

USER MANUAL

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1. GENERAL INFORMATION

This manual describes the function, operation and maintenance of the **PAT** DS 350 Load Moment Indicator¹ (LMI).

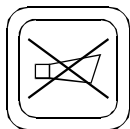
The LMI has been designed to provide the crane operator with the essential information required to enable the machine to be used within its design parameters.

Using various sensing devices, the Load Moment Indicator monitors various crane functions and provides the operator with a continuous reading of the crane's capacity. The readings continuously change as the crane moves through the motions needed to make the lift.

The LMI provides the operator with information regarding the length and angle of the boom, tip height, working radius, rated load and the total calculated weight being lifted by the crane.

If non permitted conditions are approached, the DS 350 Load Moment Indicator will warn the operator by sounding an audible alarm, lighting a warning light and locking out those functions that may aggravate the crane's condition.

¹LOAD MOMENT: generally the product of a force and its moment arm; specifically, the product of the load and the load-radius. Used in the determination of the lifting capacity of a crane.

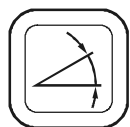
(9) BUTTON "BUZZER OFF"

Press this button to temporarily interrupt the audible alarm.*

The audible alarm sounds in the following cases:

System test, overload, imminent hoist end situation (if A2B switch function is registered by the LMI), malfunction of the LMI system and recognized operator's error.

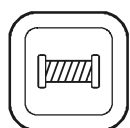
*System reaction after confirmation of an alarm depends on the positioning of jumper 1 on the circuit board. If jumper 1 is placed in position, the system sounds a fresh alarm 6 seconds after confirming with button (9). If the jumper is not inserted, the alarm is not renewed after confirmation. The alarm is sounded afresh upon system detection of a new alarm condition.

(10) *unused***(11) BUTTON "BOOM ANGLE THRESHOLD"**

Two boom angle thresholds can be set, altered or deleted after pressing this button. The procedure is menu controlled and described in chapter 4.3.

(12) BUTTON "MAIN HOIST"

The Main Hoist Button (12) informs the LMI system about the hoist system in operation. It must be pressed if the main hoist is used for hoisting operations. It lights up if pressed.

(13) BUTTON "AUXILIARY HOIST"

The Auxiliary Hoist Button (13) informs the LMI system about the hoist system in operation. It must be pressed if the auxiliary hoist is used for hoisting operations. It lights up if pressed.

6. SERVICE AND MAINTENANCE

Daily maintenance of the load moment indicator consists of inspecting:

1. The electrical wiring connecting the various parts of the system. If electrical wiring is damaged, it shall be replaced immediately.
2. If the insulation is worn on the length sensor cable or cable guides are damaged, these parts shall be replaced. (telescope cranes only)
3. Check the anti two-block limit switches for freedom of movement.
4. The cable reel shall be under tension to operate properly. (telescope cranes only)
5. Check the pressure transducers at the lift cylinder(s) and the connecting hoses for oil leakage.
6. Check mechanical installation, electrical connection and function of boom extension configuration sensors. (if installed)
7. Check mechanical installation, electrical connection and function of boom nose configuration sensor. (if installed)
8. Check mechanical installation, electrical connection and function of hoist line sensor. (if installed)
9. Check mechanical installation, electrical connection and function of crawler configuration sensors. (if installed)
10. Check mechanical installation, electrical connection and function of inclination sensor. (if any)

Other than correcting the problems identified in the Malfunctions Table and replacing faulty mechanical parts and cables, no other repairs shall be performed by non expert personnel.

Error Code E14

- Error: Fallen below the lower limit value in the measuring channel "actuating pressure".
- Cause:
- a. Cable between central unit and pressure transducer defective or water inside the connector.
 - b. Pressure transducer is defective.
 - c. Electronic component in the measuring channel is defective.
- Remedy:
- a. Check cable and connectors, exchange, if need be.
 - b. Exchange pressure transducer.
 - c. Exchange main board.

Error Code E16

- Error: Fallen below lower limit value for measuring channel "wind speed"
- Cause:
- a. Cable between central unit and anemometer defective or disconnected or water inside the connector.
 - b. Anemometer is defective.
 - c. Electronic component in the measuring channel is defective.
- Remedy:
- a. Check cable and connectors, exchange, if need be.
 - b. Exchange anemometer.
 - c. Exchange main board.

Error Code E17

- Error: Fallen below lower limit value for measuring channel "length tele I(+II)"
- Cause:
- a. Cable between central unit and length sensor defective or disconnected or water inside the connector.
 - b. Length sensor is defective.
 - c. Electronic component in the measuring channel is defective.
- Remedy:
- a. Check cable and connectors, exchange, if need be.
 - b. Exchange Length sensor.
 - c. Exchange main board.

Error Code E19

- Error: Reference voltage is defective
- Cause:
- a. The total of the supply and reference voltages at MP10 is less than 3.1 V.
 - b. A/D converter is defective.
- Remedy:
- a. Check supply voltages.
 - b. Exchange main board.

Error Code E31

- Error: Error in the system program
- Remedy: Exchange the system program PROM (No. 0).

Error Code E38

- Error: Wrong system program in SLI
- Cause: The system program in the SLI does not match the programmings in the data EPROM.
- Remedy: Exchange the system program PROM (No. 1).

Error Code E39

- Error: Wrong system program in SLI
- Cause: The system program in the SLI does not match the programmings in the TLK EPROM.
- Remedy: Exchange the system program PROM or the TLK EPROM (No. 2).

Error Code E41

- Error: Error in the internal write/read memory (RAM) of the computer module 80C537
- Remedy: a. Exchange computer module 80C537.
b. Exchange SLI main board with CPU modul.

Error Code E42

- Error: Error in the external write/read memory (RAM), part 1
- Remedy: a. Exchange write/read memory (CMOS-RAM).
b. Exchange SLI main board.

Error Code E43

- Error: Error in the external write/read memory (RAM), part 2
- Remedy: a. Exchange write/read memory (CMOS-RAM).
b. Exchange SLI main board.

Error Code E45

- Error: Redundancy error in the A/D conversion
- Cause: The A/D converter on the processor board and the redundant A/D converter in the CPU 80C537 provide differing results.
- Remedy: Exchange processor board

PAMPHLET 4 Instructions to ensure the electromagnetic compatibility (EMC) with electronic systems under the effect of electromagnetic fields

Electromagnetic fields increasingly affect electronic systems and can thus cause malfunctions for whose elimination we shall indicate some preventive measures according to today's state of engineering below:

1. The preventive measures are mainly based upon the idea to shield the electronic circuits from irradiated high frequency interferences:
 - All components will have metal housings outside with grounding possibility;
 - The cables used will have braided shields. The shield applied must be highly conductive as to the surface of all junction areas;
 - Coupling of crane ground and electronic ground at only one point of the system.
2. The general measures listed in item 1, however, cannot ensure complete protection against electromagnetic fields in individual cases because the size and the type of the effect depends on the local conditions.

The influencing factors, inter alia, are as follows:

- Particularly unfavorable arrangement of the antenna as to the system;
- Very high transmitter powers;
- Impossible to observe the measures of item 1 consistently by reason of local conditions;
- Long cables;
- Interferences coupling into the supply lines.

With unfavorable conditions you can therefore not do without taking any measures exceeding the preventive ones experimentally on site, taking into account the principles mentioned in item 1, e.g.:

- Adding filters or short-circuiting the interfering frequencies by means of capacitors;
- Making or removing ground connections;
- Using double shielded cables (guarded shield system).

Full Version Available

PAT IK 350 / 1340 Load Moment Indicator Service Manual

PAT IK 350 / 1340 load moment indicator service manual with programming, calibration verification and troubleshooting. Instant PDF download.

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