W3350R
TELESCOPIC BOOM CRANE RADIO RATED CAPACITY INDICATOR

Installation and Calibration Manual

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The purpose of this manual is to provide the customer with the operating procedures essential for the promotion of proper machine operation for its intended purpose. It is important to over-stress proper usage. All information in this manual should be read and understood before any attempt is made to operate the machine. Since the manufacturer has no direct control over machine application and operation, conformance with good safety practice in this area is the responsibility of the user and his operating personnel.

All procedures herein are based on the use of the system under proper operating conditions, with no deviations from the original design. Alteration and/or modification of the equipment is strictly forbidden without written approval from Rayco Technology Group.

The W3350R Wylie Systems Rated Capacity indicator is to be regarded only as an aid to the operator.

This system must never be used, under any circumstances, as a substitute for the good judgment of a crane operator when carrying out approved crane-operating procedures. Responsibility for the safe operation of the crane lies with the crane operator. The indicator equipment will not necessarily prevent crane damage due to overloading and related causes if not set properly.

Before operating a crane equipped with a Wylie system indicator, the operator must carefully read the information in both this manual and the crane manufacturer operator's manual. He must also have read and understood the CIMA safety manual, the latest ASME B30.5 standard and the current OSHA, federal, state and local regulations applicable to his job. Correct functioning of the system depends upon routine daily inspection.

Any suspected faults or apparent damage should be immediately reported to the responsible authority before using the crane.

SINCE SAFETY OF PERSONNEL AND PROPER USE OF THE MACHINE IS OF PRIMARY CONCERN, DIFFERENT SYMBOLS ARE USED THROUGHOUT THIS MANUAL TO EMPHASIZE CERTAIN AREAS. THE FOLLOWING DEFINITIONS INDICATE THE LEVEL OF HAZARD WHEN THESE SYMBOLS APPEAR THROUGHOUT THIS MANUAL.

WHENEVER ONE OF THESE SYMBOLS APPEARS IN THIS MANUAL, PERSONNEL SAFETY IS A CONCERN. PLEASE TAKE TIME TO READ AND UNDERSTAND THESE DEFINITIONS!

DANGER: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY.

CAUTION: INDICATES A POTENTIALLY HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, MAY RESULT IN MINOR OR MODERATE INJURY. IT MAY ALSO BE USED TO ALERT AGAINST UNSAFE PRACTICES.

IMPORTANT: INDICATES A SITUATION THAT MAY CAUSE MACHINE DAMAGE IF NOT CORRECTLY FOLLOWED.

NOTE: PROVIDES INFORMATION THAT MAY BE OF SPECIAL INTEREST.

TABLE OF CONTENTS

GENERAL DESCRIPTION

1.1 - Introduction

This manual contains installation and calibration information for the W3350R Rated Capacity indicator system. Information in this manual will enable qualified personnel to install and calibrate the W3350R system efficiently.

1.2 - Personnel qualification and scope of this manual

This manual is intended for use by field engineering and repair personnel, who are fully qualified and trained to perform the procedures described in this manual.

This manual is divided into the following sections:

SECTION 1 - GENERAL DESCRIPTION

SECTION 2 - INSTALLATION

SECTION 3 - CONFIGURATION AND CALIBRATION

1.3 - Brief description of the W3350R system

The W3350R is a computerized crane safety system. It measures load, boom angle, radius, and indicates safe or hazardous conditions. It comprises sensors fitted to the crane and a display located in the crane cabin.

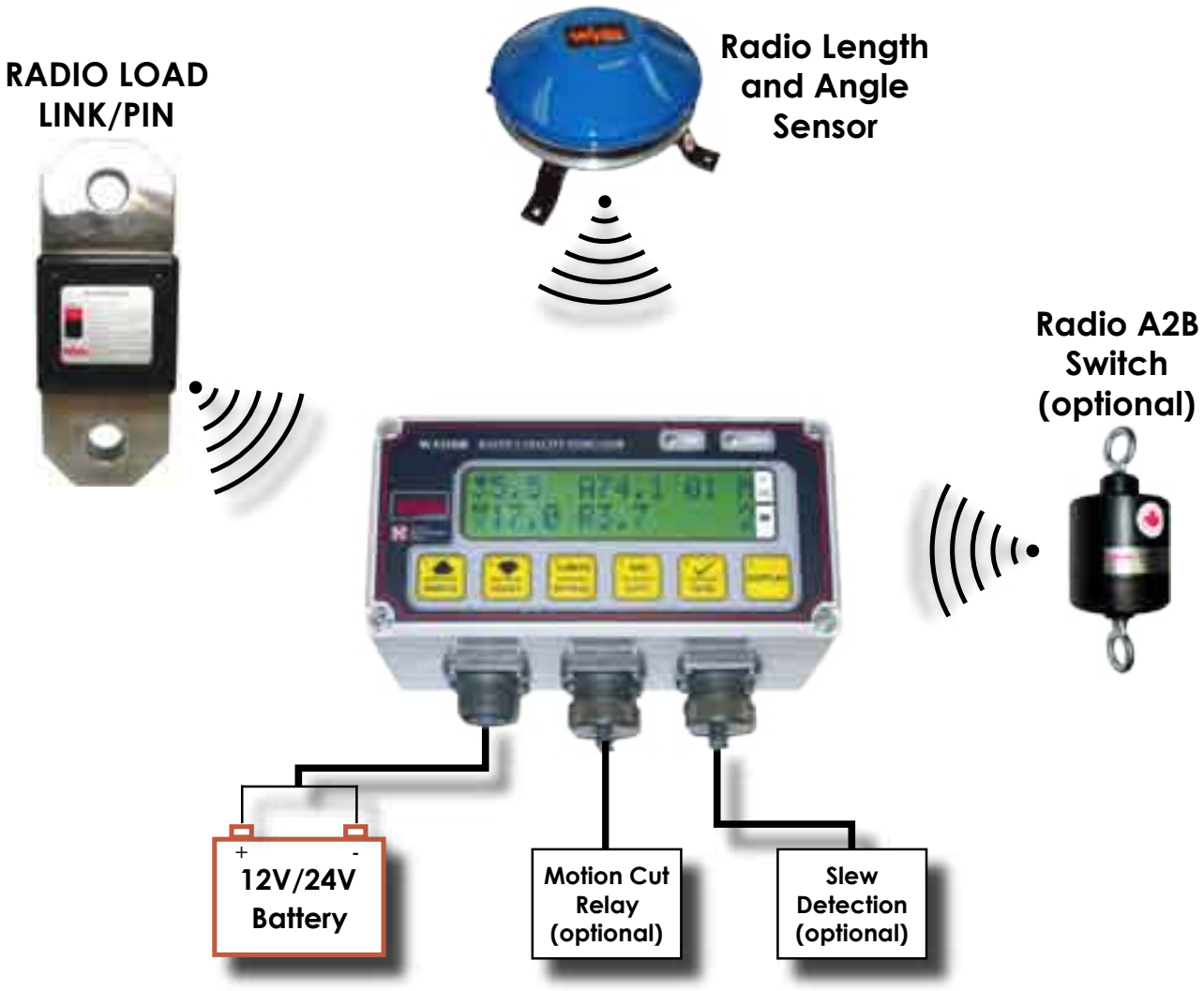
The load sensor provides an electrical signal that is proportional to the actual load in the load hoist rope system of the crane. An inclinometer provides a signal that is proportional to the boom angle. A potentiometer provides a signal that is proportional to the boom extension. Radius is calculated from boom angle, boom extension and the boom measurement parameters calculated by the system during the calibration process.

In operation the actual load lifted by the crane is automatically compared with corresponding data related to the maximum permissible crane manufacturer loading charts. The actual load is expressed as a percentage of permissible load, if this percentage exceeds a preset value, alarms and safety functions are activated.

The values of hook load, permissible load, boom angle and main radius are displayed in digital form on a liquid crystal display (LCD).

The required load-radius curves are stored in non-volatile memory and cannot be altered except by exchanging a factory programmed 'data eprom'. The calculated crane parameters and calibration data are stored in additional non-volatile memory. The calibration of the crane is performed by using known loads, boom angles, and other pre-determined data.

Figure 1: W3350R Block Diagram



1.4 - W3350R specifications

1.4.1 - Display

- Liquid Crystal Display (16 characters x 2 rows)
- Big characters 0,307" X 0,197" (7.8 mm X 5 mm)
- Viewing area of 3,898" (99 mm) wide X 0,945" (24 mm) high
- LCD backlight for great visibility in any lightning conditions
- 2 Color alarm status LED

1.4.2 – Sensor excitation

- Lithium battery powered (3Volts)

1.4.3 – Relay output

- 1 relay NO/NC contacts rated @ 5A

1.4.4 – Environmental

- Operating: -20 °C to +55 °C (-4 °F to 131 °F)
- Storage : -30 to +80 °C (-22 °F to 176 °F)

1.4.5 – Input power

- 11 – 30 VDC (10W typical, 20W max)

1.4.6 – Enclosure

- IP67 Display and processing unit

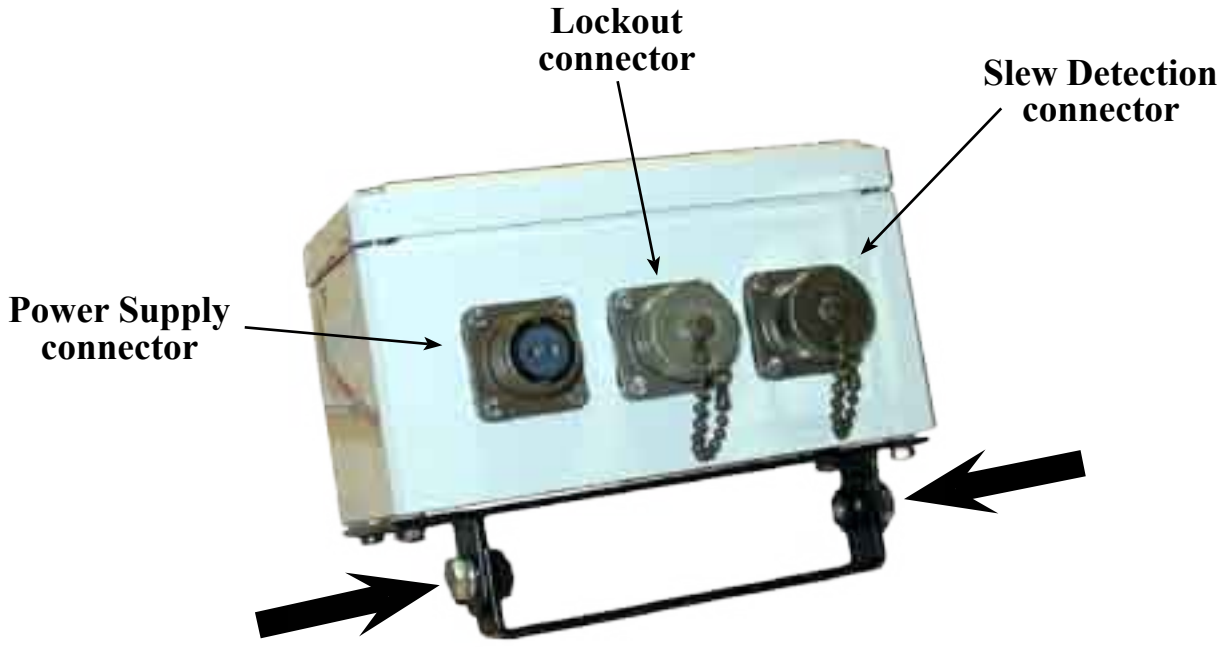
The W3350R display is rated IP-67

INSTALLATION

2.1 – Display mounting

The display is mounted on a bracket assembly that enables the unit to be tilted for optimum viewing angle.

The display should be located at the front of the cab, where it is readily visible from the operator's control position but does not interrupt the external view of the load working area. This is usually easier to accomplish when the display is mounted low in the operator's field of view. Also, if the display is mounted high in the cab, it can be hard to see against the sun. Take care not to obscure any crane instruments, control levers, or switches etc. Locate the best area and drill 2 x 1/4"mounting holes to match those in the bracket.

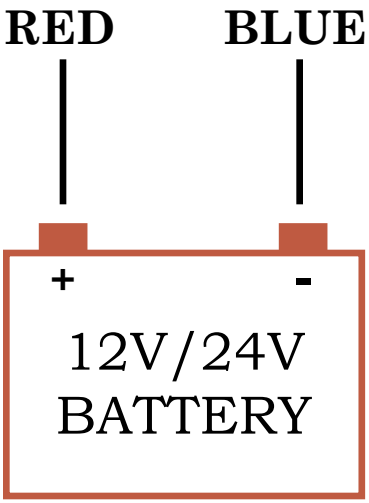


The viewing angle of the display can be adjusted using the two 7/16" hexagonal cap screws located each side of the bracket.

2.2 – Display connections

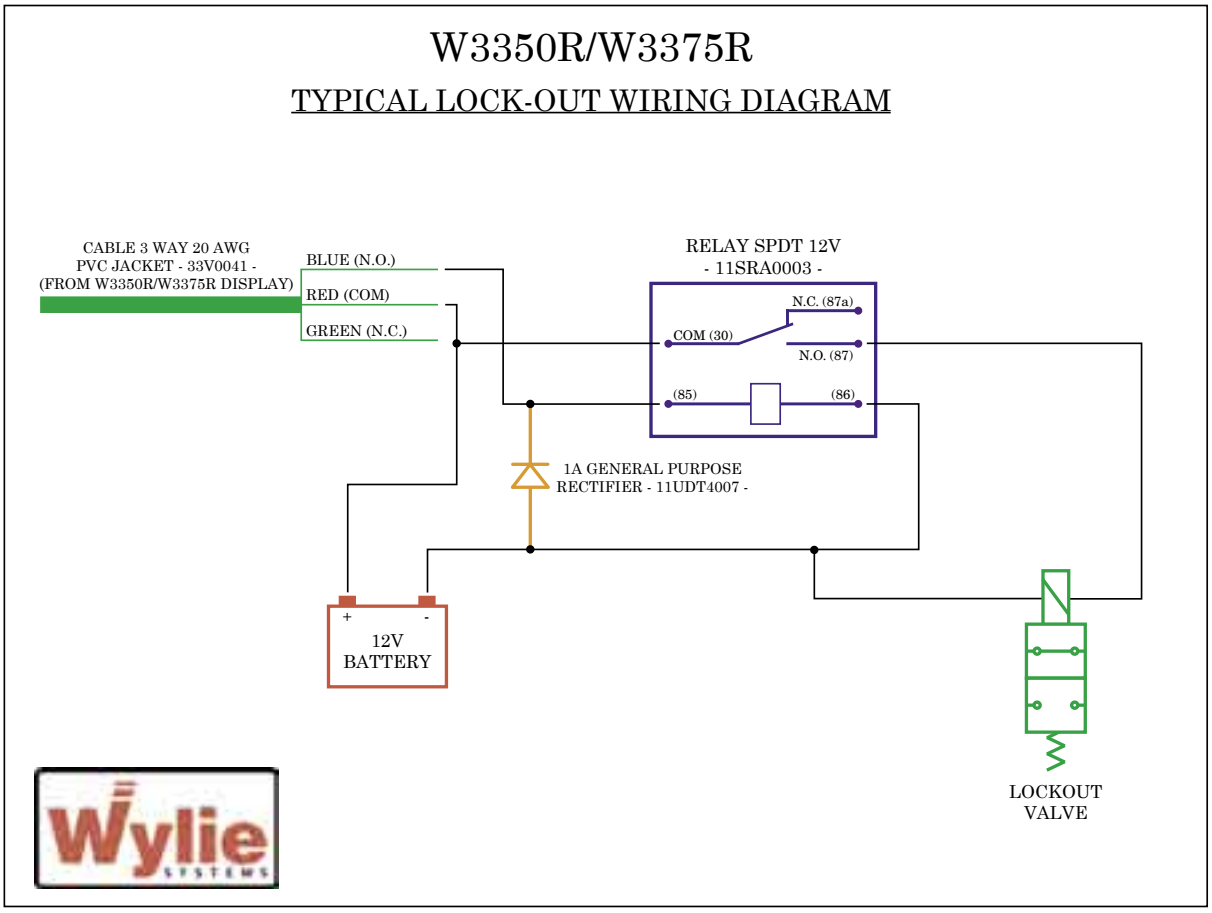
POWER CABLE:

The W3350R is sold with a 15 feet power cable that connect to the display left side connector. Connect either a +12VDC or +24VDC power source to the other end of the power cable. **The RED wire connect to the positive supply (+) and the BLUE wire to the negative supply (-)**. Supply voltage must be a minimum of 11 volts and must not be greater than 30 volts otherwise over-voltage protection will be activated and will blow the protective input fuse.



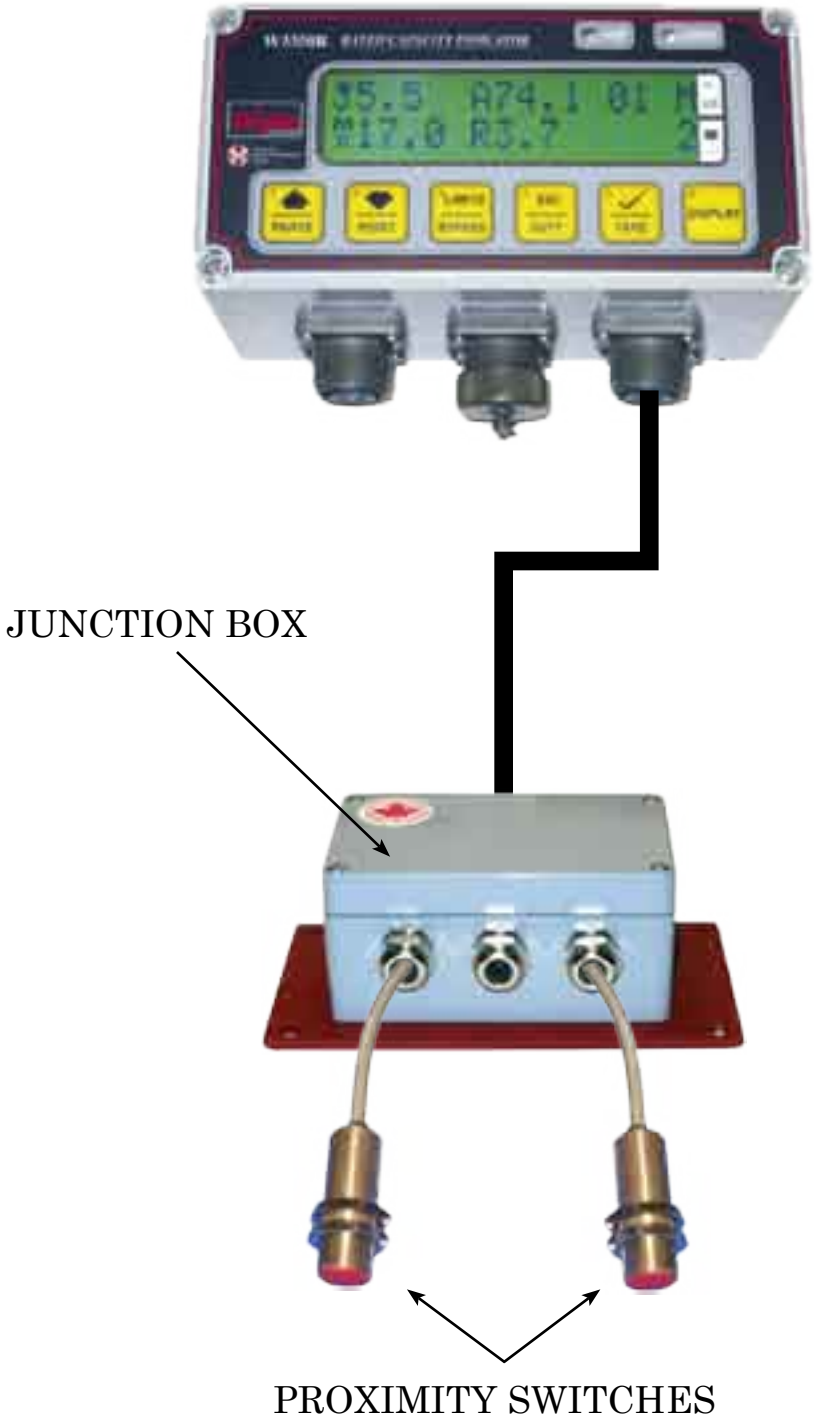
LOCKOUT CABLE (OPTIONAL):

An optional 25 feet lockout cable can be connected to the center connector of the display unit. The lockout connection is according to your specific lockout configuration. The relay is controlled in 'Fail Safe ' mode, that is it will be closed during normal operation, relay status of COM-NO, and open during alarm or power-off, relay status of COM-NC.



SLEW DETECTION (OPTIONAL):

An optional slew detection kit can be used to monitor the boom position (eg. over-front, over-side or over-rear of the machine). This kit includes a 25 feet slew detection cable that connect to the display right side connector. This cable goes to a junction box where one, two or three proximity switches are also connected. Exact wiring connection are according to the crane loading chart. Consult Wylie Systems for specific wiring diagram.



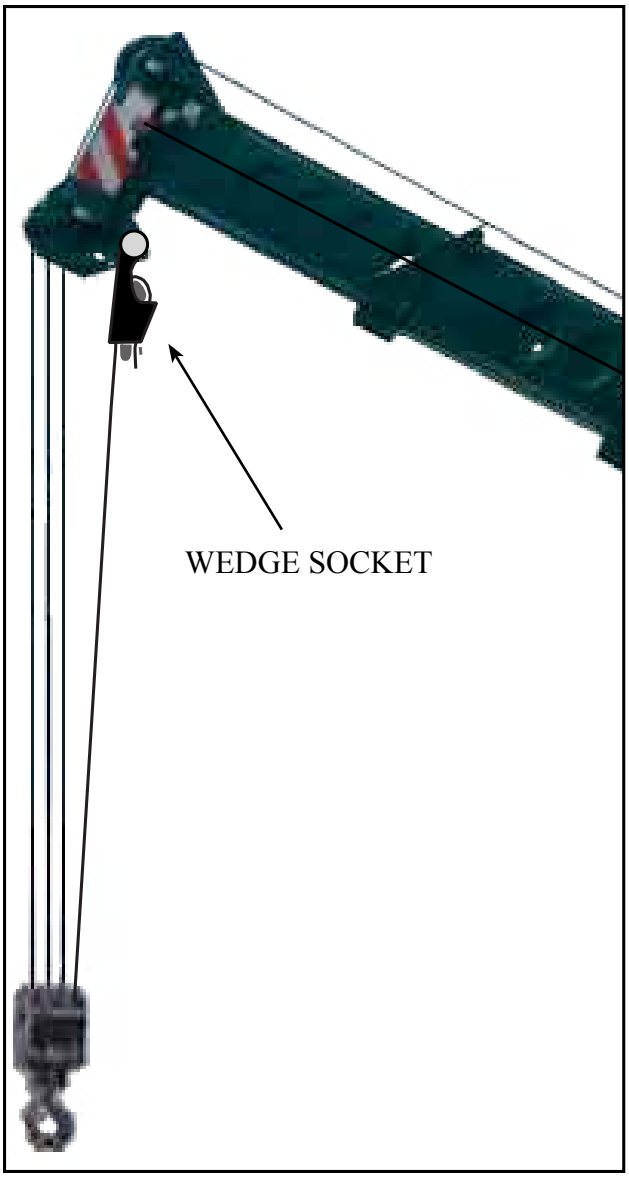
2.3 – Load link installation

Load link are generally installed on the hoist line's dead-end attachment to the boom. They measure the hoist line tension.

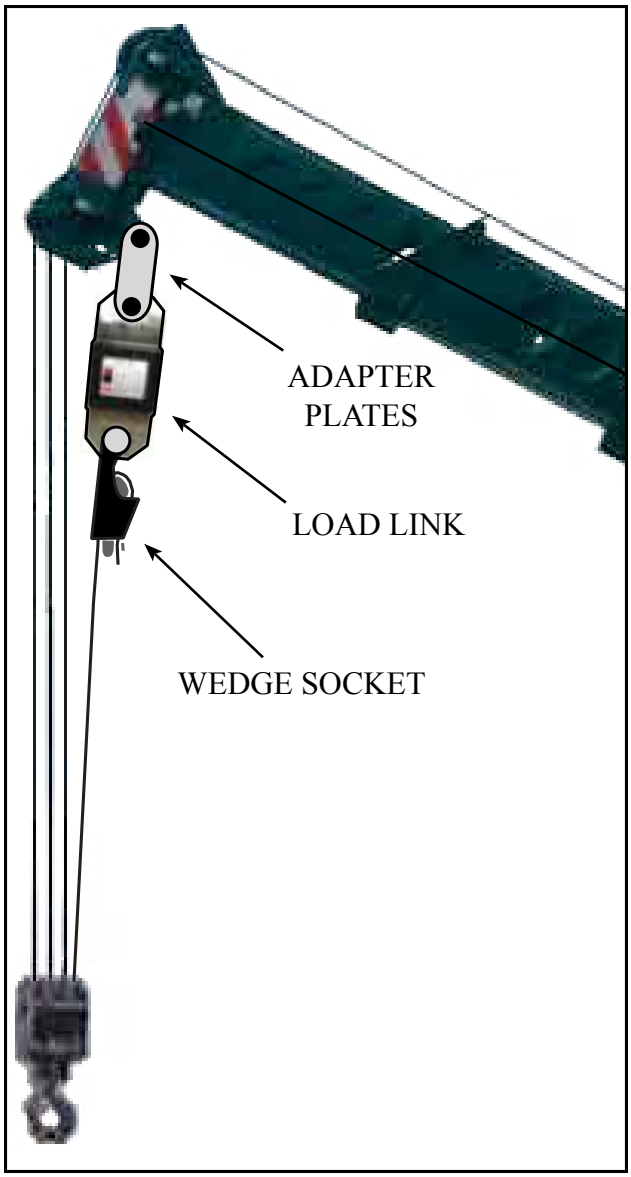
To install the load link:

1) Unpin the wedge socket or other hoist line attachment from the boom's dead-end point.
2) Pin two adapter plates to the boom dead-end.
3) Pin the load link to the adapter plates.
4) Pin the wedge socket or other attachment to the load link.

BEFORE INSTALLATION

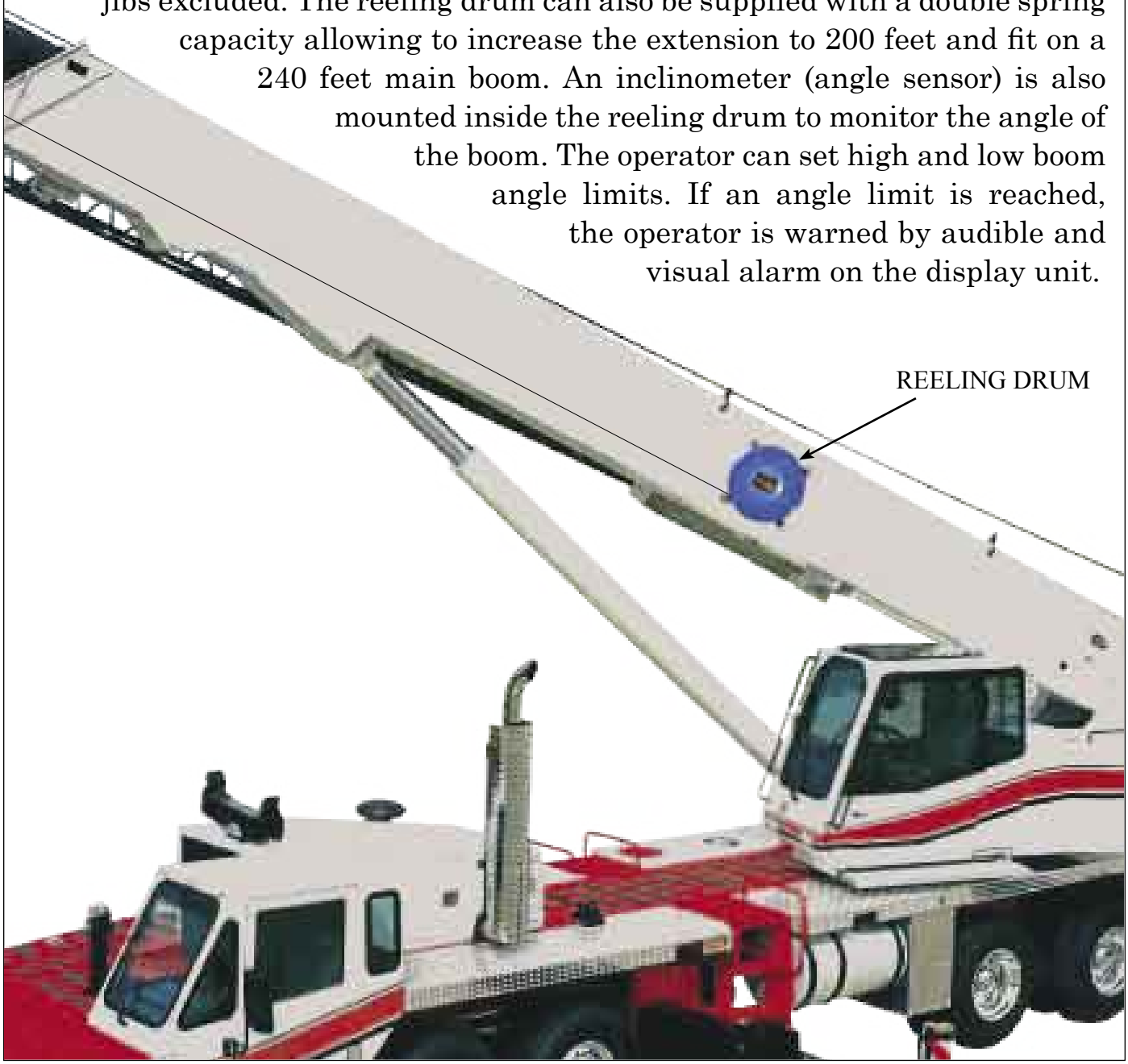


AFTER INSTALLATION



2.4 – Reeling drum installation

The length and angle sensor are located inside the reeling drum witch is usually located near the center of the left side of the boom. It should be in the visual range of the operator in the event the wire gets caught in branches. This way, the operator will see the problem and he will be able to prevent damages. The length sensor is a 10 turns potentiometer. As the boom extends, the reeling drum unwinds and the potentiometer is gear driven. The output is proportionalto the boom extension. The standard reeling drum has an extension capacity of 110 feet normal. This means, if you add the retracted boom length to the extension, that the reeling drum is good for a total boom length of approximately 140 feet, jibs excluded. The reeling drum can also be supplied with a double spring capacity allowing to increase the extension to 200 feet and fit on a 240 feet main boom. An inclinometer (angle sensor) is also mounted inside the reeling drum to monitor the angle of the boom. The operator can set high and low boom angle limits. If an angle limit is reached, the operator is warned by audible and visual alarm on the display unit.



The reeling drum must never stick above or below the boom as this would increase its vulnerability to colide with objects. It should be located equally distant from all chords and ribs to prevent stresses when welding lugs.

The reeling drum can be bolted to the boom or bolted to lugs welded on the boom. The easiest method of mounting the reeling drum is by using weld lugs. For this reason, the reeling drum is provided with four weldable mounting lugs. Mount the weld lugs to the reeling drum bracket and position the reeling drum on the boom. While holding the reeling drum in position, tack weld lugs to the boom base section sideplate. Remove the reeling drum from the weld lugs, finish welding the lugs to the boom base side plate and then remount the reeling drum.

WELD LUG

A cable guide must also be bolted in front of the drum to prevent the wire from jumping over the drum on windy days.

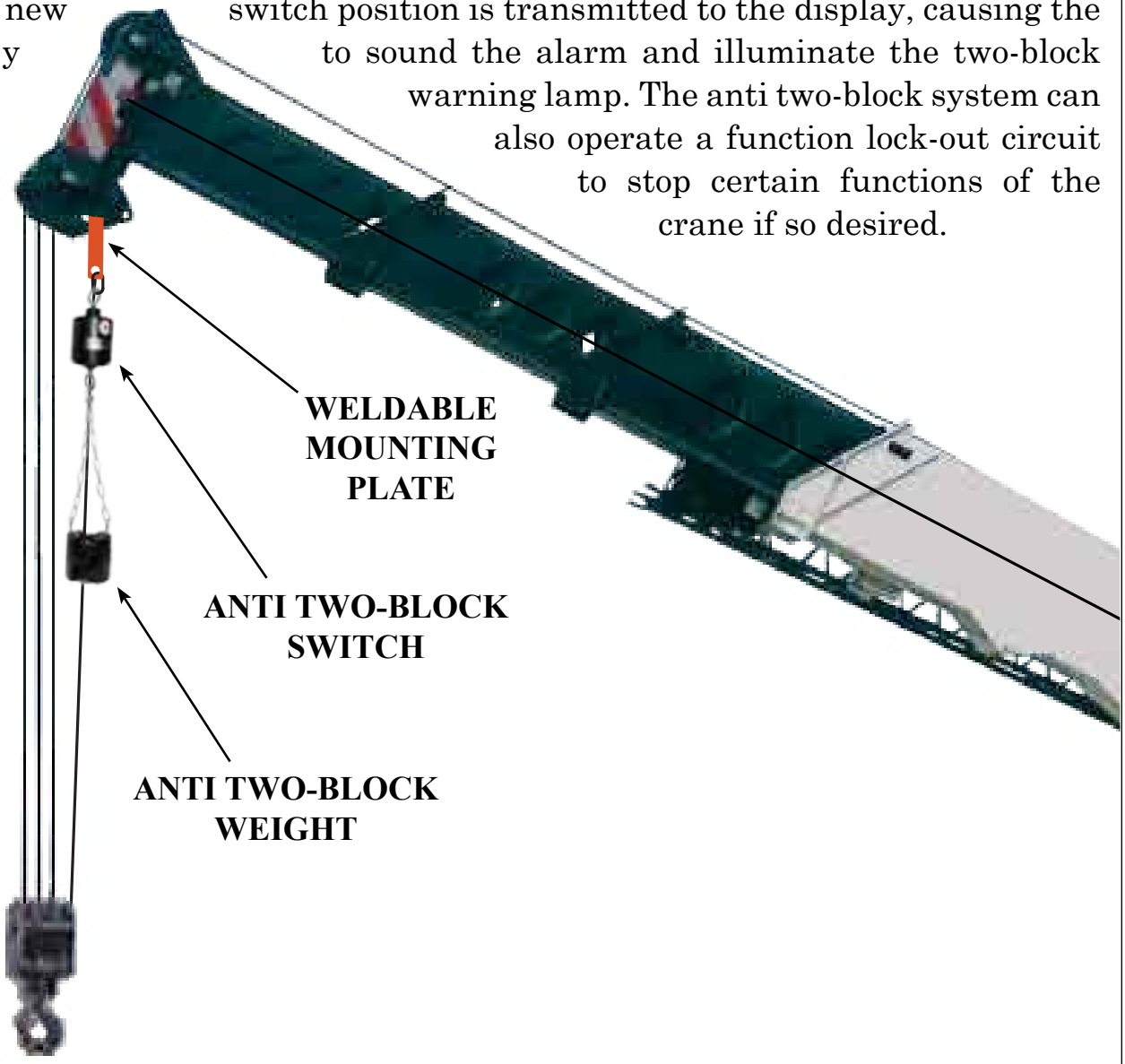
A cable guide must also be installed at the end of each boom section to keep the cable in straight line. Saging of the wire would cause non-linearity of the length measurement.

All cable guides must be in perfect alignment both vertically and horizontally and parallel to the boom to allow easy flowing of the wire and to keep the boom length measurement linear.

All weldings must be done by a certified welder and inspected according to the local regulation.

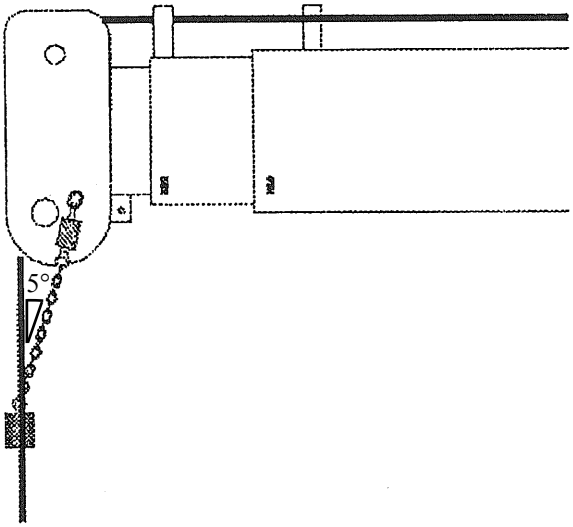
2.5 – Anti two-block switch installation

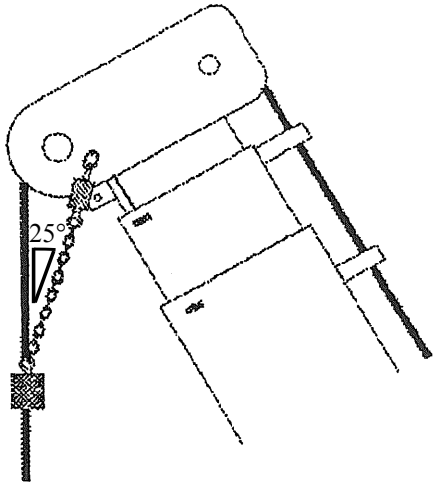
The anti two-block switch is a spring pressured, normally open switch used to provide a warning to the operator that the hook block is approaching the boom tip sheaves or the upper block. An anti two-block weight is hung from the anti two-block switch, holding the switch in a closed contacts position. Depending upon the design, this weight is loosely clamped around one or more of the hoist line falls below the boom tip. When the hook block is raised into the weight it lifts the weight, allowing the switch to return to the open contacts position. The new switch position is transmitted to the display, causing the display to sound the alarm and illuminate the two-block warning lamp. The anti two-block system can also operate a function lock-out circuit to stop certain functions of the crane if so desired.



The anti two-block switch is mounted at the boom or jib tip in a location which allows the switch to hang freely suspended through the boom's range of motion. This will allow it to follow the hoist line as the boom angle changes. The switch should be mounted so that there is little or no side pull on the switch when the weight is clamped around the hoist line. It is preferable to install the anti two-block weight on the slowest moving part of the hoist line's reeving. This is typically the last line (the dead-end).

The ideal angle of assembly (switch, chain and weight) with the hoist line is between 5 degrees and 25 degrees at all boom angle. To keep this tolerance, the mounting bracket should be installed as close as possible to the head sheave center pin and sticking out about 3 to 5 inches away from the outmost sheave. In no instances, must the switch lean or touch parts of the boom during operation: this would cause side forces on the switch leading to mechanical wear.





Once the mounting location is determined, weld the mounting plate in the proper position. The weight will be clamped around the proper hoist rope then attached to the bottom of the switch. Please note that the anti two-block weight should move freely on the hoist rope and not bind on the hoist rope. If the weight is too tight on the hoist rope, false two-block indications will occur.

CONFIGURATION AND CALIBRATION

The calibration section will guide the technician and explain the procedures to follow, in order to calibrate the W3350R system rapidly and efficiently.

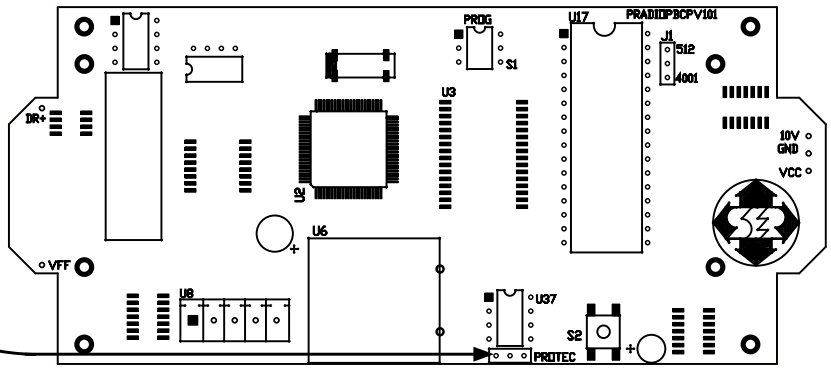
The calibration of the sensors is performed using software by entering data using the display's keypad.

Necessary Calibrating Tools	• Angle indicator with accuracy of 0.5º or better. • Test load that produces a line pull of approximately 90% of line pull.
Necessary Calibration Information	• The rated line pull of each hoist line. • The maximum number of parts of lines. • The weight of each block (within ±1%), slings and attachment used for calibration.

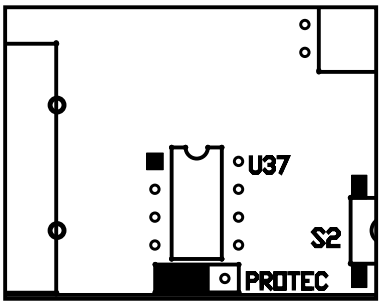
3.1 - Memory Protection

The W3350R system has both a hardware and software key to protect the data calibration. The hardware key protection is implemented by the calibration jumper located on the CPU board inside the display box. When you place the calibration jumper to the PROTEC position, the hardware protection is enabled and you are not allowed to enter calibration data in the memory bank.

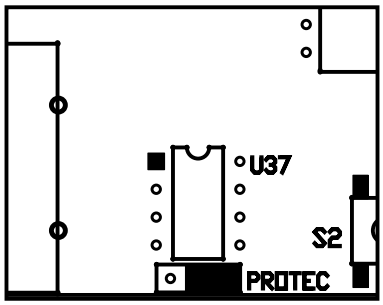
Close up view of the calibration jumper located on the CPU board. When the switch is placed on the PROTEC position, calibration modification is disabled.



The W3350R CPU board



Jumper set to the calibration enabled position (non-protec).



Jumper set to the calibration disabled position (protec).

MAKE SURE THAT THE CALIBRATION SWITCH IS SET TO THE NON-PROTEC POSITION BEFORE STARTING CALIBRATION OF THE SYSTEM. WHEN THE CALIBRATION IS OVER SET THE SWITCH TO THE PROTEC POSITION TO PREVENT YOUR CALIBRATION DATA FROM BEING CORRUPTED.

3.2 – System Initialization

When each sensor has been verified for its full functionality the system can be initialized in order to start the calibration procedure. <u>This will obliterate all calibration data from the memory bank, and therefore should be done only when a system is FULLY re-calibrated</u>.

CALL WYLIE SYSTEMS BEFORE DOING THIS!

Perform a system initialization as follows:

1. Press and hold buttons #1 and #2 at the same time when the system is powered up.

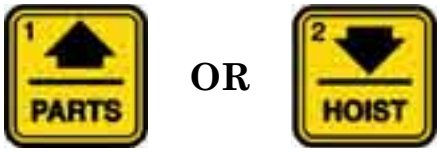
2. Press Select (#5) to confirm your choice.

3.3 - Calibration Mode

The calibration mode is a separate entity of the w3350r system. It is totally independent of the regular operating mode as if it was a different system. The purpose of the calibration mode is to calibrate the angle sensor, the length sensor, the load sensor(s), the radius and numerous factors or set points.

The calibration mode is accessed by pressing both button #1 and button #6 in normal operation.

The calibration mode is organized in a linear sequence. A series of 12 items will appear. The SCROLL UP (#1) or SCROLL DOWN (#2) buttons will allow you to navigate through these items.



Although in calibration mode it is possible to navigate and access any stage of the calibration, it is recommended (and sometimes essential) that the system is calibrated in the order described in this manual.

CALIBRATION MENU:

- **1- CALIB. DATA**
  - 1- TX ID AUTOMAT.
  - 2- TX ID MANUAL
  - 3- DISPLAY UNITS
  - 4- RELAY FUNCTION
  - 5- MAX PARTS
  - 6- ROPE LIM. MAIN
  - 7- ROPE LIM. AUX.
  - 8- PERCENT/PART
  - 9- APPROACH %
  - 10- OVER %
  - 11- CUT OFF %
  - 12- SLEW OFFSET
  - 13- SHEAVE RADIUS
  - 14- HEIGHT OFFSET
  - 15- GAP FOR EXT.
  - 16- RIG ANGLE
  - 17- O.D. RADIUS
  - 18- O.D. ANGLE
  - 19- O.D. LENGTH
  - 20- I.D. LENGTH
- **2- SELECT SENSOR**
  - 1- RADIO LOAD
  - 2- RADIO ANGLE
  - 3- RADIO LENGTH
  - 4- WIRED LOAD
  - 5- WIRED ANGLE
  - 6- WIRED LENGTH
- **3- ZERO R. LOAD**
- **4- SPAN R. LOAD**
- **5- BOOMLEN. P1-P2**
- **6- TARE LOAD**
- **7- BOOM DEF. P3-P4**
- **8- LOAD BEND COR.**
- **9- CALIB STATUS**
- **10- INTERPOLATION**
- **11- TX BATTERY**

3.4 Calibration Procedure

STEP 1

THIS STEP IS ALREADY DONE BY WYLIE SYSTEMS AND THEREFORE YOU SHOULD SKIP IT AND START FROM STEP 2.

The first thing to do is to **identify the transmitters used with the W3350R system**. Each transmitter is labeled with a serial number that contain the TX ID number (ie the serial #). It is a 4 digits hexadecimal number. Example: 8675, A457, 7BF4. The TX ID number can be entered by two different way: manually or automatically.

MANUALLY:

In the calibration menu, push the select button to enter the calib data menu.

Scroll down with button #2 to choose the "2 -TX ID MANUAL" line and push the button #5 to enter the menu.

The display should now show:

Select «A)LOAD SENS.MAIN» with button #5. 

The display now show:

Use the UP or DOWN 

button to choose the first character and press 

when it's done. The cursor shifts automatically to the next character once your selection is made. Enter the whole TX ID number for your main load sensor.

AUTOMATICALY:

In the calibration menu, push the select button to enter the calib data menu.

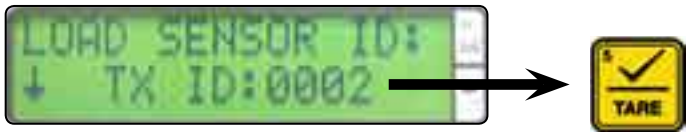

Choose the "1 -TX ID AUTOMAT" line and push the button #5 to enter the menu.


The display should now show :

Push the button #5 to select the load sensor. Now the display will show :

Now the system wait to receive a transmission from any load sensor.

You can wait for a maximum of 2 minutes until you receive a transmission from your main load sensor or you can force a transmission by lifting a load with your main hoist. As soon as the load sensor do a transmission, its tx id will appear on the second line of the display.



Push button #5 to accept it.

WARNING : since the tx id automatic can identify any load sensor transmitter, it can identifiy another load sensor from Wylie systems if there is another in the near area. Be sure that the tx id suggested by the system is realy the one you want. If you only have one load sensor in the field, it is ok. If the ID is not the one on the label of the transmitter, push the button #2 and the system will wait for a different tx id.

Repeat the procedure for the angle sensor, the length sensor and the anti two-block switch TX ID number if those options are fitted on the crane. Instead of choosing load sens. main, push button #2 to select a different sensor.

STEP 2

The second step is to select the **display units**. Scroll the calibration data menu with the up (#1) or down (#2) button to the line:

3- DISPLAY UNITS

and push the button #5 

to enter this menu. The display will show:

You can use the up or down 

button to scroll between 1000 pounds (Klb) and feet or tonne (te) and meters. Push button #5 

when the desired unit is on the screen.

STEP 3

The third step is to set the **relay function**. Scroll the calibration data menu with the up (#1) or down (#2) button to the line :

4-RELAY FUNCTION

and push the select button (#5) 

to enter it. The display will show :

Use the up or down 

button to scroll between the 3 options:

A2B + CUT-OFF : this mean that the system relay will react when an A2B conditon or a CUT OFF condition occur.

CUT-OFF ONLY : this mean that the system relay will react only when a CUT OFF condition occur.

A2B ONLY : this mean that the system relay will react only when an A2B condition occur.

When the desired function is on the second line of the display, push the select button (#5) 

to save it.

STEP 4

The next step is to enter the **maximum number of parts of line**.
Scroll the calibration data menu with the up (#1) or down (#2) button to the line :

5- MAX PARTS

and push button #5 

to enter it. The display will show :

Use the up, down 

and select (#5) 

button to enter the maximum number of parts of line to be used.

The max parts of line is not the current number of parts rigged on the machine. It is only to restrict the operator in the choice of the parts of line. For exemple, if the max parts is set to 01, this mean that the operator won't be able to change his parts of line to 2 or more.

STEP 5

Enter the **rope limit** for each hoist. This is the **maximum line pull** permitted per part of line on the main and auxiliary hoist according to the crane loading charts. This value will be used as the load limitation if lower than the rated capacity. Scroll the calibration data menu to the line :

«6-ROPE LIM. MAIN»
«7-ROPE LIM. AUX.»

Use the up (#1), down (#2) 

and accept (#5) 

button to enter the rope limit of the main or auxiliary hoist (line pull).

To be able to use the auxiliary hoist and calibrate it, you must enter a value in the rope limit aux menu. You can use the same load sensor for the main and the auxiliary if you enter the same tx id for both sensors.

To calibrate the auxiliary hoist, you must select it in the normal operation mode then enter in the calibration mode of the W3350R.

STEP 6

Next you must enter a value for the **slew offset**. The slew offset is the distance between the center of rotation and the boom base pin in feet or metres. Negative if the boom base pin is behind the center of rotation, otherwise positive. On telescopic cranes, this value is generally negative.

Scroll the calibration data menu with the up and down button to the line :

12- SLEW OFFSET

Use the up (#1), down (#2) 

and accept (#5) 

button to enter the slew offset value.

STEP 7

Enter the **sheave radius** value. The sheave radius is the radius of the boom head sheave in feet or metres. It is used to compensate the radius when lifting with one part line.

Scroll the calibration data menu with the up (#1) or down (#2) button to the line :

13- SHEAVE RADIUS

Use the up (#1), down (#2) 

and accept (#5) 

button to enter the sheave radius value.

STEP 8

Enter the **height offset** value. The height offset is the distance between the ground and the boom base pivot. It is used to determine the height of the boom head sheave block from the ground. Add the clearance height above the boom head sheave block to use the height display as the head room height of the crane (this will be safe but not precise).

Scroll the calibration data menu with the up (#1) or down (#2) button to the line :

14- HEIGHT OFFSET

Use the up (#1), down (#2) 

and accept (#5) 

button to enter the height offset value.

STEP 9

Go back in the normal operating mode by pressing the ESC button twice from the calibration data mode.

To begin the main load sensor calibration, you must select the proper hoist, duty number and the correct number of parts of line.

•The hoist selection is done using the hoist button (refer to the operation manual for details).
•The duty number selection is done using the duty button (refer to the operation manual for details).
•Specify the parts of line used for the calibration by pressing the parts button (refer to the operation manual for details).

At this point, the main load sensor is ready for calibration. Get the crane ready to lift the test load. The load should be near maximum line pull of the hoist line. The load sensor can be calibrated on any number of parts of line. However, to avoid mixing hoist line friction and rope reading fluctuations, it is preferable to calibrate the hoist line with the fewest parts of line possible.

Enter the calibration mode of the W3350R system. Refer to section 3.3 of this manual for details.

Now it's time to **calibrate the load sensor**.

REMEMBER that before starting the load sensor calibration, you must make sure that the correct crane configuration is set in the normal mode: the number of parts of line rigged and the actual hoist selection are important factors for load sensor calibration because the zero and span load will take thoses parameters into account.

Scroll with the up (#1) or down (#2) button in the calibration menu to the line:

2- SELECT SENSOR

Push the SELECT (#5) button and then choose:

1- RADIO LOAD

Push button #5 to select the radio load calibration. The display will show:

Push the SELECT (#5) button.

Lift a small test load that corresponds to approximately 10% of the maximum rated capacity for the current parts of line and crane configuration. The weight of the hook block may be sufficient. Use buttons (#1) and (#2) to edit the value of the total suspended load (hook block, slings, hoist line below boom tip).

The value on the second line of the display must match the true value of the total suspended load (hook block, slings, hoist line below boom tip). Push the Select (#5) button to confirm the edited value.

The number on the first line is the value (in bits) of the load sensor. Without any load applied (load cell on a shelf), this number should be around 500.

Scroll down one time to the line:

Push button #5 to enter it. The display now show:

Slowly lift a large test load (between 50% and 90% of the maximum rated capacity for the current parts of line and crane configuration) and then stop smoothly. The value on the first line of the display should be above 2000.

The value on the second line of the display must match the true value of the suspended load (load, slings, hook block, shackles, hoist line below boom tip) in thousand pounds or kilos depending the units of measure selected. To adjust this value use the up (#1) and down (#2) buttons to select the value of the first digit and press the select button (#5) to accept it. Repeat this procedure with remaining digit(s). The load sensor is now calibrated.

Note: the biggest load (without overloading the crane) you can use for calibration, the better precision you will get with the system.

STEP 10

The next step is to **calibrate the angle sensor**. Scroll with the up (#1) or down (#2) button in the calibration menu to the line:

2- SELECT SENSOR

Push the SELECT (#5) button and then choose:

2- RADIO ANGLE

Push button #5 to select the radio angle calibration. The display will show:

Push button #5 to enter it. The display now show:

Boom down to minimum angle, ideally zero degrees (main boom parallel to ground). Measure the true boom angle using an independent precision angle indicator and note this value.

The value on the second line of the display must match the true value noted with the inclinometer. To adjust this value use buttons (#1) or (#2) to adjust the indicated value of boom angle recorded earlier and push button #5 to confirm.

STEP 11

The next step is to **calibrate the length sensor**. Scroll with the up (#1) or down (#2) button in the calibration menu to the line:

2- SELECT SENSOR

Push the SELECT (#5) button and then choose:

2- RADIO LENGTH

Push button #5 to select the radio length calibration. The display will show:

Push button #5 to enter it. The display now show:

Retract the boom completely. The sensor's value (first line of the display) must be approximately 700 bits (adjust the potentiometer inside the cable reel if necessary).

The value on the second line of the display must be zero (0) if the boom is completely retracted. Push button #5 to confirm this value.

Scroll down one line to:

and push button #5 to enter the menu. The display will show:

Extend the boom completely. The sensor's value should be at least 500 bits above the zero value (typically 2500 bits or more). In the second line of the display, enter the difference between the fully extended main boom and the fully retracted main boom. Refer to the crane's main boom chart.

Example: A fully extended boom of 81 feet minus a fully retracted boom of 34 feet = 47 feet. You enter 047.0 as the span extension value. To adjust this value use buttons (#1) or (#2) and push the Select (#5) button to confirm the edited value.

STEP 12

Step 12 is the **radius calibration**. This step must be done for each boom configuration.

Scroll with the up (#1) or down (#2) button in the calibration menu to the line:

Push button #5 to enter it. The display now show:

Retract the boom completely.
Boom down to approximatly 20° (between 10° and 25°).
Push the select button (#5) to edit the radius value.
Measure the radius (from center of rotation to the hook).
Use the up (#1) or down (#2) button to change the radius value.
Push the select (#5) button to confirm the value.

The system will go automatically to:

Boom up to approximatly 60° (between 55° and 80°).
Push the select (#5) button to edit the radius value.
Measure the radius (from center of rotation to the hook).
Use the up (#1) or down (#2) button to change the radius value.
Push the select (#5) button to confirm the value.

STEP 13

Step 13 is the **tare load setting.**

The purpose of the tare load is to take into account the weight of the hook block (include hook block, slings, hoist line below boom tip) during unloaded boom deflection calibration (P3 and P4).

Scroll with the up (#1) or down (#2) button in the calibration menu to the line:

6- TARE LOAD

Push button #5 to select the tare load calibration. The display will show:

Use the up (#1), down (#2) 

and accept (#5) 

button to enter the tare load value.

STEP 14

Step 14 is the **unloaded boom deflection (P3 and P4)**. This step must be done for each boom configuration.

Scroll with the up (#1) or down (#2) button in the calibration menu to the line:

Push button #5 to enter it. The display now show:

Extend the boom to approximately 1/3 of the full extension.
Place the boom to approximately 60° (between 55° and 80°).
Push the select (#5) button to edit the radius value.
Measure the radius (from center of rotation to the hook).
Use the up (#1) or down (#2) button to change the radius value.
Push the select (#5) button to confirm the value.

The system will go automatically to:

Fully extend the boom.
Push the select (#5) button to edit the radius value.
Measure the radius (from center of rotation to the hook).
Use the up (#1) or down (#2) button to change the radius value.
Push the select (#5) button to confirm the value.

STEP 15

Step 15 is the **loaded boom deflection (P5)**.
When a load is applied on a telescoped boom, the deflection of the boom causes an extension of the radius. To correct this radius error, the system uses a load bend correction factor. You must carry out a load bend correction for each configuration of the crane.

The **loaded boom deflection** requires a weight to lift. This load must be between 50% and 100% of the crane's capacity fully telescoped and at an angle between 55° and 80°. It includes the hook block, the slings, the hoist line weight and any other load applied to the boom tip.

Scroll with the up (#1) or down (#2) button in the calibration menu to the line:

Push button #5 to enter it. The display now show:

Extend the boom completely and boom up to an angle between 55° and 80°.
Lift a load witch is between 50% and 100% of the crane's capacity.
Push the select (#5) button to edit the radius value.
Measure the radius (from center of rotation to the hook).
Use the up (#1) or down (#2) button to change the radius value.
Push the select (#5) button to confirm the value.

END OF THE CALIBRATION PROCEDURE!

Notes