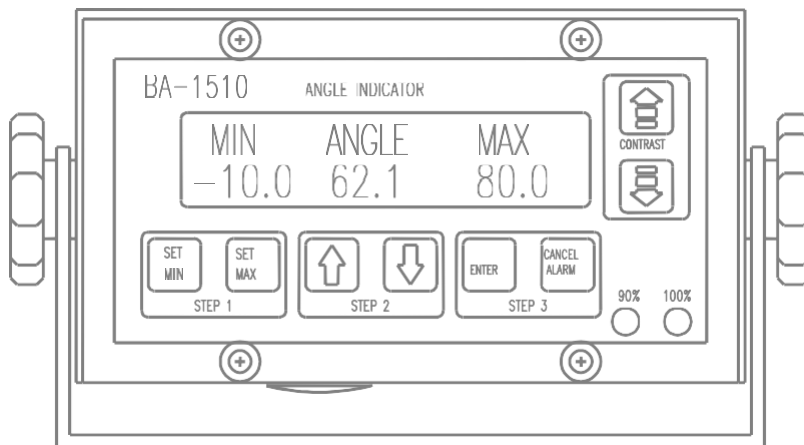


GREER COMPANY

Crane Systems

BA 1510™ ANGLE INDICATOR



CALIBRATION MANUAL

HYDRAULIC & LATTICE CRANES



GREER COMPANY

Crane Systems

WARNING

The BA-1510™ Angle Indicator is designed to aid the fully trained and experienced crane operator in safe crane setup and operation involving boom angles. This manual provides the crane service personnel with instructions for calibrating the BA-1510™ System. At no time may this System be used as a substitute for the standard safety practices and precautions required in the safe setup and operation of cranes.

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BA-1510™ ANGLE INDICATOR

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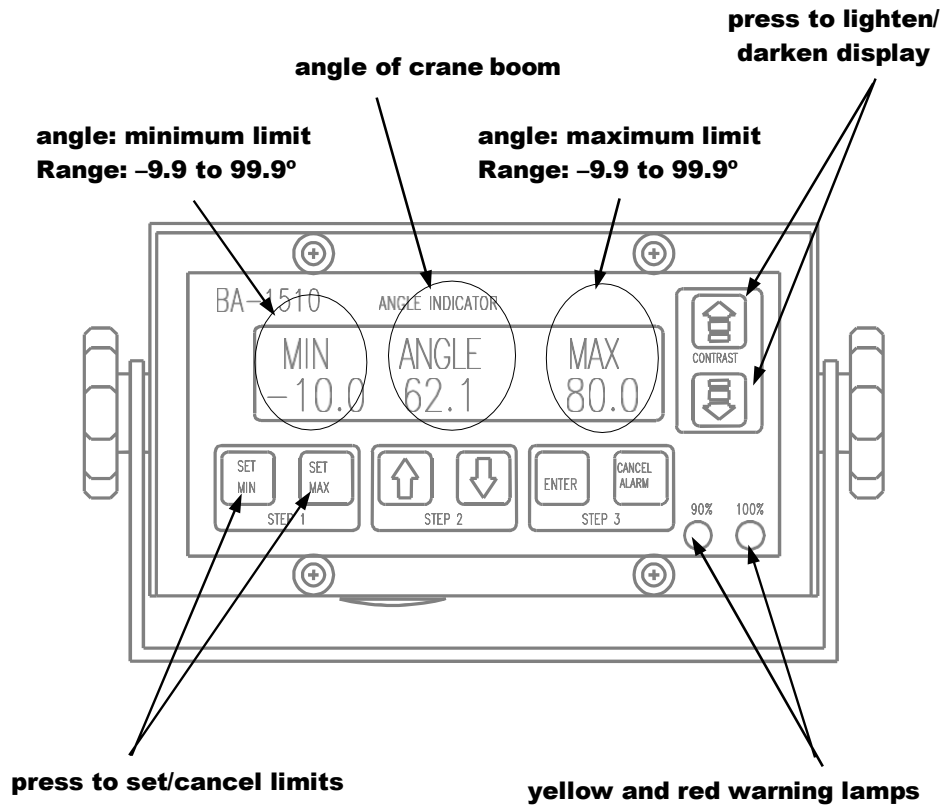
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BA-1510™ ANGLE INDICATOR (METER)

BA-1510™ Calibration Manual GREER COMPANY Tel:(714) 259-9702 Fax: (714) 259-7626 PN W340001 Rev A 08/99

BA-1510™ ANGLE INDICATOR (METER)

The BA-1510™ Angle Indicator (meter) is used during setup and operation of the crane to display the crane boom angle and to set and display crane boom minimum and maximum angle limits. The System provides visual and audible warning alerts if the set limit(s) is (are) exceeded. Motion cuts (halting of crane hoist up, extend out, and boom down movements) are available as an additional option, if desired.

This manual provides instructions for calibrating the BA-1510™ System.

THE CALIBRATION MODE

The BA-1510™ Angle Indicator System must be in the **CALIBRATION MODE** before calibrating the System. **IMPORTANT:** When in the calibration mode, **NO ALARMS ARE ACTIVE.**

ENTERING THE CALIBRATION MODE

Refer to the illustration on the opposite page.

TO ENTER THE CALIBRATION MODE:

1. SIMULTANEOUSLY, **PRESS THE UP AND DOWN ARROW** IN THE CENTER OF THE METER. THE METER DISPLAY WILL REQUEST A KEY CODE ENTRY.
2. ENTER THE **KEY CODE** IN THE SEQUENCE SHOWN BELOW:
PRESS SET MAX TWICE
PRESS ENTER THREE TIMES

EXITING THE CALIBRATION MODE

TO LEAVE THE CALIBRATION MODE:

PRESS CANCEL ALARM WHEN NOT IN ANY CALIBRATION PROCEDURE.

CALIBRATING THE BA-1510™ ANGLE INDICATOR SYSTEM

The two calibration procedures required for the BA-1510™ Angle Indicator are outlined on the next page. Please review the following points before proceeding with the calibration procedures.

- **UPON ENTERING THE CALIBRATION MODE**, V1.1 CAL MODE (meter software identification) will flash on the upper left section of the display followed by CAL ZERO (the FIRST calibration procedure).
- **BEFORE CALIBRATING**, obtain an inclinometer or similar device designed to measure angles accurately.
- **THE BA-1510™ METER MUST BE CALIBRATED** before boom angle or angle limits are valid.
- **RECALIBRATION** clears previous alarm setpoints.
- **ONCE A PROCEDURE IS STARTED**, it must be continued until the name of the procedure reappears, indicating that another procedure may be accessed or the CALIBRATION MODE exited.
- **UPON INITIAL CALIBRATION ONLY**, the calibration procedures should be completed in the order shown on page 7.

USE OF DISPLAY BUTTONS WHEN CALIBRATING

- **PRESS ENTER to START PROCEDURES.** If ENTER is pressed while CAL ZERO is displayed on the screen, the CAL ZERO routine will be initiated.
- **PRESS the UP or DOWN ARROWS** in the center of the display to move to the CAL SPAN procedure.
- **PRESS CANCEL ALARM** to exit the Calibration Mode after completing calibration.

CALIBRATION PROCEDURES

To calibrate, the BA-1510™ System must be in the Calibration Mode. Review pages 5 and 6 outlining steps for Calibration Mode entry and general calibration rules.

CAL ZERO

1. **PRESS ENTER** TO BEGIN THE CAL ZERO ROUTINE.
2. **BOOM DOWN TO 0°** AND THEN **PRESS ENTER**.
3. **USING AN INCLINOMETER, VERIFY** THAT THE DISPLAYED ANGLE IS 0°.
4. **PRESS ENTER**.
5. **FOR FIRST TIME CALIBRATION, PRESS THE UP OR DOWN ARROW** AND GO TO **CAL SPAN**.

CAL SPAN

1. **PRESS ENTER** TO BEGIN THE CAL SPAN ROUTINE.
2. **BOOM UP OVER 60°** AND THEN **PRESS ENTER**.
3. **USING AN INCLINOMETER, MEASURE** THE BOOM ANGLE.
4. **PRESS THE UP OR DOWN ARROW** UNTIL THE ANGLE APPEARING ON THE DISPLAY MATCHES THE MEASURED ANGLE.
5. **PRESS ENTER** TO SET THE CALIBRATION POINT.
6. **VERIFY THAT THE BOOM ANGLE READOUT IS CORRECT**.
7. **PRESS ENTER**.
8. **PRESS CANCEL ALARM** TO EXIT THE CALIBRATION MODE.

FACTORY RECOMMENDED SERVICE

PREVENTIVE MEASURES FOR GREER SYSTEMS

DAILY OR EVERY 8 HOURS OF OPERATION

1. EXERCISE THE METER BY ENTERING DIFFERENT VALUES IN THE DISPLAY, SUCH AS HIGH OR LOW ALARMS, AS APPROPRIATE TO THE METER USED. PRESS **ENTER** TO TEST THE HORN, WARNING LIGHTS, AND MOTION CUTOFF SIGNAL (IF MOTION CUT OPERATION IS INSTALLED).
2. IF USING AN ANTI TWO-BLOCK SYSTEM, TEST THE SYSTEM BY CAUTIOUSLY HOISTING THE HOOK(S) TO ACTUATE THE SWITCH AND ALARM.
3. CHECK THE METER FOR ANY VISIBLE MOISTURE AND KEEP IT AS DRY AS POSSIBLE.

MONTHLY OR EVERY 160 HOURS OF OPERATION

1. CHECK THE ACCURACY OF THE BA-1510™ ANGLE INDICATOR (METER).

FOR ANGLE INDICATING SYSTEMS, VERIFY THE BOOM ANGLE WITH AN INCLINOMETER AND COMPARE IT WITH THE VALUE DISPLAYED. IMMEDIATELY CORRECT ANY ERRORS.

2. CHECK ALL ELECTRICAL CABLING BETWEEN THE METER AND THE SENSORS TO ENSURE THAT THE CABLING IS NOT BEING

STRETCHED OR DAMAGED.

3. CHECK ALL SENSOR HARDWARE FOR LOOSE CLAMPS, FITTINGS, BOLTS OR NUTS ETC.

ANNUALLY OR EVERY 1000 HOURS OF OPERATION

1. UNDO THE CABLE CONNECTORS IN THE SYSTEM; INSPECT AND CLEAN THESE CONNECTORS. GENEROUSLY REPACK EACH CONNECTOR WITH DOW CORNING #111 SILICON GREASE OR A COMPARABLE SUBSTITUTE.
2. IF USING AN EXTENSION REEL, CLEAN THE REEL CABLE AND GENEROUSLY LUBRICATE IT WITH SILICON SPRAY.

For service, call the Greer Company Service Department in Southern California at **(714) 259-9702**. Please be able to identify the **type of crane** used and have the meter **serial number** and **model number** available.

TROUBLESHOOTING

TROUBLESHOOTING

All troubleshooting efforts will be greatly assisted by first reading the installation, calibration and operator's manuals. for the BA-1510™ System. These manuals will be especially useful for those unfamiliar with digital meters.

*If the **meter readout** has directed you to the Troubleshooting section of this manual one of three possible problems may exist:*

- 1) **The angle sensor has been mounted incorrectly** (the cable should exit from the right side of the sensor.
- 2) **There is a problem with the connection between the sensor, cable, and meter** (possible water in connectors, a two block cable used in place of an angle cable, a pinched cable, or rarely, a damaged sensor or meter).
- 3) **Calibration procedures were completed without having a sensor attached, or without moving the boom.** Is there a voltage difference between the Zero and Span calibration points?

To check out the sensor for reading problems:

- refer to the RAW DATA READOUT routine on page 13. Check the raw numbers to see if they change as the sensor is moved. This will identify sensor response regardless of calibration. If there is no sensor response, there is a probable cable problem.
- ensure that the angle cable, is being used, as it is the only cable with the three wires inside that the sensor requires. (Two Block cables have three pin locations on the connectors, but they have only two wires running the length of the cable.)

Two Block Warning Signal

If the *Two Block Warning is constantly on*: The two block warning occurs when pins 5 and 6 of the meter cable are not shorted by the two block switch.

- If a two block system is not installed, pins 5 and 6 must be shorted.
- If a two block system is installed and the warning continues, inspect the switches and cabling.

If the problem is not resolved, call the Greer Company Service Department in Southern California at (714) 259-9702. Have the **serial number** and **model number** of the meter ready and be able to identify the **type of crane in use**.

RAW DATA READOUT

This procedure is not a calibration procedure. It is included here for troubleshooting purposes only and is used with equal success on calibrated or non calibrated systems.

Typical problems resolved by using this readout include: pinched or stretched cables (wires broken even if the insulating jacket is not) or water collection in the connectors. Connectors must be packed in silicon grease upon installation.

PRESS ENTER TO VIEW THE RAW DATA COMING FROM THE ANALOG TO DIGITAL CONVERTER.

PRESS ENTER ONCE MORE TO EXIT.

- The display reads: "RAW DATA = ####" (a number between 0 and 4095)
If the number now presented changes as the pendulum is moved, it is correctly installed.
- The readout should move in increments as small as 1. If the pendulum is tipped very slowly, it may flicker slightly, indicating that it may be hovering between two values.

The number **range may be as low as 0** (which corresponds to zero volts coming from the sensor) and **as high as 4095** (corresponding to five volts coming from the sensor).

If the number drifts up or down independent of the pendulum's motion or remains at 0 or 4095 no matter what the pendulum does, the cable may be disconnected or broken



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PSR is the global provider for sales, repair and installation of Load Moment Indicating (LMI) systems, Anti-Two Block Systems (A2B), and Rated Capacity Indicating systems. Please contact us with your crane repair and certification needs today.

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