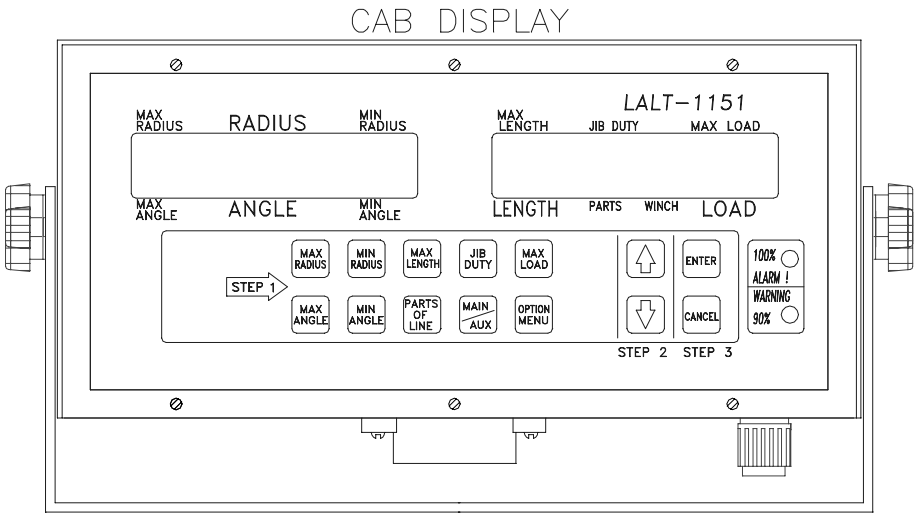


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LALT™ -1151 SYSTEM
for
HYDRAULIC CRANES



CALIBRATION MANUAL



WARNING

The LALT™ 1151 System for hydraulic cranes is designed to be used by the fully trained and experienced crane operator to aid in preventing overload and/or a Two-Block condition.

At no time may this System be used as a substitute for the well-trained operator or to replace the usual safety practices and precautions required for the safe setup and operation of cranes.

While in the Calibration Mode, only the Two-Block alarm will function. All other alarms will remain inactive until the System is out of the Calibration Mode.

Operator settable alarms, as well as the rest of the System are dependent upon proper calibration. The Calibration Mode is entered only when the System requires calibration.



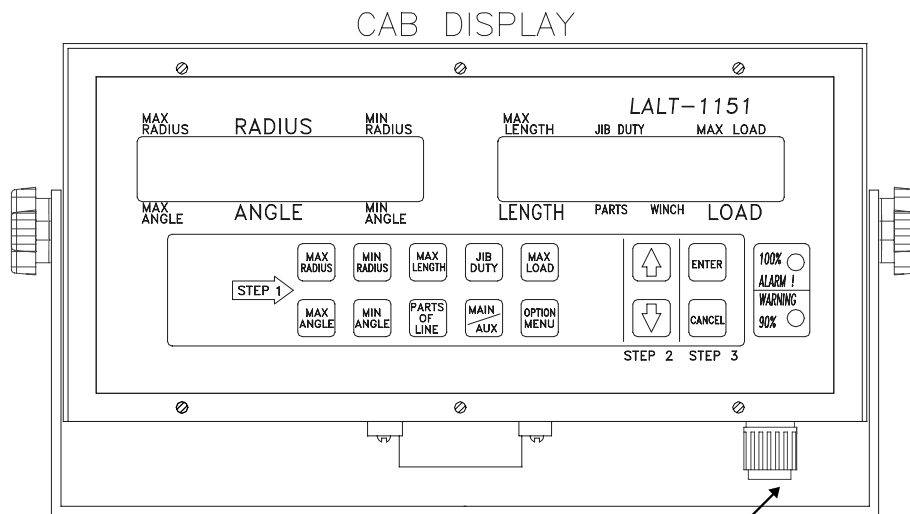


Figure 1

Contrast Control Knob

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Calibration

After installation, the LALT™ -1151 System for hydraulic cranes must be calibrated before it can operate.

- If the LALT™ -1151 System **has never been calibrated**, complete Sections A–J for single winch cranes and Sections A–M for dual winch cranes. Always calibrate the System in the order shown in the following pages.
- If the LALT™ -1151 System **has already been calibrated**, but needs recalibration in a particular area, check the parts-of-line (Section B) for accuracy; then enter the Calibration Mode (Section C). Next recalibrate only those areas requiring change. **DO NOT** perform initialization steps in Section A; *to do so will cause all previously stored calibration data to be lost.*

Note: If the displays are blank or all black, adjust the contrast knob (Fig.1) on the bottom of the Display Unit.

Required Tools

- Tape measure
- Inclinometer (for measuring the angle of the boom)
- a test weight for each hoist that is equal to a minimum of 50% of the hoist rope single part maximum capacity x Parts-of-Line in use. (See example for calculating the correct test weight on page 16.)

A Initialization

Perform the following "**INITIALIZATION**" steps 1-7 **ONLY** when calibrating the **ENTIRE** LALT™ -1151 System. These steps **will remove all data that was previously stored in the System memory.**

1. Press **OPTION MENU**. The display will read: "SET RIGGING MODE."
2. Press **MIN RAD**.

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3. Press **MIN ANG**.
4. Press **MAX ANG**.
5. Press **PARTS-OF-LINE**.
6. Press either **ENTER** for "YES" or **CANCEL** for "NO."
7. Press **CANCEL** to exit the **OPTION** menu.
All limit displays show " _ _ _ _ ."

B Parts of Line

Always set the "PARTS-OF-LINE" before entering the Calibration Mode.

1. Press **MAIN/AUX** until the display reads: "**M**" (MAIN).
2. Press **PARTS-OF-LINE**.
3. Pressing the **▲** and **▼** arrows, set the **PARTS-OF-LINE** for the MAIN winch.
4. Press **ENTER**.
5. Verify that the **PARTS-OF-LINE** are correct on the display.
(If there is no auxiliary hoist line in use, do not complete steps 6-10.)
6. Press **MAIN/AUX** once; the display will read: "**A**" (AUXILIARY).
7. Press **PARTS-OF-LINE**.
8. Pressing the **▲** and **▼** arrows, set the Parts-of-Line for the AUXILIARY winch.
9. Press **ENTER**.
10. Verify that the **PARTS-OF-LINE** are correct on the display.

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C Entering and Exiting the Calibration Mode

To calibrate the System, it is necessary to first enter the "**CALIBRATION MODE.**"

1. Press **OPTION MENU**. The display will read: "SET RIGGING MODE."
2. Press the **↑** arrow three times. The display will read: "ENTER CAL. MODE."
3. Press **ENTER**. The display will read: "ENTER KEY CODE."
4. Press **MAX ANGLE** twice; then, press **OPTION MENU** three times. An asterisk will appear for each key press.
5. When the display reads: "CAL. ANGLE," the System is in the **CALIBRATION MODE.**
6. To exit the **CALIBRATION MODE**, press **CANCEL** after completing any of the calibration routines.

D Number Entry

When entering angle, length, radius, or load numbers, a decimal should show on the screen.

- a) An *ANGLE* is displayed in degrees, decimal, and tenths of degree.
EXAMPLE: Ten and one half degrees = 10.5°
- b) *LENGTH*, *RADIUS*, and *SWING OFFSET* is displayed in feet, decimal, and tenths of feet.
EXAMPLE: Ten and one half feet = 10.5
- c) *LOAD* is displayed in pounds x 1000.
EXAMPLE: Ten thousand five hundred pounds = 10.5

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E **Boom Angle Calibration**

The "**BOOM ANGLE**" is the angle measured between the boom centerline and horizontal.

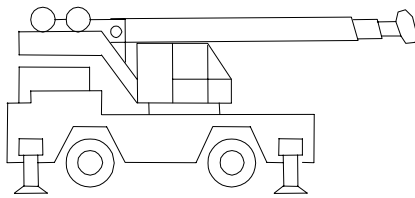


Figure 2

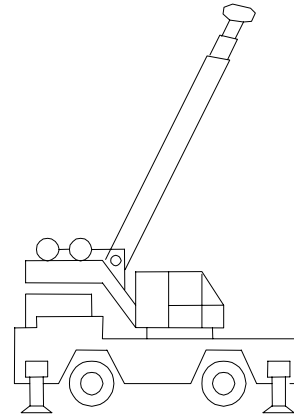


Figure 3

When first entering "**CAL MODE**," the display will read: "CAL. ANGLE."

1. Press **ENTER** to start the routine.
2. Fully retract the boom.
3. Boom down (Fig. 2) to zero degrees. Verify the angle with an inclinometer.
4. Press **ENTER**.
5. Boom up (Fig. 3) to at least 60 degrees. Verify the angle with an inclinometer.
6. Press **ENTER**.
7. Pressing the **▲** or **▼** arrows*, set the **EXACT BOOM ANGLE**.
8. Press **ENTER**.
9. Press **ENTER** to exit the routine.

*The longer an **▲** or **▼** arrow is pressed, the faster the displayed numbers will change. When the arrow key is released, the flashing digit will be the digit that will change the next time an **▲** or **▼** arrow is pressed.

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F Extension Calibration

"EXTENSION" is *not* the boom length. Extension is the distance that the boom point travels when moved from the fully retracted to the fully extended position. Please refer to Figures 4 & 5 and the example below for a 100 foot boom.

EXAMPLE: Extended length – retracted length = Extension. (100 ft – 30 ft = 70 ft.)

1. Press the **↑** arrow until the display reads: "Cal. Extension."
2. Press **ENTER** to start the routine.
3. Retract the boom fully (Fig. 4).

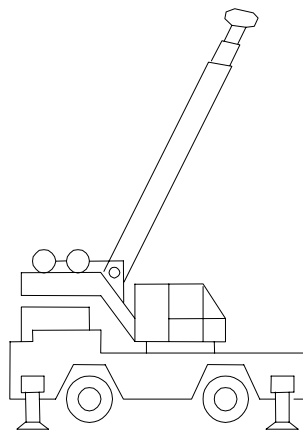


Figure 4

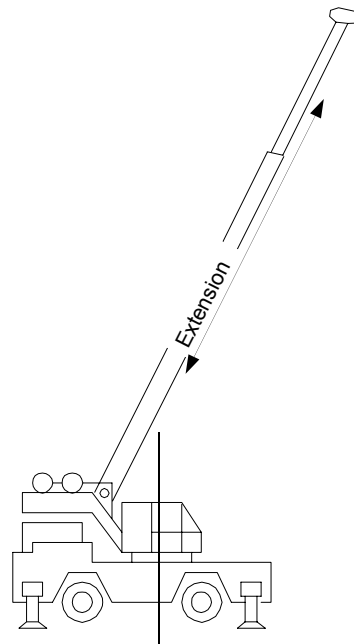


Figure 5

4. Boom up to a boom angle great enough to allow full boom extension. (See crane Capacity Chart.)
5. Press **ENTER**.
6. Extend the boom (Fig. 5) fully.
7. Press **ENTER**. The Display will show the value of full Extension.

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- Pressing the **↑** and **↓** arrows, **set** Extension (fully extended main boom length minus fully retracted main boom length).
- Press **ENTER**.
- Press **ENTER** to exit the routine.

G Slew Offset Calibration

"**SLEW OFFSET**" is the horizontal distance between the centerline of rotation and the boom pivot. If the pivot pin is behind the centerline of rotation, as illustrated, the slew offset must be entered as a **negative** number.

- Press the **↑** arrow until the display reads: "CAL. SLEW OFFSET."
- Press **ENTER** to start the routine.
- Measure the horizontal distance on the crane between the centerline of rotation and the center of the boom pivot pin (Fig. 6) to get the **NEGATIVE SLEW OFFSET**.

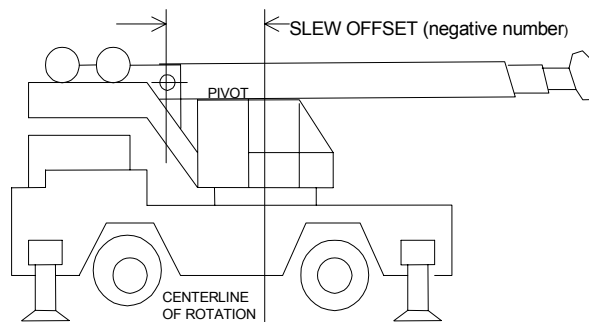


Figure 6

- Pressing the **↓** arrow, set the **NEGATIVE SLEW OFFSET**.
- Press **ENTER**.
- Press **ENTER** to exit the routine.

H Radius Calibration

The "RADIUS" is the horizontal distance between the centerline of rotation on the crane and the hook centerline.

1. Press the **▲** arrow until the display reads: "CAL. RADIUS."
2. Press **ENTER** to start the routine.
3. Retract the boom fully and boom down to **ZERO** degrees (Fig. 7).

The display will now exhibit the boom angle and extension length.

4. Press **ENTER**.
5. Pressing the **▲** and **▼** arrows, set the **MEASURED CURRENT RADIUS** (Radius 1).

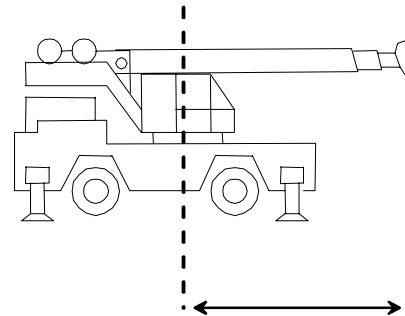


Figure 7

Radius 1

Note: The radius is always measured as the horizontal distance from the hook centerline to the centerline of rotation of the crane.)

6. Press **ENTER**.
7. Boom up to a boom angle great enough to allow full boom extension (Fig. 8). (See Capacity Chart.)
8. Press **ENTER**.
9. Pressing the **▲** and **▼** arrows, set the **MEASURED CURRENT RADIUS** (Radius 2).
10. Press **ENTER**.

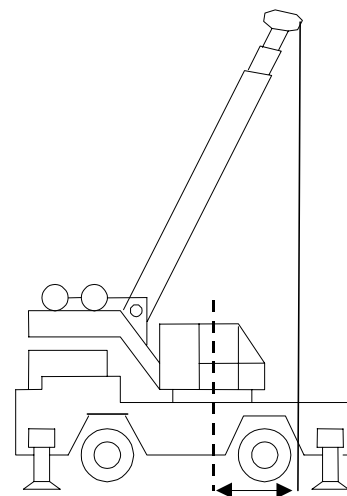
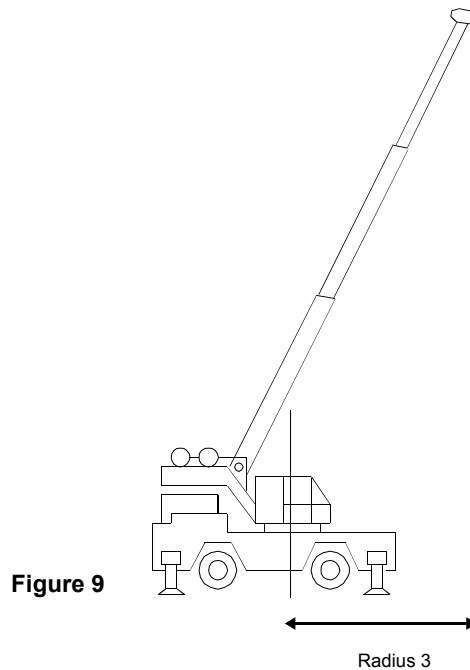


Figure 8

Radius 2

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11. Extend the boom to maximum extension
(Fig. 9).
12. Press **ENTER**.
13. Pressing the **↑** and **↓** arrows,
set the **MEASURED CURRENT RADIUS** (Radius 3).
14. Press **ENTER**.
15. Verify that boom length and radius are now correctly displayed.
16. Press **ENTER** to exit the routine.



I **Main Linepull Calibration**

"MAXIMUM MAIN LINEPULL" is the maximum allowable tension in **one part** of the main winch hoist rope.

1. Press the **↑** arrow until the display reads: "CAL. MAIN L-PULL."
2. Press **ENTER** to start the routine.
3. Pressing the **↑** and **↓** arrows, set the **MAXIMUM ALLOWABLE LINEPULL** of one part of the main winch hoist rope.
4. Press **ENTER**.
5. Verify that the value for the main linepull shown on the display is correct.
6. Press **ENTER** to exit the routine.

J **Main Zero Calibration**

"MAIN ZERO" is the tension in the main winch hoist rope when the hook is on the ground.

1. Press the **↑** arrow until the display reads: "CAL. MAIN ZERO."
2. Press **ENTER** to start the routine.
3. Put the main hook on the ground and let the lines go slack (Fig.10).
4. Press **ENTER**.
5. Press **ENTER** to exit the routine.

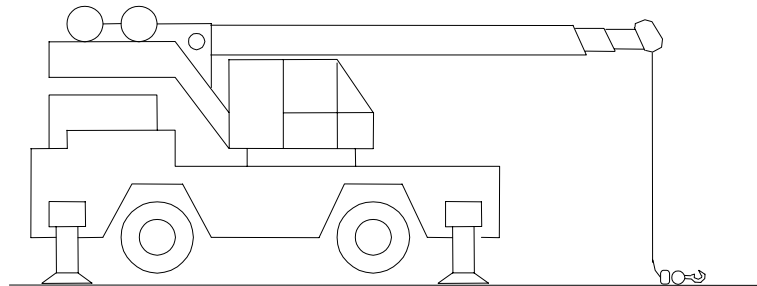


Figure 10

Main Span Calibration

K **"MAIN SPAN"** is the internal adjustment that causes the System to correctly indicate the main winch load weight.

1. Prepare to lift the *main winch test weight* at a safe radius (See Capacity Chart) for that load. Use a test weight that is heavy enough to make a single part line pull at least equal to 50% of the hoist rope maximum capacity.

Example for calculating test weight: A hoist rope with a 10,000 lb. capacity reeved to 4 parts of line, at 50% of the hoist rope maximum capacity will have a minimum test weight of 20,000 lbs. ($10,000 \times 4 \div 2 = 20,000$).

2. Press the **▲** arrow until the display reads: "CAL. MAIN SPAN."
3. Press **ENTER** to start the routine.
4. Pressing the **▲** and **▼** arrows, set the value for the **TEST WEIGHT**.
5. Press **ENTER**.

continued on next page

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6. Leaving the test weight on the ground, lift the rigging, letting it hang slack from the hook (Fig. 11).
7. Press **ENTER**.
8. Lift the test weight off the ground (Fig. 12).
9. Press **ENTER**.
10. Verify that the load weight shown on the display is the test weight **plus** the weight of the rigging.

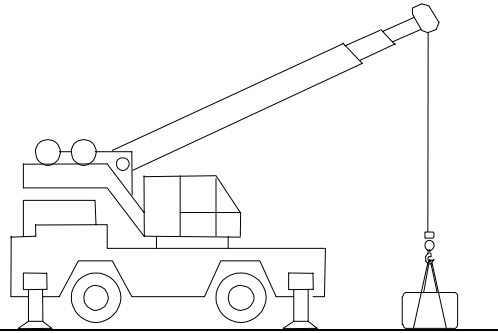


Figure 11

- If the weight shown on the display is correct, press **ENTER** to exit the routine.
 - If the weight shown on the display is incorrect, press **ENTER** two times to reenter "**CAL MAIN SPAN**" and adjust the weight.
11. Continue with Option A or B, as appropriate:
 - A. If there is an auxiliary hoist winch in use on the crane, complete calibration steps in Sections K, L, and M.
 - B. If there is no auxiliary hoist winch in use on the crane, do not complete calibration steps in Sections K, L, and M. Press **CANCEL** to exit the "**CALIBRATION MODE.**"

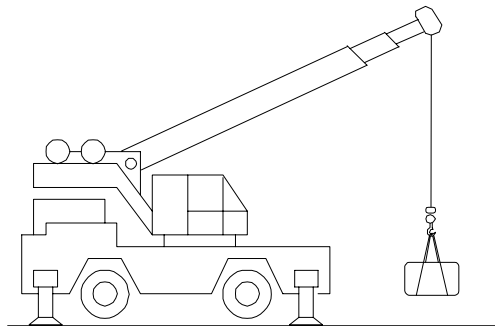


Figure 12

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L Aux. Linepull Calibration

"**MAXIMUM AUX. LINEPULL**" is the maximum allowable tension in **one part** of the auxiliary winch hoist rope.

1. Press the **↑** arrow until the display reads: "CAL. AUX L-PULL."
2. Press **ENTER** to start the routine.
3. Pressing the **↑** and **↓** arrows, set the **MAXIMUM ALLOWABLE LINEPULL** of one part of the aux. winch hoist rope.
4. Press **ENTER**.
5. Verify that the value for the "AUX. L-PULL" shown on the display is correct.
6. Press **ENTER** to exit the routine.

M Aux. Zero Calibration

"**AUX. ZERO**" is the tension in the aux. winch hoist rope when the hook is on the ground.

1. Press the **↑** arrow until the display reads: "CAL. AUX. ZERO."
2. Press **ENTER** to start the routine.
3. Put the Aux. hook on the ground (Fig. 13), and let the lines go slack.
4. Press **ENTER**.
5. Press **ENTER** to exit the routine.

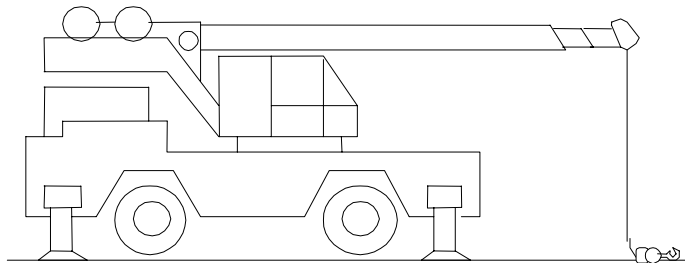


Figure 13


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N **Aux. Span Calibration**

"AUX. SPAN" is the internal adjustment that causes the System to correctly indicate the weight of the auxiliary winch load.

1. Prepare to lift the aux. winch test weight at a safe radius for that load.
Use a test weight that is heavy enough to make a single part line pull at least equal to 50% of the hoist rope maximum capacity.

Example for calculating test weight: A hoist rope with a 10,000 lb. capacity reeved to 4 parts of line, at 50% of the hoist rope maximum capacity will have a minimum test weight of 20,000 lbs. ($10,000 \times 4 \div 2 = 20,000$).

2. Press the  arrow until the display reads: "Cal. Aux. Span."

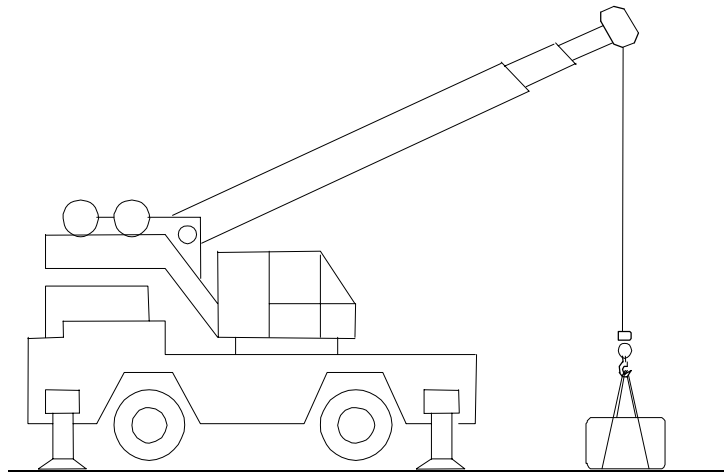


Figure 14

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3. Press **ENTER** to start the routine.
4. Pressing the **↑** and **↓** arrows, set the **VALUE OF THE TEST WEIGHT**.
5. Press **ENTER**.
6. Leaving the test weight on the ground, lift the rigging, letting it hang slack from the hook (Fig. 14).
7. Press **ENTER**.
8. Lift the test weight off the ground (Fig. 15).
9. Press **ENTER**.
10. Verify that the value shown on the display is the test weight **plus** the weight of the hook and rigging.

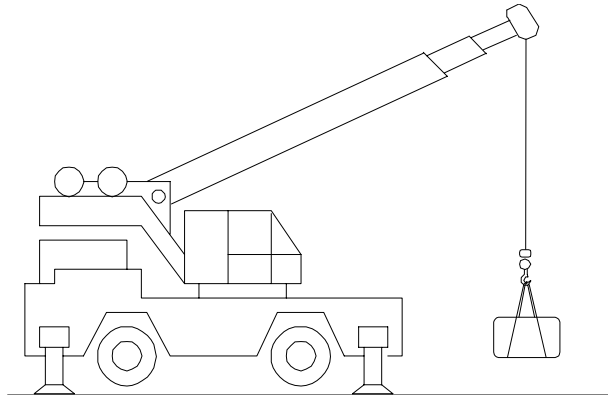


Figure 15

- If the weight shown on the display is correct, press **ENTER** to exit the routine.
 - If the weight shown on the display is incorrect, press **ENTER** two (2) times to reenter **CAL. AUX. SPAN** and adjust the weight.
11. Press **CANCEL** to exit the **CALIBRATION MODE**.

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THE ANTI TWO-BLOCK CIRCUIT

MICROGUARD® 414/424 AND LALT™ 1151 SYSTEMS for hydraulic cranes.

When performing installation upgrades on the above systems, **always** isolate the Anti Two-Block circuit.

ISOLATING THE ANTI TWO-BLOCK CIRCUIT

Carefully follow all of the steps below in the order shown. Refer to Figure 16 on page 19.

Warning: If the following steps are not carried out, the one amp fuse inside the meter will blow up as soon as the system is turned on.

1. THE TRIANGLE PLATE TERMINAL STRIP

- a. Remove the brown wires from the top and bottom rows and connect to Terminal #5.
- b. Remove the black wires from the mounting screws on the top and bottom rows and connect to Terminal #6.

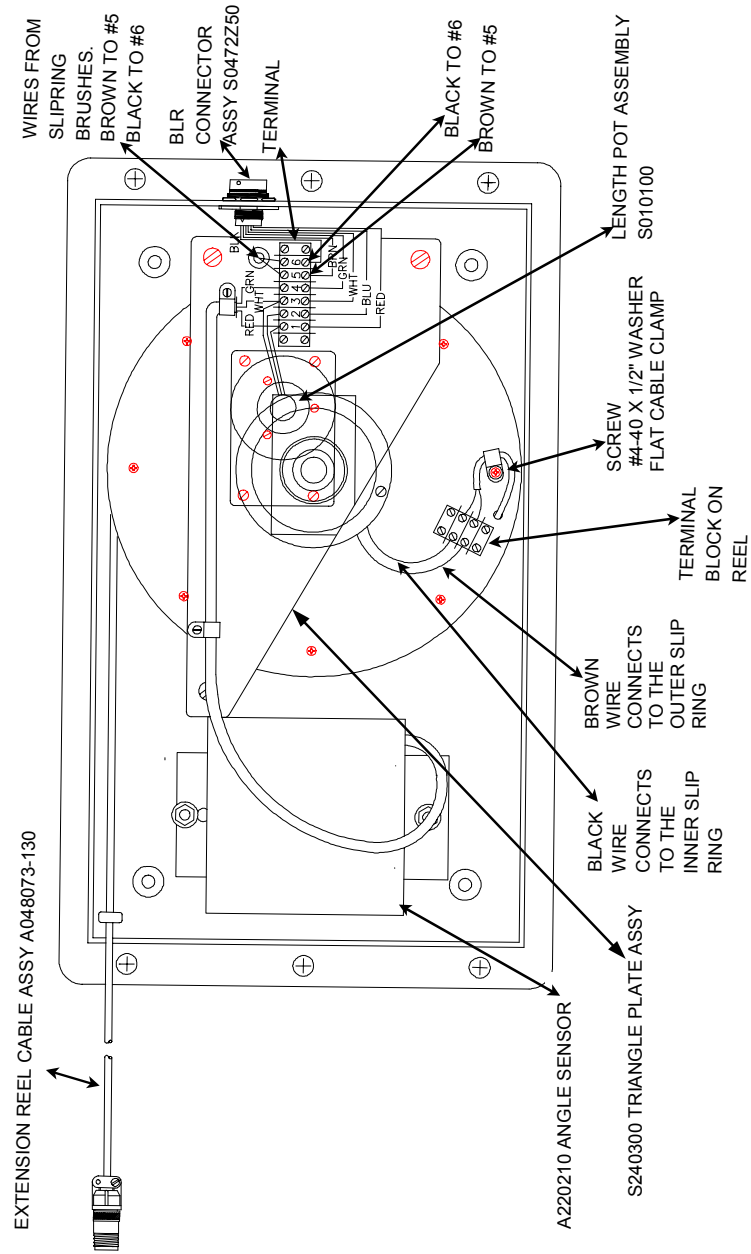
2. THE EXTENSION REEL TERMINAL BLOCK

- a. Remove the two screws that anchor the cable on the extension reel terminal block
- b. Replace these screws with #4-40 X 1/4" screws only.
(the use of longer screws will cause a short to the ground.)
- c. Secure the wires to the terminal block according to Appendix A.

NOTE: Use a cable clamp and one of the existing screws on the extension reel cover to hold the excess cable. This will prevent the cable from getting caught on the triangle plate assembly as the extension reel rotates.

**EXTENSION REEL ASSEMBLY FOR INSTALLATION UPGRADES TO
MICROGUARD® 414/424 AND LALT™ 1151 SYSTEMS FOR HYDRAULIC CRANES**

Figure 16





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