

LOAD LIMITER



SIR LOCK 3

KNUCKLE BOOM CRANES



SPRING

MACHINE CONTROL

ON BOARD ELECTRONIC SYSTEMS





“

This family of products is the result of the work of a team that has been carrying out for more than 20 years.

We have been designing – manufacturing – selling – installing electronic systems for industrial vehicles for more than 20 years.

In a field where the manufacturers usually relay on the usual partners we have started a project called **DAVIDE VS GOLIA**

At SPRING machine control we are proud to be able to concentrate on an important goal even in such a difficult period of crisis.

We are proud of our results, because we obtained them thanks to our own strength, ideas, capability, passion and above all thanks the faith that our clients put in our company.

Our goal is not only to satisfy a technical request but also to offer a wide range of high performance products that can give profit from the management point of view.

Your profit is an important part of our project.

Please read carefully to better understand our **DAVIDE VS GOLIA**

Special thanks:

Clients– above all those who took the project to heart

R&D Smc

UTEC Smc

Technicians Smc

Suppliers Smc - above all those who overcame the obstacles

Thanks of taking part to the project **DAVIDE VS GOLIA**

”

SIR LOCK 3

Moment limiter for knuckle boom cranes

SIR LOCK 3 system is the supervisor, it must guarantee that all the goods handling can be carried out without any risk for the machine, limiting its capacity. This guarantees the safety of the operator and prevents machine, equipment and goods damaging.

The software of the system is a powerful Moment Limiter with the management of the stabilization of the machine, the Safety on the Road, the maintenance program and the Black Box Events.

SIR LOCK 3 systems are prepared according to the technical features of the manufacturer. SIR LOCK 3 is made in the conformity with the requirement of UNI EN ISO 13849-1 and UNI EN ISO 13849-2 PL d.

SIR LOCK 3

ITS STRENGTH

- Modular system
- Data upload thanks to a USB key
- Easy to install, only one cable connects the main parts of the system
- Modules – sensors – board IP65 (* higher on demand)
- Safety on the road integrated
- Remote assistance
- Vehicle tracking



SPRING was the first company to introduce systems with the opportunity to **upload the software upgrade using a simple USB key.**

This idea has changed the working habit; during the test and the service, the technicians are no more obliged to have a PC

This characteristics is **appreciated not only by the manufacturer but also by the dealer** that is able to set the parameters of the system during the final installation.



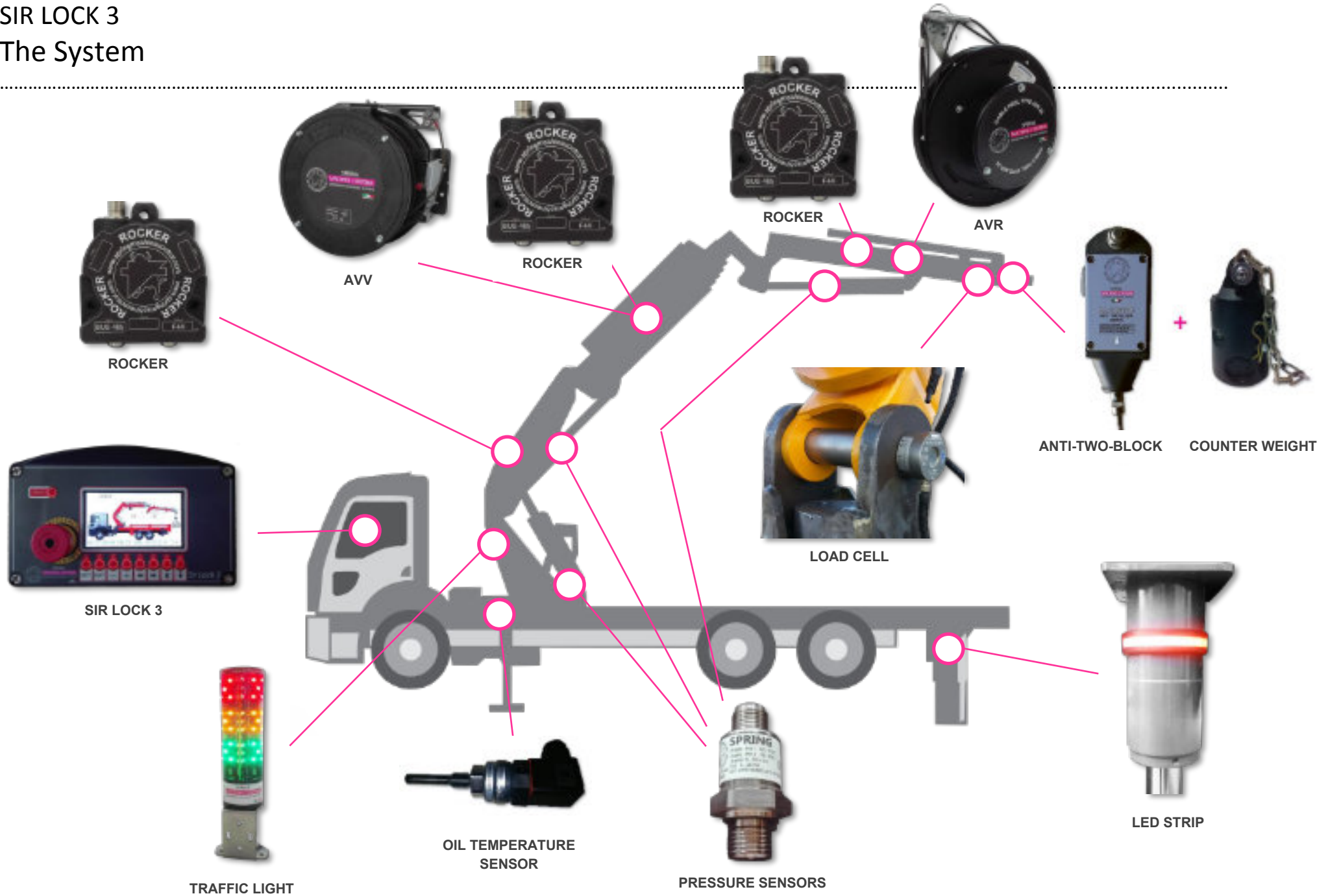
Software, hardware and sensors are manufactured with our trade mark.



SPRING
MACHINE CONTROL
ON BOARD ELECTRONIC SYSTEMS



SIR LOCK 3 The System



SIR LOCK 3

The Controller

The system is available in 3 different models: **Standard Version. LED Version and Full-Color Version.**

STANDARD VERSION



- ✓ Simple and clean design
- ✓ Graphic display 160 x 32
- ✓ Management of two text lines with 20 characters each
- ✓ 8 buttons + RESET button
- ✓ Real time visualization of the using % of the arms
- ✓ Pre-alarm and Alarm lights
- ✓ Buzzer
- ✓ Emergency stop

LED VERSION



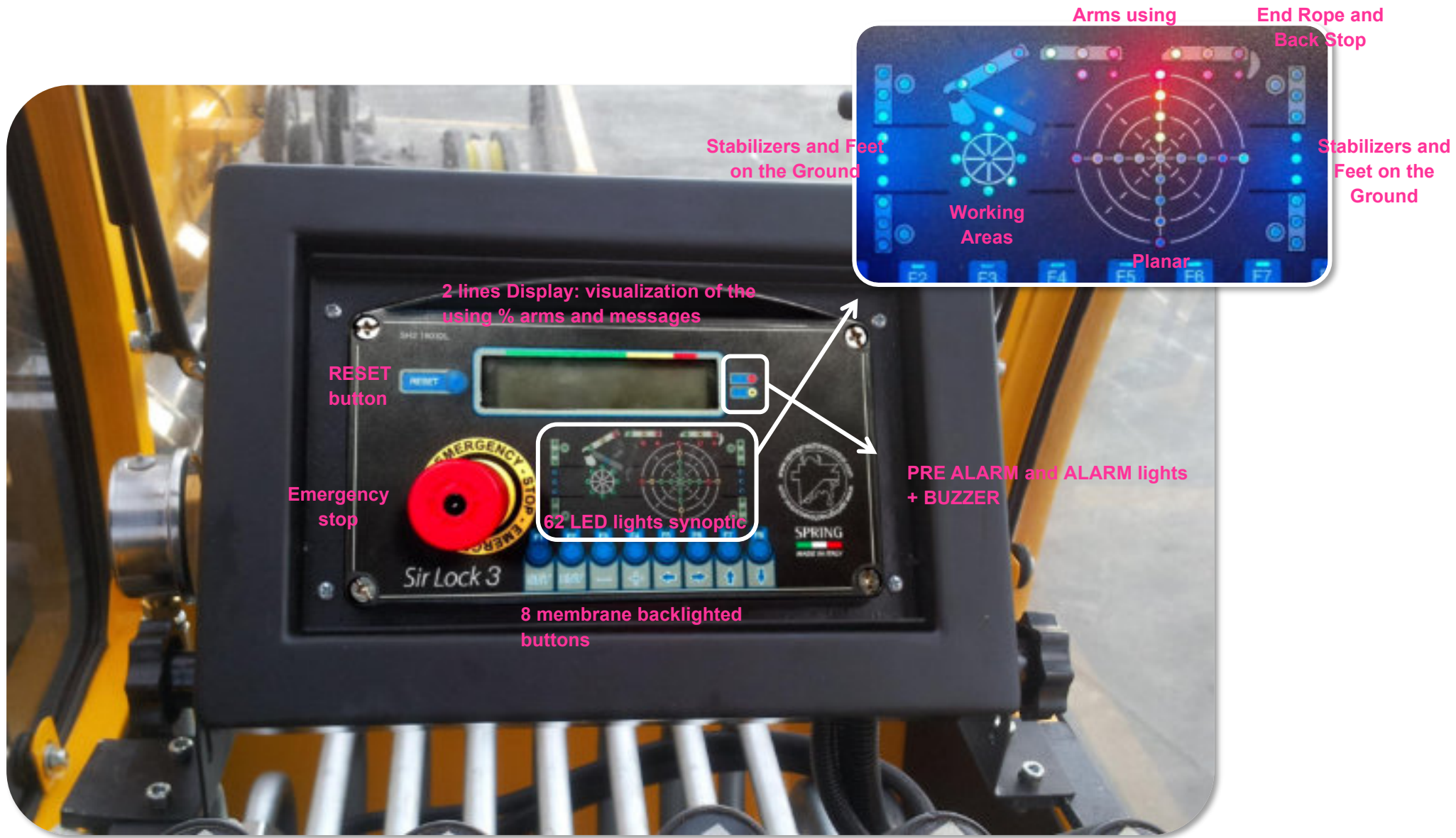
- ✓ Graphic display 160 x 32
- ✓ Management of two text lines with 20 characters each
- ✓ 8 buttons + RESET button
- ✓ Customized design for knuckle boom crane
- ✓ Synoptic of 62 LED lights to control in real time the machine (arms, stabilization, working areas, planar)
- ✓ Real time visualization of using % of the arms
- ✓ Pre-alarm and Alarm lights
- ✓ Buzzer
- ✓ Emergency stop

FULL-COLOR VERSION



- ✓ Wide graphic display TFT Full-color 4.3" big
- ✓ Resolution 480 x 272 (WQVGA)
- ✓ Different working pages
- ✓ Possibility to customize the machine (for OEM)
- ✓ Real time visualization of lots of data (arms, using %, stabilization, planar, working areas...)
- ✓ Buzzer
- ✓ Emergency stop

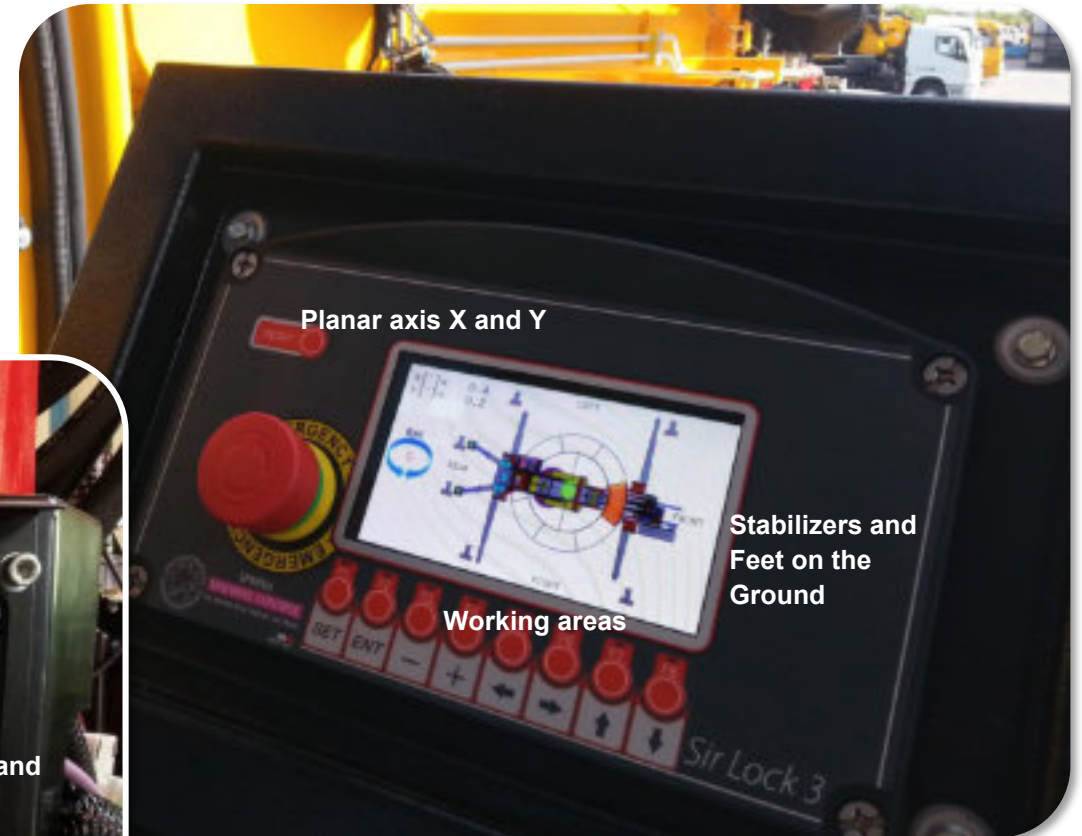
SIR LOCK 3 The Controller – LED Version



SIR LOCK 3

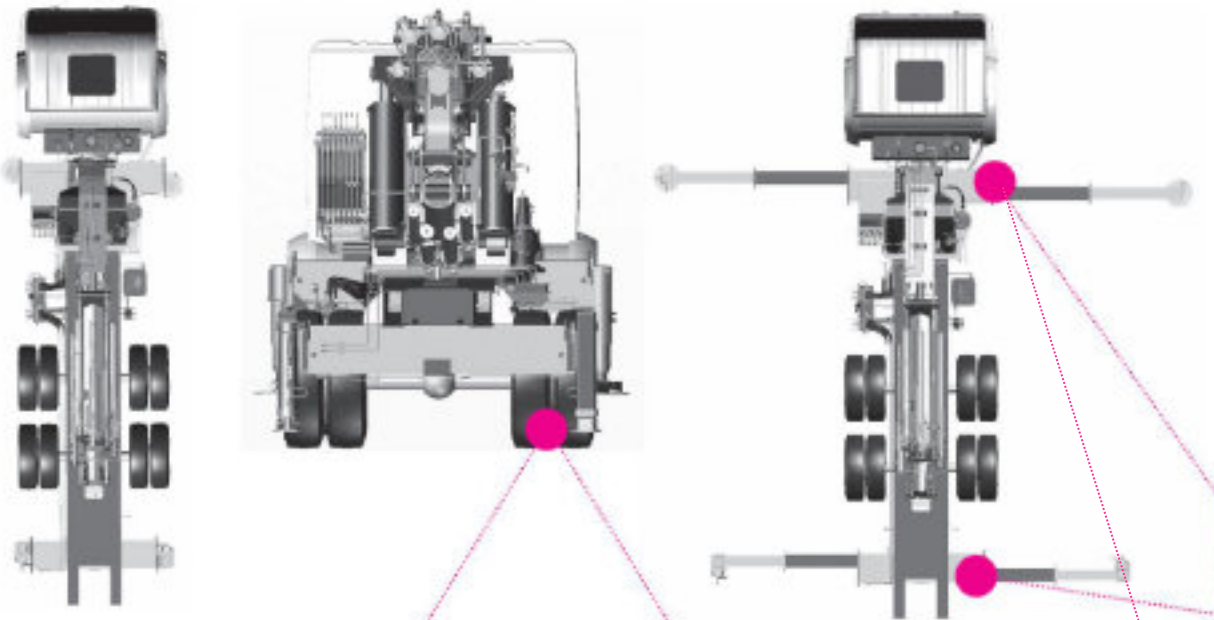
The Controller – FULL-COLOR Version

The Full-Color version provides different working pages and gives the possibility to custom the machine for the OEM, both in design and in data. Here below you can see an example of visualization.

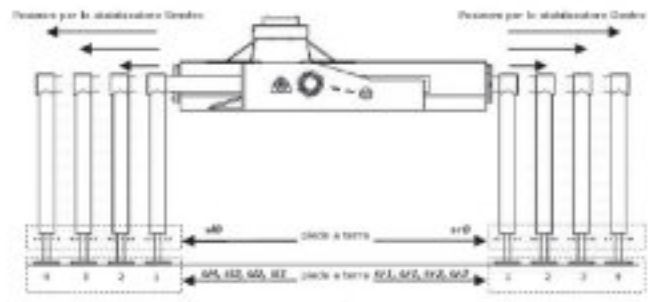


SIR LOCK 3

Management of the machine STABILIZATION: rotation – stabilizer out – feet on the ground



MANAGEMENT OF THE FEET ON THE GROUND



MANAGEMENT OF THE MACHINE STABILIZATION

NEW!



LENGTH SENSORS

HOSE REELS

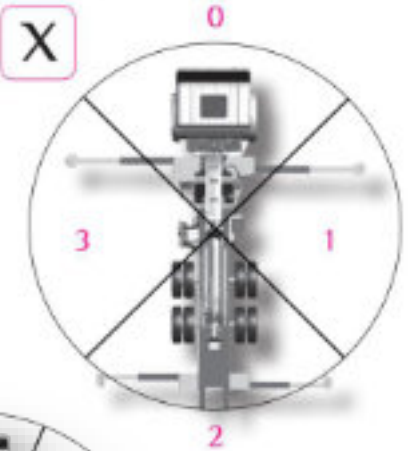
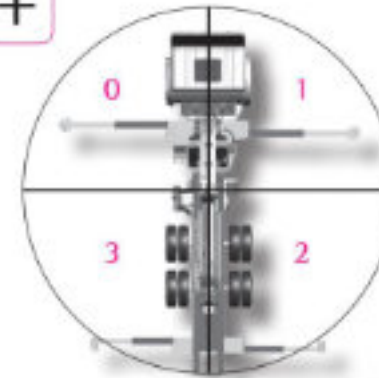
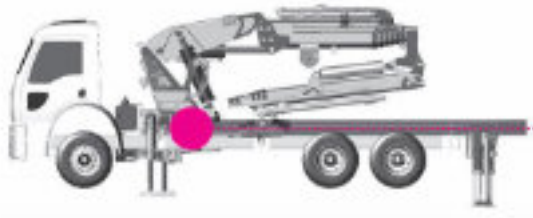
SIR LOCK 3

Management of the WORKING AREAS: up to 8 different areas

Management of 4 Working Areas using Proximity sensors, management of 8 Working Areas using the Encoder.

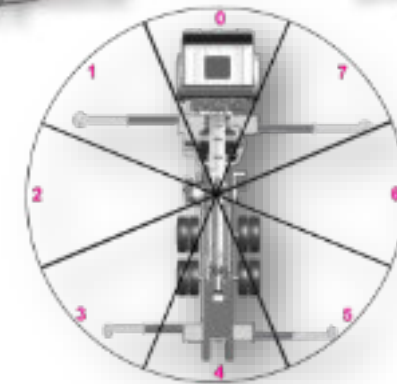
PROXIMITIES SENSORS

Reading of the proximities sensors

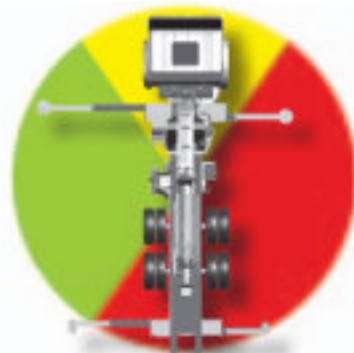
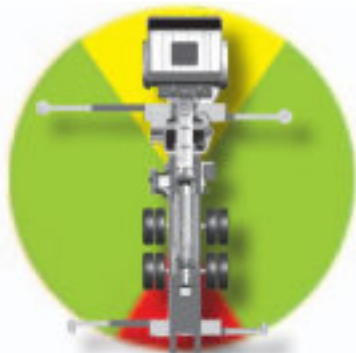


ENCODER

Reading of the ENCODER in the rotary distributors



NEW!



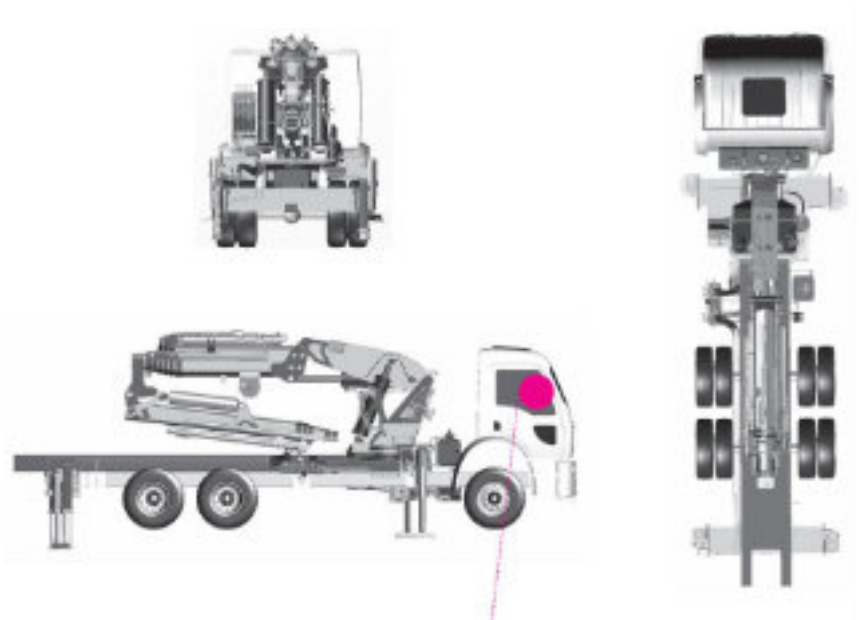
WORKING AREAS:

- RED
- YELLOW
- GREEN

Reducing of the capacity according to the working area and the stabilizers out/in and feet on the ground.

SIR LOCK 3

Management of the safety on the road: main arm in rest position – stabilizers in – feet up



A2L is a kit designed by SPRING. It is an audio-visual signal for automotive applications. This product can be used both inside and outside in remote control electrical panel.



Audio-visible signal installed in the console of the truck



Green Led OK



Red Led with audio signal

□ Size

Large	31mm
Height	75mm
Depth	35mm

SIR LOCK 3

Management WEIGHT ON HOOK

You can know the **weight loaded in real time** installing **load cells** on your machines, on second or third Arm.



Secondo braccio



Terzo braccio

SIR LOCK 3 Management PERSONNEL BASKET

SIR LOCK 3 manages a **personnel basket** added on the crane.



SIR LOCK 3

Data Logger - Timers

SIR LOCK 3 stores all the events that take place during the machine working time. The Logger Black Box is a “black” box that can store each single datum, date, time, machine status, value of the sensors, safety level each time that the machine oversteps the safe limit.

These events are memorized with **DAY – MONTH – YEAR** and they are NEVER overwritten.

DATE	TIME	SENSOR 1	SENSOR 2	SENSOR 3	SENSOR 4	SENSOR 5	SENSOR 6
15/10/2014	10:00	0	0	0	0	0	0
15/10/2014	10:05	0	0	0	0	0	0
15/10/2014	10:10	0	0	0	0	0	0
15/10/2014	10:15	0	0	0	0	0	0
15/10/2014	10:20	0	0	0	0	0	0
15/10/2014	10:25	0	0	0	0	0	0
15/10/2014	10:30	0	0	0	0	0	0
15/10/2014	10:35	0	0	0	0	0	0
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15/10/2014	10:45	0	0	0	0	0	0
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15/10/2014	10:55	0	0	0	0	0	0
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15/10/2014	23:55	0	0	0	0	0	0
15/10/2014	00:00	0	0	0	0	0	0

CAR	INDEX	TIME IN SECONDS	TIME IN HOURS	TIME IN MINUTES	NAME	UNIT
DA	0	60000	16h	00'	DA_0:TimeTotal	Total time of use of the machine
DA	1	15140	4h	10'	DA_1:TimeWork	Working time of the machine
DA	2	3400	0h	56'	DA_2:TimeIdle	Idle time of the machine
DA	3	2000	0h	33'	DA_3:TimeAlarm	Time of alarm
DA	4	100	0h	1'	DA_4:TimeAlarmOut	Time of alarm out
DA	5	1214	0h	20'	DA_5:TimeAlarmIn	Time of alarm in
DA	6	3000	0h	50'	DA_6:TimeAlarmOut	Time of alarm out
DA	7	100	0h	1'	DA_7:TimeAlarmIn	Time of alarm in
DA	8	100	0h	1'	DA_8:TimeAlarmOut	Time of alarm out
DA	9	100	0h	1'	DA_9:TimeAlarmIn	Time of alarm in
DA	10	100	0h	1'	DA_10:TimeAlarmOut	Time of alarm out
DA	11	1000	0h	16		

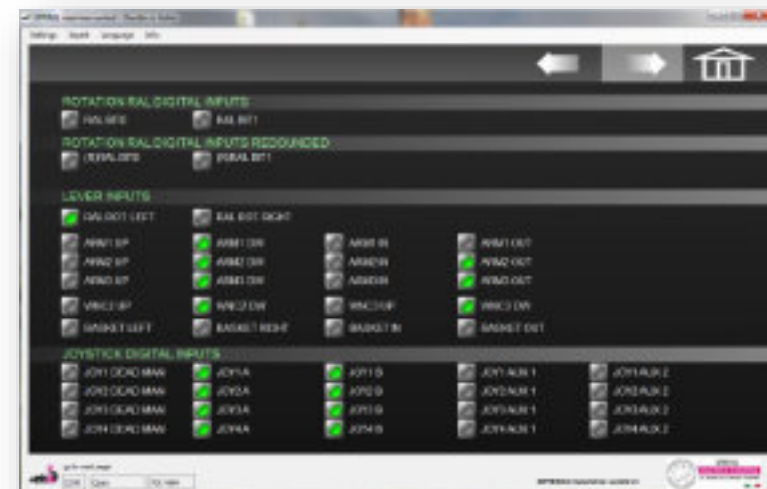
SIR LOCK 3 GPS / GPRS Module – TELE ASSISTANCE

SIR LOCK 3 can be equipped with a GPS / GPRS module. Thanks to this innovation, SPRING can offer a specialized **Remote Support Service** for each single machine. The technical department is available in real time to help you: it easily identifies, diagnoses, and solves issues fast.



BENEFITS:

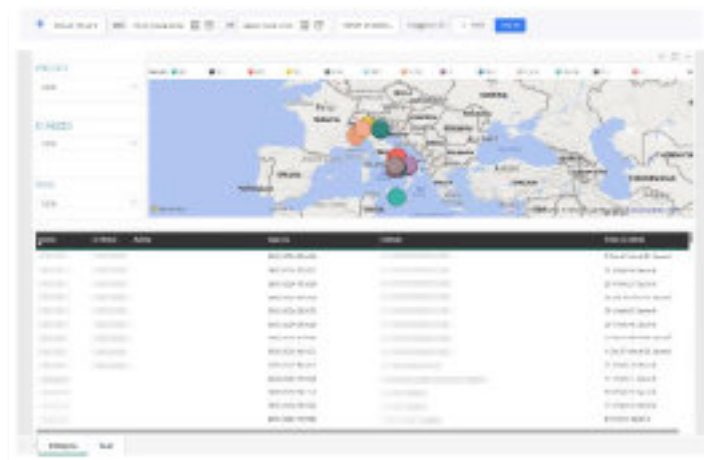
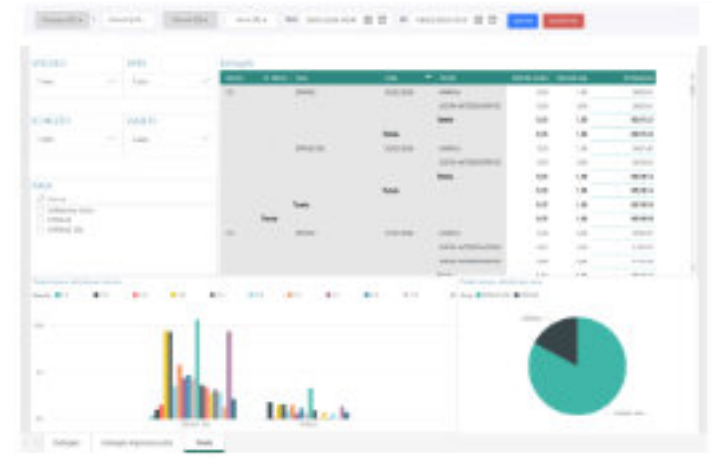
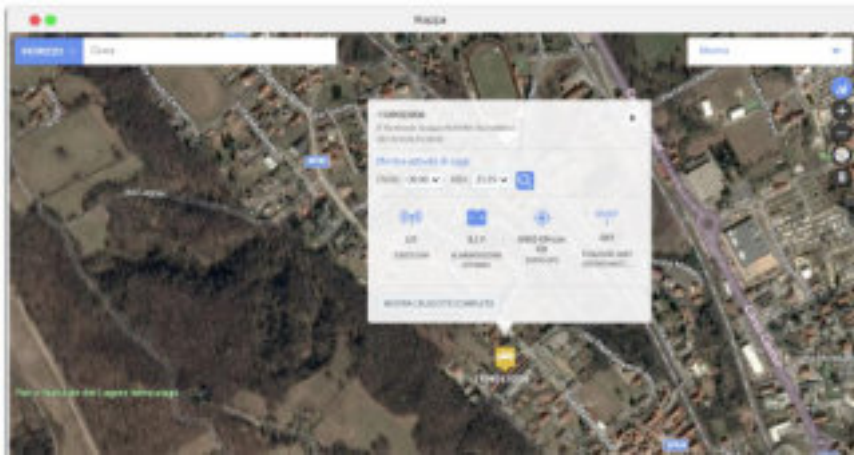
- ➔ Cost effective and cost reduction
- ➔ Improved support model
- ➔ Continuous monitoring and remediation



SIR LOCK 3

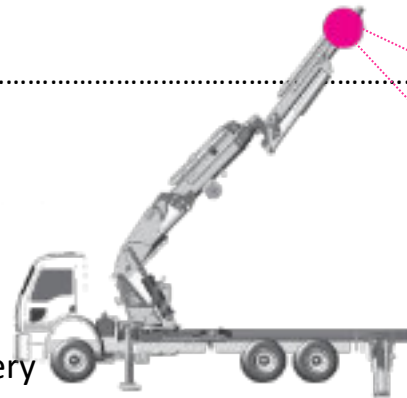
GPS / GPRS Module – Add ons

In systems equipped with GPRS module, customers can explore a **web platform** with lots of functions about the machine. For example you can **localize in real time** your vehicles, easily manage the **maintenance**, see different **reports** about the movements done and manage many **customizable alarms**.

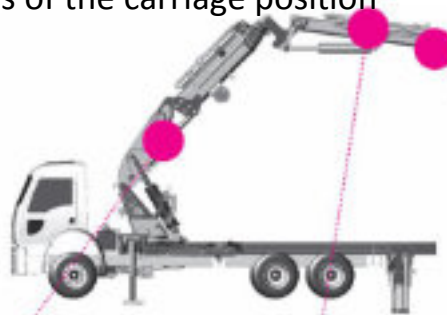


SIR LOCK 3 Options

- ❑ LED lights ON
- ❑ Oil filter obstructed
- ❑ Reading of the weight on the hook
- ❑ Reading of pressure of the oil general delivery
- ❑ Reading of the temperature of the oil general delivery
- ❑ Management of winch limit stop (A2B)
- ❑ Management of the rotation according to the reading of the proximity sensors or Encoder which is inside the hydraulic coupling
- ❑ Reading of the stabilizer in 4 different positions both by an extension and length Sensor, by digital sensors (Proximity/microswitch) and by hose reels
- ❑ Reading on the 2 axels of the carriage position
- ❑ PLE management



A2B



Weight on
the Hook

SIR LOCK 3

Technical and commercial features

SIR LOCK 3 is a moment limiter and can manage the stabilizers of the crane; it has a new technology and it is a modular kit that can manage several configurations of the machine according to kind of equipment sold.

SIR LOCK 3 can manage both the SINGLE and DOUBLE KNUCKLE BOOM.

Management of the moment limiter:

- Pressure transducer ARM1
- Angular sensor 360° on ARM1
- Pressure transducer ARM2
- Angular sensor 360° on ARM2
- Pressure transducer ARM3
- Angular sensor 360° on ARM3

Management of the stabilization of the machine:

- Proximity sensors for the management of the rotation L and R (4 working areas)
- Encoder for the management of the rotation L and R (8 working areas)
- Management of the stabilizers with feet on the ground (up to 8)
- For the management of the stabilizers (up to 8) extension in 4 areas

Management of the hydraulic lever for the movements:

- Management rotation R and L
- ARM1 UP and DW
- ARM1 IN and OUT
- ARM2 UP and DW
- ARM2 IN and OUT
- ARM3 UP and DW
- ARM3 IN and OUT
- WINCH2 UP e DW (NEW)
- WINCH3 UP e DW (NEW)

- Management H2-B3
- Management PLE
- Management oil filter obstructed
- Management limit stop winch (A2B)
- Management END ROPE
- Management OVER DRUM
- RESET 5/30 by pass of the moment limiter
- Management radio control:
RADIO ENABLE, RADIO OK and RESET RADIO

- Management output TRAFFIC LIGHT
- Management output DAMP VALVE
- Management and supply of the sensor for axis X-Y for the control of the chassis with programmable operating limit
- Management PERSONNEL BASKET (NEW)
- Management and supply of the emergency button with RESET function and visualization of 90% and 100% of the max load
- Visualization of the weight on the hook
- Management of SAFETY ON THE ROAD

- Management LOGIN for enabled users (NEW)
- Management system and machine SERVICE (NEW)
- DATA LOGGER
- TIMERS
- GPS / GPRS MODULE (NEW)
- REMOTE ASSISTANCE (NEW)
- VEHICLE TRACKING (NEW)





SPRING

MACHINE CONTROL

ON BOARD ELECTRONIC SYSTEMS



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