- functionality of flexible tubes;
- inspection of the metalwork for any splits or fissures, with special attention being paid to welded areas (discontinuity or cracks in the paintwork may be a warning of structural damage);
- check lifting hook intactness and functionality of movement;
- efficiency of the lifting accessories;
- intactness and legibility of diagrams, symbols and notices displayed on the machine;
- functionality of safety devices.

CAUTION

On resuming work after a pause or after momentarily leaving the machine, check that the safety devices set before leaving have not been modified and that the machine has not been vandalised or tampered with.

General warnings

During use

- The operator must take up such a position as to have control over the trajectory of the load and over the area where handling takes place;
- it is forbidden to move the crane arm and/or the load over the operator and/or persons present in the working area;
- it is strictly forbidden to touch moving parts;
- do not use the crane for purposes other than those envisaged by the Manufacturer;
- always check beforehand that functioning of the machine and all its units, including auxiliary units, do not create dangerous situations for persons, property or animals;
- use the personal protection devices envisaged by the accident prevention regulations in force;
- should it be necessary to throw the emergency switch, reset the production cycle only after having eliminated the risk conditions.

Warnings about the system

If the crane is to function well the hydraulic system fluid must, while running, have a limit viscosity of between **100** e **12 cSt** (recommended interval **70÷20 cSt**).

For example:

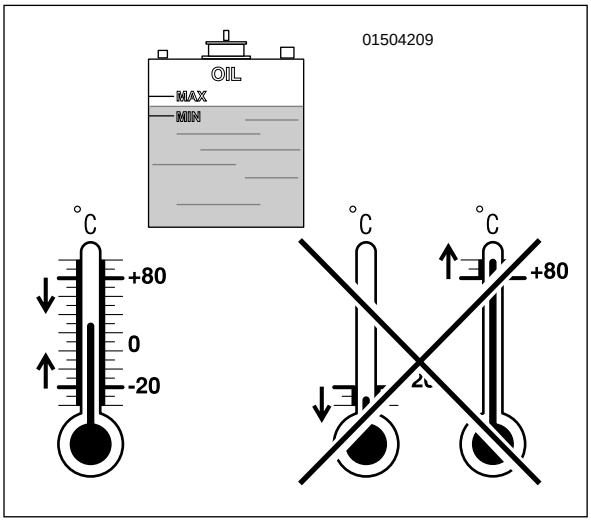
For **VG 46** type fluid (see table in the Maintenance section) corresponds to limit temperature intervals while running of between **25** and **75 °c** (recommended interval **30÷60 °c**). In any case the limit for cold starting is **1000 cSt** (**-5°** with **VG 46**). Never start up the crane with fluid temperature below -20°C.

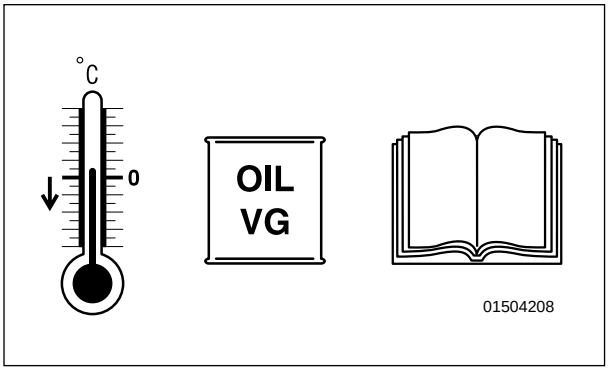
The fluid occasional overheating limit corresponds to a viscosity limit of **10 cSt** (**80 °c** with **VG 46**); while running, never exceed a temperature of **80 °c**.

It is important to choose the right type of fluid according to the surrounding temperature and the kind of work (see table in the Maintenance section). The use of type **hlp /ISO** is recommended.

With the fluid cold, at the start of the cycle, the filter block indicator may suggest a maintenance intervention. Wait a few minutes. If the indicator persists, proceed with maintenance in accordance with the manual..

For surrounding temperatures below or equal to 0°C, the fluid must be preheated to the minimum functioning temperature (**250 cSt** at **10°c** with fluid **VG46**). The preheating methods are described in the section "**cold start**" described in the following pages.





General warnings

CAUTION

With a fluid temperature less than the minimum operating temperature, corresponding to viscosities greater than 250 cSt (10°C with fluid VG46), conditions are created for malfunctioning of certain components and devices (radio-control not active, pump cavitation at high revs, reduced performance of the FPI device etc.).

N.B. With device PVG32 Danfoss it is normal (and safe) that in these conditions of fluid temperature the first activating of a lever requires considerable force whereas the same movement immediately afterwards requires much less.

CAUTION

If the fluid temperature tends to exceed 80°C you must contact an EFFER Authorised Workshop, which is indispensable for checking the installation and/or suitability of the heat exchanger in the following cases:
a - high surrounding temperature;
b - continuous production conditions with pauses that are few and brief, especially in the case of hydraulic jib configurations and more than 3 extensions.

CAUTION

Maintain the jack limit device in accordance with the prescriptions described. This manoeuvre, protracted out of proportion, further heats the fluid and may cause risk situation and malfunctioning of the control levers (blocking the stroke).

Use sequences

Start-up

- Set the parking brake.
- Start the vehicle (or auxiliary) engine.
- Engage the power take-off.
- Make the vehicle driver's cabin inaccessible.
- Chuck the drive wheels.
- Enable the crane's electrical functions from the main cut-out (**A**).
- Check the position of the emergency buttons.
- Enable stabilisation movements with the key switch (**B**) (Position 2) or by radiocontrol switch (**V**) (Position **STAB**).

Cold start

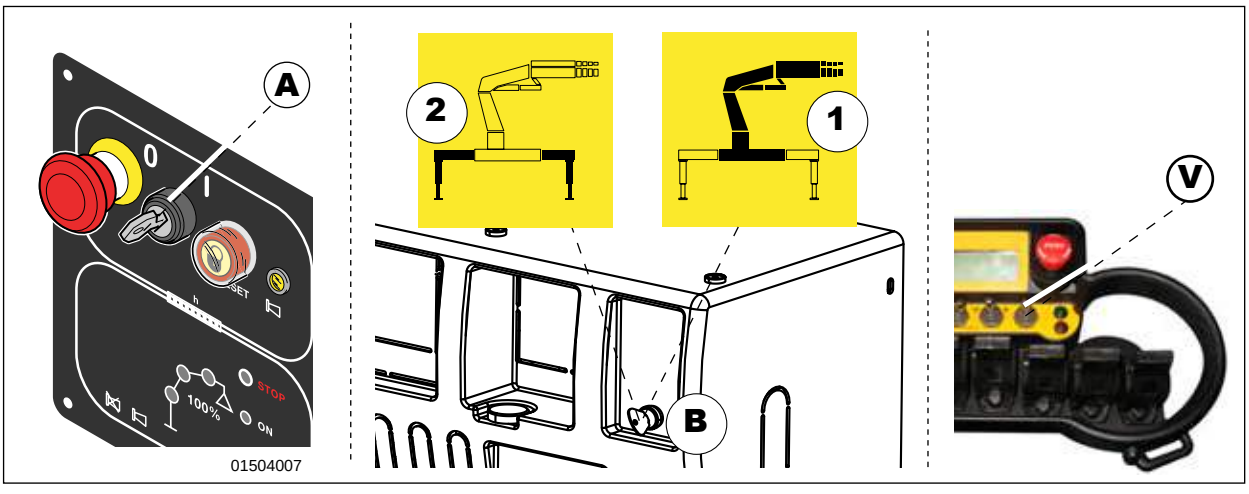
With surrounding temperature equal to or below **0°**, you must act as follows:

- start the vehicle (or auxiliary) engine at low revs;
- engage the power take-off;
- do not use the control levers for **2-5 minutes**;
- put the crane in lifting set-up (traverses and stabiliser feet fully extended and resting on the ground - see subsequent paragraphs for methods). Open the crane and put it into horizontal position, aligning the second arm with the first (for method see subsequent sections);
- carry out limits with second arm jack fully extended, holding the control lever half way (alternatively you can carry out the ascent limit of a foot jack with the crane folded).

Continue the operation until the fluid reaches the minimum working temperature (**10-15 °c** with **VG46** fluid). Proceed as for normal start-up (see above).

CAUTION

Maintain the jack limit devices in accordance with the prescriptions described. This manoeuvre, protracted out of proportion, further heats the fluid and may cause risk situation and malfunctioning of the control levers (blocking the stroke).



Use sequences

Stabilisation

CAUTION

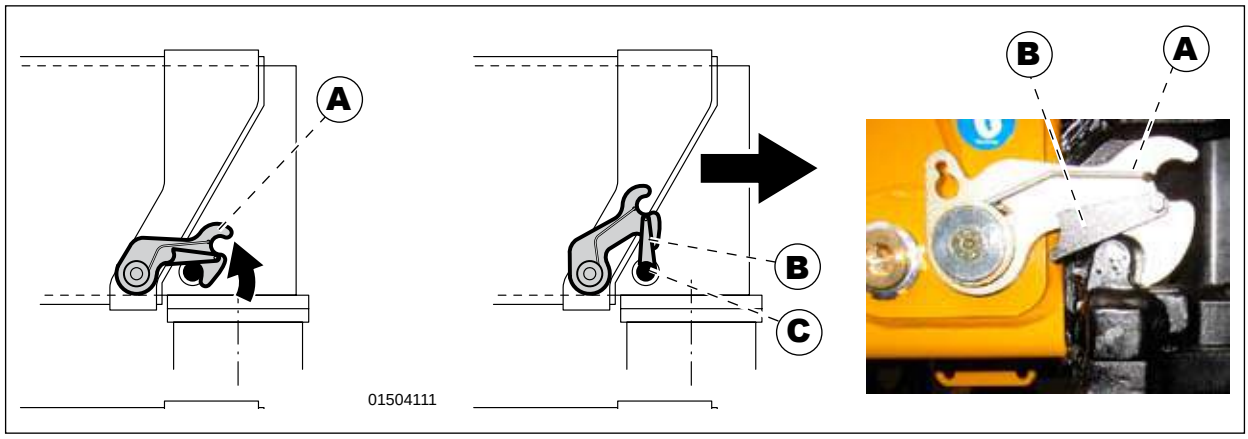
Stabilisation must always be carried out with the crane folded in transport configuration.

CAUTION

Visually check the extraction movements of the stabilisers. Complete stabiliser extension must be practicable without obstacles.

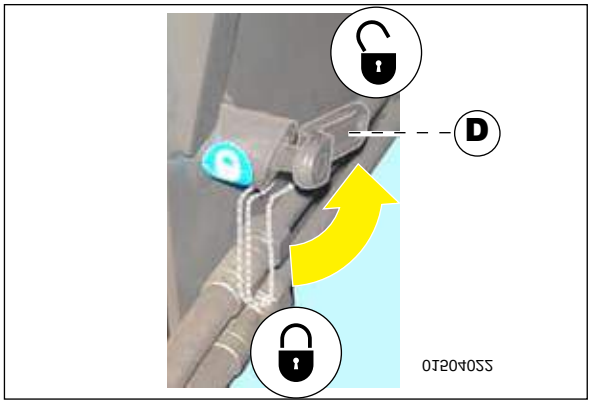
1 Go to one side of the vehicle and unlock the crane stabiliser, and rise the hook (**A**) , laying reference (**B**) on pin (**c**).

2 Still on the same side, unblock the supplementary stabiliser by turning the stop (**D**).



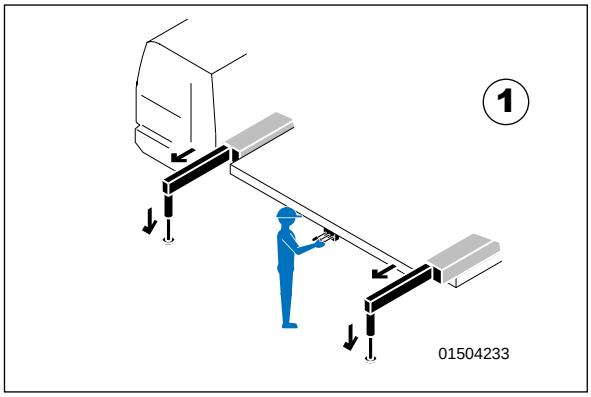
3 From the stabilisation controls on the same side, command extraction of the stabilisers (figure **1**) (for use of the controls see chap. "**4 - c ontrols and instruments**").

Complete extraction is marked by a coloured strip.



4 With a crane fitted with swivelling jacks, turn the jacks to working position in accordance with the methods described in chapter "**7 - Accessories**".

5 Check the conditions of the ground on which the stabiliser feet will rest. Carefully avoid supports that are only apparently stable (drains, manholes etc.).



Use sequences

6 Slip out the two stabiliser jacks (figure **1**) located on the same side of the control post used until they touch the ground.

For methods of using the controls see chap. "**4 - c ontrols and instruments**".

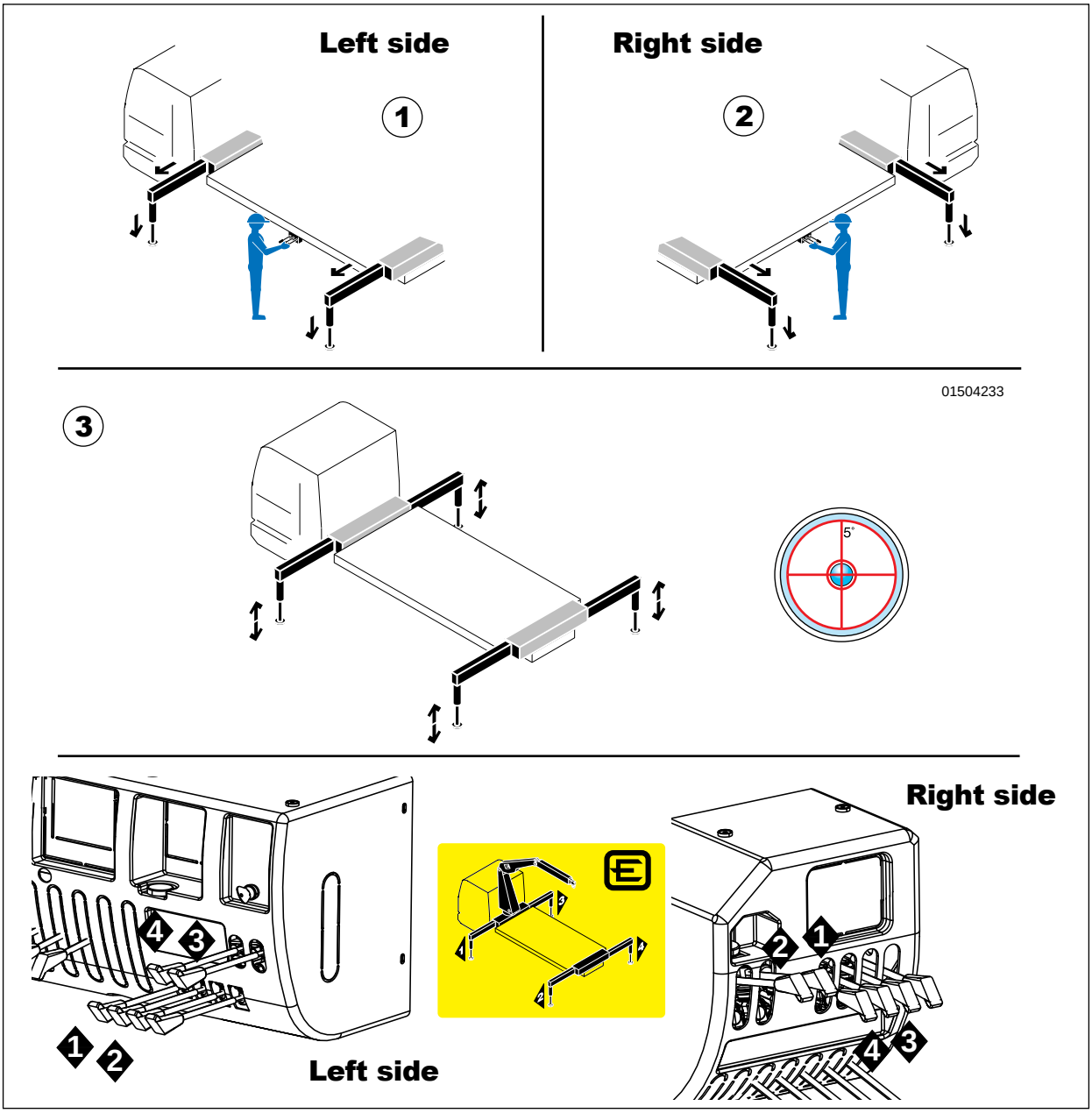
CAUTION

Visually check the extraction of the stabiliser feet until they touch the ground.

7 Repeat the stabiliser extension and stabiliser foot extension operations on the other side of the vehicle (figure **2**).

8 Finely tune the placement of the machine on the level (figure **3**), checking the levelling of the vehicle with the spirit levels located beside the stabilisation controls.

Notes ***Placement fine tuning may be carried out by activating the four feet from a single control post. Carry out this operation only with the feet on the ground.***



Crane opening

CAUTION

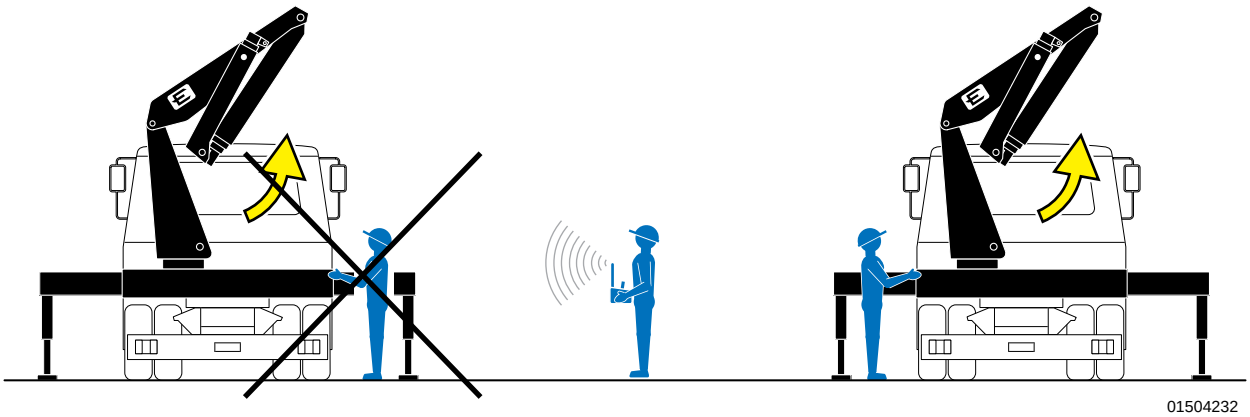
Carry out opening manoeuvres at minimum speed, visually checking the operations. For the versions equipped with radio-control we recommend you to select from the keyboard the speed "snail" function during the last movements steps.

PROHIBITION

While using the bottom side control station it is forbidden to carry out the opening manoeuvres from the same side as arm closure.

CAUTION

While using the remote/radio-control station you are advised to carry out opening manoeuvres from the same side as closure of the arms, while maintaining a safety distance.



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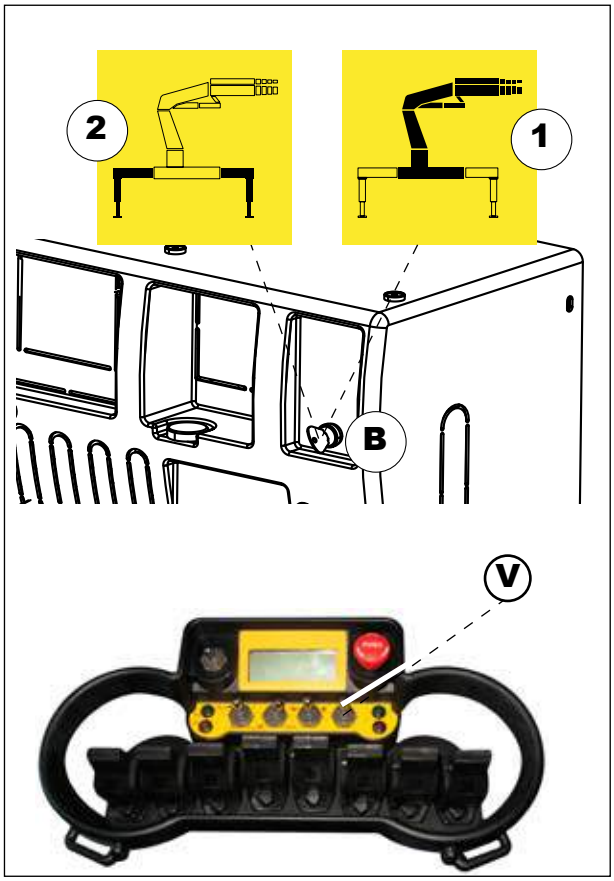
Use sequences

PROHIBITION

On cranes without radio-control it is forbidden to carry out opening manoeuvres from the arm opening side.

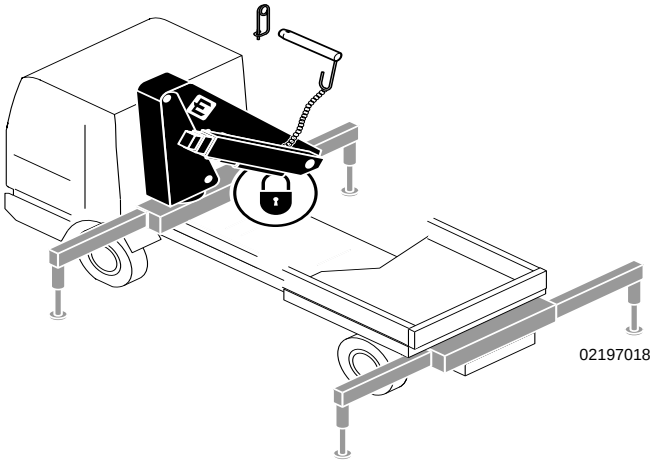
- If engaged, remove the safety pin that locks the 1st arm in closed position;
- Check that control activation key switch (**A**) is in position **1** (crane handling controls).
- Check that control switch (**V**) is on position **c RANE** (crane handling controls).



The operations described below are valid for both radio and manual controls.

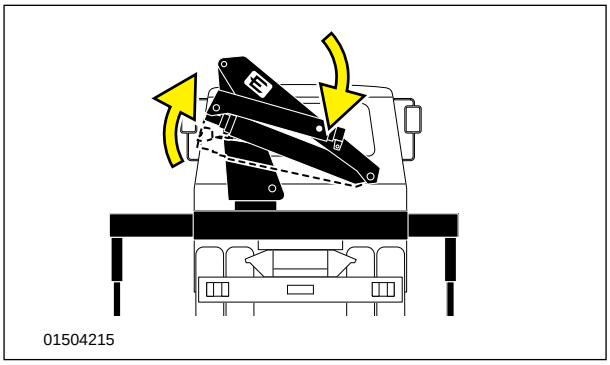
1 Carry out a manoeuvre of complete closure of the second arm in such a way as to raise it from its rest position in the column.

If the jib is mounted, carry out the same manoeuvre of complete jib closure.



CAUTION

If the DMU3000 PLUS device "Opening the crane in safety" is enabled, it is possible that certain movements will be prevented if they are not carried out in the right opening sequence. In this case you must, as first manoeuvre, close the 2nd arm for a few seconds.



Use sequences

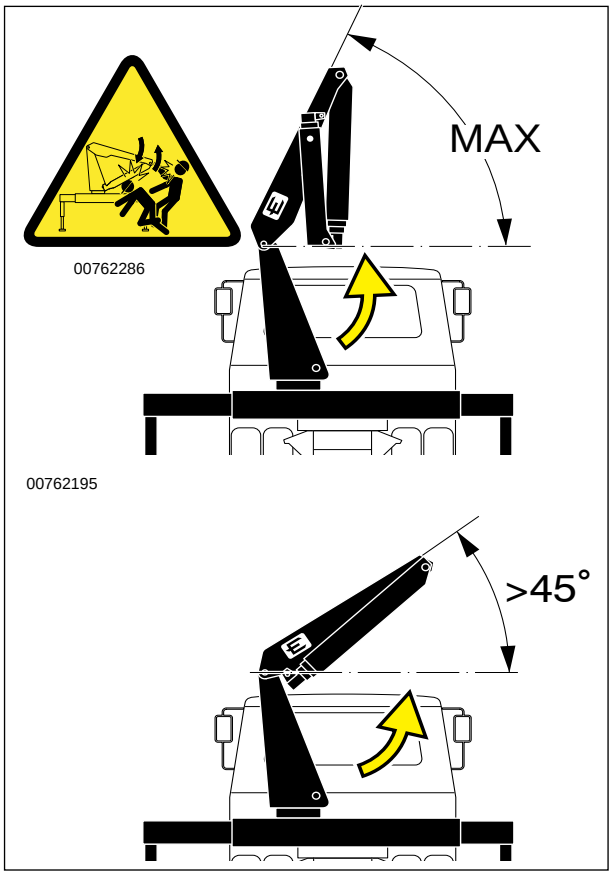
2 Raise the first arm of about 45° checking that the trajectory is free of obstacles.

DANGER

Danger of entanglement and dragging if unsuitable clothing is worn.

CAUTION

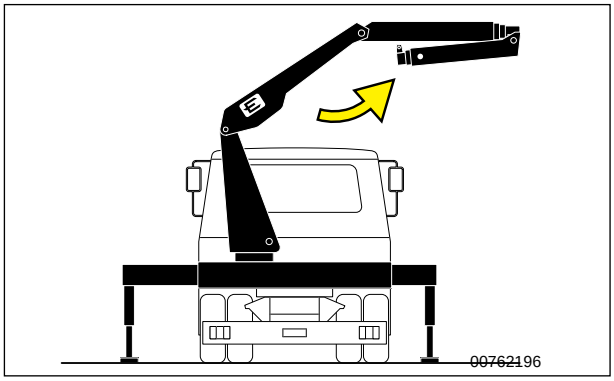
Movements carried out carelessly and with superficiality could cause dangerous situation (collision, interference etc.) with parts of the machine.

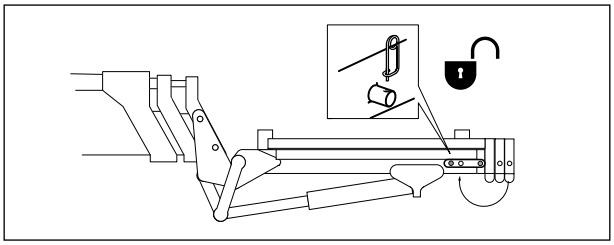


3 Open the second arm, checking that it is sufficiently open to permit opening of the jib.

CAUTION

Release jib extensions by means of the link-rod, if fitted. Make sure jib extensions are released during crane operation.

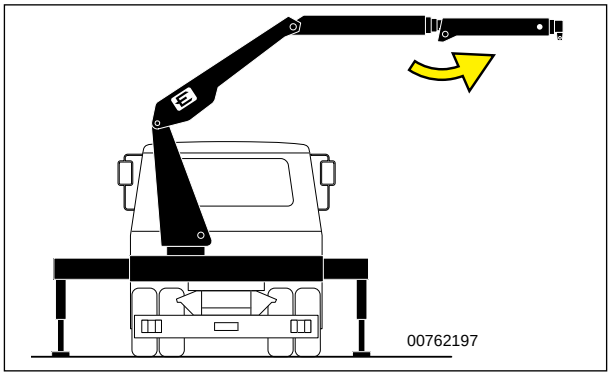




4 Raise the jib.

CAUTION

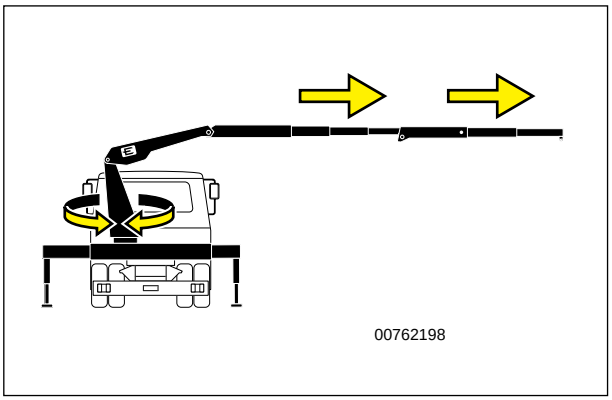
Carry out extraction of the crane extensions only after opening the jib.



Use sequences

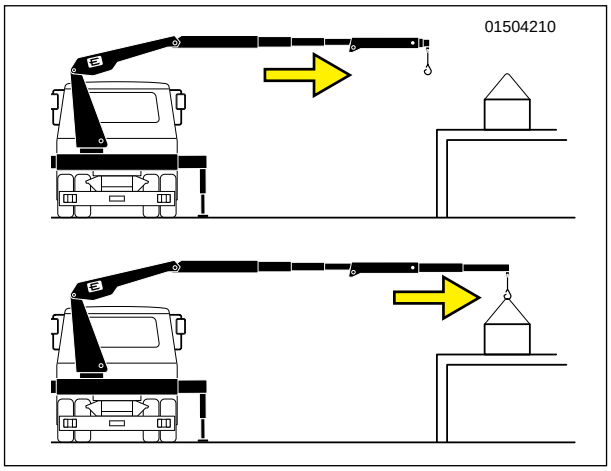
5 Carry out rotation of the column, going towards the load to be lifted.

Carry out extraction of the basic crane extensions and the jib.



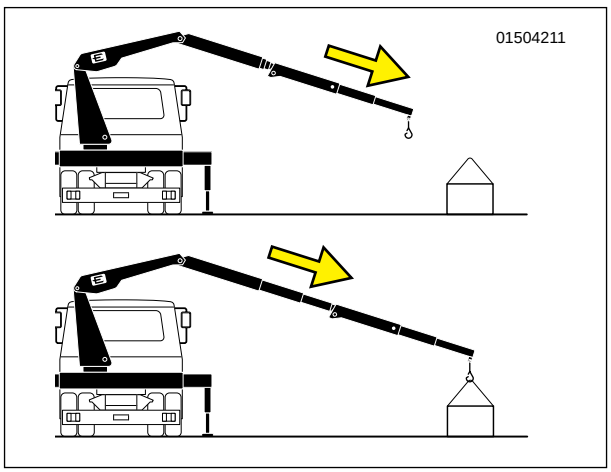
CAUTION

To attach loads directly reachable with a horizontal extraction of the extensions (a condition shown on the load diagram), first extend the crane extensions then those of the jib.



CAUTION

To attach loads which can be reached by stretching out the extensions other than the horizontal one, first extract the jib extensions then those of the crane.



PROHIBITION

It is forbidden to use the stabilisation controls when the crane is in working condition.

CAUTION

During pauses from work never leave the crane with the arms raised over property and/or materials. Possible leaks within the cylinders could cause slow but constant lowering of the arms, damaging anything found in their way.

Use sequences

Crane closing

CAUTION

Carry out closure manoeuvres at minimum speed, visually checking the movements. For the versions equipped with radio-control we recommend you to select from the keyboard the speed "snail" function during the last movements steps.

PROHIBITION

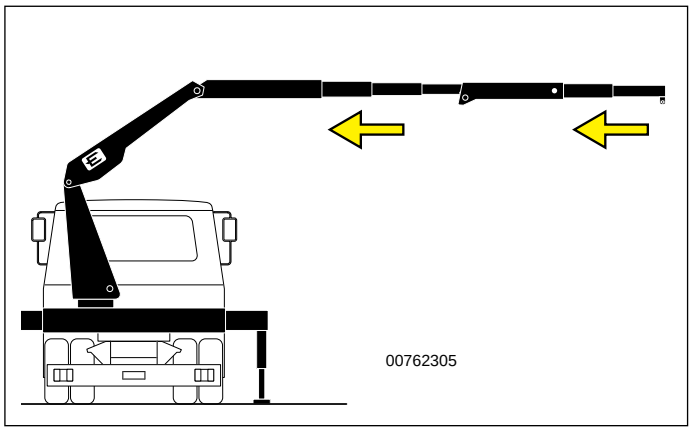
When using the bottom-side control station it is forbidden to carry out folding manoeuvres from the same side as arm closure.

CAUTION

Using the remote/radio-control station you are advised to carry out the folding manoeuvre from the same side as closure of the arms, maintaining a safety distance.

The operations described below are valid for both radio and manual controls.

1 Carry out complete retraction of all the jib and crane extensions.

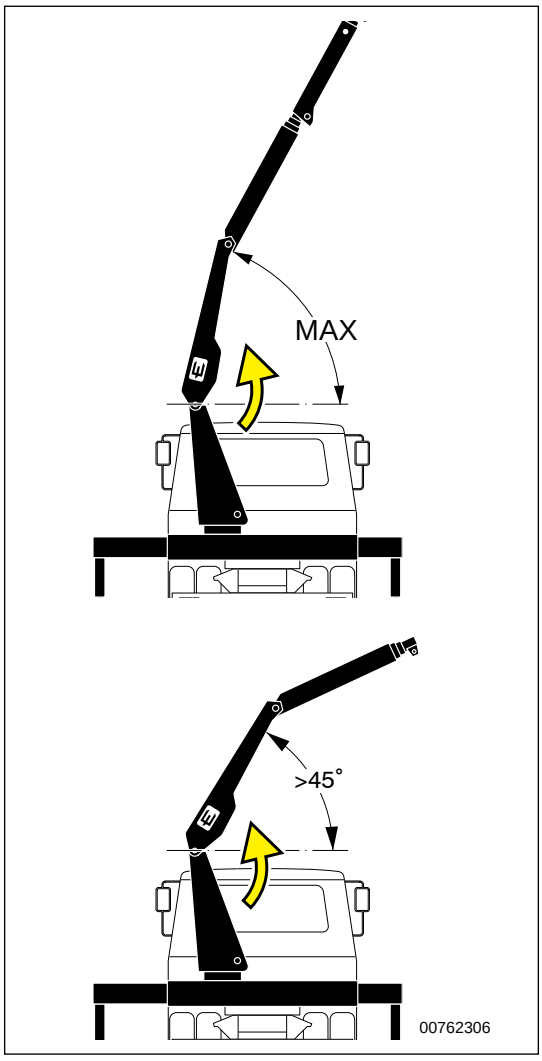


CAUTION

First retract the jib extensions then the crane's.

2 Raise the first arm by a minimum of 45° (at 60° maxi. whenever the crane is equipped with jib).

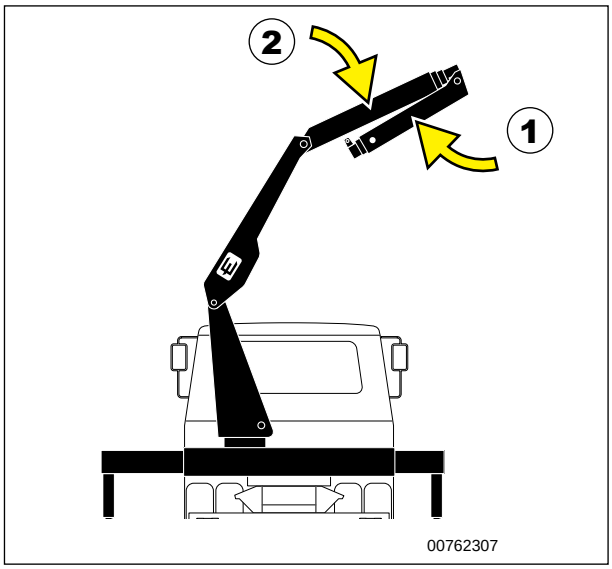
3 Raise the second arm to permit closure of the jib.



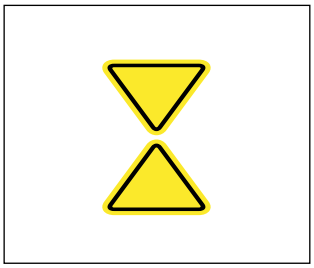
Use sequences

4 Completely close the jib.

5 Completely close the second arm.



6 Turn with the column until the column/base markings match up.

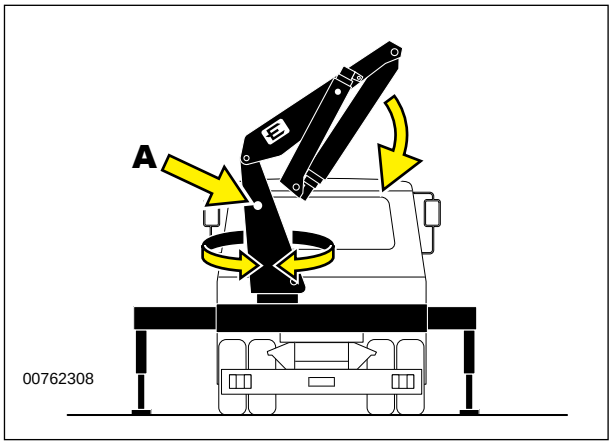


7 Lower the first arm in such a way as to close the crane on the rest support of the base, visually correcting, by turning the column, the descent trajectory.

8 Lightly and gently open the second arm so that it goes to rest on the special column (**A**) support.

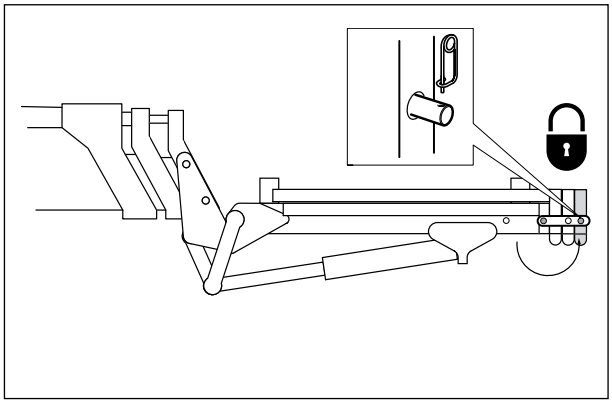
CAUTION

Do not force, otherwise stress will be placed on support parts (A).



9 Reinsert the safety pin that locks the first arm in the closed position.

10 Lock the jib extensions with the proper articulated link-rod, if fitted, thus avoiding the extensions coming out their seat during the transport.



Use sequences

Stabilisation retraction

CAUTION

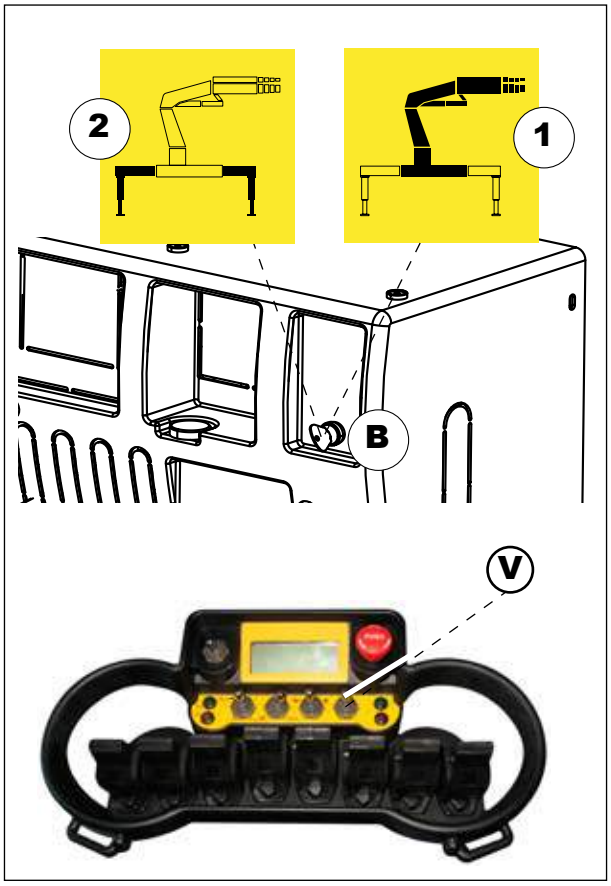
The stabilisation retraction phase must always be carried out with the crane folded in transport configuration.

Once the crane has been folded you must:

1 Enable stabilisation movement with the key switch (**B**) (position 2).

1b Enable stabilisation movement with the switch (**V**) (position **STAB**).

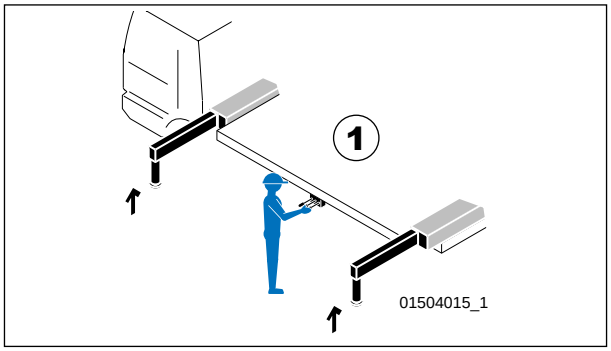
2 From one of the stabilisation control stations, activate retraction of the stabiliser feet on that side.



CAUTION

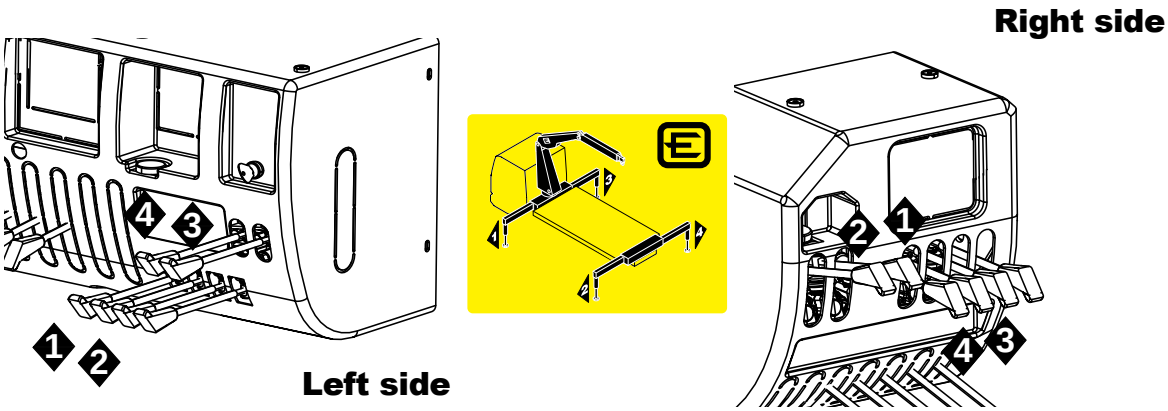
Visually check stabiliser foot jack retraction (see chap. 4 "Controls and instruments" for operational instructions).

Completely retract the stabiliser foot jacks (figure **1**) on that side.
For use of the controls see chap. "**4 – controls and instruments**".



Notes ***Activate retraction of the stabiliser feet from a single control post.***

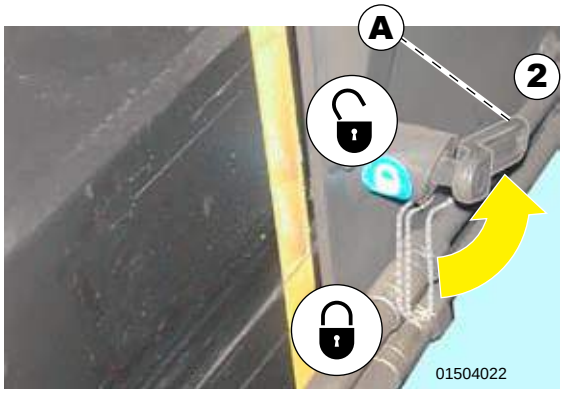
For cranes equipped with swivelling stabiliser jacks, turn the stabiliser jacks manually (figure **2**), as described in chapter "**7 - Accessories**".



Use sequences

3 Unblock the supplementary stabilisers. Turn stops (**A**) (where applicable) to position **2**.

4 From the same control station activate retraction of the stabilisers.
For methods of using the controls see chap. "**4 - c ontrols and instruments**".
Check that the two mechanical stops (**A**) and (**c**) correctly lock the traverses [stop (**A**) inserted and stop (**c**) hooked up to pin (**D**)] so as to avoid stabilisers coming out during the transport.



5 Check for complete retraction of the stabilisers and the foot jacks.

6 On the other side of the vehicle repeat the operations described in points **2** to **5**.

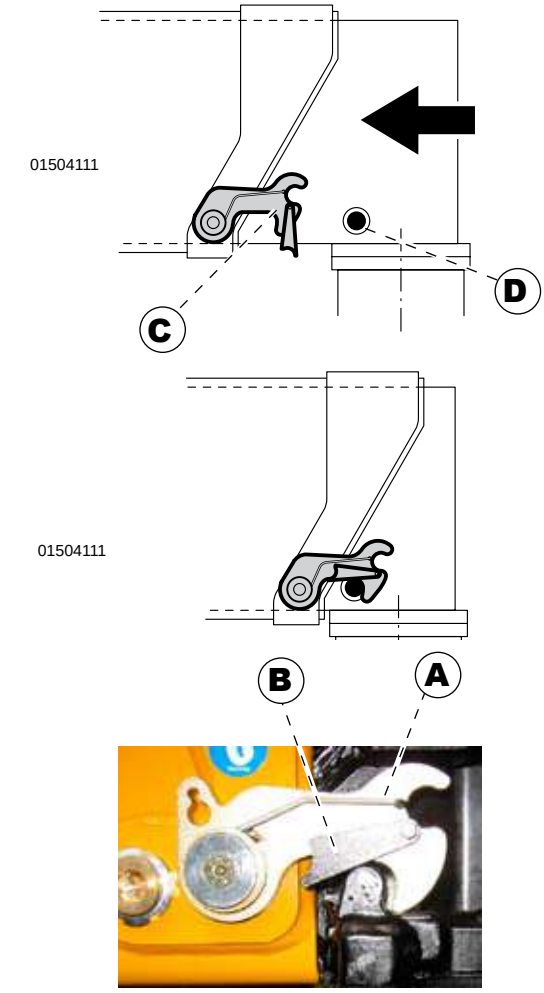
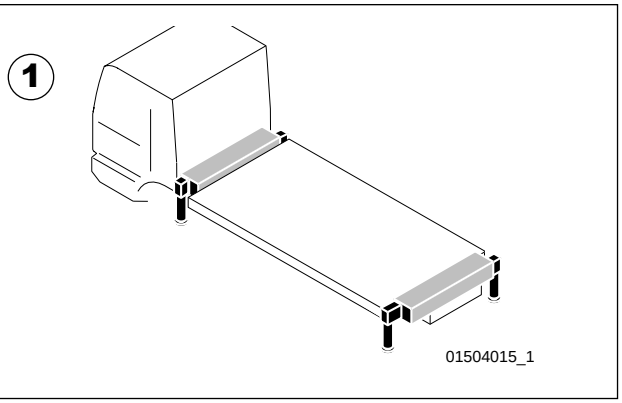


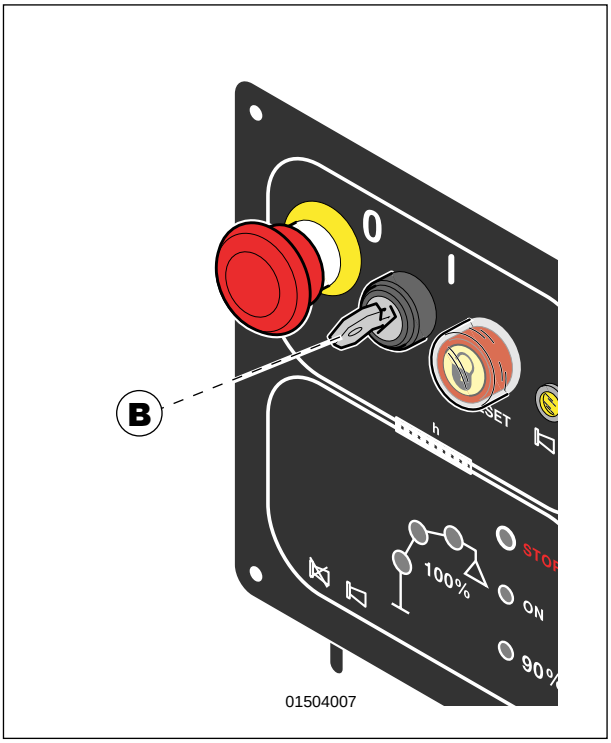
Figure **1** shows the rest position of the stabilising elements for cranes equipped with swivelling jacks.

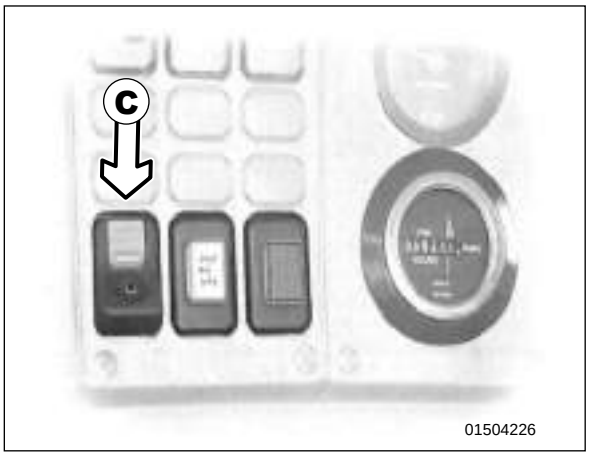


Use sequences

Stop

- Disable the push-button panel (**A**).
- Disable the electrical functions of the crane from the main cut-out (**B**).
- Remove the chucks from the drive wheels.
- Disengage the power take-off (**c**).
- Switch off the vehicle (or auxiliary) engine.





Precautions after use

- Put away cables and slings used for lifting.
- Fix equipment or separate accessories to avoid them projecting out from the truck body during transport.
- Clean the crane of debris or residues.
- Put away signs and signals used for cordoning off the work area.
- Clean and tidy the work area so that visibility and viability conditions are as much as possible similar to what they were before work began.

CAUTION

If the work carried out has modified these conditions and actually reduced safety, the site safety manager, or the owner, should be informed. Otherwise suitable warning signs should be placed pointing out any danger.

- Remove keys from lockable doors and devices and leave the keys in the vehicle cabin.
- Recharge the push-button panel / radio-control batteries.

9
Maintenance

CAUTION

Disconnect the machine from all sources of energy before starting any jobs: the truck motor has to be off and the crane electric installation must not be operating.
Oil and other components in general are to be disposed of according to current laws.
Always follow the manufacturer's instructions and legal provisions in terms of health and safety.

Introduction

The information given herein refers to routine procedures (routine maintenance, routine tests and inspections).

Extraordinary maintenance and inspections are always and exclusively to be carried out by authorised EFFER workshops .

The use of non-original spare parts or any modifications and/or alterations made (even minimal) relieve the manufacturer from all forms of liability with regard to the correct operation of the machine and to the safety of persons and/or property.

The guarantee conditions lose effect if any problems encountered are due to incorrect maintenance or if no maintenance has been made.

Inspections, lubrication and cleaning jobs are to be carried out with the machine stopped, in full control of the operating elements and in compliance with the safety instructions.

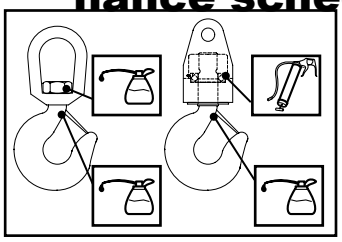
CAUTION

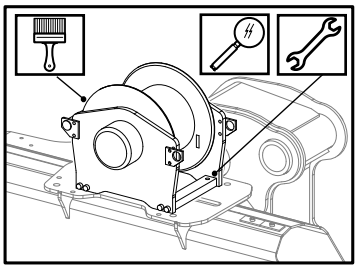
Extraordinary maintenance jobs are to be written down in the inspection register.

CAUTION

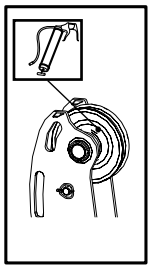
Maintenance personnel must comply with all current injury prevention requirements related to repair shop work and moving loads.

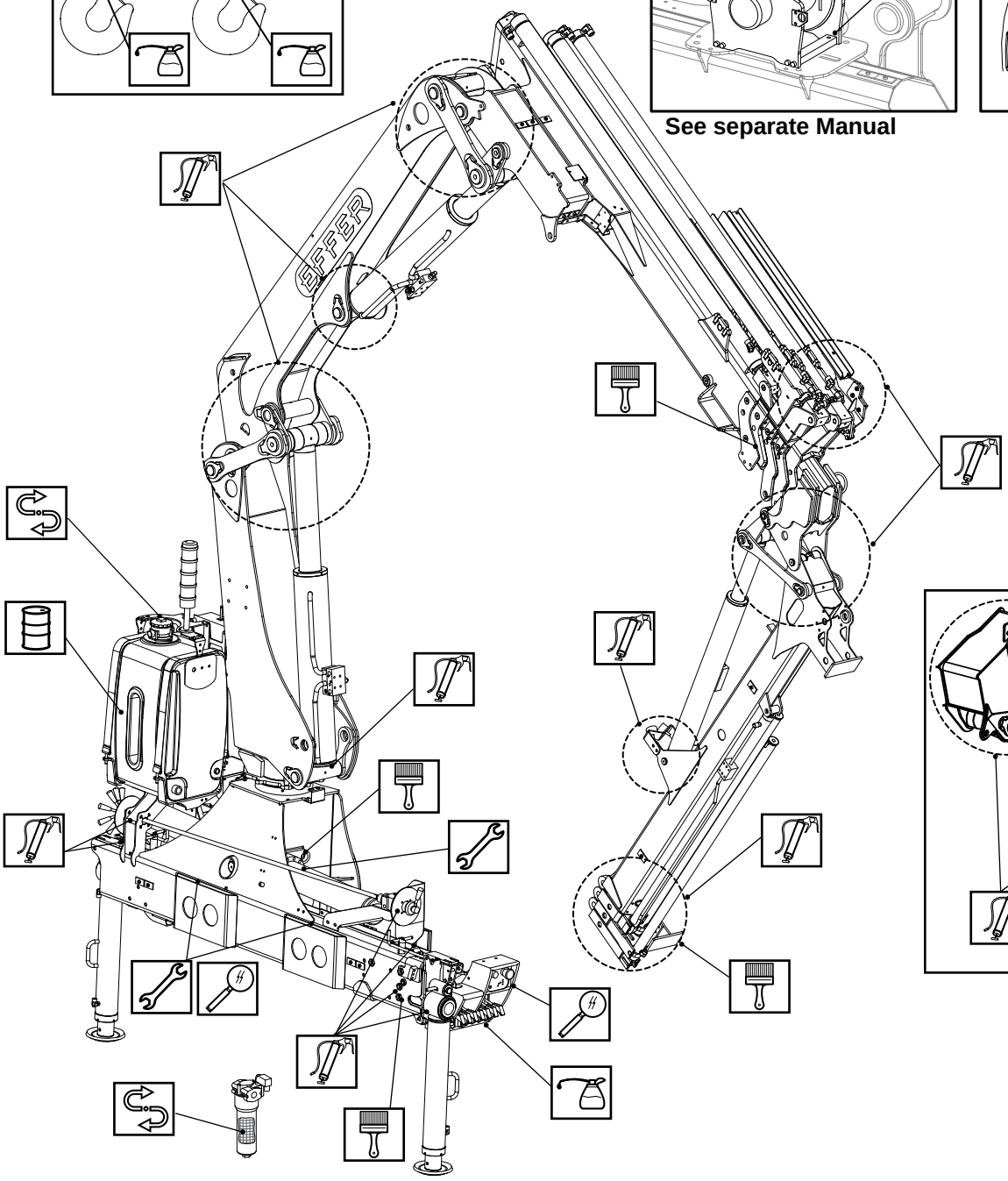
Maintenance schedule

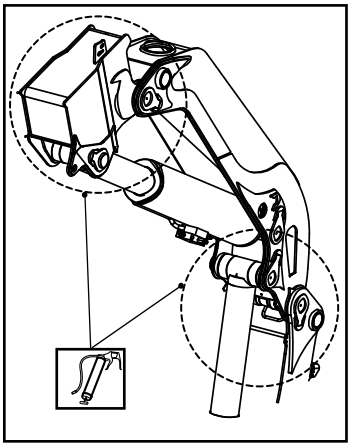




See separate Manual



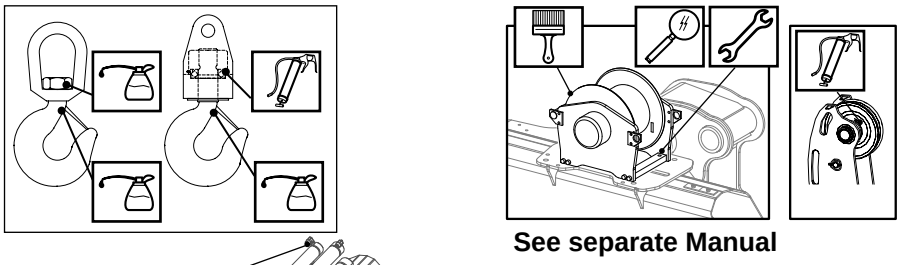




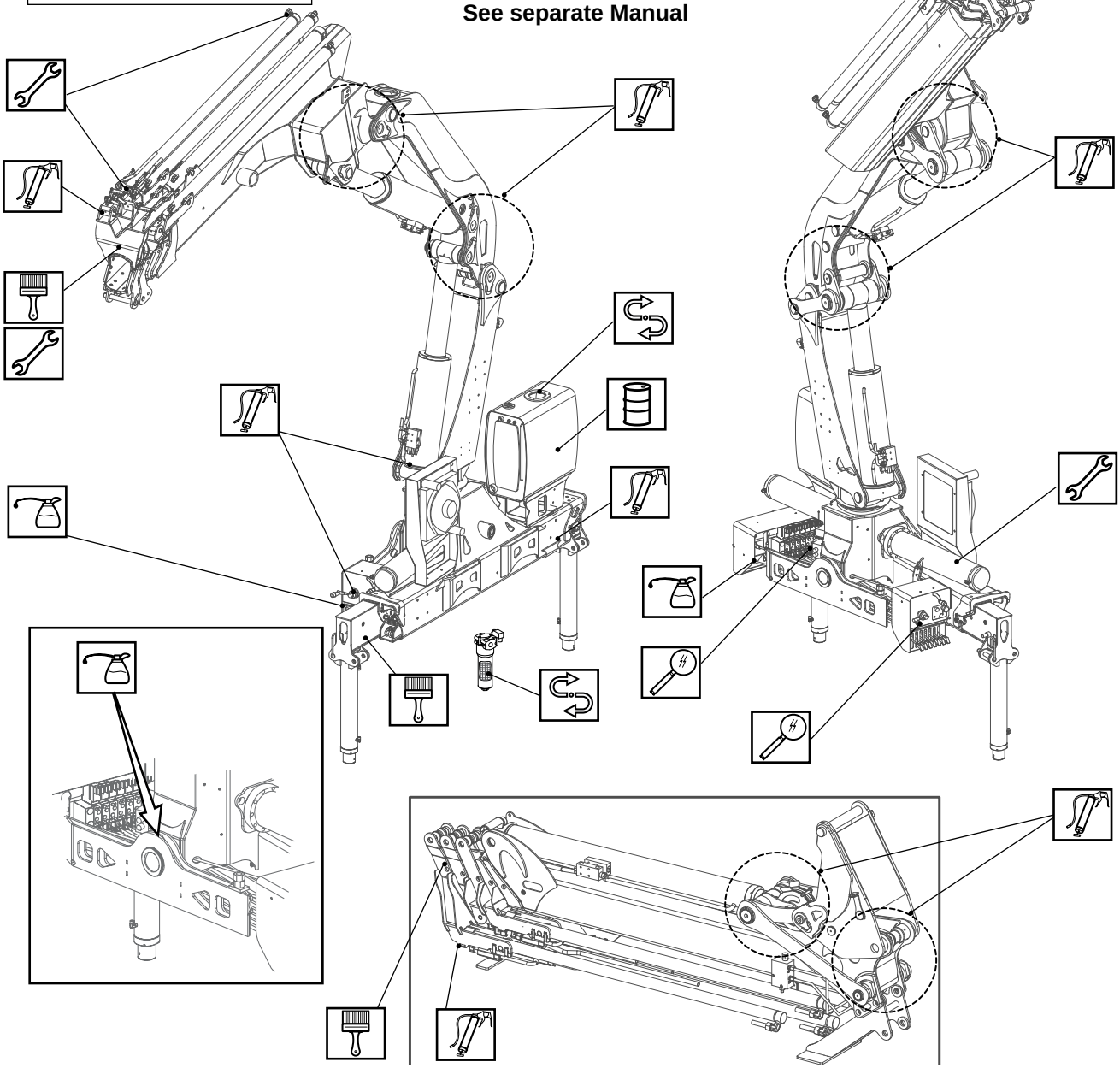
Check, inspect	Grease with pump	Replace
Tightening/using tools		OIL
Grease with brush	Lubricate with oil	Authorised workshop

Note ***The pump greasing points on the crane can be recognized thanks to a label placed nearby.***

Maintenance schedule



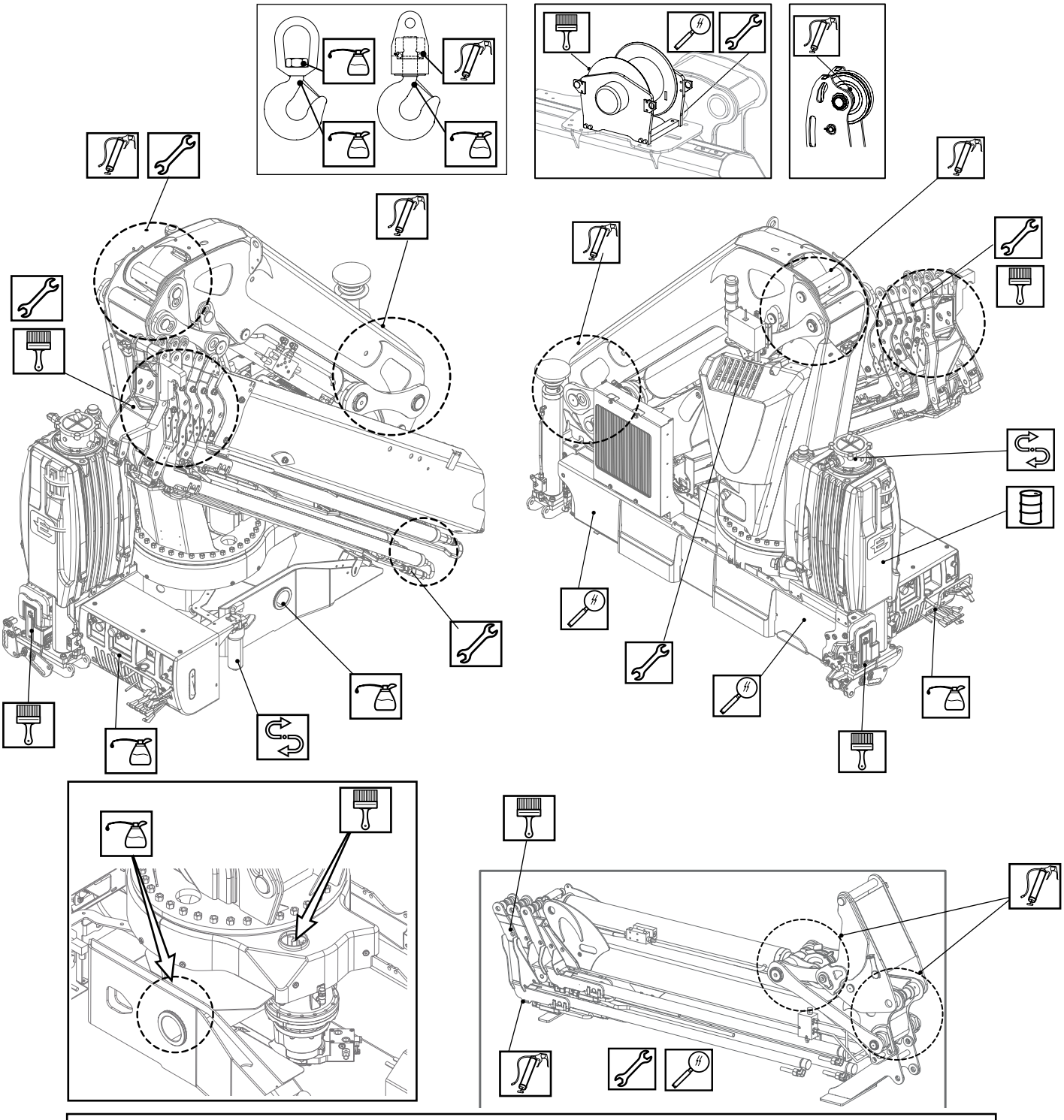
See separate Manual



Check, inspect	Grease with pump	Replace
Tightening/using tools		OIL
Grease with brush	Lubricate with oil	Authorised workshop

Note ***The pump greasing points on the crane can be recognized thanks to a label placed nearby.***

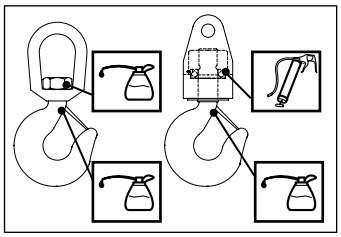
Maintenance schedule

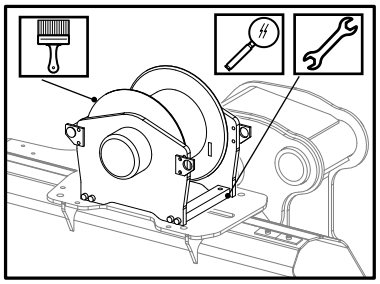


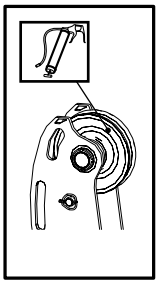
Check, inspect	Grease with pump	Replace
Tightening/using tools		OIL
Grease with brush	Lubricate with oil	Authorised workshop

Note ***The pump greasing points on the crane can be recognized thanks to a label placed nearby.***

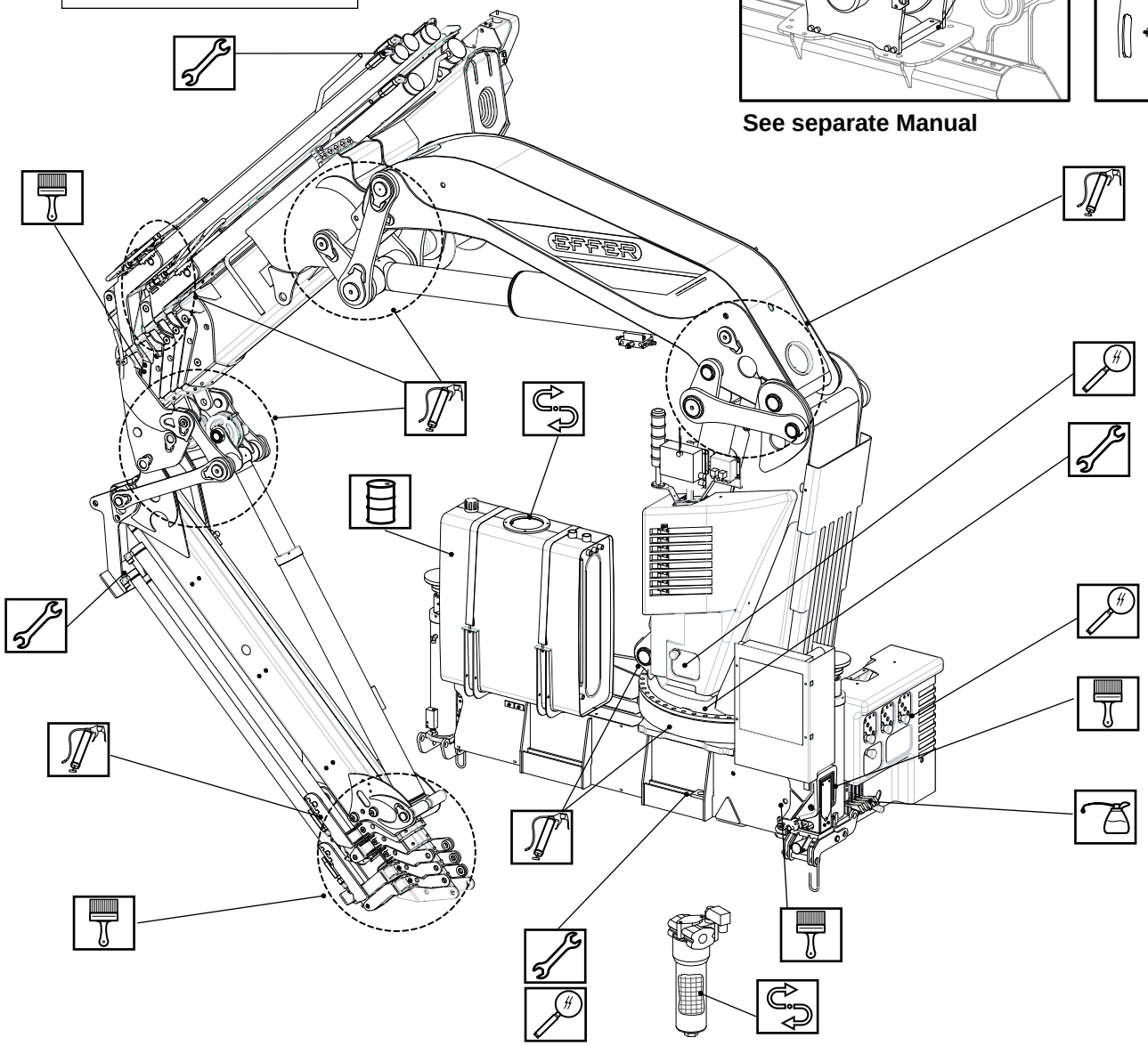
Maintenance schedule







See separate Manual



Check, inspect	Grease with pump	Replace
Tightening/using tools		OIL
Grease with brush	Lubricate with oil	Authorised workshop

Note ***The pump greasing points on the crane can be recognized thanks to a label placed nearby.***

Maintenance schedule

I IST OF OpERATORS' pROFIl ES AVAIl ABl E FOR INSTAll ATION, USE, MAINTENANc E AND INSpEcTION OF ThE cRANES

pictogram	Tab. W
A	OWNER / EMPLOYER
B 	INSTALLER person / company responsible of the set up and installation of the crane on vehicle / unit / fixed base, in accordance with the instructions provided by Effer and according to the rules and laws in force in the country in which the equipment will be used.
C 	EFFER SERVICE CENTER person / company that received instructions training, resources by Effer to perform properly check interventions, testing, service and repairs on the crane. (*)
QO 	OPERATOR QUALIFIED TO CRANE USE: A person so designated by the employer who has appropriate training and adequate experience in the use of the crane.
MQO 	OPERATOR QUALIFIED TO BASIC CRANE SERVICE: A person so designated by the employer who has appropriate training and adequate experience in the use of the crane and in the simple maintenance of the crane.
MQM 	MECHANICAL OPERATOR QUALIFIED TO COMPLEX CRANE MAINTENANCE: Skilled person, like defined by standard ISO 12480-1-1997, trained to be authorized to carry out complex maintenance mechanical operations and, when provided, to update and to sign the inspection register. The personnel in charge of maintenance operations of Effer service centers covers this qualification.
MQE 	ELECTRICAL / ELECTRONIC QUALIFIED OPERATOR: Skilled person, like defined by standard ISO 12480-1997, trained to and authorized to perform maintenance operations, of electrical / electronic complexity and, when provided, to update and to sign the inspection register. The personnel in charge of maintenance operations of Effer service centers covers this qualification.
IQ 	QUALIFIED INSPECTOR (ISO 23814-2009 - Categories d): Experienced person with the necessary knowledge and well-known experience, so as to carry out such inspections to the crane. He/she should have practical skills that can facilitate the inspection procedures. Such capabilities can be derived by a combination of various experiences in the field. Moreover, he/she will have to update knowledge and skills as required by product innovation, and he/she will be free from any commercial, financial and other contractual interest that can influence his/her inspection job.
IE 	EXPERT ENGINEER (ISO 9927-1-2009 - TAB. A1): An engineer with experience in crane design, building, maintenance with adequate knowledge of regulations, standards and equipment necessary to carry out inspections. The experienced engineer must be also able to judge the safety status of the crane and to decide on measures that must be taken in order to ensure the correct safe operation; moreover, he/she must be free from any commercial, financial interest that could affect his investigative work.

(*) The updated list of Effer service centers, can be found on the site www.effer.com

Maintenance schedule

DAIl Y chEcKS (a cura dell'operatore)			
Before each job			
	Element	**Job**	
	Luminous/audible warning functions		
	Crane safety device efficiency		
	Winch safety device efficiency (when mounted)		
	Emergency push buttons efficiency		
	Stabiliser safety mechanical stop efficiency		
	Efficiency of distributor control leverst		
	Efficiency radio-remote control (when mounted)		
	Hydraulic oil level		
	Hook, hook safety, safety in general		
	Winch rope (when mounted)		
	Lifting accessories		
	Structural functionality and safety, wear, play, deformations, misalignments		

Note ***The work hours indicated in the tables are understood as time units for crane operation, the sum of the lift cycle times and the pause times according to the expected intermittent use (see previous chapters). In the event of heavier use in which the crane is operated / moved with brief pause periods and with heavier use than expected, the operation hours indicated in the tables must be decreased proportionally.***

Note ***The greasing intervals shown are referring to the use of high performing greases (see recommended greases).***

Note ***Extraordinary maintenance jobs are to be carried out once a year at least, by authorised workshops.***

Maintenance schedule

FIRST SERVIcE

After initial 50 hours of work (it is advisable to have the first service done by an authorised workshop)

Element	Job	Operator profile
Macchina nel suo insieme (struttura e impianti)		
Oil Filter		
Winch screws (when mounted)		
Slewing tube, slewing ring, gear motor screws (depending on the model)		
Fixing kit screws		
Gear motor and winch oil level (when mounted)		
Tubi idraulici rigidi e flessibili, raccordi idraulici		
Structural functionality and safety, wear, play, deformations, misalignments		

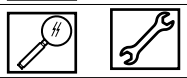
ROUTINE MAINTENANcE

Every 20-30 hours of work or once a week.

Element	Job	Operator profile
Safety locking devices		
Column and rack/ slewing ring (depending on the model)		
Telescopic parts-crane extensions -stabilizers (if noises are heard or there is decreased performance)		
Pins		
Distributor control levers (when mounted)		
Hydraulic oil level		
Winch /pulleys (when mounted)		
Winch rope (when mounted)		
Hook and lifting accessories		
Stem surfaces cleaning of the exposed cylinders. Oil if the machine has not been running for more than 1 month.		
Structural functionality and safety, wear, play, deformations, misalignments		

Maintenance schedule

ROUTINE MAINTENANcE		
Every 250 work hours or at least every 3 months		
Element	**Job**	**Operator profile**
Winch cable and chains (where applicable)(according to attachment VI LD 81/08		
Structural functionality and safety, wear, play, deformations, misalignments		

ROUTINE MAINTENANcE		
Every 500 work hours or every 6 months		
Element	**Job**	**Operator profile**
Screws/nuts/Seeger rings/pins		
Winch screws		
Rotation hydraulic cylinders shank screws/reducer screws		
Swivel ring screws		
Fixing kit screws		
Winch and reducers oil level		
Carpentry and plumbing inspection		
Luminous/audible/visual warnings		
Safety devices functionality control		
Electric cables and connections integrity control		

Maintenance schedule

EXTRAORDINARY MAINTENANcE *

For operating instructions see the SERVIcE MANUAl

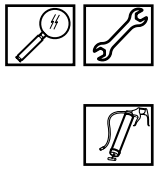
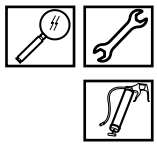
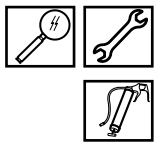
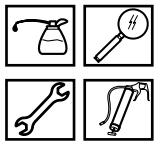
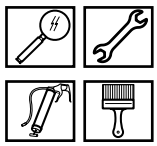
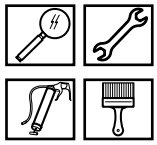
Every 1000 hours of work or at least once a year

* If, during an emergency situation, the crane has been subjected to overloads, or any by-passes, or the operator detects the need for an extraordinary maintenance operation in order to keep the equipment safe, immediately contact an authorized repair shop.

cRANE

ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Machine as a whole (structure and equip-ment)	- General visual inspections	☐	☐	☐	☐	
Signals, pictograms, posters, si-gns, notices	- Presence, readability, wear	☐	☐	☐	☐	
Counterframe	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation, disallineamenti - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Stabilizers / feet / plates	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication - Adjustments	☐	☐	☐	☐	
Basement	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication - Adjustments	☐	☐	☐	☐	
Fifth wheel / gear / teeth	- Structural integrity - Wear, play, - Screw tightening - Lubrication - Leaks	☐	☐	☐	☐	

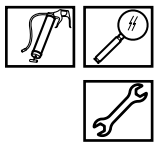
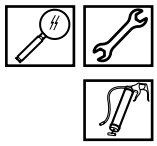
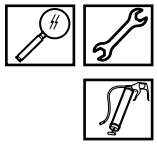
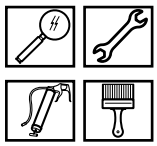
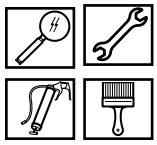
cRANE

ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Column 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication - Adjustments	☐	☐	☐	☐	
1st Boom 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication	☐	☐	☐	☐	
Connecting rods 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication	☐	☐	☐	☐	
Pins and Bushings 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication	☐	☐	☐	☐	
2nd boom 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication - Adjustments	☐	☐	☐	☐	
Extensions booms / pads 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication	☐	☐	☐	☐	

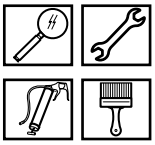
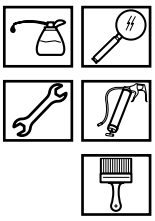
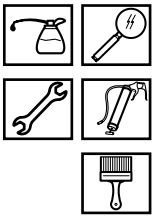
(*) Wear / play: eg. between metal parts, bushings, pads.
Structural integrity: verify the presence of cracks, deformation, breaks, pins functionality, cotter pins, Seeger, screws, etc..

Key:
S: Yeah, ok, all operations were performed successfully according to crane instruction manual;
N: no, one or more operations were performed successfully;
R: repaired, and recovery of the safety conditions.

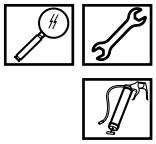
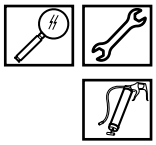
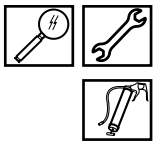
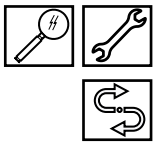
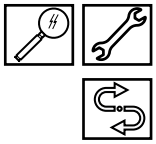
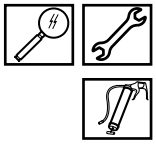
JIB

ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Boom / coupling 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation, misalignement - Tie rods / screws / ring nuts tightening - Lubrication	☐	☐	☐	☐	
Connecting rods 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation, misalignement - Tie rods / screws / ring nuts tightening - Lubrication	☐	☐	☐	☐	
Pins and Bushings 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation, misalignement - Tie rods / screws / ring nuts tightening - Lubrication	☐	☐	☐	☐	
2nd boom / coupling 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation, misalignement - Tie rods / screws / ring nuts tightening - Lubrication - Adjustments	☐	☐	☐	☐	
Booms extensions / pads 	- Structural integrity, efficiency, structural functionality (*) - Wear, play, deformation, misalignement - Tie rods / screws / ring nuts tightening - Lubrication					

AccESSORIES

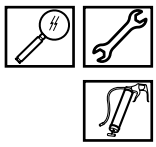
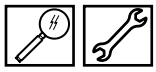
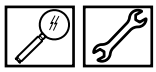
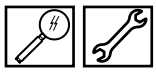
ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Winch / pulleys / cable / wire terminals 	- Structural integrity - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Leaks - Lubrication	☐	☐	☐	☐	
Manual extensions	- Structural integrity - Wear, play, deformation - Marking integrity	☐	☐	☐	☐	
Lifting accessories (hooks, shackles, pins / cotter pins) 	- Structural integrity - Wear, play, deformation - Lubrication - Marking integrity	☐	☐	☐	☐	
Additional tools (buckets, rotors, baskets, etc.) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	

hYDRAUlIc SYSTEM

ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Hydraulic cylinders valves / hoses / bushes) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Leaks - Functionality - Leaks - Leakage - Lubrication	☐	☐	☐	☐	
Hydraulic motors 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Leaks - Leakage - Lubrication	☐	☐	☐	☐	
PTO / pump 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Leaks - Leakage - Adjustments (check pressure and speed)	☐	☐	☐	☐	
Valves Solenoid valves Controlbanks Hoses / pipes Delivery filters 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Functionality - Leaks - Leakage - Adjustments (check pressure and speed) - Sealing - Tamper Evident - Replacement of filter cartridges - Replacement of damaged flex hoses	☐	☐	☐	☐	
Tank Oil / air filters 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Leaks - Oil replacement - Replacement of oil/air filter cartridges (**)	☐	☐	☐	☐	
Flex hose reel 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Functionality - Leaks - Replacement of damaged flex hoses - Lubrication	☐	☐	☐	☐	

(**) Replace the air filter on the tank after 1000 working hours, in case of clogging signalled by the indicators (if any). To work in very dusty areas, replace every 500 hours

ElEcTRIc SYSTEM

ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Emergency pump (if present) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Electrical boxes Wiring Connectors 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Waterproof - Cleaning - Sealing - Tamper Evident	☐	☐	☐	☐	
Sensors, electrical / electronic 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Calibration setting - Sealing - Tamper Evident	☐	☐	☐	☐	
Audible and visual warnings 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	

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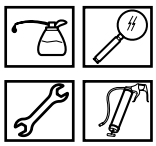
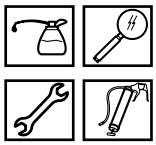
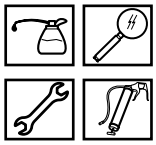
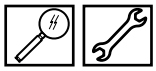
ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Manual controls 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication - Sealing (limit switch) - Test	☐	☐	☐	☐	
Emergency controls 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Lubrication - No Control levers fitted - Emergency levers fitted (when provided)	☐	☐	☐	☐	
Seat / platform / entrances 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Remote control 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening - Waterproof - Cleaning - Test	☐	☐	☐	☐	

SAFETY DEVIcES

ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	N	R	Lubrication replacement	Notes
Parking brake / chocks (wheel lock wedges) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Pins / safety pins 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Cylinders safety valves (general) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Control systems (video cameras, mirrors, etc.) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Transport safety devices (outriggers position, 1st boom, etc..) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Controls and protections for interlocks 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Indicators of clogged oil / air filters 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Luminous acoustic signals (general) 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Stop button and / or emergency 	- Structural integrity, efficiency, functionality - Wear, play, deformation - Tie rods / screws / ring nuts tightening	☐	☐	☐	☐	
Tamper-proof devices, (seals, mechanical seals, adhesives, paint, electronic recordings) 	- Structural integrity, efficiency, functionality - Wear, play, deformation	☐	☐	☐	☐	

Crane moment limiter 	Operational test	☐	☐	☐	☐	
Crane position limiter 	Operational test	☐	☐	☐	☐	
Crane load indicator 	Operational test	☐	☐	☐	☐	
Crane stability control device 	Operational test	☐	☐	☐	☐	
Winch load limiters 	Operational test	☐	☐	☐	☐	
Winch limit up 	Operational test	☐	☐	☐	☐	
Winch limit down 	Operational test	☐	☐	☐	☐	
Basket devices		☐	☐	☐	☐	

ITEMS TO CHECK	TYPE OF CHECK	TEST RESULTS S	TEST RESULTS N	TEST RESULTS R	Lubrication replacement	Notes
General lubrication 	- According to user manual	☐	☐	☐	☐	
Operation testing on vacuum 	- Test	☐	☐	☐	☐	
Operation tests with load diagram 	- Test	☐	☐	☐	☐	
Checking the documentation (operator's manual, control register) 	- Accuracy of the documentation	☐	☐	☐	☐	
Checking the conditions of use of the crane (condition - SWP) 	- Analysis by calculating residual SWP (CL%)	☐	☐	☐	☐	
Place Date 	Stamp and signature	☐	☐	☐	☐	

Greasing and lubrication

Proceed with lubricating the set areas on the crane indicated with the ////// symbol, the equipment and accessories according to the manufacturer's recommendations regarding the types of grease and oil indicated.

You will need different tools based on the zone to be lubricated:

-  Pressure grease pump
-  Oiler
-  Brush

When using pressure grease pumps, open the plastic safety guard of the lubricator and close it upon completion.

Use grease type EP2 (Extreme pressure – consistency 2) according to the technical specifications given below.

Recommended grease:	**Nilex 2 (Nils) ***
Alternative grease	**FUchS lUBRITEcK: STABYl AX 2** **AGIp: ROcOl SApphIRE AQUA 2** **AGIp: Ac 2**
Main features required in case of use of grease from other manufacturers:	
Consistency NLGI (IP 50) (ASTM D217): 2	Inspissator: compound aluminium
Minimum carrier capacity: 3000N (welding force DIN 51350-4) - 40lb (testTimken ASTM 2509)	Temperature of use: -20/+150°C (DIN 51502) Drop point: ca 240°C (DIN 51801)

As a rule, grease shall have the following excellent characteristics: resistance to oxidation, waterproof, stability, protection against corrosion, adhesiveness, fluidity on long term.

Note ***Specific additives inside the grease (varying according to the manufacturer) affect the value of the greasing intervals.***
THE USE OF GREASES BASED ON ALUMINIUM IS PRESCRIBED.
Do not mix lithium based greases with aluminium based ones. When you change from one kind to the other you need to completely eliminate the grease to be replaced, through a plentiful first greasing.

Note ***Do NOT use grease with Molibdene Bisulphide.***

In order to grease the hydraulic extensions tubulars and the stabilisers tubulars you can use minor performing greases. Grease type EP2 is recommended.

For the greasing of the winch rope please use special greases for ropes (normally spray).Grease type EP2 is allowed.

The type of oil for the reduction unit of the rotation unit is SAE 80W/90 API GL5 with yield temperature less than or equal to –35°.

For oil lubrication, use class SAE 30 oil (for max 20°C room temperatures) and SAE 90 oil (for more than 20°C room temperatures) according to the room temperature.

Note ****- with crane equipped with centralised automatic greasing system, use grease type NILS ATOMIC RH***

Greasing

Observe the warnings that follow:

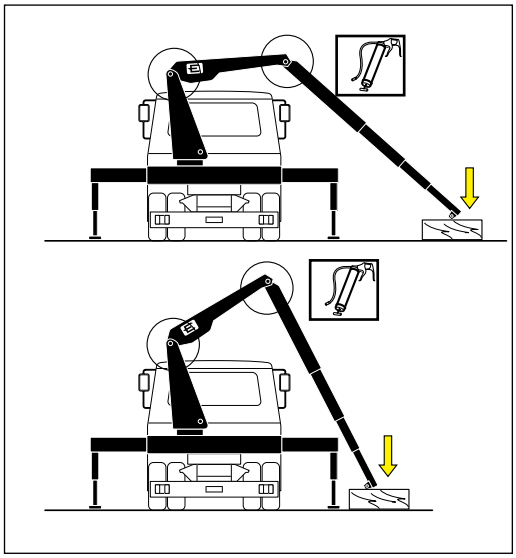
- Clean the points to be greased before actually doing so, otherwise any dirt present could be pushed in with the lubricant causing early wear and anomalies of the parts.
-  Using the grease pump, inject grease into the points established until grease spills out of the ends. Do this a number of times in various points of the pin to be certain that its whole surface is fully lubricated. Clean away the excess grease.
-  Spread the grease evenly using a brush.

Lubricating jobs

-  Using a suitable oiler, apply the oil in the parts in which there is any contact or sliding movement of the pin and levers.

Hinge pins

Press gently to the low the end of the crane (i.e. put it on a wooden board) to be sure that all the pin surface is lubricated. We recommend you grease several times and in different positions.



Slewing system

To correctly execute the greasing shall be made several times by placing the crane column in different angular positions.

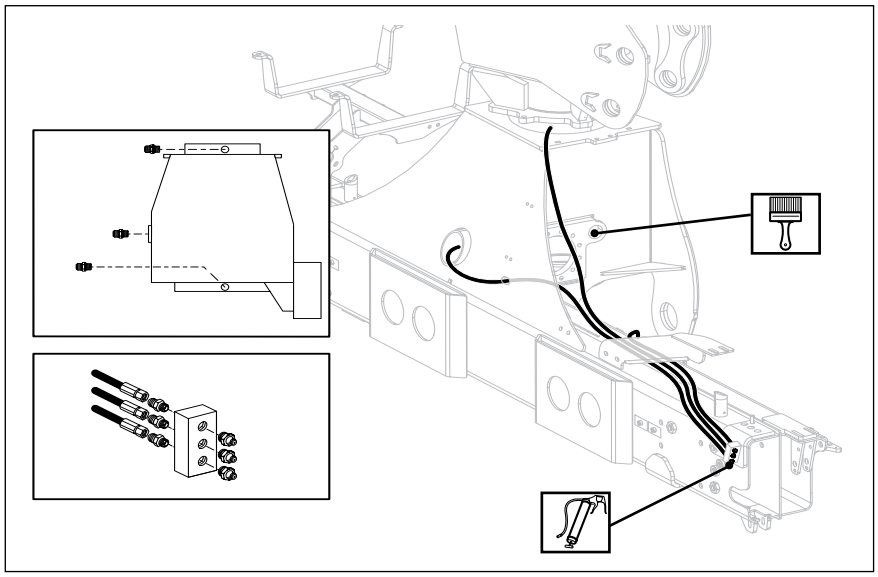
When provided, the greasing points are joined in a centralised manifold.

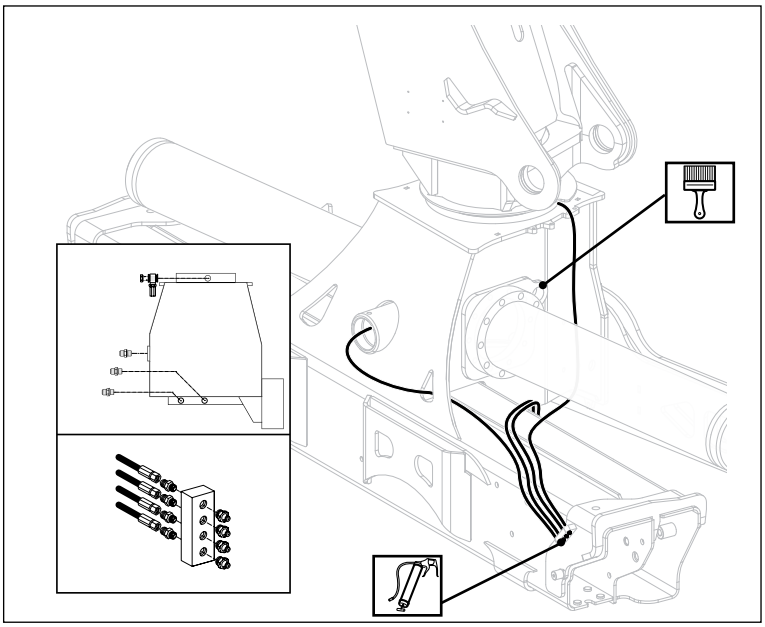
1) Slewing ring/gear motor system
- grease the teeth on the column pinion, inserting a small brush in the appropriate opening.
- grease the upper and lower bushing.

2) pinion/gear motor system
- Grease the teeth on the slewing ring, inserting a brush in the appropriate opening on the column.
- Grease the swivel ring spheres at the appropriate points.

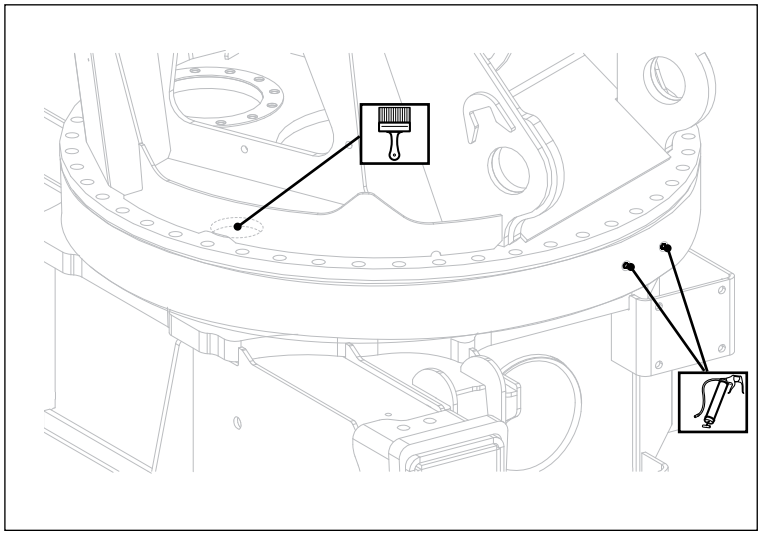
Greasing and lubrification

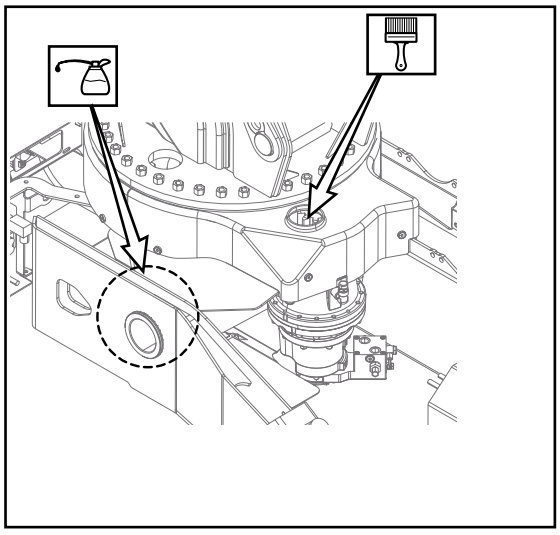
1) Slewing ring/gear motor system





2) pinion/gear motor system

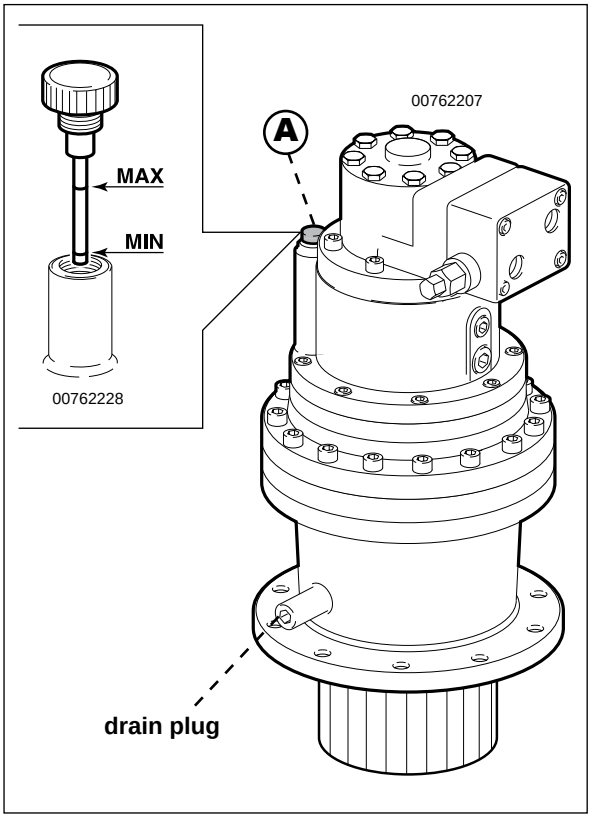


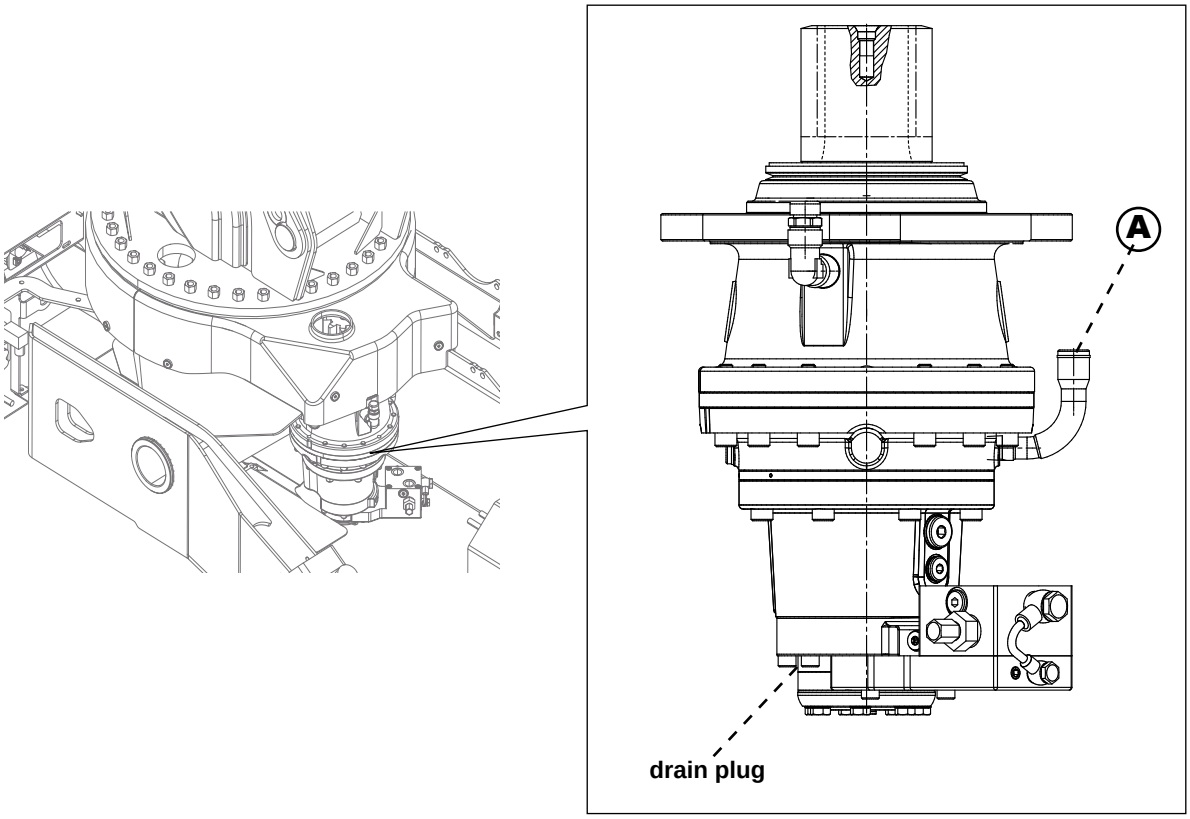


Greasing and lubrification

Topping and changing oil of gear box

Re-fill by means of plug **A**. When the correct oil level has been reached, the oil will come out of the plug **A**. To drain the used oil refer to the regulations in force in the Country where the crane is used.





Hydraulic extensions

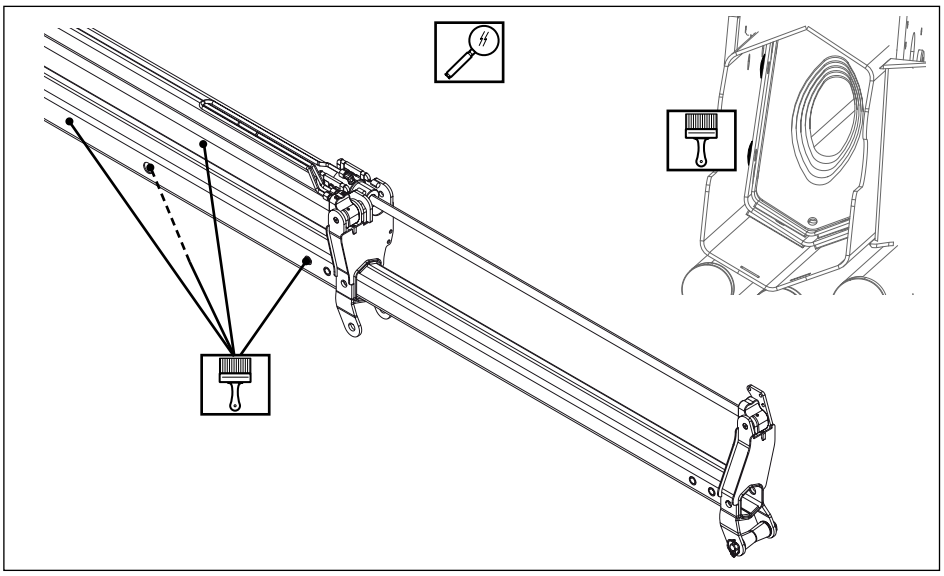
Clean the surfaces and remove any abrasive material (earth, sand, shavings) using a spatula and also remove the old grease.

Grease externally the tubulars in the low part (less in the upper and side parts).

Grease internally the tubulars in the upper part (less in the lower and side parts).

In order to internally grease use the side holes in the tubulars (when provided) and the back closing plate slots.

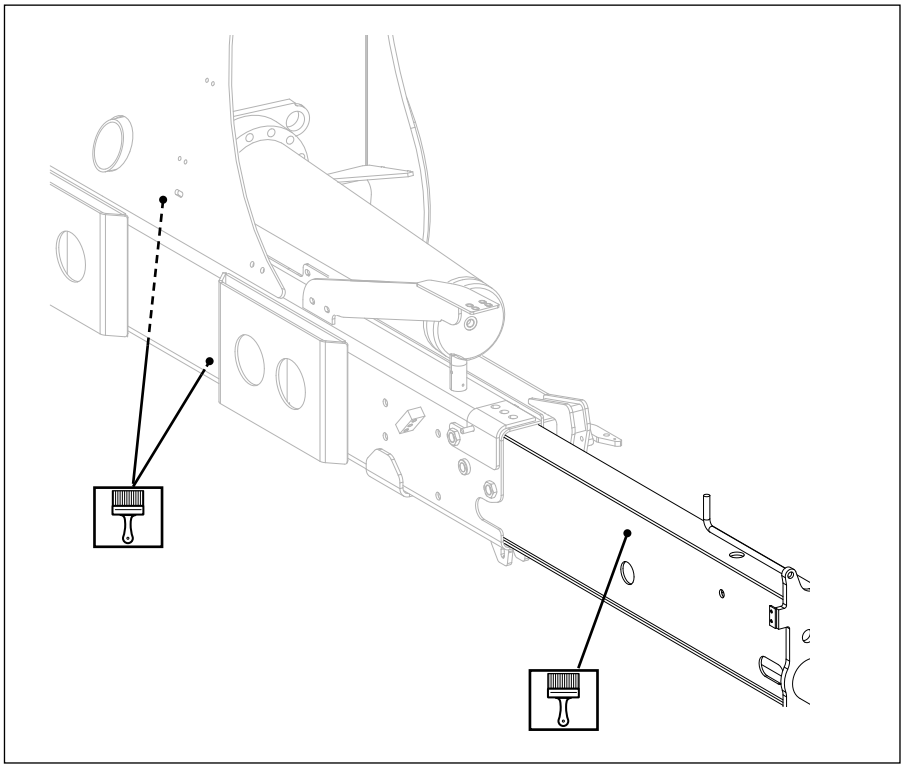
Grease the sliding block area when present, with extensions inside, also through two specific greasing points.

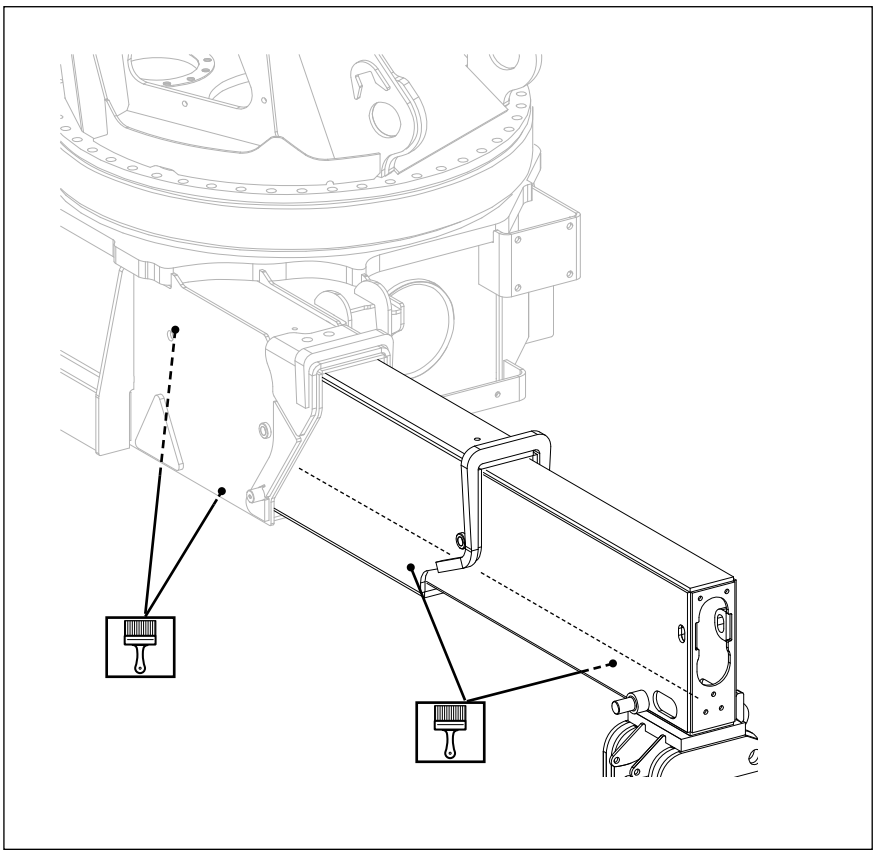


Stabiliser tubular sections

Grease the pipes on the lower sliding surfaces.

When accessible, grease the interior of the fixed pipe in the upper and lower sliding surfaces.





Winch cables

Cable servicing on a regular basis ensures the perfect operational efficiency of the crane, and increases the cable operational life.

Metallic cables must be lubricated periodically, according to the crane use.

Lubricants for servicing are listed in the oil table.

Note ***Cable is submitted to dust and dirt causing wear and tear. Clear it regularly, when particularly dirty, with brush.***

Transmission heads, transmission block

With a grease pump, lubricate the bearing pin on the pulleys for various angular positions to cover 360°, the grease must come out of the part opposite the greaser.

Winch

(See separate manual).

Changing oil when servicing the filters

Recommended hydraulic oils

To ensure the perfect operational efficiency of the crane, the oil in the hydraulic system must have a limit viscosity of between **100** and **12 cSt** during the working phase (recommended interval **70 ÷ 20 cSt**).

For example:

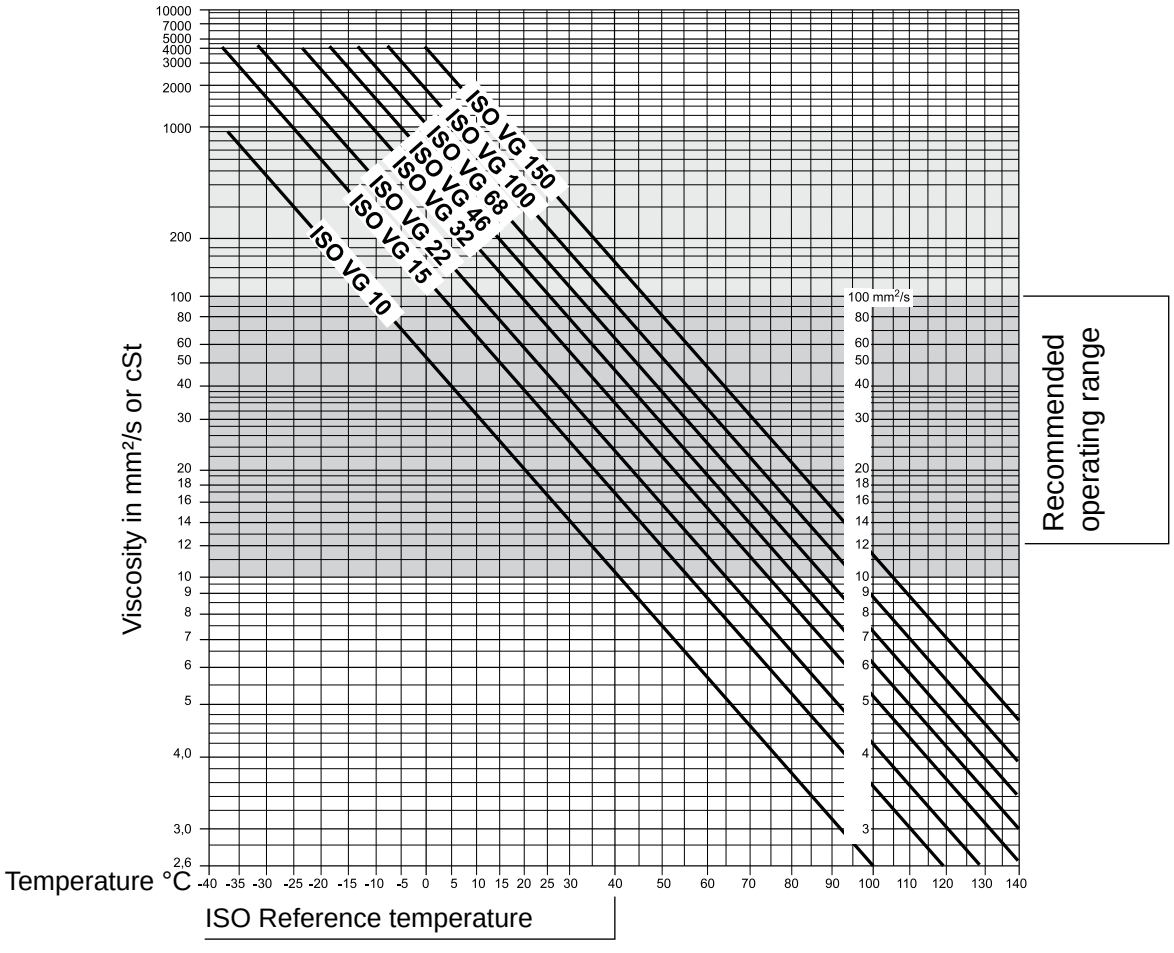
For oil type **VG 46**, this corresponds to limit temperature intervals during the working phase of between **25** and **75 °c** (recommended interval **30 ÷ 60 °c**). Whatever the case, the cold starting limit is **1000 cSt** (**-5°** with **VG 46**) and the crane must never be started when the oil temperature is lower than **–20 °c**. The irregular overheating limit of the oil corresponds to a limit viscosity of **10 cSt** (**80° c** with oil **VG 46**) and the temperature of **80 °c** must never be exceeded during the working phase.

It is of crucial importance to choose the correct type of oil based on the ambient temperature and type of working conditions. Do not compromise. You are recommended to use oil type **hlp/ISO** .

When the oil is still cold at the beginning of the cycle, the oil filter-clogging indicator may indicate the need for maintenance. Wait a few minutes and if the indication still persists, carry out maintenance as instructed herein.

When the ambient temperature is lower than or equal to **0 °c**, the oil needs to be pre-heated to be able to reach the minimum working temperature (**250 cSt** at **10°c** with oil **VG 46**). The oil pre-heating methods are described in the "**cold starting**" section described in the pages that follow.

In all cases, observe the range of temperature/viscosity values of the oil illustrated in the graph below:



Changing oil when servicing the filters

Observe the following limits:

In general, the hydraulic oil shall have excellent features regarding corrosion, lubrication, air separation, foamy ratio, gaskets and pipes neutrality, viscosity and temperature ratio (HLP/ISO).

- Limit irregular viscosity (overheating) **10cSt**
- Limit cold starting viscosity **1000 cSt**
- Working viscosity **100x12cSt** (recommended **70 ÷ 20 cSt**)
- Oil purity class **15/12** (**ISO4406**)

CAUTION

Oil temperatures lower than the minimum working temperature, corresponding to a viscosity of more than 250 cSt (10°C with oil VG 46), create the conditions for anomalies in some components and devices (radio remore control not active, pump cavitation at high rpm, lower performance of FPI device, etc.).

CAUTION

If the temperature of the oil tends to exceed 80°C, contact an authorised EFFER workshop. It is indispensable to have the installation and/or suitability of the heat exchanger checked in the following cases:
a – High ambient temperatures

b – Long working hours with very few breaks, especially in configurations with hydraulic joint and more than 3 extensions.

Below is an indicative table based on the ambient temperature during the hours of work.

Note ***Use hydraulic oil model HLP/ISO.***

Ambient temperature (indicative)	-20°C÷0°C	-5°C÷30°C	+30°C÷45°C
ISO VG Classification	VG 15	VG 46	VG68
(Viscosity at 40°C in cSt)		VG 32	

CAUTION

Do NOT use biodegradable oils unless they are the type approved by EFFER. Do however remember that even if these oils are more compatible with the environment compared to traditional ones they still cannot be thrown away outdoors.
Do not mix different types of oil together, as this could alter the envisaged characteristics.

Cleaning and replacing the filters

The pump must always be switched off and the oil must never be hot when replacing and cleaning the filters.

Identify mainly:

1. return filter
2. delivery filter (when mounted)
2. air filter

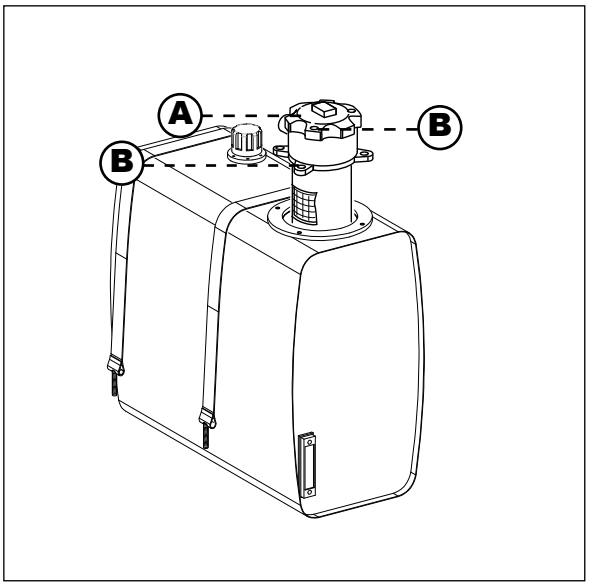
Return filter (type 1)

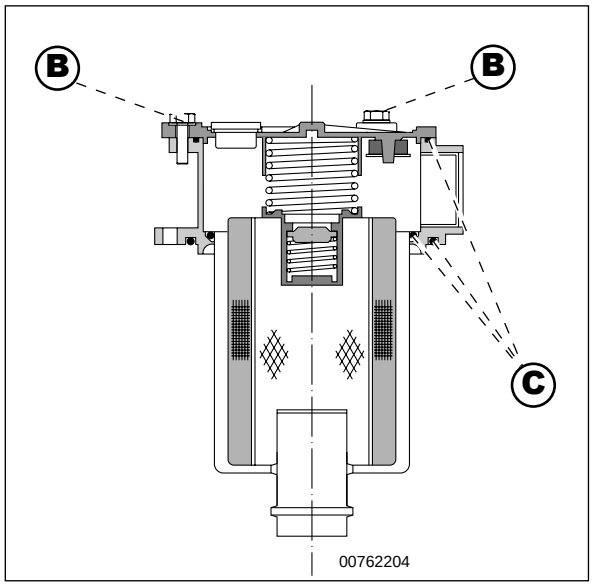
The replacement shall be made paying attention to the fact that no impurities shall be introduced during the assembly and disassembly:

- remove the screws (**A**) on the filter cover;
- disassemble the filter body by unscrewing the fixing screws (**B**) on the tank;
- take the cartridge out and clean inside the filter body;
- fit a new cartridge.

Assemble again by operating contrarywise paying attention to the seal gaskets (**c**).

To drain the used oil refer to the regulations in force in the Country where the crane is used.





Changing oil when servicing the filters

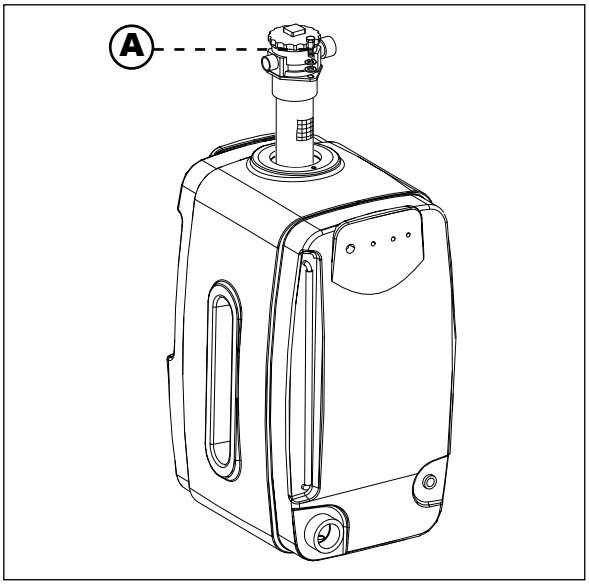
Return filter (type 2)

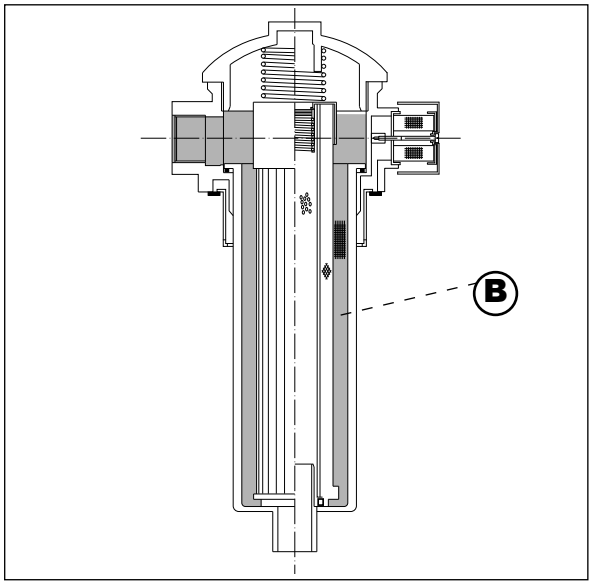
Unscrew the metal ring (**A**) and be careful not to loose the spring and the gasket.

Take off the cartridge (**B**) and replace it.

Reassemble making the same operations contrarywise.

To drain the remaining oil and the filter act according the regulations in force in the Country where the crane is used.



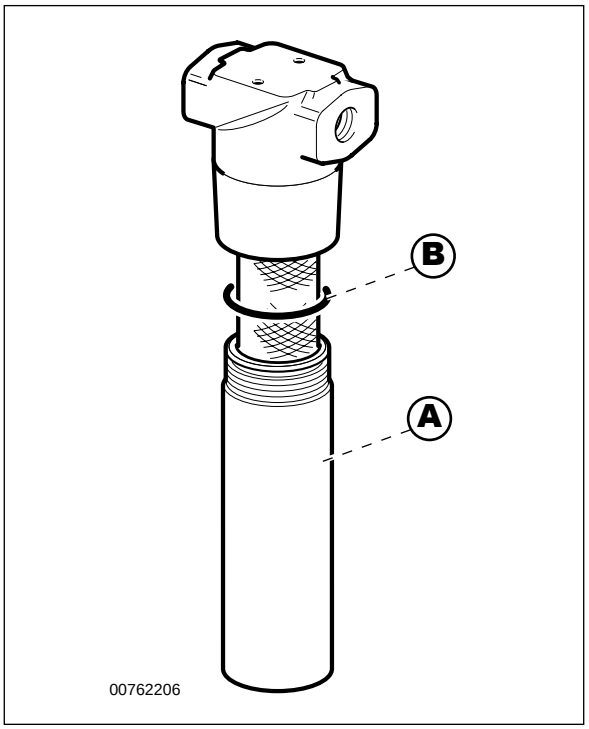


Delivery filter (when mounted)

- Clean the zone near the filter before removing the cartridge;
- unscrew the body (**A**), and pull the cartridge (**B**) out;
- keep the body unscrewed in vertical position to avoid oil splitting. Pay great care if the control bank is located at a higher height than the filter. If this is the case, by removing body (A), oil in the tube located between the filter and the control bank will come out. Arrange for a container to collect oil;
- take off the oil inside the body and clean inside;
- assemble the new cartridge by gently pushing till the end of the stroke.

Reassemble making the same operations contrarywise.

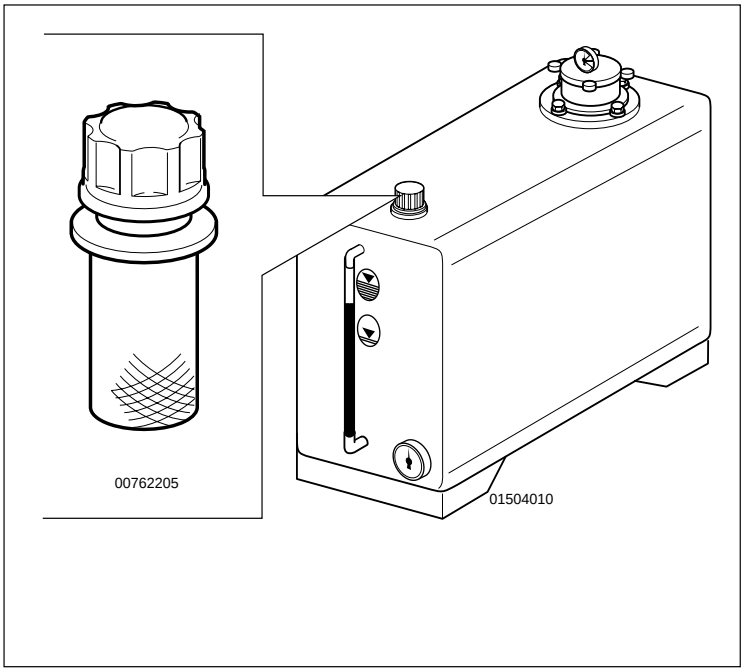
To drain the remaining oil and the filter act according the regulations in force in the Country where the crane is used.



Changing oil when servicing the filters

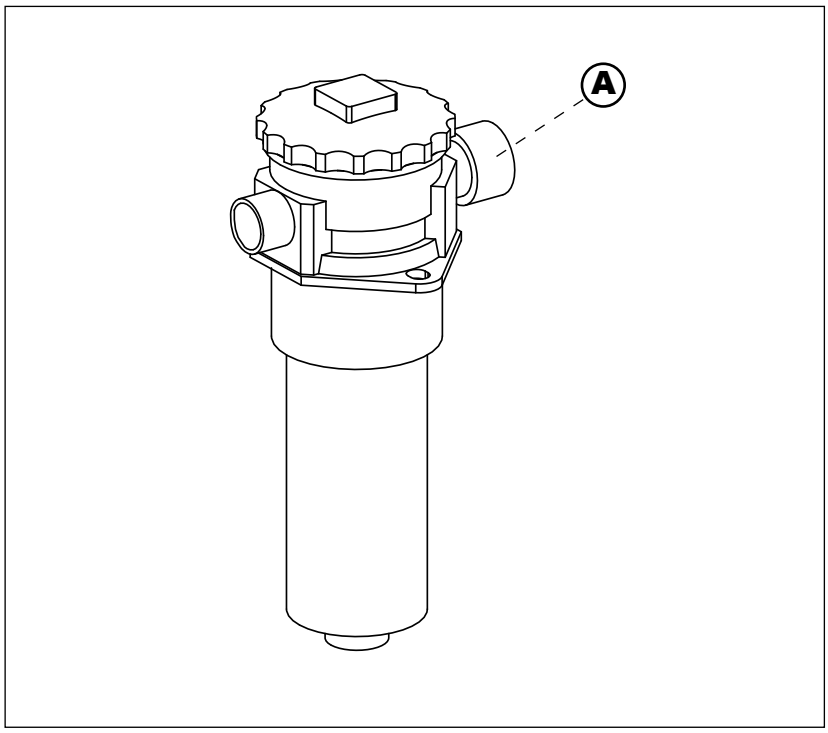
Air filter (type 1)

Remove the oil plug. The air filter inside cannot be removed. Consequently you need to replace the complete plug. Reassemble making the same operations contrarywise.



Air filter (type 2)

Remove the small cover (**A**) by unscrewing the screw and replace the filter. Reassemble making the same operations contrarywise.



Changing oil when servicing the filters

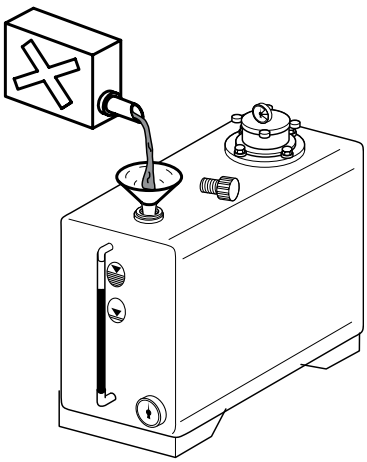
Replacing the hydraulic oil

In compliance with all stated in the maintenance schedules given herein, the oil is to be replaced in the following manner:

- The oil temperature must be 10÷20°C.
- with the crane folded down, shut-off the tap of the suction hose leading to the pump;
- open the top oil cap, remove the drain cap, unscrewing it with a suitable key and drain the oil into a container placed underneath it beforehand;
- once the tank is empty, dismantle the return filter in the top part of the tank using suitable keys;
- inspect the state of the internal surfaces of the tank through the attachment hole of the filter, using a battery-operated lamp for a better view (ensure there are no rusty points or dirt). If any of these conditions are noticed, clean the inside of the tank using diesel fuel being extremely careful it does not enter the oil suction hose. It is advisable therefore to pour just a little bit of fuel at a time into the tank through the top hole on the opposite side of the suction hole.

To be able to do this job better, it is advisable to remove the suction hose when cleaning the tank.

- using the battery-operated lamp, ensure no cleaning liquid is left in the tank;
- fit the filter and the return hose back in place;
- turn off the drain plug but not too tight and make sure of the special washer efficiency: replace it if it is damaged;
- fill the tank right up to the top level with new oil, of the type previously described, through the filling cap. Pour the oil in gradually so that the air in the tank is released;
- open the tap of the suction hose leading to the pump;
- dispose of spent oil according to current environmental laws.



CAUTION

It is important to drain as much of the old oil out of the tank as possible, especially if the new oil is a different type.

Bleeding the air from the hydraulic circuit

During the hydraulic circuit maintenance some hydraulic cylinders/hoses may be emptied; you may have air inside causing temporary bad working.

In order to avoid these inconveniences you have to:

- move all the cylinders **slowly**, taking them to the end-of-stroke position in one direction and the other but without creating excessive pressures;
- repeat these movements a few times until the air has separated from the oil in the tank.

Tightening the screws and bolts

You can check if any screws and bolts have worked loose using normal commercial spanners/ Allen keys.

If you find any loose parts, tighten them without overscrewing. Go to your authorised workshop as soon as possible to check the tightness and to find out why they are working loose.

Torque wrench settings for screw/bolt bolted couplings			
Metric thread	Class 88 (8G)	Class 10.9 (10k)	Class 12.9 (12k)
	Nm	Nm	Nm
M5	6	8	9
M6	9	14	16
M8	23	34	38
M10	45	67	78
M12	78	117	135
M14	126	184	216
M16	193	279	333
M18	270	387	459
M20	387	558	648
M22	522	747	873
M24	666	954	1116
M27	990	1395	1665
M30	1350	1890	2250

NB. For tightening screws with growes type elastic washers, do not use the column “Class 12.9 (12k)”

Torque wrench settings for crane bracketing tie-rods (*)		
Tie-rod (39NiCrMo3)	Min. torque (Nm)	Max. torque (Nm)
M18x1.5	162	216
M24x2	399	532
M27x2	594	792
M30x2	810	1080
M33x2	1130	1507
M36X3	1450	1930
M39x3	1883	2511
M42x3	2323	3097

* ***Note*: check the torques do not create permanent deformations on the parts near the tightening area. In this case, the torques can be decreased up to a maximum of 30%.**

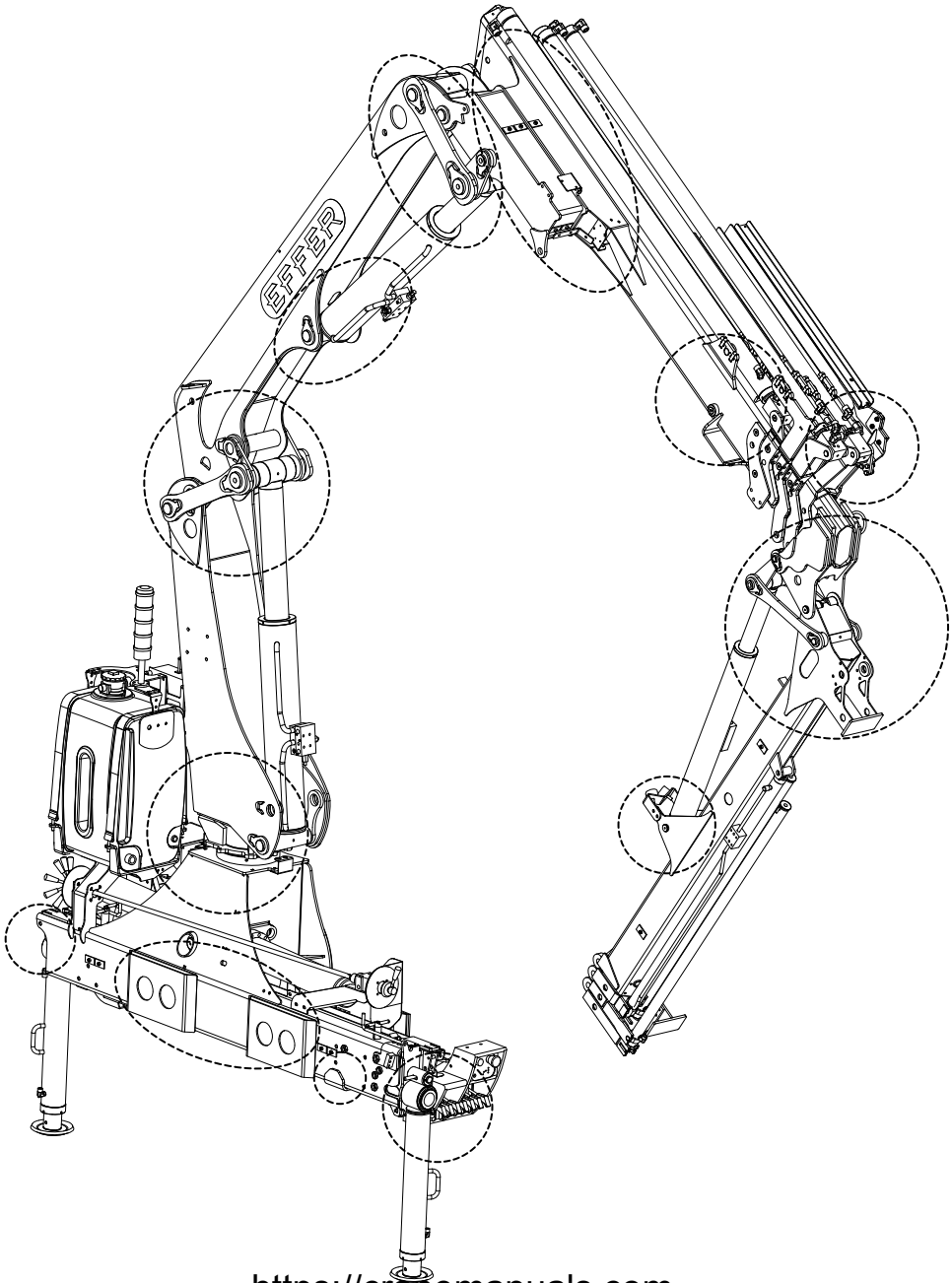
Checks, tests and inspections

Inspecting the structural steelwork of the crane

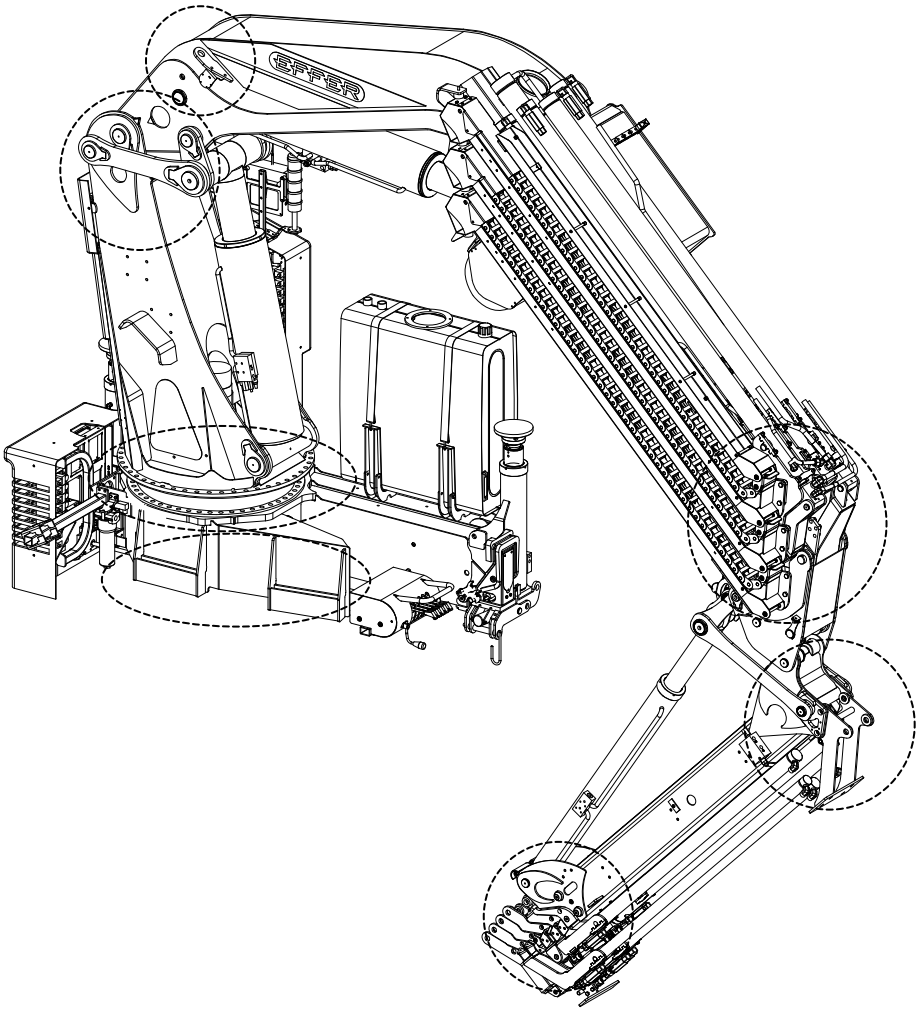
Check the state of the structural steelwork of the crane, in particular check for cracks and splits, above all around welded edges and right in the middle of welded joints. Annexes with marked areas most frequently submitted to faults are provided. If the painting work shows signs of cracking this could mean that something is starting to wear. If you should notice these signs or any other anomalies, contact EFFER Technical Service department urgently.

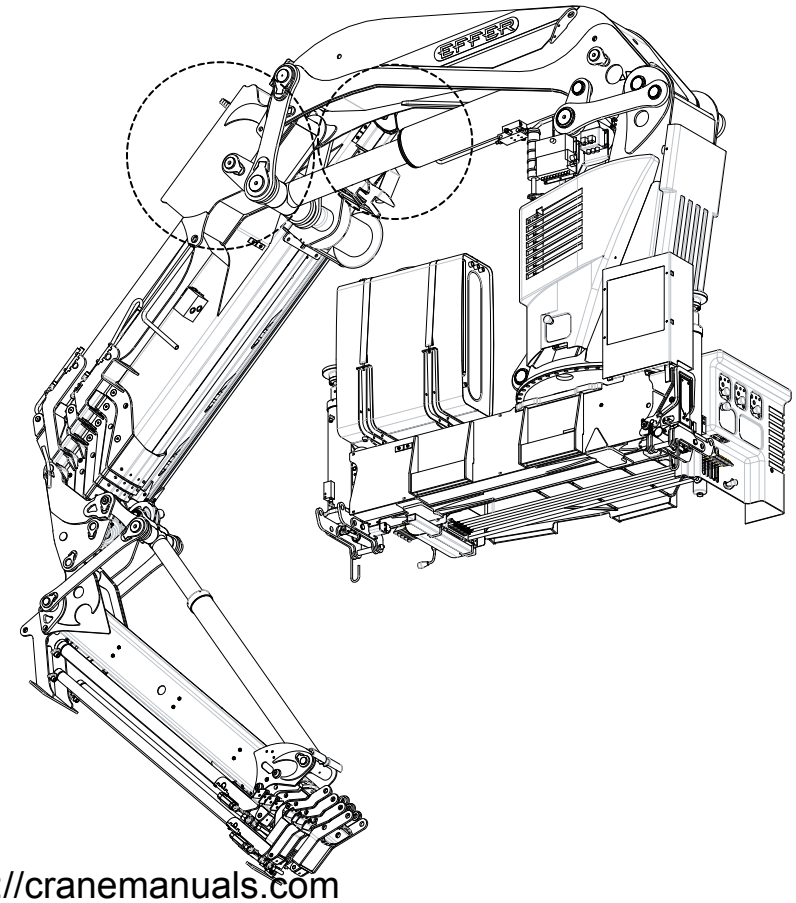
The crane structure must be checked and inspected **thoroughly** once a year by authorised technicians (according to ISO 9927-1 - ISO 12482-1).

Note ***Drawings in the annexes are a useful example, but inevitably not complete.***



Checks, tests and inspections





Inspecting the hydraulic system

Check the state of the rigid pipes and flexible hoses, the pipe fittings and the valves. None of these parts must show signs of oil leaks, impact, squashing or any other types of damage. Check the integrity and the efficiency of the mud-scraper gaskets of the jacks, which clean the stem as they retract. Also check if the stems are not excessively covered in oil, as this could mean that the internal gaskets are damaged.

Note ***The fittings used in the hydraulic circuit may leak oil in the joining points, especially during the first months of use.***

If you should notice any anomalies, contact EFFER Technical Service department urgently.

The hydraulic system of the crane must be checked and inspected thoroughly once a year by an authorised workshop (extraordinary service).

Checking the hooks, cables and lifting accessories

All the accessories and cables must be checked prior to use and tested once every 3 months if used normally, especially following extraordinary oscillations. If you should suspect any damages that are not visible and also when you notice signs of wear you should write the jobs down in dedicated data sheets (see tables and inspection register). However you shall comply with the laws and regulations in force.

Hooks – rings – clamps – clips – cable terminals

These checks are made to find the following:

Hook	deformations	cuts	stretching	cracks
rings, clamps, clips, cable terminals	deformations	squashing	cuts	
	stretching	play in pins	cracks	

The material must be replaced when:

- there is a reduction in any point of the cross section of more than 10%;
- the accessory has been strained, exceeding the flexible limit of the material with permanent stretching of more than 7% compared to a new piece;
- there are visible cuts and cracks

Chains

The chains must be replaced when:

- the reduction in the diameter of the link ring exceeds 10%;
- the link stretches more than 5% along the whole length of the chain;
- the links are joined with metal wire or other solution;
- some links are excessively worn, visibly cracked or their shape is permanently deformed.

Cables

To ensure operating safety, the cables must be checked, replaced and serviced according to the provisions of standard ISO 4309/90. The following are general indications, for further information refer to the cable manufacturer.

Type of non-turning cables	**Maximum nr. of broken wires along a length equal to**	
	6d	30d
A4/Alc-A5-A6-A6l-A7 ≤ diam 24 mm	**1**	**2**
A6-A7 Alc ≥ diam 24 mm	**2**	**4**

Note ***The type of cable is indicated in the technical data***

Checks, tests and inspections

- type of breakage and number of wires broken.
- point and chronological sequence of the breakage of the wires;
- reduction in the diameter of the cable through use (wear);
- corrosion, abrasion, deformation of the cable;
- effects due to heat;
- total period the cable has been sitting in its seat.

Check the ends of the join in particular (cable terminal attachment zone, thimbles, attachment to drum).

The individual elements of the cable transmission, the drums and the rollers must turn freely in their supports. The shape of the cable must not be impressed on the grooving of the base.

Note: ***Bear in mind that is quite difficult to notice breakages, because the ends of the broken wire remain in their primitive position and do not stick out of the cable. To find these types of breakages you need to remove the grease and run a soft piece of wood along the cable, bending it by hand so that the ends lift out and can be seen more clearly.***

When counting the broken wires, consider those that have visibly reduced in diameter by 50% less than the original and also those that have reduced in diameter due to corrosion. It takes a lot of practice and experience to evaluate internal corrosion (see standard ISO 4309/90).

DANGER

Note: The overlapped cable turns on block may cause serious damage to the cable, because of the torsion stress caused.

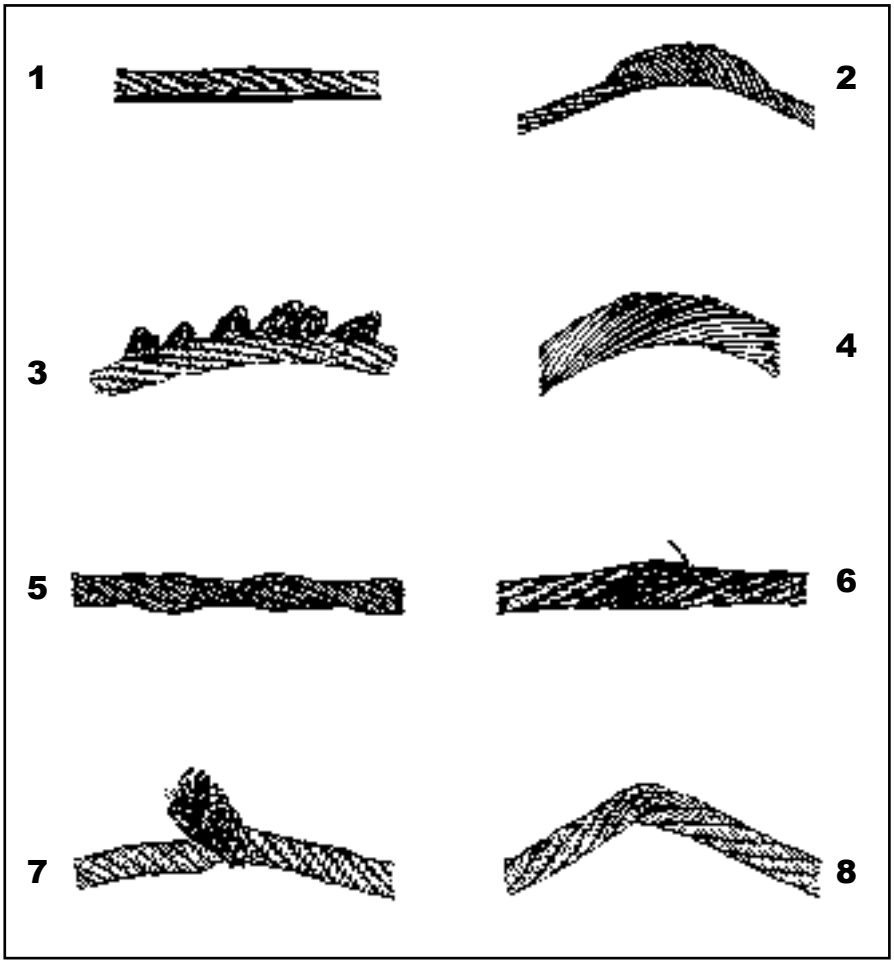
Checks, tests and inspections

Rejecting the cables

WARNING!

Cables are to be rejected as soon as one of the following damages is noticed:

- breakage of a strand
- presence of cavities in the breakage of the wires
- number of wires broken, as defined in table
- helical deformation by over 1/3 of the diameter of the cable (fig. 1)
- braiding of the wires (fig. 2)
- wires bulging out from the cable (fig. 3)
- reduction in the diameter of the cable by 7% compared to the rated diameter
- loosening of the cable structure (fig. 4)
- contractions of the cable (fig. 5)
- bending or squashing (fig. 6+8)
- sharp bending or permanent deformations in the cable (fig. 7)



Checks, tests and inspections

If you should notice particular damages to the cables, you need to find the cause and eliminate rapidly and effectively before laying new cables.

Damages and traces of abrasion on constructional elements of the crane may provide useful information accordingly.

WARNING!

If you have any doubts on the safety of the cables of the crane, reject the cables or have them examined by an expert for further advice.

WARNING!

If you should realize that the minimum condition for cable replacement has occurred, do not work with the winch and contact immediately an authorised workshop EFFER.

Ends of the cables

The attachment of the end of the cable must be checked frequently because it is one of the most delicate and strained points. After you have checked, according to the instructions already explained in the zone of the cable near the joins, you also need to inspect the joining systems for:

- deformations
- stretching
- squashing
- play in pins
- cuts
- cracks and slits

The cable anchorage system and/or the zone in which the cable is attached must be replace when:

- there is a reduction in the cross section of more than 5%;
- the material is no longer perfectly flexible, with permanent stretching of over 3% compared to the new piece;
- there are signs of cuts, cracks, slits, corrosion and play.

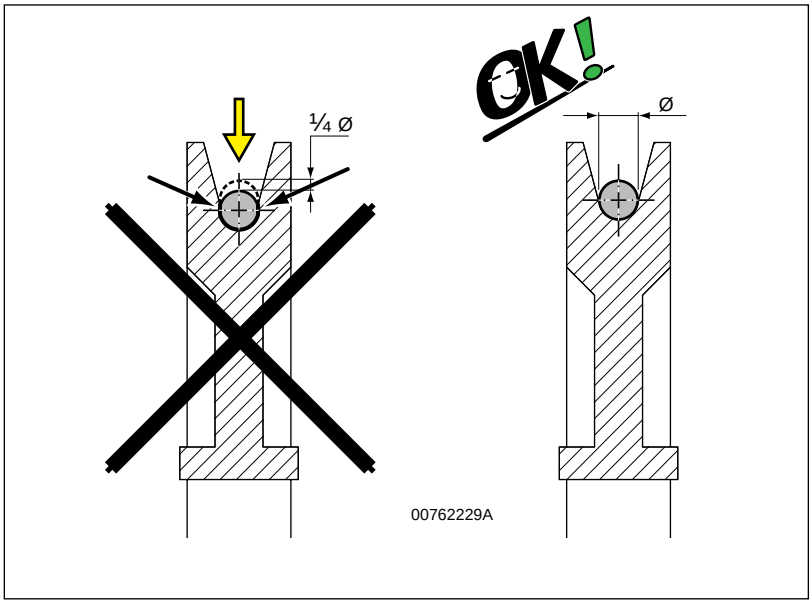
Inspecting transmission head and transmission block

Check the state of transmission cable, heads, and block. In particular check for cracks and warping and make sure the structural resistance of the parts is not endangered by signs of wear and tear.

Pay special attention to pulley rotation and to excessive play. Check the state of the side walls containing the cable, which must not have signs cracks and splits, warping.

Note ***The wear and tear of the cable groove shall not exceed the limit shown in the picture (the groove base line is lowered more than ¼ of the cable diameter).***

Check also the good condition of locking pins and retainers.



Operational check of the safety devices

As regards the check of the safety devices, see specific sections (when mounted)

In general, before any working schedule, you have to check the safety devices and the overload stop.

Push the emergency buttons one by one and then move the control levers: the crane shall not move.

- Operate the crane overload blocking devices by using the limit switch on the 1st arm hydraulic cylinder (or by pressing the Reset button): the outputs of the crane extensions and winch must not be permitted and the acoustic and visual warnings (lights, indicator lights, displays and gauges) must be activated. Then unblock the crane using the reset button and/or extension return strokes.

- Repeat the same operations bringing the winch hydraulic cylinder to the end block.

- When present, verify the correct signal on the angular sensor of the second arm that activates an audible signal when the second arm exceeds 30° from horizontal.

- When present, verify the stabilizer output sensors, verifying the congruency between the actual position and the position detected by the sensors (remote control display).

- Check the crane block when the stabilizers are not correctly positioned.

- Operate the safety devices on the winch (raise, lower limit switches) to verify blocking.

- Operate the general safety devices, simulating their activation and verifying blocking and operation (i.e. voluntary audible warning button, rotation block in less stable work areas, etc.)

Cleaning and maintaining the crane

The crane and its main and auxiliary components are to be kept clean at all times to prevent damages and anomalies.

In particular:

- to prevent gaskets from wearing before time, remove dust, impurities and dirt from the stems of the jacks, using non-abrasive material and detergents.
- salt on the road, oil, dust etc. scratch protective treatments (paint, galvanisation etc.) causing increased corrosion, deterioration and consequently anomalies. For this reason it is advisable to wash down the crane regularly.
- keep handles and mats clean from oil, grease and dirt to prevent slipping and falling.

Warnings on cleaning equipment and systems

- The crane can be washed with water and non-corrosive detergents with neutral pH. You are recommended to use a fast drying system.
- Wash the crane with the electric system OFF.
- It is strictly prohibited to spray water on and around electric components (near electric boxes, solenoid valves, connections etc.) or on oil caps with air filter.

DANGER

Risk of short-circuit with serious malfunctioning

- Do not spray high-pressure and/or high-temperature jets on plastic parts, plates, bearings etc.
- Do not spray high-pressure and/or high-temperature jets on greased joints to prevent water from entering.
- The exceeding lubricant must not be washed out of the joints with high-temperature jets.
- If you use a high-pressure and/or steam wash system, stand 80 cm away from the machine, plus the water must not be hotter than 60°C.
- **Always lubricate after washing.**

Various maintenance jobs

Maintenance of painted parts

Touch-up any painted parts that may have worn during use.

Plates and labels

All plates and labels arranged around the machine must be legible and clearly comprehensible at all times. If they should deteriorate, contact EFFER directly or an authorised workshop to order replacements.

Decommissioning and disposal

Decommissioning

The machine is to be decommissioned in conditions of safety, which bear in mind the logistic, environmental and wear and tear conditions of the machine itself.

As a general rule, proceed as follows to decommission the machine:

- Follow the instructions given in the chapter on “Handling the CRANE”
- The operator must wear and use suitable homologated health and safety gear (hard hat, industrial safety shoes, gloves, goggles and masks if necessary).
- Ensure the machine is disconnected from all sources of energy.
- Ensure the hydraulic systems cannot cause hazards during their disassembly (depressurise etc.)
- Dismantle the machine in small groups that can be easily transported.

⚠ WARNING!

The machine is to be decommissioned by specialised companies, trained for these types of jobs and in possession of suitable tools and equipment for such purpose.

Disposal

The machine is to be disposed of in observance of the following conditions:

- The parts made of different materials such as steel, aluminium, plastic, rubber, electric cables and parts, oil and grease etc. must be put into differentiated waste containers.
- Dispose of pollutants in compliance with current laws in force in the country in which the machine is being scrapped (plastic materials, oil, grease, rubber, synthetic materials and so on).

⚠ WARNING!

The machine is to be disposed of by specialised companies, qualified for these types of jobs.

EFFER S.p.A. - Via IV Novembre,12 40061 Minerbio (Bologna) - Italy
Ph. + 39 051 4181211 - Fax + 39 051 4181491
web: www.effer.com - e-mail: info@effer.it

Registro di controllo

ISTRUZIONI ORIGINAlI

DATI IDENTIFIcATIVI

Compilazione: **Installatore**

DATI DEIIA GRU	
Costruttore	**EFFER S.p.A**
Indirizzo	**Via IV Novembre, 12 - 40061 Minerbio (BO) Italia**
Tel.	**051 4181211**
Email	**info@effer.it**
MODEIIO GRU	
N° di serie	
Anno di costruzione	
N° dichiarazione CE di conformita'	
Manuale dell'operatore (Cod./Rev)	

AccESSORI GRU (snodo, verricello, cestello, benna, rotore etc)	
Tipo	
N° di serie	
Anno di costruzione	
N° dichiarazione CE di conformita'	
Manuale dell'operatore (Cod./Rev)	
Tipo	
N° di serie	
Anno di costruzione	
N° dichiarazione CE di conformita'	
Manuale dell'operatore (Cod./Rev)	
Tipo	
N° di serie	
Anno di costruzione	
N° dichiarazione CE di conformita'	
Manuale dell'operatore (Cod./Rev)	
Tipo	
N° di serie	
Anno di costruzione	
N° dichiarazione CE di conformita'	
Manuale dell'operatore (Cod./Rev)	

DATI 1° pROpRIETARIO	
Nome	
Indirizzo	
Tel.	
Email	

La responsabilità della corretta compilazione e gestione del registro di controllo è in ogni caso del proprietario/datore di lavoro. Il REGISTRO DI CONTROLLO così costituito, è un importante documento al quale la EFFER potrà fare riferimento in caso di richiesta di garanzia, di contestazioni e di incidente.

Nota: Se i fogli del presente registro di controllo risultassero insufficienti, aggiungere i fogli necessari redatti secondo i vari schemi qui indicati. Sui fogli aggiuntivi l'utente dovrà riportare i dati identificativi della macchina. I fogli aggiuntivi diventeranno parte integrante del presente registro di controllo.

DATI DEll'INSTAllAZIONE

Compilazione: **Installatore**

DATI DEll'INSTAllAZIONE	1° Installazione
Installatore	
Indirizzo	
Tel.	
Email	
Dati autocarro	
Modello	
N° Telaio	
DATA DEllA MESSA IN SERVIZIO GRU INSTAllATA	
N° DIchlARAZIONE cE DI cONFORMITA DEll 'INSTAllATORE	
INTEGRAZIONE MANUAlE DI ISTRUZIONE (cod./Rev)	

cONSEGNA Al pROpRIETARIO

l 'apparecchio al cui presente registro di controllo di proprietà di .....

In data.....è stato consegnato a: .....

Con qualifica di: ☐ **proprietario** ☐ **Delegato**

☐ **Datore di lavoro** ☐ **.....**

secondo le condizioni contrattuali stabilite, secondo le caratteristiche tecniche dimensionali e funzionali specificate nel manuale istruzioni, completo di documentazione di corredo.

Firma di chi ritira	Timbro Installatore	Data

DATI DEll'INSTAllAZIONE	2° Installazione
Installatore	
Indirizzo	
Tel.	
Email	
Dati autocarro	
Modello	
N° Telaio	
DATA DEllA MESSA IN SERVIZIO GRU INSTAllATA	
N° DIchlARAZIONE cE DI cONFORMITA DEll 'INSTAllATORE	
INTEGRAZIONE MANUAlE DI ISTRUZIONE (cod./Rev)	

cONSEGNA Al pROpRIETARIO

l 'apparecchio al cui presente registro di controllo di proprietà di .....

In data.....è stato consegnato a: Nome .....

Con qualifica di: ☐ **proprietario** ☐ **Delegato**

☐ **Datore di lavoro** ☐ **.....**

secondo le condizioni contrattuali stabilite, secondo le caratteristiche tecniche dimensionali e funzionali specificate nel manuale istruzioni completo di documentazione di corredo.

Firma di chi ritira	Timbro Installatore	Data

ScOpO E cONTENUTO DEI REGISTRO DI cONTROllO

Il REGISTRO DI CONTROLLO è prescritto dalle istruzioni Effer (•) ed è obbligatorio in alcuni paesi (vedi riferimenti normativi). Il REGISTRO DI CONTROLLO ha lo scopo di documentare la storia della gru per ciò che riguarda dati, operazioni d'installazione, manutenzione, riparazione, collaudi, trasformazioni, tests, verifiche dello stato di sicurezza e conservazione.

Il registro di controllo contiene:

- Istruzioni per la conservazione/compilazione
- Legenda dei profili degli operatori della manutenzione
- Riferimenti normativi
- Registro dei trasferimenti di proprietà
- Registro/Validazione della messa in servizio
- Registro dati tecnici gru/installazione
- Registro delle manutenzioni e riparazioni/sostituzioni
- Registro delle verifiche periodiche
- Registro/esito/modalità dei Tests di sovraccarico
- Registro delle trasformazioni della gru/applicazioni di accessori
- Registro delle condizioni di utilizzo della gru
- Registro dello stato di conservazione della gru - SWP (safe working period/periodo di lavoro sicuro) / GO - (general overhaul/ revisione generale)
- Punti di assistenza

(•) Il REGISTRO DI CONTROLLO così costituito, è un importante documento al quale la EFFER potrà fare riferimento in caso di richiesta di garanzia, di contestazioni e di incidente.

ISTRUZIONI pER IA cONSERVAZIONE

Il presente registro di controllo deve essere ben custodito a bordo macchina per tutta la vita della gru fino al suo smaltimento quindi per almeno 10 anni dalla prima messa in servizio.

ISTRUZIONI pER IA cOMpIlAZIONE

Nella Tabella **Z** e Tabella **R** sono riassunte le compilazioni/registrazioni da eseguire con indicati i relativi operatori/persone abilitate. In tutti gli spazi predisposti, è obbligo riportare nome leggibile, data, firma. Le caratteristiche di ciascun operatore qualificato, sono riportate nella tabella **W**.

La corretta compilazione e gestione del REGISTRO DI CONTROLLO è di responsabilità del proprietario/datore di lavoro.

Nota: Se i fogli del presente registro di controllo risultassero insufficienti, aggiungere i fogli necessari redatti secondo i vari schemi qui indicati. Sui fogli aggiuntivi l'utente dovrà riportare i dati identificativi della macchina. I fogli aggiuntivi diventeranno parte integrante del presente registro di controllo.

TABEIIA RIASSUNTIVA cOMpIIAZIONI/REGISTRAZIONI DEI REGISTRO DI cONTROIIO

Tab. Z

TIpI DI REGISTRAZIONE/cOMpIIAZIONE	RESpONSABIIE EGISTRAZIONE/cOMpIIAZIONE (vedi tab. W)	pAGINA
Dati identificativi gru/installazione Dichiarazione di consegna al proprietario	- Installatore **B** - Proprietario **A**	Pag. 2/3
Trasferimenti di proprietà	Nuovo proprietario/precedente proprietario **A**	Pag. 8
Validazione della messa in servizio	- Installatore **B** -Proprietario/delegato **A**	Pag. 9
Dati tecnici gru/installazione	- Installatore **B**	Pag. 13
Registro Tests di sovraccarico	- Installatore **B**	Pag. 15
Registro di Manutenzione/ Riparazioni/ Sostituzioni **(Vedi TAB R)**	**- centro assistenza EFFER C (MQM - MQE)** **- Operatore (MQO)**	Pag. 19
Registro verifica periodica **(Vedi TAB R)**	**- Ispettore qualificato IQ**	Pag. 25
Registro trasformazioin/ applicazione accessori	- Installatore **B**	Pag. 26
Registro delle CONDIZIONI DI UTILIZZO della gru	**- Operatore (QO)**	Pag. 27/28
Registro delle verifiche dello STATO DI CONSERVAZIONE DELLA GRU/ACCESSORI REVISIONE GENERALE (SWP-GO) **(Vedi TAB R)**	**- Ingegnere esperto (IE)**	Pag. 29

TABEIIA RIASSUNTIVA DEI REGISTRI DEIIE MANUTENZIONI E VERIFIchE

Tab. R

	MANUTENZIONE ORDINARIA				MANUTENZIONE STRAORDINARIA		VERIFICA PERIODICA	Verifica dello STATO DI CONSERVAZIONE DELLA GRU/ACCES-SORI (SWP-GO)
TIpO DI MA-NUTENZIONE / INTERVAIII * *	30h / 7giorni	PRIMA ASSISTENZA 50 h	250h / 3 mesi	500h / 6 mesi	1000h / 12 mesi	Riparazioni / Sostituzioni	12 mesi / 24 mesi	1000h / 12 mesi
REGISTRAZIONE	NO	SI	SI	SI	SI	SI	SI	SI
OpERATORE MANUTENZIONE/ VERIFIchE (VEDI TAB. W)	**(MQO)**	**(MQM) (MQE)** (Centro Assistenza Effer) **C**	**(MQO)**	**(MQM) (MQE)** (Centro Assistenza Effer) **C**	**(MQM) (MQE)** (Centro Assistenza Effer) **C**	**(MQM) (MQE)** (Centro Assistenza Effer) **C**	**(IQ)**	**(IE)**
pOSIZIONE / pAGINA	/	Pag. 19			Pag. 19	Pag. 23/24	Pag. 25	Pag. 30

△ *** *** Vedere manuale istruzione gru / Service Manual

IEGENDA DEI pROFIlI DEGlI OpERATORI pREDISpOSTI All'INSTAllAZIONE, All'USO, AllA MANUTENZIONE E AllE VERIFIchE DEllA GRU

pittogramma	Tab. W
A	PROPRIETARIO/DATORE DI LAVORO
B 	INSTALLATORE persona/ impresa responsabile dell'approntamento e della messa in servizio dell'installazione della gru su veicolo/mezzo/base fissa secondo le operazioni previste dalle istruzioni Effer e secondo norme/leggi in vigore nel paese di utilizzo dell'apparecchio
C 	CENTRO ASSISTENZA EFFER persona/impresa che ha ricevuto da Effer istruzioni e mezzi al fine di eseguire correttamente interventi di controllo, verifica, manutenzione e riparazione sulla gru.(*)
QO 	OPERATORE QUALIFICATO ALL'USO: Persona designata dal datore di lavoro che dispone di opportuno addestramento e di adeguata esperienza nell'uso della gru.
MQO 	OPERATORE QUALIFICATO ALLA MANUTENZIONE SEMPLICE: Persona designata dal datore di lavoro che dispone di opportuno addestramento e di adeguata esperienza nell'uso e manutenzione semplice della gru.
MQM 	OPERATORE MECCANICO QUALIFICATO ALLA MANUTENZIONE COMPLESSA: Persona esperta, cosi come definito dalla norma iso 12480-1-1997, formata allo scopo autorizzata ad effettuare operazioni di manutenzione di natura meccanica complessa e,quando previsto, aggiorna e firma il registro di controllo. Riveste tale qualifica il personale addetto alla manutenzione dei centri di assistenza Effer.
MQE 	OPERATORE ELETTRICO/ELETTRONICO QUALIFICATO: Persona esperta, cosi come definito dalla norma iso 12480-1997, formata allo scopo autorizzata ad effettuare operazioni di manutenzione di natura elettrica/elettronica complessa e,quando previsto, aggiorna e firma il registro di controllo. Riveste tale qualifica il personale addetto alla manutenzione dei centri di assistenza Effer.
IQ 	ISPETTORE QUALIFICATO (ISO 23814 - 2009 - Categories d): Persona esperta con la necessaria e ricnosciuta conoscenza ed esperienza tali da eseguire le specifiche ispezioni della gru. Egli dovrà possedere capacità pratiche che facilitino le procedure di ispezione; tali capacità potranno derivare da una combinazione di varie esperienze nel settore; dovrà aggiornare le sue conoscenze e capacità come richiesto dall'innovazione del prodotto; dovrà essere esente da ogni interesse commerciale, finanziario e di altro tipo che portrebbero influire sul suo lavoro di verifica.
IE 	INGEGNERE ESPERTO (ISO 9927-1-2009 - TAB. A1): Ingegnere con esperienza nella progettazione, costruzione, manutenzione di gru con una sufficiente conoscenza dei regolamenti, norme ed attrezzature necessari per effettuare l'ispezione. Inoltre l'ingegnere esperto è in grado di giudicare lo stato di sicurezza della gru e di decidere le misure che devono essere prese al fine di assicurare la continuazione del funzionamento sicuro; dovrà essere esente da ogni interesse commerciale, finanziario e di altro tipo che potrebbero influire sul suo lavoro di indagine.

(*) la lista aggiornata dei centri di assistenza Effer, si trova sul sito www.effer.com

RIFERIMENTI NORMATIVI

Il presente registro di controllo è redatto in conformità all'allegato I della Direttiva Macchine 2006/42/CE valida nell'Unione Europea e nei paesi dello Spazio Economico Europeo (SEE) associati. É inoltre prescritto dalla ISO 12482-1 (Condizioni di monitoraggio gru)
Tale registro di controllo, è possibile debba essere conforme ad ulteriori leggi/normative nazionali che possono variare a seconda del paese di utilizzo della gru. E' compito del proprietario/datore di lavoro/installatore informarsi su tali aspetti normativi nazionali.

Riportiamo di seguito le ulteriori normative italiane
paese di utilizzo: Italia (normativa nazionale: Dlgs 81/08 trasposizione di direttive communitarie).

Il datore di lavoro deve prendere le misure necessarie affinchè:
art. 71 comma 4
a) le attrezzature di lavoro siano:
1- Installate e utilizzate in conformità alle istruzioni uso;
2- oggetto di idonea manutenzione al fine di garantire nel tempo la permanenza dei requisiti di sicurezza di cui all'articolo 70 e siano corredate, ove necessario, da apposite istruzioni d'uso e libretto di manutenzione.
b) siano curati la tenuta e l'aggiornamento del registro di controllo delle attrezzature di lavoro per cui lo stesso e previsto (per gli apparecchi di sollevamento il registro di controllo è previsto nell'allegato 1 delle Direttiva Macchine 2006/42/CE)
art. 71 comma 7
Qualora le attrezzature (apparecchi di sollevamento) richiedano per il loro impiego conoscenze o responsabilità particolari in relazione ai loro rischi specifici, il datore di lavoro deve prendere le misure necessarie affinchè:
a) l'uso dell'attrezzatura di lavoro sia riservato ai lavoratori allo scopo incaricati che abbiano ricevuto una formazione adeguata e specifica informazione, formazione ed addestramento adeguato.
b) in caso di riparazioni,di trasformazioni o manutenzione, i lavoratori interessati siano qualificati in maniera specifica per svolgere dette compiti.
art. 71 comma 8
Fermo restando quanto disposto dal comma 4, il datore di lavoro,....., provvede affinchè;
a) le attrezzature di lavoro la cui sicurezza dipende dalle condizioni di installazione siano sottoposte a un controlo iniziale (dopo l'installazione e prima della messa in esercizio) e ad un controllo dopo ogni montaggio in un nuovo cantiere o in una nuova località di impianto, ai fini di assicurare l'installazione corrente e il buon funzionamento.
b) le attrezzature soggette a influssi che possono provocare deterioramenti suscettibili di dare origine a sistuazioni pericolose siano sottoposti:
1) a controlli periodicis econdo frequenze stabilite in base alle indicazioni fornite dal fabbricante, ovvero dalle norme di buona tecnica, e in assenza di queste ultime, desumibili dal codice di buona prassi.
2) ad interventi di controllo straordinari al fine di garantire il mantenimento di buone condizioni di sicurezza, ogni volta che intervengono eventi eccezionali che possono avere conseguenze pregiudizievoli per la sicurezza delle attrezzature di lavoro quali riparazioni, trasformazioni, incidenti, fenomeni naturali o periodi prolungati di inattività.
c) gli interventi di controllo di cui alle lettere a) e b) sono svolti ad assicurare il buon stato di conservazione e l'efficienza ai fine di sicurezza delle attrezzature di lavoro e devono essere effettuati da persona competente.
art. 71 comma 9
I risultati dei controlli di cui al comma B devono essere riportati per iscritto e, almeno quelli relativi agli ultimi anni, devono essere conservati e tenuti a disposizione degli organi di vigilanza.

Il presente registro di controllo, è redatto in conformità all'allegato I della Direttiva Macchina 2006/42/CE.
Tale registro di controllo, è possibile debba essere conforme ad ulteriori leggi/normative che possono variare a seconda del paese di utilizzo della gru.

E' compito del proprietario/datore di lavoro/installatore informarsi su aspetti normativi vigenti nel paese di utilizzo gru.

REGISTRO TRASFERIMENTI DI pROpRIETA'

Compilazione: **proprietario precedente**
Nuovo proprietario

1° TRASFERIMENTO DI pROpRIETA'

Gru modello ..... Matricola ..... in data .....

è stata trasferita la proprietà: vecchio proprietario .....

nuovo proprietario .....

si attesta che in tale data le caratteristiche tecniche, dimensionali e funzionali della gru in oggetto sono conformi a quelle previste in origine e che eventuali variazioni sono sate riportate sul registro di controllo.

Proprietario precedente	Nuovo proprietario
Timbro e firma	Timbro e firma
---	---

2° TRASFERIMENTO DI pROpRIETA'

Gru modello ..... Matricola ..... in data .....

è stata trasferita la proprietà: Proprietario precedente .....

Nuovo proprietario .....

si attesta che in tale data le caratteristiche tecniche, dimensionali e funzionali della gru in oggetto sono conformi a quelle previste in origine e che eventuali variazioni sono sate riportate sul registro di controllo.

Proprietario precedente	Nuovo proprietario
Timbro e firma	Timbro e firma
---	---

3° TRASFERIMENTO DI pROpRIETA'

Gru modello ..... Matricola ..... in data .....

è stata trasferita la proprietà: Proprietario precedente .....

Nuovo proprietario .....

si attesta che in tale data le caratteristiche tecniche, dimensionali e funzionali della gru in oggetto sono conformi a quelle previste in origine e che eventuali variazioni sono sate riportate sul registro di controllo.

Proprietario precedente	Nuovo proprietario
Timbro e firma	Timbro e firma
---	---

NOTA: Informare l'installatore ed EFFER ad ogni trasferimento di proprietà al fine di mantenere aggiornati i dati per eventuali comunicazioni tecniche e/o campagne di richiamo.

VAIIDAZIONE DEIIA MESSA IN SERVIZIO

Copia per cliente

Compilazione: **Installatore**

I a validazione della messa in servizio ha lo scopo di verificare il corretto funzionamento della gru e degli accessori e il corretto espletamento di tutte le procedure per garantire la corretta messa in servizio della gru/installazione. L'installatore/proprietario datore di lavoro certificano con questo documento, all'atto della consegna, l'avvenuto collaudo, l'espletamento delle procedure previste e la dimostrazione pratica dell'uso dell'apparecchio parallelamente all'illustrazione del manuale dell'operatore. Questo documento va compilato e firmato dall'installatore dal Cliente/proprietario/datore di lavoro o chi da lui autorizzato il quale è pregato di rivolgersi direttamente alla EFFER in caso di inadempienze da parte dell'installatore.

AD OGNI CAMBIO DI PROPRIETÀ DELL'APPARECCHIO O SPOSTAMENTO DELLA GRU SU DIVERSO VEICOLO/MEZZO DEVE ESSERE COMPILATO DA PARTE DELL'INSTALLATORE/VENDITORE UN DOCUMENTO ANALOGO A QUESTO.

0. LEGGI E NORMATIVE

- ☐ L'installatore deve assicurarsi la conformità dell'installazione della gru e degli accessori secondo leggi nazionali/paese di utilizzo
- ☐ L'installatore ha osservato tutte le istruzioni aggiornate previste dalla EFFER.

1. DATI DI IDENTIFICAZIONE

Targhetta marcatura CE del costruttore e installatore:

- ☐ Presenza
- ☐ Fissaggio
- ☐ Leggibilità

2. DOCUMENTI

- ☐ Dichiarazione CE di conformità emessa dal costruttore (in copia) - Allegato
- ☐ Dichiarazione CE di conformità emessa dall'installatore (in originale) - Allegato
- ☐ Dichiarazione CE di conformità per accessori (originale/copia) - Allegato
- ☐ Documenti previsti da leggi nazionali

3. MANUALI

- ☐ Libretto uso e manutenzione per gru - Allegato
- ☐ Libretto uso e manutenzione per allestimento - Allegato
- ☐ Libretto uso e manutenzione per accessori - Allegato

4. TARGHE

Targhe portate, istruzioni ed avvertenze come da libretto uso e manutenzione:

- ☐ Presenza
- ☐ Fissaggio
- ☐ Leggibilità
- ☐ Applicate n° ____ targhe di portata in posizione visibile dall'operatore

5. DISPOSITIVI DI SICUREZZA - POSTI DI COMANDO

Controllo corretto funzionamento di:

- ☐ Valvole di blocco
- ☐ Limitatore di momento
- ☐ Dispositivo posizione stabilizzatori (dispositivo di controllo stabilità)
- ☐ Dispositivo d'arresto (emergenza)
- ☐ Limitatore arco di rotazione zona instabile
- ☐ Dispositivo di blocco stabilizzatori in trasporto
- ☐ Dispositivo corretta posizione gru per il trasporto
- ☐ Dispositivi sicurezza verricello
- ☐ Dispositivi di sicurezza in generale
- ☐ Posti di comando

6. PROVE FUNZIONALI E DI SOVRACCARICO

- ☐ Sollevamento con carichi di targa
- ☐ Verifica statica di stabilità nei settori con carichi maggiorati secondo le istruzioni EFFER
- ☐ Verifica livello di rumore con prova fonometrica (secondo normative-secondo leggi nazionali)
- ☐ Verifica funzionamento degli accessori

7. FORMAZIONE OPERATORE PER L'USO DELLA GRU E PER LA MANUTENZIONE

- ☐ Istruzioni d'uso della gru
- ☐ Istruzioni d'uso degli accessori
- ☐ Istruzioni di manutenzione
- ☐ Istruzioni sul Registro di Controllo

8.CONCLUSIONI DELL'INSTALLATORE

In relazione alle operazioni effettuate sopra elencate il sottoscritto Sig.....(Responsabile della validazione della messa in servizio) dichiara che:

☐ **NON SONO** state riscontrate anomalie ☐ **SONO** state riscontrate anomalie

L'apparecchio **è conforme** ai sensi delle seguenti leggi/normative: ☐ Direttiva Macchine **2006/42/cE** ☐_____

☐ **pUÒ** essere messo in servizio ☐ **NON pUÒ** essere messo in servizio

Data: ..... Firma VERIFICATORE ..... Società / Timbro

Nome VERIFICATORE .....

9.CONCLUSIONI DEL PROPRIETARIO/DATORE DI LAVORO

Il sottoscritto Sig. .....con qualifica di .....(☐ delegato dal Sig. .....proprietario/datore di lavoro) attesta che le operazioni sopra elencate sono state eseguite in sua presenza, di aver ricevuto documenti e materiale di corredo, e che:

☐ **NON ESISTONO** riserve alla presa in carico della macchina ☐ **ESISTONO** riserve alla presa in carico della macchina

Data	Data .....
Nome e firma delegato	Nome e firma Proprietario/datore di lavoro .....

10.SITUAZIONI PARTICOLARI

Le operazioni sopra elencate N° .....

☐ SONO ☐ NON SONO state eseguite in presenza del proprietario/datore di lavoro/delegato

Le operazioni sopra elencate N° .....

☐ SONO ☐ NON SONO state eseguite in presenza del proprietario/datore di lavoro/delegato

☐ Il presente documento e la documentazione di corredo è stata consegnata al Delegato al Ritiro, Sig.....

☐ Il presente documento e la documentazione di corredo è stata inviata al Proprietario/Datore di lavoro, Sig.....

Data	Data .....
Nome e firma Verificatore	Firma delegato al ritiro .....

VAIIDAZIONE DEIIA MESSA IN SERVIZIO

Copia per installatore

Compilazione: **Installatore**

I a validazione della messa in servizio ha lo scopo di verificare il corretto funzionamento della gru e degli accessori e il corretto espletamento di tutte le procedure per garantire la corretta messa in servizio della gru/installazione. L'installatore/proprietario datore di lavoro certificano con questo documento, all'atto della consegna, l'avvenuto collaudo, l'espletamento delle procedure previste e la dimostrazione pratica dell'uso dell'apparecchio parallelamente all'illustrazione del manuale dell'operatore. Questo documento va compilato e firmato dall'installatore dal Cliente/proprietario/datore di lavoro o chi da lui autorizzato il quale è pregato di rivolgersi direttamente alla EFFER in caso di inadempienze da parte dell'installatore.

AD OGNI CAMBIO DI PROPRIETÀ DELL'APPARECCHIO O SPOSTAMENTO DELLA GRU SU DIVERSO VEICOLO/MEZZO DEVE ESSERE COMPILATO DA PARTE DELL'INSTALLATORE/VENDITORE UN DOCUMENTO ANALOGO A QUESTO.

0. LEGGI E NORMATIVE

- ☐ L'installatore deve assicurarsi la conformità dell'installazione della gru e degli accessori secondo leggi nazionali/paese di utilizzo
- ☐ L'installatore ha osservato tutte le istruzioni aggiornate previste dalla EFFER.

1. DATI DI IDENTIFICAZIONE

Targhetta marcatura CE del costruttore e installatore:

- ☐ Presenza
- ☐ Fissaggio
- ☐ Leggibilità

2. DOCUMENTI

- ☐ Dichiarazione CE di conformità emessa dal costruttore (in copia) - Allegato
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- ☐ Dichiarazione CE di conformità per accessori (originale/copia) - Allegato
- ☐ Documenti previsti da leggi nazionali

3. MANUALI

- ☐ Libretto uso e manutenzione per gru - Allegato
- ☐ Libretto uso e manutenzione per allestimento - Allegato
- ☐ Libretto uso e manutenzione per accessori - Allegato

4. TARGHE

Targhe portate, istruzioni ed avvertenze come da libretto uso e manutenzione:

- ☐ Presenza
- ☐ Fissaggio
- ☐ Leggibilità
- ☐ Applicate n° ____ targhe di portata in posizione visibile dall'operatore

5. DISPOSITIVI DI SICUREZZA - POSTI DI COMANDO

Controllo corretto funzionamento di:

- ☐ Valvole di blocco
- ☐ Limitatore di momento
- ☐ Dispositivo posizione stabilizzatori (dispositivo di controllo stabilità)
- ☐ Dispositivo d'arresto (emergenza)
- ☐ Limitatore arco di rotazione zona instabile
- ☐ Dispositivo di blocco stabilizzatori in trasporto
- ☐ Dispositivo corretta posizione gru per il trasporto
- ☐ Dispositivi sicurezza verricello
- ☐ Dispositivi di sicurezza in generale
- ☐ Posti di comando

6. PROVE FUNZIONALI E DI SOVRACCARICO

- ☐ Sollevamento con carichi di targa
- ☐ Verifica statica di stabilità nei settori con carichi maggiorati secondo le istruzioni EFFER
- ☐ Verifica livello di rumore con prova fonometrica (secondo normative-secondo leggi nazionali)
- ☐ Verifica funzionamento degli accessori

7. FORMAZIONE OPERATORE PER L'USO DELLA GRU E PER LA MANUTENZIONE

- ☐ Istruzioni d'uso della gru
- ☐ Istruzioni d'uso degli accessori
- ☐ Istruzioni di manutenzione
- ☐ Istruzioni sul Registro di Controllo

8.CONCLUSIONI DELL'INSTALLATORE

In relazione alle operazioni effettuate sopra elencate il sottoscritto Sig.....(Responsabile della validazione della messa in servizio) dichiara che:

☐ **NON SONO** state riscontrate anomalie ☐ **SONO** state riscontrate anomalie

L'apparecchio **è conforme** ai sensi delle seguenti leggi/normative: ☐ Direttiva Macchine **2006/42/cE** ☐_____

☐ **pUÒ** essere messo in servizio ☐ **NON pUÒ** essere messo in servizio

Data: ..... Firma VERIFICATORE ..... Società / Timbro

Nome VERIFICATORE .....

9.CONCLUSIONI DEL PROPRIETARIO/DATORE DI LAVORO

Il sottoscritto Sig. .....con qualifica di .....(☐ delegato dal Sig. .....proprietario/datore di lavoro) attesta che le operazioni sopra elencate sono state eseguite in sua presenza, di aver ricevuto documenti e materiale di corredo, e che:

☐ **NON ESISTONO** riserve alla presa in carico della macchina ☐ **ESISTONO** riserve alla presa in carico della macchina

Data	Data .....
Nome e firma delegato	Nome e firma Proprietario/datore di lavoro .....

10.SITUAZIONI PARTICOLARI

Le operazioni sopra elencate N° .....

☐ SONO ☐ NON SONO state eseguite in presenza del proprietario/datore di lavoro/delegato

Le operazioni sopra elencate N° .....

☐ SONO ☐ NON SONO state eseguite in presenza del proprietario/datore di lavoro/delegato

☐ Il presente documento e la documentazione di corredo è stata consegnata al Delegato al Ritiro, Sig.....

☐ Il presente documento e la documentazione di corredo è stata inviata al Proprietario/Datore di lavoro, Sig.....

Data	Data .....
Nome e firma Verificatore	Firma delegato al ritiro .....

REGISTRO DATI TEcNIcI GRU/INSTAIIAZIONE

Compilazione: **Installatore**

Riassunto dati tecnici gru: *

Gru Modello .....

Classificazione gru: * *

normativa di progettazione: .....

versione normativa .....

classificazione completa:.....

Reazione max. piede stabilizzatori.....

Dispositivi di sicurezza: *

- ☐ Limitatore di momento
- ☐ Dispositivo posizione stabilizzatori (dispositivo di controllo stabilità)
- ☐ Dispositivo d'arresto (emergenza)
- ☐ Limitatore arco di rotazione zona instabile
- ☐ Dispositivo di blocco stabilizzatori in trasporto
- ☐ Dispositivo corretta posizione gru per il trasporto
- ☐ Dispositivi sicurezza verricello
- ☐ Dispositivi di sicurezza in generale

Dati tecnici allestimento gru/autocarro

Automezzo: Anno di costruzione.....

Marca.....Modello.....

Targa..... Telaio.....

Passo.....N° di assi.....

Tipo di carozzeria.....

Dati montaggio:

☐ Retrocabina ☐ Retrocassone

Posizione di riposo della gru

☐ Ripiegata ☐ Distesa

Tiranti n°..... Materiale..... Diametro.....

Impianto Idraulico:

Regime di giri motore per utilizzo gru ..... (RPM) Portata olio (l/min).....

Presa di forza tipo..... Marca..... Rapporto.....

Pompa idraulica tipo..... Marca..... Cilindrata (cm^3) .....

Olio tipo..... Marca..... Gradazione .....

Stabilizzatori - Gru *

Allargabili ☐ Manualmente ☐ Idraulicamente

☐ Standard ☐ Maggiorati

Stabilizzatori - Supplementari

☐ Fissi

Allargabili ☐ Manualmente ☐ Idraulicamente

posti di comando Gru *

- ☐ bilaterale a terra
- ☐ monolaterale a terra
- ☐ seggiolino in alto
- ☐ con scaletta di accesso
- ☐ comando a distanza (radiocomando)
- ☐ .....

posti di comando stabilizzatori *

- ☐ bilaterale a terra
- ☐ monolaterale a terra
- ☐ comando a distanza (radiocomando)
- ☐ .....

Varianti ed accessori *

☐ snodo tipo..... Normativa..... ☐ verricello tipo..... Normativa.....

☐ n°..... prolunghe manuali gru ☐ n°..... prolunghe manuali snodo

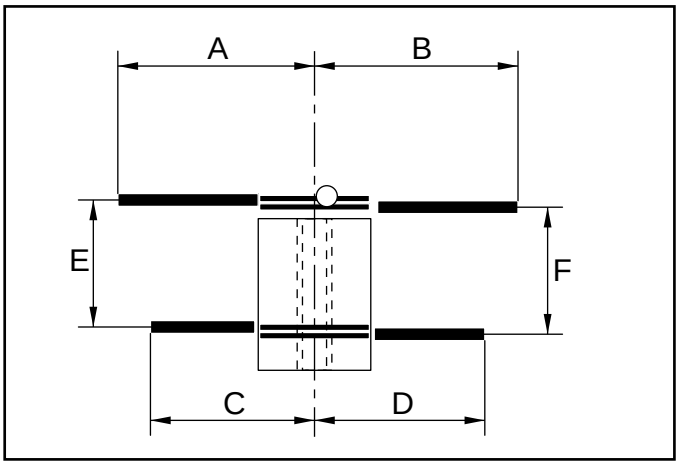
☐ cestello ☐ benna/polipo/forca ☐ rotore

☐ ..... ☐ ..... ☐ .....

* Dati da ricopiare dal Manuale uso e dalla Dichiarazione CE

** Ricopiare da cap. DATI TECNICI del Manuale uso e dalla Dichiarazione CE. es. normativa di progettazione (es. EN 12999) / versione normativa (es 2011-A1) / classificazione completa (es HC1 S1 HD5 dove classe tipo lavoro (HC1) / resistenza strutturale:(S1) / classe tipo di comando (HD5 - solo quando previsto)

segue

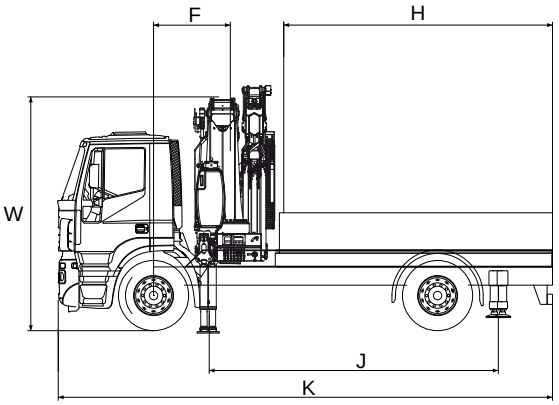


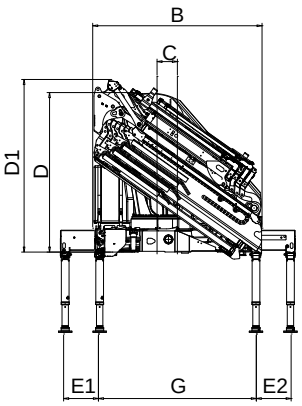
A (mm)	
B (mm)	
C (mm)	
D (mm)	
E (mm)	
F (mm)	

Reazione massima stabilizzatori gru	
1) Pressione massima sul terreno (con piattello fisso) (daN/cm^2)	
2) Pressione massima sul terreno (con piastra.....(cm) x .....(cm)	
3) Pressione massima sul terreno (con piastra.....(cm) x .....(cm)	

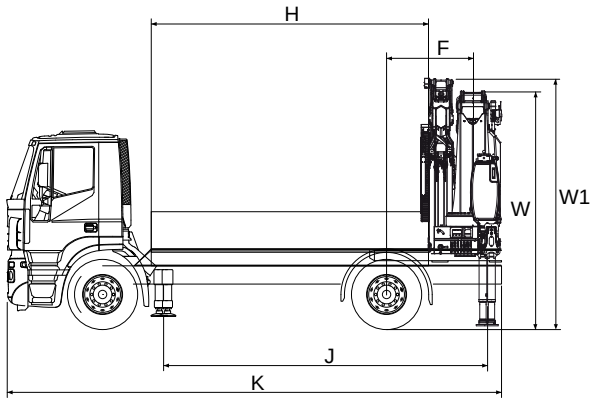
Reazione massima stabilizzatori supplementari	
1) Pressione massima sul terreno (con piattello fisso) (daN/cm^2)	
2) Pressione massima sul terreno (con piastra.....(cm) x .....(cm)	
3) Pressione massima sul terreno (con piastra.....(cm) x .....(cm)	

Posizione gru in trasporto		1° Asse	2° Asse	3° Asse	4° Asse	5° Asse	Totale
	☐ Ripiegata						
	☐ Distesa						
Tara (kg) +							
Portata Utile (kg) =							
Complessiva (kg)							
Massima ammessa (kg) <							





B	mm	
C	mm	
D	mm	
D1	mm	
E1	mm	
E2	mm	
G	mm	



K	Lunghezza totale allestimento (mm)	
F	Distanza asse / baricentro gru (mm)	
J	Distanza stabilizzatori gru / stabilizzatori supplementari (mm)	
W	Altezza gru a riposo (mm) - ripiegata	
W1	Altezza gru a riposo con JIB (mm) - ripiegata	
H	Lunghezza cassone (mm)	

REGISTRO TESTS DI SOVRAccARIcO

Compilazione: **Installatore**

TEST STATIc O E TEST DINAMIc O

Tutte le gru Effer devono essere testate secondo il test statico (carico di prova statico massimo 1.25 volte il carico nominale) e il test dinamico (carico di prova dinamico massimo 1.1 volte il carico nominale) secondo le condizioni previste dalla EN 12999 e dalla Direttiva Macchine 2006/42/CE.

TEST DI STABIl ITA'

Il test di stabilità deve essere eseguito secondo le istruzioni Effer (Service Manual).

In particolare si raccomanda di non superare i seguenti carichi di prova indicati per lo specifico modello di gru: ****

gru modello..... snodo modello.....

carico di prova massimo gru : TL_M = ... kg allo sfilo n°..... applicato a .....m deroga(*) (si) o (no) o

carico di prova massimo snodo: TL_M = ... kg allo sfilo n°..... applicato a .....m deroga(*) (si) o (no) o

(*) nel caso sia barrata la casella (si), il carico di prova del test di stabilità è ridotto per problemi strutturali, rispetto al TL previsto dalla norma EN 12999. In tal caso si deve adottare uno dei seguenti metodi:

1) se il TL_M dello snodo è ridotto in deroga e il TL_M della gru non è ridotto in deroga , si esegue solo il test gru, mentre per lo snodo valgono i soli calcoli. (previsto da ISO 4310)

2) se il TL della gru e dello snodo sono entrambe ridotti in deroga, applicare un TL1=1.25 * P e procedere con il metodo del pompaggio opposto secondo istruzioni Effer, esercitando verso l'alto una forza TL2 da parte opposta della colonna che provochi lo stesso momento ribaltante generato dal TL previsto da EN 12999 rispetto alla linea di ribaltamento. Tale procedura è prevista dalla EN12999

RIASSUNTO TEST DI STABIl ITA'

Come è previsto nelle istruzioni Effer :

-nel caso di gru con dispositivo di controllo stabilità con posizione unica degli stabilizzatori, viene eseguito il test di stabilità della sola PROVA 1 del modulo 'compendio test di stabilità' **All EGATO.**

- nel caso di gru con dispositivo di controllo stabilità con posizione variabile degli stabilizzatori, vengono eseguiti test di stabilità solo in alcune posizioni degli stabilizzatori con gli opportuni TL (PROVA 1,2,3 del modulo 'compendio test di stabilità' **All EGATO)**. La verifica della stabilità nelle ulteriori posizioni degli stabilizzatori viene eseguita con soli calcoli come previsto dalla EN 12999.

I dati/risultati del test di stabilità sono riportati nel modulo **All EGATO "RIASSUNTO TEST DI STABIl ITA'"**

I diagrammi di carico validati secondo tali test di stabilità, sono riportati nel:

- manuale d'istruzione gru, capitolo " DATI TECNICI"

- manuale d'istruzione installatore, capitolo .....

NOTA: l e istruzioni EFFER per l'esecuzione dei test di sovraccarico si possono consultare sul sito "www.effer.com" alla voce Service Manual.

NOTA: I documenti completi relativi ai test di stabilità sono archiviati nel fascicolo tecnico dell'installatore.

**** (compilazione di competenza installatore: dati sul Service Manual):

Compilazione: **Installatore**

REpORT TEST DI STABIlITA '

Tibro installatore

Data

Codice file		test di stabilità standard		K (fattore generale di sicurezza) =		Kv (configurazione fattore di sicurezza) =	

TEST 1 * *

Aree di lavoro		Carico nominale (Kv ≥ 1)	Primo martinetto p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	Carico test TL*	Primo martinetto p1 test (Kv=1)	Applicazione Carico test Num. braccio/sbraccio
SIN.	θ_2 = ° θ_3 = °	kg	bar			kg	bar	Num. braccio m
DESTRA	θ_6 = ° θ_7 = °	kg	bar			kg	bar	Num. braccio m
FRONTE		kg	bar			kg	bar	Num. braccio m
RETRO		kg	bar			kg	bar	Num. braccio m

***DEROGA ISO 4310: carico Test solo con GRU** ☐ Yes ☐ No

***DEROGA EN 12999: carico Test solo con 2 parti Tl1 = kg; Tl2 = - kg @ - m** ☐ Yes ☐ No

TEST 2 * *

Aree di lavoro		Carico nominale (Kv ≥ 1)	Primo martinetto p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	Carico test TL*	Primo martinetto p1 test (Kv=1)	Applicazione Carico test Num. braccio/sbraccio
SIN.	$\theta_{1\text{-}2}$ = ° θ_4 = °	kg	bar			kg	bar	Num. braccio m
DESTR.	θ_5 = ° $\theta_{7\text{-}8}$ = °	kg	bar			kg	bar	Num. braccio m

TEST 3 * *

Aree di lavoro		Carico nominale (Kv ≥ 1)	Primo martinetto p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	Carico test TL*	Primo martinetto p1 test (Kv=1)	Applicazione Carico test Num. braccio/sbraccio
SIN.	θ_1 = ° θ_4 = °	kg	bar			kg	bar	Num. braccio m
DESTR.	θ_5 = ° θ_8 = °	kg	bar			kg	bar	Num. braccio m

TEST 4 * *

Aree di lavoro		Carico nominale (Kv ≥ 1)	Primo martinetto p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	Carico test TL*	Primo martinetto p1 test (Kv=1)	Applicazione Carico test Num. braccio/sbraccio
SIN.	θ_1 = ° θ_4 = °	kg	bar			kg	bar	Num. braccio m
DESTR.	θ_5 = ° θ_8 = °	kg	bar			kg	bar	Num. braccio m

RESUITATI TEST

prova di stabilità

La prova di stabilità è stato completata con successo perché i carichi di prova sono stati sostenuti in modo statico durante il movimento di rotazione in tutto l'arco di ogni configurazione e/o area di lavoro secondo le modalità sopra indicate (istruzioni Effer secondo EN 12999). Per garantire una stabilità nelle ulteriori configurazioni e/o aree di lavoro secondo il manuale dell'operatore, sono considerati validi (secondo EN ISO 12999-2011 4310) i calcoli inclusi nel fascicolo tecnico dell'installatore.
Durante il test, uno o più stabilizzatori o ruote vengono sollevati dal suolo, ma almeno una ruota frenata dal freno di stazionamento o con altri mezzi, è rimasta in contatto con il suolo.
Dopo un controllo visivo, non si evidenziano incrinature, deformazioni permanenti, cricche nella vernice, e non sono stati rilevati danni strutturali dei meccanismi e del sistema elettro-idraulico da mettere a repentaglio la sicurezza e il funzionamento.

Test di funzionamento

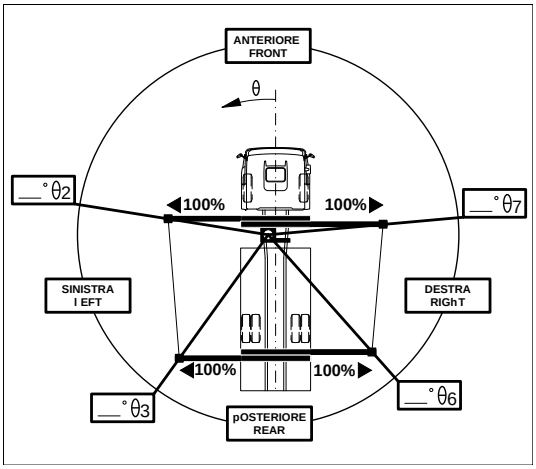
Il test funzionale è stata completato con successo dal momento che i carichi nominali sono stati bloccati in prossimità e in rotazione come prescritto e secondo le modalità sopra indicate. Le prove di controllo dei dispositivi di sicurezza sono state completate con successo secondo le modalità sopra descritte.

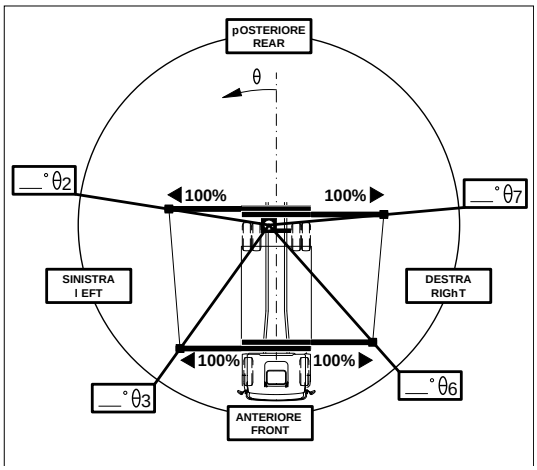
**** NB: per le illustrazioni relative al Test Di Stabilità fare riferimento alle illustrazioni corrispondenti al vostro modello di gru presenti nelle pagine n° 17 e 18.**

☐ **Installazione Retrocabina**

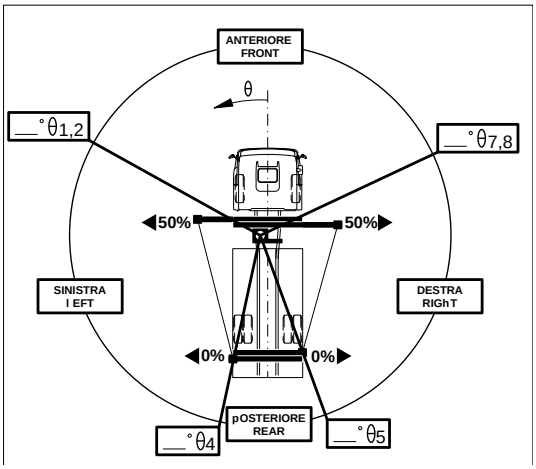
☐ **Installazione Retrocassone**

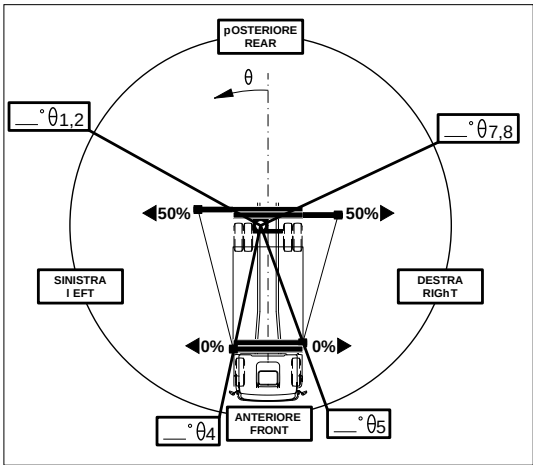
TEST 1



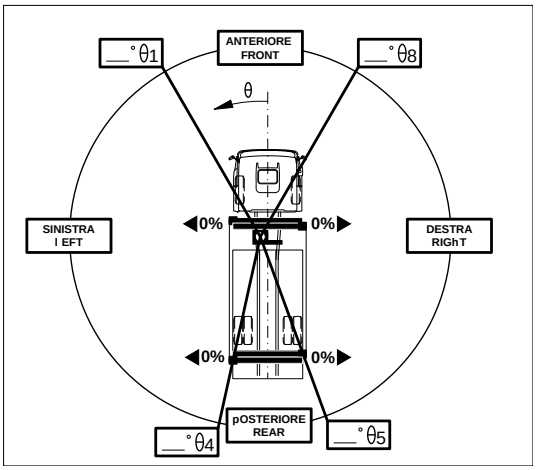


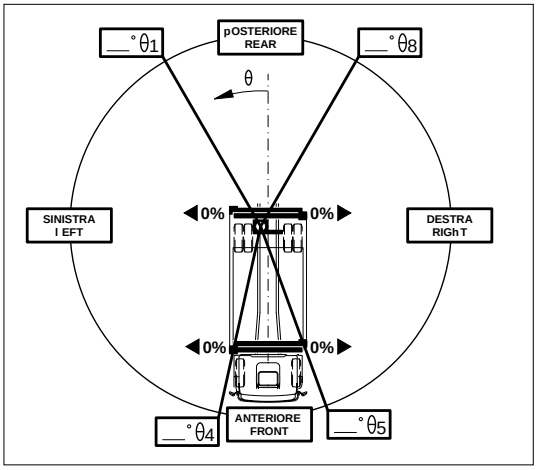
TEST 2



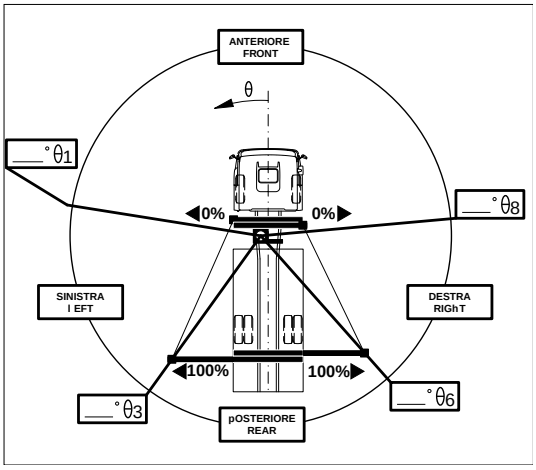


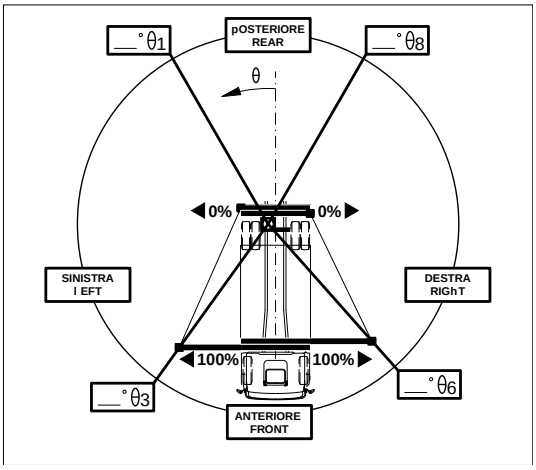
TEST 3





TEST 4

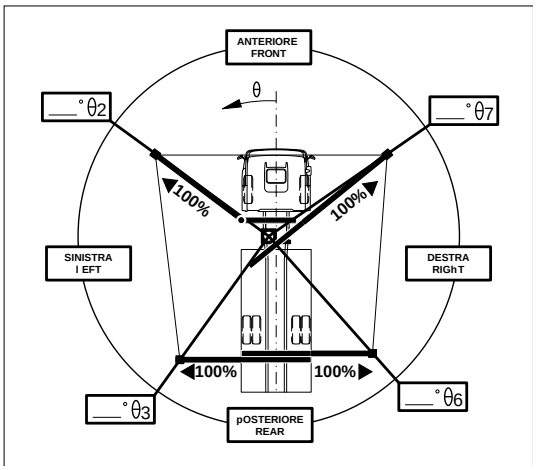


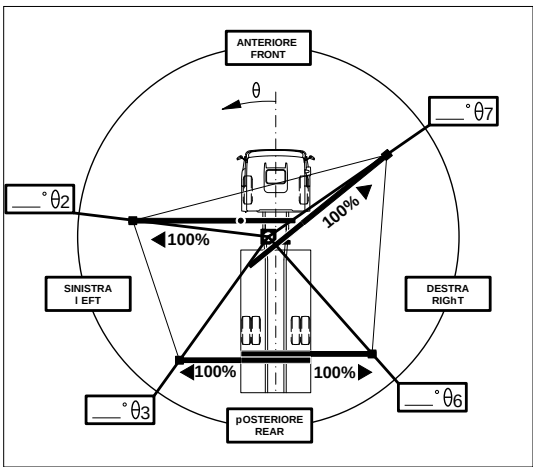


☐ **Installazione cross stab (123°)**

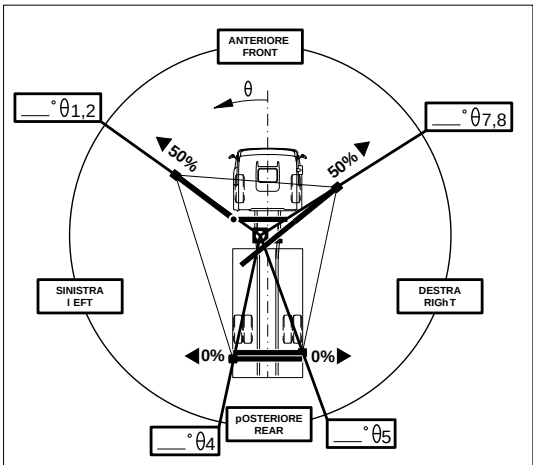
☐ **Installazione cross stab (90°)**

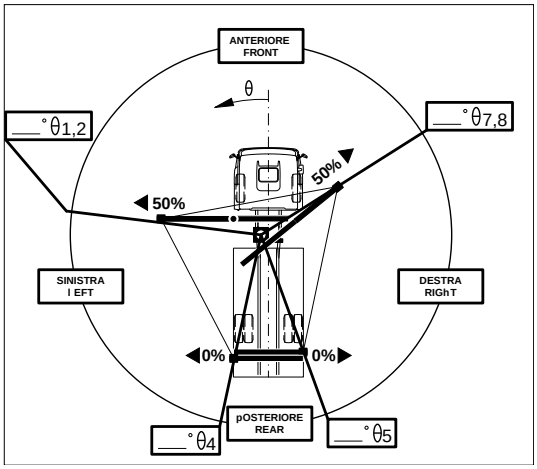
TEST 1



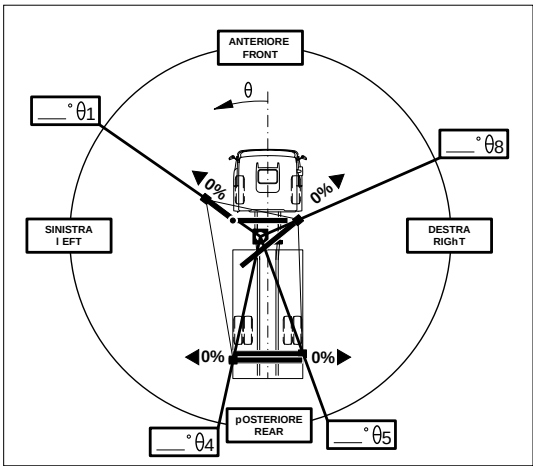


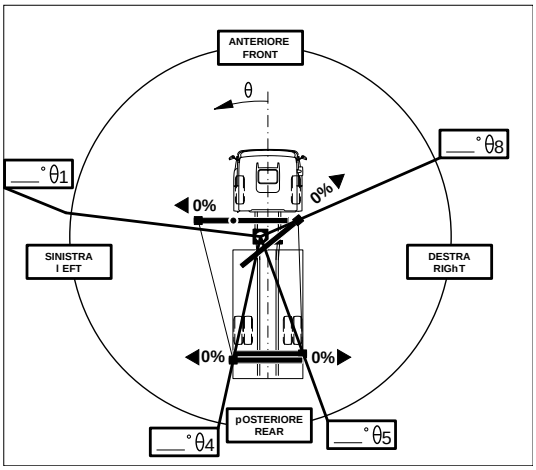
TEST 2



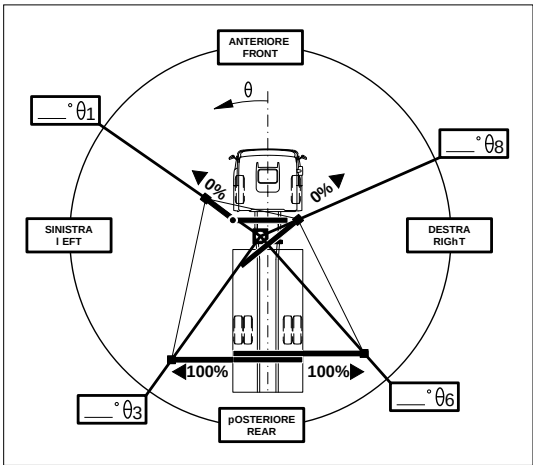


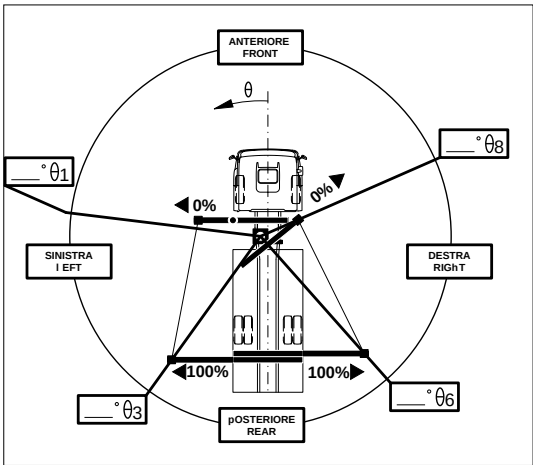
TEST 3





TEST 4





REGISTRO DI MANUTENZIONE

Compilazione: **MQO/MQM/MQE**

Dopo aver completato ogni operazione di controllo/manutenzione, spuntare le caselle corrispondenti in base all'esito. Per apprendere quali operazioni sono da effettuare negli intervalli previsti (250 ore/500 ore/1000 ore) e quale sia il tipo di operatore qualificato, consultare le tabelle X + Y+Z del capitolo 9 “manutenzione” del manuale di istruzione della gru.
Se durante i controlli si assegna un codice “N” è necessario spuntare la corrispondente casella, mettere fuori servizio la macchina e ripararla.
Dopo la riparazione effettuare nuovamente controlli e se risulta “conforme” spuntare la casella R.
Successivamente compilare le tabelle H e H1 (Registri successivi) a seconda che si tratti di riparazioni o sostituzione.

	1ª ASSISTENZA	
50 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
NOTE:		

	1° ANNO	
250 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
NOTE:		

	2° ANNO	
250 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
NOTE:		

500 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S N R	Data..... Firma .....
NOTE:		

500 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S N R	Data..... Firma .....
NOTE:		

750 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
NOTE:		

750 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
NOTE:		

1000 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S N R	Data..... Firma .....
NOTE:		

1000 ore	S	Data..... Firma .....
	N	Data..... Firma .....
	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S N R	Data..... Firma .....
NOTE:		

Legenda: **S**: si, ok, tutte le operazioni eseguite con esito positivo secondo il manuale di istruzione gru.

N: no, una o più operazioni con esito non positivo (vedi note)
R: riparato, ripristino delle condizioni di sicurezza

REGISTRO DI MANUTENZIONE

Compilazione: **MQO/MQM/MQE**

Dopo aver completato ogni operazione di controllo/manutenzione, spuntare le caselle corrispondenti in base all'esito. Per apprendere quali operazioni sono da effettuare negli intervalli previsti (250 ore/500 ore/1000 ore) e quale sia il tipo di operatore qualificato, consultare le tabelle X + Y+Z del capitolo 9 “manutenzione” del manuale di istruzione della gru.
Se durante i controlli si assegna un codice “N” è necessario spuntare la corrispondente casella, mettere fuori servizio la macchina e ripararla.
Dopo la riparazione effettuare nuovamente controlli e se risulta “conforme” spuntare la casella R.
Successivamente compilare le tabelle H e H1 (Registri successivi) a seconda che si tratti di riparazioni o sostituzione.

	3° ANNO		4° ANNO		5° ANNO	
250 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	
500 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S N R	Data..... Firma	S N R	Data..... Firma	S N R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	
750 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	
1000 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S N R	Data..... Firma	S N R	Data..... Firma	S N R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	

Legenda: **S**: si, ok, tutte le operazioni eseguite con esito positivo secondo il manuale di istruzione gru.
N: no, una o più operazioni con esito non positivo (vedi note)
R: riparato, ripristino delle condizioni di sicurezza

REGISTRO DI MANUTENZIONE

Compilazione: **MQO/MQM/MQE**

Dopo aver completato ogni operazione di controllo/manutenzione, spuntare le caselle corrispondenti in base all'esito. Per apprendere quali operazioni sono da effettuare negli intervalli previsti (250 ore/500 ore/1000 ore) e quale sia il tipo di operatore qualificato, consultare le tabelle X + Y+Z del capitolo 9 “manutenzione” del manuale di istruzione della gru.
Se durante i controlli si assegna un codice “N” è necessario spuntare la corrispondente casella, mettere fuori servizio la macchina e ripararla.
Dopo la riparazione effettuare nuovamente controlli e se risulta “conforme” spuntare la casella R.
Successivamente compilare le tabelle H e H1 (Registri successivi) a seconda che si tratti di riparazioni o sostituzione.

		6° ANNO	7° ANNO	8° ANNO
250 ore	S	Data..... Firma	Data..... Firma	Data..... Firma .....
	N	Data..... Firma	Data..... Firma	Data..... Firma .....
	R	Data..... Firma	Data..... Firma	Data..... Firma .....
NOTE:				
500 ore	S	Data..... Firma	Data..... Firma	Data..... Firma .....
	N	Data..... Firma	Data..... Firma	Data..... Firma .....
	R	Data..... Firma	Data..... Firma	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S / N / R	Data..... Firma	Data..... Firma	Data..... Firma .....
NOTE:				
750 ore	S	Data..... Firma	Data..... Firma	Data..... Firma .....
	N	Data..... Firma	Data..... Firma	Data..... Firma .....
	R	Data..... Firma	Data..... Firma	Data..... Firma .....
NOTE:				
1000 ore	S	Data..... Firma	Data..... Firma	Data..... Firma .....
	N	Data..... Firma	Data..... Firma	Data..... Firma .....
	R	Data..... Firma	Data..... Firma	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S / N / R	Data..... Firma	Data..... Firma	Data..... Firma .....
NOTE:				

Legenda: **S**: si, ok, tutte le operazioni eseguite con esito positivo secondo il manuale di istruzione gru.

N: no, una o più operazioni con esito non positivo (vedi note)
R: riparato, ripristino delle condizioni di sicurezza

REGISTRO DI MANUTENZIONE

Compilazione: **MQO/MQM/MQE**

Dopo aver completato ogni operazione di controllo/manutenzione, spuntare le caselle corrispondenti in base all'esito. Per apprendere quali operazioni sono da effettuare negli intervalli previsti (250 ore/500 ore/1000 ore) e quale sia il tipo di operatore qualificato, consultare le tabelle X + Y+Z del capitolo 9 “manutenzione” del manuale di istruzione della gru.
Se durante i controlli si assegna un codice “N” è necessario spuntare la corrispondente casella, mettere fuori servizio la macchina e ripararla.
Dopo la riparazione effettuare nuovamente controlli e se risulta “conforme” spuntare la casella R.
Successivamente compilare le tabelle H e H1 (Registri successivi) a seconda che si tratti di riparazioni o sostituzione.

	9° ANNO		10° ANNO		11° ANNO	
250 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	
500 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S / N / R	Data..... Firma	S / N / R	Data..... Firma	S / N / R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	
750 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	
1000 ore	S	Data..... Firma	S	Data..... Firma	S	Data..... Firma .....
	N	Data..... Firma	N	Data..... Firma	N	Data..... Firma .....
	R	Data..... Firma	R	Data..... Firma	R	Data..... Firma .....
COPPIA DI SERRAG-GIO RALLA	S / N / R	Data..... Firma	S / N / R	Data..... Firma	S / N / R	Data..... Firma .....
NOTE:			NOTE:		NOTE:	

Legenda: **S**: si, ok, tutte le operazioni eseguite con esito positivo secondo il manuale di istruzione gru.
N: no, una o più operazioni con esito non positivo (vedi note)
R: riparato, ripristino delle condizioni di sicurezza

REGISTRO RIpARAZIONI EI EMENTI STRUTTORAI I/MEcc ANISMI/pARTI IDRAUI Ich E/ DISpOSITIVI DI SIcUREZZA

H1

Compilazione: **MQM/MQE**

Data	**Elemento**	**causa della riparazione**	**codice**	**Firma Responsabile**

REGISTRO SOSTITUZIONI El EMENTI STRUTTORAl I/MEcc ANISMI/pARTI IDRAUl Ich E/ DISpOSITIVI DI SIcUREZZA

H

Compilazione: **MQM/MQE**

Data	Elemento	causa della sostituzione	codice	Firma Responsabile

REGISTRO VERIFIchE pERIODIchE OBBlIGATORIE

Compilazione: **IQ**

Le gru devono essere sottoposte a verifiche periodiche, da parte di Enti Terzi indipendeti abilitati pubblici e/o privati (es. organismi Notificati). **Tali verifiche sono volte a valutare l'effettivo stato di conservazione, efficienza e sicurezza della gru.**
le operazioni secondo le prescrizioni EFFER sono indicate nel manuale dell'operatore nel capitolo
"**9 - Manutenzione -pagina 10)**" **con il simbolo**  **.**

pRESclZIONI EFFER *"OBBLIGATORIE"*	VERIFIchE pERIODIchE		Tab. K
	1ª VERIFIcA	VERIFIcA pERIODIcA	
SOGGETTTO VERFIc ATORE (IQ)	Ente Pubblico/Privato	Ente Pubblico/Privato	
pERIODIcITA'		OGNI ANNO	OGNI 2 ANNI
		(con almeno una di tali condizioni)	
		- oltre 10 anni - ambiente con persone nelle vicinanze - ambiente con beni materiali potenzialmente pericolosi - ambiente cantieristico - ambiente siderurico - ambiente portuale	- tutti gli altri ambienti e meno di 10 anni

☐ pRESCRIZIONI IN ITAlIA D.lgs 81/08 comma 11	VERIFIchE pERIODIchE (art. 71 comma 11)		Tab. K
	1ª VERIFIcA	VERIFIcA pERIODIcA	
SOGGETTTO VERFICATORE (IQ)	< = 60 gg INAIL (ex ISPELS) > 60 gg ENTI PRIVATI ABILITATI	< = 60 = gg ASL-ARPA > 60 gg ENTI PRIVATI ABILITATI	
pERIODIcITA'		OGNI ANNO	OGNI 2 ANNI
		(con almeno una di tali condizioni)	
		- oltre 10 anni - ambiente cantieristico - ambiente siderurico - ambiente portuale	- tutti gli altri ambienti

☐ pRESCRIZIONI IN	VERIFIchE pERIODIchE		Tab. K
	1ª VERIFIcA	VERIFIcA pERIODIcA	
SOGGETTTO VERFICATORE (IQ)			
pERIODIcITA'			

Anno	Data	ENTE EROGATORE	Nome	Firma	Note
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

REGISTRO DEllE TRASFORMAZIONI DEllA GRU/ApplIcAZIONI DI AccESSORI

Compilazione: **Installatore**

Data	Trasformazione		

REGISTRAZIONI DEIIE cONDIZIONI DI UTIlIZZO DEIlA GRU

Compilazione: **QO**

Ogni anno/1000 ore di lavoro, l'operatore ha l'obbligo di registrare le 'CONDIZIONI DI UTILIZZO DELLA GRU/ ACCESSORI nel REGISTRO allegato secondo le istruzioni sotto riportate. La mancata registrazione di tali dati, porta alla cessazione delle condizioni di garanzia.

Tipo di dispositivo contaore

E' il dispositivo utilizzato per rilevare il n° di ore di lavoro. Deve essere indicato il tipo di dispositivo contaore utilizzato. Può essere automatico, fornito da Effer, o dall'installatore, oppure può essere utilizzato un dispositivo azionato volontariamente dall'operatore. Secondo la norma ISO 12482-1, a seconda del tipo di dispositivo utilizzato, si ha una differente valutazione di calcolo dello stato di conservazione della gru

N° di ore di lavoro

Sono intese come unità temporali di funzionamento della gru secondo l'uso intermittente previsto (somma del tempo del ciclo di sollevamento e del tempo di sosta). Devono essere registrate sia il n° di ore totali di lavoro, sia i valori parziali per ogni tipo di utilizzo (gancio, benna, cestello).

Regime di carico

Il regime di carico rappresenta il livello di sollecitazione al quale è sottoposta la gru durante il suo utilizzo. Sono definiti diversi regimi di carico associati al tipo di lavoro della gru (gancio, benna, cestello) secondo 4 livelli di sollecitazione definiti come rapporto % tra i carichi reali sollevati, e i relativi carichi massimi indicati nel 'diagramma di carico' di riferimento. I diagrammi di carico di riferimento sono quelli riferiti a ciascun tipo di lavoro (gancio, benna e cestello) e sono quelli di massima prestazione (gru con stabilizzatori completamenti aperti/prestazioni gru non declassate)

N° cicli di sollevamento

Un ciclo di sollevamento parte dal momento in cui la gru solleva il carico fino al momento in cui il carico viene rilasciato e la gru si predispone per un ciclo successivo.
NB: Valutando il tempo medio di un ciclo di sollevamento, il n°di ore di lavoro può essere un utile parametro di valutazione per risalire al n° di cicli di sollevamento.

VERIFIchE DEIlA FUNE

Si allega (vedi pag. 38) lo schema di Running Record per le verifiche della fune secondo **ISO 4309-2010**. In tale schema sono previste tra l'altro le date di installazione e smaltimento della fune. Per ulteriori informazioni si rimanda alla norma **ISO 4309-2010.**

REGISTRO DEllE cONDIZIONI DI UTIlIZZO DEllA GRU

Compilazione: **QO**

- ☐ **Dispositivo contaore automatico EFFER (ore totali)**
- ☐ **Dispositivo contaore automatico non EFFER (ore totali)**
- ☐ **Dispositivo contaore manuale azionato dall'operatore (ore totali)**
- ☐ **Dispositivo contaore manuale azionato dall'operatore (ore parziali)**

		Sollevamento con **gancio**						Sollevamento con **snodo**						Sollevamento con **verricello**						Sollevamento con **benna**								
Anni/Ore	N° ore totali **(h)**	N° ore parziali **(h)**	Tempo medio un ciclo **(minuti)**	N° cicli al 30% rated capacity	N° cicli al 50% rated capacity	N° cicli al 70% rated capacity	N° cicli al 100% rated capacity	N° ore parziali **(h)**	Tempo medio un ciclo **(minuti)**	N° cicli al 30% rated capacity	N° cicli al 50% rated capacity	N° cicli al 70% rated capacity	N° cicli al 100% rated capacity	N° ore parziali **(h)**	Tempo medio un ciclo **(minuti)**	N° cicli al 30% rated capacity	N° cicli al 50% rated capacity	N° cicli al 70% rated capacity	N° cicli al 100% rated capacity	N° ore parziali **(h)**	Tempo medio un ciclo **(minuti)**	N° cicli al 30% rated capacity	N° cicli al 50% rated capacity	N° cicli al 70% rated capacity	N° cicli al 100% rated capacity	Nome operatore	Firma	Data
1°/1000																												
2°/2000																												
3°/3000																												
4°/4000																												
5°/5000																												
6°/6000																												
7°/7000																												
8°/8000																												
9°/9000																												
10°/10000																												

VERIFIcA DEllO STATO DI cONSERVAZIONE DEllA GRU - SWp (safe workiing period/ periodo di lavoro sicuro) – REVISONE GENERAIE (GO –general overhaul)

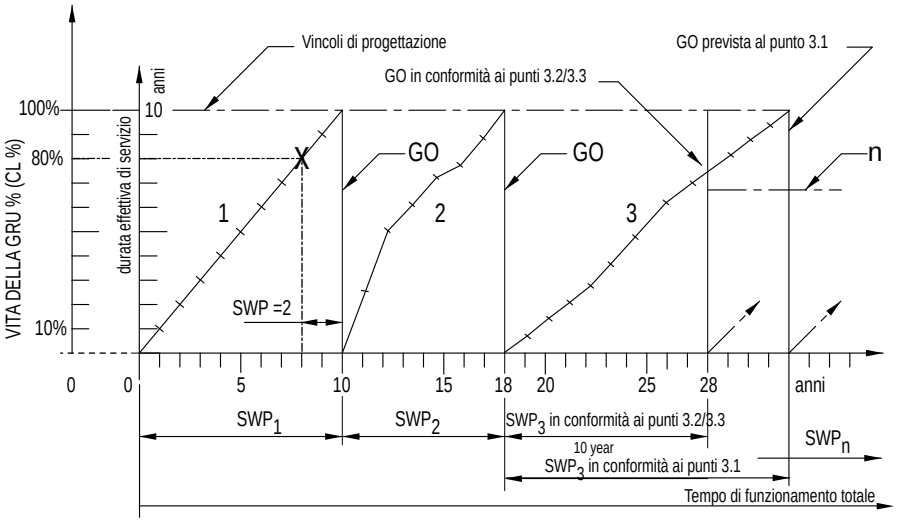
Compilazione: **IE**

Ogni 12 mesi/1000 ore di utilizzo della gru, i dati registrati dall'operatore delle 'condizioni di utilizzo della gru' devono essere esaminati da un Ingegnere esperto (**)(IE - tab. W - ISO 9927-1-2009-table A1) secondo lo schema della norma ISO 12482-1-1995 (Fem 9.755), e comunque secondo normative riconosciute. Nel caso in cui, dall'esame dei dati registrati, risulti esaurito il SWP (h/anni - safe working period) poiché è stata raggiunto il 100% della vita prevista della gru (crane life CL%=100%), è OBBLIGATORIA la REVISIONE GENERALE (GO –general overhaul) secondo le indicazioni satabilite dell'Ingegnere esperto (IE) (vedere Fig.1).

E' possibile non eseguire la registrazione manuale delle 'condizioni di utilizzo della gru' sopradescritte, solo quando la gru è dotata di 'CONTATORE ELETTRONICO'. La presenza di tale dispositivo è espressamente indicata nel manuale di istruzione della gru.

ISO 12482-1-1995

Fig.1



SWp (periodo di lavoro sicuro)

cl	Vita Gru (definizione Effer)
GO	Revisione generale
1	Periodo di funzionamento secondo la classificazione
2	Periodo di funzionamento variabile (carico più pesante)
3	Periodo di funzionamento variabile (carico più leggero)
n	Nuovi vincoli di progettazione (dopo GO), che possono essere inferiori a quelli precedenti e che devono essere specificati dal costruttore

Esempio X:

- SWp residuo = 2 anni ~ 2000 ore

- cl % = 80 %

REGISTRO DEllE VERIFIchE DEllO STATO DI cONSERVAZIONE DEllA GRU

Compilazione: **IE**

Dati: clASSE GRU *** ..... ; swp=10 anni *; CL_{max} = 100%

- Normativa di calcolo swp residuo/CL % : ☐ Regole **EFFER** Cod..... **(EN 13001)**
  ☐ ISO 12482-1-1995 (**)
  ☐ .....

		Calcoli di verifica												Risultati di verifica **							
anni/ore	n° ore totali							NOTE			STANDARD			S.W.P Residuo (anni)	S.W.P Residuo (h)	C.L % (Max 100%)	G.O Revisione generale	Società Verificatrice	Nome Verificatore	Firma	Data
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) Con utilizzo, come indicato nel manuale operatore, 10 anni corrispondono mediamente a 10.000 ore di lavoro

(**) Vedere Fig. 1

(***) Vedere capitoli precedenti

REGISTRO DEIIE VERIFIchE DEIIO STATO DI cONSERVAZIONE DEGII AccESSORI

Compilazione: **IE**

Dati: TIpO AccESSORIO *** .....; swp=10 anni *; CL_{max} = 100%

- Normativa di calcolo swp residuo/CL % : ☐ Regole **EFFER** Cod..... **(EN 13001)**
  ☐ ISO 12482-1-1995
  ☐ .....

		Calcoli di verifica												Risultati di verifica **							
anni/ore	n° ore totali							NOTE			STANDARD			S.W.P Residuo (anni)	S.W.P Residuo (h)	C.L % (Max 100%)	G.O Revisione generale	Società Verificatrice	Nome Verificatore	Firma	Data
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) Con utilizzo normale, 10 anni corrispondono mediamente a 10.000 ore di lavoro

(**) Vedere Fig. 1

(***) Vedere capitoli precedenti

REGISTRO DEllE VERIFIchE DEllO STATO DI cONSERVAZIONE DEGll AccESSORI

Compilazione: **IE**

Dati: TIpO AccESSORIO *** .....; swp=10 anni *; CL_{max} = 100%

- Normativa di calcolo swp residuo/CL % : ☐ Regole **EFFER** Cod..... **(EN 13001)**
  ☐ ISO 12482-1-1995
  ☐ .....

		Calcoli di verifica												Risultati di verifica **							
anni/ore	n° ore totali							NOTE			STANDARD			S.W.P Residuo (anni)	S.W.P Residuo (h)	C.L % (Max 100%)	G.O Revisione generale	Società Verificatrice	Nome Verificatore	Firma	Data
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) Con utilizzo normale, 10 anni corrispondono mediamente a 10.000 ore di lavoro

(**) Vedere Fig. 1

(***) Vedere capitoli precedenti

REGISTRO DEllE VERIFIchE DEllO STATO DI cONSERVAZIONE DEGll AccESSORI

Compilazione: **IE**

Dati: TIpO AccESSORIO *** .....; swp=10 anni *; CL_{max} = 100%

- Normativa di calcolo swp residuo/CL % : ☐ Regole **EFFER** Cod..... **(EN 13001)**
  ☐ ISO 12482-1-1995
  ☐ .....

		Calcoli di verifica												Risultati di verifica **							
anni/ore	n° ore totali							NOTE			STANDARD			S.W.P Residuo (anni)	S.W.P Residuo (h)	C.L % (Max 100%)	G.O Revisione generale	Società Verificatrice	Nome Verificatore	Firma	Data
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) Con utilizzo normale, 10 anni corrispondono mediamente a 10.000 ore di lavoro

(**) Vedere Fig. 1

(***) Vedere capitoli precedenti

Riferimento gru	Data installazione fune	Dettagli fune (vedere 150 17893 uso fune)					
		RCN [a]	Diametro nominale mm	Pand name	Nucleo[b]	Finitura cavo[b]	Direzione e tipo [b]
Lavoro fune	Data scarto fune	.....	.....	Costruzione	IWRC FC WSC	Zinco non rivestito/Gal.	Destra : sZ zZ Z Sinistra: zS sS S
Terminale(i) fune		Numero accettabile di fili rotti esterni visibili ..... in 6d e..... in 30d Diametro di riferimento ..... mm					diminuzione ammissibile di diametro rispetto al diametro di riferimento ..... mm

Data di ispezione	Fili rotti esterni visibili						Diametro				Corrosione		Danni e deformazioni		Valutazione generale	Nome (stampa) e firma della persona competente	
	Numero in lunghezza		Posizione nella fune		Valutazione di gravità		Diametro misurato mm	Riduzione attuale rispetto al Diametro di rif. mm	Posizione nella fune	Valutazione di gravità	Posizione nella fune	Valutazione di gravità	Posizione nella fune	Valutazione di gravità	Es. Valutazione combinata di gravità		
Anno/mese/ giorno	6d	30d	6d	30d	6d	30d											

[a] RCN è Rape Category Number (vedere Tavole 1 e 2 e allegato E).
[b] Spuntare se applicabile
[c] Descrivere come livello di gravità: lieve o 20%, medio o 40%, alto o 60%;% molto alto o 80%, o scarto o 100%.

Riferimento gru	Data installazione fune	Dettagli fune (vedere 150 17893 uso fune)					
		RCN [a]	Diametro nominale mm	Pand name	Nucleo[b]	Finitura cavo[b]	Direzione e tipo [b]
Lavoro fune	Data scarto fune	.....	.....	Costruzione	IWRC FC WSC	Zinco non rivestito/Gal.	Destra : sZ zZ Z Sinistra: zS sS S
Terminale(i) fune		Numero accettabile di fili rotti esterni visibili ..... in 6d e..... in 30d Diametro di riferimento ..... mm					diminuzione ammissibile di diametro rispetto al diametro di riferimento ..... mm

Data di ispezione	Fili rotti esterni visibili						Diametro				Corrosione		Danni e deformazioni		Valutazione generale	Nome (stampa) e firma della persona competente	
	Numero in lunghezza		Posizione nella fune		Valutazione di gravità		Diametro misurato mm	Riduzione attuale rispetto al Diametro di rif. mm	Posizione nella fune	Valutazione di gravità	Posizione nella fune	Valutazione di gravità	Posizione nella fune	Valutazione di gravità	Es. Valutazione combinata di gravità		
Anno/mese/ giorno	6d	30d	6d	30d	6d	30d											

[a] RCN è Rape Category Number (vedere Tavole 1 e 2 e allegato E).
[b] Spuntare se applicabile
[c] Descrivere come livello di gravità: lieve o 20%, medio o 40%, alto o 60%;% molto alto o 80%, o scarto o 100%.

Riferimento gru	Data installazione fune	Dettagli fune (vedere 150 17893 uso fune)					
		RCN [a]	Diametro nominale mm	Pand name	Nucleo[b]	Finitura cavo[b]	Direzione e tipo [b]
Lavoro fune	Data scarto fune	.....	.....	Costruzione	IWRC FC WSC	Zinco non rivestito/Gal.	Destra : sZ zZ Z Sinistra: zS sS S
Terminale(i) fune		Numero accettabile di fili rotti esterni visibili ..... in 6d e..... in 30d Diametro di riferimento ..... mm					diminuzione ammissibile di diametro rispetto al diametro di riferimento ..... mm

Data di ispezione	Fili rotti esterni visibili						Diametro				Corrosione		Danni e deformazioni		Valutazione generale	Nome (stampa) e firma della persona competente	
	Numero in lunghezza		Posizione nella fune		Valutazione di gravità		Diametro misurato mm	Riduzione attuale rispetto al Diametro di rif. mm	Posizione nella fune	Valutazione di gravità	Posizione nella fune	Valutazione di gravità	Posizione nella fune	Valutazione di gravità	Es. Valutazione combinata di gravità		
Anno/mese/ giorno	6d	30d	6d	30d	6d	30d											

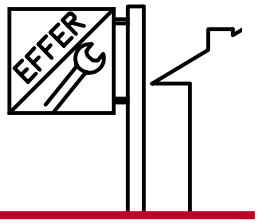
[a] RCN è Rape Category Number (vedere Tavole 1 e 2 e allegato E).
[b] Spuntare se applicabile
[c] Descrivere come livello di gravità: lieve o 20%, medio o 40%, alto o 60%;% molto alto o 80%, o scarto o 100%.

REGISTRO DOcUMENTI VARI

Data	Documento		

pUNTI DI ASSISTENZA / SERVIcE cENTERS

pOINTS DE SERVIcE ApRES-VENTE / KUNDENDIENSTpUNKTE



Per conoscere la lista delle Officine Autorizzate Effer, consultare il sito:

www.effer.com

MO00062_0

Appendix Y

EFFER S.p.A. - Via IV Novembre,12 40061 Minerbio (Bologna) - Italy
Ph. + 39 051 4181211 - Fax + 39 051 4181491
web: www.effer.com - e-mail: info@effer.it

Inspection register

TRANSlATION OF ThE ORIGINAl INSTRUcTIONS

IDENTIFIcATION DATA

Fill in:Installer

cRANE DATA	
Manufacturer	**EFFER S.p.A**
Address	**Via IV Novembre, 12 - 40061 Minerbio (BO) Italia**
Phone	**051 4181211**
Email	**info@effer.it**
cRANE MODEl	
Serial no	
Year of construction	
CE declaration of conformity no.	
Operator's Manual (Code / Rev.)	

cRANE AccESSORIES (jib, winch, basket, bucket. rotor, etc.)	
Type	
Serial no	
Year of construction	
CE declaration of conformity no.	
Operator's Manual (Code / Rev.)	
Tipo	
Serial no	
Year of construction	
CE declaration of conformity no.	
Operator's Manual (Code / Rev.)	
Type	
Serial no	
Year of construction	
CE declaration of conformity no.	
Operator's Manual (Code / Rev.)	
Type	
Serial no	
Year of construction	
CE declaration of conformity no.	
Operator's Manual (Code / Rev.)	

1st OWNER'S DATA	
Name	
Address	
Phone	
Email	

△ The responsibility for the correct filling in and management of the control register is of the owner / employer, in any case.
The inspection register so constituted is an important document to which EFFER can refer in case of warranty request, dispute and accident.

△ If sheets of this control register would be insufficient, add the necessary sheets prepared under various schemes here indicated. The user will note the identification data of the machine on the additional sheets. The additional sheets will become an integral part of this inspection register.

INSTAIIATION DATA

Fill in:Installer

INSTAIIATION DATA	1st Installation
Installer	
Address	
Phone	
Email	
Data truck	
Model	
No. Chassis	
DATE OF START Up OF ThE INSTAIIED cRANE	
No. of cE DEcIARATION OF cONFORMITY BY ThE INSTAIIER	
DATA ADDED TO ThE INSTRUcTION MANUAI (code / Rev.)	

DEIIVERY TO ThE OWNER

The device to which this control register refers, belongs to .....

Date.....on it was delivered to: .....

In the position of: ☐ **Owner** ☐ **Managing director**

☐ **Employer** ☐ **.....**

according to the stated contractual terms, according to the dimensional and functional technical specifications stated in the instruction manual complete with annex documentation.

Signature of the person in charge of the pick up	Installer Seal	Date

INSTAIIATION DATA	2nd Installation
Installer	
Address	
Phone	
Email	
Data truck	
Model	
No. Chassis	
DATE OF START Up OF ThE INSTAIIED cRANE	
No. of cE DEcIARATION OF cONFORMITY BY ThE INSTAIIER	
DATA ADDED TO ThE INSTRUcTION MANUAI (code / Rev.)	

DEIIVERY TO ThE OWNER

The device to which this control register refers, belongs to **.....**

Date**.....**on it was delivered to**: .....**

In the position of: ☐ Owner ☐ Managing director

☐ Employer ☐ **.....**

according to the stated contractual terms, according to the dimensional and functional technical specifications stated in the instruction manual complete with annex documentation.

Signature of the person in charge of the pick up	Installer Seal	Date

AIM AND pOURpOSE OF ThE INSpEcTION REGISTER

The inspection register is required by Effer instructions (•) and is mandatory in some countries (see legislative references). The inspection register has the purpose to take notes of the history of the crane as regards data, operations of installation, maintenance, repairs, proofs, processing, tests, safety status and preservation checks.

The inspection register contains:

- Instructions for storage / fill in
- List of the profiles of maintenance operators
- Normative References
- Property transfer register
- Register / Putting into service Validity
- Crane/ installation technical data
- Register of maintenance and repairs / replacements
- Register of the peridical checks
- Register /report/ of overload test performances
- Crane transformations register/ accessory application
- Register of the conditions of use of the crane
- Register of the preservation status of the crane - SWP (safe working period) / GO - (general overhault)
- Service centers

(•)The inspection register so constituted is an important document to which EFFER can refer in case of warranty request, dispute and accident.

INSTRUcTIONS FOR cORREcT STORAGE

This inspection register, must be well kept on the machine, for the entire life of the crane until its disposal, i.e at least 10 years from the first start up.

INSTRUcTIONS FOR FIlING IN

Compilations / recordings to be made, with its operators and approved persons listed, are summarized in Tables Z and R. In all the spaces provided, you must write a readable name, date, and signature. The characteristics of each qualified operator are shown in Table W.

In any case, the owner / employer is responsible of the proper fill in and management of the inspection register.

If sheets of this control register would be insufficient, add the necessary sheets prepared under various schemes here indicated. The user will note the identification data of the machine on the additional sheets. The additional sheets will become an integral part of this inspection register.

SUMMARY TABIE OF cOMpIlATIONS / REcORDINGS OF ThE INSpEcTION REGISTER

Tab. Z

TYpES OF REcORDINGS AND FIll IN	REGISTRATION /FIll IN MANAGER (see Tab. W)	pAGE
cranes Identification data/ installation data Declaration of delivery to the owner	- Installer **B** - Owner **A**	Page 2/3
Transfers of ownership	- Previous owen/new owner **A**	Page 8
Validation of the putting into service	- Installer **B** - Owner/Appointed **A**	Page 9
Crane Technical data / Installation	- Installer **B**	Page 13
Overload Test Register	- Installer **B**	Page 15
service / Repair / Replacement Register **(See TAB R)**	- EFFER Service Centre **C** **(MQM - MQE)** - Operator **(MQO)**	Page 19
Periodic test register **(See TAB R)**	- Qualified Inspector **IQ**	Page 25
Transformation / application accessories Register	- Installer **B**	Page 26
Register of the TERMS OF USE of the crane	- Operator **(QO)**	Page 27/28
Register of the checks of the STATE OF preservation OF the CRANE / ACCESSORY GENERAL REVIEW (SWP-GO) **(See TAB R)**	- Expert Engineering **(IE)**	Page 29

SUMMARY TABIE OF MAINTENANcE AND INSpEcTIONS

Tab. R

	ORDINARY MAINTENANCE				EXTRAORDINARY MAINTENANCE		PERIODICAL CHECK	Checking the STATE OF PRESERVATION OF THE CRANE / ACCESSORIES (SWP-GO)
TYPE OF SERVICE / INTERVALS* *	30h / 7days	1rst SERVICE 50 h	250h / 3 months	500h / 6 months	1000h / 12 months	Repairs/ Substitutions	12 months/ 24 months	1000h / 12 months
REGISTRATION	NO	YES	YES	YES	YES	YES	YES	YES
SERVICE / TEST OPERATOR **(see TAB. W)**	**(MQO)**	**(MQM) (MQE)** (Effer Service Centre) **C**	**(MQO)**	**(MQM) (MQE)** (Effer Service Centre) **C**	**(MQM) (MQE)** (Effer Service Centre) **C**	**(MQM) (MQE)** (Effer Service Centre) **C**	**(IQ)**	**(IE)**
pOSITION / pAGE	/	Pag. 19			Pag. 19	Pag. 23/24	Pag. 25	Pag. 30

△ * * Vedere manuale istruzione gru / Service Manual

I IST OF OpERATORS' pROFIl ES AVAIl ABl E FOR INSTAIl ATION, USE, MAINTENANc E AND INSpEcTION OF ThE cRANES

pictogram	Tab. W
A	OWNER / EMPLOYER
B 	INSTALLER person / company responsible of the set up and installation of the crane on vehicle / unit / fixed base, in accordance with the instructions provided by Effer and according to the rules and laws in force in the country in which the equipment will be used.
C 	EFFER SERVICE CENTER person / company that received instructions training, resources by Effer to perform properly check interventions, testing, service and repairs on the crane. (*)
QO 	OPERATOR QUALIFIED TO CRANE USE: A person so designated by the employer who has appropriate training and adequate experience in the use of the crane.
MQO 	OPERATOR QUALIFIED TO BASIC CRANE SERVICE: A person so designated by the employer who has appropriate training and adequate experience in the use of the crane and in the simple maintenance of the crane.
MQM 	MECHANICAL OPERATOR QUALIFIED TO COMPLEX CRANE MAINTENANCE: Skilled person, like defined by standard ISO 12480-1-1997, trained to be authorized to carry out complex maintenance mechanical operations and, when provided, to update and to sign the inspection register. The personnel in charge of maintenance operations of Effer service centers covers this qualification.
MQE 	ELECTRICAL / ELECTRONIC QUALIFIED OPERATOR: Skilled person, like defined by standard ISO 12480-1997, trained to and authorized to perform maintenance operations, of electrical / electronic complexity and, when provided, to update and to sign the inspection register. The personnel in charge of maintenance operations of Effer service centers covers this qualification.
IQ 	QUALIFIED INSPECTOR (ISO 23814-2009 - Categories d): Experienced person with the necessary knowledge and well-known experience, so as to carry out such inspections to the crane. He/she should have practical skills that can facilitate the inspection procedures. Such capabilities can be derived by a combination of various experiences in the field. Moreover, he/she will have to update knowledge and skills as required by product innovation, and he/she will be free from any commercial, financial and other contractual interest that can influence his/her inspection job.
IE 	EXPERT ENGINEER (ISO 9927-1-2009 - TAB. A1): An engineer with experience in crane design, building, maintenance with adequate knowledge of regulations, standards and equipment necessary to carry out inspections. The experienced engineer must be also able to judge the safety status of the crane and to decide on measures that must be taken in order to ensure the correct safe operation; moreover, he/she must be free from any commercial, financial interest that could affect his investigative work.

(*) The updated list of Effer service centers, can be found on the site www.effer.com

REFERENcE STANDARDS

This inspection register is prepared in accordance to Annex I of Machinery Directive 2006/42/EC that applies in European countries and in the countries of the European Economic Area (EEA) members. It is also prescribed by the ISO 12482-1 (Crane condition monitoring) This inspection register must comply with other laws / national regulations which may vary depending on country of use of the crane. It's up to the owner / employer / installer to observe these issues according to national legislation.

here are additional Italian rules.

country of use: Italy (National legislation: Decree No. 81/08 transposition of communitarian directives).

The employer must take steps to ensure that:

Article. 71 paragraph 4

a) work equipment are:

1-Installed and used in accordance with the manual instruction;

2 - properly maintained and overhauled so as to ensure long-life to the safety requirements according to the Article 70, and they are supplied, if necessary, by appropriate instructions reported in the use and maintenance manual.

b) correct recording and updating of the inspection register for work equipment for which it was intended (for lifting equipment the inspection register is provided in Annex 1 of Machinery Directive 2006/42/EC)

Article 71 paragraph 7

If the equipment (lifting equipment) require special knowledge for their use or special responsibilities in relation to their specific risks, the employer must take steps to ensure that:
a) the use of work equipment is restricted to those persons which have received adequate knowledge, specific information, and adequate training.
b) in case of repairs, transformations, or maintenance, the involved workers must be qualified and specifically trained to undertake such tasks.

Article 71 paragraph 8

Notwithstanding the provisions of paragraph 4, the employer, ..., so provides;
a) work equipment whose safety depends on the installation conditions, are subject to an initial check (after installation and prior to commissioning) and inspection after any assembly at a new site, or at any new location of the unit, for the purpose of ensuring correct installation and proper operation.
b) equipment exposed to conditions which may cause deterioration or liable to cause any dangerous event are subject to:
1) Periodic checks according to the intervals determined by the manufacturer's instructions, or by the standards of good practice, and if failing this, derived from good practice.
2) extraordinary service interventions so as to ensure maintenance safety good conditions, every time any event occurs under any exceptional circumstances that may have adverse consequences for the safety of work equipment such repairs, changes, accidents, natural phenomena or prolonged periods of inactivity.

c) the control actions referred to in subparagraphs a) and b) are performed to ensure a good status of preservation and efficiency of the work equipment with the aim of safety, and are performed by a competent person.

Article 71 paragraph 9

The results of the inspections referred to paragraph B must be reported in writing, and at least those regarding the past recent years, must be saved and kept available to supervisors. This inspection register is written in accordance to Annex I of the Machinery Directive 2006/42/EC. This inspection register may comply with other laws and regulations which may vary depending on country in which the crane is used.

⚠ It depends on the owner / employer / installer responsibility to collect all the current regulatory issues in force in the country in which the crane is used.

REGISTER OF TRANSFER OF pROpERTY

Fill in: **Owner previous**
New owner

1st TRANSFER OF pROpERTY

Crane model ..... Serial no. ..... on date .....

was transferred the Property: previous owner .....

new owner .....

We hereby certify that at that time the technical, dimensional, and functional crane characteristics complied with those laid down at the start up, and that any changes were reported on the inspection register.

Previous owner	Previous owner
Stamp and signature	Stamp and signature
---	---

2nd TRANSFER OF pROpERTY

Crane model ..... Serial no. ..... on date .....

was transferred the Property: previous owner .....

new owner .....

We hereby certify that at that time the technical, dimensional, and functional crane characteristics complied with those laid down at the start up, and that any changes were reported on the inspection register.

Previous owner	Previous owner
Stamp and signature	Stamp and signature
---	---

3rd TRANSFER OF pROpERTY

Crane model ..... Serial no. ..... on date .....

was transferred the Property: previous owner .....

new owner .....

We hereby certify that at that time the technical, dimensional, and functional crane characteristics complied with those laid down at the start up, and that any changes were reported on the inspection register.

Previous owner	Previous owner
Stamp and signature	Stamp and signature
---	---

NOTE: Inform the installer and EFFER to any transfer of property, in order to keep the data updated for any technical communications and / or recall.

VAIIDATION OF cOMMISSIONING

copy for the customer

Fill in: **Installer**

The validation of the commissioning is intended to verify the proper operation of the crane and of the accessories, as well as the proper completion of all the procedures, so as to ensure correct commissioning of the crane and installation. The installer / owner/ employer certify, by this document upon delivery, that the testing took place, that the envisaged procedures and the practical demonstration of the use of the equipment as well as the explanation of the operator's manual were performed. This document must be filled in and signed by the installer, by the customer / owner / employer or by anyone authorized by him, who is requested to apply directly to EFFER in case of non-attendance by the installer. AT EVERY CHANGE OF OWNERSHIP OF THE EQUIPMENT OR AFTER ANY NEW COLLOCATION OF THE CRANE ONTO A DIFFERENT VEHICLE A DOCUMENT SIMILAR TO THIS MUST TO BE FILLED IN BY THE INSTALLER / SELLER.

0. LAWS AND REGULATIONS

- ☐ The installer must grant the compliance of the installation of the crane and the accessories, according to rules in force in the country of use.
- ☐ The installer has complied with all the current information provided by EFFER.

1. DATA IDENTIFICATION
CE marking Nameplate by the manufacturer and installer:
- ☐ Presence
- ☐ Fixing
- ☐ Legibility

DOCUMENTS
- ☐ EC declaration of conformity issued by the manufacturer (copy) - Annex
- ☐ EC declaration of conformity issued by the installer (original) - Annex
- ☐ EC declaration of conformity for accessories (original / copy) - Annex
- ☐ Documents provided by local national rules

3. MANUALS
- ☐ Operation and maintenance manual for crane - Annex
- ☐ Operation and maintenance manual for set up - Annex
- ☐ Operation and maintenance manual for accessories -Annex

4. PLATES
Lifting capacity plates, instructions and warnings according to operation and maintenance manual:
- ☐ Presence ☐ Fixing
- ☐ Legibility
- ☐ Apply No. __capacity diagrams plates in position visible to the operator

5. SAFETY DEVICES - CONTROL SEATS
Monitoring proper functioning of::
- ☐ Stop valves
- ☐ Limiting device
- ☐ stabilizers position device (stability control device)
- ☐ Stop device(emergency)
- ☐ Limiting rotation device for unstable area
- ☐ Stabilizers locking device for transport
- ☐ Device for crane transport correct position
- ☐ Winch safety devices
- ☐ General Safety devices
- ☐ Command seats

6. FUNCTIONAL AND OVERLOAD TESTS
- ☐ Lifting of rated loads
- ☐ Static stability check in the areas with increased loads according to EFFER instructions
- ☐ Noise level check with phonometric test according to standards and according to local laws)
- ☐ Check operation of accessories

7. OPERATOR TRAINING FOR CRANE USE AND SERVICE
- ☐ Instructions for use of the crane
- ☐ Instructions for use of accessories
- ☐ Maintenance instructions
- ☐ Instructions on the Inspection Register

8. INSTALLER'S REPORT

According to the operations above performed and listed, the undersigned Mr. ..... (Head of the validation of the start up) states that:

☐ **ThERE WERE NO** defects ☐ Defects **WERE DETEcTED**.

The equipment complies with the following laws / regulations: ☐ Machinery Directive 2006/42/EC ☐_____

☐ **IT cAN** be put into service ☐ **IT cAN NOT** be put into service.

Date: ..... Signature of the INSPECTOR..... Stamp Company

Name of the INSPECTOR .....

9.REPORT OF THE OWNER / EMPLOYER

The undersigned Mr. .....with qualification .....(☐ Appointed by Mr. .....owner / employer certify that the above listed operations have been executed under his/her supervision, that he/she received documents and materials supplied, and that:

☐ **ThERE ARE NO** reservations to take delivery of the machine ☐ **ThERE** are reservations to take delivery of the machine.

Date	Date .....
Name and signature	Name and signature Owner / employer .....

10.SPECIAL SITUATIONS

The above operations NO. ..... ☐ WERE ☐ WERE NOT performed in presence of the Owner / Employer / Appointee	The above operations NO. ..... ☐ WERE ☐ WERE NOT performed in presence of the Owner / Employer / Appointee

☐ This document and the accompanying documentation was delivered to the Responsible of withdrawal, Mr.....

☐ This document and the accompanying documentation was sent to the Owner / Employer, Mr.....

Date ..... Name and signature of the inspector.....	Date ..... Signature of the Responsible of withdrawal.....

VAIIDATION OF cOMMISSIONING

copy for the installer

Fill in: **Installer**

The validation of the commissioning is intended to verify the proper operation of the crane and of the accessories, as well as the proper completion of all the procedures, so as to ensure correct commissioning of the crane and installation. The installer / owner/ employer certify, by this document upon delivery, that the testing took place, that the envisaged procedures and the practical demonstration of the use of the equipment as well as the explanation of the operator's manual were performed. This document must be filled in and signed by the installer, by the customer / owner / employer or by anyone authorized by him, who is requested to apply directly to EFFER in case of non-attendance by the installer. AT EVERY CHANGE OF OWNERSHIP OF THE EQUIPMENT OR AFTER ANY NEW COLLOCATION OF THE CRANE ONTO A DIFFERENT VEHICLE A DOCUMENT SIMILAR TO THIS MUST TO BE FILLED IN BY THE INSTALLER / SELLER.

0. LAWS AND REGULATIONS

- ☐ The installer must grant the compliance of the installation of the crane and the accessories, according to rules in force in the country of use.
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CE marking Nameplate by the manufacturer and installer:
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DOCUMENTS
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4. PLATES
Lifting capacity plates, instructions and warnings according to operation and maintenance manual:
- ☐ Presence ☐ Fixing
- ☐ Legibility
- ☐ Apply No. __capacity diagrams plates in position visible to the operator

5. SAFETY DEVICES - CONTROL SEATS
Monitoring proper functioning of::
- ☐ Stop valves
- ☐ Limiting device
- ☐ stabilizers position device (stability control device)
- ☐ Stop device(emergency)
- ☐ Limiting rotation device for unstable area
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- ☐ Device for crane transport correct position
- ☐ Winch safety devices
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- ☐ Maintenance instructions
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The equipment complies with the following laws / regulations: ☐ Machinery Directive 2006/42/EC ☐_____

☐ **IT cAN** be put into service ☐ **IT cAN NOT** be put into service.

Date: ..... Signature of the INSPECTOR..... Stamp Company

Name of the INSPECTOR .....

9.REPORT OF THE OWNER / EMPLOYER

The undersigned Mr. .....with qualification .....(☐ Appointed by Mr. .....owner / employer certify that the above listed operations have been executed under his/her supervision, that he/she received documents and materials supplied, and that:

☐ **ThERE ARE NO** reservations to take delivery of the machine ☐ **ThERE** are reservations to take delivery of the machine.

Date	Date .....
Name and signature	Name and signature Owner / employer .....

10.SPECIAL SITUATIONS

The above operations NO. ..... ☐ WERE ☐ WERE NOT performed in presence of the Owner / Employer / Appointee	The above operations NO. ..... ☐ WERE ☐ WERE NOT performed in presence of the Owner / Employer / Appointee

☐ This document and the accompanying documentation was delivered to the Responsible of withdrawal, Mr.....

☐ This document and the accompanying documentation was sent to the Owner / Employer, Mr.....

Date ..... Name and signature of the inspector.....	Date ..... Signature of the Responsible of withdrawal.....

RANE TEchNIcAl DATA REGISTER

Fill in:**Installer**

Summary of c rane Technical Data: *

Gru Modello .....

Crane Classification: * *

design standards: .....

law reference .....

complete classification:.....

Stabilizers max. response. foot.....

Safety devices: *

- ☐ Limiting device
- ☐ stabilizers location device (stability control device)
- ☐ Stop device (emergency)
- ☐ Limiting rotation device for unstable area
- ☐ Stabilizers locking device for transport
- ☐ Device for crane transport correct position.
- ☐ Winch safety devices
- ☐ Stop device (emergency)

c rane / truck ass.bly technical data:

Vehicle: Year of construction.....

Brand.....Model.....

Plate..... Chassis.....

Step.....Number of axes.....

Type of frame.....

Assembly Data:

☐ back of the cabin ☐ back of the body of the truck

Rest position of the crane

☐ folded ☐ opened

Rods n °..... Material..... Diameter.....

h ydraulic system:

Engine speed for crane use ..... (RPM) Oil capacity (l/min).....

PTO type..... Brand..... Ratio.....

Hydraulic pump type type..... Brand..... Displacement (cm^3) .....

Oil type..... Brand..... Grade.....

Stabilizers - c rane *

extendable ☐ manually ☐ hydraulically

☐ Standard ☐ Oversized

Stabilizers - Supplementary

☐ Fixed

extendable ☐ manually ☐ hydraulically

c rane c ontrol seats *

- ☐ Bilateral, on the ground
- ☐ Unilateral, on the ground
- ☐ seat at the top
- ☐ with access ladder
- ☐ remote control
- ☐ .....

stabilizers c ontrol seats *

- ☐ Bilateral, on the ground
- ☐ Unilateral, on the ground
- ☐ remote control
- ☐ .....

Variants and accessories *

☐ joint type..... rules..... ☐ winch type..... rules.....

☐ n°..... crane manual extensions ☐ n°..... manual extensions joint

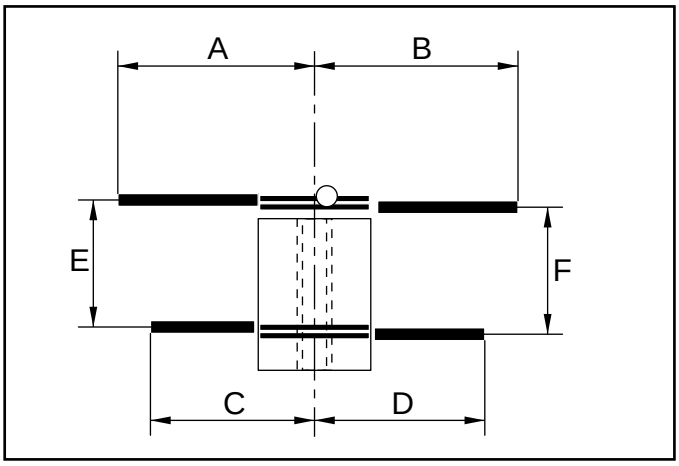
☐ Bucket ☐ drum / octopus / fork ☐ rotor

☐ ..... ☐ ..... ☐ .....

* Data to copy from the User's manual and EC Declaration.

** Please copy by chap. TECHNICAL DATA in the User's manual and the EC Declaration. E.i. design standards (e.i. EN 12999) / standard version (e.i. 2011-A1) / complete classification (e.i.HC1 S1 HD5 with class type work (HC1) / structural strength: (S1) / class control type (HD5 - only when required)

follows

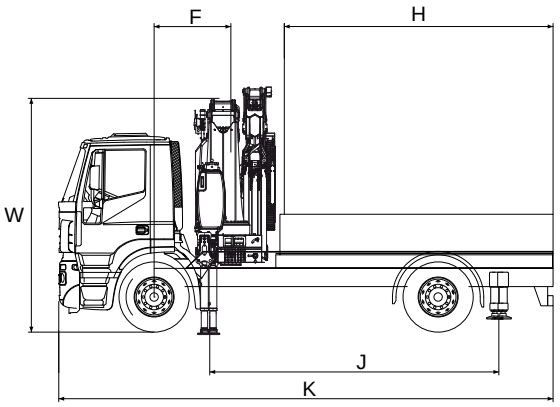


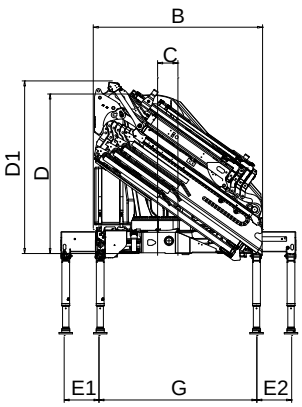
A (mm)	
B (mm)	
C (mm)	
D (mm)	
E (mm)	
F (mm)	

crane outrigger maximum reaction	
1) Maximum pressure on the ground (with fixed plate) (daN/cm^2)	
2) Maximum pressure on the ground (with plate ..... (cm) x ..... (cm)	
3) Maximum pressure on the ground (with plate ..... (cm) x ..... (cm)	

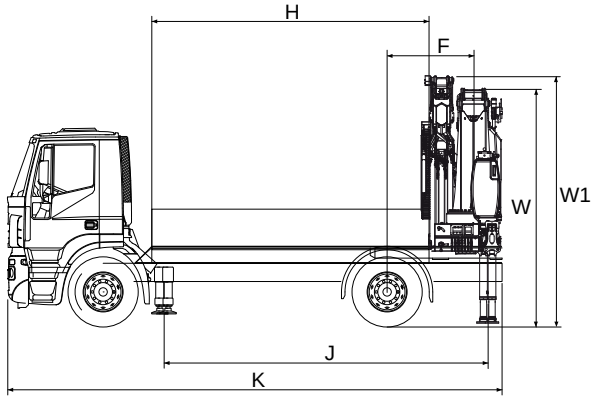
Additional stabilizers maximum reaction	
1) Maximum pressure on the ground (with fixed plate) (daN/cm^2)	
2) Maximum pressure on the ground (with plate ..... (cm) x ..... (cm)	
3) Maximum pressure on the ground (with plate ..... (cm) x ..... (cm)	

Crane in transport position	☐ Folded / ☐ Extended	1st Axis	2nd Axis	3rd Axis	4th Axis	5th Axis	Total
Tare (kg)	+						
Net Capacity (kg)	=						
Weight (kg)							
Maximum permissible (kg)	<						





B	mm	
C	mm	
D	mm	
D1	mm	
E1	mm	
E2	mm	
G	mm	



K	total ass.bly length (mm)	
F	axis Distance / crane CG (mm)	
J	crane outriggers Distance / additional stabilizers	
W	crane height at rest (mm) - folded	
W1	crane height at rest (mm) - opened	

OVERIOAD TESTS REGISTER

Fill in: **Installer**

STATIc AND DYNAMIc TESTS

All Effer cranes must be tested according to the static test (test static load max.1.25 times the maximum rated load) and the dynamic test (dynamic load test max. 1.1 times the rated load) according to the terms set by the EN 12999 and Machinery Directive 2006/42/EC.

TEST OF STABIl ITY

The stability test should be performed according to Effer instructions (Service Manual.

In particular, it is recommended you do not exceed the following test loads specified for the specific crane model: ****

Crane model..... joint mode.....

crane maximum test load: TL_M = ... kg on extension at No..... applied to .....m exemption(*) (yes) o (no) o

jib maximum test load: TL_M = ... kg on extension at No..... applied to .....m exemption(*) (yes) o (no) o

(*) In the case (yes) box is ticked, the stability test load is reduced to structural problems, as compared to the TL provided by the standard EN 12999. In this case you must consider one of the following methods:

1) if the TL value of the joint is reduced and the TL crane is not reduced, run the crane test only, whereas only calculations are valid for the joint. (Provided by ISO 4310)

2) if the TL value of the crane and the joint are both reduced, apply TL1 = 1.25 * P and perform the method of the reverse pumping according to Effer instructions, exerting an upward force TL2 on the opposite side of the column somas to cause the same tilting moment generated by the TL, according to the standard EN 12999 with respect to the tilting line.

SUMMARY OF ThE STABIl ITY

As provided by Effer instructions:
- In case of cranes provided with stability control device with stabilizer single position of the, run the stability test only for TEST 1 of module “stability test compendium” annexed.

- In case of cranes with stability control device with stabilizer variable position, stability tests are performed only in some positions of the stabilizers with the appropriate TL values (TEST 1,2,3 of module “stability test compendium” annexed). The verification of stability in other positions of the stabilizers is performed with calculations only, as required by EN 12999.

The data / results of stability tests are summarized and listed in the form ANNEX “SUMMARY OF THE STABILITY TEST”.

The load charts validated according to these stability tests are reported in:

- crane instruction manual, chapter “TECHNICAL DATA”

- Operator’s instruction manual, chapter.....

NOTE: EFFER instructions for carrying out tests can be found on the website “www.effer.com” under Service Manual.

NOTE: The complete documents relating to the stability tests are stored in the technical file of the installer.

****** (Filling in provided by the installer: Data on the Service Manual):**

Fill in: **Installer**

STABIIITY TEST SUMMARY

Fitter's stamp

Date

File code		Standard stability test		K (general security factor) =		Kv (configuration security factor) =	

TEST 1 * *

Work areas		Rated load (Kv ≥ 1)	1st cylinder p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	TL test load* (Kv = 1)	1st cylinder p1 test (Kv=1)	Test Load application N°boom / outreach
LEFT	θ_2 = ° θ_3 = °	kg	bar			kg	bar	°boom m
RIGHT	θ_6 = ° θ_7 = °	kg	bar			kg	bar	°boom m
FRONT		kg	bar			kg	bar	°boom m
REAR		kg	bar			kg	bar	°boom m

***DIpENSATION ISO 4310: Test load only with cRANE** ☐ Yes ☐ No

***DIpENSATION EN 12999: Test load only with 2 parts: Tl1 = kg; Tl2 = - kg @ - m** ☐ Yes ☐ No

TEST 2 * *

Work areas		Rated load (Kv ≥ 1)	1st cylinder p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	TL test load* (Kv = 1)	1st cylinder p1 test (Kv=1)	Test Load application N°boom / outreach
LEFT	$\theta_{1\text{-}2}$ = ° θ_4 = °	kg	bar			kg	bar	°boom m
RIGHT	θ_5 = ° $\theta_{7\text{-}8}$ = °	kg	bar			kg	bar	°boom m

TEST 3 * *

Work areas		Rated load (Kv ≥ 1)	1st cylinder p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	TL test load* (Kv = 1)	1st cylinder p1 test (Kv=1)	Test Load application N°boom / outreach
LEFT	θ_1 = ° θ_4 = °	kg	bar			kg	bar	°boom m
RIGHT	θ_5 = ° θ_8 = °	kg	bar			kg	bar	°boom m

TEST 4 * *

Work areas		Rated load (Kv ≥ 1)	1st cylinder p1 (Kv ≥ 1)	% perf. (Kv ≥ 1)	Kv	TL test load* (Kv = 1)	1st cylinder p1 test (Kv=1)	Test Load application N°boom / outreach
LEFT	θ_1 = ° θ_4 = °	kg	bar			kg	bar	°boom m
RIGHT	θ_5 = ° θ_8 = °	kg	bar			kg	bar	°boom m

TEST RESUITS

Stability test

The stability test was successfully completed because the test loads were statically supported during rotation movement throughout the whole arc of each configuration / work area according to the modes provided above (Effer's instructions & EN 12999). For stability in the additional configurations / work areas according to the operator's manual, the calculations included in installator's technical file shall be considered valid (according to EN 12999-2011 ISO 4310).
During the test, one or more stabilizers or wheels are lifted from the ground, however at least one wheel braked by the parking brake or by other means, has been in contact with the ground.
After a visual inspection, no breaks, permanent deformations, paint cracks, structural damage of mechanisms and of the electro-hydraulic system, jeopardizing safety and operation have been detected.

Functional test

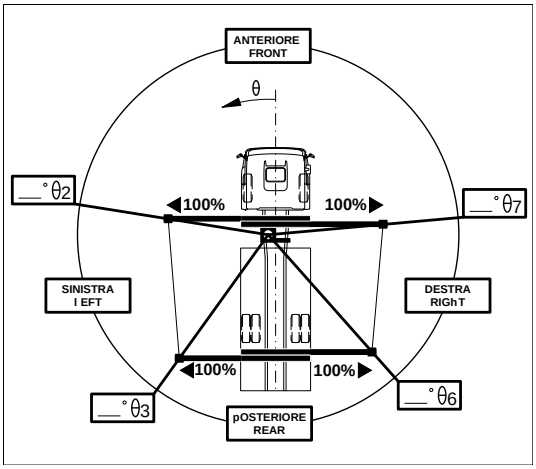
The functional test was successfully completed since the rated loads have been locked in outreach and in arc rotation as prescribed and according to modes indicated above. The control tests of safety devices have been successfully completed in accordance with the modes described above.

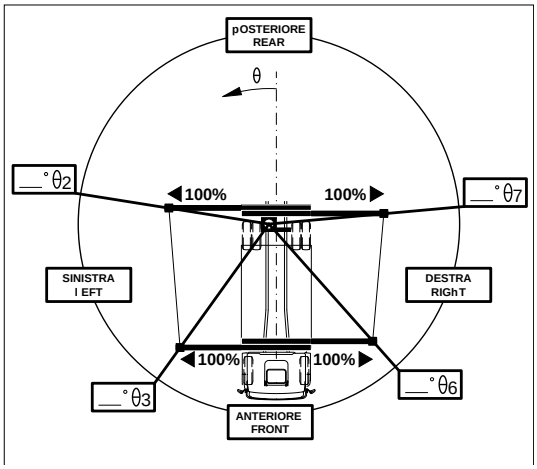
**** Note: For illustrations of the Stability Test refer to the drawings that correspond to your crane model on the pages number 19 and 20.**

☐ back of the cabin assembly

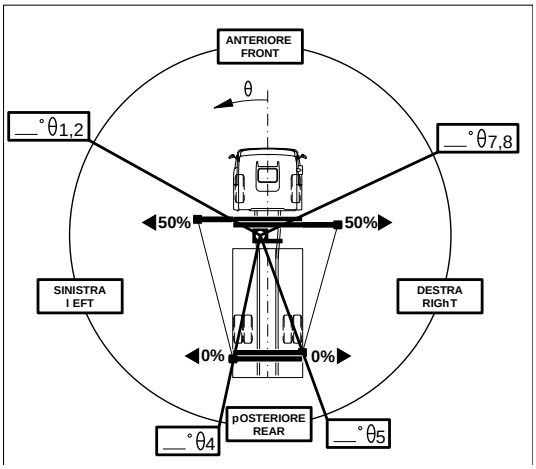
☐ back of the body of the truck assembly

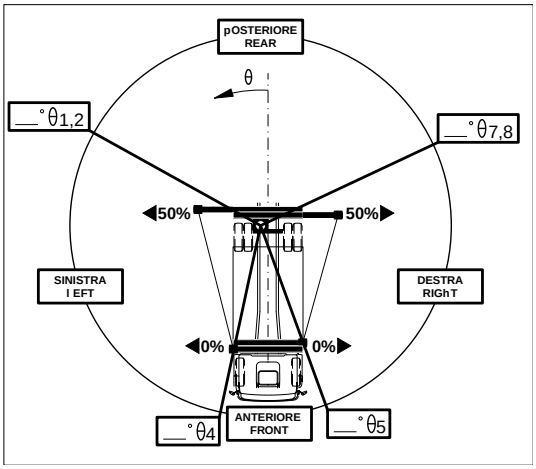
TEST 1



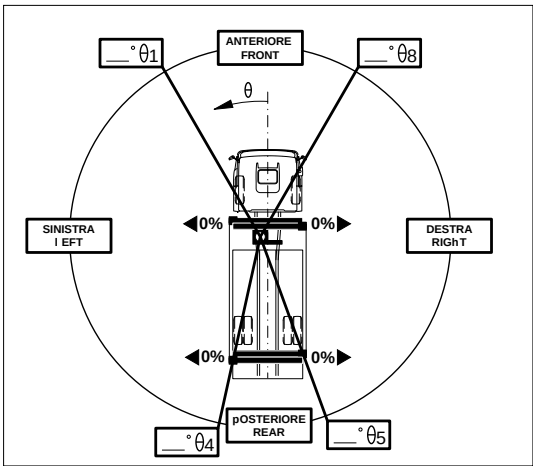


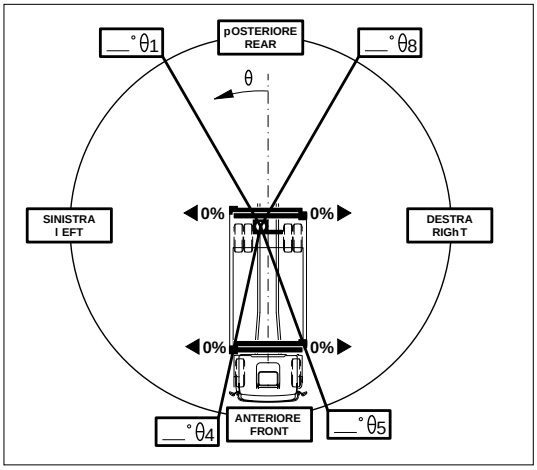
TEST 2



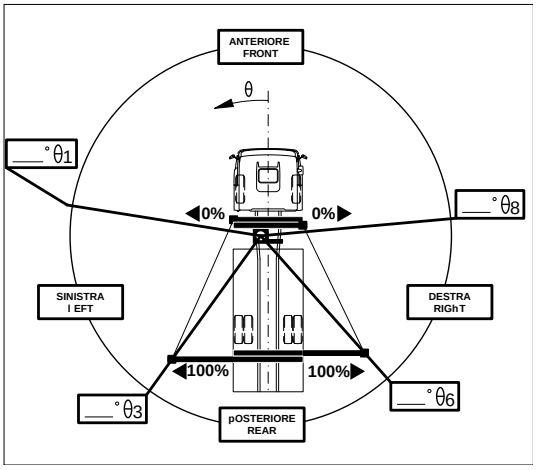


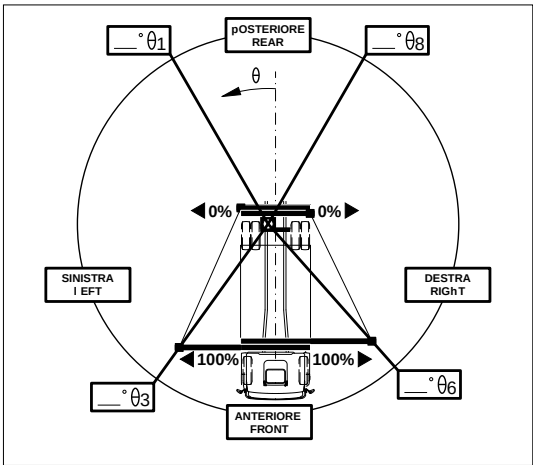
TEST 3





TEST 4

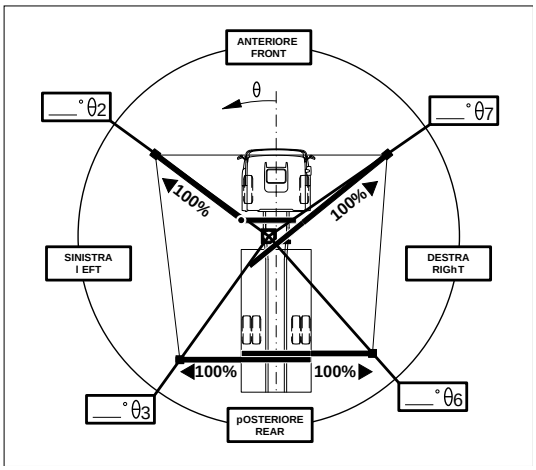


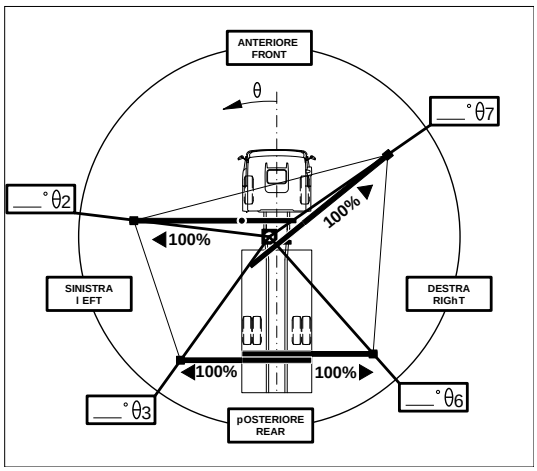


☐ cross stab assembly (123°)

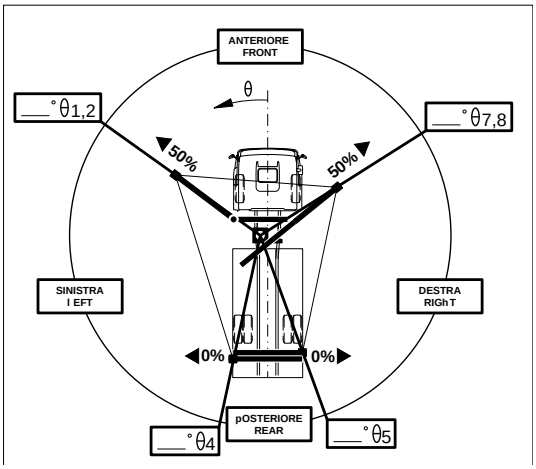
☐ cross stab assembly (90°)

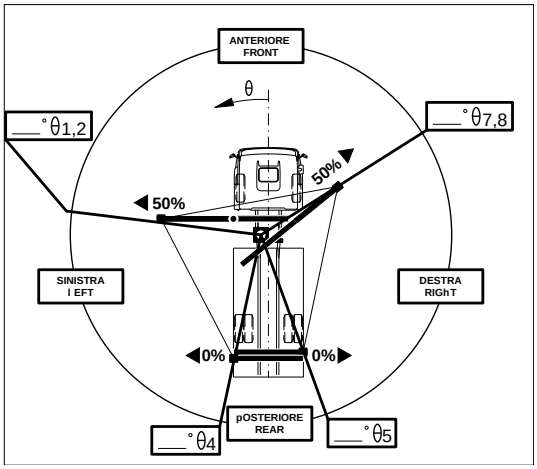
TEST 1



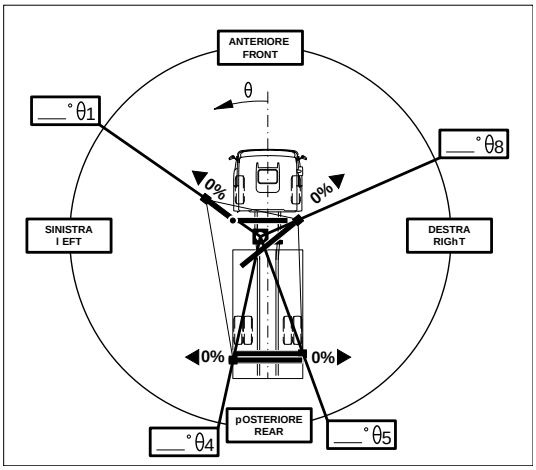


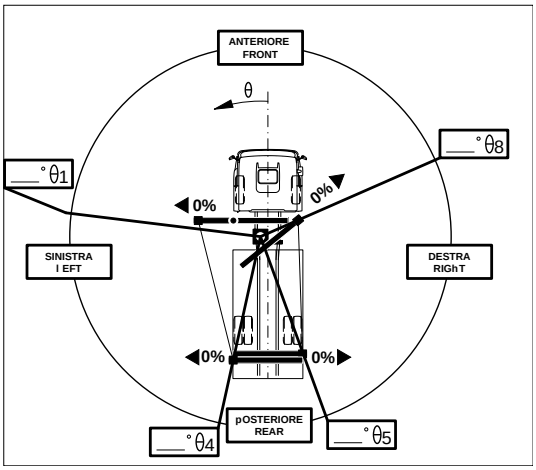
TEST 2



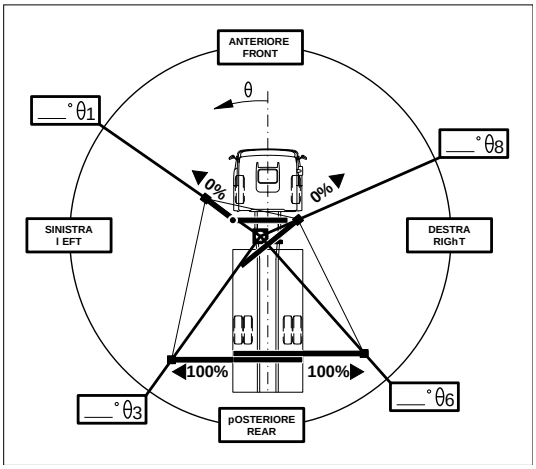


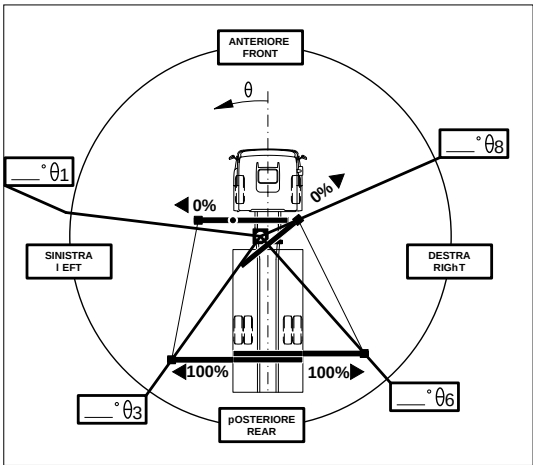
TEST 3





TEST 4





REGISTER OF MAINTENANcE

Fill in: **MQO/MQM/MQE**

After completing each control / service operation, check the boxes according to the result of the inspection. In order to learn which operations must be carried out in the expected time ranges (250 hours /500 hours /1000 hours) and what type of skilled operator must be employed, look up to the tables in Chapter 9 “maintenance” in the operator’s crane manual.
If during the inspection a code “N” is assigned (see the list), check the corresponding box, then dispose of the equipment and repair it. After repair, check it again and if it is “approved” check the box R. Then fill in tables H and H1 (the other following Registers) depending on the fact if it’s repair or replacement.

	1ª ASSISTANcE	
50 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
NOTES:		

	1° ST YEAR	
250 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
NOTES:		

	2° ND YEAR	
250 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
NOTES:		

500 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S N R	Date..... Signature .....
NOTES:		

500 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S N R	Date..... Signature .....
NOTES:		

750 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
NOTES:		

750 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
NOTES:		

1000 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S N R	Date..... Signature .....
NOTES:		

1000 hours	S	Date..... Signature .....
	N	Date..... Signature .....
	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S N R	Date..... Signature .....
NOTES:		

List: **S**: all operations are performed with positive results according to the crane manual instruction.

N: one or more operations with non-positive outcome (see notes)
R: Recovery of the safety / proper service conditions.

REGISTER OF MAINTENANcE

Fill in: **MQO/MQM/MQE**

After completing each control / service operation, check the boxes according to the result of the inspection. In order to learn which operations must be carried out in the expected time ranges (250 hours /500 hours /1000 hours) and what type of skilled operator must be employed, look up to the tables in Chapter 9 “maintenance” in the operator’s crane manual.
If during the inspection a code “N” is assigned (see the list), check the corresponding box, then dispose of the equipment and repair it. After repair, check it again and if it is “approved” check the box R. Then fill in tables H and H1 (the other following Registers) depending on the fact if it’s repair or replacement.

	3° RD YEAR		4° Th YEAR		5° Th YEAR	
250 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
NOTES:						
500 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S / N / R	Date..... Signature	S / N / R	Date..... Signature	S / N / R	Date..... Signature .....
NOTES:						
750 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
NOTES:						
1000 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S / N / R	Date..... Signature	S / N / R	Date..... Signature	S / N / R	Date..... Signature .....
NOTES:						

List: **S**: all operations are performed with positive results according to the crane manual instruction.

N: one or more operations with non-positive outcome (see notes)
R: Recovery of the safety / proper service conditions.

REGISTER OF MAINTENANcE

Fill in: **MQO/MQM/MQE**

After completing each control / service operation, check the boxes according to the result of the inspection. In order to learn which operations must be carried out in the expected time ranges (250 hours /500 hours /1000 hours) and what type of skilled operator must be employed, look up to the tables in Chapter 9 “maintenance” in the operator’s crane manual.
If during the inspection a code “N” is assigned (see the list), check the corresponding box, then dispose of the equipment and repair it. After repair, check it again and if it is “approved” check the box R. Then fill in tables H and H1 (the other following Registers) depending on the fact if it’s repair or replacement.

	6° Th YEAR		7° Th YEAR		8° Th YEAR	
250 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
NOTES:						
500 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S / N / R	Date..... Signature	S / N / R	Date..... Signature	S / N / R	Date..... Signature .....
NOTES:						
750 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
NOTES:						
1000 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S / N / R	Date..... Signature	S / N / R	Date..... Signature	S / N / R	Date..... Signature .....
NOTES:						

List: **S**: all operations are performed with positive results according to the crane manual instruction.

N: one or more operations with non-positive outcome (see notes)
R: Recovery of the safety / proper service conditions.

REGISTER OF MAINTENANcE

Fill in: **MQO/MQM/MQE**

After completing each control / service operation, check the boxes according to the result of the inspection. In order to learn which operations must be carried out in the expected time ranges (250 hours /500 hours /1000 hours) and what type of skilled operator must be employed, look up to the tables in Chapter 9 “maintenance” in the operator’s crane manual.
If during the inspection a code “N” is assigned (see the list), check the corresponding box, then dispose of the equipment and repair it. After repair, check it again and if it is “approved” check the box R. Then fill in tables H and H1 (the other following Registers) depending on the fact if it’s repair or replacement.

	9° Th YEAR		10° Th YEAR		11° Th YEAR	
250 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
NOTES:						
500 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S / N / R	Date..... Signature	S / N / R	Date..... Signature	S / N / R	Date..... Signature .....
NOTES:						
750 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
NOTES:						
1000 hours	S	Date..... Signature	S	Date..... Signature	S	Date..... Signature .....
	N	Date..... Signature	N	Date..... Signature	N	Date..... Signature .....
	R	Date..... Signature	R	Date..... Signature	R	Date..... Signature .....
RACK TIGHTENING TORQUE	S / N / R	Date..... Signature	S / N / R	Date..... Signature	S / N / R	Date..... Signature .....
NOTES:						

List: **S**: all operations are performed with positive results according to the crane manual instruction.

N: one or more operations with non-positive outcome (see notes)
R: Recovery of the safety / proper service conditions.

REGISTER OF REpAIRED STRUcTURAl pARTS/MEch ANISMS/hYDRAUl lc pARTS

H1

Fill in: **MQM/MQE**

Date	**Element**	**cause of repair**	**code**	**Signature of the person in charge**

REGISTER OF REpAIRED STRUcTURAl pARTS/MEch ANISMS/hYDRAUl Ic pARTS

H

Fill in: **MQM/MQE**

Date	Element	cause of repair	code	Signature of the person in charge

REGISTER OF ThE REQUIRED pERIODIcAl chEcKS

Fill in: **IQ**

The cranes shall be subject to regular checks by indipendent third parties enabled by public and/or private bodies (eg. Notified Bodies). **These checks are intended to assess the actual state of conservation, efficiency and safety of the crane. The operations according to EFFER instructions are shown in the operator's manual, in the chapter "9 - Service –page 10)" with the symbol simbolo Inspection besides.**  **.**

EFFER cOMpUlSARY prescription	PERIODICAL CHECKS		Tab. K
	1st TEST	REGULAR CHECK	
AUDITING BODY (IQ)	Public Private / Body	Public Private / Body	
FREQUENc Y		EVERY YEAR	EVERY 2 YEARS
		(With at least one of these conditions)	
		- more than 10 years - rea with people in the nearby - area with potentially hazardous materials - Shipbuilding area - Steel production area - Harbor area	- All other areas and less than 10 years

☐

REQUIREMENTS IN ITAl Y D.lgs 81/08 comma 11	PERIODICAL CHECKS (art. 71 paragraph 11)		Tab. K
	1st TEST	REGULAR CHECK	
AUDITING BODY (IQ)	<= 60 days INAIL (ex ISPELS) > 60 days QUALIFIED PRIVATE BODIES	<= 60 days = ASL-ARPA > 60 days QUALIFIED PRIVATE BODIES	
FREQUENc Y		EVERY YEAR	EVERY 2 YEARS
		(With at least one of these conditions)	
		- more than 10 years - Shipbuilding area - Steel production area - Harbor area	- All other areas

☐

REQUIREMENTS IN	VERIFIchE pERIODIchE		Tab. K
	1st TEST	REGUl AR ch Ec K	
AUDITING BODY (IQ)			
FREQUENc Y			

Year	Date	DISTRIBUTOR BODY	Name	Signature	Notes
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

REGISTER OF ThE cRANE TRANSFORMATIONS / ApplIcATIONS OF AccESSORIES

Fill in: **Installer**

Date	Transformation		

REcORDS OF ThE cONDITIONS OF USE OF ThE cRANE

Fill in: **QO**

Each year / or 1000 working hours, the operator is required to record the “CONDITIONS OF USE OF THE CRANE’ / OF THE ACCESSORIES” in the register attached, in accordance with the instructions below.
Failure to record such data, brings to the end of the warranty conditions.

Type of counter device

This device is used to record the no. of working hours. It is necessary to indicate the type of counter device used.
It can be automatically provided by Effer, or by the installer, or a device activated voluntarily by the operator can be used too. According to ISO 12482-1, depending on the type of device used, a different Evaluation of the calculation is used to determine the conditions of the crane.

No. of working hours

They are intended as a time unit of operation of the crane, according to the expected intermittent use (sum of the lifting cycle time and rest time).

Both the total no. of hours of work and the partial values must be recorded for each type of use (hook, bucket, basket).

l oading rate

The loading rate represents the level of stress to which the crane is subjected during its use.
Different loading rates associated with the type of work the crane(hook, bucket, basket) and according to 4 levels of stress are defined as the ratio % between the actual loads lifted, and their maximum loads indicated in the ‘load diagram’ of reference. The ‘load diagrams of reference’ are related to each type of work (hook, bucket, basket) and are those of maximum performance (crane with outriggers fully opened / crane performances not reduceed)

No. of lifting cycles

A lifting cycle starts at the moment when the crane lifts the load, and continues up to the moment in which the load is released and the crane is ready for the next cycle.
NB: By considering the average time of a lifting cycle, the no. of working hours can be a useful assessment parameter to define the number of lifting cycles.

ROpE ch Ec KS

The diagram of Running Records for cable checks according to ISO 4309-2010 is attached (see p. 38). In this diagram, the dates of installation and disposal of the rope are arranged.

REcORDS OF ThE cONDITIONS OF USE OF ThE cRANE

Fill in: **QO**

- ☐ **EFFER automatic counter device (total hours)**
- ☐ **Automatic counter device not supplied by EFFER(total hours)**
- ☐ **counter, manually operated by the operator (total hours)**
- ☐ **counter, manually operated by the operator (partial hours)**

		SLifting by Hook						Lifting by joint						Lifting by Winch						Lifting by Bucket								
Years / Hours	No. of Total hours (h)	No. of partial hours (h)	Average cycle time (minutes)	No. of cycles at 30% rated capacity	No. of cycles at 50% rated capacity	No. of cycles at 70% rated capacity	No. of cycles at 100% rated capacity	No. of partial hours (h)	Average cycle time (minutes)	No. of cycles at 30% rated capacity	No. of cycles at 50% rated capacity	No. of cycles at 70% rated capacity	No. of cycles at 100% rated capacity	No. of partial hours (h)	Average cycle time (minutes)	No. of cycles at 30% rated capacity	No. of cycles at 50% rated capacity	No. of cycles at 70% rated capacity	No. of cycles at 100% rated capacity	No. of partial hours (h)	Average cycle time (minutes)	No. of cycles at 30% rated capacity	No. of cycles at 50% rated capacity	No. of cycles at 70% rated capacity	No. of cycles at 100% rated capacity	Operator's name	Signature	Date
1°/1000																												
2°/2000																												
3°/3000																												
4°/4000																												
5°/5000																												
6°/6000																												
7°/7000																												
8°/8000																												
9°/9000																												
10°/10000																												

chEcK OF ThE STATE OF pRESERVATION OF ThE cRANE - SWp (safe working period) - GENERAl REVISON (GO - general overhaul)

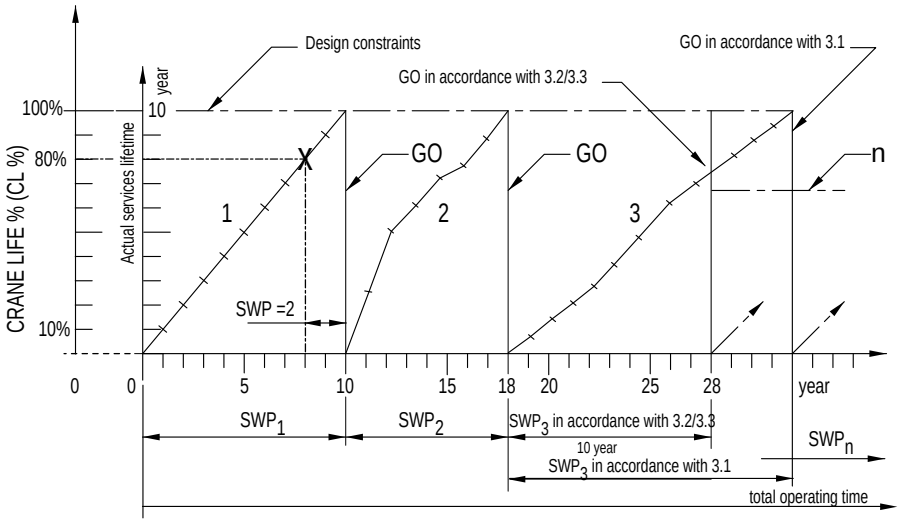
Fill in: **IE**

Every 12 months / or 1000 working hours, the data recorded by the operator about the “CONDITIONS OF USE OF THE CRANE’ must be examined by an expert engineer (IE - tab. W - ISO-2009-9927-1 table A1) according to the standard ISO 124821 - 1995 (EMF 9755), and anyway, according to recognized standards.
In case the SWP (h / year - safe working period) turns to be exhausted, after the examination of the recorded data, the 100% of the estimated life of the crane (crane life CL% = 100%) has been achieved, the GENERAL REVIEW of the crane (GO -general overhaul) according to the indications proided by the expert Engineer (IE) (See Fig.1) is MANDATORY.

If SWP (i.e. the safe working period is exhausted before 10 years from the date of putting into service of the crane, contact Effer customer service immediately**.**

ISO 12482-1-1995

Fig.1



SWp (Safe working period)

cl	Crane Life (Effer definition)
GO	General overhaul
1	Period operation according to classification
2	Period of variable operation (heavier load)
3	Period of variable operation (lighter load)
n	New design constraints (after GO), which may be lower than the previous ones and shall be specified by the manufacturer

Example X:

- SWp residual = 2 years ~ 2000 hours

- cl % = 80 %

REcORD OF ThE chEcK OF ThE STATE OF pRESERVATION OF ThE cRANE

Fill in: **IE**

Data: cRANE clASS *** ..... ; swp=10 years*; CL $_{max}$ = 100%

- Standard of calculating residual swp/CL % : ☐ **EFFER** Rules Code..... **(EN 13001)**
  ☐ ISO 12482-1-1995 (**)
  ☐ .....

		Check calculations												Results of verification **							
Years / Hours	No. of Total hours (h)							NOTES			STANDARD			S.W.P residue (years)	S.W.P residue (h)	C.L % (Max 100%)	G.O General overhaul	Auditor Company	Name of the Auditor	Signature	Date
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) With use as indicated in the operator's manual, 10 years correspond to an average value of for 10,000 hours

(**) See Figure 1

(***) See the previous chapters

REcORD OF ThE chEcK OF ThE STATE OF pRESERVATION OF ThE cRANE

Fill in: **IE**

Data: cRANE clASS *** ..... ; swp=10 years*; CL_{max} = 100%

- Standard of calculating residual swp/CL % : ☐ **EFFER** Rules Code..... **(EN 13001)**
  ☐ ISO 12482-1-1995 (**)
  ☐ .....

		Check calculations												Results of verification **							
Years / Hours	No. of Total hours (h)							NOTES			STANDARD			S.W.P residue (years)	S.W.P residue (h)	C.L % (Max 100%)	G.O General overhaul	Auditor Company	Name of the Auditor	Signature	Date
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) With use as indicated in the operator's manual, 10 years correspond to an average value of for 10,000 hours

(**) See Figure 1

(***) See the previous chapters

REcORD OF ThE chEcK OF ThE STATE OF pRESERVATION OF ThE cRANE

Fill in: **IE**

Data: cRANE clASS *** ..... ; swp=10 years*; CL $_{max}$ = 100%

- Standard of calculating residual swp/CL % : ☐ **EFFER** Rules Code..... **(EN 13001)**
  ☐ ISO 12482-1-1995 (**)
  ☐ .....

		Check calculations												Results of verification **							
Years / Hours	No. of Total hours (h)							NOTES			STANDARD			S.W.P residue (years)	S.W.P residue (h)	C.L % (Max 100%)	G.O General overhaul	Auditor Company	Name of the Auditor	Signature	Date
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) With use as indicated in the operator's manual, 10 years correspond to an average value of for 10,000 hours

(**) See Figure 1

(***) See the previous chapters

REcORD OF ThE chEcK OF ThE STATE OF pRESERVATION OF ThE cRANE

Fill in: **IE**

Data: cRANE clASS *** ..... ; swp=10 years*; CL_{max} = 100%

- Standard of calculating residual swp/CL % : ☐ **EFFER** Rules Code..... **(EN 13001)**
  ☐ ISO 12482-1-1995 (**)
  ☐ .....

		Check calculations												Results of verification **							
Years / Hours	No. of Total hours (h)							NOTES			STANDARD			S.W.P residue (years)	S.W.P residue (h)	C.L % (Max 100%)	G.O General overhaul	Auditor Company	Name of the Auditor	Signature	Date
1°/1000																					
2°/2000																					
3°/3000																					
4°/4000																					
5°/5000																					
6°/6000																					
7°/7000																					
8°/8000																					
9°/9000																					
10°/10000																					

(*) With use as indicated in the operator's manual, 10 years correspond to an average value of for 10,000 hours

(**) See Figure 1

(***) See the previous chapters

Crane reference	Date rope installed	Rope details (see 150 17893 far rope designation)					
		RCN [a]	Nominal diameter mm	Pand name	Core[b]	Wire finish[b]	Directian and type of lay[b]
Rope duty	Date rope discarded	.....	.....	Construction	IWRC FC WSC	Uncoated Zinc/Gal.	Right: sZ zZ Z Left: zS sS S
Rope termination(s)		Permissible number of visible broken outer wires ..... in 6d and..... in 30d Reference diameter ..... mm					Permissiblee decrease in diameter from reference díameter ..... mm

Date of inspection	Visible broken outer wires						Diameter				Corrosion		Damage and deformations		Overall assessment	Name (print) and signature of competent person	
	Number in length of		Position in rope		Severity rating[c]		Measured Diameter mm	Actual decrease from reference diameter mm	Position in rope	Severity rating[c]	Position inrope	Severity rating[c]	Position In rope	Severity rating°	i.e. combined severity rating[c]		
Yy/mm/dd	6d	30d	6d	30d	6d	30d											
							-										

[a] RCN is Rape Category Number (see Tables 1 and 2 and Annex E) .
[b] Tick as applicable
[c] Describe severity rating as: slight or 20 %; medium or 40 %; high or 60 %; very high or 80 %; or discard or 100 %.

RUNNING REcORD - ISO 4309:2010

Crane reference	Date rope installed	Rope details (see 150 17893 far rope designation)					
		RCN [a]	Nominal diameter mm	Pand name	Core[b]	Wire finish[b]	Directian and type of lay[b]
Rope duty	Date rope discarded	.....	.....	Construction	IWRC FC WSC	Uncoated Zinc/Gal.	Right: sZ zZ Z Left: zS sS S
Rope termination(s)		Permissible number of visible broken outer wires ..... in 6d and..... in 30d Reference diameter ..... mm					Permissiblee decrease in diameter from reference diameter ..... mm

Date of inspection	Visible broken outer wires						Diameter				Corrosion		Damage and deformations		Overall assessment	Name (print) and signature of competent person	
	Number in length of		Position in rope		Severity rating[c]		Measured Diameter mm	Actual decrease from reference diameter mm	Position in rope	Severity rating[c]	Position inrope	Severity rating[c]	Position In rope	Severity rating[c]	i.e. combined severity rating[c]		
Yy/mm/dd	6d	30d	6d	30d	6d	30d											

[a] RCN is Rape Category Number (see Tables 1 and 2 and Annex E) .
[b] Tick as applicable
[c] Describe severity rating as: slight or 20 %; medium or 40 %; high or 60 %; very high or 80 %; or discard or 100 %.

Crane reference	Date rope installed	Rope details (see 150 17893 far rope designation)					
		RCN [a]	Nominal diameter mm	Pand name	Core[b]	Wire finish[b]	Directian and type of lay[b]
Rope duty	Date rope discarded	.....	.....	Construction	IWRC FC WSC	Uncoated Zinc/Gal.	Right: sZ zZ Z Left: zS sS S
Rope termination(s)		Permissible number of visible broken outer wires ..... in 6d and..... in 30d Reference diameter ..... mm					Permissiblee decrease in diameter from reference díameter ..... mm

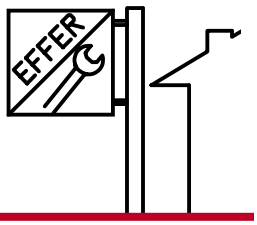
Date of inspection	Visible broken outer wires						Diameter				Corrosion		Damage and deformations		Overall assessment	Name (print) and signature of competent person	
	Number in length of		Position in rope		Severity rating[c]		Measured Diameter mm	Actual decrease from reference diameter mm	Position in rope	Severity rating[c]	Position inrope	Severity rating[c]	Position In rope	Severity rating°	i.e. combined severity rating[c]		
Yy/mm/dd	6d	30d	6d	30d	6d	30d											
							-										

[a] RCN is Rape Category Number (see Tables 1 and 2 and Annex E) .
[b] Tick as applicable
[c] Describe severity rating as: slight or 20 %; medium or 40 %; high or 60 %; very high or 80 %; or discard or 100 %.

VARIOUS DOcUMENT REGISTER

Date	Document		

SERVIcE cENTERS



For the names and addresses of the EFFER Authorized Workshops, please see:

www.effer.com

Annex of the operator manual concerning adaptation to Standard EN 12999-2011

Foreword: This annex is an extension of the crane operator manual, providing instructions and describing the safety devices required by standard EN 12999-2011.

Contents

1 Standards and safety devices

1.0 Conformity of the product

Community Directives

2006/42/EC Directive of the European Parliament and of the Council on the approximation of the laws of Member states relating to machinery.

Article 14 of directive 98/37/EC replaces directive 89/392/EEC and subsequent amendments.

2004/108/EC Directive of the Council on the approximation of the laws of Member states relating to electromagnetic compatibility.

Amendments and additions: 92/31/EEC, 93/68/EEC, 93/97/EEC.

References to the Main Standards

IEC EN 60204 Safety of machinery – Electrical equipment of machines.
EN 12999-2011 Cranes - Loader cranes
DIN 15018 - DIN 4114 - DAST-RI 011 Crane construction

1.0.1 Permitted installation/rules on use

The loader crane was designed in conformity with Standard EN 12999-2010.

Refer to chapter **"3 - Description and technical data" for specifications.**

The crane is designed for intermittent use generally at medium, and only occasionally at maximum, capacity. When put to particularly heavy use, the crane should be given more frequent routine and supplementary maintenance.

WARNING

Use for very long periods at a time and/or frequent handling at max load capacity could seriously reduce the life span of the crane.

The crane is generally installed on a commercial vehicle (with trailer) of significant load bearing capacity. Loader cranes are designed for loading and unloading the vehicle and for other tasks such as moving or positioning unconstrained loads in all the areas specified in the load diagram and permitted by the type of installation.

Examples of possible applications (in accordance with the load and installation diagram):

- Lifting loads off the ground at different heights (e.g. placing cement on a roof);
- Construction work (e.g. positioning the beams and structures of a building);
- Positioning palletized construction material from the vehicle on which the crane is installed or from another vehicle, or from the ground;
- Positioning material in the various areas of a yard;
- Lifting and handling material in wells or ditches with the aid of a winch;
- Positioning tool machines in plants.

Notes	***It is forbidden to drive the vehicle with the crane in its working position, i.e. not folded into its transport configuration.***

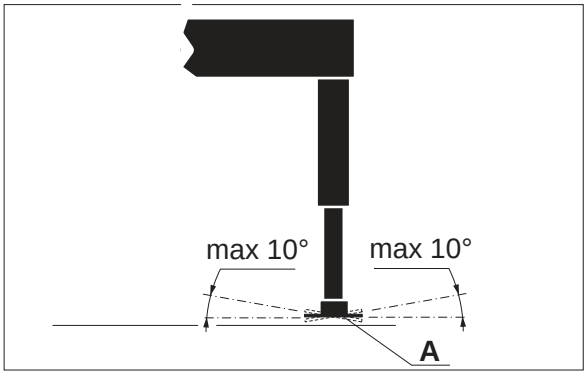
Notes	***Commercial vehicles are: trucks, road tractors, motor vehicles for special uses, lorries with trailers, articulated lorries and trailers.***

Notes	***A loader crane installed on a static base should still be considered a loader crane.***

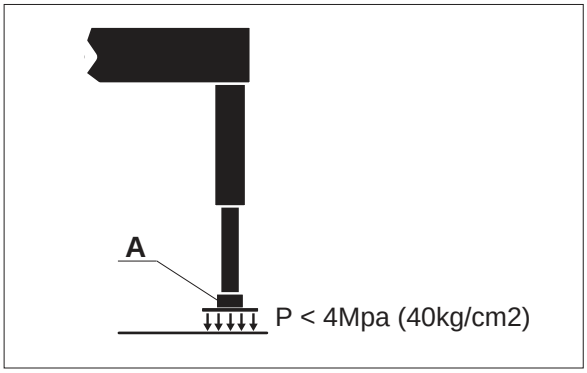
1.1 Jacks for the stabilizer feet

Plates for the stabilizer feet

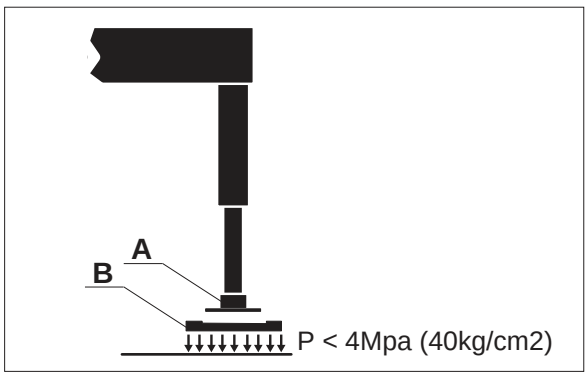
- The plates of the feet (**A**) (crane and accessories-when available) can be inclined at an angle of about 10° to compensate for uneven terrain.



- The pressure applied on the ground by the plates of the feet (**A**) (crane and accessories-when available) is always < 4Mpa (40kg/cm^2).

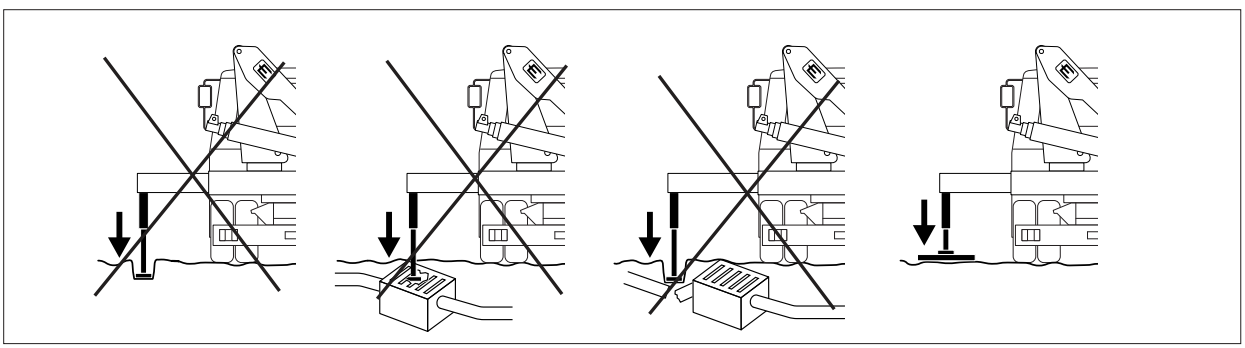


- For models of cranes where the pressure applied on the ground by the plates of the feet (**A**) is more than 4Mpa (40kg/cm2), additional weight-bearing plates are provided as standard (**B**) that can be fitted under the plates of the stabilizers' feet.



Foot support surface

The crane should be installed on hard, compact ground.
In the case the ground is not sufficiently hard or compact (refer to table C), you will need to put additional supporting plates under the plates of the stabilizers' feet to prevent the latter from sinking into the ground.



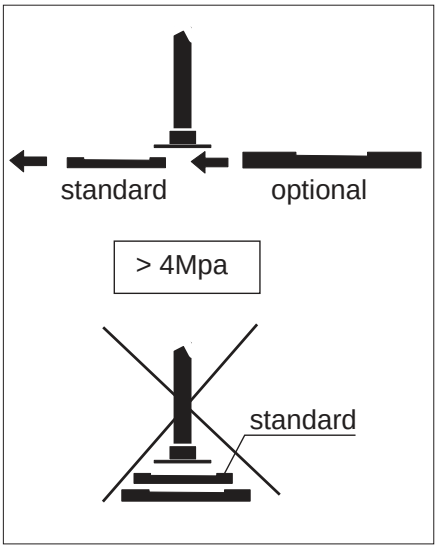
WARNING

If the type of ground can only withstand a pressure of < 4Mpa, you will need to put down additional supporting plates under the plates of the stabilizers' feet, or ones replacing the plates provided by EFFER. These additional plates (not provided by EFFER) must have a surface (A) of:

$$A\ (m\ 2) = \frac{Rmax\ (daN)\ .\ 10}{P\ (MPa)}$$

For the data: Rmax - Refer to the Technical Data table of the crane

P (MPa) - Refer to the table (C) below



WARNING

The supporting plates must be strong, resistant to the Rmax, and made of suitable materials such as: wood, thermoplastic, steel, etc, and be of a suitable size and shape (symmetrical). Position the foot plates at the centre of their respective supporting plates to ensure uniform weight distribution.

Table C **Permitted load on the supporting ground**

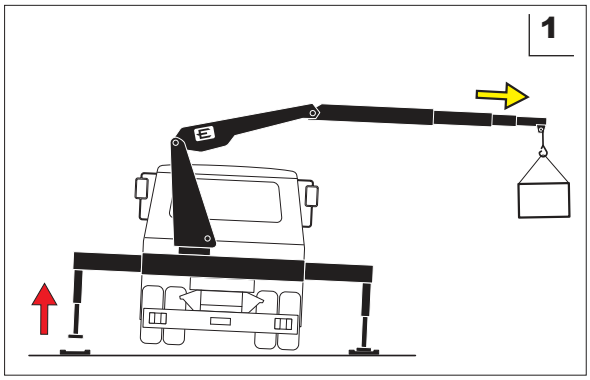
Type of ground	daN/cm^2 kg/cm^2	P (MPa)
A) Filled land, not artificially tamped	0-1	0-0,1
B) Natural ground that is visibly intact		
1. Mud, peat, swampy ground		
2. Incoherent ground, supported in a sufficiently stable manner: fine to moderately coarse sand coarse sand and gravel	 1,5 2.0	 0,15 0,2
3. Coherent ground: soft malleable rigid semi-solid solid	 0,4 1.0 2.0 4.0	 0,04 0.1 0,2 0,4
4. Rock with small cracks, in good condition, not broken down by atmospheric agents and appropriately stratified: with closed succession of layers with solid or columnar formation	 15 30	 1,5 3
C) Artificially formed ground		
1. Asphalt	5-15	0,5-1,5
2. Concrete Category of concrete B I Category of concreteB II	 50-250 350-550	 5-25 35-55
> 4Mpa – foot plates or standard EFFER supporting plates are sufficient		

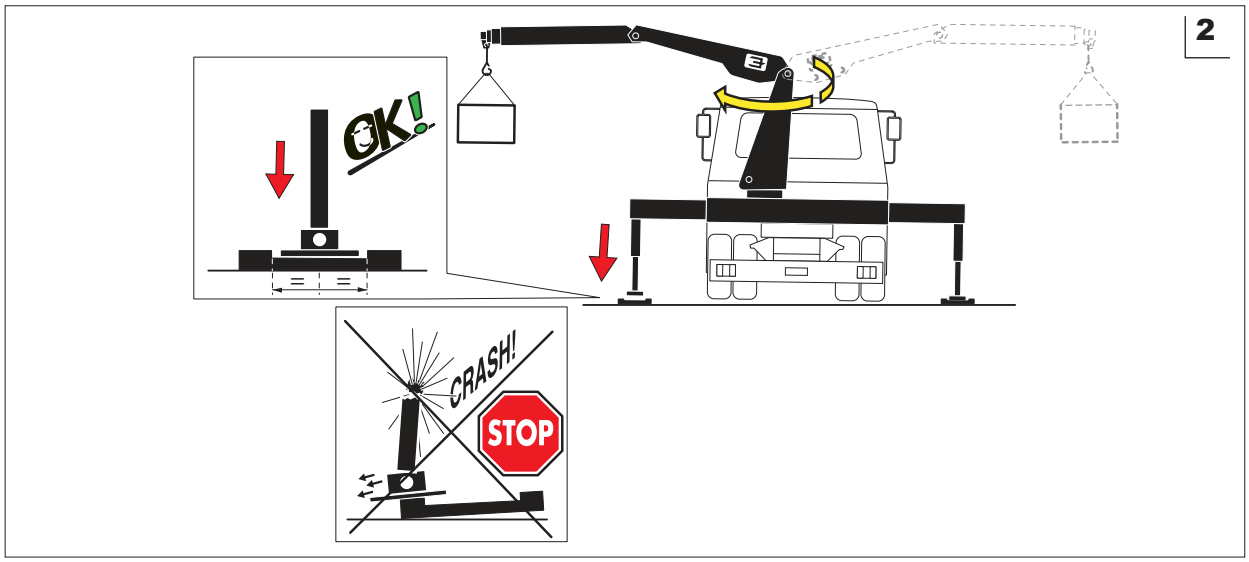
4Mpa – additional supporting plates are required

Use of the removable supporting plates

Rules

- In the event some of the foot plates lift up when the crane is lifting loads (fig. 1), you **must** check the plates move back down to and lift up again from their correct position (fig. 2) (the foot plate must be at the centre of its respective point on the supporting plate).



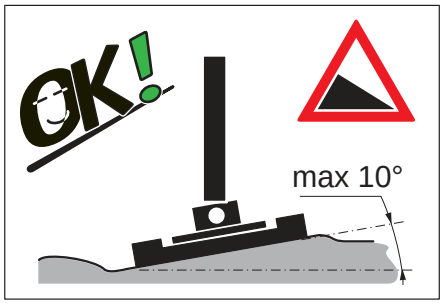


If the plates do not reposition themselves correctly, you will need to put the load back down on the ground and correctly re-stabilize the crane by putting the plates back in their respective points on the supporting plates.

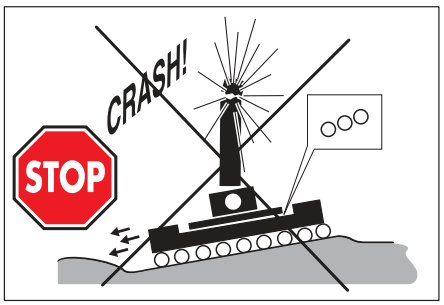
DANGER

If you do not do the above, there will not be the necessary friction between the feet and the ground with the risk of damaging/breaking the foot and causing the vehicle to overturn

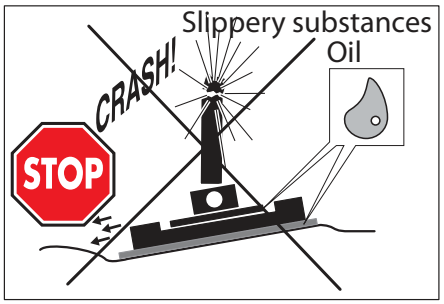
- The supporting plates should be positioned on the ground at a max inclination of 10°.



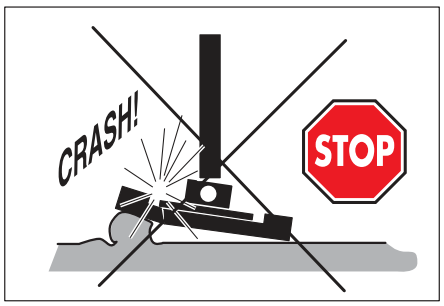
There must be friction between the foot plate, the supporting plate and the ground to ensure the correct operation of the jack.



To ensure correct friction, make sure there are no oily or slippery substances or firm sliding bodies between the various parts.



The surface on which supporting plates rest should be as flat as possible and not so rough as to damage the supporting plate.



DANGER

If you do not do the above, there will not be the necessary friction between the feet and the ground with the risk of damaging/breaking the foot jack and causing the vehicle to overturn

1.2 Working conditions

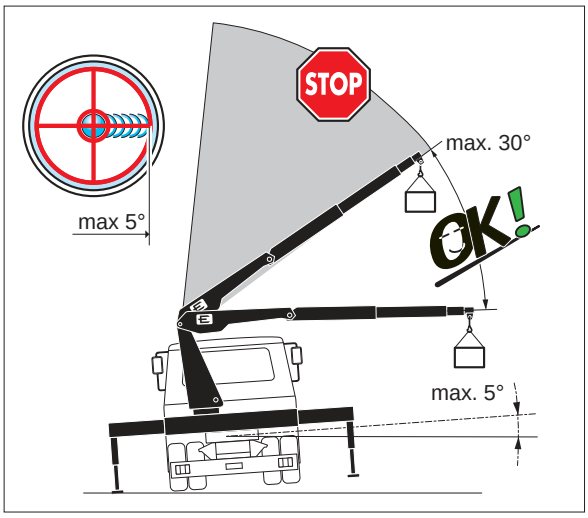
Max inclination of the work area 5°

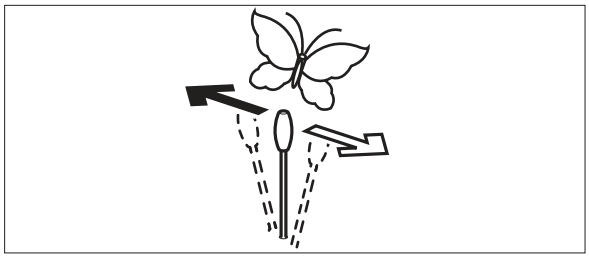
When the vehicle is at the max inclination of 5° in each direction, it is only possible to work with the booms at an angle of less than 30°.

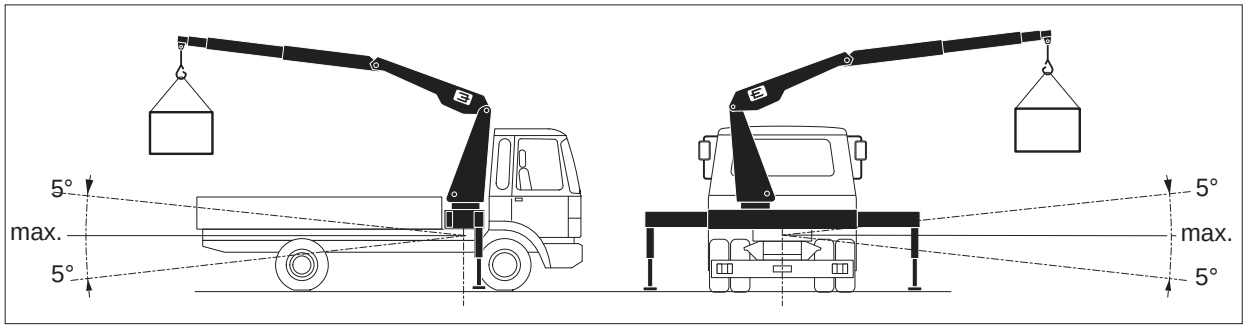
To determine the inclination angle, check the position of the bubble in the planarity device. The angle is less than 5° when the bubble is tangential to the outer circle.

In any case, check the planarity indicator during the rotating maneuvers to make sure the inclination **does not exceed 5°** due to structural deformities or to giving way of the ground.

If the vehicle is at an inclination of more than 5°, execute all the crane maneuvers, rotation in particular, in a slow manner







DANGER/WARNING

Failure to take these precautions can result in structural damage that can cause falling of the load and uncontrolled movements.

- Uncontrolled rotation and drift (fig. 1).

- Twisting of the tubular sections and veering to the side (fig. 2).

fig. 1

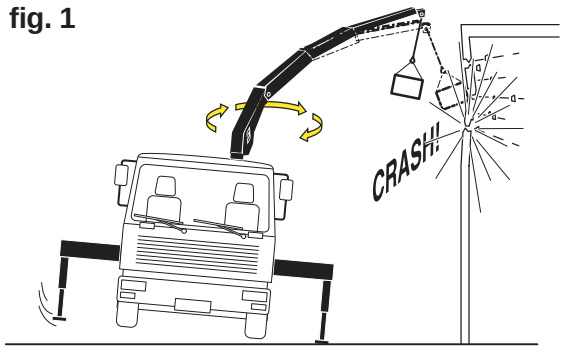
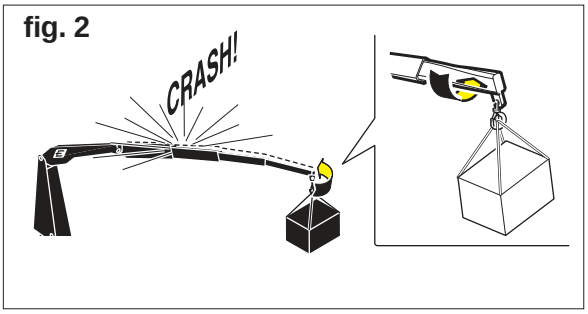


fig. 2



Working with the boom over 50°

The vehicle should normally be levelled at a max inclination of ±1.5°.

When using the crane with the booms at an inclination of more than 50°, the vehicle **must** be evenly levelled (at a max tolerance of ± 1°) in all directions. To check the level, check the position of the bubble in the planarity device. **The air bubble must be in the central circle (fig. 3).**

Take particular care in configurations with articulated joints and winches.

During lifting/rotation manoeuvres, regularly check the vehicle **does not exceed the max inclination of** ± 1° which can be due to structural deformities or to giving way of the ground.

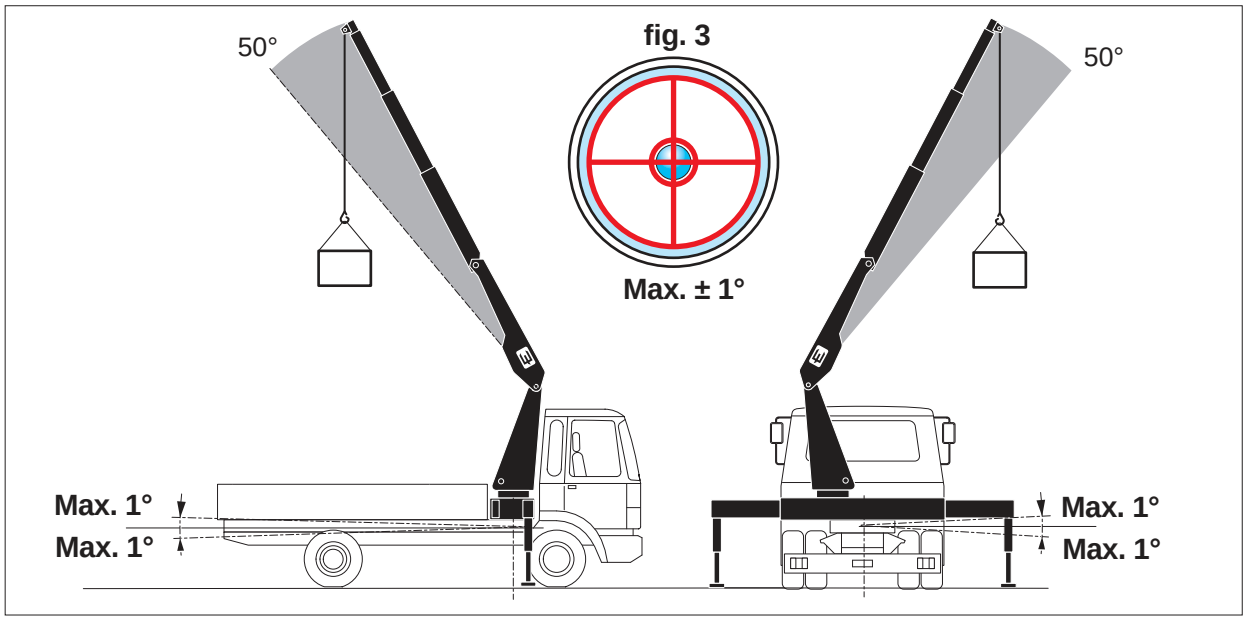


fig. 3

In these conditions, with the booms vertical, the profiles of the booms are less resistant and not as easy to guide.

DANGER/WARNING

Failure to take these precautions can result in structural damage that can cause the load to fall and the vehicle to overturn.

- Breaking at the back (fig. 4)
- Veering to the side and twisting of the tubular sections (fig. 5).
- Overturning at the back (fig. 6)

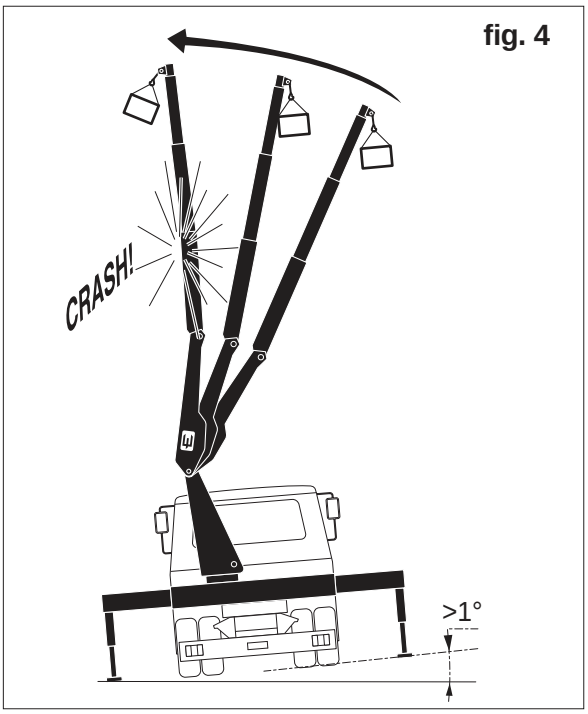


fig. 4

fig. 5

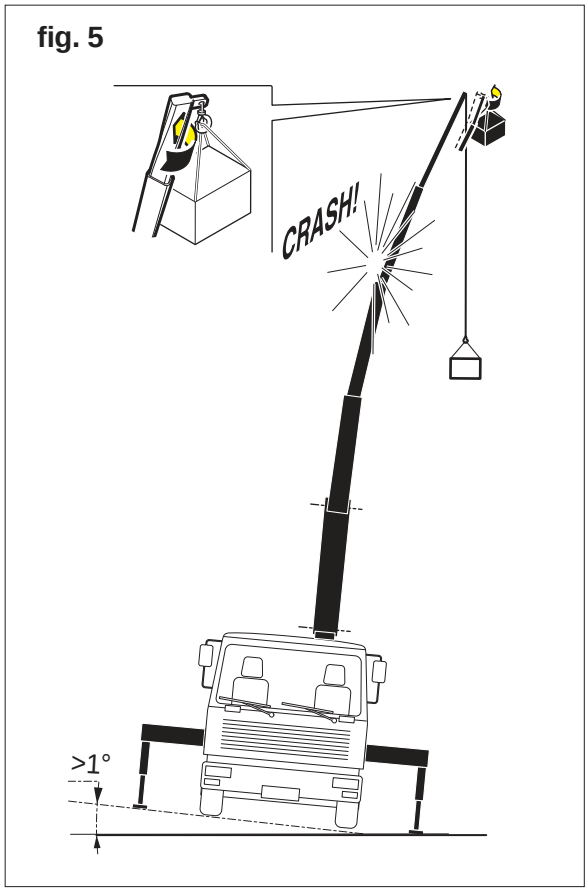
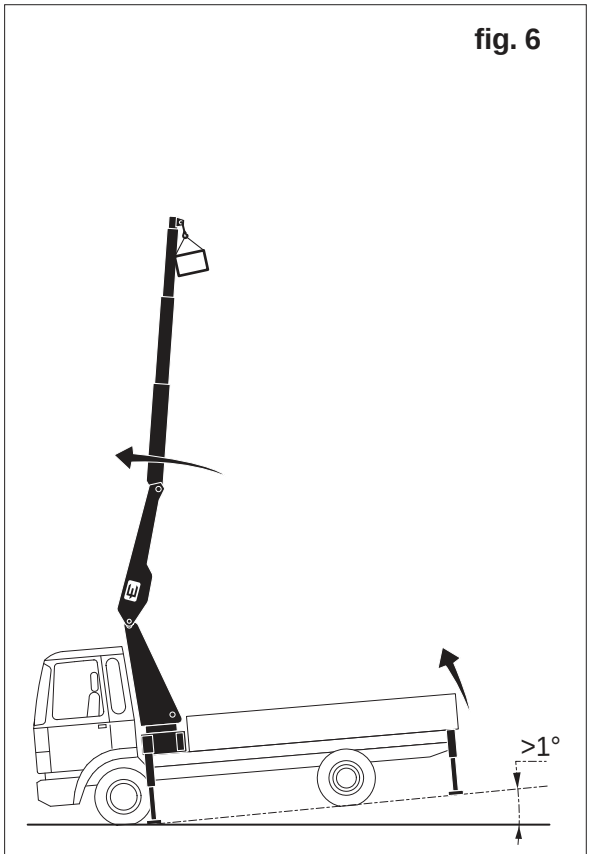


fig. 6

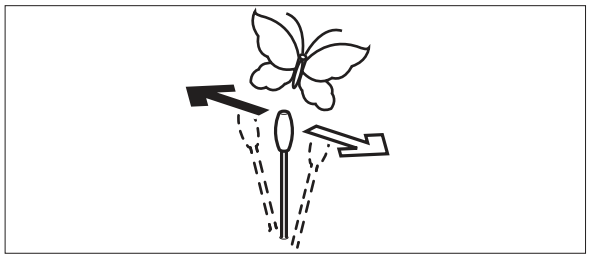


WARNING

The above is not controlled by any device. The operator has full responsibility.

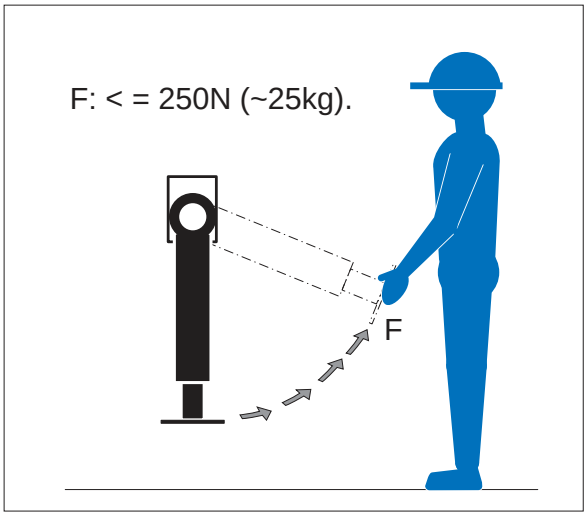
WARNING

When the booms are upright in these working conditions, execute all crane manoeuvres, rotation in particular, in a slow manner.

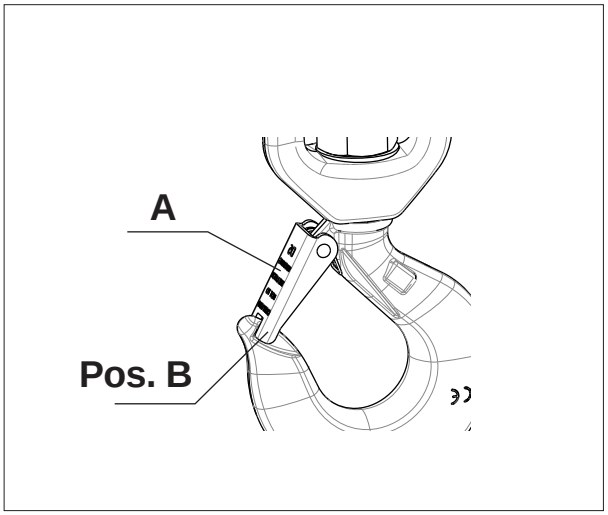


1.3 Manually adjustable jacks

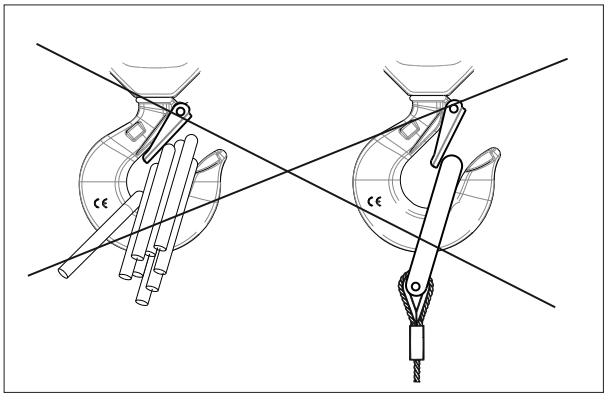
- In the case of cranes where the jacks of the stabilizer feet can be turned by hand, the maximum torque the operator should apply at the end of the foot for rotation is 250N or less (~25kg).



1.4 Lifting hook



- The lifting hooks are designed to prevent the load from detaching accidentally.
- There is a safety device **(A)** that prevents the latch from closing.
- This device opens manually and closes automatically by means of a spring.

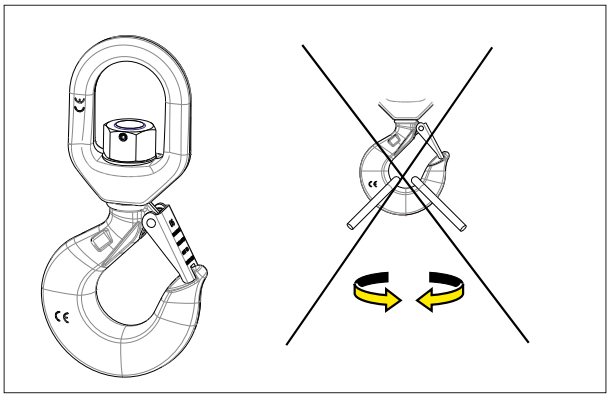


WARNING

The latch closing device must never support the weight of the load or interfere with the load holding devices.

Do not use the hook if the safety device A is missing or damaged or is not in its perfect position (Pos. B). Always make sure it is in good working order.

There are two types of lifting hook:



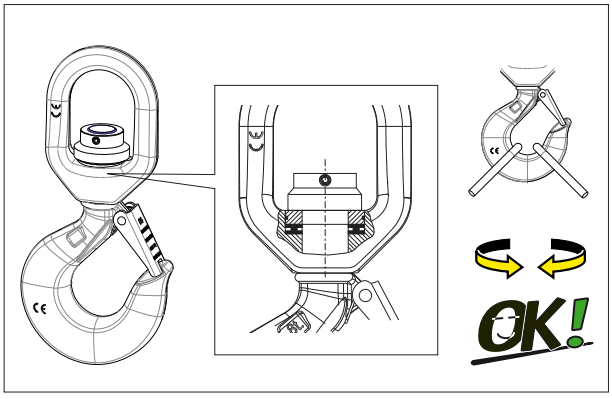
Adjustable hook:

It CANNOT be turned with the load

Turning hook with bearing:

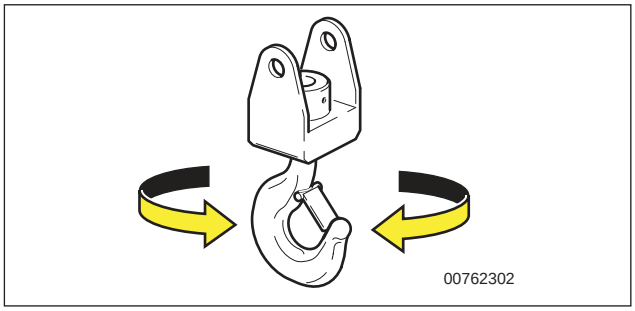
It CAN be turned with the load.

The distinguishing feature of the turning hook is the bearing ring.



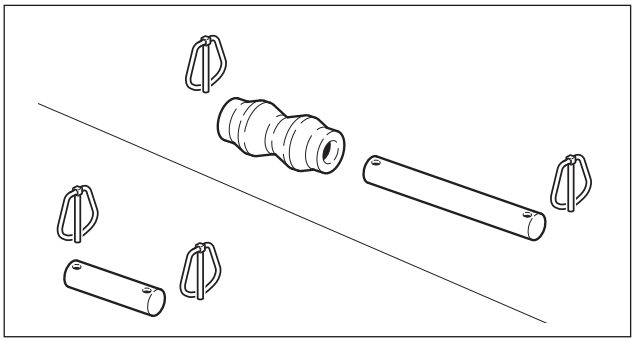
Swivel pot hook:

Where rotation under load is allowed.



The hook can be connected directly to a pin or to a pin with the centering spacer.

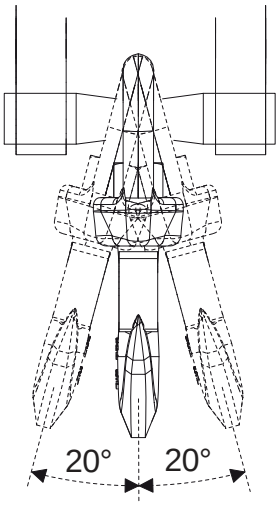
All pins that hold the hooks are locked with RUBIG type pin retainer.

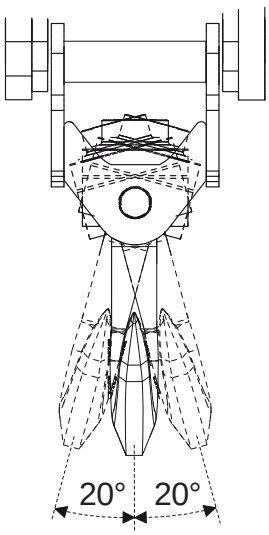


CAUTION

Always check that the hook supplied corresponds to the documents supplied by EFFER (see chapter "3 - Technical features").

All types of hooks (pot, swinging, swivel hooks) swing by ± 15 ° in both ways and in all directions to allow load verticality under the allowed conditions.



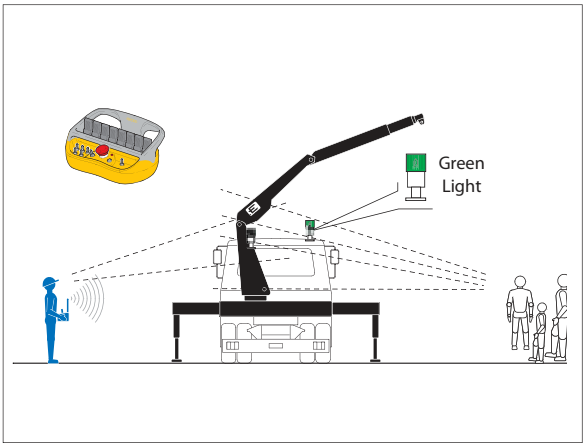


CAUTION

If a 15°-inclination is exceeded, the structural parts are stressed in a dangerous and unpredictable way.

1.5 Luminous device for remote controlled crane

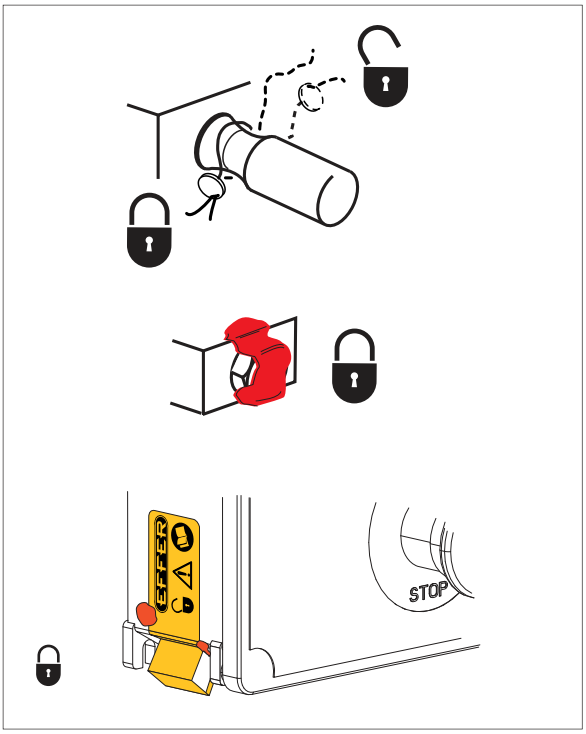
- Each remote controlled crane has a (green) luminous device that can be seen from all sides and warns anyone in the immediate vicinity when the remote controlled crane is in operation.
- If the standard luminous device cannot be seen in all the work area, the installer should use another light in addition to the standard one.



1.6 Tamper protection on the safety devices

- The main safety components (e.g. pressure/speed/performance limiters, etc.) have features that allow EFFER to determine whether they have been tampered with (coded leading, labels and glazes, etc.).

The cranes with electronic safety devices have an electronic system that records the main acts of tampering directly and, in some cases, slows down or stops the movements of the crane.

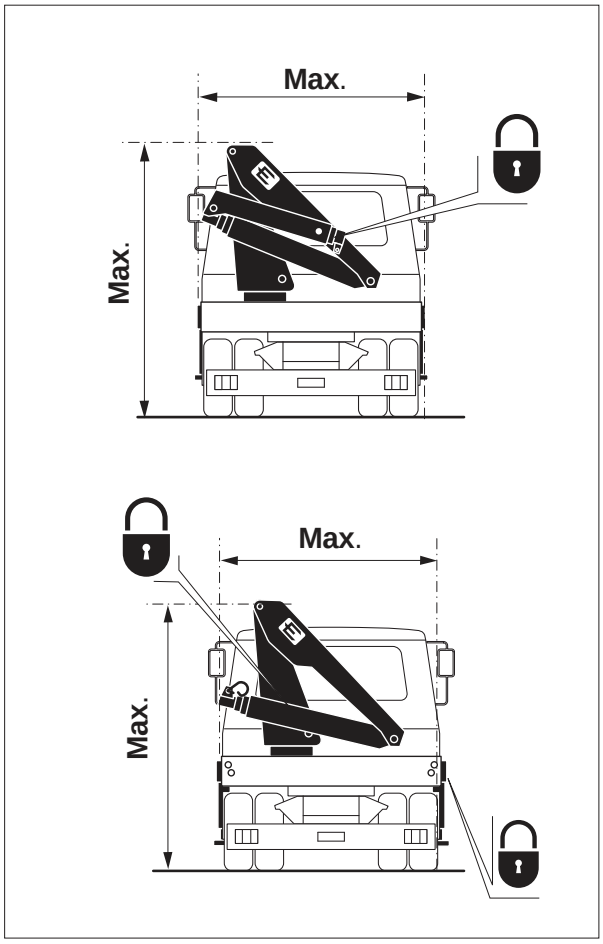


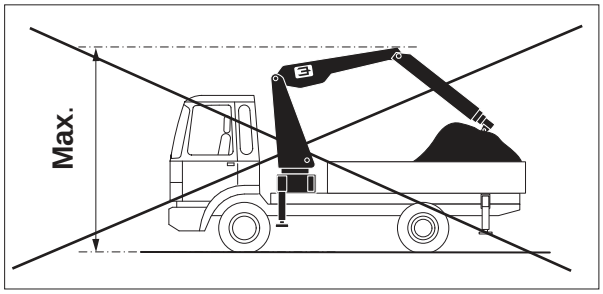
1.7 Residual risks

Driving/transport

Before driving off, the operator must check:

- the extensions of the joint are fully retracted and have been locked in place with their respective fasteners.
- the extensions of the crane are fully retracted and the hook is properly in place.
- the booms of the crane and of the joint are closed correctly in their respective rest positions, and are also locked in place with their respective fasteners (when applicable).
- the stabilizers are closed correctly and fitted with their respective fasteners.
- the whole is within the maximum permitted dimensions.





WARNING

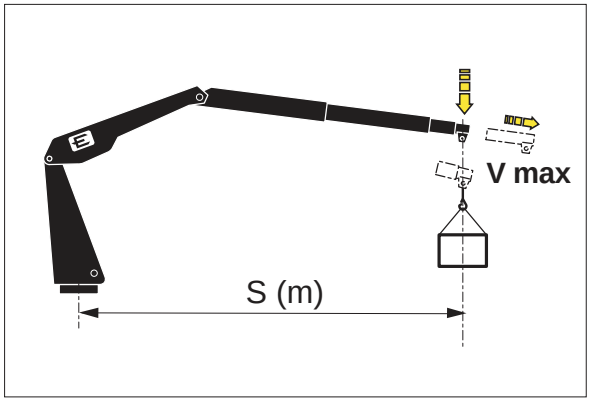
Do not forget that the crane must always be folded up on the supports provided by EFFER – no other configuration is permitted for transport.

It is forbidden to transport the crane with its booms retracted and resting on the load or loading platform, unless the installer fits the crane with appropriate devices such as the overlimit device. (Refer to section 1.11)

Lowering due to hydraulic flow

WARNING

The position of the crane/load does not always remain static but can vary according to normal movement of the oil in the hydraulic circuit. Uncontrolled lowering of the booms or extending of the extensions is therefore possible, at a speed that depends on the boom (S). The max permitted speed is determined with this formula:



con S < 12 m Vmax = 0,5 x S (m) = V m/min

con S > 12 m Vmax = 0,2 x S (m) = V m/min

You should therefore take care when parking with the crane open and when the crane has been at rest for a long while and not been folded.

Notes: ***You are advised to close the crane or place the crane/load on the ground if it is to be at rest for more than 30 minutes.***

1.8 Safe stabilizer control

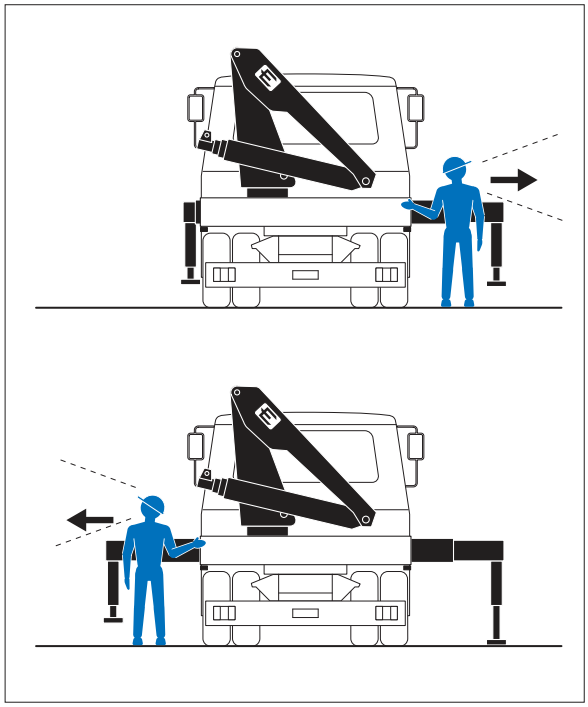
- The operator should only extend the stabilizers on one side when he is in a position to monitor them carefully.
- The stabilizer extension controls for manually controlled hydraulic stabilizers are situated on the same side as their respective stabilizers.

To avoid the danger of the stabilizers moving accidentally, they can only be activated with a double action control:

1 – selector/switch to activate the stabilizer function

2 – stabilizer control lever

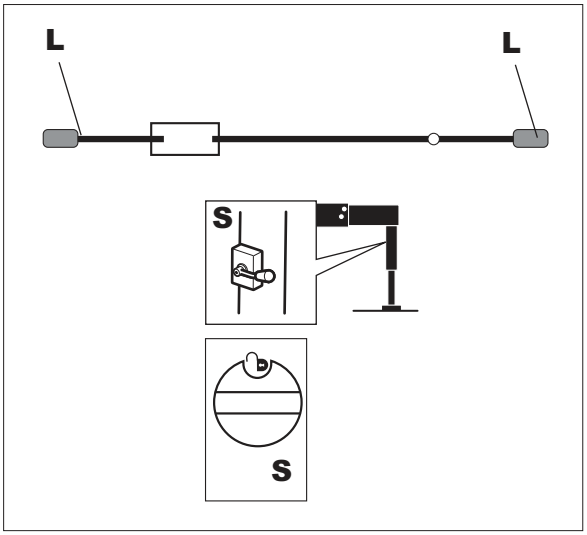
Below are a few notes on stabilization controls according to type of crane.



Type A (manual extension of the stabilizers)

1) to move a foot, open the selector valve **(S)** of the same foot; the selector valves **(S)** of the other feet should remain closed.

2) use the stabilizer control lever **(L)** to extend the stabilizers.



WARNING

After stabilization, all the selector valves S must be in their STOP position to prevent accidental movement of the feet by touching the lever (L).

Type B (hydraulic extension of the stabilizers for Crane model 100)

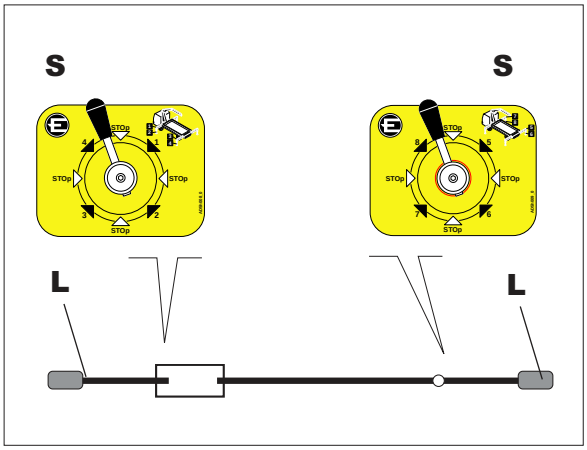
There is a selector on both sides **(S)** for executing stabilization, and a control lever **(L)**.

1) Turn the selector **(S)** to select the movement of the stabilizers and feet jacks.

2) Move the stabilizer control lever **(L)** on the same side of the selector **(S)** you have just turned, to extend the stabilizers and lower the foot.

Turn the selector **(S)** to **STOP**.

Walk round to the other side of the crane to adjust the stabilizers on that side.



WARNING

When moving the stabilizers on one side, the selector (S) on the opposite side must be turned to its STOP position, otherwise you may run the risk of accidentally moving the stabilizers on the opposite side without being in a position to monitor them.

NOTES: All the other types of stabilizer controls require dual action, without residual risks.

1.9 Remote controlled stabilizers

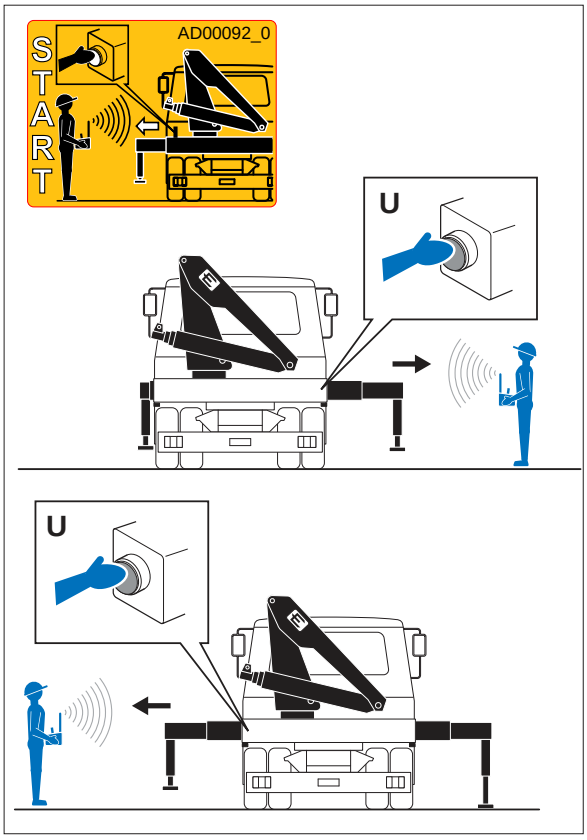
- To extend the remote controlled stabilizers, you need to press one of the timed selection buttons (**U** (with a timer of about 20 seconds) located on each side of the truck.

1- Press the selector button (**U**) on the side on which you wish to activate the stabilizers (the side in your line of vision).

2- Turn the selector (**B2**) to select the movement of the stabilizers and feet jacks.

3- Turn the correct lever on the remote control to extend the pre-selected stabilizers.

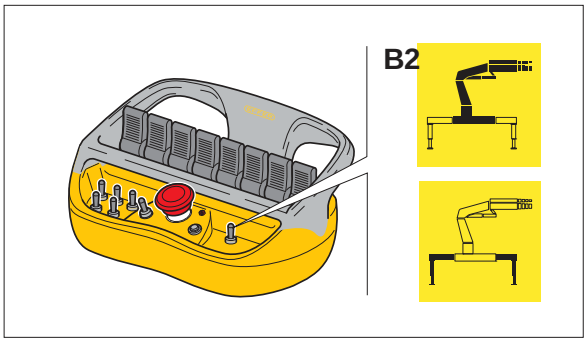
4- If the preset time of the timed selector is not sufficient to fully extend the stabilizers, you can press the button (**U**) again to complete the action.



PROHIBITION

It is forbidden to let another operator press the timed button (U).

It is forbidden to press the timed button (U) on one side of the vehicle and then move to the other side or to a position where you do not have a good view of the stabilizers.

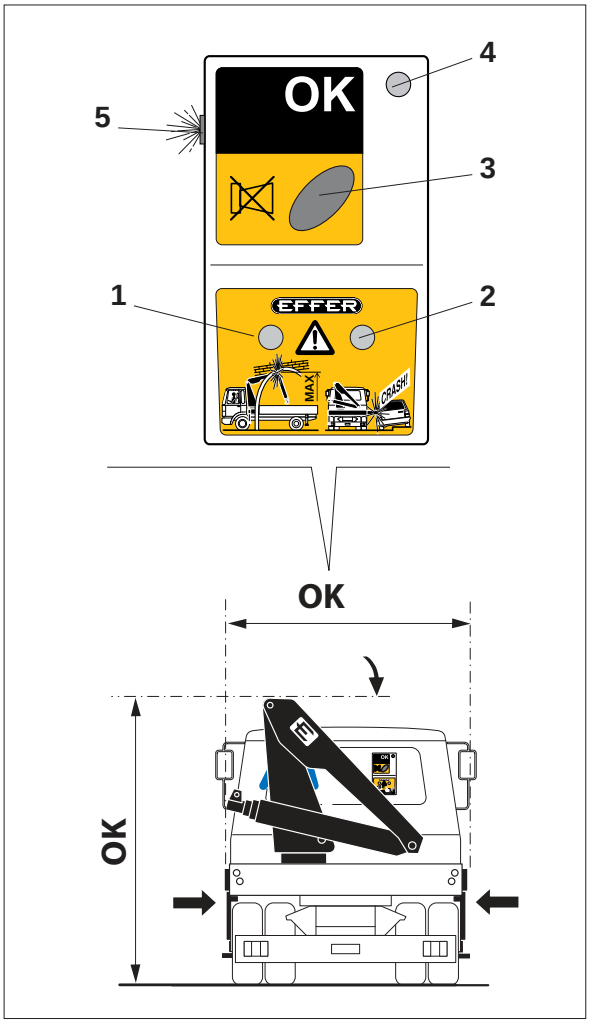


1.10 Hazard warning not correct transport position of the crane / outriggers

This device is required only in CE cranes.

- This device consists of (6-7) means that detect the incorrect position of transport of 1 arm of the crane and additional stabilizers, and send the data to a device in the cabin that alerts the operator of the incorrect position for transport.

NB: During the work phases 1-2 the red lights are lit and the buzzer is activated. And 'possible to turn off the buzzer by pressing the button 3.



Signaling Device

1- Warning lights in Red

Switched on: indicates when the crane is not in correct transport configuration (correctly closed, in gauge - quota limit for transport).

After positioning the 1 arm the light goes off.

2 - Red warning light

Switched on: warns you at least one of the stabilizers is not in its transport confi guration

After positioning the stabilizers the light goes off.

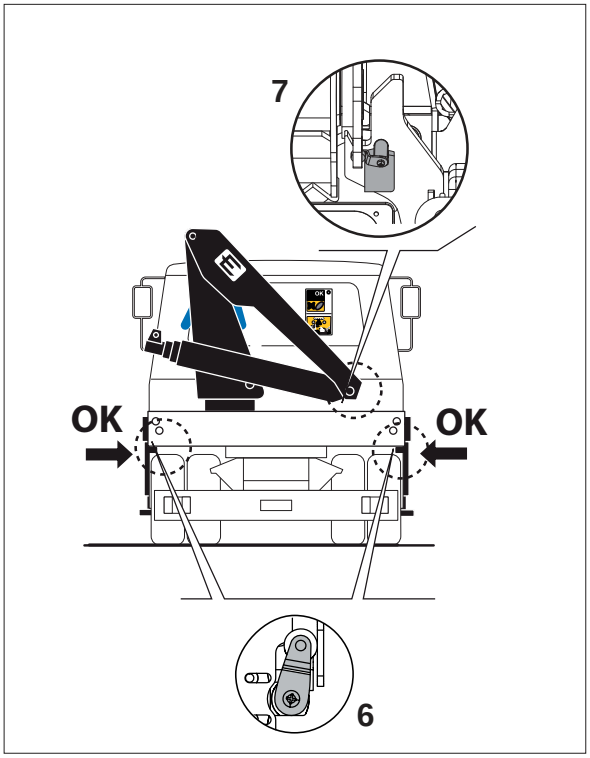
2 - Warning lights in Red

3 - Buzzer OFF button

4 - Green warning light

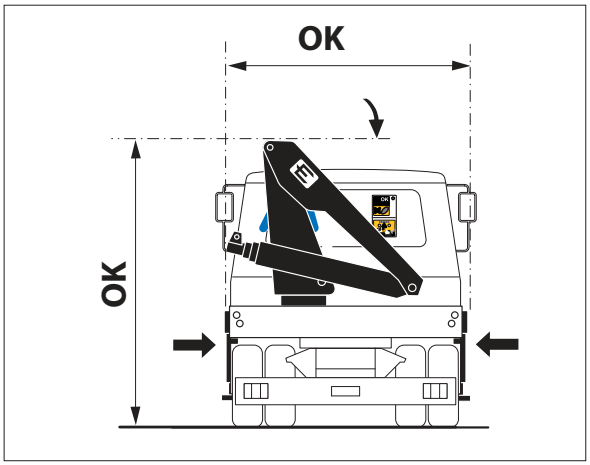
It is possible to drive off safely when the green light is switched on and the other lights are switched off.

5 - Buzzer



Operation of the device (CE)

Position 1, Crane Arm



- This device signals **(7)** when the cabin 1, the boom is stowed under the height allowed transport (according to laws and regulations).

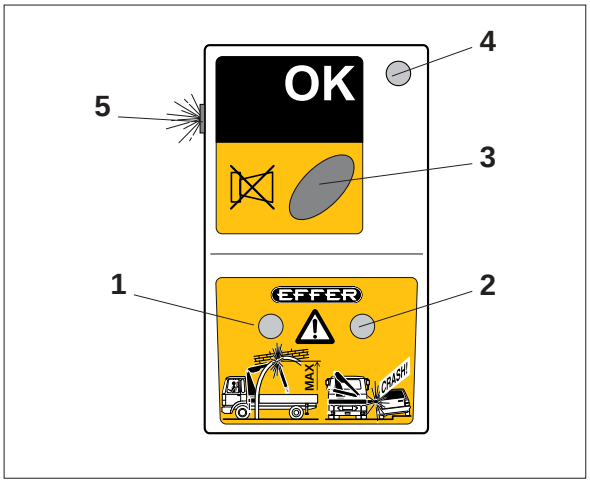
The signal warning of danger provides for the simultaneous illumination of the red light (1) and activation of a sound signal (buzzer) (5).

- The red lights (1) and audible signal (buzzer) will remain active until:

- Shall not to bring the arm 1, and stabilizers in the correct transport position.

The beep can be disabled intentionally by pressing the button (3).

Note: For configurations of transport provided by EFFER see section 2-3.



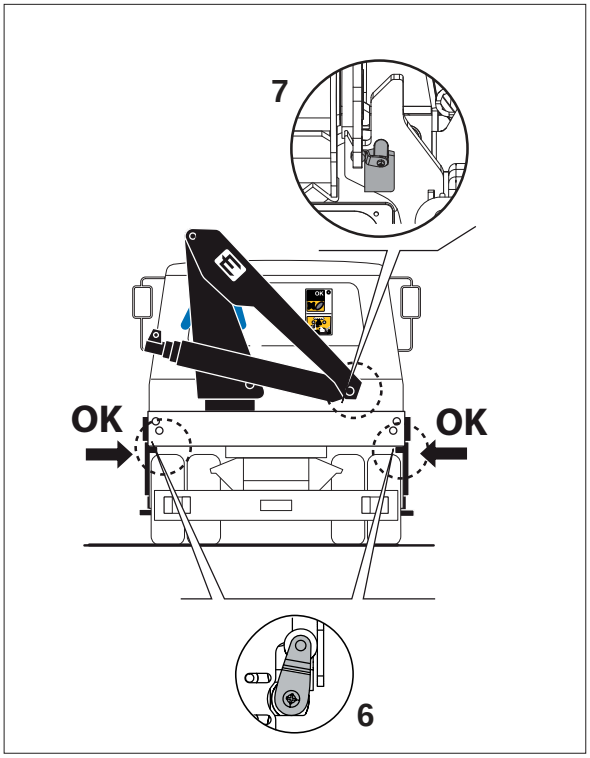
Position stabilizers

- This device **(6)** signals in the cab of the crane when the stabilizers are not properly locked in position allowed transport (according to laws and regulations).

The signal warning of danger provides for the illumination of the red light **(2)** and activation of a sound signal (buzzer) **(5)**.

- The red lights **(2)** and audible signal (buzzer) will remain on until:

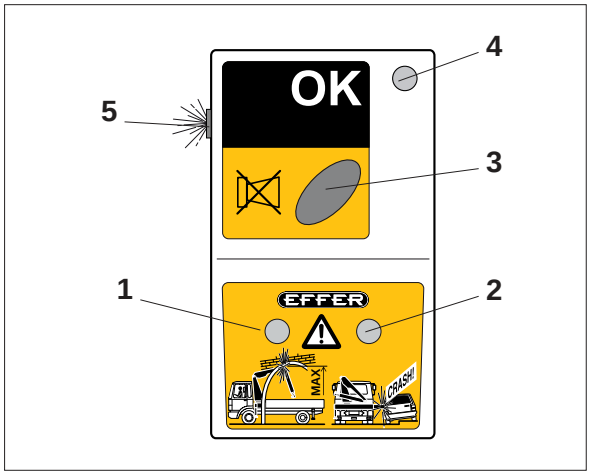
- Does not ensure correct positioning of all the stabilizers. The beep can be disabled intentionally by pressing the button **(3)**.



1.11 Reactivation beep

As mentioned previously, the beep of the alarm can be switched off.

To reactivate it is necessary to make a small extension maneuver stabilizers to disengage at least one sensor (6) and then reposition the stabilizers in the correct position of transport. (Red LED off)



Warnings

PROHIBITION

It 'may not move the vehicle if the visual alarm / sound is on (indicator lit red), and the green light is off.

Stop the vehicle immediately if the red light and/or buzzer are activated while driving. Verify the reason for the alarm. Check that there are no failures (mechanical locks and/or hydraulic seals stabilizers).

Then retract the stabilizers correctly before driving off.

If the alarm persists, you may resume the march, and only if they are adopted, by qualified personnel, appropriate temporary means to ensure the lock while driving cranes and stabilizers in the transport position.

ATTENTION

In the event of a fault, go immediately to an EFFER service centre to execute the necessary checks.

2 - Stability control device

There are two types of stability control device:

- MINIESS **(MINI EFFER STABILITY SYSTEM)** for cranes with hydraulic and electro-hydraulic torque limiter: (section 2.1)

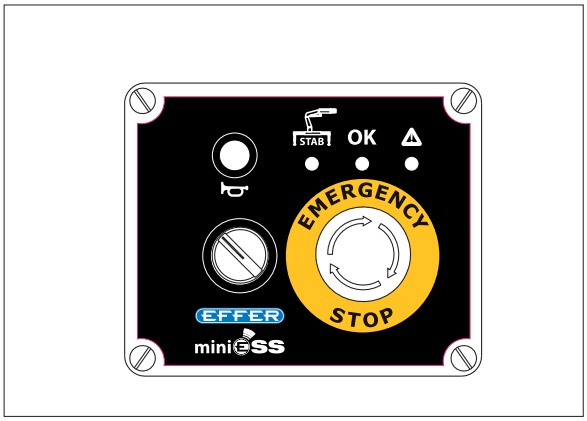
- ESS **(EFFER STABILITY SYSTEM)** for cranes with electronic torque limiter (DMU).

2.1 MINI EFFER STABILITY SYSTEM

- This device guarantees the vehicle's stability and prevents it from overturning.

The device checks the following:

1) Full extension of the stabilizers at the sides
2) Correct positioning of the feet jacks on the ground (it checks the stabilizers of the crane and any additional ones, if fitted).
3) The maximum torque of the crane (boom x load) at which the machine is stable with the stabilizers in their correct position (integrated torque limiter device).



The crane can be activated only when the device has determined correct stabilization.

Use of the crane is otherwise disabled.

The device has a control panel.

You should give the stabilizers a visual inspection in any case, to make sure they are fully extended (yellow reference). Refer also to the instructions in the manual provided with the crane.

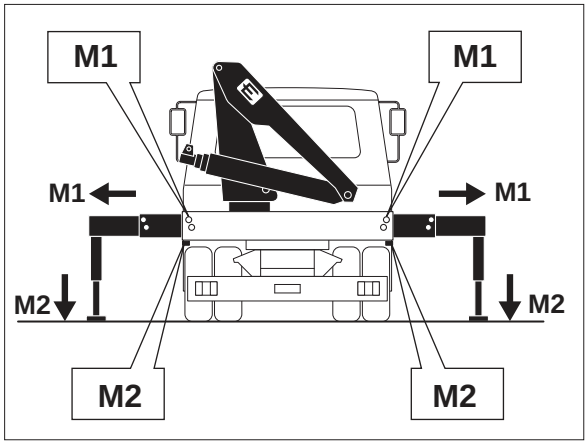
In the case of manually extendable stabilizers, the operator should extend the stabilizers to their max working limit and fasten them in place with their respective mechanical devices. This is a voluntary action not controlled by the stability device.

Stability control sensors

The crane is fitted with control sensors that check it is correctly stabilized.

The sensors **(M1)** on the tubular sections of the stabilizers (one per extension) check the stabilizers are correctly extended.

The sensors **(M2)** below or above the tubular sections of the stabilizers check the stabilizer feet are standing on the ground.



Types of device

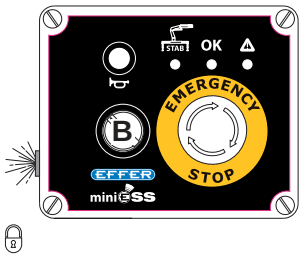
There are three types of device according to the functional and technical properties of the EFFER crane (types 1, 2 and 3).

The selector/switch (B-B1-B2, depending on the type of device), allows you to select movement of the stabilizers (STAB) or of the crane (CRANE).

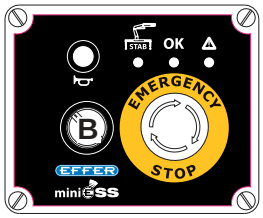
Type 1 – Crane with STAB/CRANE selector/switch (B) on the device control panel.

There are two device control panels, one at the main control station (**control side**) and one at the secondary control station (**double control side**). There is a selector **B** on both panels.

CONTROL SIDE

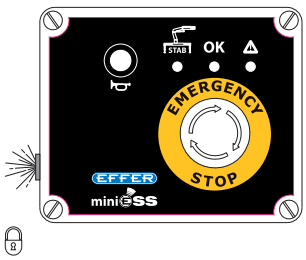


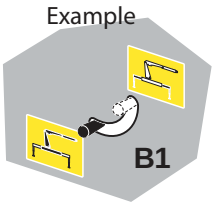
DOUBLE CONTROL SIDE



Type 2 - Crane with STAB/CRANE switch (B1) in the immediate vicinity of the device's controls

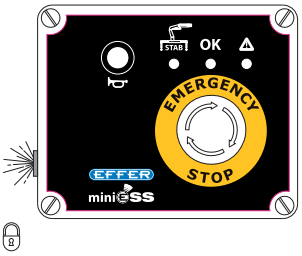
There are two device control panels, one near the controls and one near the double controls, and a separate switch valve **B1** for the STAB/CRANE function.

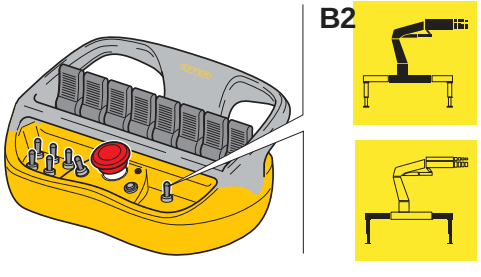




Type 3 - Crane with STAB/CRANE selector (B2) on the remote control

There is a single device control panel at the base of the crane. The STAB/CRANE function can be activated with the **B2** selector on the remote control.





Controls/lights on the device

A Emergency STOP button

This button can also be used to turn on the device

B-B1-B2 STAB/CRANE activation selector/ switch (depending on the type of device - 1, 2 or 3)

WARNING

In the case of a type 2 device, the selection of the "CRANE/STAB" function is signalled by lights E and D and not by the position of selector/switch B. Two-way switch that can move randomly.

C Button (unstable)

Allows you to deliberately activate the buzzer to warn any people in the vicinity.

D **Yellow** warning light

Switched on: indicates the STAB function is selected/activated (selector B).

E **Green** warning light

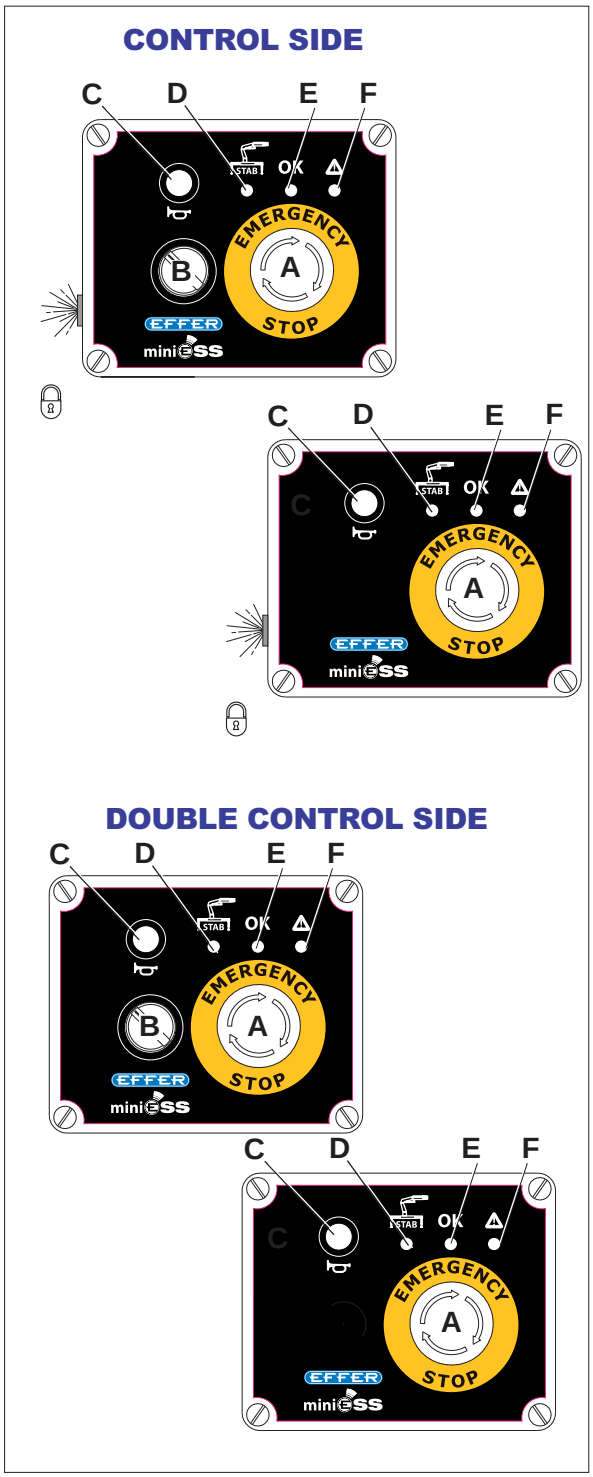
Switched on: indicates the CRANE function is selected/activated (it switches on if the light F is off - due to correct stabilization).

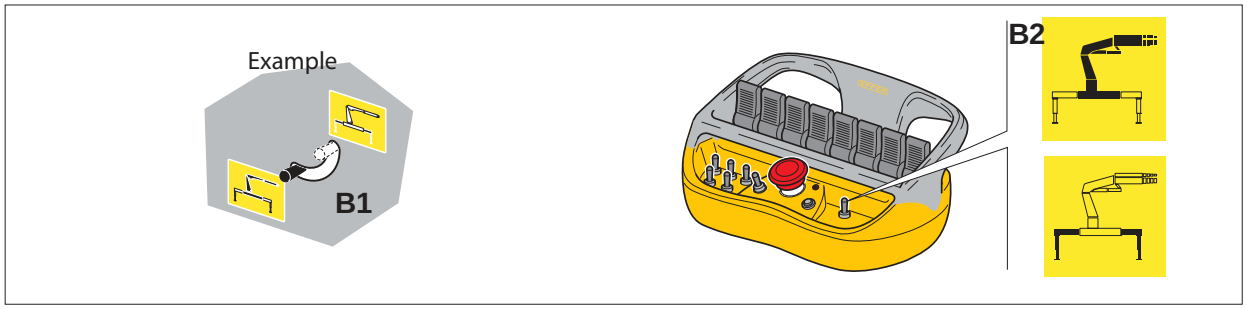
F **Red** warning light

Switched on: indicates incorrect stabilization, or lifting of one or more feed jacks, and/or one or more stabilizers are not fully extended.

It also indicates the device is switched on.

Wait for light F to turn off before turning the B selector to CRANE





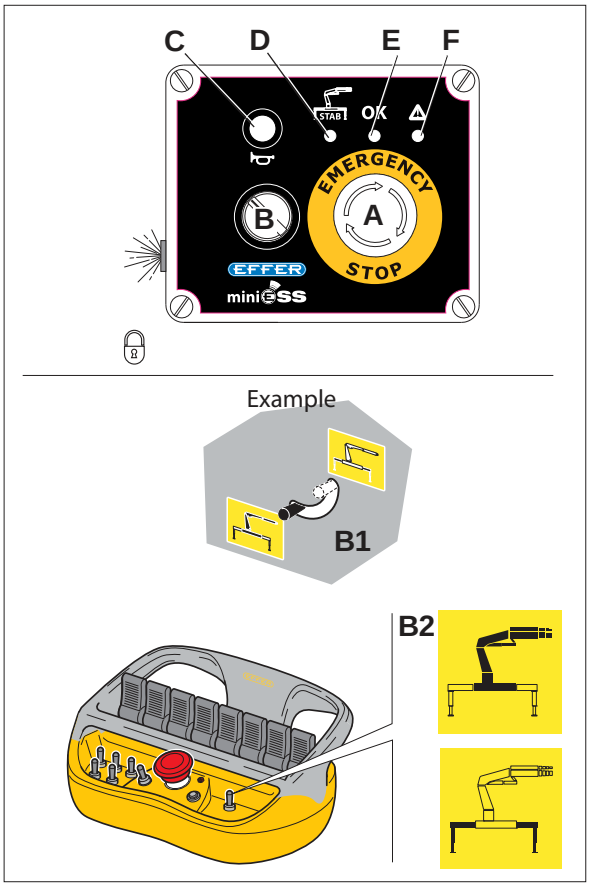
Operation of the device

Activation of the crane and device

Turning the emergency button **A** powers the device and turns on the red LED **(F)**.

The crane and device are disabled when the emergency button is pressed.

To reset, turn the emergency button in the direction indicated by the arrows above it.



Stabilization

Turn the selector/switch **(B-B1-B2)** according to the type of device (type 1, 2 or 3) to select the **STAB** function; the yellow light (**D**) turns on to confirm your selection.

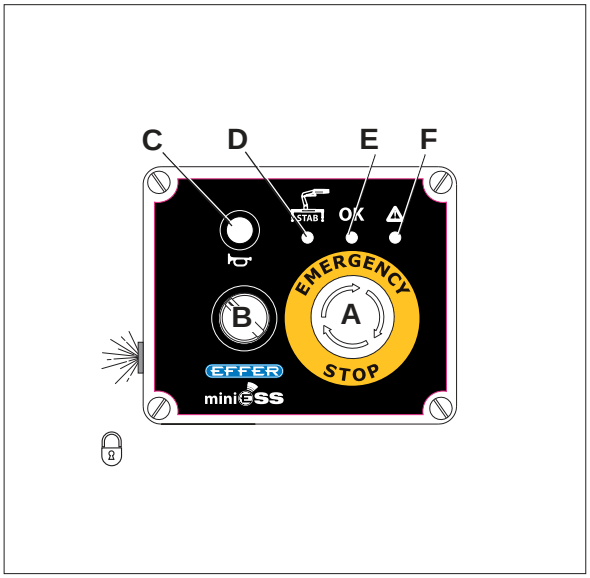
Use the stabilizer controls to stabilize the crane. Extend the stabilizers using the controls at the sides of the same.

To stabilize the crane correctly you need to fully extend the stabilizers and ensure all the feet are in contact with the ground.

When you have done, the red light (**F**) turns off.

Using the crane

Turn the selector/switch **(B-B1-B2)** to select the **CRANE** function; the green light turns on to confirm your selection **(E)**.



Notes ***The device has to detect that the crane is correctly stabilized (with the stabilizers fully extended and the feet firmly on the ground, and the red light F off) before you can select the CRANE function to open/move the crane, otherwise the crane controls are disabled.***

Residual risks

PROHIBITION

The stabilizer controls are disabled when the CRANE function is selected. In the case of a type 1 device, it is forbidden to use the crane and stabilizer control levers at the same time as to do so stops the crane and cause damage leading to instability of the load and undue stress on the structure.

PROHIBITION

In the case of a type 1 device, it is forbidden to use the stabilizer and crane activation levers at the same time in STAB mode; to do so could cause uncontrolled and damaging movement of the crane, resulting in undue stress on the structure.

WARNING

When the crane is in use, the red light F switches on only if one or more feet are raised. The red light does not stop the crane in any way when it turns on. It simply indicates the crane is at risk of becoming unstable. Another integrated device (torque limiter) determines the maximum stability and can disable all crane movement.

Closing the crane

Instructions on how to close the crane are given in the operator manual.

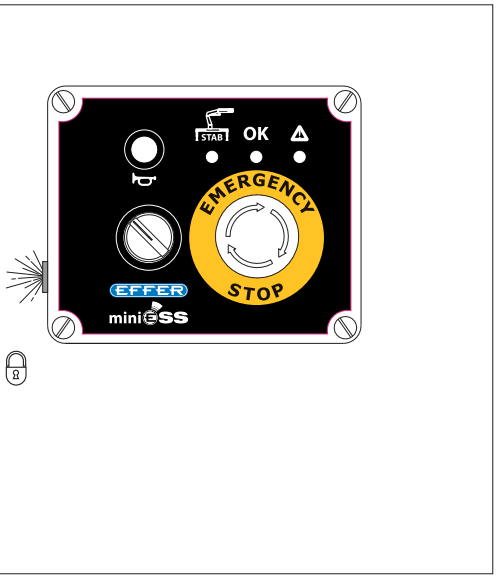
Turn the **B-B1-B2** selector to select the **STAB** function.

Retract the stabilizers (refer to the safety notes in section 1.8)

Voluntary operation of STAB function with operating crane

With the operating crane - open booms - the operator (double action with selector + lever) has the possibility, on a voluntary basis, to operate the stabilizers by running the STAB function. This maneuver is not recommended for the high risk of tipping, in particular the foot rise movement.

In any case, you must avoid operating the stabilizers with the load hanging.



WARNING

IN ANY CASE, the shift from STAB function to CRANE function requires the original conditions for stabilizati on to be recreated, which means that all the stabilizers shall be properly laid down on the ground (red warning light F off).

If this does not occur (for example, as a result of the conditions of deformation of the frame with a loaded crane), the crane controls will be inhibited.

There is the risk of being unable to move the crane any longer and remaining at a deadlock with the booms opened.

Before making this move make sure that you can recreate the initial conditions for stabilization.

If the selector has been switched to STAB function and you cannot recreate the original condition s for stabilization, it is possible to use the emergency by-pass function with the sole purpose of carrying the load safely.

WARNING

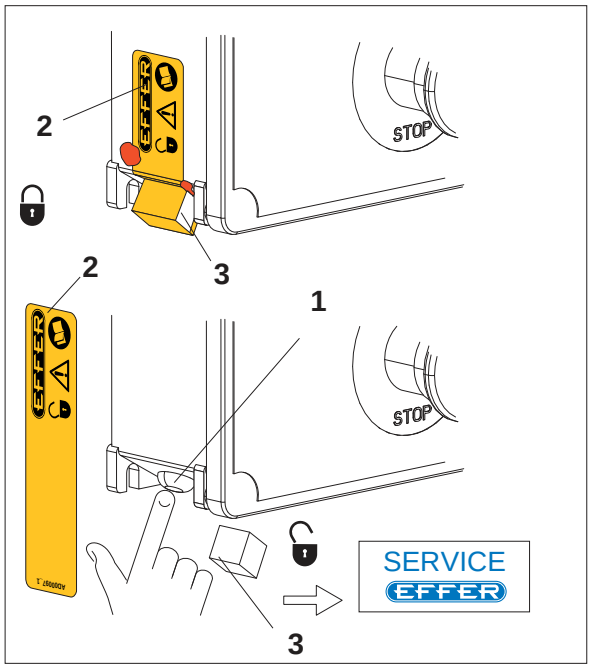
When using the crane, if the selector is UNNECESSARILY switched from CRANE function to STAB function, this can lead to a crane deadlock as mentioned above. This can happen if, when it is switched, there is even one stabilizer foot not properly laid down on the ground.

Bypass function during stabilization

WARNING

The bypass button (1), on the device's electric box, allows you to disable the device in the event of an emergency. In emergency situations, the device no longer controls stability and there is a danger of the crane overturning.

There is a coded seal label (2) on the bypass selector that allows EFFER to determine whether the device has been tampered with.



To activate the **bypass** function:

- Remove the adhesive **(2)** and the protective plug **(3)**.
- Select the CRANE function by turning the selector **(B-B1-B2)** to **CRANE** and pressing and holding the **bypass** button **(1)** at the same time.

It is now possible to take the necessary measures to exit emergency mode.

After taking the measures to exit emergency mode, contact an EFFER service centre immediately to have the device reset.

PROHIBITION

It is forbidden to lift anything with the crane when the stability control device is disabled.

2.2 - EFFER STABILITY SYSTEM (with DMU)

- This device guarantees the vehicle's stability and prevents it from overturning.

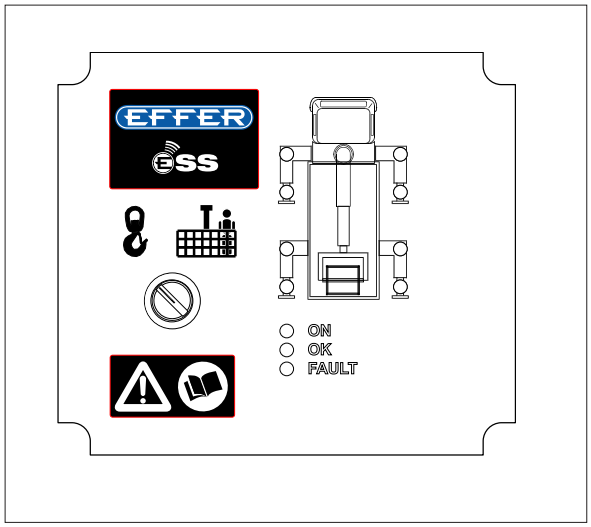
The device checks the following:

1) Full extension of the stabilizers at the sides
2) Correct positioning of the feet jacks on the ground (it checks the stabilizers of the crane and any additional ones, if fitted).
3) The maximum torque of the crane (boom x load) at which the machine is stable with the stabilizers in their correct position (integrated torque limiter device).

The crane can be activated only when the device has determined correct stabilization.

Use of the crane is otherwise disabled.

The device has a control panel.



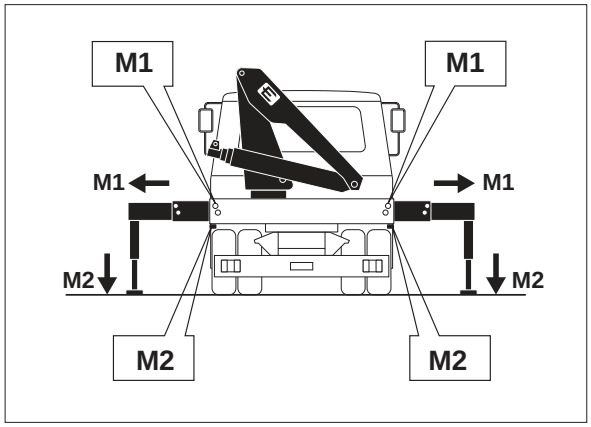
You should give the stabilizers a visual inspection in any case, to make sure they are fully extended (yellow reference). Refer also to the instructions in the manual provided with the crane.

Stability control sensors

The crane is fitted with control sensors that check it is correctly stabilized.

The sensors **(M1)** on the tubular sections of the stabilizers (one per extension) check the stabilizers are correctly extended.

The sensors **(M2)** below or above the tubular sections of the stabilizers check the stabilizer feet are standing on the ground.



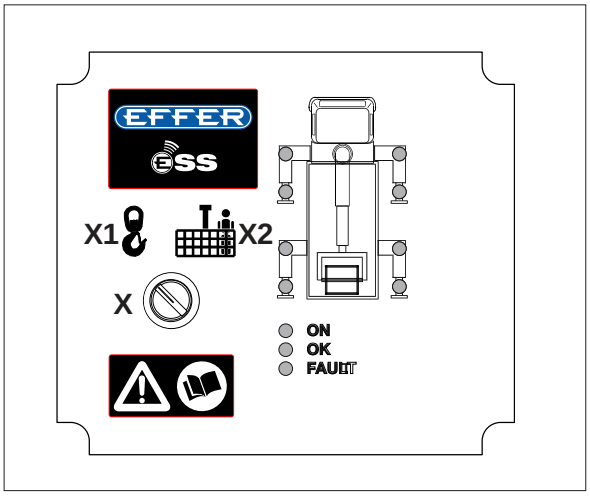
Controls/lights on the device

X – On/off selector/switch

Pos. **X1** – To use the crane with hook.

Pos. **X2** – To use the crane with PLE.

(NOT PERMITTED) ***It is therefore strictly forbidden to lift people.***



WARNING

WARNING The PLE function is an incomplete one; this function slows down the crane and stops as soon as a single foot is raised.

ON - green LED

Turns on when the device is running.

OK - green LED

Turns on to indicate the crane can be used (the B1-B2 STAB/CRANE selector/switch is enabled).

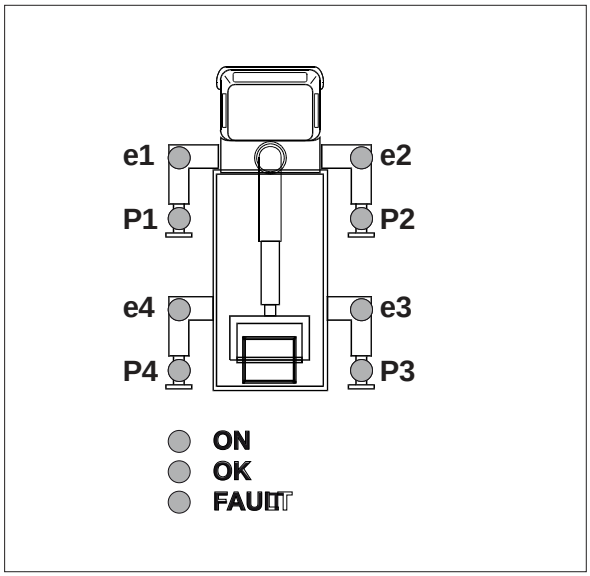
Turns off to indicate alarm mode and disables all the controls except for the retraction of the extensions.

e1- e2 - e3 - e4 – red LEDs

These stay on until the respective stabilizers are fully extended; they turn off when the stabilizers are positioned correctly.

P1- P2 - P3 - P4 - red LEDs

These stay on until the respective feet are standing on the ground; they turn off when the stabilizers are standing correctly.

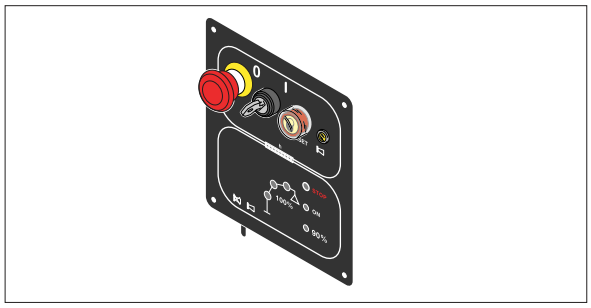


FAULT - yellow LED

This comes on and is steady or flashing when there is a system fault (e.g. a problem with the micro-switch controls, etc.). The LED turns on at the same time as the LEDs of the micro-switches concerned.

Operation of the device

Activation of the crane and device



Check the position of the emergency buttons on the DMU panel.

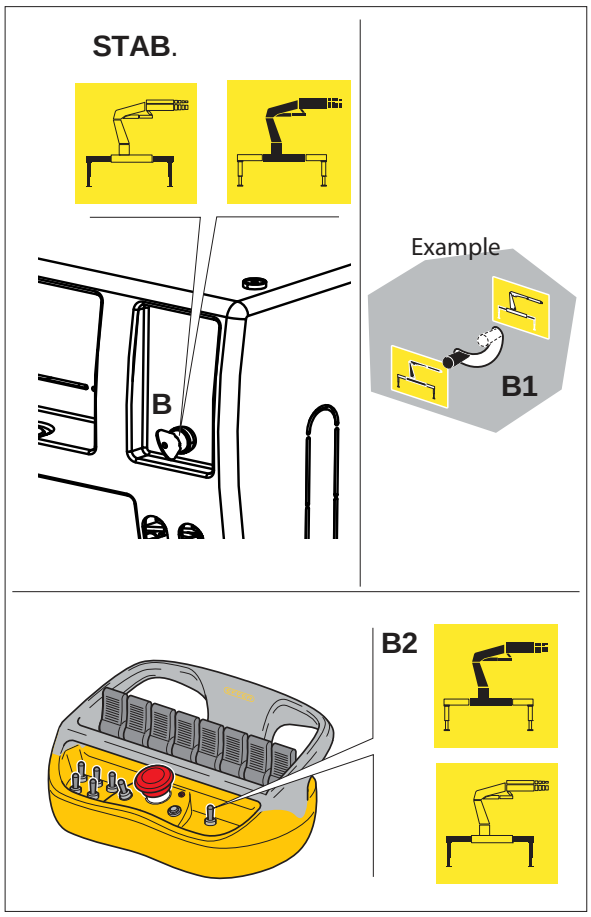
The crane and device cannot be used when the emergency button has been pressed.

To reset the emergency button, turn it in the direction of the arrows above it.

Turn on the power by turning the key in the DMU panel.

When it turns on, the device executes a system control; the green ON LED turns on when the device is operational.

Stabilization



Turn the selector/switch **(B-B1-B2)** to select the **STAB** function.

Use the stabilizer controls to stabilize the crane. Extend the stabilizers using the controls at the sides of the same. Fully extend the extensions of the stabilizers and stand the feet jacks on the ground.

On the control panel, the red LEDs e1-e2-e3-e4 turn off when the respective stabilizers are extended, and the red LEDs P1-P2-P3-P4 turn off as each foot meets the ground. The green OK LED turns on when all the stabilizers are extended and all the feet are on the ground (complete stabilization), and the crane is ready for use. (The B, B1 or B2 selector is enabled).

In this case all the wheels of the truck must be in full contact with the ground.

⚠WARNING

-The device has to detect that the crane is correctly stabilized (Extended stabilizers and support feet - all the red LEDs off and the green OK LED on) before you can open and use the crane, otherwise the crane controls are disabled.

⚠ WARNING

When working in crane mode, a foot could lift off the ground or could simply be discharged while working. This situation is immediately shown on the control panel by the LED corresponding to the foot that has lifted off the ground, which lights up. When the red LED lights up, an intermittent buzzer triggers to warn the operator so that the crane movements can be slowed automatically down.

If, while the crane is moving, a second foot should lift off the ground the crane is blocked. The operator is warned of this situation via the display of the device but also via a continuous buzzer. In this emergency situation only the movements needed to restore normal working conditions may be performed (configuration with one foot raised at the most):

a) retract crane extensions; **b**) retract jointed extensions; **c**) lower winch.

WARNING

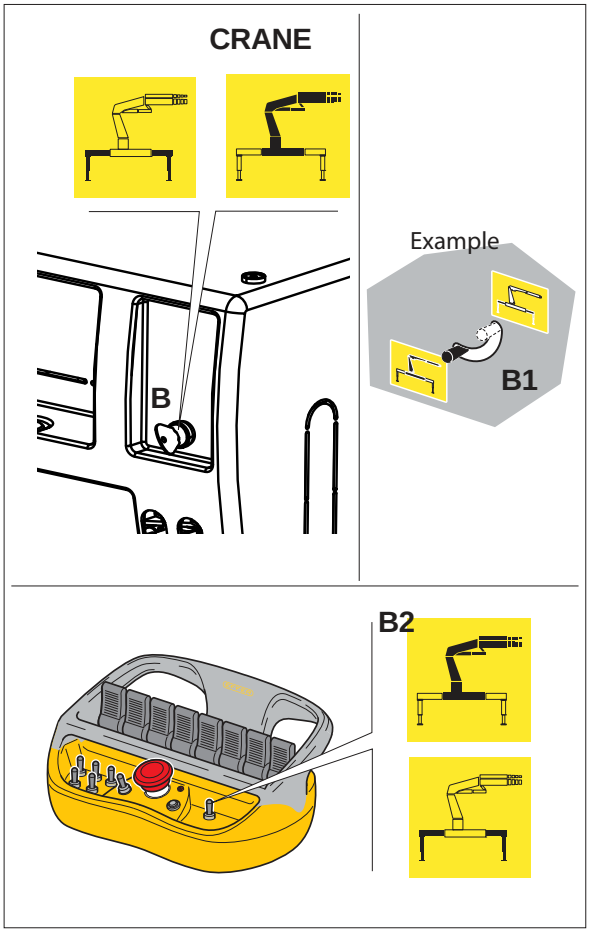
If there is a remote control you need to press a manual button on the side of the truck you wish to control the stabilizers.

Refer to the notes in the chapter "Safe stabilizer control" of section 1.8.

Using the crane

Turn the selector **(B-B1-B2)** to select the **CRANE** function.

Notes ***The device has to detect that the crane is correctly stabilized (with the stabilizers fully extended and the feet firmly on the ground) before you can select the CRANE function (selector B-B1-B2 enabled) to open/move the crane, otherwise the crane controls are disabled.***



Closing the crane

Instructions on how to close the crane are given in the operator manual.

Turn the **B-B1-B2** selector to select the **STAB** function.

Retract the stabilizers (refer to the safety notes in section 1.8)

Check the stabilizers are correctly closed (refer to section 1.8)

Bypass device function

WARNING

The Bypass G button, on an electric box (H) in a protected area near the stabilizer control distributor, allows you to disable the device in the event of an emergency. In emergency situations, the device no longer controls stability and there is a danger of the crane overturning.

There is a tamperproof coded seal label (L) on the bypass G button that allows EFFER to determine whether the device has been tampered with.

To activate the **bypass** function:

Remove the adhesive (**L**) and the protective plug (**T**).

- Select the CRANE function by turning the selector **(B-B1-B2)** to **CRANE** and pressing and holding the **bypass** button **(G)** for two seconds.

WARNING

After taking the measures to exit emergency mode, contact an EFFER service centre immediately to have the device reset.

PROHIBITION

It is forbidden to lift anything with the crane when the stability control device is disabled.