



EFFER

Operator's Manual



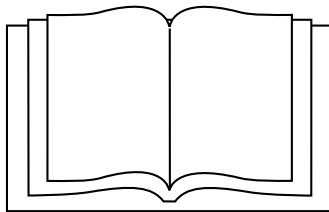
Data Monitor Unit 3000

Foreword

The contents in this technical manual concern the electronic overload safety device (EOP) named DMU3000 installed on the crane.

The information of this booklet are to be considered as additional specifications to the rules already set forth in the Crane User Manual.

Reading this manual is essential to learn how the DMU3000 system works. It also helps to operate with the crane under safe conditions, at maximum performances.



Indix

1 - WORK PRINCIPLES	4
2 - DESCRIPTION OF CONTROL PANEL FUNCTIONS	
Main panel	4
Additional panel	5
Optionals panel	5
3 - START OF DMU3000 DEVICE	
Stand-by	7
Crane opening in safety	7
4 - WORKING WITH THE CRANE	8
5 - USE OF SUPPLEMENTARY FLY-JIB AND GRAB/ROTATOR	10
6 - USE OF RADIO REMOTE CONTROL	
"SCANRECO" radio remote control	12
"HETRONICS-QUES" radio remote control	13
"AUTOMATIC SLOW DOWN"	13
FPI function (optional)	13
Enabling the pitch control disabling selector switch	13
7 - ADDITIONAL FUNCTION/OPTIONAL	
Work in front area, automatic decreasing of crane performances	14
Work stops with winch use	14
Protective crane down-grading for work with grab	15
Control devices	15
Notes about clogged filter	15
Check of oil high temperature	16
Check of minimum oil level	16
8 - OPTIONAL	17
9 - PIN CODENUMBER	
How to store PIN codenumber	18
How to use PIN codenumber	19
How to delete PIN codenumber	19
How to change PIN codenumber	19
10 - ANOMALIES/REMEDIES	
Instructions to disconnect the device in case of emergency	22
11 - MAINTENANCE	25

1 - Work principles

The **DMU3000** is an electronic overload safety device enabling to work with the crane under safe conditions, avoiding overload manoeuvres.

IT IS ESSENTIAL TO ACTIVATE THE DEVICE BY MEANS OF THE RELEVANT CONTROLS, IN ORDER TO OPERATE WITH THE CRANE.

During job phase, the pressure inside the lifting cylinders is constantly kept under control. The operator learns, through acoustic and visual signals, when 90% and 100% of the max. crane performance are reached.

On the control panels located next to crane manual controls, the cylinder which activated the device is pointed out. This helpful indication enables to use the crane at maximum performances of all structural components.

The radio remote control (optional) leads to a series of functions applied on the radio transmitter.

The device engagement does not permit the operator to make those movements with the crane, which could bring away the load from the crane base. This particular manoeuvre would subsequently increase the crane lifting capacities.



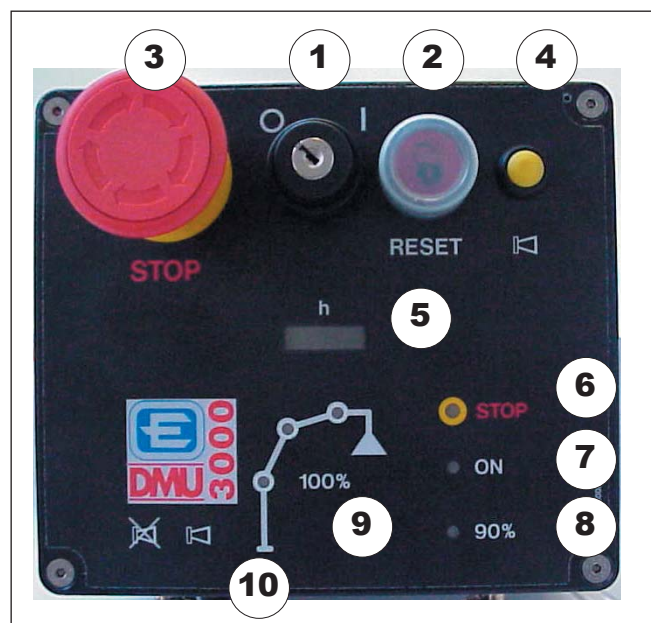
Note For further information, kindly refer to user manual

The installation of winch (optional) requires an additional control panel for the load applied to rope and engagement of end stroke devices.

2 - Description of control panel functions

2.1 Main panel

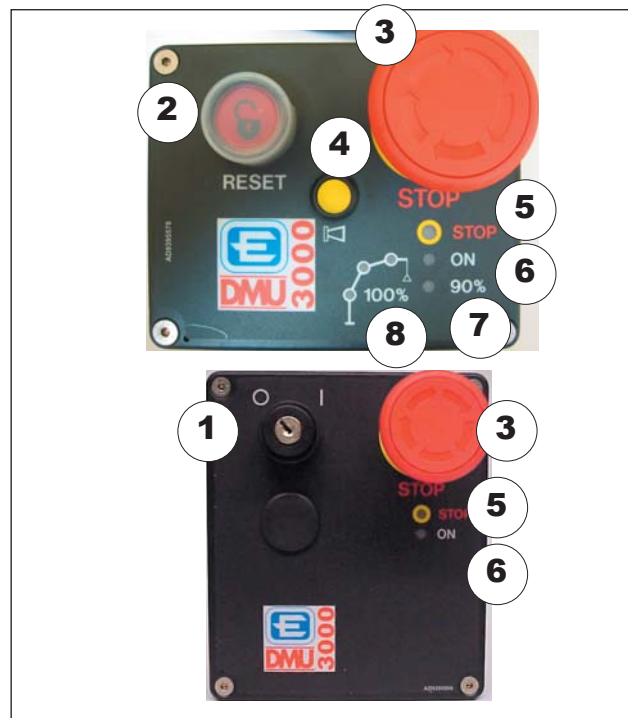
- 1 - main switch
- 2 - reset push-button
- 3 - emergency stop push-button
- 4 - acoustic alarm
- 5 - hours-counter
- 6 - warning lamp to indicate "pushed emergency stop"
- 7 - warning lamp to indicate "device turned on"
- 8 - warning lamp to indicate reaching of "90% max. performance"
- 9 - warning lamps to indicate "lifting cylinder at max. performances (100%)"
- 10 - on/off acoustic switch



2.2 Additional panel

Based on the crane version, the available additional control panel may be one of the two types shown herebelow.

- 1 - main switch
- 2 - reset push-button
- 3 - emergency stop push-button
- 4 - acoustic alarm
- 5 - warning lamp to indicate "pushed emergency stop"
- 6 - warning lamp to indicate "device turned on"
- 7 - warning lamp to indicate reaching of "90% max. performance"
- 8 - warning lamps to indicate "lifting cylinder at max. performances (100%)"



2.3 Optional panel

Other panels may be available on the crane, according to technical requirements and to accessories.

The single functions are shortly described as follows:



- 1 - emergency stop push-button
- 2 - main switch
- 3 - warning lamp to indicate "pushed emergency stop"
- 4 - warning lamp to indicate "device turned on"
- 5 - warning lamp to indicate "activated oil cooler"
- 6 - warning lamps to indicate pressure status inside the different crane lifting cylinders
- 7 - warning lamp to indicate reaching of "winch 90% max. performance"
- 8 - warning lamp to indicate engagement of one winch end stroke device or "reaching of winch max. performance"

- 9 - warning lamp to indicate crane booms positioned in the work area in front of truck (reduced crane lifting capacity)
- 10 - warning lamp to indicate "clogged oil filter"
- 11 - warning lamp to indicate "reaching of max. hydraulic oil temperature"
- 12 - warning lamp to indicate "low oil level in the tank"
- 13 - warning lamp to indicate "activated device for grab use"
- 14 - warning lamp to indicate "anomaly to DMU3000 device or requested crane service".

3 - Start of DMU3000 device

After inserting truck p.t.o., please carefully follow these instructions, to engage the electronic overload device:

TURN THE KEY MAIN SWITCH

by moving the key into "I" position, the device is electrically engaged



CHECK THAT THE "STOP" WARNING LAMP SHALL NOT TURNED ON

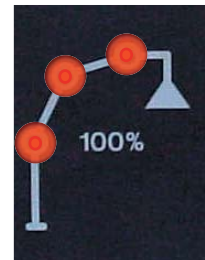
if the warning lamp is on, one emergency stop push-button is pushed

to release it, turn the push-button clockwise



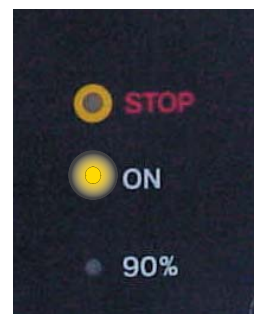
THE DEVICE IS UNDER AUTO-DIAGNOSTIC PHASE

once control is finished, the warning lamps at side and the acoustic alarm operate for one second, in case of positive result



CHECK THAT THE "ON" WARNING LAMP IS LIGHTING

if the warning lamp is lighting, the first start phase gave a positive result. Otherwise, re-check all above stated points



PUSH THE "RESET" PUSH-BUTTON WHILE FLASHING

after a few seconds of fix light, the push-button starts to flash slowly. Then, after pushing, it switches off to show that the start phase is over



CHOICE OF ACOUSTIC ALARM

by operating the switch, the acoustic alarm may be selected: either continuous type (it only extinguishes at alarm end) or timer type (it extinguishes 5 seconds after alarm start).

CAUTION

Carrying out a preliminary functionality check, raise the 1st boom cylinder upwards at full stroke, without load. The DMU3000 device shall avoid the outlet manoeuvre of the basic crane extensions. In case of fly-jib, open at maximum: the DMU3000 shall be activated. To unblock the crane, read the instructions as per chapter 4.



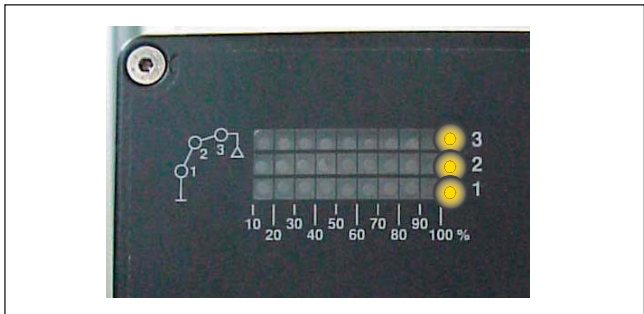
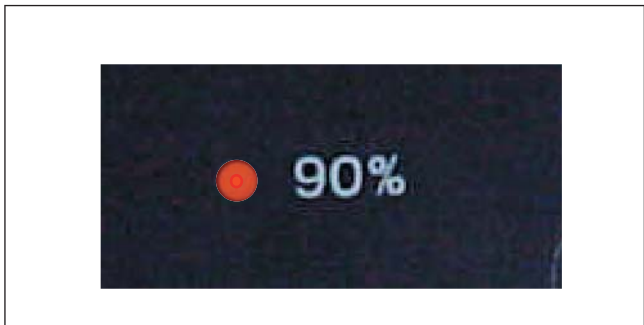
3.1 Stand-by

If, during the job, no controlbank lever has been operated for over 30 minutes, the **DMU3000** is in STAND-BY position and the warning lamp shown in the picture starts to flash (two flashes alternated by a pause). To work with the crane, begin the whole start procedure from key switch. To start manoeuvring the crane, a whole start-up procedure shall be launched. A distinction shall be made whether using the crane manually (thru the controlbank) or by radio-controls.

- **use of the crane in manual mode:** repeat the starting procedure by turning the key switch and pressing the RESET button.

- **use of the crane via radio control:** press the emergency stop button on the radio control, then release the button and connect the radio signal.

If the crane is supplied with optional panel, the STAND-BY mode of the crane is shown on the visual display unit **V** in the following way: the leds relative to the maximum pressure values inside the cylinders are the only ones illuminated.

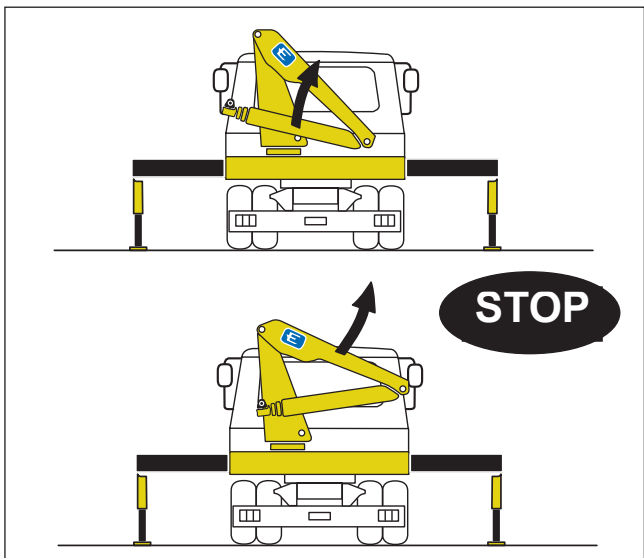


3.2 Crane opening in safety

As described in the User Manual, the 1st manoeuvre to be executed to open the crane from transport position regards the 2nd boom closure.

On some crane models supplied with pressure transducer fitted on the 2nd boom hydraulic cylinder, the **DMU3000** device blocks the controlbank operation and, as a consequence, the crane operation, should the right work sequence not be followed.

It is necessary to close the 2nd boom hydraulic cylinder, in order to restore the crane movements.



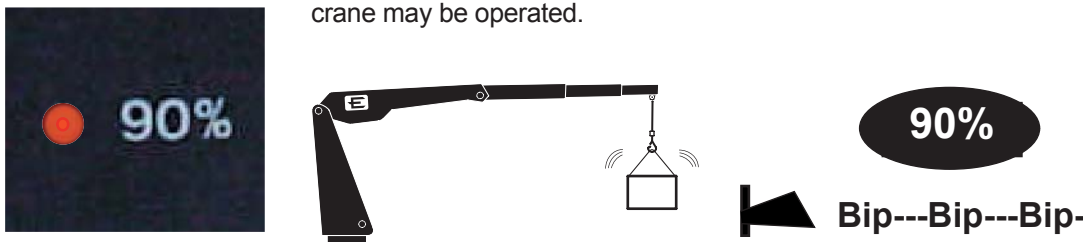
4 - Working with the crane...

Even in presence of the **DMU3000** system, the operator shall handle the loads by paying attention to the lifting capacities shown in the load charts.

The following operative conditions may be faced:

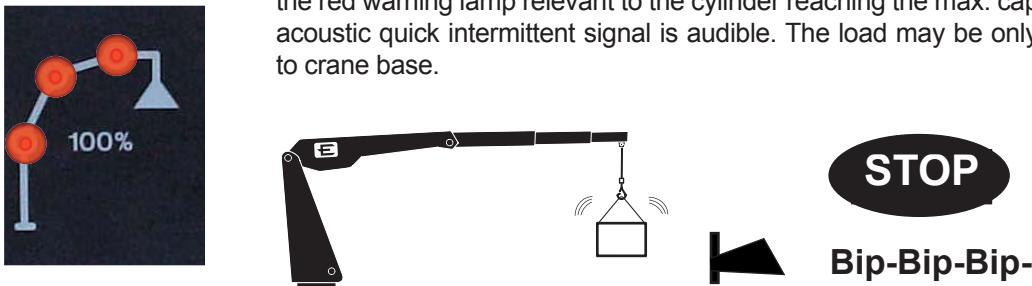
90% of max. lifting capacity is reached

the yellow warning lamp is on, an acoustic slow intermittent signal is audible. The crane may be operated.



100% of max. cylinder capacity is reached

the red warning lamp relevant to the cylinder reaching the max. capacity is on, an acoustic quick intermittent signal is audible. The load may be only brought near to crane base.



CAUTION

A) it is always possible to bring the load close to crane base: the pressure inside the cylinders goes down and all movements are automatically restored.

CAUTION

B) it is possible to lower both crane arms when the 2nd boom is positioned under horizontal and, in some cases, even when it is over the horizontal but within an angle of 30°.

CAUTION

C) it is always possible to perform slewing manoeuvres.


CAUTION

D) the intervention of the safety device DMU3000 can be affected by load oscillations and operating speeds: an improper operation can be easily reset executing a fast manoeuvre with the lever corresponding to standard machine extension, in the direction of re-enter. The erasure of an eventual improper operation depends on the shifts of the lever in the correct direction: no movements of hydraulic extensions are necessary.

Note *When the crane shall handle the load at its max. performance, always work at slow speed, preferably moving the cylinders one by one. otherwise, it may happen that the operative advantages described at point b) shall not be profited.*

Note *If 100% of the crane's maximum capacity is reached (i.e.: end-of-stroke of 1st boom section, the noticeable swinging of load, configuration with horizontal articulation), reduce the pressure of the cylinder of the 1st boom section to restore the operating conditions of the crane using the lever that retracts the extensions of the base machine. This procedure can be repeated 5 times at the most.*


CAUTION

TO BE USED ONLY IN THOSE CASES WHEN LOAD LOWER SHALL HELP PREVENTING A DANGEROUS SITUATION.

Pushing the "RESET" push-button on DMU3000 panel, it starts to flash for 10 seconds. Within this period of time, it is possible to carry out a short movement with one of the unadmitted manoeuvres, except the extensions outlet.

CAUTION: *this manoeuvre requires a further higher performance to crane.*

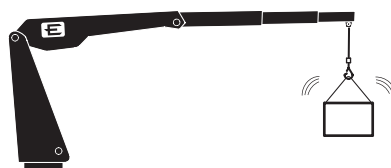
Once the manoeuvre time is over, the crane automatically blocks again and the operator must wait 30 seconds before repeating this procedure. Repeat is feasible until the max. emergency limit is reached and anyhow for a maximum number of 5 times successively.

As an alternative, one can operate simultaneously on the lever for the main boom down motion and, shaking it many times, the extensions retract lever. This manoeuvre can only be performed for a maximum number of 3 times successively.

This occurs in consequence of sudden operative stops or big load oscillations.



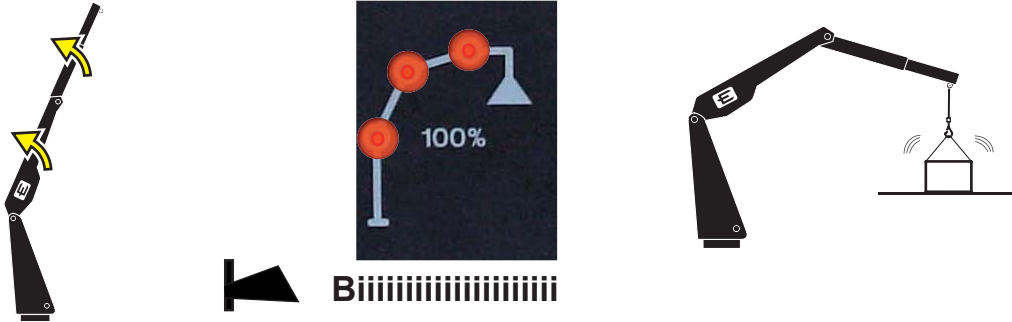
The red warning lamps relevant to cylinders showing dangerous situation are on, an acoustic continuous signal is audible. The load may be only brought near to crane base; no slewing manoeuvres are allowed.



the max. emergency limit is reached because of:

- sharp end stroke opening of cylinder (even without any load hanged on the hook);
- weight higher than crane capacity hanged on the hook and trial of lifting it quickly.

The red warning lamps relevant to cylinders showing dangerous situation are on, an acoustic continuous signal is audible. The crane can not be operated.



Pushing the “RESET” push-button, it starts to flash for 10 seconds. Within this period of time, it is possible to carry out a short lowering movement, in order to unblock the crane. On cranes equipped with “speed automatic slow down” system, in case the **DMU3000** device operated because of an end stroke opening of the 1st boom, it may happen that you don't note the lowering of the arm, although the sound alarm stops. In such case, bring back the lever of the controlbank to the central position and execute an additional manoeuvre to lower the boom (no other manoeuvre is required).

 **Bip-Bip-Bip-Bip**

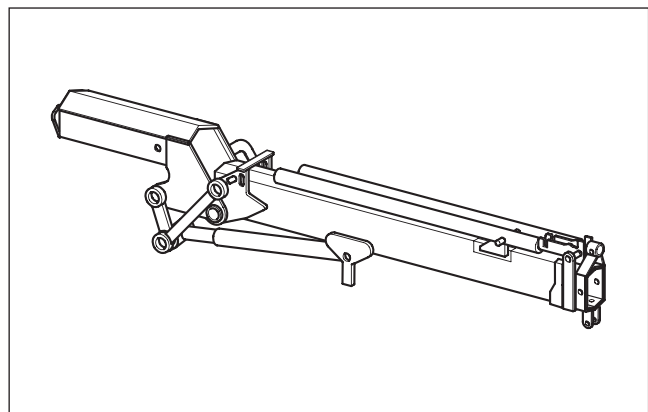
On cranes equipped with remote control and “speed automatic slow down” system, the activation of the signal indicating that the crane reached the 90% of its maximum lifting capacity due to an end stroke opening of the 1st boom, implies that boom lowering manoeuvres are at the minimal speed. In order to obtain the maximum operating speed after some millimetres of cylinder hydraulic stroke, bring back the lever of the controlbank to the central position and execute an additional manoeuvre to lower the boom (no other manoeuvre is required).

Note *In case the DMU3000 device stops crane operation because of sudden load movements, or fast boom movements with heavy loads applied, check pressure by acting on the inlet extension lever with quick shifts (max. 5 shifts).*

5 - Use of supplementary fly-jib and grab/rotator

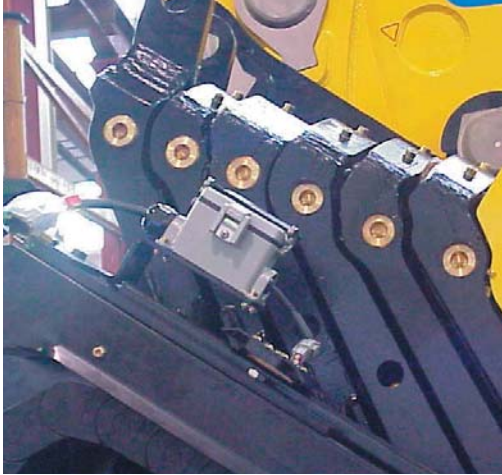
The following notes are helpful to fly-jib use on those crane models, where the DMU3000 electronic device is available.

- fly-jib work is assimilable to the one of crane 2nd boom.
- fly-jib is hydraulically activated through connection of four quick couplings.
- an electric connector is located close to the hydraulic quick couplings. The electric activation of the fly-jib occurs when such connector is fitted



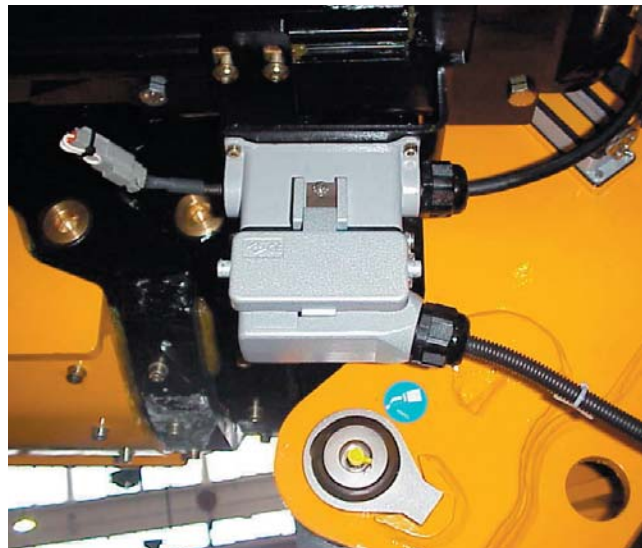
Note *Remove the electric by-pass from the plastic 2-poles connector when using the winch with the fly-jib.*

Note *Without any electric connection, the fly-jib may not be operated.*



Electric connection:

electric connection at crane tip, to be carried out when wanting to work with the fly-jib

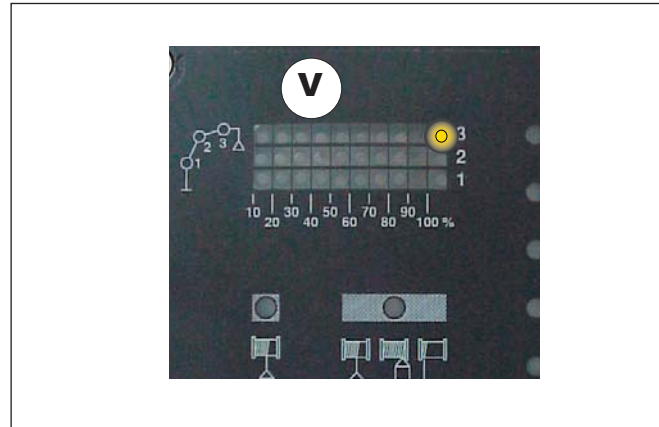


Protection plug with electric by-pass function for connection on crane. Remove the when using the winch with the fly-jib.

The same protecting cap is used for the electric connection of the fly-jib to the winch end-stroke up device (if it is not mounted).



If the crane is supplied with optional panel, the positioning of the additional fly-jib “in negative - not operating position” is indicated in the following way on the visual display unit **V**: the STAND-BY mode of the crane is shown on the visual display unit **V** in the following way: the led relative to the maximum pressure value inside the fly-jib cylinder is the only one illuminated.



Note *If the articulation is not used, the mobile metal connector can be fixed to an attachment arranged on the articulation itself.*

Using rotor/bucket equipment (in alternative to the articulation)

If a rotor/bucket is fitted to the end of the base crane, in alternative to the articulation, a metal electric connector with the bucket programming is to be inserted (**bucket key**) so that the equipment can be operated hydraulically. The bucket movements are performed with a slightly de-rating of the crane performance and only after having enabled the commanding distributor for this type of use.

This is done through a pre-established sequence of movements of the lever dedicated to the bucket function (lever that originally operates the supplementary extension). The lever is to be pushed up twice and pushed down once within 2 seconds. This sequence is denominated “bucket PIN”. When the sequence has been completed, you will hear an acoustic indication to confirm that the bucket is enabled.

6 - Use of radio remote control

The following notes are helpful to operator for use of crane through radio remote control, which may be of two different:

6.1 Radio remote type “SCANRECO”

Push button “1” of the push button control panel of the radio controller acts as the acoustic indicator of the **DMU3000** device and, simultaneously, as the RESET function.



6.2 Radio remote type “HETRONIC-QUES”

On the transmitter, the push-button “3” serves like acoustic alarm for **DMU3000** device and, at the same time, like **RESET** function.

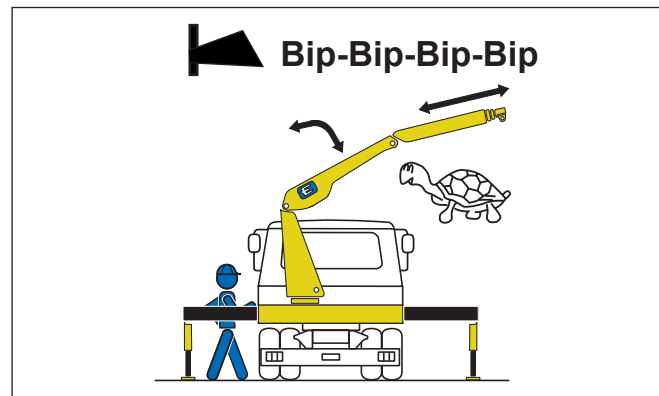
6.3 “AUTOMATIC SLOW DOWN”

The function “AUTOMATIC SLOW DOWN” of booms movements and extensions outlet is available in case of work with the radio remote control, before activating the overload safety device.

Some seconds before hearing the quick alarm signal (leading to crane movements stop), the “AUTOMATIC SLOW DOWN” function is being operated. The crane automatically reduces the max. speed of the booms movements and extensions outlet.

Slewing speed automatically reduces if the load applied is equal to or higher than 70-80% of the max. load allowed.

The automatic movements stop shall occur with low structural stresses and, **MOST OF ALL**, without unforeseen load oscillations.



To restore crane movements at full speed, stop the load approach to crane base for a while. The pressure inside the lifting cylinder causing alarm shall decrease under a predetermined value.

The movement speed of the boom sections is automatically lowered if the 2nd boom section exceeds a vertical angle of 70°. In some crane models you can position the supplementary articulation beyond the alignment position with the 2nd boom section. This can only be done if the angle of the 2nd boom section is less than 30°. The 2nd boom section of the crane can exceed the alignment position with the 1st boom section only if the pitch control function is disabled (see 6.5). This operating mode is denominated “pitching”. Each crane model has a specific maximum pitching angle, which once reached, prevents all lifting movements of the boom sections.

6.4 FPI Function (optional)

It allows to increase the crane lifting capacities by reducing the work speed.

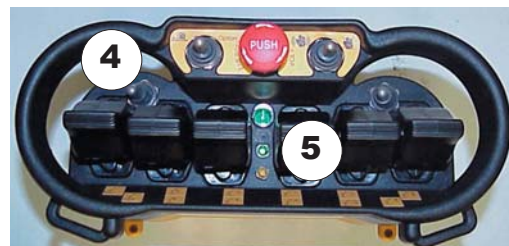
It is voluntary engaged by the operator through the push-button 4, and the warning lamp 5 shows this.

6.5 Enabling the pitch control disabling selector switch

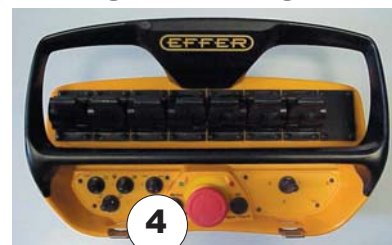
Some crane models envisage the pitching function of the 2nd boom section with a consequent admitted maximum angle.

Using a dedicated selector switch, arranged on a lead-sealed box behind the safety guard, you can disable the control function of this angle and reach the maximum pitching position.

HETRONIC



SCANRECO



7 - Additional functions/optional

The **DMU3000** device offers additional safety functions, as described in the following chapters.

Operating a certain function, an acoustic warning alarm is audible. Moreover, should the optional display be available, the warning lamp corresponding to the engaged safety function is lighting.

7.1 Work in front area, automatic decreasing of crane performances

When working with the crane in front area, the device automatically decreases performances to guarantee truck stability, according to load charts.

Kindly refer to chapter 4 for additional information.

The warning lamp relevant to this function is lighting on the optional panel.



7.2 Work stops with winch use

When using the winch, you can stop some of the crane movements, which is pointed out by an acoustic alarm accompanied by a LED, if an optional panel is installed.

A fast intermittent acoustic signal may trigger:

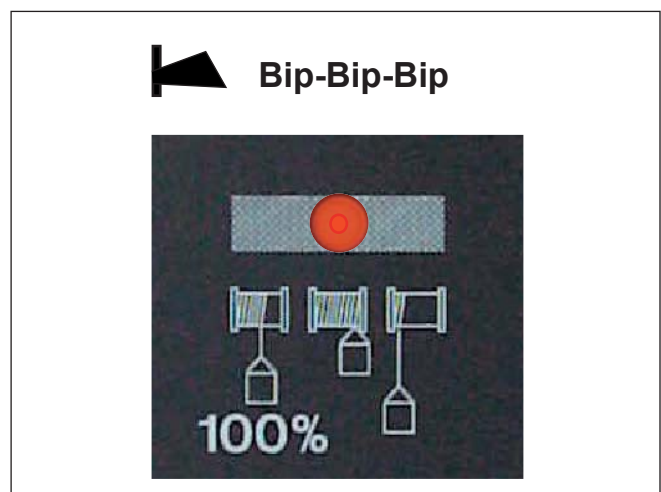
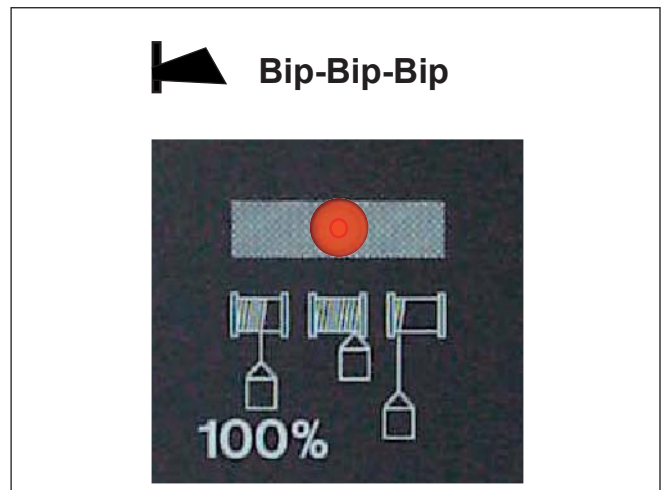
- when the maximum load admitted is detected on the winch. This alarm stops all crane movements, with the exception of the lowering movement of the cable and retracting movement of the extensions of the base machine and supplementary articulation.

- when the cable lifting limit switch trips. This alarm stops all crane movements with the exception of the cable lowering movement and retracting movement of the extensions of the base machine and supplementary articulation. When the optional panel is installed, the luminous LED flashes.

- when the cable lowering limit switch trips. This alarm only stops the lowering movement of the cable. When the optional panel is installed, the luminous LED flashes.

Slow intermittent acoustic signal

This signal triggers when 90% of the maximum load admitted on the winch is detected. This alarm does not stop any crane movement.



7.3 Protective crane down-grading for work with grab

When the device triggers, the corresponding luminous LED lights up, if the optional panel is installed.

See chapter 5, on the triggering details.



7.4 Control device

7.4.1 Notes about clogged filter

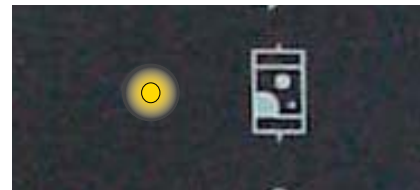
When the crane is driven by a proportional distributor, there is an acoustic/visual warning function to point out when the delivery oil filter is clogged, which is fitted on the piping that sends the oil of the pump to the hydraulic system of the crane.

If the filter cartridge should clog, the operator will hear sets of four rapid acoustic signals one after the other, for two minutes and will see the corresponding LED light up on the optional panel.

This acoustic indication is given each time the **DMU3000** is turned on and only after the levers have been continuously operated for 30 minutes.



Bip-Bip-Bip-Bip
Bip-Bip-Bip-Bip
Bip-Bip-Bip-Bip



Note *The engaged clogged filter alarm activates after 30 minutes of crane job, to avoid false alarms deriving from the hydraulic oil at low temperature. Even the alarm reset will occur after 30 minutes of work with the new, replaced filter.*

Note *Eventual alarms for crane operativity or for device anomalies have priority on this function.*

Note *Time passed with alarm switched on is stored by DMU3000, to prove an incorrect crane use.*

7.4.2 Check of oil high temperature

This function protects the hydraulic circuit components from high oil temperature. When temperature exceeds 80°C, the crane movements are blocked, an acoustic continuous signal is audible and the corresponding warning lamp is lighting.

Extensions reenter is the only admitted manoeuvre.

Push the **RESET** push-button if wanting to work with the crane, without waiting for oil cooling. The crane may be completely operated for 10 minutes. During this period of time, 2 acoustic signals are audible every 10 seconds to remind that available time is passing.

▶ **Biiiiiiiiiiiiiiiiiiiiiiiiii**



▶ **Bip-Bip----Bip-Bip**

7.4.3 Check of minimum oil level

This function protects the hydraulic circuit in consequence of insufficient hydraulic oil level.

When oil goes down the minimum level, the crane movements are blocked, an acoustic continuous signal is audible and the corresponding warning lamp is lighting.

Extensions reenter is the only admitted manoeuvre.

Push the **RESET** push-button to restore the necessary oil level. Closure of hydraulic cylinders is admitted. This kind of manoeuvre increases oil level inside tank.

If functions 7.4.2 and 7.4.3 are present but the optional display is not fitted, the corresponding lights are fitted on the sensor mounted on the oil tank:

- green led ON: operating sensor
- yellow led ON: low oil level
- red led ON: oil temperature $\geq 80^{\circ}\text{C}$

▶ **Biiiiiiiiiiiiiiiiiiiiiiiiii**



8 - Optional

The additional panel allows to display:

A - the percentage of pressure available inside hydraulic cylinders

B - ordinary servicing schedule, and the functions engagements described at chapter 7.

A - On the panel, the signal **V** gives advice to the operator during job, which percentage of pressure is available inside the 1st boom cylinder, 2nd boom cylinder and jib cylinder (if fitted). Thanks to this display, the operator may continuously check the load applied to crane in terms of percentage compared to max. performance.

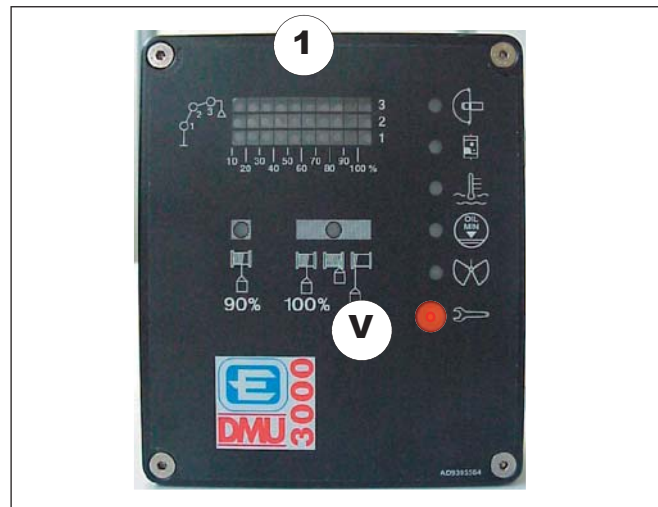
B - Besides this, the signal **V** shows the eventual need of crane servicing (kindly refer to User Manual for details of this topic).

Simultaneously to signal **V**, which is displayed for 10 seconds from start, the red warning lamp **1** is lighting intermittent:

- close to 50 work hours: it flashes for 10 seconds after each start for 10 hours, to indicate that ordinary servicing is required. A line with vertical leds on the signal **V** is lighting for 10 seconds.

- close to 500 work hours: it flashes for 20 seconds after each start for 20 hours, to indicate that careful servicing is required. Two lines with vertical leds on the signal **V** are lighting for 10 seconds.

- close to 1000 work hours: it flashes for 35 seconds after each start for 40 hours, to indicate that extraordinary servicing is required. Three lines with vertical leds on the signal **V** are lighting for 10 seconds.



Note

Careful and extraordinary servicing must be carried out by an EFFER authorized workshop, which will eliminate the visual signal and store the intervention on the DMU3000 device. Later on, this will help to always have an updated status of effected servicing.

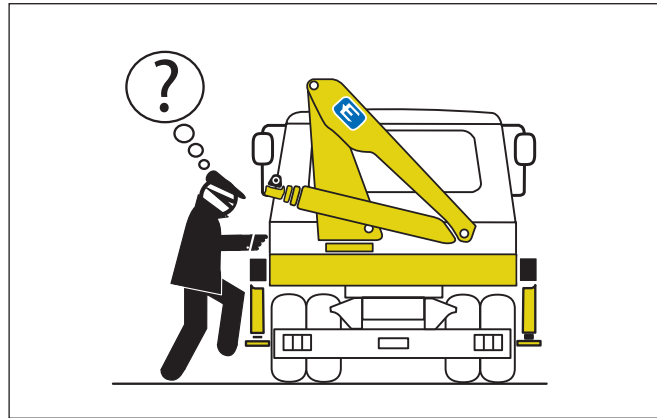
9 - PIN Codenumber

PIN Codenumber

The **DMU3000** device offers the chance of inserting a personalized start codenumber. Thus, an antitheft system comes in force: should the right PIN codenumber not be digitated, the crane may not be operated.

At each crane start, insert the PIN codenumber, by shifting the controlbank levers or by means of the remote control (if installed on the crane).

The personalized codenumber shall be inserted by installer or by user. The following instructions will be helpful in case of PIN codenumber store, delete and change.



9.1 How to store PIN codenumber

(to be carried out starting from crane completely switched off)

PIN codenumber **111** can not be used.

A lever not shifted means **ZERO**.

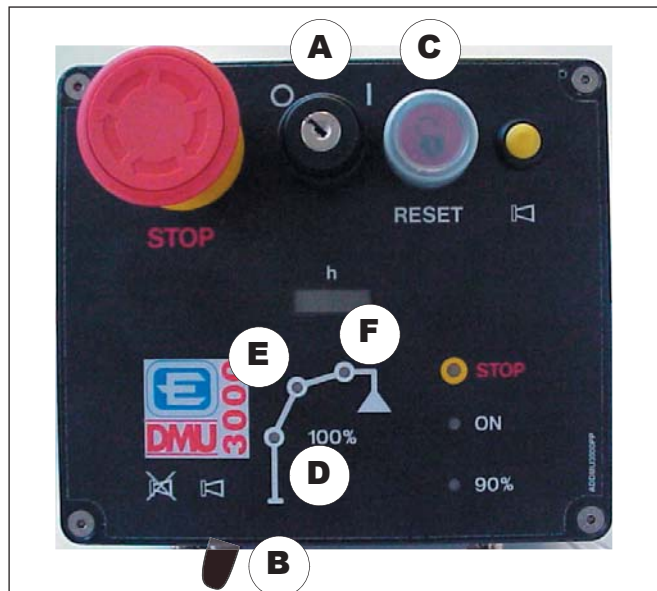
Example: how to store the PIN 129 codenumber.

1- operate the main switch **A** (key switch)

2- operate the switch **B** to cut out the acoustic signal a few times quickly. A short sound is audible and the red led **D** relevant to 1st boom block is lighting

3- push the "RESET" push-button **C** once

4- to insert the codenumber operate:
once the 1st boom lever (simulating lower)
twice the 2nd boom lever (simulating lower)
nine times extensions outlet lever (simulating outlet)



5- operate the 1st boom lever in upwards direction, to confirm the inserted codenumber

6- the red led **E** relevant to 2nd boom block is lighting

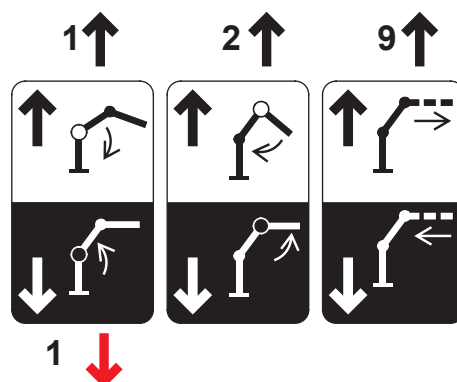
7- repeat codenumber input

8- the red led **F** relevant to fly-jib block is lighting and a sound is audible for 3 seconds.

9- turn off the key main switch **A**.

From this moment, the crane may be operated only after inserting the PIN codenumber.

Example: No of times



PIN Codenumber: 129

Note

In case of error, the red led D relevant to 1st boom block is lighting and 2 short sounds are audible. Push the "RESET" push-button C and repeat the procedure.

9.2 How to use the PIN codenumber

With a **PIN** codenumber already stored, operate the main switch **A**: three red leds (**D,E,F**) on the control panel will start flashing in the sequence to indicate that the **PIN** codenumber must be inserted.

Before shifting the controlbank levers, push the "**RESET**" push-button: the three red leds light up and the **PIN** codenumber must be inserted in the **DMU3000** device.

Operate the controlbank levers once simulating lower of 1st boom, 2nd boom and basic crane extension and operate the 1st boom lever in upwards direction, to confirm.

The insertion of a wrong **PIN** codenumber is signalled by three flashing red leds: push the "**RESET**" push-button and repeat the procedure of **PIN** codenumber insertion.

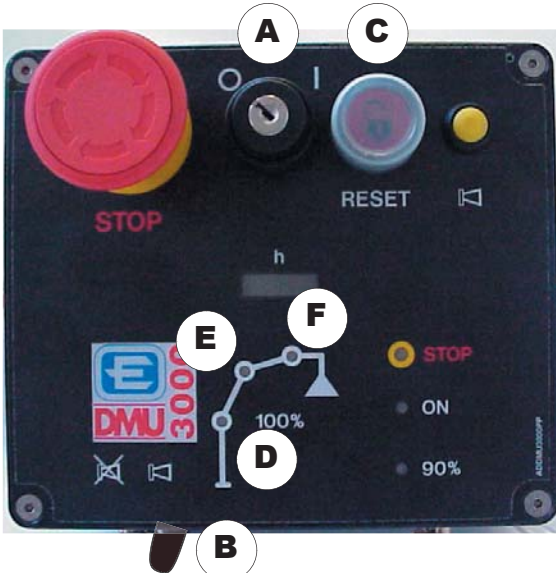
9.3 How to delete PIN codenumber (to be carried out starting from crane completely switched off)

- 1- operate the main switch **A** (key switch)
- 2- operate the switch **B** to cut out the acoustic signal a few times quickly. A short sound is audible
- 3- push the "**RESET**" push-button **C** once and insert the current **PIN** codenumber (Ex.: 129). The red light **D** relevant to 1st boom block is lighting. In case of error, repeat the procedure and push again the "**RESET**" push-button each time
- 4- push the "**RESET**" push-button **C** again: the three leds are lighting
- 5- operate the controlbank levers once simulating lower of 1st boom, 2nd boom and extensions outlet
- 6- operate the 1st boom lever once simulating upwards of 1st boom: the red led **E** relevant to 2nd boom is lighting
- 7- operate the controlbank levers once simulating lower of 1st boom, 2nd boom and extensions outlet
- 8- operate the 1st boom lever simulating upwards movement. The red led **F** relevant to fly-jib is lighting and a sound is audible for 3 seconds
- 9- turn off the key main switch **A**.

From this moment, the crane has no PIN codenumber.

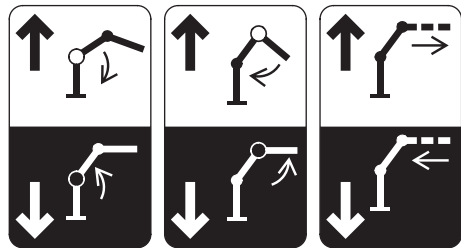
9.4 How to change PIN codenumber (to be carried out starting from crane completely switched off)

- 1- operate the main switch **A** (key switch)



Example: No of times

1 ↑ 1 ↑ 1 ↑

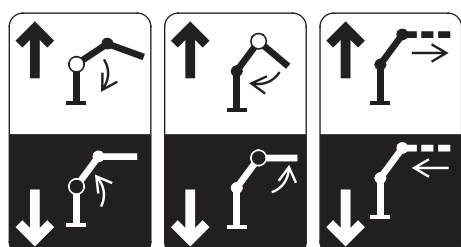


1 ↓

+

Example: No of times

1 ↑ 1 ↑ 1 ↑

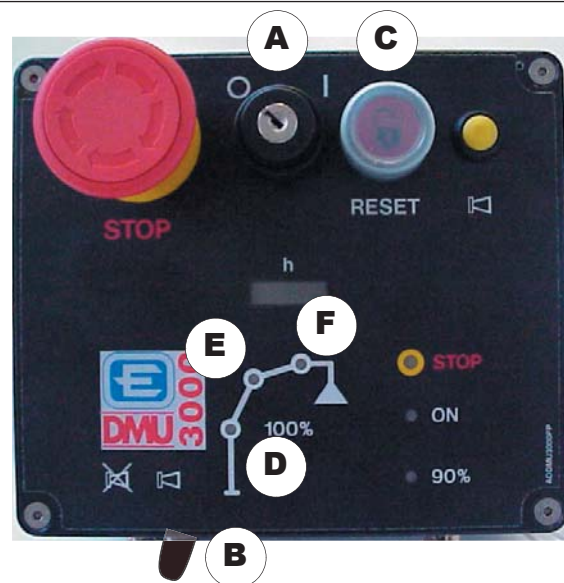


1 ↓

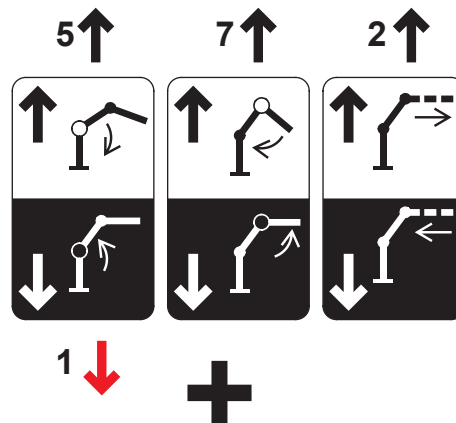
=

NO PIN Codenumber

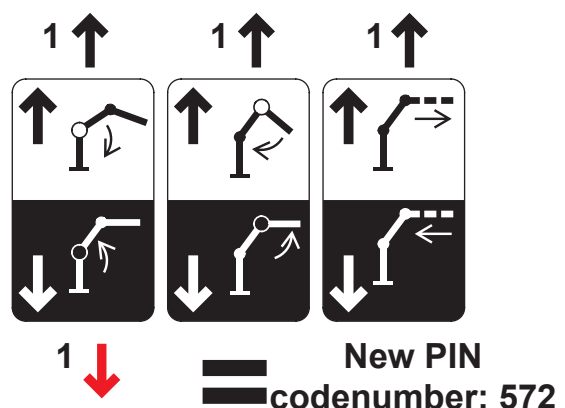
- 2- operate the switch **B** to cut out the acoustic signal a few times quickly. A short sound is audible
- 3- push the "RESET" push-button **C** once and insert the current PIN codenumber (Ex.: 129). The red light **D** relevant to 1st boom block is lighting. In case of error, repeat the procedure and push again the "RESET" push-button each time.
- 4- push the "RESET" push-button **C** again
- 5- operate the three above mentioned controlbank levers for the desired number of times. The new PIN codenumber is set up.
- 6- operate the 1st boom lever in upwards direction, to confirm the inserted codenumber (EX.572)
- 7- the red led **E** relevant to 2nd boom block is lighting
- 8- repeat codenumber input
- 9- the red led **F** relevant to fly-jib block is lighting and a sound is audible for 3 seconds
- 10- turn off the key main switch **A**.



Example: No of times



Example: No of times



Note In case of error, the red led **D** relevant to 1st boom block is lighting and 2 short sounds are audible. Push the "RESET" push-button **C** and repeat the procedure from point 5.

From this moment, the crane may be operated only after inserting the new PIN codenumber

Note Should the PIN codenumber be "forgotten", it is necessary to go to an authorized workshop which may intervene on DMU3000 software, in order to work again with the crane. However, it is possible to use the crane according to paragraph 10.1

10 - Anomalies/Remedies

In case of defect, the DMU3000 is audible the acoustic alarm continuous alarm. Some warning lamps are displayed on the control panel, to give advice about the kind of anomaly occurred.

The following notes concern the main anomalies, causes and remedies, to finish a job and go to the nearest EFFER authorized workshop. The note of "activated antitheft" is listed, should it be mistaken for anomaly.

Anomaly	Cause	Remedy
No warning lamp is lighting and no acoustic alarm is working, even after a right start procedure.	Lack of electric power to DMU3000 .	Check integrity of the fuse located next to truck batteries space (7,5 A.)
All warning lamps ("100%", "90%" and "RESET") are lighting slowly.	One or more controlbank lever(s) not in central position at time of DMU3000 start.	Bring all levers back to central position and repeat the start procedure. The extensions reenter is being operated in this condition, only after pushing the RESET push-button.
All warning lamps ("100%", "90%" and "RESET") are lighting quickly.	One or more controlbank lever(s) have the sensor disconnected from DMU3000 or the connecting cable, or the sensor itself, is damaged.	Check sensors status of all controlbank levers and all electric connections. Repeat the start procedure. If problem still persists, get in touch with an EFFER authorized workshop immediately.
The "100%" warning lamp of 1 st boom is lighting quickly, while the other warning lamps "RESET", "90%" and "100%" are fixed on.	The pressure sensor of 1 st boom cylinder is disconnected or the connecting cable, or the sensor itself, is damaged.	Check sensors status and the related electric connections. Once problem is solved, the device will automatically eliminate the alarm, without repeating the start procedure. If problem still persists, get in touch with an EFFER authorized workshop immediately.
As above, but while carrying out upwards movement with 1 st boom (in support).	The pressure sensor of 1 st boom cylinder does not feel enough pressure for lifting. P.T.O. not connected.	Check hydraulic pressure and oil supply to lifting cylinders, then repeat the start procedure. If problem still persists, get in touch with an EFFER authorized workshop immediately.
The "100%" warning lamp of 2 nd boom is lighting quickly, while the other warning lamps "RESET", "90%" and "100%" are fixed on.	The pressure sensor of 2 nd boom cylinder and/or the relevant angle sensing are disconnected or the connecting cable, or the sensors themselves, are damaged.	Check sensors status and the related electric connections. Once problem is solved, the device will automatically eliminate the alarm, without repeating the start procedure. If problem still persists, get in touch with an EFFER authorized workshop immediately.
The "100%" warning lamp of fly-jib is lighting quickly, while the other warning lamps "RESET", "90%" and "100%" are fixed on.	Lack of jib controls when fly-jib is fitted (refer to chapter 5). One or both pressure sensors on the fly-jib cylinder, or the angle sensing as well are disconnected from the safety device or the connecting cable, or the sensors themselves, are damaged.	Connect the by-pass plug to basic crane (refer to chapter 5). Check sensors status and the related electric connections. Once problem is solved, the device will automatically eliminate the alarm, without repeating the start procedure. If problem still persists, get in touch with an EFFER authorized workshop immediately.
All warning lamps ("100%", "90%" and "RESET") are fixed on.	The DMU3000 device has a problem.	Turn off and then turn on the device. If problem still persists, get in touch with an EFFER authorized workshop immediately. For crane folding, kindly refer to paragraph 10.1.

The "100%" warning lamps are lighting in quick course.

The crane is blocked via antitheft system with a PIN codenumber.

Insert the right PIN codenumber to start working with the crane (refer to chapter 9.1).

The oil filter LED is lit on the optional panel and the intermittent acoustic signal is heard.

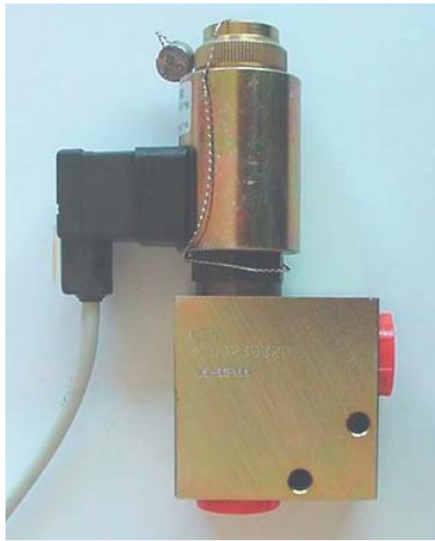
Oil filter clogged

Replace filter (see chap.7)

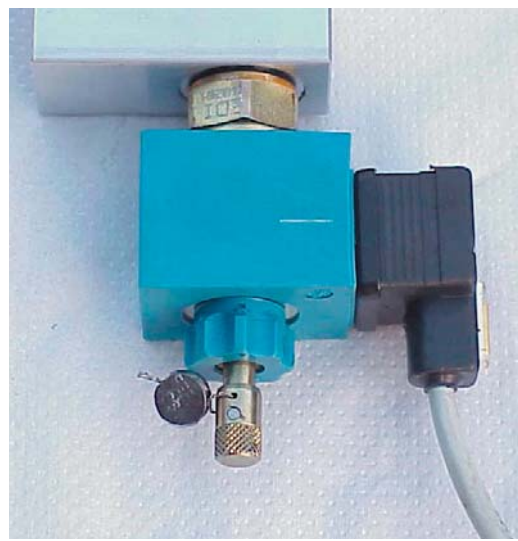
10.1 Instructions to disconnect the device in case of emergency

According to the type of crane, one of the four under stated solenoid valves is available:

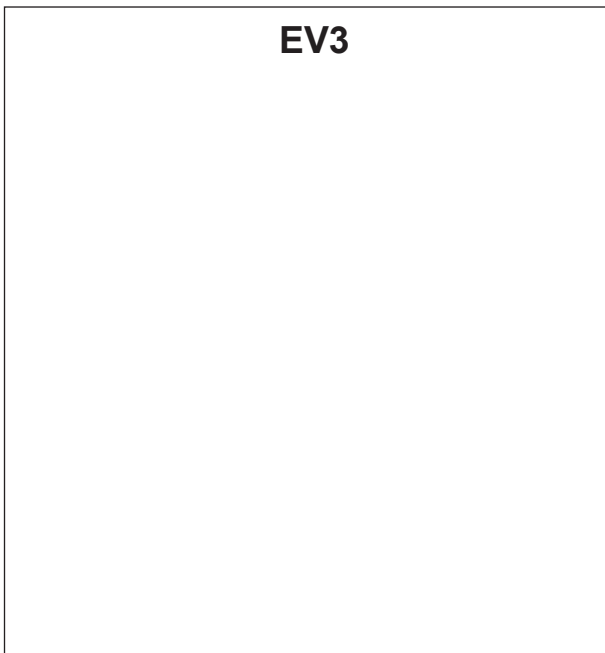
EV1



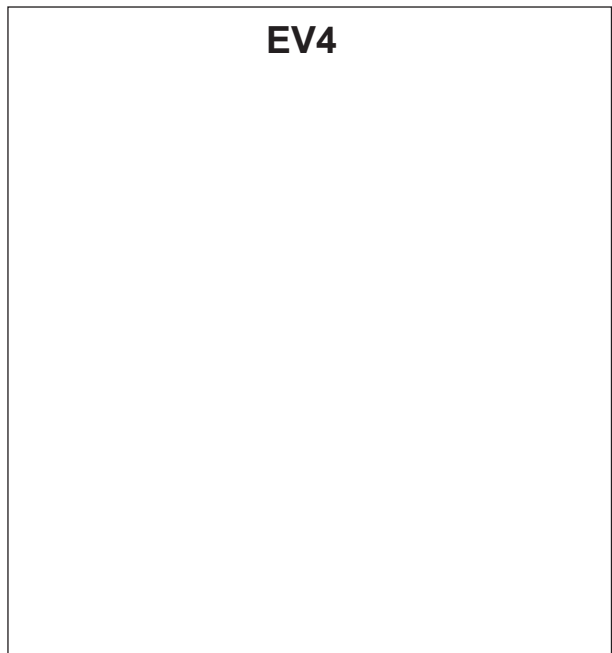
EV2

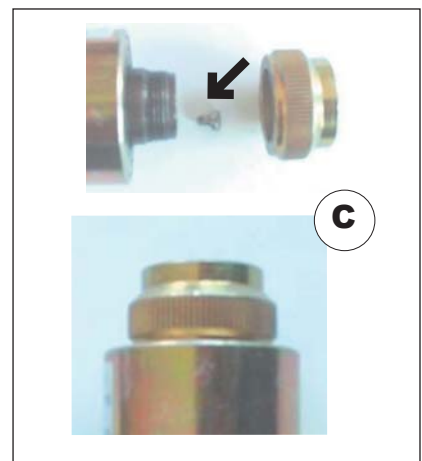
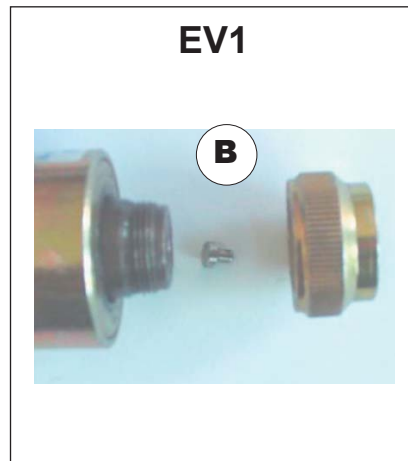
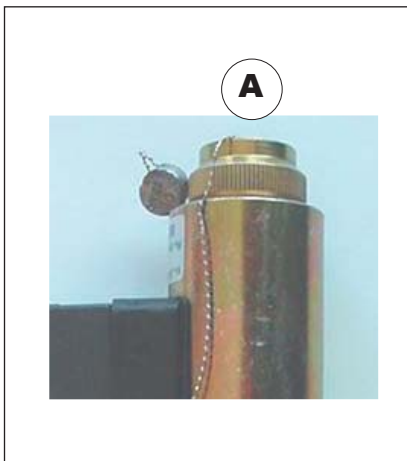


EV3



EV4

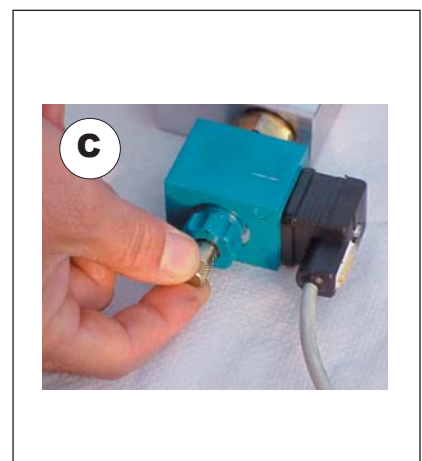
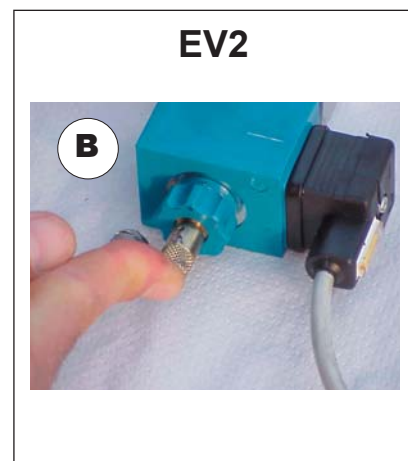
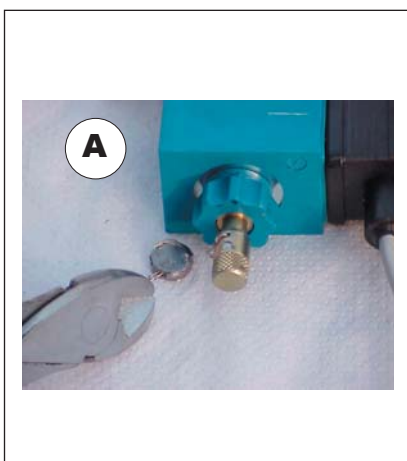




A) Take away the seal put at end;

B) Mechanically block the spool inside the solenoid valve, by unloosening the ring nut; pay attention that the small piston is not lost, because it is essential to work;

C) Invert the small piston indicated by the arrow. Insert it inside the cover for better convenience;
Then screw the ring nut again.



A) Take away the seal put at end;

B) Push the spool inside the solenoid valve;

C) Turn the spool clockwise until it is locked.

A large empty rectangular box intended for a diagram or image related to the EV3 emergency condition.

EV3

A large empty rectangular box intended for a diagram or image related to the EV4 emergency condition.

EV4

After cutting out the solenoid valve, lay the load without increasing the outreach, bring the crane in transport position according to User Manual instructions and go to an EFFER authorized workshop.



DANGER

With the crane in emergency condition, all safety devices are disconnected. Do not operate the crane with loads hanged on, to avoid severe personal injuries or run the risk of life danger to crane operator.

11 - Maintenance

The electronic overload safety system does not require any servicing. The accurate choice of components at design phase allows its use even under unfavourable weather conditions (temperature range : -30°C + 70°C).

The operation is guaranteed, even if voltage of truck batteries differs by 20% from rated one. Obviously, check of batteries voltage is part of the regular truck controls.

During washing with hydro-polishing machine, avoid to turn the water outflow on several electric parts, as well as on all truck components.



CAUTION

In case of weldings on truck, on crane or on truck body, disconnect the positive cable from truck batteries, in order to cut out the electric power supply of the device.



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