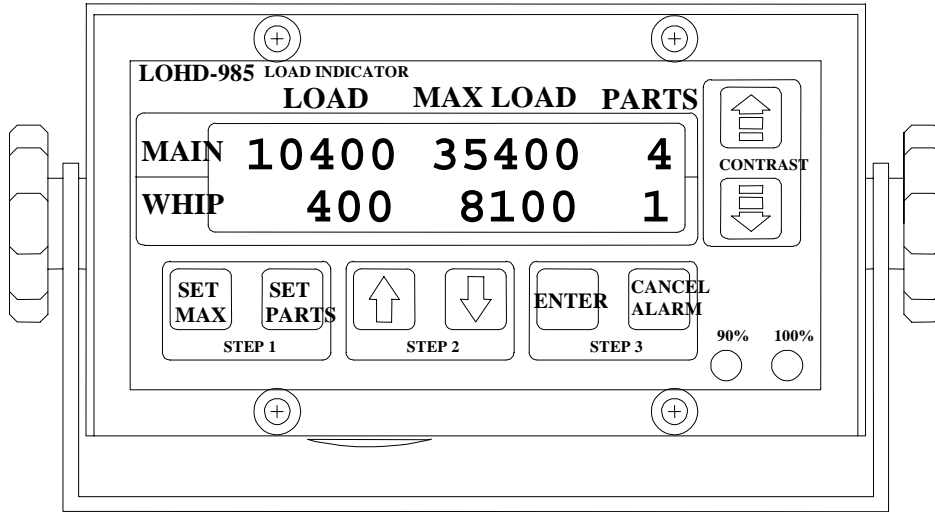


LOHD™ -985 SYSTEM LOAD INDICATOR



CALIBRATION MANUAL



WARNING

The LOHD™ 985 System should be set up and operated by persons trained and experienced in crane setup, operation, and calibration procedures.

At no time may this System be used as a substitute for employing the usual safety practices and precautions required for the safe setup and operation of cranes.

THE LOHD™ 985 SYSTEM

The LOHD™ 985 System is designed as an aid in preventing Overload and/or a Two-Block condition in the operation of cranes. This manual has been designed in the following sections to assist in calibrating the LOHD™ 985 System.

BEFORE CALIBRATING

GENERAL WARNINGS

ACCESSING AND EXITING THE CALIBRATION MODE

MOVING THROUGH THE CALIBRATION ROUTINES

CALIBRATING THE LOHD™ 985 SYSTEM LOAD INDICATOR

- ROUTINE 1 CAL ZERO, MAIN
- ROUTINE 2 CAL SPAN, MAIN
- ROUTINE 3 CAL ZERO, WHIP
- ROUTINE 4 CAL SPAN, WHIP

TROUBLESHOOTING THE LOHD™ 985 SYSTEM

FACTORY RECOMMENDATIONS

DISPLAYING RAW DATA

BEFORE CALIBRATING

Please review Figure 1 on the opposite page to become familiar with the LOHD™ SYSTEM display outputs and button functions. Before starting the calibration routines, obtain a known Test Weight of at least 50% OF THE MAXIMUM LIFTING CAPACITY OF THE CRANE for use in calibrating the System.

GENERAL WARNINGS

- Enter the Calibration Mode **only** when the System requires calibration.
- Only the TWO-BLOCK alarm (if installed) will function in the Calibration Mode.
- Ensure that the System has been calibrated **before** entering MAX LOAD.
- Operator-settable alarms are also dependent on proper calibration.
- Parts of Line must be set to ACTUAL PARTS IN USE prior to entering the Calibration Mode.
- Always press the **center** of the selection buttons.

GREER COMPANY
Crane Systems

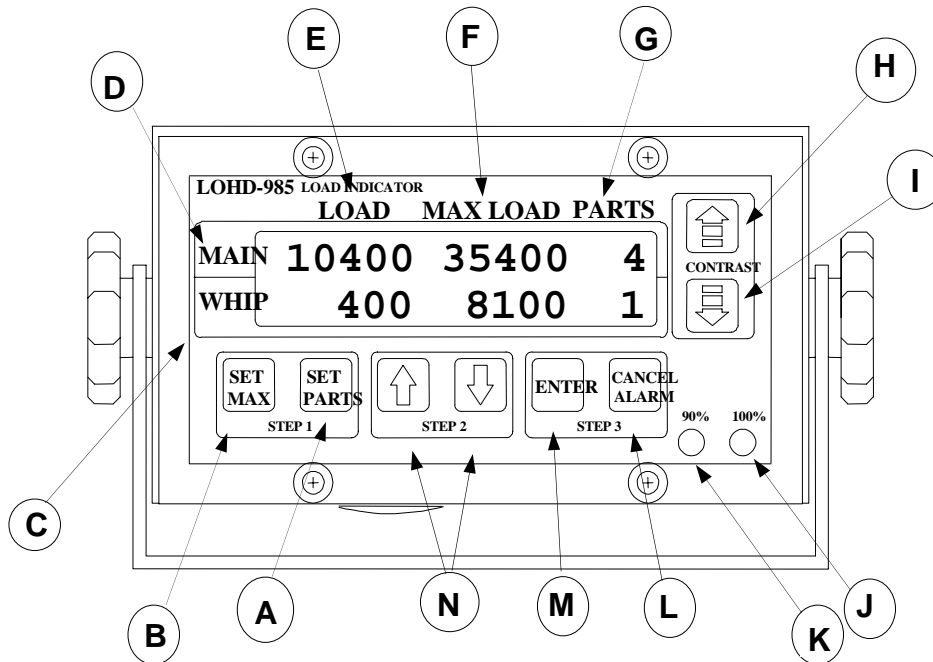


FIGURE 1: LOHD™-985 LOAD INDICATOR

- | | |
|---|---|
| A Press to set Parts of Line. | I Press to lighten readout. |
| B Press to set Maximum Load. | J Red warning light – flashes at maximum allowed Load (100%). |
| C Read across for Whip Load Data. | K Yellow caution light – flashes at approaching overload (90%). |
| D Read across for Main Load Data. | L Press to Cancel Alarms/ Exit Calibration Mode. |
| E Load on line, as calibrated. | M Press to start/end a routine & to start/confirm/complete an action. |
| F Maximum Load Limit (Range: 0-999, 900 lbs.). | N Press either arrow to scroll through options. |
| G Parts of Line (Range:1-31.) | |
| H Press to darken readout. | |

ACCESSING & EXITING THE CALIBRATION MODE

1. Simultaneously PRESS  and  arrows to access the Calibration Mode.

2. Enter the following **KEY CODE** in the order shown (from left to right):



3. The display will read: "V1.1 CAL MODE." The System automatically moves to the first calibration routine: "**CAL ZERO, MAIN.**" See page 7.

4. To **EXIT** the **CALIBRATION MODE** (not a calibration routine) ensure that the System is not in a calibration routine. Then press:



MOVING THROUGH THE CALIBRATION ROUTINES

1. Always press  to start a routine.

2. Press the  or  arrow to scroll through the routines.

3. Once a routine is started, continue until the name of the routine reappears. Then continue to the next routine or exit the Calibration Mode.

CALIBRATING THE LOHD™ -985 SYSTEM

CALIBRATION ROUTINE 1

For initial calibration, complete each of the four routines in the order shown in this manual.

Following the initial calibration, any routine may be run separately.

CAL ZERO – MAIN

1. TO BEGIN THE ROUTINE, **PRESS ENTER.**
THE DISPLAY READS: “**UNLOAD MAIN LINE.**”
2. LET THE LINES FOR THE MAIN HOIST WINCH GO SLACK.
3. **PRESS ENTER.**
4. VERIFY THAT THE DISPLAYED LOAD IS ZERO.
5. TO COMPLETE THE ROUTINE, **PRESS ENTER.**
6. TO SCROLL TO THE NEXT ROUTINE, **PRESS UP OR DOWN ARROW.**

CALIBRATION ROUTINE 2

CAL SPAN – MAIN

1. TO BEGIN THE ROUTINE, **PRESS ENTER** .
THE DISPLAY READS: “**ENTER TEST WEIGHT.**”
2. TO INCREASE THE DISPLAYED VALUE, **PRESS UP ARROW.**
TO DECREASE THE DISPLAYED VALUE, **PRESS DOWN ARROW.**
3. TO ACCEPT THE DISPLAYED VALUE AS THE ACTUAL TEST WEIGHT,
PRESS ENTER.
4. THE DISPLAY READS: “**PICK HOOK ONLY.**”
5. PICK UP THE HOOK BLOCK, LEAVING THE SLINGS TO THE LOAD SLACK.
6. **PRESS ENTER.** THE DISPLAY READS: “**PICK UP TEST WEIGHT.**”
7. PICK UP THE TEST WEIGHT.
8. TO SET THE CALIBRATION, **PRESS ENTER.**
9. VERIFY THAT THE READOUT IS CORRECT. THE DISPLAY SHOWS THE HOOK LOAD,
INCLUDING THE WEIGHT OF THE HOOK BLOCK, SLINGS, AND TEST WEIGHT.
10. TO COMPLETE THE ROUTINE, **PRESS ENTER.**
11. TO SCROLL TO THE NEXT ROUTINE, **PRESS UP OR DOWN ARROW.**

CALIBRATION ROUTINE 3

CAL ZERO – WHIP

1. TO BEGIN THE ROUTINE, **PRESS ENTER**
THE DISPLAY READS: “**UNLOAD WHIP LINE.**”
2. LET THE LINES FOR THE WHIP HOIST WINCH GO SLACK.
3. **PRESS ENTER.**
4. VERIFY THAT THE DISPLAYED LOAD IS ZERO.
5. TO COMPLETE THE ROUTINE, **PRESS ENTER.**
6. TO SCROLL TO THE NEXT ROUTINE, PRESS **UP** OR **DOWN** ARROW.

CALIBRATION ROUTINE 4

CAL SPAN – WHIP

1. TO BEGIN THE ROUTINE, **PRESS ENTER** .
THE DISPLAY READS: “**ENTER TEST WEIGHT.**”
2. TO INCREASE THE DISPLAYED VALUE, **PRESS UP ARROW**.
TO DECREASE THE DISPLAYED VALUE, **PRESS DOWN ARROW**.
3. TO ACCEPT DISPLAYED VALUE AS “ACTUAL TEST WEIGHT,”
PRESS ENTER.
4. THE DISPLAY READS: “**PICK HOOK ONLY.**”
5. PICK UP HOOK BLOCK LEAVING SLING LINES TO THE LOAD SLACK.
6. **PRESS ENTER**.
7. THE DISPLAY READS: “**PICK TEST WEIGHT.**”
8. PICK UP TEST WEIGHT.
9. TO SET THE CALIBRATION POINT, **PRESS ENTER**.
10. VERIFY THAT THE LOAD READOUT IS CORRECT.
(THE DISPLAY SHOWS THE LOAD ON THE HOOK, INCLUDING THE WEIGHT OF THE HOOK
BLOCK, SLINGS, AND TEST WEIGHT.)
11. **PRESS ENTER** TO COMPLETE ROUTINE.
12. TO EXIT THE CALIBRATION MODE, **PRESS ENTER**.

TROUBLESHOOTING THE LOHD™ 985 SYSTEM

Problems that have been identified when setting up, calibrating, and operating the LOHD™ 985 System are outlined below, along with effective and immediate solutions.

If, after reviewing these pages, the problem cannot be resolved, please call the Service Department (714 259-9702) at the Greer Company. Service will need you to provide the serial number of the LOHD INDICATOR, model number (LOHD™ 985) , and the type of crane in use.

A TWO-BLOCK ALARM WILL NOT DEACTIVATE

- **Two-Block System is not installed**
 1. Pins 5 and 6 of the LOHD™ INDICATOR CABLE must be shorted by the Two-Block Switch.
- **Two-Block System is installed**
 1. Is (are) the Two-Block switch(es) free to move?
 2. Is (are) the Two-Block weight(s) pulling the switch(es) down properly?
 3. Is there an electrical toggle switch set up to receive input from a second switch on a jib that was either removed or not installed?
 4. Are the cables cut? Inspect cables for damage.

B POWER PROBLEMS

- **Voltage.** Check the voltage to the 985 LOHD™ INDICATOR. A reading of less than 12V indicates a probable problem. Ensure that connections are secure and that there is reasonable access to a proper power distribution point.

Check voltage across the red and black wires seated behind the connector on the large cable exiting from the rear of the LOHD™ INDICATOR. The reading must be between 12 and 30 volts for the System to function properly.

- **Weak alternators and blown alternator diodes.** These problems, as well as "dirty power" in general, are often found on older cranes. Rule out a weak or noisy alternator by temporarily replacing it with a good 12V or 24V battery. If the problem is not resolved, check to see if a new radio, electric heater, or fan has been added to the crane causing too much power to be drawn from the alternator. In this case, the problem may be corrected by providing more power through a separate power supply. If the problem persists, call the Service Department.
- **Rain.** Severe thunderstorms with lightning can sometimes damage the LOHD™ Indicator.
- **Newly repaired booms.** Check the placement of the welding ground which should not be near the sensors. If a change is required, always disconnect the power first.

C LOAD READOUT INCORRECT OR SHOWING OVERLOAD

Follow the steps on the inside back cover of this manual for displaying raw data. Observe the readouts next to "MAIN" and "WHIP" on the Load Indicator display. Normal range is between 25 and 3500. Follow the directions below.

- **If the raw numbers are in proper range**, put the Main Hook on the ground. The readout on the display should show a decreased value after MAIN.
If, instead, there is a decreased value after WHIP, the signal cables have been accidentally crossed.
- **If a raw number is greater than 3500**, there is either a corrosive short (indicative of moisture problems) or a real short in a cable. Disconnect the load cell and the cables down the boom. As soon as the shorted cable is disconnected, the readout on the display will drop dramatically. Repair or replace the cable. A heat gun can sometimes be used to dry out a soaked connector. Improperly greased (without silicone grease) connectors are usually too badly corroded to be repaired.
- **Removing the load cell removes the overload.** It is possible that the load cell was jammed in the linerider. Similarly, the hoist rope must be below the end rollers of the linerider and above the center rollers.
- **The number reads zero.** This indicates a cut cable or a potential short to the other load cell signal line. If the cable is not cut, look for water in the connectors at the boom head. If this is not the problem, locate the corrosive short by removing the cable sections, one by one and reconnecting the load cell each time to check the display readouts.
- **The radio seems to scramble the displays.** CB's, ham radios, and wireless intercoms all emit radio frequency energy that is difficult to control and that is very sensitive to the wiring on a crane boom. Occasionally, this can temporarily affect the input to the display. Sometimes, however, very minor problems are blamed on radio frequency energy.

1. Job site related radio trouble

Sometimes, electronic work sites near a major airport and in-line with flight approaches and multiple radio frequencies, or near navy ships that have a powerful radar output, are affected. The only alternative is to shield the sensors with grounded conduit.

2. Crane-related radio trouble

Does the Load readout change when the transmitter in the crane is active?
A powerful radio emitting improper frequencies could be mounted next to a sensor wire. Look for any problem that could be affecting the operation of the Load Indicator before attempting to make changes to the Load Indicator.

**3. Raw numbers jump around over 10,000 lbs.
under a stable load**

This usually indicates a loose jam nut on the load cell inside the linerider. The load cell must press against a stable fixed point.

4. Difficulty getting an accurate hook weight

This happens when friction interferes with cable tension from the load. This occurs most frequently on large lattice cranes with many Parts of Line. Once load is applied, the load can be measured much more accurately. Look for friction in the crane machinery. Has this been greased properly?

D LOAD READOUT IS UNUSUALLY HIGH OR LOW OR DRIFTS

- **Moisture** This is usually caused by moisture or rain water collecting in cable connectors. This can also happen in relatively dry weather as the small enclosed spaces in the cable connectors 'breathe' moisture in and retain it as the temperature cycles each day.

A heat gun or hair dryer can be used to dry out these connectors which are commonly the connectors on the tip of the boom, not those in the cab.

To prevent this problem, keep the connectors completely filled with silicone grease, not regular grease. Silicone grease fills the gaps preventing moisture accumulation. It does not, like regular grease, conduct electricity.

- **Recent repair of the crane boom.** The cables may not have been reconnected or reattached to the crane boom properly. A caught sensor cable may have been stretched beyond the limit. Cable jacketing stretches more easily than the wires inside presenting little evidence of a break. It is often possible to locate this kind of damage by squeezing the cable by hand.

E MOTION CUT WILL NOT DEACTIVATE

Look for the orange wire on the connector with the red and black wires. This connector is located on the large cable attached to the rear of the Load Indicator. Apply power. **Check the voltage on the orange wire.**

1. The alarm is off and the orange wire **does not have positive crane voltage.** The relay inside the meter may be bad.
2. The alarm is off and the orange wire **does have positive crane voltage.** Trace the orange wire to the hydraulic solenoid valves to locate the broken connection.

For other problems, refer to the Operator's Manual.

If still in need of assistance, call Service at (714) 259-7626.

FACTORY RECOMMENDATIONS

DAILY OR EVERY 8 HOURS OF OPERATION

1. Test the Load Indicator by entering various values and checking the readouts on the display. Press **Enter** to test the horn, warning lights, and motion cutoff signal (if installed).
2. If an Anti-Two-Block System is installed, carefully lift the hook(s) to activate the switch and alarm.
3. Check the Load Indicator for visible moisture. Take steps to keep the device as dry as possible.

WEEKLY OR EVERY 40 HOURS OF OPERATION

2. For Systems using tensiometers, lubricate the tensiometers at the four zerk points.
3. Check for excessive buildup of cable dressing on the tensiometer rollers. Remove excess.

MONTHLY OR EVERY 160 HOURS OF OPERATION

1. Check the accuracy of the System. For length and/or radius measuring Systems, physically tape any distances displayed by the Load Indicator. For angle indicating Systems, verify the boom angle with an inclinometer and compare it with the value displayed. For load measuring Systems, lift weights and compare the test weight value with the value displayed. Correct errors immediately.
2. Check all electrical cabling between the instrument and its sensors to ensure that they are not being stretched or damaged.
3. Check all sensor hardware for loose clamps, fittings, bolts, or nuts.

ANNUALLY OR EVERY 1000 HOURS OF OPERATION

1. Undo the cable connectors in the System; inspect and clean them. Repack each one with a

generous application of DOW CORNING #11 silicon grease or a comparable substitute.

2. Clean the cable on the extension reel, generously lubricating it with silicon spray.

ANNUALLY OR EVERY 2000 HOURS OF OPERATION

For Systems using a tensiometer, disassemble the tensiometer and inspect the rollers for rope tracks. Carefully inspect the center roller. This roller sustains double the pressure that is applied to the end rollers. Inspect the bearings and shafts for wear. Replace anything that has visible or measurable wear.

DISPLAYING RAW DATA

The following steps are to be used for troubleshooting purposes only.

This readout is completely independent of calibration. It may be used on calibrated or uncalibrated Systems. Any System that will not respond to these steps will not be changed by calibrating the System. Typical problems detected by these steps include: pinched or stretched cables (wires broken even if the insulating jacket is not) or water collection in the connectors. Connectors must be completely filled with silicone grease upon installation.

A ENTER CAL CODE

B SCROLL TO RAW DATA

1. Press **ENTER** to view the raw data inputting from the analog to the digital converter.
2. Press **ENTER** again to exit. The display reads:

MN = #### PRESS

WP = #### ENTER

- #### will register a number between zero and 4095. If the numbers change as the load is lifted, installation is correct.
- If a number drifts up or down when a load is not being lifted, or if the number remains static no matter what is done with the load, the sensor cable may be disconnected or broken.



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