The LOAD & A-2-B Company Inc.

Model #365
Radio Boom Angle Indicating System

Installation and operating manual

Keep this manual near the system at all times

"Thank you very much for your business"

For sales, service or assistance:
1-888-562-3222 / (780) 437-2986

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Foreword

The Model 365 Radio Boom Angle Indicator is a two component crane boom angle indicating system. It is designed to provide a continuous digital indication of the boom or luffing jib angle. The system also provides an audible alarm if operator selectable angle limits are exceeded.

System components

Check to be sure that you have received the following components:

- Display panel
- Angle sensor and weld plate assembly (attached)
- Antenna (rubber or rubber and magnetic mount, or metal whip and bracket mount)
- Power cable (6 ft)
- Installation manual

ATTENTION

DO NOT CONSIDER THIS SYSTEM
A SUBSTITUTE FOR GOOD JUDGMENT, EXPERIENCE AND ACCEPTED, SAFE CRANE OPERATING PRACTICES.

THE CONTENTS OF THIS MANUAL MUST BE READ AND THOROUGHLY UNDERSTOOD BEFORE OPERATING THE CRANE.

THIS SYSTEM UTILIZES A SERIES OF ELECTRICAL AND MECHANICAL COMPONENTS AND CANNOT BE 100% FAIL SAFE.

Installation guidelines

Read all of these instructions completely prior to beginning

- Plan the installation
- Have the necessary tools available
- Choose location for Sensor
- Mount Sensor
- Mount the Display Panel
- Initialize and test the system

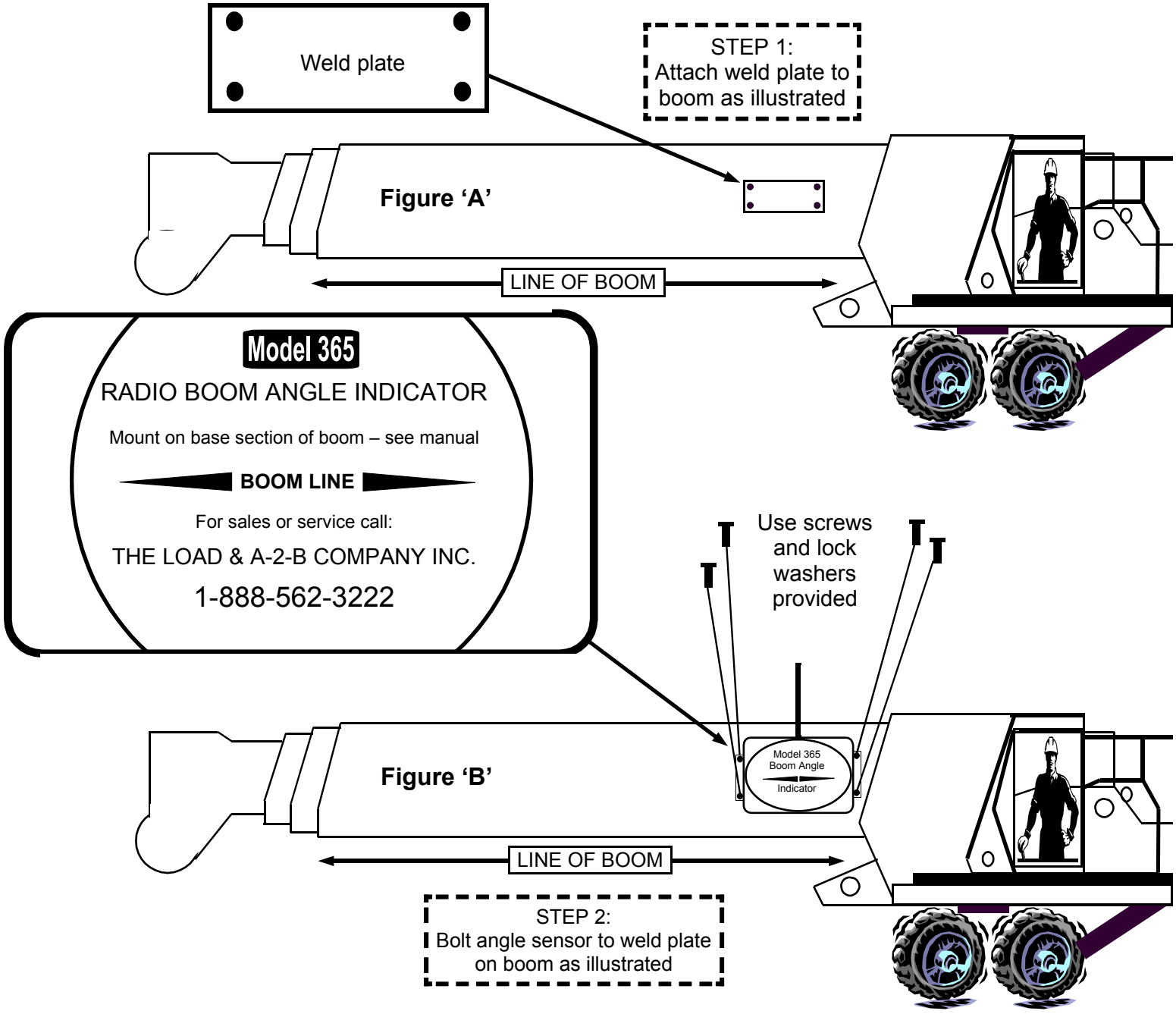
Tools required

- This manual
- Step ladder – to reach the boom
- Carpenters level (optional)
- Welder
- Electric drill with 3/16th inch drill bit
- Wire crimping tools – for the display power and ground connections
- Screw drivers and or socket set

Boom Angle Sensor Installation The angle sensor must be installed at the base of the boom at a minimum distance of ten feet from the receiver panel in the cab of the crane. The sensor can be mounted on either side of the boom and is programmable from the panel mounted in the cab. Position the sensor weld plate assembly parallel with the boom line. Use the illustration on the Sensor label as an alignment aid.

BOOM LINE

Exact alignment is not necessary. Alignment error can be zeroed out at the panel in the cab of the crane. Mark or scribe the boom where the weld plate will be mounted. Detach the weld plate from the angle sensor and lightly tack weld, not permanently weld the plate. (see figure A below) PLEASE NOTE: Lightly tack weld plate where you think it should go, leaving the opportunity to move, adjust and re-weld if necessary, before testing the system for operation. Make certain that the antenna on the boom angle sensor will not be touching any metal once mounted. DO NOT ATTEMPT TO WELD THE WELD PLATE WHILE ATTACHED TO THE SENSOR. THE SENSOR WILL BE PERMANENTLY DAMAGED. When the weld has cooled, mount the sensor to the weld plate (see figure B below) using the bolts and lock washers supplied.
Proceed to next step of installation.



Display Panel Installation

Find a suitable location on the dash in the cab or by the controls of the crane, so the operator can view the display panel easily. Remove the lower portion of the mounting bracket. Mark and drill two 3/16" holes in the dash for the lower portion of the mounting bracket. Attach the lower bracket to the dash using screws and nuts supplied. Mount the panel to the lower bracket with the knobs and star washers supplied. (Please note that the panel has a thin protective plastic skin on the front of it. You may or may not wish to remove it)

Antenna Installation

You may have received two versions of an antenna. If the receiver panel is within 150 feet of the boom mounted angle transmitter, and where the panel is not IN a cab or behind glass, use the standard rubber antenna attached to the receiver panel. Where the receiver panel is installed in the cab, use the external magnetic mount with the rubber antenna on the top or top side of the control cab. If this is a marine installation and where the antenna is the stainless steel whip version, please install the mounting bracket to the top or top side of the crane cab with the bracket provided. The rubber antenna is removable from the receiver panel with a counter clockwise turn of the stainless steel base. It is important to maintain line of sight between the antenna on receiver panel and the boom angle sensor

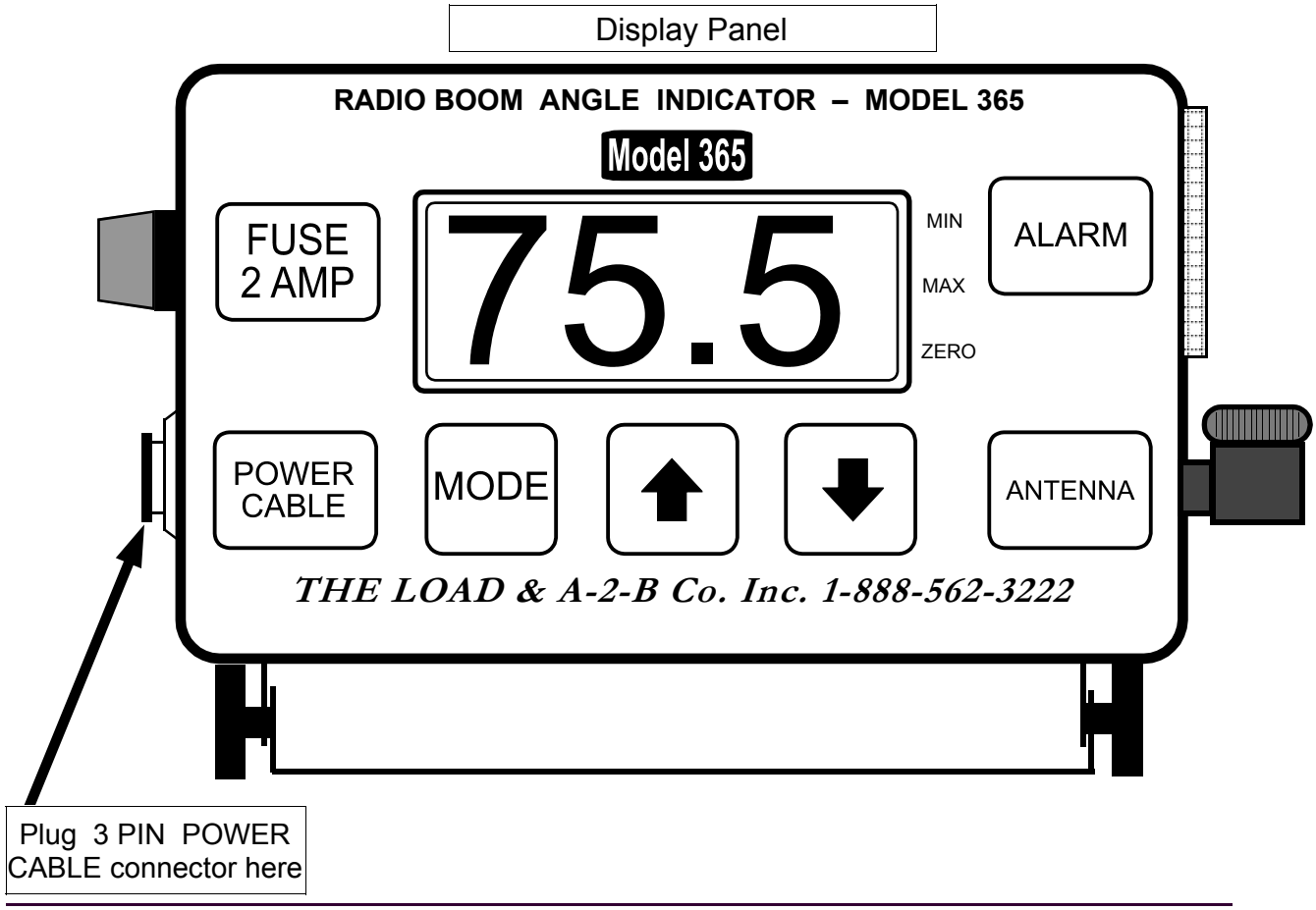
Power Cable Installation

Route the Power Cable from the blue receiver panel to the cranes electrical system.
Connect as follows:

Red plus 12/24 Volts

Black Ground

Attach the 3 PIN POWER CABLE to the POWER CABLE socket on the Display Panel and secure.



Operating instructions: Start up

Upon power up the panel will display the following information in sequence – software revision identification, system I.D., left/right boom placement configuration, current setting of minimum angle, current setting of maximum angle, and current setting of zero. System will then sequence from zero to nine, then two buzzer beeps, and to three dash lines, until it receives its first transmission. After startup the boom angle in degrees is indicated on the display.

Configuration of Boom side selection *** Required on installation only ***

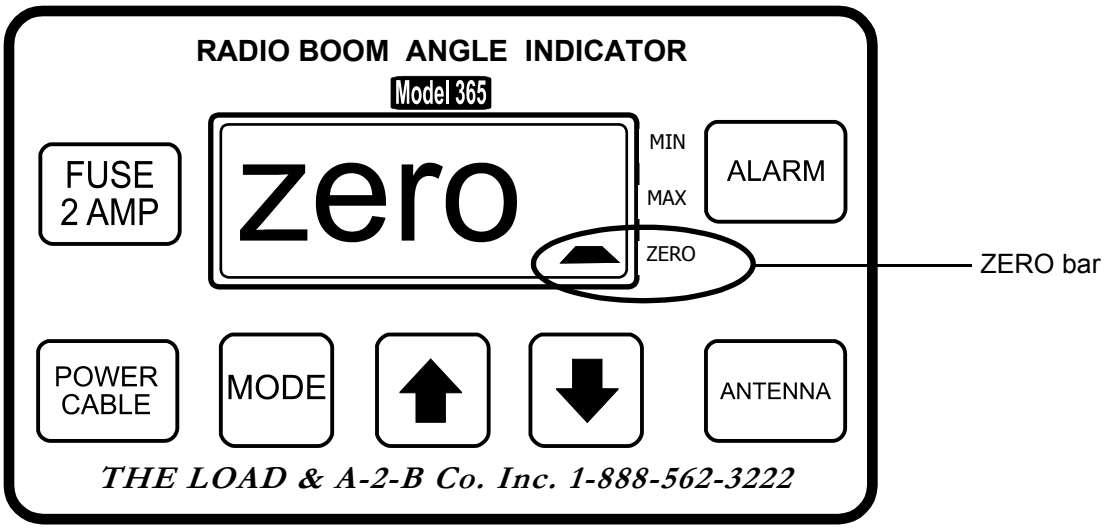
1. Unplug the power cable from the receiver panel.
2. Hold down the **MODE** button.
3. While holding the **MODE** button, plug cable back into receiver panel.
4. Display will flash the word **ConF 5** times, and then a capital **L** and small **r** will flash alternately.
5. Push **Up Arrow Button** to select left side of boom mount for sensor, or push **Down Arrow Button** to select right side of boom mount for sensor.
6. Once selection is made, example Left, the capital **L** will flash. This indicates your selection.
7. Press the **MODE** button, the selected letter will hold for one second, the **ConF** will flash **5** times, then the normal start sequence is run.
8. The boom side selection is permanently stored in memory, but can be changed using the same procedure.

Initialization and zeroing of system

HINT: Pre-position the boom to zero degrees using a carpenters level or site the boom against the horizon. (Stand at least 50 ft away from the crane if you use this method). If the boom is preset to zero degrees then set the Panel to indicate zero – 0.0

1. Press the **MODE** button until **ZEro** and zero bar is displayed – Figure 'A' below.
2. Press the **UP** and **DOWN** arrow buttons simultaneously and hold them, then press the **MODE** key while still pressing the Arrow buttons. **HINT:** Use 3 fingers from one hand.
3. Use the **Arrow** buttons to set the display to the actual boom angle.
4. Press the **MODE** button once to return to normal operation. (no zero bar displayed)

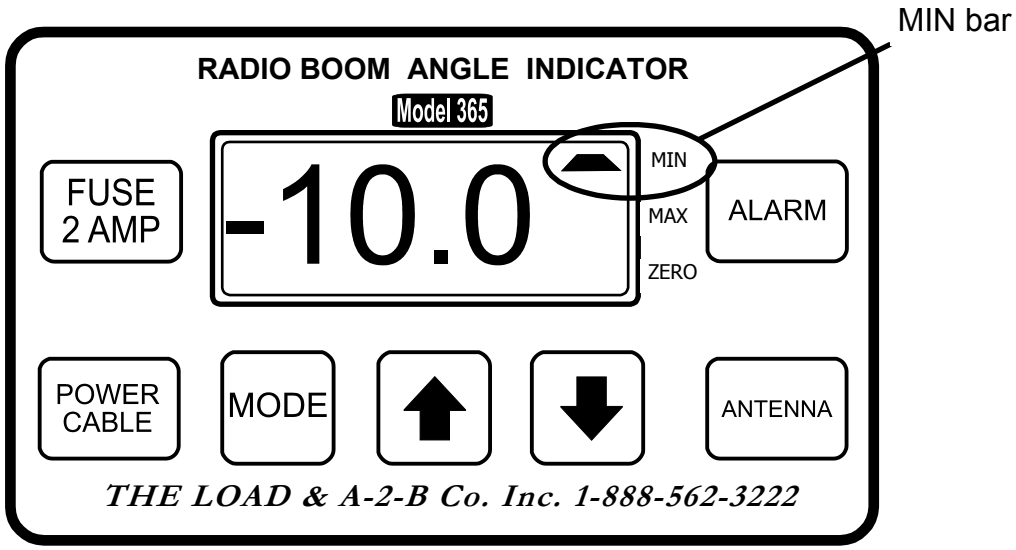
The display will flash **ZEro** three times if the buttons were pushed correctly. If the display does not flash then repeat the whole procedure from the beginning. If the display flashed properly then the display will be showing the boom angle.



Setting MIN (minimum) boom angle alarm

Factory setting is **–10 degrees**. To change the minimum setting proceed as follows:

- Press **MODE** button until **MIN** bar is displayed.

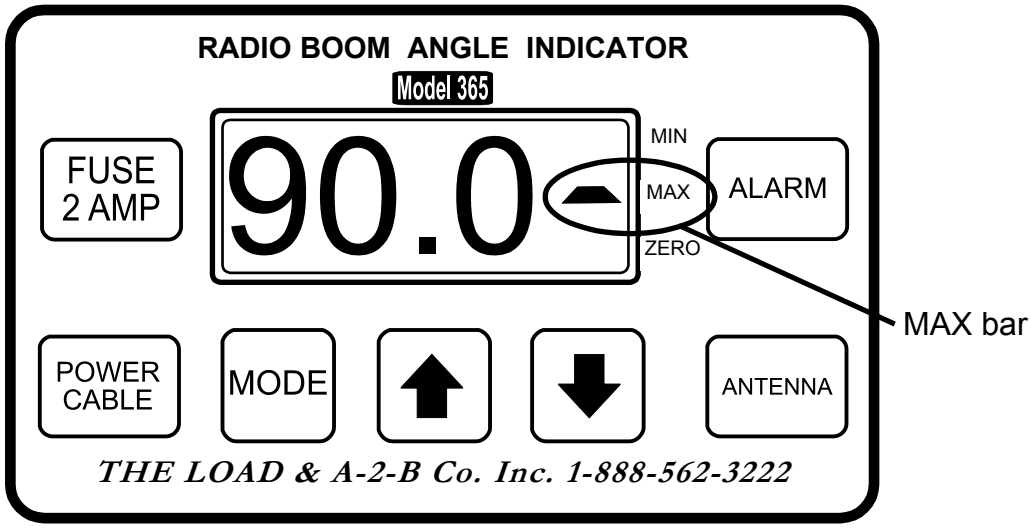


- Display now shows the minimum angle setting - **not the boom angle**.
- Adjust minimum setting using the **Arrow** buttons. Lowest limit is –10 degrees.
- Press the **MODE** button three times to return to normal operation with no bars displayed.
- System will now alarm at that preset minimum angle.

Setting MAX (maximum) boom angle alarm

Factory setting is 90 degrees. To change the maximum setting proceed as follows:

- Press the **MODE** button until the **MAX** bar is displayed.



- Display now shows the maximum angle setting – **not the boom angle.**
- Adjust maximum setting using the **Arrow** buttons. Highest limit is 90 degrees.
- Press the **MODE** button two times to return to normal operation with no bars displayed.
- System will now alarm at that preset maximum angle.

Angle Transducer Battery Replacement

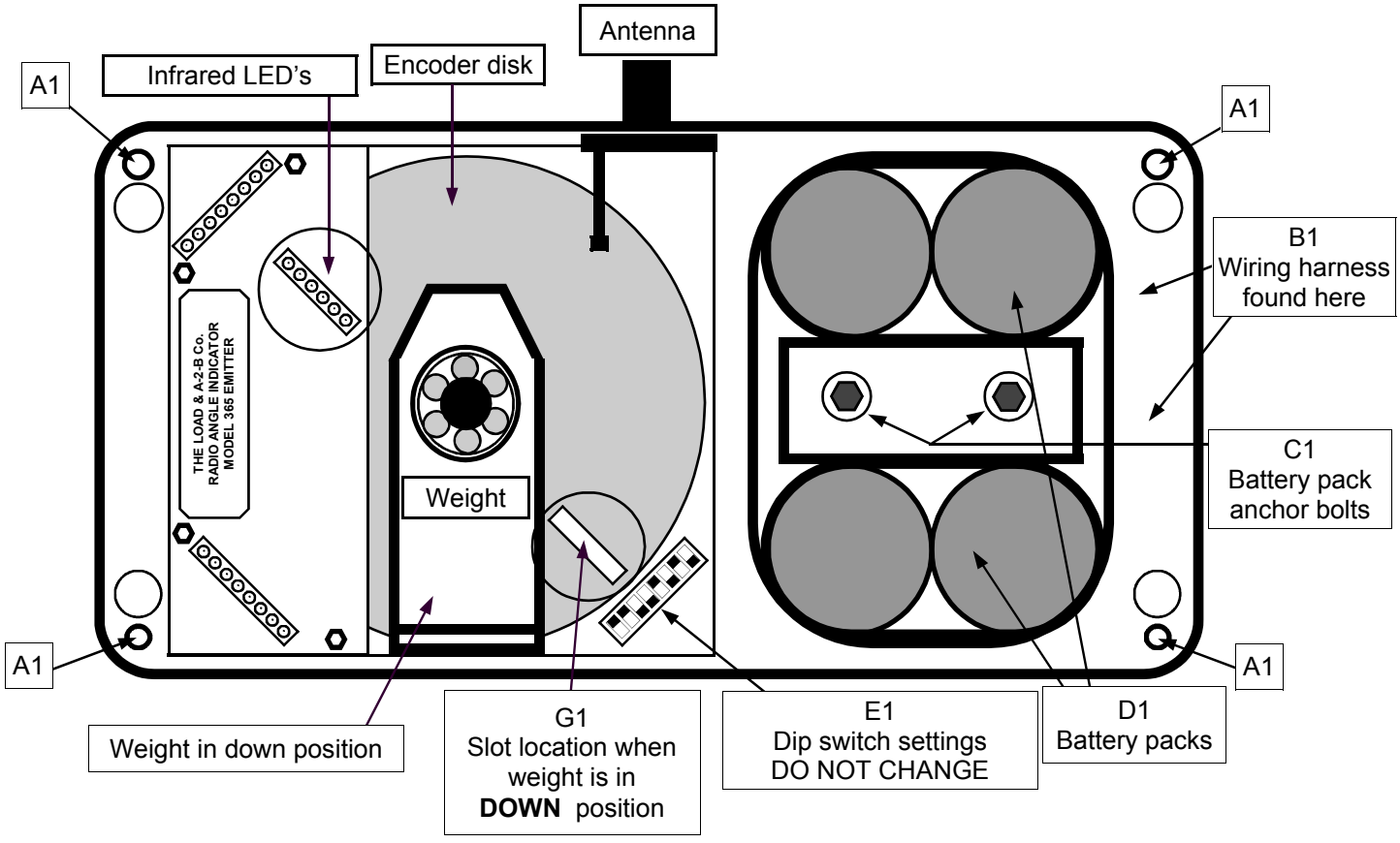
Before attempting to replace the batteries we suggest that you read over the troubleshooting guide and then call the service department @ 1-888-562-3222. Once you have verified that it is a battery problem then read the following instructions before beginning.
Tools and equipment needed for battery replacement:
1 Battery replacement kit (Contact The Load & A-2-B Co.

Contents of kit: 1 battery pack – 7.2V Lithium Ion Pack
1 Allen Key 5/32”

We suggest that you remove the angle transmitter from the weld plate on the boom of the crane, but the replacement can be done with the transmitter on the boom. If it is humid, raining or snowing, DO NOT OPEN THE ANGLE TRANSMITTER. Remove it and perform the battery replacement indoors or undercover.

1. Unscrew the **4** corner screws **(figure A1)** on the face plate of the transmitter. Please note that once the 4 bolts are loose they remain in the face plate itself, so please **do not attempt to pry them free.**
2. Slowly and gently, pull the black and red wiring harness **(figure B1)** just far enough to expose the white plastic connectors, from the right side of the battery pack. By gently pulling on the white plastic connectors (NOT THE WIRES) disconnect the main battery pack.
3. Using the supplied allen key, loosen and remove the two allen bolts **(figure C1)** securing the battery pack. The battery pack **(figure D1)** should now be free and ready to remove. Be very careful to ensure that the wires are tucked in beside the battery pack before you replace the faceplate, to prevent cutting of the wires.
4. To install new battery pack, simply follow these instructions in reverse.

Before closing up the transducer, you must re-enable the system by following the instructions on the following page carefully.

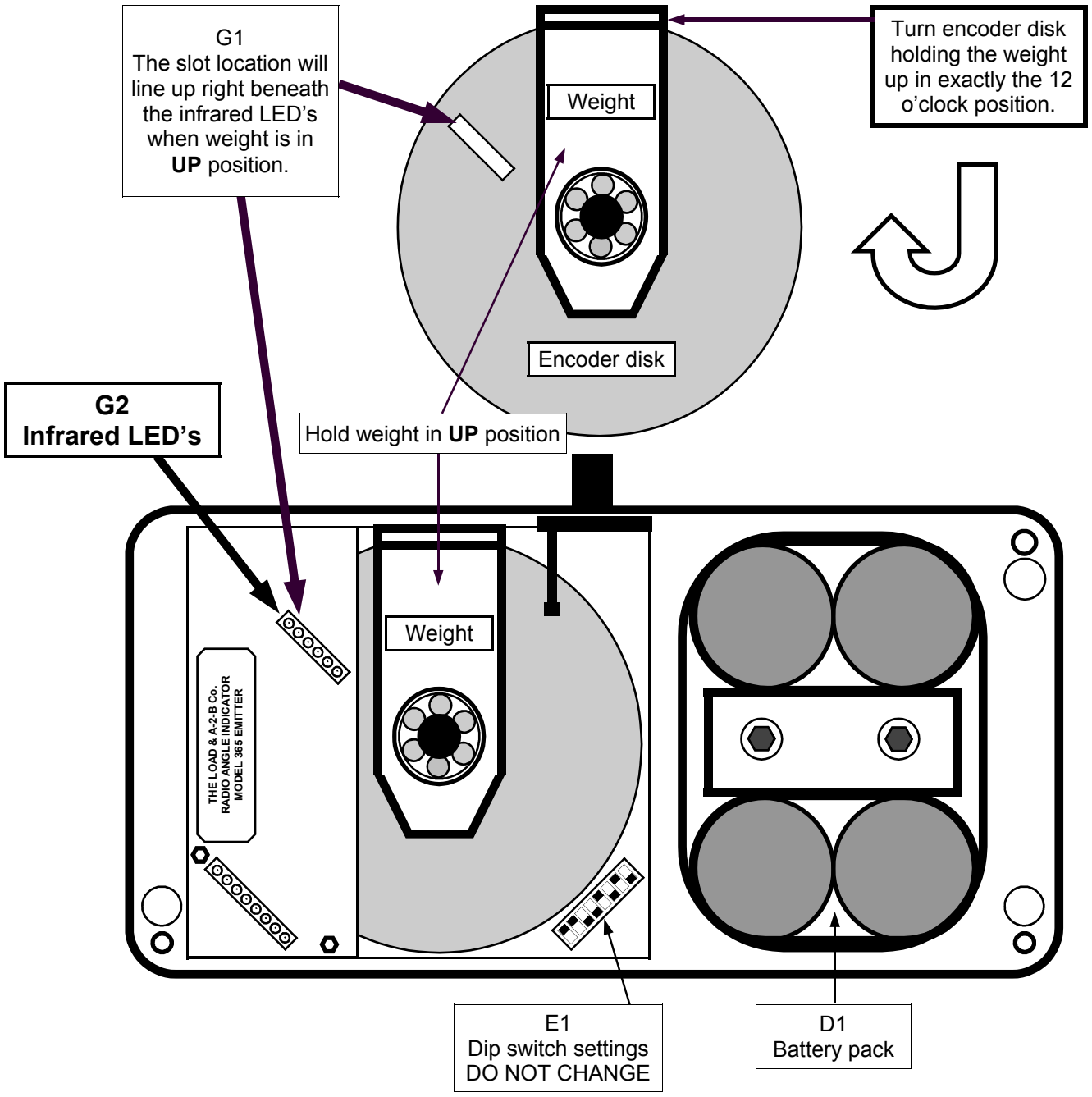


Angle transducer enabling

Prior to replacing the face plate, the transducer must be properly enabled. To enable the transducer, please follow these steps carefully. If you have any questions please contact The Load & A-2-B Company at 1-888-562-3222.

The batteries must be plugged in **before you proceed** with the following transducer enable procedure.

1. With the transducer on its back (as illustrated below) move and hold the encoder disk weight in the 12 o'clock position.
2. The goal is to align the open slot (Figure G1) on the encoder disk to line up right underneath the Infrared LED's (Figure G2).
3. Carefully hold the weight with the slot right below the infrared LED's **for a minimum of 10 seconds.**
4. Release the weight and close the lid ensuring that the o-ring seal is not caught or pinched. Tighten screws securely. Replace angle transducer on the boom.
5. You will now have to zero the system. Please go to page 5 of this manual for instructions.



365 Troubleshooting Guide

Please do not attempt to open the angle transmitter or the receiver panel in the cab. Read this section completely or contact The Load & A-2-B Company service department at 1-888-562-3222.

Problem description	**Possible solution**
1. Panel does not power up.	A. Review the wiring instructions in the installation section of the manual. B. Power cable may be disconnected. C. Verify that there is +12VDC to +24VDC going to the panel. D. Check the Fuse. E. Check power cable for damage. (cuts, nicks, etc.)
2. Panel powers up, but does not run through the full start up sequence. E.g. lights burnt out, etc.	A. Verify that there is +12VDC to +24VDC going to the panel. B. Power the panel directly with +12VDC from the cranes battery bypassing any fuse panels and connections or on a separate 12 volt battery to assure that it is not a crane power problem. C. Call the service department at 1-888-562-3222.
3. Panel gets extremely hot to the touch when using a +24VDC supply.	A. If the panel is installed in a cab remove the black dust cover and try improving the air circulation around the panel. B. Change the power to the panel so that it runs on +12VDC. If you need assistance in doing this contact the service department at 1-888-562-3222.
4. **Lo b** is flashing .	A. Battery needs replacement. Please contact the Load & A-2-B service department for details on battery replacement and see page 7 of this manual.
6. **- - - -** These dash lines appear with a beeping from the panel.	A. The receiver panel is not receiving a signal from the transmitter. Call the service department at 1-888-562-3222.

Technical Component Specifications

Display panel

Display resolution	+/- 0.5 degrees of true angle
Power supply	12-24 VDC standard
Weight	2.2 pounds
Length x height	9 inches by 6 inches
Width	2¼ inches
Operating temperature	-40 to 122 ºF, (-40 to 50 ºC)

Angle sensor

Response time	0.8 second
Weight (with weld plate)	10 pounds
Length x height	10.5 inches by 4.75 inches
Width	3.75 inches
Operating temperature	-40 to 122ºF, (-40 to 50 ºC)
FCC ID	NFBLAB939SW

Warranty

The Load & A-2-B Company Inc. warrants to the purchaser of each new model 365 Boom Angle Indicator that any part thereof which proves to be defective in material or workmanship within two (2) years from date of delivery will be repaired or replaced at no charge, if the system is returned to us in Edmonton, Alberta with all freight charges prepaid.

This warranty does not cover defects resulting from accident, alteration, improper use, or failure of the purchaser to follow normal operating procedures as outlined in this instruction manual.

THIS WARRANTY IS IN LIEU OF ANY WARRANTY OR MERCHANTABILITY AND OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, ALL OF WHICH ARE HEREBY EXCLUDED.

The Load & A-2-B Company Inc. shall in no event be liable for any special, indirect, or consequential damages whatsoever and neither assumes nor authorizes any person to assume for it any other obligation or liability. If a performance problem should occur, contact our service department at 1-888-562-3222.