WEIGH-TRONIX

# WI-125 (QTLTSC)
# Indicator and System
# Service Manual

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# WI-125 Specifications

| | |
|---|---|
| Dimensions: | 9.37" W x 6.75" H x 3.75" D<br>(23.8 cm x 17.1 cm x 9.5 cm) |
| Power: | 10 to 90 VDC, 300 mA minimum |
| Display: | 8 digits, 7-segment LCD, 0.6 inch high with annunciators and backlighting. |
| Display Rate: | One, two or five times per second |
| Agencies: | NIST Handbook 44, Class III, IIIL, 5,000 divisions<br>Consumer and Corporate Affairs, Canada<br>FCC Class A |
| Accuracy : | Class III, IIIL; 5,000 divisions<br>Span: ±5.0 ppm/C Zero: ±.066 uV/C (-10 to 40°C)<br>Span: ±10 ppm/C Zero: ±0.13 uV/C (-30 to 60°C) |
| Linearity: | ±0.005% of capacity, maximum |
| Repeatability: | ±0.005% of capacity, maximum |
| Hysteresis: | 0.005% of capacity, maximum |
| Weigh bar drive capacity: | Up to eight 350 ohm weigh bars. |
| Environment: | -10 to 40°C (14 to 104°F) for HB-44 specs<br>10 to 90% relative humidity |
| Internal Resolution: | 0.25 mV/V = 67,500 counts |
| A to D conversion rate: | 30 times per second |
| Analog Range: | -0.14 to +3.5 mV/V |
| Capacity: | .00001 to 999999, programmable to any number between these limits. |
| Divisions: | .0001 to 20000, programmable to any division size between these limits. |
| Push Button Zero Range: | 0 to ±100% of capacity; programmable independent positive and negative limits; unit will not allow zeroing beyond capacity. |
| Tare: | The unit may be configured to have pushbutton tare which can function as a scroll tare register. Pushbutton tare and scroll tare may tare only positive gross weights up to the capacity of the unit. Scroll tare allows numeric entry of a tare value using two keys to enter the value. |
| Motion Detection Window: | Programmable from 0 to 999999 divisions, decimal entries are accepted. |
| Automatic Zero Tracking: | Window: Programmable from 0 to 999999 divisions, decimal entries are accepted.<br><br>Net Mode<br>Tracking: May be enabled or disabled.<br>Rate: 0.2 division per second<br>Starting Delay: 2 seconds |
| Angle Compensation: | Compensates for pitch and/or roll out-of-level weighing. |
| VIBRATION COMPENSATION | |
| Analog Low Pass Filter: | Two section with .10 second time constant for low power analog and .06 second time constant for standard analog. |
| Software Low Pass Filter: | One section with .05 second time constant. |

# Introduction

This service manual covers the WI-125/Quik-Tach certified lift truck system. The front section of the manual covers such things as configuration of the indicator and calibration of the system. The back section contains technical drawings of the system components.

# Operational Modes

The WI-125 operates in three modes:

- operations mode
- test mode
- configuration mode

## Operations Mode

Operations mode contains all normal weighing operations. In this mode, you can view or set the following parameters if the unit is so configured:

- pushbutton tare
- time
- date
- light (backlight)

Any combination of these items can be secured behind a security code. Any items secured by the code number can be viewed but not changed. Operations mode is fully explained in the *WI-125 (QTLTSC) Indicator User's Manual* (PN 29608-0013).

## Test Mode

Use this mode to perform tests on the WI-125. The test mode is covered in the *Indicator Diagnostics* section of this manual.

## Configuration Mode

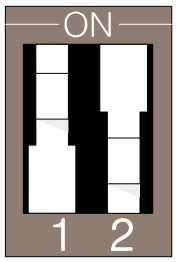
Use this mode to set up options and program the operation of the scale and indicator. Configuration is explained fully in the *Configuration Mode* section of this manual.

# Sealing the Indicator

*Complete the physical sealing of the unit by using a sealing wire and the screws on the outside of the enclosure.*

*S1-2 is not functional.*

The WI-125 can be sealed. If sealed, no configuration items can be changed in the configuration menu. Seal the unit by placing switch S1-1 in the OFF position. Unseal the unit by placing S1-1 in the ON position. Remove the front panel of the indicator to gain access to switch S1-1. The switch is located near the bottom corner of the PC board behind the display and looks like the diagram at right.



# Keyboard

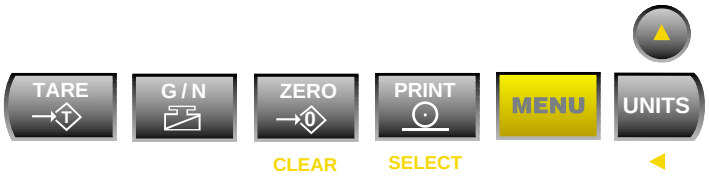



**Figure 1**
WI-125 Keyboard

Enters a pushbutton tare in gross/net operation. This key's factory default is OFF and it must be enabled for use.

Accesses the gross weighing mode from any other function and activates the net weighing mode if a tare is active.

Zeros the scale in gross or net weigh mode. This button also clears scrolled digits on the display before they are accepted.

Sends a print command and is used to select menu items.

Used to access menus and move among choices in a menu.

Changes the unit of measure during operations mode and moves a digit inserted with the - key one space to the left. The factory default for this key is set for lbs only.

Lets you scroll numerical values.

## Entering Numbers with Arrow Keys

The arrow keys are used to enter numbers throughout different configuration selections. Refer to this section when you need to enter a number or numbers.

Example: To key in the number *603*

Press the ↑ key repeatedly until the *6* appears on the display.

Press the ← key once to move the *6* one space to the left.

Press the ↑ key until the *0* appears.

Press the ← key once to move the *60* one space to the left.

Press the ↑ key until *3* appears.

To exit to normal weigh mode, press **G/N**.

# Configuration Mode

This section of the manual explains how to view and set up parameters in the configuration mode. Follow the configuration menu and instructions in Figure 2 to set up the WI-125 indicator to suit your specific needs. Below are explanations for each section of the menu. The non-bold heading for each section is the pathway you follow on the configuration menu to get to the parameter or parameter options shown in bold text.

**Sidestepping Security Code Entry to Configuration**

In case you forget the security code or the security code is altered without your knowledge, access the configuration menu as follows: First, make sure switch S1- 1 is in the OFF position. Then enter the default code number 1. Get into the configuration menu as instructed in the key to Figure 2. When **CODE NUMBER** is displayed on the menu, flip switch S1-1 from the OFF position to the ON position. Understand that opening the indicator to access the switch unseals the indicator! Then enter a new code number twice, as the display prompts. Now you have complete access to the configuration menu.

Setup, Scale, Units-
**Pounds, 1000g**

Under each unit of measure you have the option of selecting ON or OFF. Choosing the OFF option under a unit of measure disables that unit of measure. If a unit is disabled, it will not appear in the configuration menu under *CAPACITY* or *DIVISION* nor will you be able to choose it during weighing procedures.

Setup, Scale, Units, Capacity-
**Pounds, 1000g**

This menu section lets you set the scale capacity for those units of measure enabled under *UNITS*. For lb/kg scales to be sealed in the USA, you must be sure the capacities are within one division. For example, if you want a 10,000 by 2 lb scale, the kg capacity must be 4536 kg. Note that the indicator will show over range at 10,000 lb. If a 2.5% over range is desired, you must enter 10250 lb and 4695 kg as the capacities in this example.

Setup, Scale, Units, Capacity, Division-
**Pounds, 1000g**

This option lets you set the division size for the units of measure enabled under *UNITS*.

One feature not readily apparent is that the number of displayed leading zeros can be specified. For example, for 10 pound divisions, if you want 5 zeros displayed when no weight is on the scale, key in 00010 for a division size. The display will read 00000 when the scale is empty. If you want two zeros displayed when the scale is empty, key in a division size of 10.

Setup, Scale, Units, Capacity, Division, Zero-

**-Percent, Percent**

With this option you can set the plus and minus percent of capacity that the indicator can zero. For example, if the capacity of the scale is 10,000 lb and the zero range is ±2%, key in *2* for both the positive and negative ranges. You may key in decimal values.

Setup, Scale, Units, Capacity, Division, Zero-

**Stability**

This option lets you set the size of the motion detection window in divisions. You may enter decimal values less than one or up to 999999 which turns off the motion detection.

Setup, Scale, Units, Capacity, Division, Zero, Stability, AZT -

**Range, Net**

Range - With this option you can set the ± automatic zero tracking window in scale divisions. To turn off AZT, enter a range of 0.

Net - If an AZT range is set, NET will appear in the menu. This option lets you choose to enable AZT during net weighing operations (ON) or disable it (OFF). The gross weight must be zero for AZT to work in net mode.

Setup, Scale, Units, Capacity, Division, Zero, Stability, AZT, Update -

**5, 1, 2**

Choose the rate at which your display updates information, 1, 2, or 5 times per second. Five is the default value.

Setup, Scale, Units, Capacity, Division, Zero, Stability, AZT, Update -

**Average**

This option allows you to choose the number of display periods over which the dates are internally averaged prior to being displayed. Any number between 1 and 10 may be entered. Three is the default value.

Setup, Scale, Options

**Angles**

Choosing ON enables angle sensors. Choosing OFF disables angle sensors.

***WARNING*** *- Do not set ANGLES to OFF or all calibration data will be lost. OFF should only be chosen if the indicator is connected to a lift truck scale with no angle sensing capability.*

Setup, Scale, Options, Angles

**Dashes?**

Choosing ON causes dashes to be displayed during scale motion. Required for Canadian certification.

Setup, Scale, Options, Angles

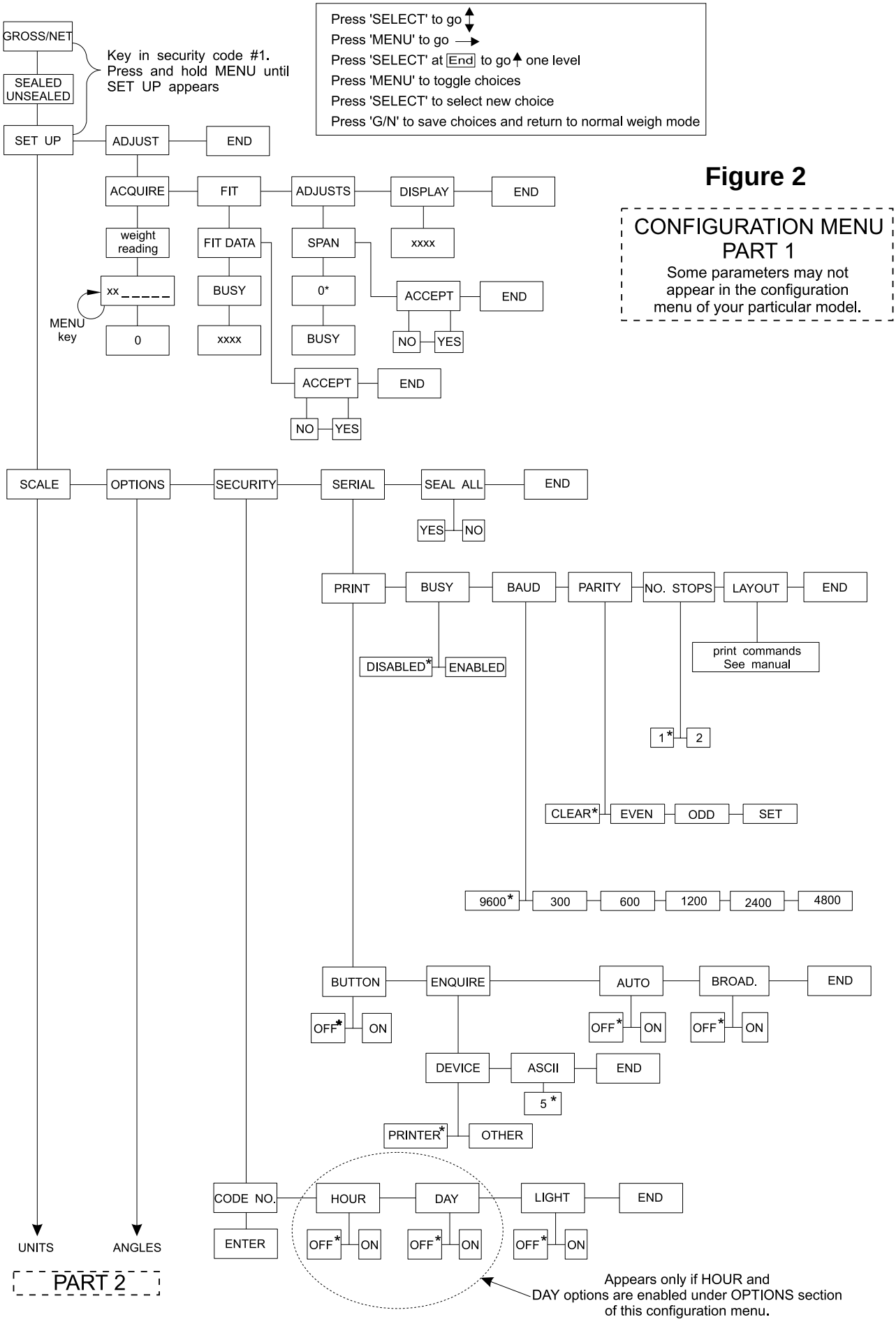
**Tare**

Choosing ON enables the pushbutton tare. Choosing OFF disables the pushbutton tare. If pushbutton tare is disabled, **TARE** will not appear in the operations menu.

Setup, Scale, Options, Angles, Tare

**ID**

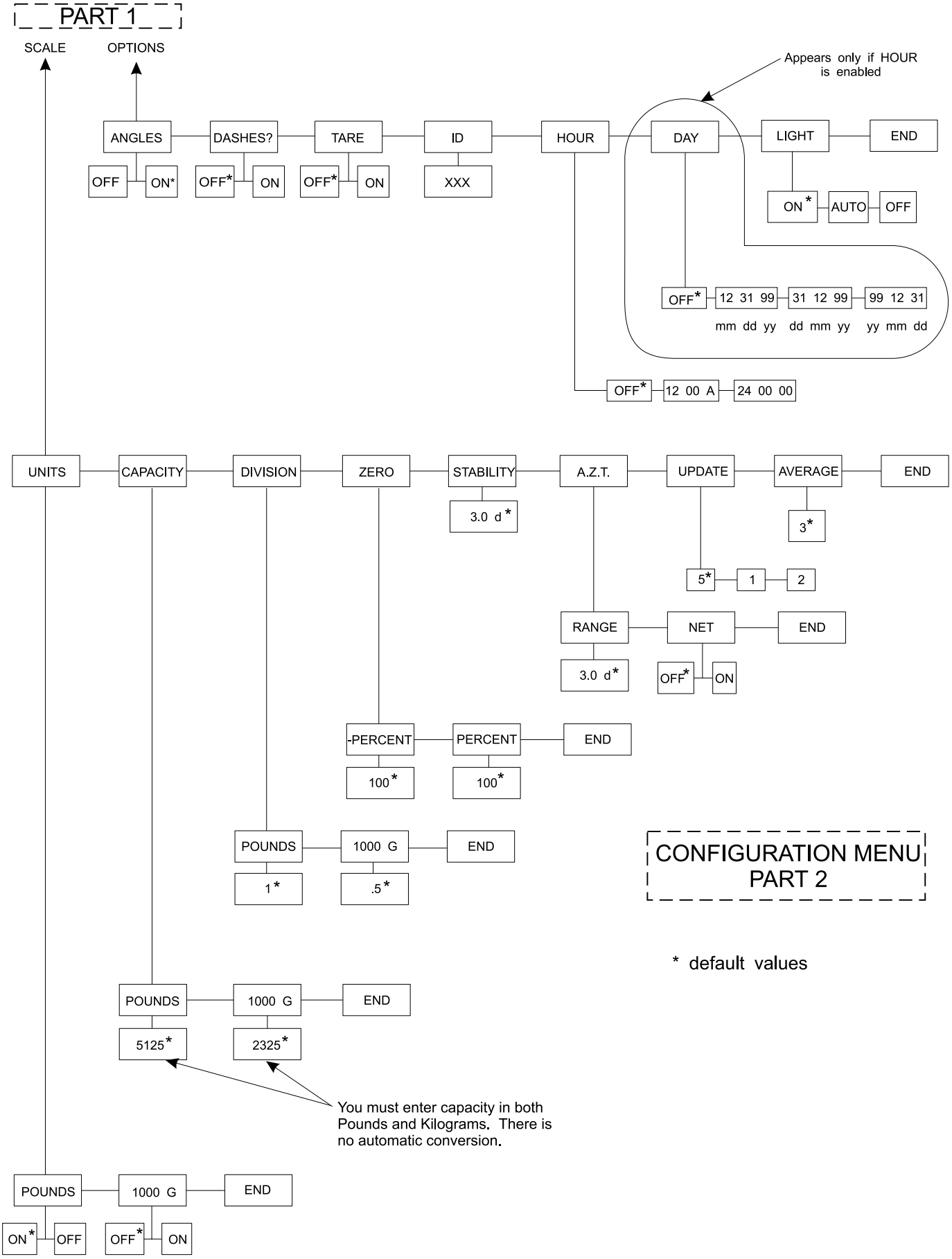
Shows unit identification number.




# Figure 2

## CONFIGURATION MENU PART 1

Some parameters may not appear in the configuration menu of your particular model.


PART 1
SCALE
OPTIONS
Appears only if HOUR is enabled
ANGLES
OFF
ON*
DASHES?
OFF*
ON
TARE
OFF*
ON
ID
XXX
HOUR
DAY
OFF*
12 31 99
31 12 99
99 12 31
mm dd yy
dd mm yy
yy mm dd
LIGHT
ON *
AUTO
OFF
END
OFF*
12 00 A
24 00 00
UNITS
CAPACITY
DIVISION
ZERO
STABILITY
3.0 d*
A.Z.T.
UPDATE
5*
1
2
AVERAGE
3*
END
RANGE
3.0 d*
NET
OFF*
ON
END
-PERCENT
100*
PERCENT
100*
END
POUNDS
1*
1000 G
.5*
END
POUNDS
5125*
1000 G
2325*
END
You must enter capacity in both Pounds and Kilograms. There is no automatic conversion.
POUNDS
ON*
OFF
1000 G
OFF*
ON
END
CONFIGURATION MENU PART 2
* default values

Setup, Scale, Options, Angles, Tare, ID -
**Hour**

With this option you can choose to have the clock disabled (OFF) or the mode of clock you want. You can choose the 12 hour clock display or the 24 hour clock display. If the clock is disabled, HOUR will not appear in the SECURITY section of this menu and DAY will not appear in the OPTIONS or SECURITY section of this menu.

Setup, Scale, Options, Angles, Tare, ID, Hour -
**Day**

This option lets you choose to disable the calendar (OFF) or choose the mode of calendar display you want. You can choose to display the days (**dd**), months (**mm**), and year (**yy**) as **mm dd yy**, or **dd mm yy**, or **yy mm dd**. If DAY is disabled, DAY will not appear in the SECURITY section of this menu.

Setup, Scale, Options, Security -
**Code No.**

This option lets you enter a personalized security code number.

Setup, Scale, Options, Security, Code No. -
**Hour, Day**

Under each item you have the option of choosing OFF to leave the option unlocked or choosing ON to lock the option behind the security code. If ON is chosen you can view but not change that parameter value in the operations menu.

Setup, Scale, Options, Security, Serial, Print -
Button

Choosing OFF disables the front panel **PRINT** button. Choosing ON enables the front panel **PRINT** button.

Setup, Scale, Options, Security, Serial, Print, Button -
**Enquire**

This sub-menu allows you to choose a printer or other device which will send an enquire code to the indicator. You may select the ASCII code number you wish to act as the enquire code number. ASCII decimal 0005 is the default value. If a device sends the enquire code number to the indicator, the indicator will transmit weight data. If a computer sends the enquire code number, the Button, Auto and Broad. selections are overridden and will not function.

Setup, Scale, Options, Security, Serial, Print, Button, Enquire -
**Auto**

With auto print enabled the indicator automatically transmits weight data when the scale weight stabilizes at greater than 1% of capacity. To print again, scale weight must fall below 1% of capacity and stabilize above 1% of capacity again. OFF disables the auto print feature. ON enables the auto print.

Setup, Scale, Options, Security, Serial, Print, Button, Enquire, Auto - **Broad.**

Broad. stands for broadcast. If you enable ON (broadcast), weight data is transmitted at the display rate. Choosing OFF disables the broadcast. If broadcast is enabled, the Button, Enquire, and Auto selections are overridden and will not function.

Setup, Scale, Options, Security, Serial, Print, Busy - **Disabled, Enabled**

Disables or enables the hardware ready/busy line. If your printer does not have a ready/busy line, this parameter must be set to disabled. If your printer has a ready/busy line, you can enable this parameter so the indicator will know if the printer is busy or ready.

Setup, Scale, Options, Security, Serial, Print, Busy, Baud - **9600, 300, 600, 1200, 2400, 4800**

This option lets you choose the baud rate for your printer or device.

Setup, Scale, Options, Security, Serial, Print, Busy, Baud, Parity - **Clear, Even, Odd, Set**

This option lets you choose parity as even, odd, clear (logic 0 or space), or set (logic 1 or mark). For 7 data bits and even parity, the parity bit must be **Even**; for 7 data bits and odd parity, the parity bit must be **Odd**; for 7 data bits and no parity, the parity bit must be **Set**; and for 8 data bits and no parity, the parity bit must be **Clear**.

Setup, Scale, Options, Security, Serial, Print, Busy, Baud, Parity, No. Stops - **1, 2**

With this option you can set the number of stop bits as 1 or 2.

Setup, Scale, Options, Security, Serial, Print, Busy, Baud, No. Stops - **Layout**

Use this print-layout option to customize the physical arrangement of your printed information. This section assumes you have the time/date option card and that the parameters are all enabled. *The next several pages deal with the layout of your printed output. The rest of the documentation on configuration follows this layout section.*

You may print seven items:

- Time
- Date
- Gross weight
- Net weight
- Tare weight
- Displayed weight
- Custom wording you choose

An eighth ***Print Command***, STATUS, is available if you have BROAD enabled under SERIAL in the configuration menu or if OTHER is chosen under ENQUIRE.

*The status command may be placed anywhere within the layout. The status command sends the following hexadecimal information:*

*0011 LHBM*

*where*
*L = Low battery*
*H = Hung*
*B = Beyond range*
*M = motion*

There are seven print commands you use to print these seven items. They are:

| **Print Command** | **Item** |
|---|---|
| HOUR | Time |
| DAY | Date |
| GROSS | Gross weight |
| NET | Net weight |
| TARE | Tare weight |
| DISPLAY | Displayed weight |
| ASCII | Custom wording (ASCII string) |

Figure 3 shows a sample of the default printout generated when you press the **PRINT** key. Figure 4 shows an example of a customized printout. Refer to Figure 5 for the default order of print commands.

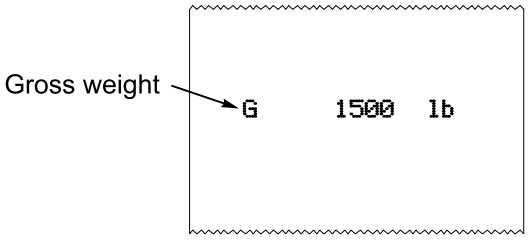



**Figure 3**
Default Printout

## Customizing the Layout Menu

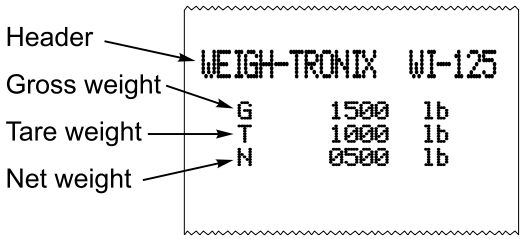



**Figure 4**
Customized Printout

The default layout menu can be changed to suit your needs. Any print command can be deleted or rearranged to accomplish customization. (See Figure 4.)

As in the other WI-125 menus, the **SELECT** key opens up the next level of the menu. There is one more level of information under the print commands in the layout menu. This information may be one of two types:

- an ASCII string or
- a layout submenu.

## ASCII Strings

*ASCII is an acronym for **A**merican **S**tandard **C**ode for **I**nformation **I**nterchange. ASCII codes are numbers a computer can translate into letters, numbers and instructions. See Table 2.*

ASCII strings are stored under the ASCII print commands, such as numbers 1, 3, 5, 7, etc. An ASCII string is a sequence of ASCII code numbers. Each code number is preceded on the indicator display by a sequence number. See Figure 5. You view these sequence numbers and ASCII code numbers by repeatedly pressing **MENU**. These ASCII strings contain the codes for your custom wording.

Figure 5 shows the default ASCII string under the *1 ASCII* print command. Table 1 shows the relationship between this sequence of codes and the output of the printer. You can change the ASCII string or delete it entirely to suit your needs. To delete an ASCII print command from the layout menu, first delete the entire ASCII string which is stored in that ASCII print command.

As you enter ASCII codes, the display may read FULL when you try to enter a code number. This means the memory allocated to the print layout is full. You must rearrange or delete some of the items you want printed for your customized printout.

Find complete instructions for these procedures in the section *Examples and Step by Step Instructions*.

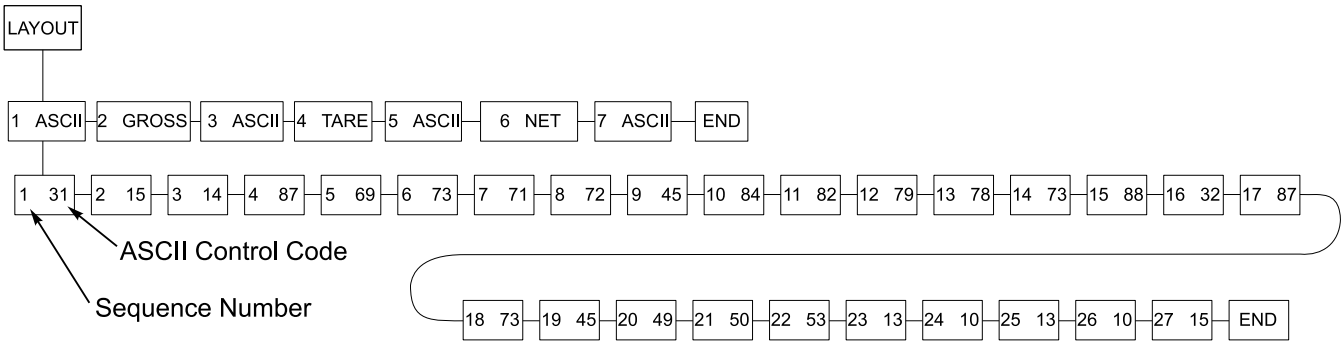



**Figure 5**
ASCII Control Code under the Print Command, I ASCII

In Figure 5, the **MENU** key advances you through the ASCII control-character displays. The **SELECT** key returns you to the *I ASCII* display.

| | |
|---|---|
| #31- Sets WP-233 printer to 40 column print mode | #73- I |
| #15- Makes double wide characters until a carriage return | #88- X |
| #14- Makes double high characters until a carriage return | #32- Space |
| #87- W | #87- W |
| #69- E | #73- I |
| #73- I | #45- - |
| #71- G | #49- 1 |
| #72- H | #50- 2 |
| #45- - | #53- 5 |
| #84- T | #13- Carriage return (CR) |
| #82- R | #10- Line feed (LF) |
| #79- O | #13- Carriage return (CR) |
| #78- N | #10- Line feed (LF) |
| | #15- Sets next line's characters to double wide |

**Table 1**
ASCII Control Characters under the Print Command, 1 ASCII

**Layout Submenu**

Under each non-ASCII print command (*GROSS, TARE*, etc.) is a layout submenu. The layout submenu contains all seven print commands and a *DELETE* command. From this submenu you select what you want printed and in what order. The same submenu is available in every case, but the currently selected item is always offered first.

Find complete instructions for these procedures in the section *Examples and Step by Step Instructions*.

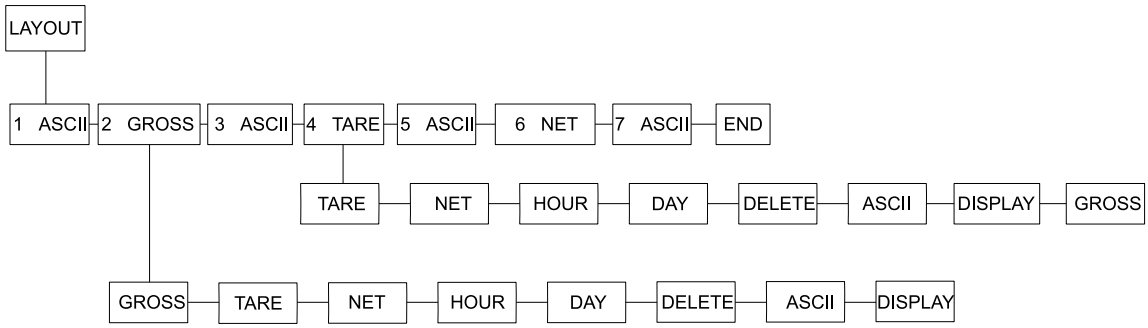



**Figure 6**
Layout Submenu

## Examples and Step by Step Instructions

**Example A:** To change the second print command from *2 GROSS* to *2 HOUR*:

1. Scroll to the *HOUR* print command in the submenu under *2 GROSS*.

2. Press **SELECT**. — The print command *2 GROSS* is now changed to *2 HOUR*.

**Example B:** To delete the second print command, *2 GROSS*:

1. Scroll to *DELETE* in the submenu under *2 GROSS*.

2. Press **SELECT**. — The *2 GROSS* print command is now deleted, and *3 ASCII* becomes *2 ASCII*, *4* becomes *3*, etc.

Below is a list of procedures to customize your layout. The steps for each procedure are explained below the list. Use the appropriate procedure or procedures to customize your layout to your liking. These step by step instructions relate to the layout shown in Figure 4.

- Deleting one ASCII code from an ASCII string
- Deleting all the ASCII codes in an ASCII string
- Deleting an ASCII print command after the ASCII codes are deleted
- Deleting a non-ASCII print command from the layout menu
- Inserting a print command in the layout menu
- Adding ASCII codes to an ASCII string

### Deleting One ASCII Code From an ASCII String

For example, to delete the hyphen in WEIGH-TRONIX you need to delete the ASCII control code for the hyphen. In Table 1 you can see that this is #45. In Figure 4, the 9th ASCII control code is code #45.

1. With *9 45* displayed, press **CLEAR** twice. — **CLEAR** deletes the value and deletes that step in the string. When you delete #9, #10 becomes #9, etc.

### Deleting All the ASCII Codes in an ASCII String

For example, to delete the entire line of text at the top of a printout you need to delete all the ASCII control codes under the *1 ASCII* display shown in Figure 4.

1. With the first ASCII control code of the string displayed (*1 31*), press **CLEAR** repeatedly until *END* is displayed.

2. Press **SELECT**. — *1 ASCII* is displayed. All the control characters under it are now gone.

## Deleting an ASCII Print Command After the ASCII Codes Are Cleared

1. With *1 ASCII* displayed, press **CLEAR**.

   The item is removed from the menu and all the following items move up one number value on the menu. What was item 2 becomes item 1, etc.

## Deleting a Non-ASCII Print Command From the Layout Menu

For example, to delete *2 GROSS* from the menu:

1. Display *2 GROSS*.
2. Press **CLEAR**.

   The item is removed from the menu and all the following items move up one number value on the menu. What was item 2 becomes item 1, etc.

## Inserting A Print Command in the Layout Menu

For example, to reinsert *GROSS* in the #2 position:

1. Display *2 ASCII*, the menu item currently in the #2 position.
2. Press ←.

   The layout submenu shown in Figure 5 appears.

3. Scroll through the menu by pressing **MENU** until *GROSS* is displayed.
4. Press **SELECT**.

   *2 GROSS* is displayed showing that it has been inserted in the second position. *2 ASCII* becomes *3 ASCII*, etc.

These directions apply to the insertion of any print command in the menu.

*You may insert new codes in an existing ASCII string. Display the code you want the new code to precede and press ←. A cursor appears and you may enter the new code number. All the following code numbers move down one position in the sequence.*

## Adding Characters to an ASCII String

For example, let's say you've created a new ASCII print command in the #1 position in the menu (*1 ASCII*). To insert new codes:

1. Display *1 ASCII*.
2. Press **SELECT**.

   *1* _ is displayed.

3. Key in the control code you want and press **MENU**.

   *2* _ is displayed, prompting you for the 2nd control code in the ASCII string.

4. Repeat this step until you have entered all the ASCII control codes you want or the indicator tells you the memory is full.
5. Press **SELECT**.

   *1 ASCII* is displayed in this example.

*To repeat any ASCII code, instead of entering it multiple times, enter the code number, then a decimal, then the number of times you want that code repeated. For example: To enter seven carriage returns, enter 13.7 To enter two capital letter O's in a row, enter 79.2.*

# Table 2
## ASCII Control Codes

| Code # | Control Character | Code # | Control Character | Code # | Control Character | Code # | Control Character |
|---|---|---|---|---|---|---|---|
| 0 | NUL | 33 | ! | 66 | B | 99 | c |
| 1 | SOH | 34 | " | 67 | C | 100 | d |
| 2 | STX | 35 | # | 68 | D | 101 | e |
| 3 | ETX | 36 | $ | 69 | E | 102 | f |
| 4 | EOT | 37 | % | 70 | F | 103 | g |
| 5 | ENQ | 38 | & | 71 | G | 104 | h |
| 6 | ACK | 39 | ' | 72 | H | 105 | i |
| 7 | BEL | 40 | ( | 73 | I | 106 | j |
| 8 | BS | 41 | ) | 74 | J | 107 | k |
| 9 | HT | 42 | * | 75 | K | 108 | l |
| 10 | Line Feed | 43 | + | 76 | L | 109 | m |
| 11 | VT | 44 | , | 77 | M | 110 | n |
| 12 | Form Feed | 45 | - | 78 | N | 111 | o |
| 13 | Carriage Return | 46 | . | 79 | O | 112 | p |
| 14 | S0 | 47 | / | 80 | P | 113 | q |
| 15 | S1 | 48 | 0 | 81 | Q | 114 | r |
| 16 | DLE | 49 | 1 | 82 | R | 115 | s |
| 17 | DC1 | 50 | 2 | 83 | S | 116 | t |
| 18 | DC2 | 51 | 3 | 84 | T | 117 | u |
| 19 | DC3 | 52 | 4 | 85 | U | 118 | v |
| 20 | DC4 | 53 | 5 | 86 | V | 119 | w |
| 21 | NAK | 54 | 6 | 87 | W | 120 | x |
| 22 | SYN | 55 | 7 | 88 | X | 121 | y |
| 23 | ETB | 56 | 8 | 89 | Y | 122 | z |
| 24 | CAN | 57 | 9 | 90 | Z | 123 | { |
| 25 | EM | 58 | : | 91 | [ | 124 | \| |
| 26 | SUB | 59 | ; | 92 | \ | 125 | } |
| 27 | ESC | 60 | < | 93 | ] | 126 | ~ |
| 28 | FS | 61 | = | 94 | ^ | 127 | Delete |
| 29 | GS | 62 | > | 95 | _ | | |
| 30 | RS | 63 | ? | 96 | ` | | |
| 31 | US | 64 | @ | 97 | a | | |
| 32 | Space | 65 | A | 98 | b | | |

NOTE: To repeat a control code a number of times, enter the control code #, a decimal, and the number of times you want it repeated. Spaces, letters, or carriage returns can easily be repeated this way.

## Entering the Configuration Mode to Calibrate the System

*While in the ACQUIRE mode, the power cable **must** always be hooked up to a hot line or data acquired will be lost. If you are running the lift truck during calibration do not turn off the lift truck until calibration is completely done.*

Calibration of the QTLTSC system consists of two processes; cornering and calibration of the system. Cornering makes the Weigh Bars work together. Calibration of the system makes the indicator work with the scale. **If the indicator provides linear but incorrect readings, you need only perform a span adjustment. See the section *Spanning Adjustment for an Existing Calibration*.** A total system calibration is done by acquiring data points. Acquiring data points means loading the scale with different test weights, tilting the unit to different angles and telling the indicator what weight is on the scale at each tilt position. The indicator then fits these data points into its operation.

To calibrate your system you must enter the Configuration Menu. Follow the steps on the following pages to enter the Configuration Menu, corner the Weigh Bars and calibrate the system.

1. While in Gross Weighing Mode with the **unit unsealed**, press the up arrow key two times. The number *"1"* should appear on your display.
2. With the number *"1"* displayed, press and hold the **MENU** key until *SET UP* is displayed.

   **NOTE: DO NOT** let go of the **MENU** key until *SET UP* is displayed or else *LIGHT* will be displayed. If this occurs, press the **G/N** key to return to Weighing Mode and begin again at Step 1.
3. Press **MENU** to display *ADJUST*.
4. Press **SELECT** to display *ACQUIRE*.
5. You are now in the Configuration Menu. To move around within the Configuration Menu follow the instructions printed in the box below. Specific instructions for cornering and acquiring data points are detailed on the following pages.

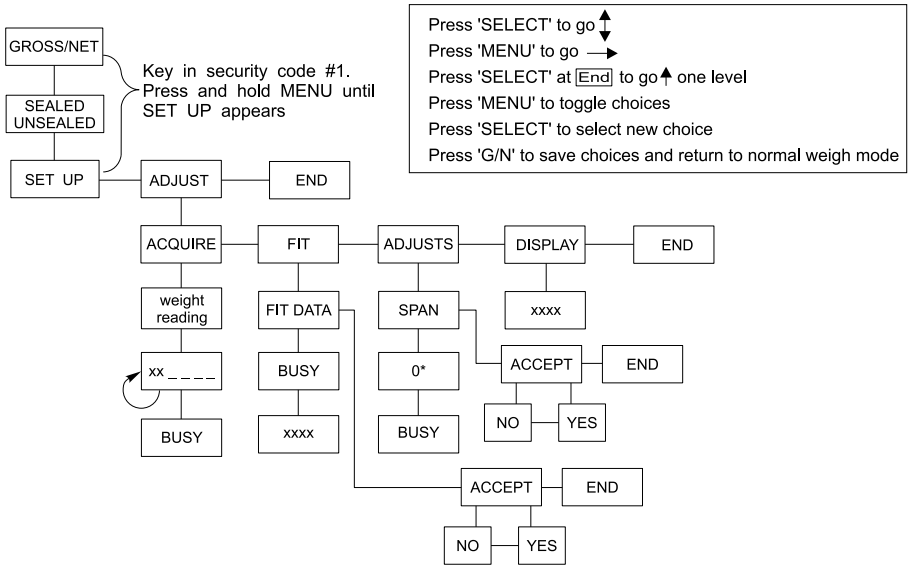



**Figure 7**
Calibration Menu Guide

## J-Box Information

**Caution**

*DO NOT ADJUST THE PITCH AND ROLL POTS! These are factory set and should be left alone.*

*Use a drop of #242 (blue) Loctite on all threaded hardware and RTV (electronic grade) on all pots and connectors.*

You make trim and balance adjustments in the J-box. The J-box is shown at right. Trim and balance adjustments make up the cornering procedure. **Cornering makes the Weigh Bars work together and is usually not required unless you replace a Weigh Bar or junction box.**

To access the junction box, remove the protective plate in the center of the scale. Remove the sealing wire and the two screws fastening the access cover.

Trim, balance and calibration (acquiring data points) are covered in the following sections.

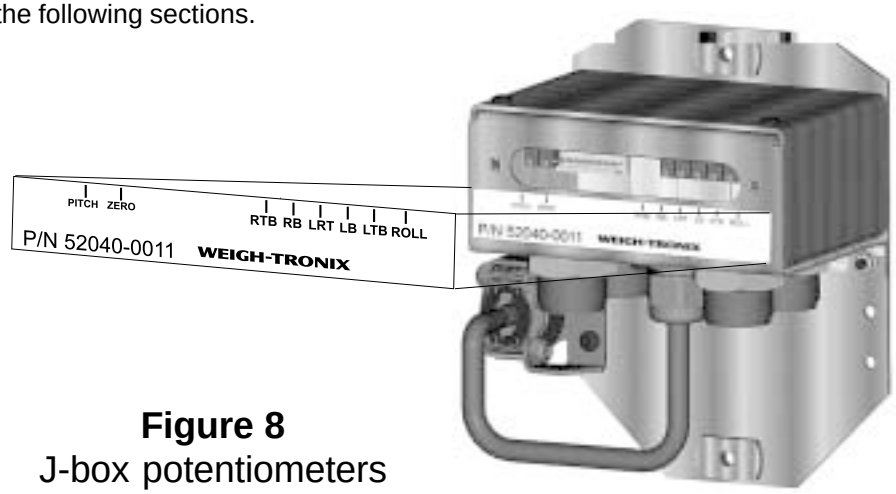
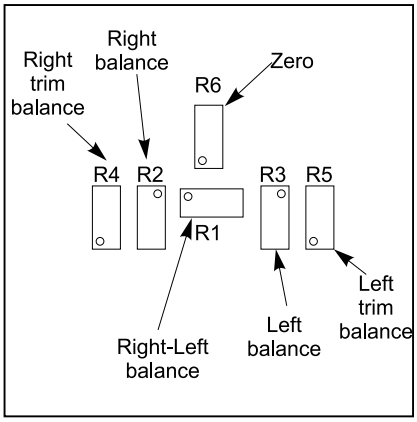



**Figure 8**
J-box potentiometers

### Original Style J-Box

If you have the original style J-box, refer to the illustration below when making potentiometer adjustments.



## Trim Potentiometer Adjustment

*The right fork and left forks are those that are on the right and left* ***when you are sitting in the lift truck seat****.*

*Letters (LRT, RTB, etc.) refer to the potentiometer labels on the J-Box.*

*0.15% of 1000 lbs = 1.5 pounds*
*0.15% of 2000 lbs = 3 pounds*
*0.15% of 3000 lbs = 4.5 pounds*
*0.15% of 4000 lbs = 6 pounds*
*0.15% of 5000 lbs = 7.5 pounds*
*0.15% of 6000 lbs = 9 pounds*
*0.15% of 7000 lbs = 10.5 pounds*
*0.15% of 8000 lbs = 12 pounds*
*0.15% of 9000 lbs = 13.5 pounds*
*0.15% of 10000 lbs = 15 pounds*

*0.05% of 1000 lbs = 0.5 pounds*
*0.05% of 2000 lbs = 1 pound*
*0.05% of 3000 lbs = 1.5 pounds*
*0.05% of 4000 lbs = 2 pounds*
*0.05% of 5000 lbs = 2.5 pounds*
*0.05% of 6000 lbs = 3 pounds*
*0.05% of 7000 lbs = 3.5 pounds*
*0.05% of 8000 lbs = 4 pounds*
*0.05% of 9000 lbs = 4.5 pounds*
*0.05% of 10000 lbs = 5 pounds*

***A zero shift will occur whenever any of the potentiometers are adjusted. Remove all weight from the forks and zero the indicator after making any adjustments.***

**Prior to beginning any adjustments, obtain a 42", square, heavy duty pallet that will support the weights you will be using during the calibration process. To exercise the system, it is recommended that you place the pallet and weights on the lift truck and drive it around. Once you start this procedure, do not move the lift truck to another location until the procedure is completed.**

1. Set the WI-125 indicator to read in one pound divisions by following the steps shown in Figure 7. **Remember to reset divisions to five pound increments when finished.**
2. Set the forks directly over the Weigh Bars™. Place the cornering weight (recommend 50% of capacity) on each of the four corners of the pallet one at a time and record the weight of each location.
3. Starting with the fork that has the largest difference between front and rear weight readings, adjust the trim balance (RTB for right trim balance and LTB for the left trim balance) to reduce the difference to less than 0.15% of the cornering weight you are using. See *Guidelines for Adjusting the Trim Potentiometers* below to determine which way to turn the potentiometer.
4. Switch to the other fork. Adjust the trim balance for that fork to reduce the difference between front and rear weight readings to less than 0.15% of the cornering weight you are using.
5. Place the cornering weight on the center of each fork and record the weight. Adjust the left-right balance (LRT) until the difference between these readings is less than 0.15% of the cornering weight you are using.
6. Repeat steps 3 through 5, but reduce the allowable difference to 0.05% of the cornering weight you are using.

### Guidelines for Adjusting the Trim Potentiometers

(refer to Figure 8 for potentiometer location)

- The right trim balance (RTB) reduces the difference in weight readings on the right fork. For example, if the weight reading on the end of the right fork is less than the reading at the base of the right fork, slightly turn the RTB clockwise.
- The left trim balance (LTB) reduces the difference in weight readings on the left fork. For example, if the weight reading on the end of the left fork is less than the reading at the base of the left fork, slightly turn the LTB clockwise.
- The left-right trim (RLT) reduces the difference in weight readings between the left and right forks. For example, if the weight reading of the left fork is less than the reading of the right fork, turn the LRT clockwise.

## Balance Potentiometer Adjustment

*The right fork and left forks are those that are on the right and left* ***when you are sitting in the lift truck seat.***

*0.15% of 1000 lbs = 1.5 pounds*
*0.15% of 2000 lbs = 3 pounds*
*0.15% of 3000 lbs = 4.5 pounds*
*0.15% of 4000 lbs = 6 pounds*
*0.15% of 5000 lbs = 7.5 pounds*
*0.15% of 6000 lbs = 9 pounds*
*0.15% of 7000 lbs = 10.5 pounds*
*0.15% of 8000 lbs = 12 pounds*
*0.15% of 9000 lbs = 13.5 pounds*
*0.15% of 10000 lbs = 15 pounds*

*0.05% of 1000 lbs = 0.5 pounds*
*0.05% of 2000 lbs = 1 pound*
*0.05% of 3000 lbs = 1.5 pounds*
*0.05% of 4000 lbs = 2 pounds*
*0.05% of 5000 lbs = 2.5 pounds*
*0.05% of 6000 lbs = 3 pounds*
*0.05% of 7000 lbs = 3.5 pounds*
*0.05% of 8000 lbs = 4 pounds*
*0.05% of 9000 lbs = 4.5 pounds*
*0.05% of 10000 lbs = 5 pounds*

***A zero shift will occur whenever any of the potentiometers are adjusted. Remove all weight from the forks and zero the indicator after making any adjustments.***

The following directions will enable you to adjust the scale so that it is insensitive to changes in fork position.

1. Place the cornering weight (recommend 50% of capacity) on the center of the right fork and record the weight. Move the right fork in six inches. Once again, place the weight on the center of the right fork and record the weight. Move the right fork out six inches so that it is in its original position.
2. Place the cornering weight on the center of the left fork and record the weight. Move the left fork in six inches. Once again, place the weight on the center of the left fork and record the weight. Move the left fork out six inches to its original position.
3. Starting with the fork that has the largest difference in weight readings between the two positions, adjust the balance potentiometer (RB or LB) to reduce the difference to less than 0.15% of the cornering weight you are using. See *Guidelines for Adjusting the Balance Potentiometers* below to determine which way to turn the potentiometer.
4. Switch to the other fork. Adjust the balance potentiometer (RB or LB) to reduce the difference between the two readings to less than .15%.
5. Repeat steps three and four, but reduce the allowable difference to 0.05% of the cornering weight you are using.
6. Adjusting the balance potentiometers may affect the cornering. You can correct these differences by repeating the steps listed under *Guidelines for Adjusting the Trim Potentiometers*. If large adjustments are necessary, the balance potentiometers may need to be readjusted by following the steps under *Balance Potentiometer Adjustment.*

### Guidelines for Adjusting the Balance Potentiometers

(refer to Figure 8 for potentiometer location)

- The right balance potentiometer (RB) reduces the weight reading difference between the two positions of the right fork. For example, if the weight reading when the right fork is moved in six inches is less than the reading when the fork is directly over the Weigh Bars™, turn the right balance potentiometer (RB) clockwise.
- The left balance potentiometer (LB) reduces the weight reading difference between the two positions of the left fork. For example, if the weight reading when the left fork is moved in six inches is less than the reading when the fork is directly over the Weigh Bars™, turn the left balance potentiometer (LB) counterclockwise.

## Spanning Adjustment for an Existing Calibration

*It is best to use full capacity weight when calibrating. A minimum of 60% of capacity is recommended.*

**Span Adjustment**

**This spanning procedure applies only to those systems that already have the 16 data points in memory.**

Respanning may save time if your system is simply out of tolerance and the 16 step data acquisition is not necessary. Use this spanning procedure if weight value remains the same when the system is tipped but the weight is inaccurate.

1. Lift a load near the capacity of the lift truck several times to exercise the scale.
2. Check the scale span by lifting an accurately known load with the lift truck. If the weight reading is correct, go to Step 3.

   If the weight reading is incorrect, the scale should be respanned by following these steps:

   a. Press the round, yellow **UP ARROW** key twice—"*1*" is displayed

   b. Press and hold the **MENU** key until "***set up***" appears

   c. Press **MENU** again—"***adjust***" appears

   d. Press **SELECT**—"***acquire***" appears

   e. Press **MENU**—"***fit***" appears

   f. Press **MENU**—"***adjusts***" appears

   g. Press **SELECT**—"***span***" appears.

   h. Press **SELECT** again—a number appears and you may now enter in the known weight of your test load using the yellow **UP ARROW** and **UNITS** keys. Follow the example below:

      To enter the weight of 4500:

      1. Press the yellow **UP ARROW** key 4 times—***4*** is displayed
      2. Move over the 4 by pressing the **UNITS** key—***40*** is now displayed
      3. Press the yellow **UP ARROW** key 5 times—***45*** is displayed
      4. Move over the 45 by pressing the **UNITS** key—***450*** is now displayed
      5. Since the third number is a zero, press the **UNITS** key to accept it—***450*** is now displayed
      6. Move over the 450 by pressing the **UNITS** key—***4500*** is now displayed

   i. After keying in your load weight, press **SELECT**—"***busy***" is displayed momentarily, followed by "***span***"

   j. Press **MENU**—"***accept***" is displayed

   k. Press **SELECT**—"***no***" is displayed

   l. Press **MENU**—"***yes***" is displayed

   m. Press **SELECT**—"***accept***" is displayed

   n. Press **MENU**—"***end***" is displayed

   o. Press the **G/N** key to return to weighing mode. Calibration is complete.

3. Unload the scale, zero the indicator by pressing the **ZERO** key and weigh the known weight again. If the weight reading is still incorrect, respan the indicator by following steps “a” through “o” above.

4. Check the scale for load shift sensitivity (cornering error).
   a. Lift one-half of net capacity in one quadrant of the pallet and record the weight.
   b. Move the weight to each of the other four quadrants, recording the displayed weight each time.
      - A new, certifiable installation should have the same weight reading in every corner of the pallet.
      - An older installation should have scale readings within 5 lbs in each corner.
   c. If the scale requires cornering, refer to the *Trim* and *Balance* sections of this manual.

5. Check the scale for tilting sensitivity
   a. Lift a known weight (at least half of net capacity) with the scale,
   b. Tilt the scale through the expected range of operation. The scale should be allowed to settle in several tilted positions.
   c. If the scale requires cornering, refer to the *Trim* and *Balance* sections of this manual.

6. Check the scale for linearity.
   a. Zero the scale and lift one-half of net scale capacity.
   b. Load additional known weights until the total weight is near net scale capacity.
   c. If the scale does not accurately display both weighments (within 5 lbs at full capacity), refer to the *Trim* and *Balance* sections of this manual.

## Step-by-Step Instructions for Acquiring Data Points

*See Figure 7 for configuration menu guide.*

*Configure indicator to display 1 pound increments.*

*See* Making a Ramp *for tilting the lift truck accurately. To determine the inch equivalent of five degrees, see Table 3.*

*Forks **must** be tilted between five and ten degrees. If this is impossible to accomplish by tilting the forks alone, tilt the entire lift truck.*

*Be careful not to exceed lift truck rated lifting capacity.*

The following checklist is the 16 step procedure for acquiring data points. Detailed instructions follow below.

**Acquiring Data Points Checklist**

- ❑ Scale at zero, lift truck level
- ❑ Scale at zero, lift truck's right side elevated
- ❑ Scale at zero, lift truck's left side elevated
- ❑ Scale at zero, forks tilted forward
- ❑ Scale at zero, forks tilted backward
- ❑ With a weight of 30% to 50% new capacity on scale, lift truck level
- ❑ With a weight of 30% to 50% new capacity on scale, lift truck's right side elevated
- ❑ With a weight of 30% to 50% new capacity on scale, lift truck's left side elevated
- ❑ With a weight of 30% to 50% new capacity on scale, forks tilted forward
- ❑ With a weight of 30% to 50% new capacity on scale, forks tilted backward
- ❑ With a weight of 60% to new capacity* on scale, lift truck level
- ❑ With a weight of 60% to new capacity* on scale, lift truck's right side elevated
- ❑ With a weight of 60% to new capacity* on scale, lift truck's left side elevated
- ❑ With a weight of 60% to new capacity* on scale, forks tilted forward
- ❑ With a weight of 60% to new capacity* on scale, forks tilted backward
- ❑ With a weight of 30% to 50% new capacity on scale, lift truck level

* Refer to Figure 9, “Recalculating Lift Truck Capacity” on the next page for the new capacities.

| | |
|---|---|
| 1a. Level the forklift. With only a pallet on the scale and ***ACQUIRE*** displayed on the WI-125, press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***01*** is displayed. |
| 1b. Scroll in **0** and press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 2a. Raise the right side of the lift truck between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***02*** is displayed. |
| 2b. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 3a. Lower the right side of the lift truck and raise the left side between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***03*** is displayed. |
| 3b. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |

*For steps 7 and 8, make sure to use an adequate jack placed under the side of the lift truck to safely tilt it.*

*You may view or change any or all of your data points by following these steps.*

*To view the data points:*

1. *From the ACQUIRE display, press SELECT, then press SELECT.*

   *The first available data point will appear followed by an underscore (_).*

2. *Press the MENU key.*

   *END will be displayed.*

3. *Press the MENU key.*

   *The first data point and the entered value will be displayed. Press MENU repeatedly to see the consecutive data points.*

*To change a data point:*

1. *From point 3 above, scroll in a new value. Then press SELECT.*

   *The new value is accepted and the next data point appears.*

*Escape from this procedure by pressing MENU until END is displayed, then press SELECT.*

*Remember to refit the data if you have changed any data points.*

| | |
|---|---|
| 4a. Bring the lift truck back to a level position, then tilt the forks forward between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***04*** is displayed. |
| 4b. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 5a. Tilt the forks back, past level, to between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***05*** is displayed. |
| 5b. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 6a. With the lift truck and forks level, place ½ of new capacity on the scale. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***06*** is displayed. |
| 6b. Scroll in the amount of weight used. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 7a. Raise right side of the lift truck between five and ten degrees. Place ½ of new capacity on the scale. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***07*** is displayed. |
| 7b. Scroll in the amount of weight used. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 8a. With weight on the scale, from a level condition, raise the left side of the lift truck between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***08*** is displayed. |
| 8b. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 9a. Leave the weight on the scale, level the lift truck and tilt forks forward between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***09*** is displayed. |
| 9b. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |

| | | |
|---|---|---|
| 10a. | Leave the weight on the scale and tilt forks backward, beyond level, to between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***10*** is displayed. |
| 10b. | Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 11a. | With the lift truck and forks level, place a weight of between 60% and new capacity (see *Calculating New Lift Capacity*) on the scale. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***11*** is displayed. |
| 11b. | Scroll in the amount of weight used. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 12a. | Raise right side of the lift truck between five and ten degrees. Place a weight of between 60% and new capacity on the scale. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***12*** is displayed. |
| 12b. | Scroll in the amount of weight used. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 13a. | Leave the weight on the scale, lower the right side of the lift truck and raise left side between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***13*** is displayed. |
| 13b. | Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| 14a. | Leave the weight on the scale, level the lift truck then tilt the forks forward between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***14*** is displayed. |
| 14b. | Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |

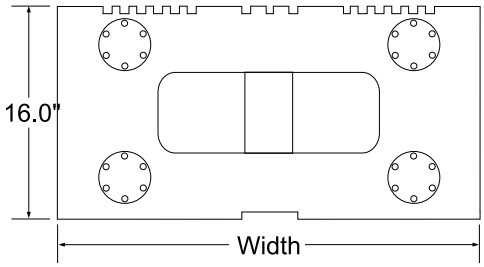
| | | |
|---|---|---|
| | 15a. Leave the weight on the scale and tilt forks back, beyond level, to between five and ten degrees. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***15*** is displayed. |
| | 15b. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| | 16a. With the lift truck and forks level, place ½ of new capacity on the scale. Press **SELECT**. Once the number on the scale is steady, press **SELECT** again. | ***16*** is displayed. |
| | 16b. Scroll in the amount of weight used. Press **SELECT**. | ***bUSy*** is displayed briefly and then ***ACQUIRE*** is redisplayed. |
| | 17. Press **MENU**. | ***Fit*** is displayed. |
| | 18. Press **SELECT**. | ***Fit dAtA*** is displayed. |
| *In step 19, if the you get the number 0, check your data points.* | 19. Press **SELECT**. | ***bUSy*** is displayed briefly and then a number will be displayed. Keep pressing **SELECT** until you get the same number (to the 2nd or 3rd decimal) consistently. Ideally this number is less than 3. |
| | 20. Press **MENU**. | ***Fit dAtA*** is displayed. |
| | 21. Press **MENU**. | ***ACCEPt*** is displayed. |
| | 22. Press **SELECT**. | ***no*** is displayed. |
| | 23. Press **MENU** to toggle to yes. | ***YES*** is displayed. |
| | 24. Press **SELECT**. | ***ACCEPt*** is displayed. |
| | 25. Press **MENU**. | ***End*** is displayed. |
| *Remember to reconfigure your indicator to display the proper pound increments for your legal-for-trade system.* | 26. Reset the indicator to read in five pound divisions by following the flow chart in Figure 1. When the number ***1*** is displayed, repeatedly press the up arrow key until the number ***5*** is displayed. | |
| | 27. Check the unit for accuracy in all positions. | |

# Calculating New Lift Capacity

The QTLTSC lift truck scale comes in ITA Class II (16" high, 5,000 lb) and ITA Class III (20" high, 5,000 and 10,000 lb) models. Each class comes in several widths for cleat type carriages. Measure the height and width of the lift truck carriage. Select from the table below the appropriate width that best meets the dimensions of the lift truck carriage. Use the weights, dimensions and the following formula to calculate the net lifting capacity of your lift truck with a scale attached. Refer to Figure 9 on the next page.

$$\text{Net Capacity} = \frac{A\,(B + C) - D\,(E + F)}{E + G + H}$$

## Class II




A = Truck basic capacity, pounds
B = Inches from front wheel center line to fork face
C = Inches from fork face to truck rating point (usually 24")
D = Weight of the scale in pounds
E = Inches from front wheel center line to carriage face
F = Inches from carriage face to scale center of gravity (CG)
G= J + K
G= Inches from carriage face to rear face of load
H= Inches from rear face of load to load center
J= Thickness of fork
K= Thickness of scale

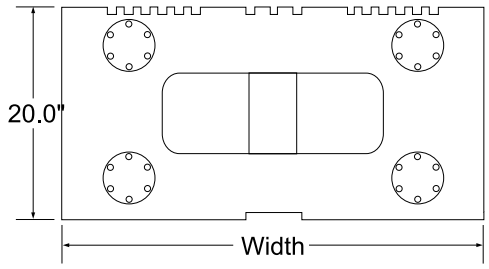
**Class II 5,000 lb Models**

| Scale P/N | Width | Weight "D" | DIM "F" | DIM "K |
|---|---|---|---|---|
| 48196-0094 | 30.0" | 373 lb | 2.0" | 4.0 |
| 48196-0011 | 32.0" | 381 lb | 2.0" | 4.0 |
| 48196-0029 | 34.0" | 389 lb | 2.0" | 4.0 |
| 48196-0102 | 36.0" | 410 lb | 2.0" | 4.0 |
| 48196-0037 | 37.0" | 413 lb | 2.0" | 4.0 |
| 48196-0110 | 38.0" | 418 lb | 2.0" | 4.0 |
| 48196-0128 | 40.0" | 438 lb | 2.0" | 4.0 |
| 48196-0045 | 42.0" | 446 lb | 2.0" | 4.0 |

**Class III 5,000 lb Models**

| Scale P/N | Width | Weight "D" | DIM "F" | DIM "K" |
|---|---|---|---|---|
| 51856-0016 | 36.0" | 520 | 2.00" | 4.00" |
| 51856-0024 | 37.0" | 530 | 2.00" | 4.00" |
| 51856-0032 | 38.0" | 540 | 2.00" | 4.00" |
| 51856-0057 | 40.0" | 580 | 2.00" | 4.00" |
| 51856-0073 | 42.0" | 635 | 2.00" | 4.00" |
| 51856-0099 | 44.0" | 685 | 2.00" | 4.00" |
| 51856-0115 | 46.0" | 700 | 2.00" | 4.00" |
| 51856-0131 | 48.0" | 720 | 2.00" | 4.00" |

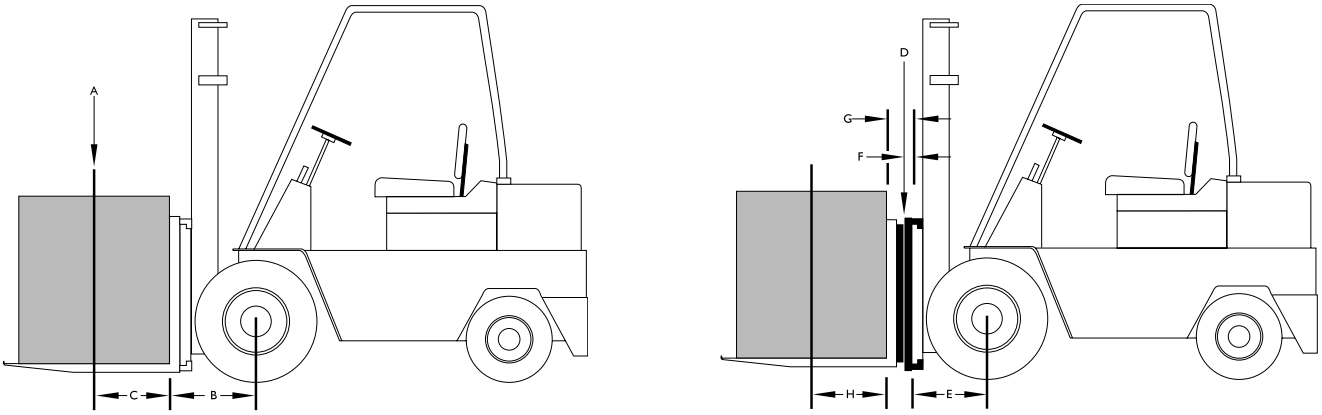
## Class III




**Average loss in lifting capacity for a QuickTach lift truck scale is 12 to 14%.**

**Class III 10,000 lb Models**

| Scale P/N | Width | Weight "D" | DIM "F" | DIM "K" |
|---|---|---|---|---|
| 51857-0031 | 40.0" | 725 | 2.75" | 5.50" |
| 51857-0056 | 42.0" | 780 | 2.75" | 5.50" |
| 51857-0072 | 44.0" | 795 | 2.75" | 5.50" |
| 51857-0106 | 47.0" | 855 | 2.75" | 5.50" |
| 51857-0114 | 48.0" | 865 | 2.75" | 5.50" |
| 51857-0155 | 52.0" | 935 | 2.75" | 5.50" |
| 51857-0197 | 56.0" | 1005 | 2.75" | 5.50" |
| 51857-0239 | 60.0" | 1030 | 2.75" | 5.50" |

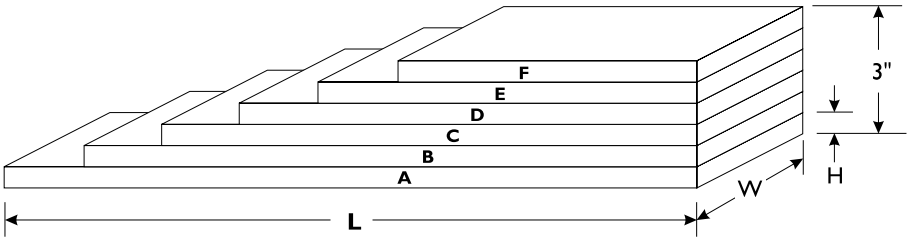



**Lift truck with no scale** **Lift truck with scale**

**Figure 9**
Recalculating Lift Truck Capacity

## Making a Ramp

1. With plywood, build two ramps, following the diagram below.
2. Nail them together.




| Board | H (in inches) | W (in inches) | L (in inches) |
|---|---|---|---|
| A | 0.5 | 8 | 24" |
| B | 0.5 | 8 | 22" |
| C | 0.5 | 8 | 20" |
| D | 0.5 | 8 | 18" |
| E | 0.5 | 8 | 16" |
| F | 0.5 | 8 | 14" |

**Table 3**
Inch Equivalent of Five Degrees

| If your lift truck width is: | Five degrees is: |
|---|---|
| 48 inches | 4.2 inches |
| 42 inches | 3.7 inches |
| 36 inches | 3.2 inches |
| 30 inches | 2.6 inches |
| 24 inches | 2.1 inches |

# Replacing a Transducer on the QTLTSC Carriage

## Disassembly

***Tools needed for Class II and III 5000 lb carriages:***

- *Minimum 12 inch/pounds torque wrench*
- *Minimum 65 foot/pounds torque wrench*
- *$^{5}/_{32}$ hex Allen*
- *$^{3}/_{8}$ hex Allen*
- *6 transducer bolts, part # 17704-5929*
- *$^{7}/_{16}$ socket*
- *¾" socket*
- *½"socket*
- *(2) $^{3}/_{32}$" cable ties*
- *side cutters*
- *#242 Loctite*
- *another person-- this disassembly and reassembly procedure is a two person task*

1. Remove forks.
2. Raise lift truck carriage and remove mounting hooks from bottom of QuickTach carriage.
3. Remove junction box shield.
4. Disconnect cables from junction box.
5. Place a pallet under carriage and lower the carriage until it is resting loosely on the pallet.
6. Tilt the carriage off and lay flat.
7. Remove the six bolts from the cable shield.
8. Loosen set screws according to the instructions on the next page.
9. Remove set screws.
10. Remove front carriage from rear carriage, being careful not to damage the transducer cables.
11. Remove the cable tie securing the cables to the cable shield.
12. Tilt the front carriage up and remove the transducer bolts and the transducer.

## Reassembly

***Tools needed for Class III 10,000 lb carriages:***

- *Minimum 12 inch/pounds torque wrench*
- *Minimum 65 foot/pounds torque wrench*
- *$^{5}/_{32}$ hex Allen*
- *$^{1}/_{4}$ hex Allen*
- *6 transducer bolts, PN 17704-6224*
- *$^{15}/_{16}$" socket*
- *½"socket*
- *(2) $^{3}/_{32}$" cable ties*
- *side cutters*
- *#242 Loctite*
- *another person-- this disassembly and reassembly procedure is a two person task*

To reassemble, reverse the steps listed above and pay close attention to the following notes:

1. Make sure the transducer cables are positioned correctly behind the cable guard. See the illustration under Scale Carriage Assembly in the back of this manual. Also make sure the cables are secured and not pinched.
2. You must replace the transducer bolts with new ones during reassembly. The part number for 5000 lb Class II and III carriages is 17704-0920. The part number for 10,000 lb Class III carriages is 17704-6224
3. When tightening the tansducer bolts on a 5000 lb carriage, they must be torqued at 65 foot pounds in a star pattern starting with the top and bottom bolts.

   When tightening the tansducer bolts on a 10,000 lb carriage, they must be torqued at 150 foot pounds in a star pattern starting with the top and bottom bolts.

*Use a drop of #242 (blue) Loctite on all threaded hardware.*

## Loosening Procedure

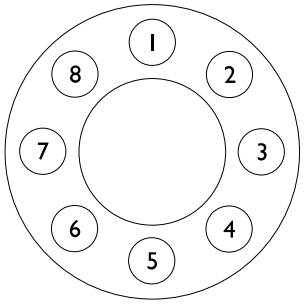



**Figure 10**
Circular Pattern

Set screws should be loosened with care. Loosening can be accomplished quickly, but do not rush to completely loosen individual set screws. Remember that the intent is to slowly release the preload force. All set screws should be loosened uniformly and usually there is no need to remove any set screw from the tensioner body during loosening.

1, Turn the first set screw counterclockwise until it feels loose (no more than half a turn). The idea is just to unload each set screw, not to completely loosen it.

2. Move in a circular pattern to the next set screw (see Figure 10) and repeat step 1.

3. Continue repeating until all set screws have been unloaded.

4. By the time you get back to the first set screw, it will be tight again. Repeat the process, moving in a circular pattern.

5. Usually, after two or three passes, the tensioner can be spun off the bolt or stud by hand.

6. Before reusing any tensioner, the set screws should be removed in the appropriate manner, the body and set screws cleaned and relubricated with approved lubricant to insure proper set screw torque vs. preload performance on installation.

## Tightening Procedure

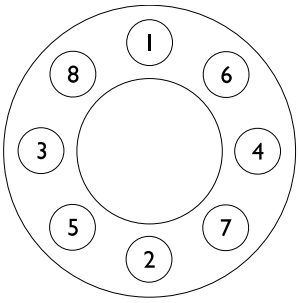



**Figure 11**
Star Pattern

*Use a drop of #242 (blue) Loctite on all threaded hardware.*

Attempt to tighten as consistently as possible. Do not tighten all at once. Use a standard torque wrench to verify final torque values.

1. This product is designed for use with hardened surface washers. Slide the washer onto the bolt or stud first.

2. Check the base of the tensioner(s) and verify that all set screws are flush with the bottom of the tensioner body.

3. Clear any dirt or chips from the threads of the bolt or stud and from the main internal thread of the tensioner.

4. Spin the tensioner body down on the main thread of the bolt or stud by hand. The tensioner body should be in light contact with the hardened washer.

5. Tighten the set screws in the star pattern shown in Figure 11 to 15 in/lbs for a 5000 lb carriage and 15 ft/lbs for a 10,000 lb carriage, or so that they are all hand tight against the washer.

6. Tighten the set screws in the same star pattern to 72 in/lbs (6 ft/lbs) for a 5000 lb carriage and 25 ft/lbs for a 10,0000 lb carriage.

7. Tighten the set screws in the circular pattern shown in Figure 10 to 108 in/lbs (9 ft/lbs) for a 5000 lb carriage and 37 ft/lbs for a 10,0000 lb carriage.

8. Tighten the set screws in the same circular pattern to 144 in/lbs (12 ft/lbs) for a 5000 lb carriage and 49 ft/lbs for a 10,0000 lb carriage.

9. Set the torque wrench for the final torque value and continue to repeat the circular pattern until all the set screws are torqued to the same value. Do not exceed the torque value stamped on the tensioner.

# Reset Menu and Master Clear

**Warning**

*Do not reset anything unless it is absolutely necessary. If you reset ADJUST, this may mean you have to bring in a weight truck to re-calibrate your system.*

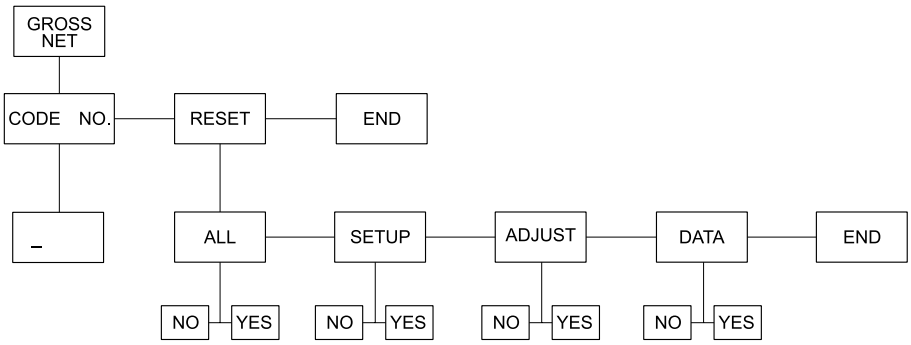
If the indicator's memory, calibration or other data becomes corrupted, a reset menu will become active. *RESET* will be displayed telling you there has been a problem. You may also choose to perform a Master Clear to reset the setup, or adjust data values to default values. Performing a master clear gives you access to the first reset menu shown below. If the indicator found a problem with itself, you will see the second menu. In either case, you must turn switch S1-1 on before you can reset setup or adjust items. **NOTE:** The only items active for a reset or master clear are those items that are **not** set to the factory defaults.

To perform a master clear follow these steps:

| | |
|---|---|
| 1. Turn the unit off, hold the **TARE** and **ZERO** keys down and turn on the unit. | *CODE NO.* is displayed. |
| 2. Press **SELECT**. . . | 0 is displayed. |
| 3. Use the ↑ key and ➔ key to key in your security code number, then press **SELECT**. . .<br><br>**NOTE:** You must enter the security code number before you can reset any items. '1' is the default code. | *CODE NO.* is displayed. |
| 4. Press **MENU**. . . | *RESET* is displayed. From here you access the rest of the menu items the same as you do for all the other menus. |

## Master Clear Menu

*Within the RESET menu at right, you may need to toggle switch S1-1 to correct power-up problems after exchanging EEPROMs.*



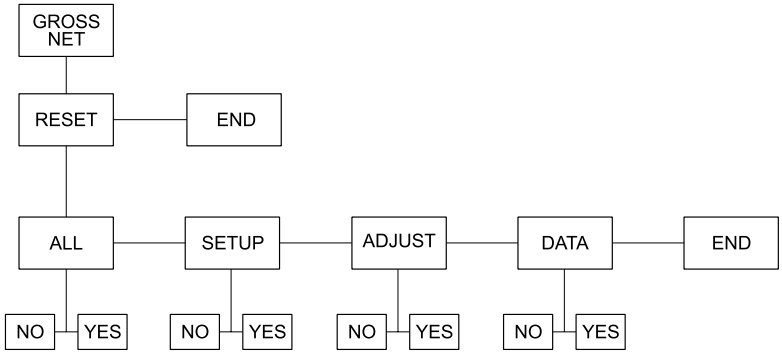

If *SETUP, ADJUST,* or *DATA* are set to defaults, they will not appear in the menu.

If *SETUP, ADJUST,* or *DATA* appear, you have the option to reset one, two, or all three of them to default values.

If any of the following are flashing it means the option is corrupted and will need to be reset in order for the unit to operate.

ALL - Includes Setup, Adjust, and Data
SET UP - Configuration selections
ADJUST - Calibration settings
DATA - User entered information

## Reset Menu




If *SETUP, ADJUST,* or *DATA* appears and it is flashing, the indicator is telling you that it is corrupted and must be reset to default values.

If *ALL* appears, you have the option to reset all values to their default settings simultaneously.

If *ALL* is flashing, the indicator is telling you that *SETUP, ADJUST*, and *DATA* are all corrupted and you must reset them all to default values.

If you choose *ALL*, the unit returns automatically to weighing mode. All factory defaults are now in place, **including calibration values**.

To reset any of the choices, use the **MENU** key to toggle between the choices. When the correct choice is displayed, press **SELECT**, then press **G/N** to save.

If you choose to reset some choices, but not all, the unit will return to weighing mode when you press **G/N**. If nothing is corrupted (no choices are flashing) you can return to weighing mode by pressing **SELECT** while *END* (after *RESET*) is displayed.

# Indicator Diagnostics

The test mode is used to test various functions of the WI-125. The test menu is shown in Figure 12. Instructions for using the test menu are found below.

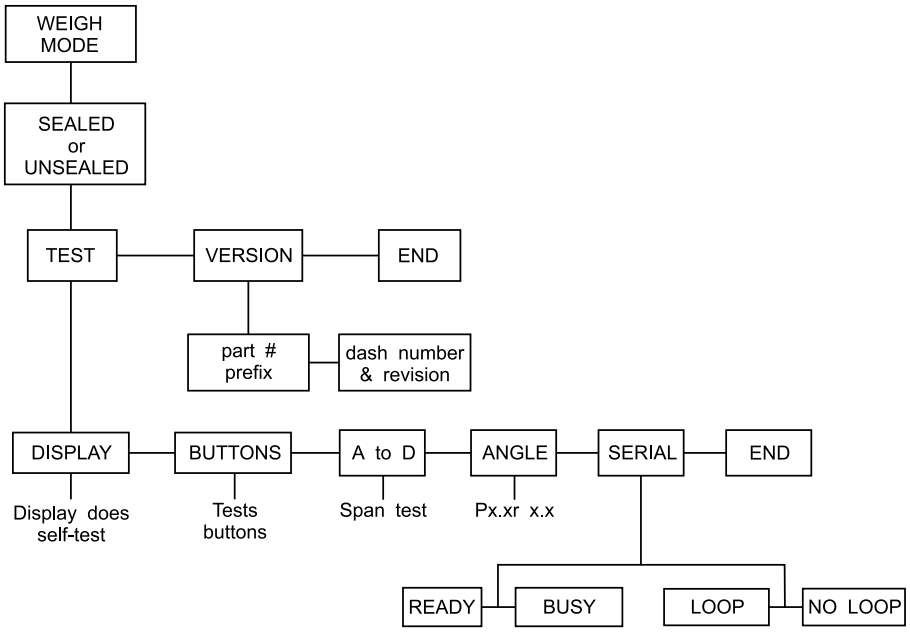



**Figure 12**
Test Menu

1. Enter the test mode from gross/net operation by pressing and holding the **MENU** key until *tESt* is displayed. *SEALEd* or *unSEALEd* is displayed briefly while you hold the key.
2. Move to the right through the menu selections by pressing **MENU** briefly. Move to the left through the menu selections by pressing **MENU** for 1 second or hold down for continuous scrolling.
3. To move down a level in the hierarchy, press **SELECT**. Anytime you wish to get to the next higher level in the hierarchy, press and hold **SELECT** for approximately 1.5 seconds or press **SELECT** whenever *End* is displayed.
4. Press **MENU** to toggle between choices.
5. Press **G/N** to return to gross weighing operation at any time.

Below are the specific directions and explanations for the items you see in the test menu.

VERSION — Under version are the Weigh-Tronix part number and revision number for the software found in your machine. Weigh-Tronix part numbers are divided into two parts: the prefix and the dash number.

DISPLAY — With *diSPLAY* displayed, press **SELECT** and the bottom row of annunciators turns on. Press **SELECT** again and a dynamic test is run. Press **MENU** to stop the dynamic test or consecutively press **MENU** to step through the display test routine. Press **SELECT** when the dynamic test is active to return the unit to *diSPLAY*.

BUTTONS — With *buttonS* displayed, press **SELECT** and an underscore will appear on the screen. Press any key except **MENU** to check for proper key functioning. After testing the buttons, press **MENU** to return to the display.

A to D — Displays the analog to digital counts. The span is normally 20,000 counts per millivolt per volt. With a calibrator at zero millivolts per volt, the displayed value should be between -200 and +200.

ANGLE — Displays pitch and roll confirming that the angle sensors are functional.

SERIAL — Tells you if the serial output is ready or busy. A jumper connecting pins 4 and 8 of the serial port will cause *rEAdY* to be displayed. Pressing the **MENU** key puts *LOOP* or *no LOOP* on the display. With pins 2 and 3 connected, *LOOP* is displayed. With them disconnected, *no LOOP* is displayed.

# WI-125 QTLTSC Troubleshooting Tips

1. **Powered Indicator**
   a. If there is a readout check the other tips
   b. If there is no readout check for voltage on the Quick Disconnect power supply connector, must have at least 10.5 volts DC and 150mA.
      1. If there is power at the connector, check for power coming from P2 pins 1 and 4 on the power supply card, should have at least 10.5 volts DC
         a. If there is power at power supply , replace main card. Setup new card and calibrate (16 Steps).
         b. If there is no power at P2, check fuse, if bad replace fuse. If the fuse is ok, replace power supply card.
      2. If there is no power at the connector, check power cable replace if necessary. Try a different power source on the LT.

2. **Lockup**

This means the A to D section is out of range or not communicating with the cells.

   a. Disconnect the interface cable at the indicator, if it stays in “lockup”, replace main card.
   b. If you read a value connect the weight and pitch/roll simulators to the indicator, if it reads “lockup”, replace the main card.
      1. If the reading is unstable replace the main card
      2. If the reading is stable, remove the 12-pin test cable and connect the interface cable to the simulators.
      3. If you get “lockup” again, replace the interface cable
      4. If there is a stable reading the interface cable and indicator are OK, there is a problem somewhere in the carriage assemble.
   c. **For hardwire style J-box.** Once the indicator and interface cable have been checked and are OK, now you need to check the pigtail. This will take an ohmmeter to verify no shorts and/or opens. Replace if defective.
   d. With the indicator attached to the carriage again and still in “lockup,” disconnect one bar at a time and try adjusting the “Zero pot” to enable a weight value. Keep proceeding until all Weigh Bars are disconnected.
   e. Next, ohm out the four Weigh Bars
      a. If all Weigh Bars ohm out OK, replace the junction box. **(**Note: **On a Hardwire style J-box, check for any broken wires or a cell(s) not wired correctly Before replacing the Junction box.)**
      b. If a Weigh Bar ohms out of tolerance, replace the Weigh Bars. **(**Note: **If you have to replace a J-box or Weigh Bar, the scale will need to be cornered and calibrated.)**

3. **Printer shuts down when trying to print.**

The WP series printers could take up to 3 amps when there is heavy printing, this may be why your printer shuts down. Try another power source (direct to a battery or remote power source).

4. **Center Dashes**

This means that there is no communication between the indicator and the angler sensors. This indication has nothing to do with Weigh Bars.

   a. Check the indicator with the roll and pitch simulator.
      1. If you still have center dashes check the 12-pin connector on the enclosure. Also check the internal wiring for any loose or broken wires

2. If you get weight readout, remove the 12-pin test cable and connect in the interface cable.
   a. If you get center dashes, than replace the interface cable.
   b. If you get weight readout on a system that uses a Connector style J-box: Replace the J-box. On a hardwire style: Ohm out the pigtail and check for shorts and/or opens. If any found, replace the pigtail. If the pigtail is OK, check for any broken or miswired connections, otherwise change the J-box.

5. **All 88888s**

If you see this on the indicator, it can be caused by 2 problems.

a. It could mean the program has somehow been corrupted and the indicator will need to be master cleared and calibrated (16 step).
b. Or it could be that the photo sensor is shorted against the LCD tube. This will usually happen when a main card was replaced. Check to make sure that the sensor is in the machined hole designated for it on the keyboard backerplate.

6. **Reset**

If you see this message then the software in the indicator has either become corrupted or the battery backup has fallen below the voltage level needed to retain the RAM memory.

a. This reset menu is referenced in the Service Manual and it consists of three or four menus:
   **ALL**: If all 3 of your menus need to be reset you will be able to use this option instead of going through each menu individually.
   **SETUP**: This is your Setup menu. If this menu is flashing you will need to reset it. This information is modified through the security code. This menu does not affect the calibration. So when resetting this menu you will not have to recalibrate!!
   **ADJUST**: This is your calibration menu. If this menu is flashing you will need to reset it and recalibrate.
   **DATA**: This menu will consist of any user information. If this menu is flashing it will need to be reset. Resetting this option does not effect calibration. If there is a battery voltage problem, this will most likely be a menu you will need to reset. If you continue to have this menu go to reset, you should have the main card repaired or replaced.

7. **Drifting**

This could be caused by a handful of different things. So try to isolate the problem.

a. You will want to verify the stability of the indicator first, so check the unit with the simulator. If the indicator still drifts replace the main card. If there is stability, check the indicator with the interface cable.
   a. If there is drift, change the Interface cable. If there is stability, disconnect each cell and adjust the zero pot if necessary to locate a faulty Weigh Bar.
   b. If there is stability after disconnecting a certain cell, replace the defective Weigh Bar. If each Weigh Bar was tested individually and the drift never went away, you will either want to ohm the Weigh Bars to see if one or more Weigh Bars are out of tolerance or replace the J-box.
   c. **On a hardwire style J-box:** Ohm out the pigtail and check for shorts and/or opens. If any found, replace the pigtail. If the pigtail is OK, check for any broken or miswired connections. Otherwise change the J-box.

8. **Not Repeating**

This can be caused by the way the Quik-Tach Scale is hanging on the lift truck's carriage.

a. First check the clamps on the bottom of the carriage. Make sure there is proper spacing around the block assembly. These clamps are there to keep the scale from coming forward off the lift truck carriage. They are not intended to secure the scale to the lift truck carriage.

b. If you have done any maintenance to the carriage as far as replacing a Weigh Bar, verify that all Weigh Bars have the stamped "T" at the very top of Weigh Bar. Also the Weigh Bars and the Super bolts should be torqued properly, and in the sequence specified in this manual.

c. If a J-box is not cornered correctly this could cause repeating problems. There is a cornering procedure in the WI-125 QTLTSC Service manual. On a hardwire style J-box, broken or miss-aligned interface or cell wires can cause repeating problems. Check the color code on the J-box PCB.

9. **Upper or Lower Dashes.**

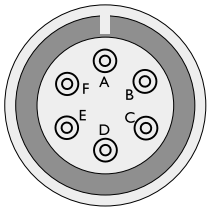
Your going to be dealing with a system that was working before because every system leaves the factory in working condition. So there must be a reason why the unit has dashes. Normally dashes (upper or lower) means your out of the A to D range of the existing calibrate points, but when the unit was working before there has to be something that put the unit into a dash mode. You will want to start trouble shooting the system to find out what part, or parts are defective and causing this type of problem. Start by checking the indicator with a simulator, if the head checks out move onto the interface cable and so on.

10. **All 0000s or 9999s after fitting data in calibration.**

This means the points in the calibration were too far out of tolerance for the WI-125 to mathematically configure the calibration. It would be wise to do a Master Clear and then recalibrate.

# Resistance Test of QTLTSC Weigh Bars

Perform these resistance checks to test the legal for trade lift truck scale Weigh Bars. With the meter set on the appropriate ohms scale, check the following values between the color coded wires on the section of the cord connected to the Weigh Bar or the corresponding pin out for the connector. See Figure 13.




A= -Output
B= +Excitation Shear Bridge
C= +Output
D= -Excitation
E= +Excitation Trim Bridge
F= Shield

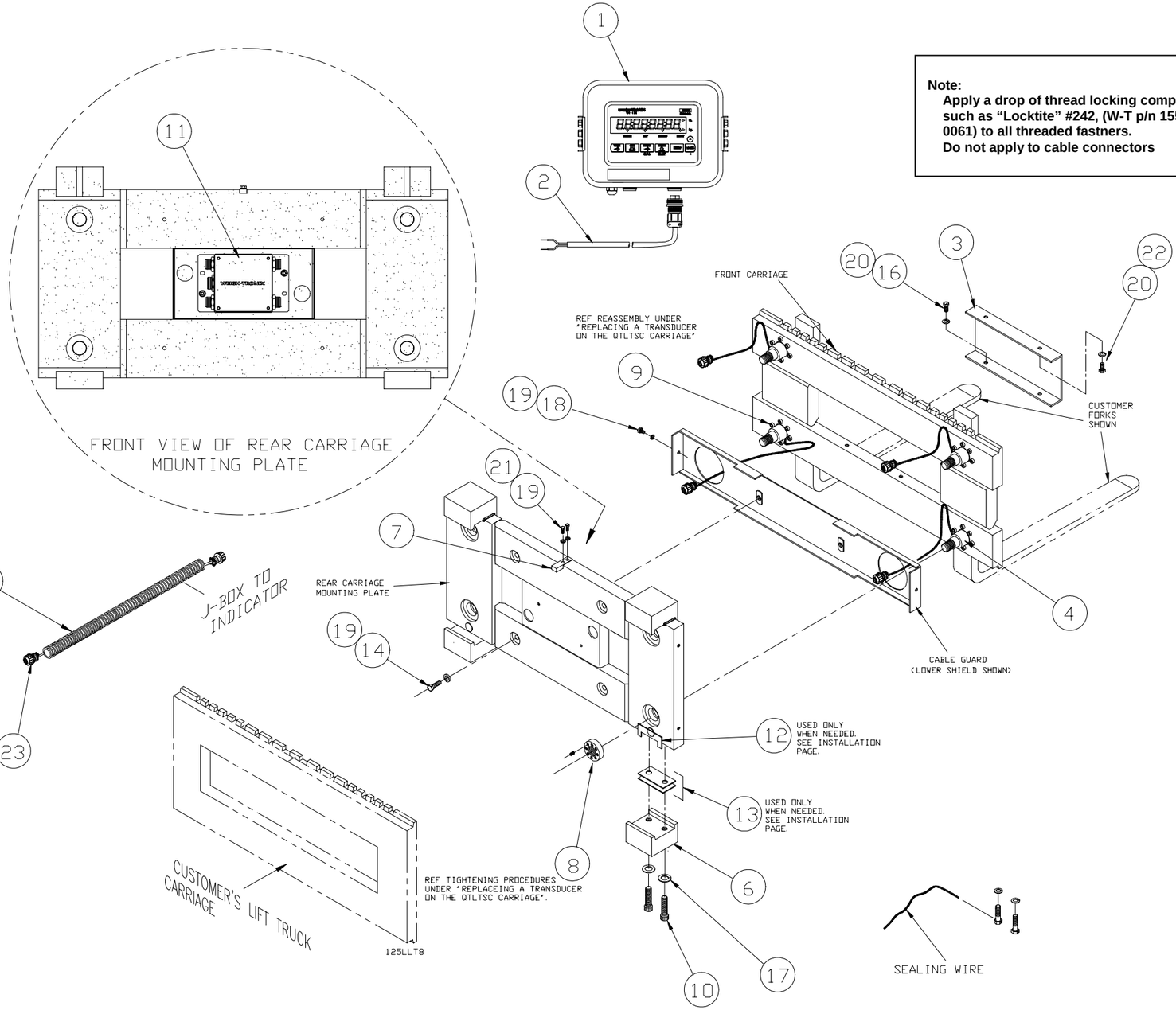
**Figure 13**
Front view of six-pin, male connector

The electrical connections of the QTLTSC Weigh Bar with a six-pin, male connector, shown above, can be verified by measuring the resistances listed below:

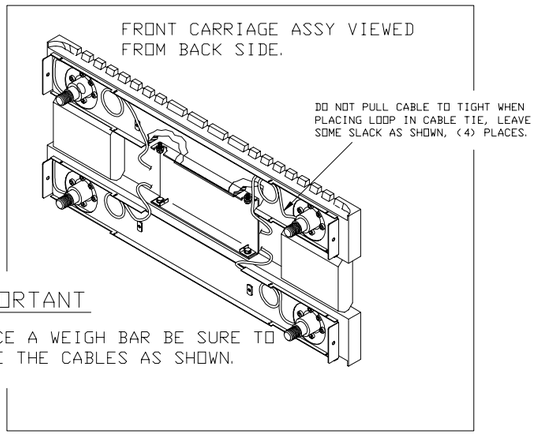
| Pins | Wires | Reading | Tolerance in Ohms |
|---|---|---|---|
| B to D | Green to Black | _____ | 1021 to 1062 (1032) |
| B to C | Green to White | _____ | 764-796 (780) |
| B to A | Green to Red | _____ | 764-796 (780) |
| B to E | Green to Blue | _____ | 1335 to 1391 (1363) |
| E to C | Blue to White | _____ | 1038 to 1082 (1060) |
| E to A | Blue to Red | _____ | 1038 to 1082 (1060) |
| E to D | Blue to Black | _____ | 356-372 (364) |
| C to A | White to Red | _____ | 935-973 (954) |
| D to A | Black to Red | _____ | 714 to 744 (729) |
| D to C | Black to White | _____ | 714 to 744 (729) |

All pins or wires to the metal of the Weigh Bar are to measure >500 megaohms. Pin F (shield, bare wire, orange wire) to all other pins or wires are to measure >500 megaohms.

# WI-125 LIFT TRUCK (QTLTSC)
# SCALE CARRIAGE *(w/ ORIGINAL J-BOX)*
*5,000 lb CLASS II* ASSEMBLY




**Note:**
**Apply a drop of thread locking compound such as "Locktite" #242, (W-T p/n 15566-0061) to all threaded fastners.**
**Do not apply to cable connectors**

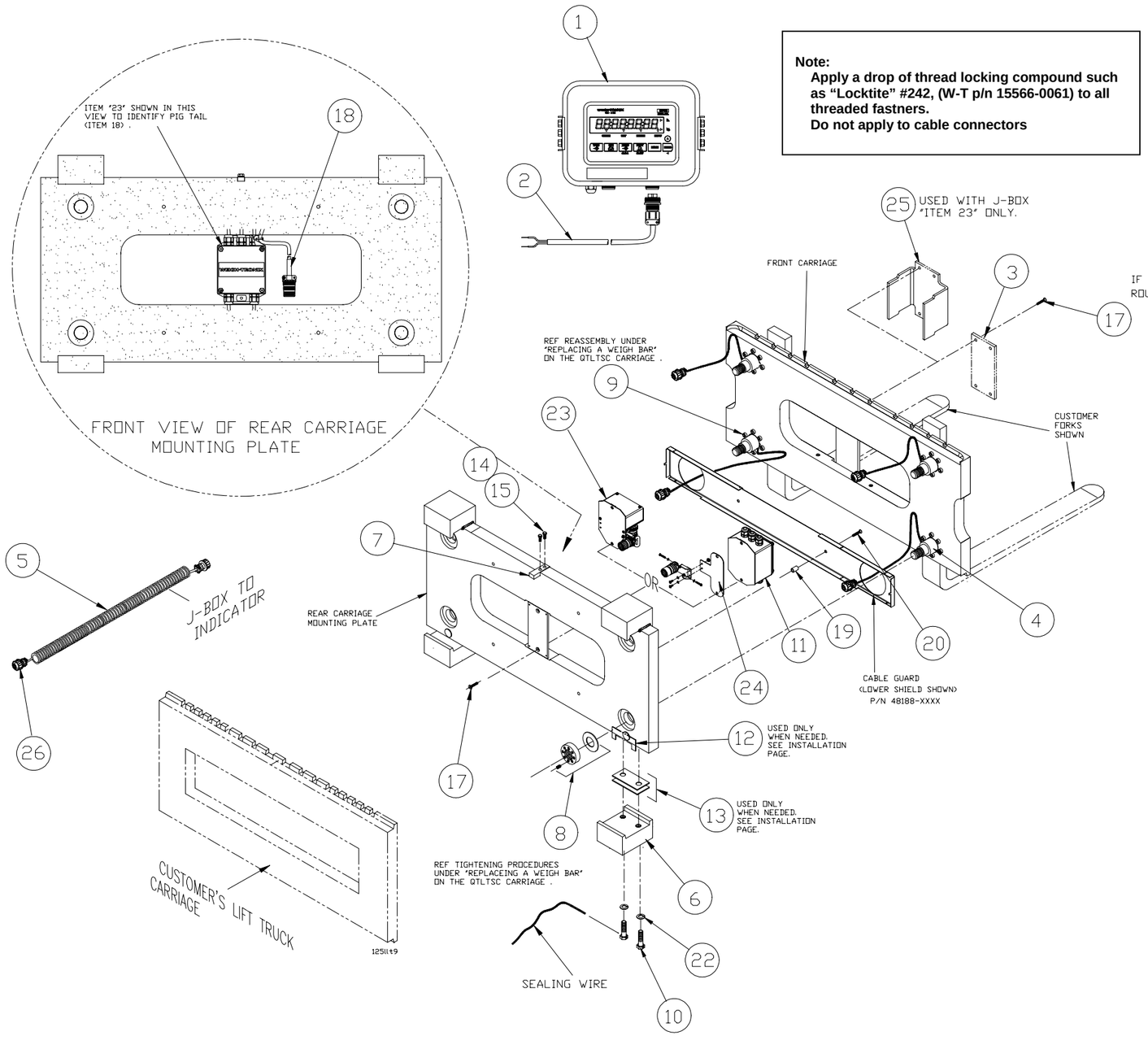



| ITEM NO. | DESCRIPTION | W-T P/N | QTY |
|---|---|---|---|
| 1 | WI-125 LIFT TRUCK (QTLTSC ) INDICATOR ASSY | 47955-0014 | 1 |
| 2 | 12-72VDC PWR CABLE *(12' long)* | 19266-0041 | 1 |
| 3 | J-BOX SHIELD | 48190-0017 | 1 |
| 4 | WEIGH BAR ASSY | 48304-0010 | 4 |
| 5 | RETRACTABLE INTFC. CABLE ASSY *(j-box-to-indicator)* | 48432-0015 | 1 |
| 6 | MOUNTING HOOK | 19967-0019 | 2 |
| 7 | CARRIAGE LOCATING PIN | 19968-0018 | 1 |
| 8 | JAM NUT TENSIONER *(incl. set screws)* | 46687-0011 | 4 |
| 9 | BOLT, SOC, .44 x 1.50" long | 17704-0920 | 24 |
| 10 | BOLT, .50 x 1.5" long GR 5 | 49889-0011 | 4 |
| 11 | J-BOX ASSY *(incl. level sensor)* | 48369-0012 | 1 |
| 12 | SHIM (.059" thk.) | 48876-0018 | 1 |
| | SHIM (.048" thk.) | 48876-0026 | 1 |
| | SHIM (.035" thk.) | 48876-0034 | 1 |
| 13 | SPACER PLATE (.095" thk.) | 49890-0018 | 1 |
| 14 | BOLT, HEX, ¼" x 2"L | 14476-0017 | 4 |
| 15 | WI-125 Indicator Angle Mounting Bracket *(not shown)* | 49106-0018 | 1 |
| 16 | BOLT, HEX, 5/16" (special) | 48482-0014 | 4 |
| 17 | LOCK WASHER, ½" | 14474-0107 | 4 |
| 18 | BOLT, ¼" x ½"L | 14495-0011 | 4 |
| 19 | LOCK WASHER, ¼" | 14474-0065 | 10 |
| 20 | LOCK WASHER, 5/16" | 14474-0073 | 6 |
| 21 | BOLT, ¼" x ¾"L | 14476-0014 | 2 |
| 22 | BOLT, 5/16" x 5/8"L | 14495-0144 | 2 |
| 23 | 12-Pin Male Connector | 46696-0010 | 2/ca. |

# WI-125 LIFT TRUCK (QTLTSC)

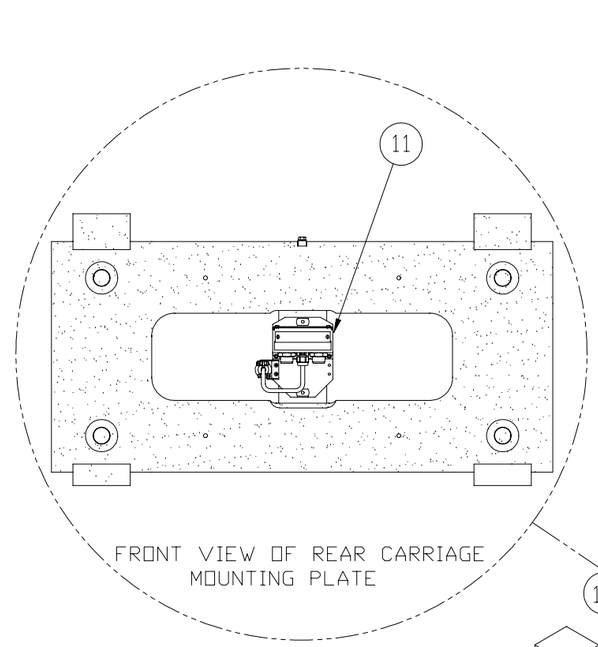
CURRENT ONE PIECE CARRIAGE w/J-BOX OPTIONS

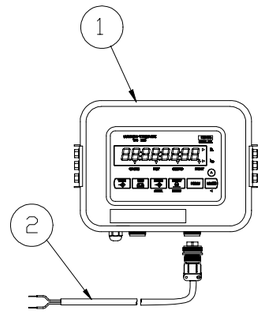
*5,000 lb CLASS II / III* ASSEMBLY

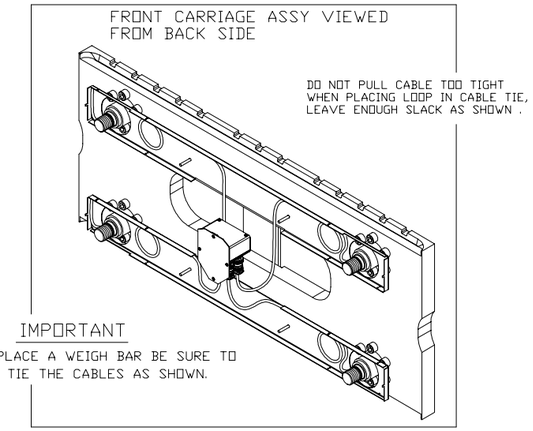



| ITEM NO. | DESCRIPTION | W-T P/N | QTY |
|---|---|---|---|
| 1 | WI-125 Lift Truck (QTLTSC ) Indicator Assy | 47955-0014 | 1 |
| 2 | DC Pwr Cable *(12' long)* | 19266-0041 | 1 |
| 3 | J-BOX Shield | 50811-0012 | 1 |
| 4 | Weigh BAR Assy, | 48304-0010 | 4 |
| 5 | Retractable Interface Cable Assy *(18'-20' stretched)* | 48432-0023 | 1 |
| 6 | Mounting Hook (class II) | 19967-0019 | 2 |
| 7 | Carriage Centering Pin | 19968-0018 | 1 |
| 8 | Jam Nut Tensioner Assy | 46687-0011 | 4 |
| 9 | Bolt, HxSoc, .44 X 1.50" Long | 17704-5929 | 24 |
| 10 | Bolt, .50 X 1.5" Long GR 5 | 49889-0011 | 4 |
| 11 | J-Box Assy *(internal termination w/ level sensor)* | 50781-0018 | 1 |
| 12 | Shim *(.059" thk)* | 48876-0018 | 1 |
| | Shim *(.048" thk)* | 48876-0026 | 1 |
| | Shim *(.035" thk)* | 48876-0034 | 1 |
| 13 | Spacer Plate, S STEEL *(.059" thk)* | 49890-0018 | 2 |
| 14 | Bolt, 1/4"-20 x 3/4"L | 14476-0014 | 2 |
| 15 | Lock Washer, 1/4" | 14474-0065 | 2 |
| 16 | Pitch / Roll Trouble Shooting Simulator *(not shown)* | 49656-0012 | 1 |
| 17 | Bolt, c'sink HxSoc 1/4" x 5/8" L | 16192-0020 | 6 |
| 18 | Pigtail Cable Assy *(12"L)* | 50802-0013 | 1 |
| 19 | Spacer | 27417-0018 | 4 |
| 20 | Bolt, c'sink HxSoc 1/4" x 1 1/2" L | 16192-0079 | 4 |
| 21 | WI-125 Indicator Angle Mounting Bracket *(not shown)* | 49106-0018 | 1 |
| 22 | Lock Washer,1/2" | 14474-0107 | 4 |
| 23 | J-Box w/ Level Sensor (current version) | 52040-0011 | 1 |
| 24 | J-Box Durability Kit (see j-box durability kit page in this manual) | 52231-0010 | 1 |
| 25 | J-Box Channel Shield (used w/ item 23 only) | 52529-0011 | 1 |
| 26 | 12-Pin Male Connector | 46696-0010 | 2/ca. |

# WI-125 LIFT TRUCK (QTLTSC)
## 10,000 lb-CLASS III- SCALE CARRIAGE
## MAJOR COMPONENTS *AND* ASSEMBLY

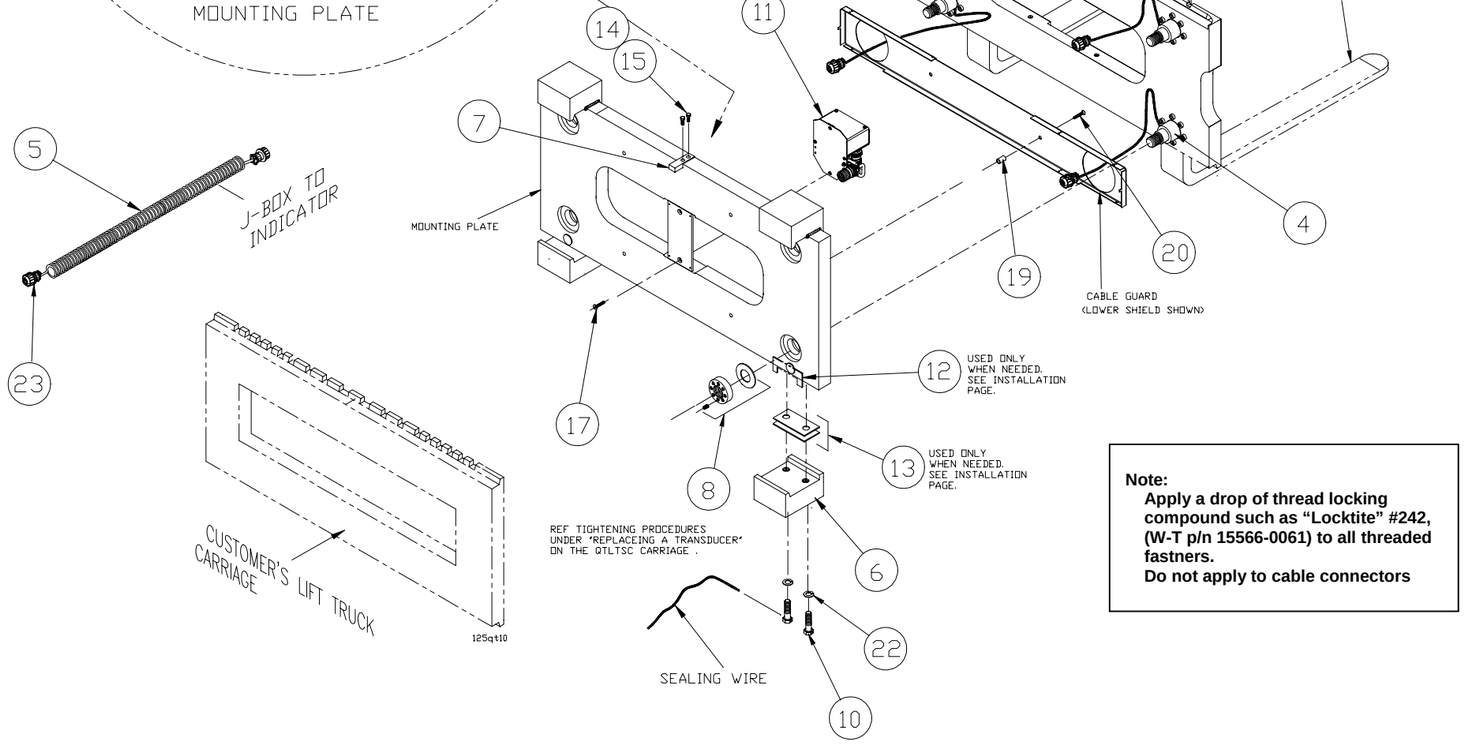



IMPORTANT

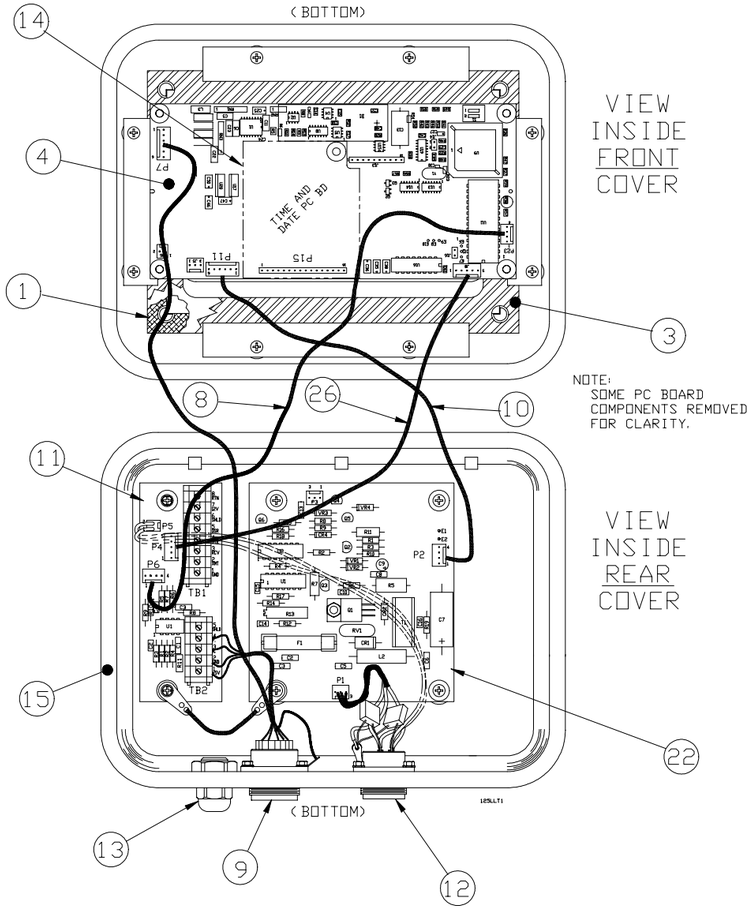
IF YOU REPLACE A WEIGH BAR BE SURE TO ROUTE AND TIE THE CABLES AS SHOWN.




**Note:**
**Apply a drop of thread locking compound such as "Locktite" #242, (W-T p/n 15566-0061) to all threaded fastners.**
**Do not apply to cable connectors**

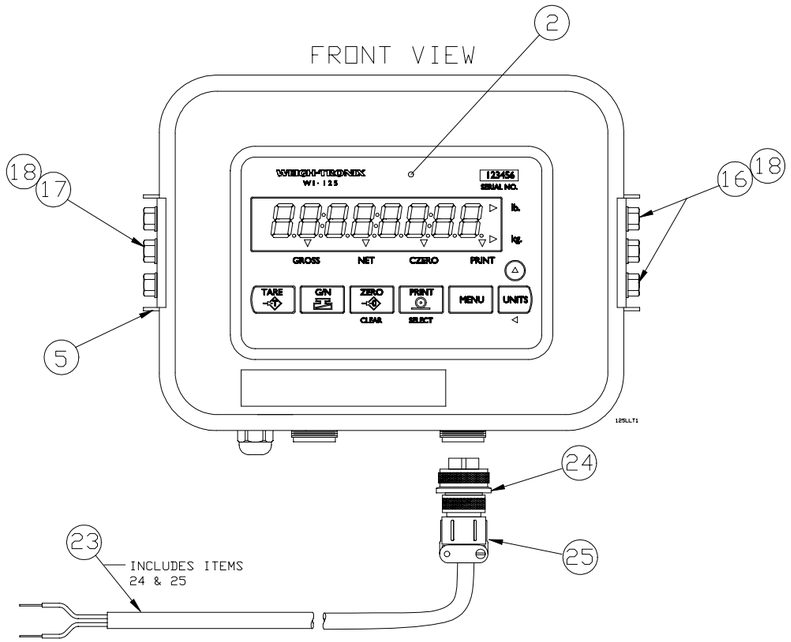
| ITEM NO. | DESCRIPTION | W-T P/N | QTY |
|---|---|---|---|
| 1 | WI-125 Lift Truck (QTLTSC ) Indicator Assy | 47955-0014 | 1 |
| 2 | DC Pwr Cable *(12' long)* | 19266-0041 | 1 |
| 3 | J-BOX Channel Shield | 52529-0011 | 1 |
| 4 | Weigh Bar Assy | 48304-0010 | 4 |
| 5 | Retractable Interface Cable Assy *(18'-20' stretched)* | 48432-0023 | 1 |
| 6 | Mounting Hook | 20732-0011 | 2 |
| 7 | Carriage Centering Pin | 19968-0026 | 1 |
| 8 | Jam Nut Tensioner Assy | 46687-0037 | 4 |
| 9 | Bolt, Hx Soc, 5/8" x 1 3/4" Long | 17704-6224 | 24 |
| 10 | Hook Mount Bolt | 49889-0045 | 4 |
| 11 | J-Box Assy w/ Level Sensor (current version) | 52040-0011 | 1 |
| 12 | Shim *(.059" thk)* | 51853-0019 | 1 |
| | Shim *(.048" thk)* | 51853-0027 | 1 |
| | Shim *(.035" thk)* | 51853-0035 | 1 |
| 13 | Spacer Plate, S STEEL *(.059" thk)* | 51852-0010 | 2 |
| 14 | Bolt, 1/4"-20 x 3/4"L | 14476-0014 | 2 |
| 15 | Lock Washer, 1/4" | 14474-0065 | 2 |
| 16 | Pitch / Roll Trouble Shooting Simulator *(not shown)* | 49656-0012 | 1 |
| 17 | Bolt, c'sink HxSoc 1/4" x 5/8" L | 16192-0020 | 6 |
| 19 | Spacer | 27417-0018 | 4 |
| 20 | Bolt, c'sink Hx Soc 1/4" x 1 1/2" L | 16192-0079 | 4 |
| 21 | WI-125 Indicator Angle Mounting Bracket *(not shown)* | 49106-0018 | 1 |
| 22 | Lock Washer,5/8" | 14474-0115 | 4 |
| 23 | 12-Pin Male Connector | 46696-0010 | 2/ca. |

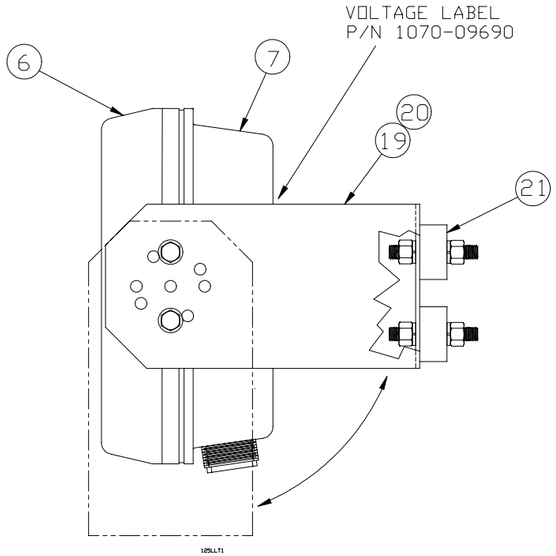
# WI-125 (QTLTSC) INDICATOR
PARTS *AND* ASSEMBLY



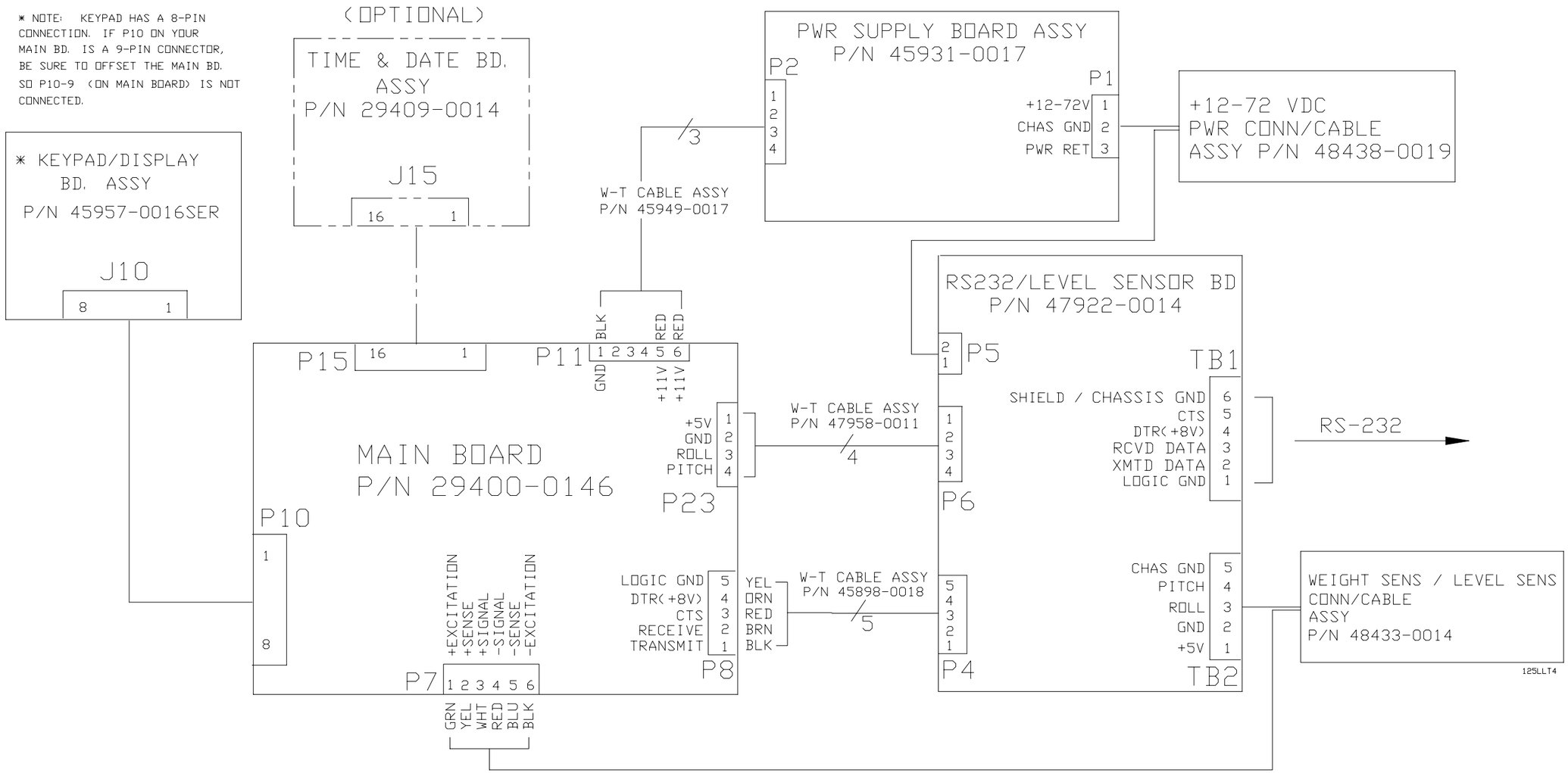

| ITEM NO. | DESCRIPTION | W-T P/N | QTY |
|---|---|---|---|
| *1 | SILICONE KEYPAD GASKET | 1055-10389 | 1 |
| 2 | KEYPAD ASSY | 45957-0016 | 1 |
| 3 | BACKER PLATE | 29422-0017 | 1 |
| 4 | MAIN PC BOARD ASSY | 29400-0146 | 1 |
| 5 | ENCLOSURE SEALING BRACKET | 1067-09677 | 2 |
| 6 | FRONT ENCLOSURE | 45902-0012 | 1 |
| 7 | REAR ENCLOSURE | 46477-0015 | 1 |
| 8 | LEVEL SENS BD TO MAIN BD CABLE ASSY | 47958-0011 | 1 |
| 9 | WGHT/LEVEL SENSOR CABLE ASSY | 48433-0014 | 1 |
| 10 | POWER SUPPLY TO MAIN BD CABLE ASSY | 45949-0017 | 1 |
| 11 | RS232 / LEVEL SENS PC BD ASSY | 47922-0014 | 1 |
| 12 | INPUT POWER CONN / CABLE ASSY | 48438-0019 | 1 |
| 13 | STRAIN RELIEF | 15257-0024 | 1 |
| 14 | TIME & DATE PC BD ASSY | 29409-0014 | 1 |
| 15 | ADHESIVE FOAM REAR ENCL. GASKET | 1045-08401 | 1 |
| 16 | CAP SCREW,#10-32 x .38L | 14505-0035 | 2 |
| 17 | CAP SCREW,#10-32 x .50L | 14505-0050 | 4 |
| 18 | TOOTH WASHER, #10 | 15698-0054 | 6 |
| 19 | MTG BRACKET (LONG) | 28170-0013MTS | 1 |
| 20 | MTG BRACKET (SHORT) | 28170-0039 | 1 |
| 21 | RUBBER MOUNT | 17807-0090 | 3 |
| 22 | POWER SUPPLY PC BD | 45931-0017 | 1 |
| 23 | 12 - 72 VDC PWR CABLE ASSY (12' LONG) | 19266-0041 | 1 |
| 24 | TWO PIN MALE CONNECTOR | 14481-0025 | 1 |
| 25 | PWR CABLE CLAMP | 14482-0016 | 1 |
| 26 | SERIAL TO CPU DISPLAY CABLE ASSY | 45898-0018 | 1 |
| 27 | ANGLE MOUNTING BRACKET (not shown) | 49106-0018 | 1 |

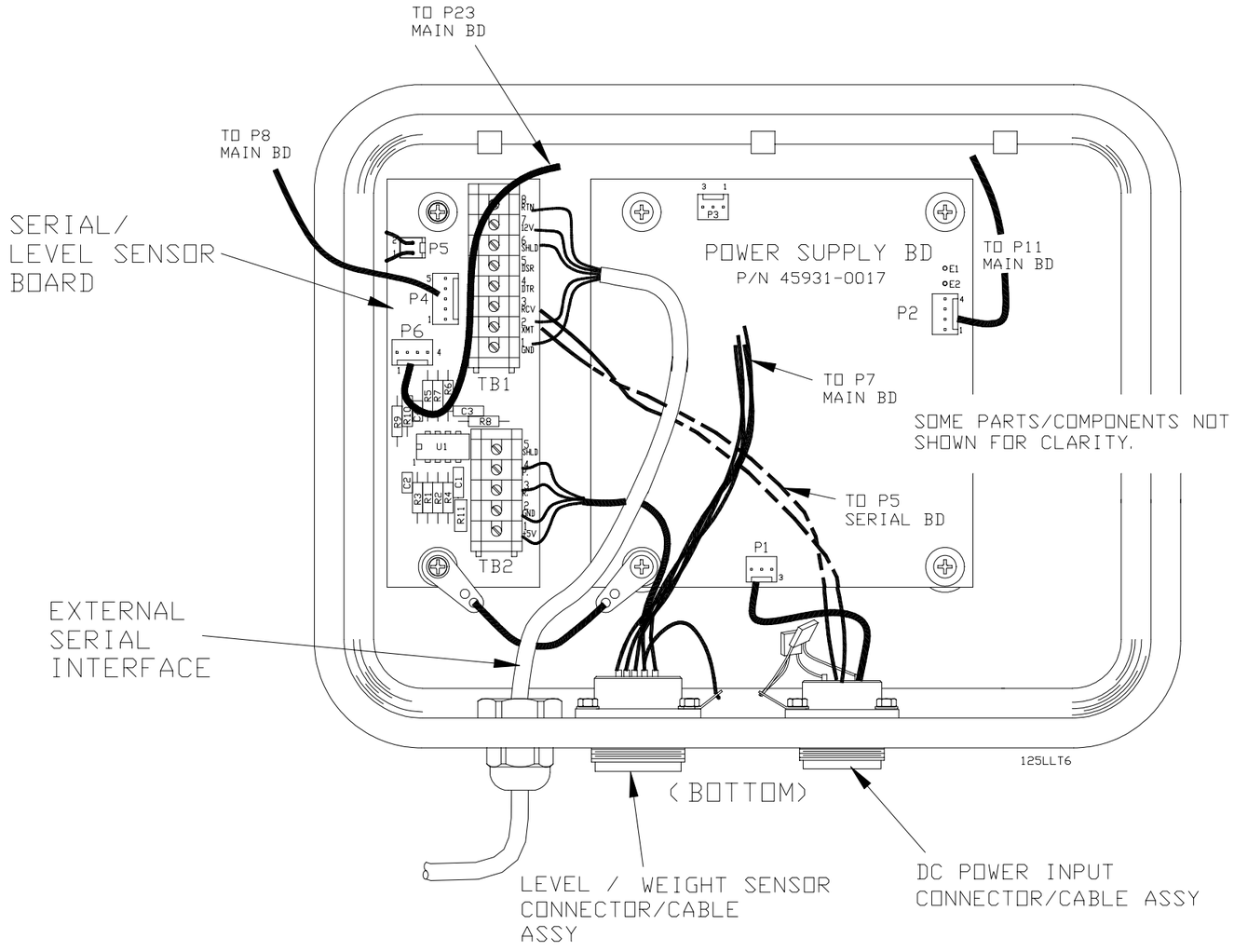
* NOTE: ALWAYS REPLACE KEYPAD GASKET WHEN REMOVING/REPLACING KEYPAD.



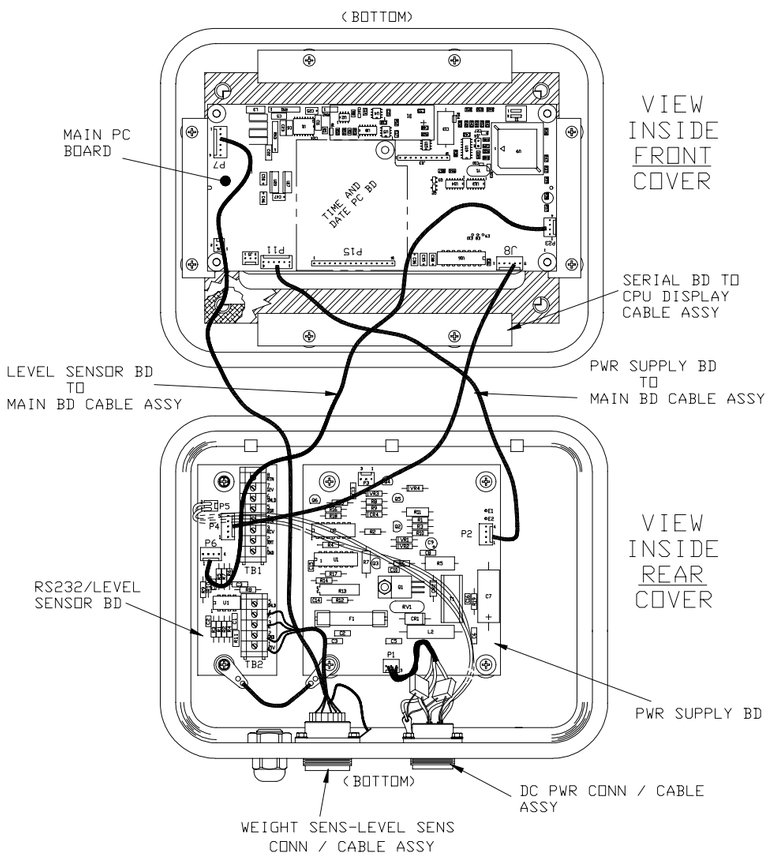
**WI-125 LIFT TRUCK (QTLTSC)**
SYSTEM BLOCK DIAGRAM

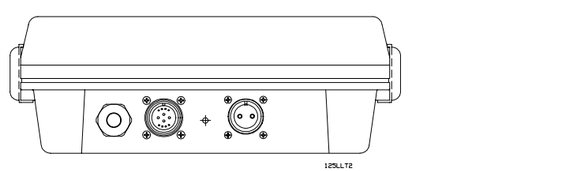


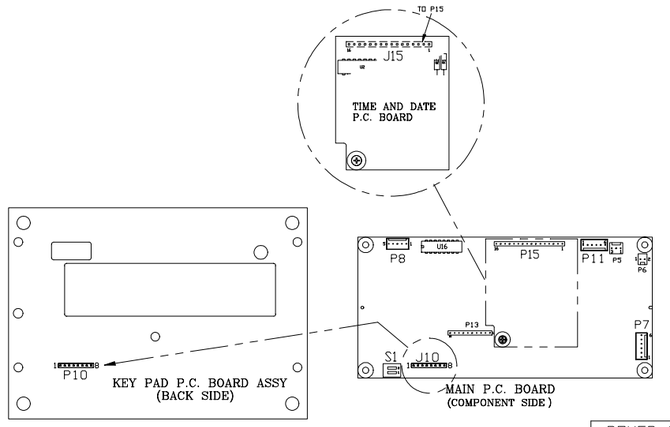

TO P23
MAIN BD
TO P8
MAIN BD
SERIAL/
LEVEL SENSOR
BOARD
P5
P4
P6
TB1
P3
POWER SUPPLY BD
P/N 45931-0017
TO P11
MAIN BD
P2
TO P7
MAIN BD
SOME PARTS/COMPONENTS NOT
SHOWN FOR CLARITY.
TO P5
SERIAL BD
P1
TB2
EXTERNAL
SERIAL
INTERFACE
125LLT6
(BOTTOM)
LEVEL / WEIGHT SENSOR
CONNECTOR/CABLE
ASSY
DC POWER INPUT
CONNECTOR/CABLE ASSY

# WI-125 (QTLTSC) INDICATOR
PC BOARD IDENTIFICATION
W/ PIN-OUTS

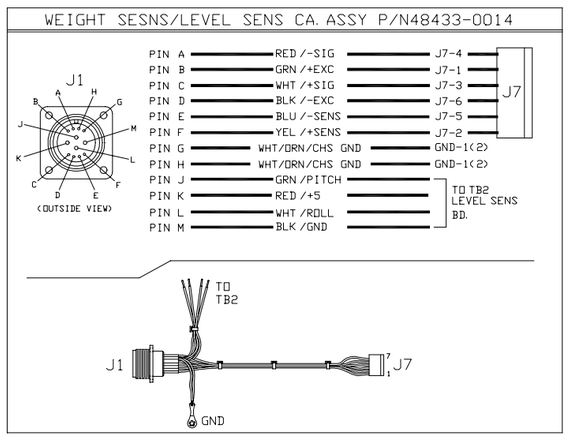
NOTE:
SOME PC BOARD COMPONENTS REMOVED FOR CLARITY.



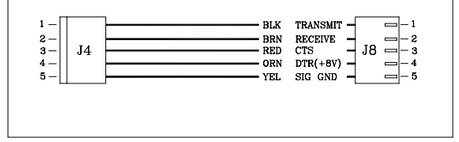



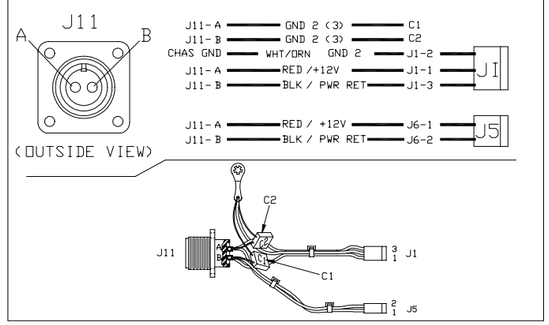

WEIGHT SESNS/LEVEL SENS CA. ASSY P/N48433-0014



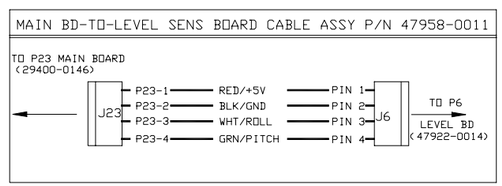

SERIAL INTERFACE-MAIN BD/CABLE ASSY P/N 45898-0018



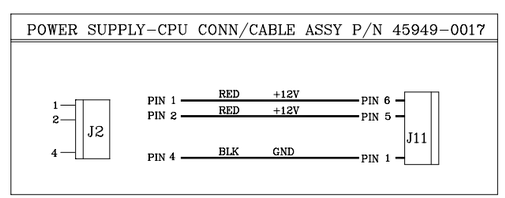

POWER CONNECTOR(12-72VDC)CABLE ASSY P/N 48438-0019




MAIN BD-TO-LEVEL SENS BOARD CABLE ASSY P/N 47958-0011



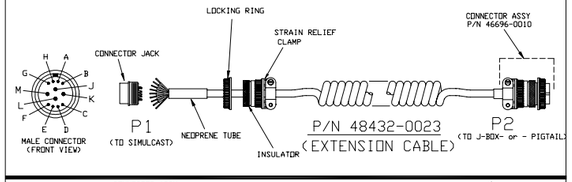

POWER SUPPLY-CPU CONN/CABLE ASSY P/N 45949-0017



# WI-125 (QTLTSC) INDICATOR
PC BOARD IDENTIFICATION
W/ PIN-OUTS

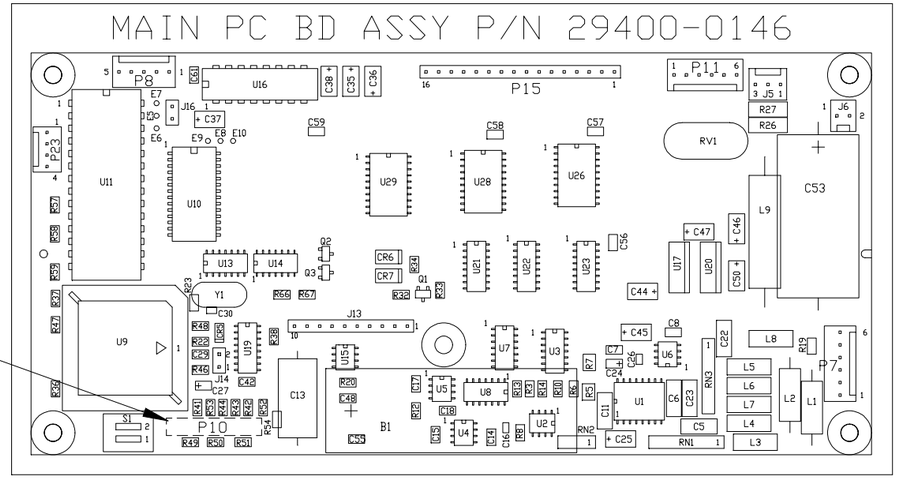
## J-BOX TO WI-125 INDICATOR CABLE ASSEMBLIES

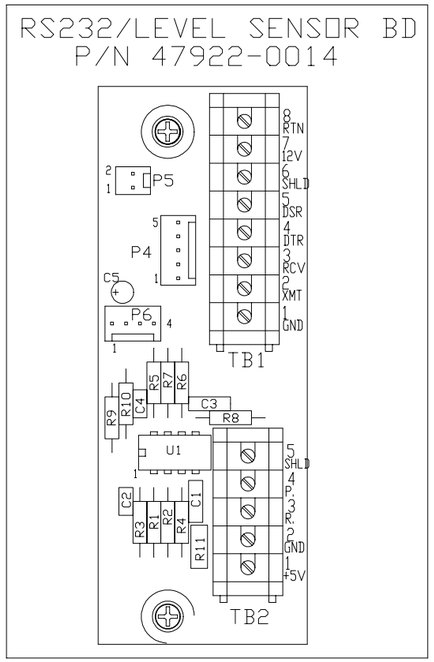
| W-T WIRE COLOR | ORIGIN (FROM J-BOX) TERMINATION | DESTINATION (TO SIMULCAST) TERMINATION | SIGNAL |
|---|---|---|---|
| RED | P2-A | P1-A | -SIGNAL |
| GRN | P2-B | P1-B | +EXCITATION |
| WHT | P2-C | P1-C | +SIGNAL |
| BLK | P2-D | P1-D | -EXCITATION |
| BLU | P2-E | P1-E | -SENSE |
| YEL | P2-F | P1-F | +SENSE |
| SHIELD | P2-G | P1-G | SHIELD |
| BRN | P2-J | P1-J | PITCH |
| ORN | P2-K | P1-K | +5V |
| VIO | P2-L | P1-L | ROLL |
| GRA | P2-M | P1-M | GROUND |

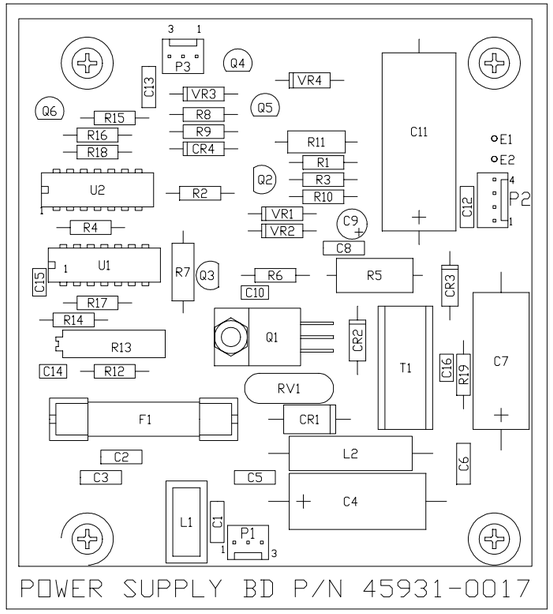


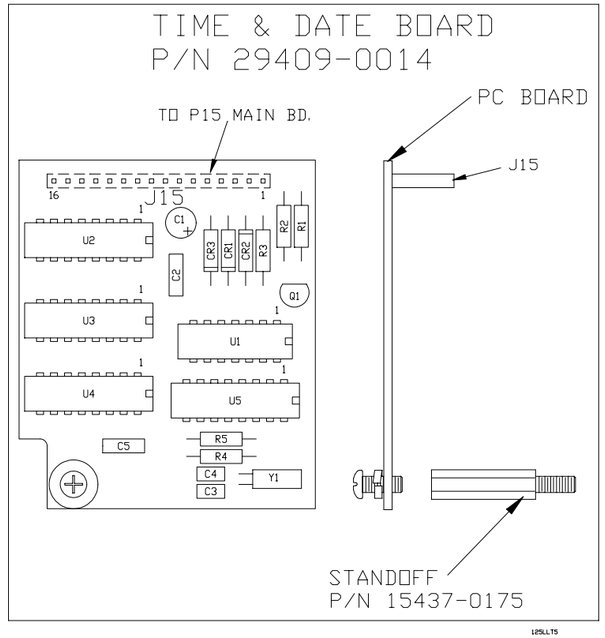

| TEST POINTS (J13, MAIN BD.) | |
|---|---|
| PIN NO. | SIGNAL |
| 1 | +8VDC |
| 2 | -8VDC |
| 3 | +5VDC |
| 10 | GND |

NOTE:
'P10' IS LOCATED ON BACK SIDE OF BOARD.

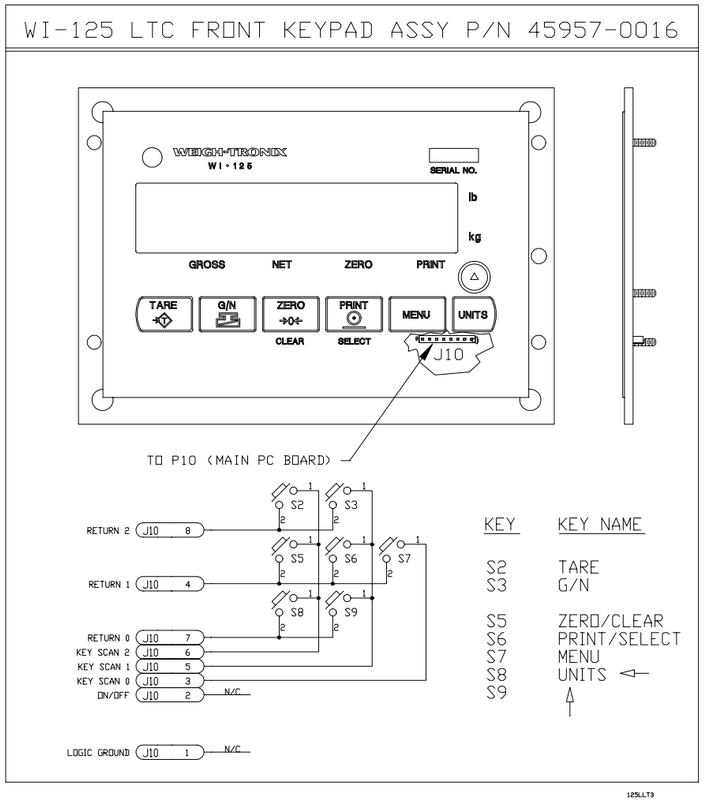


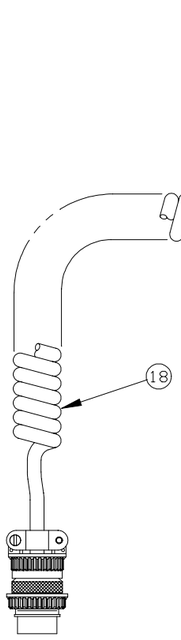



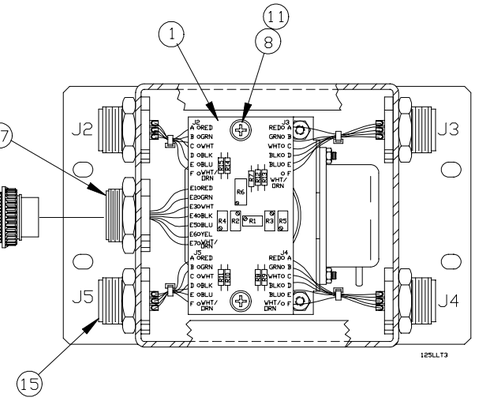
## WI-125 (QTLTSC) INDICATOR
KEYPAD ASSY AND SCHEMATIC

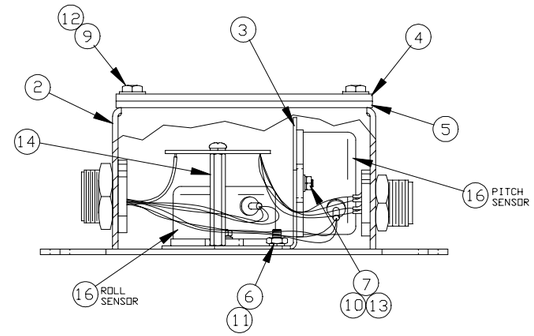



## WI-125 (QTLTSC) J-BOX/LEVEL SENSOR
PARTS AND ASSY

| ITEM NO. | DESCRIPTION | W-T P/N | QTY |
|---|---|---|---|
| 1 | J-Box Assy | 48369-0012 | 1 |
| 2 | J-Box Cover | 48371-0018 | 1 |
| 3 | Cover Gasket | 48373-0016 | 1 |
| 4 | Screw, #10 x 1/2" L | 14505-0050 | 4 |
| 5 | Flat Washer, #10 | 14475-0056 | 4 |
| 6 | Connector Assy 12-pin (male) | 46696-0010 | 1 |
| 7 | Cable Assy (J-box to indicator) | 48432-0023 | 1 |
| 8 | Complete J-Box assy | 48369-0012 | 1 |



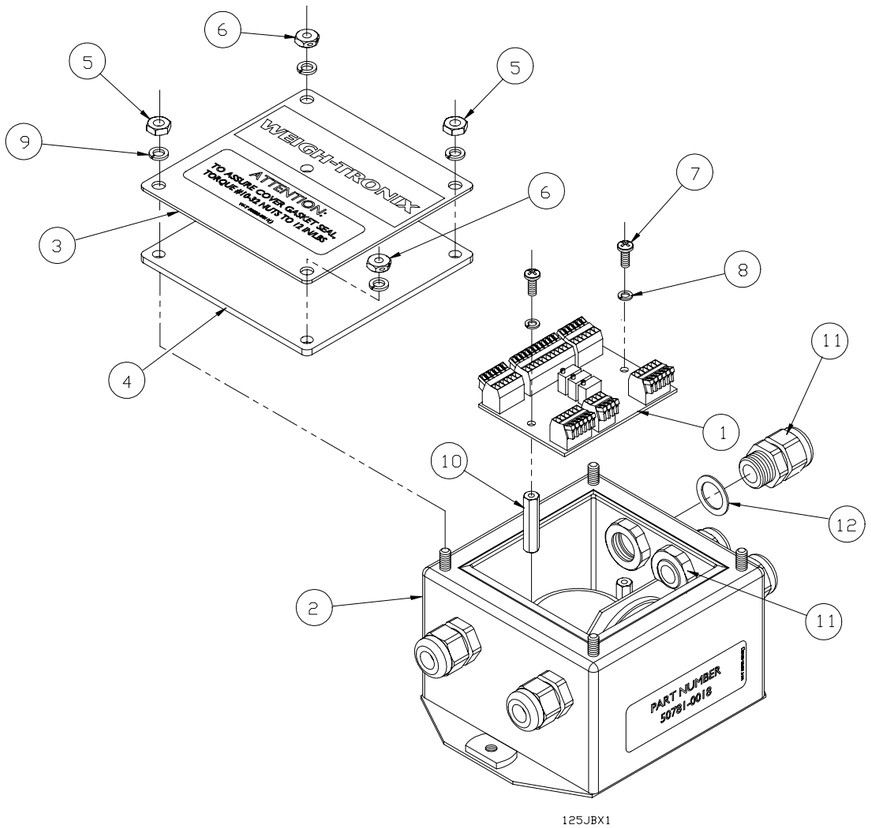



# WI-125 (QTLTSC) INDICATOR

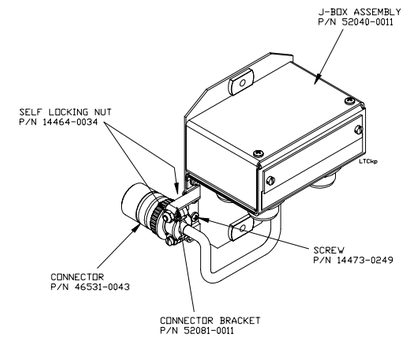
J-BOX ASSY w / INSIDE TERMINATION (with pigtail),
J-BOX ASSY w / CONNECTORS (with pigtail)

| ITEM NO. | DESCRIPTION | W-T P/N | QTY |
|---|---|---|---|
| 1 | PC Board Assy | 50768-0015 | 1 |
| 2 | J-Box Enclosure | 50782-0017 | 1 |
| 3 | J-Box Cover | 50784-0015 | 1 |
| 4 | Cover Gasket | 50785-0014 | 1 |
| 5 | Hex Nut # 10-32 | 14506-0059 | 2 |
| 6 | Hex Nut (modified) # 10-32 | 50029-0010 | 2 |
| 7 | Screw,# 6 x 3/8" L | 14473-0249 | 2 |
| 8 | Lock Washer # 6 | 14474-0032 | 2 |
| 9 | Lock Washer # 10 | 14474-0057 | 4 |
| 10 | Standoff # 6 x 1 ¼ L | 14510-0814 | 2 |
| 11 | Strain Relief Assy | 15257-0032 | 5 |
| 12 | Neoprene Washer | 26357-0020 | 5 |
| 13 | Complete J-Box Assy (w/ internal termination) | 50781-0018 | 1 |

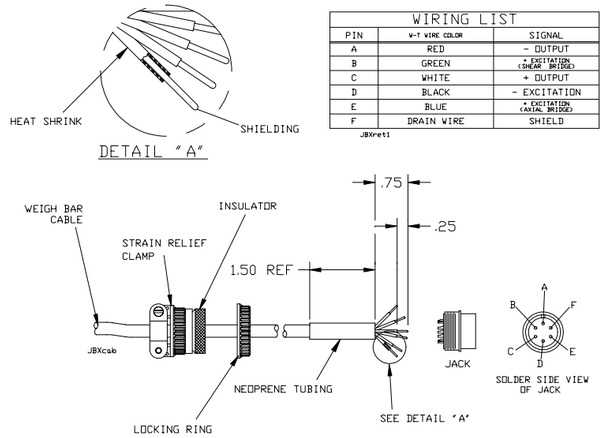



J-BOX w/ INTERNAL TERMINATION (with pigtail)

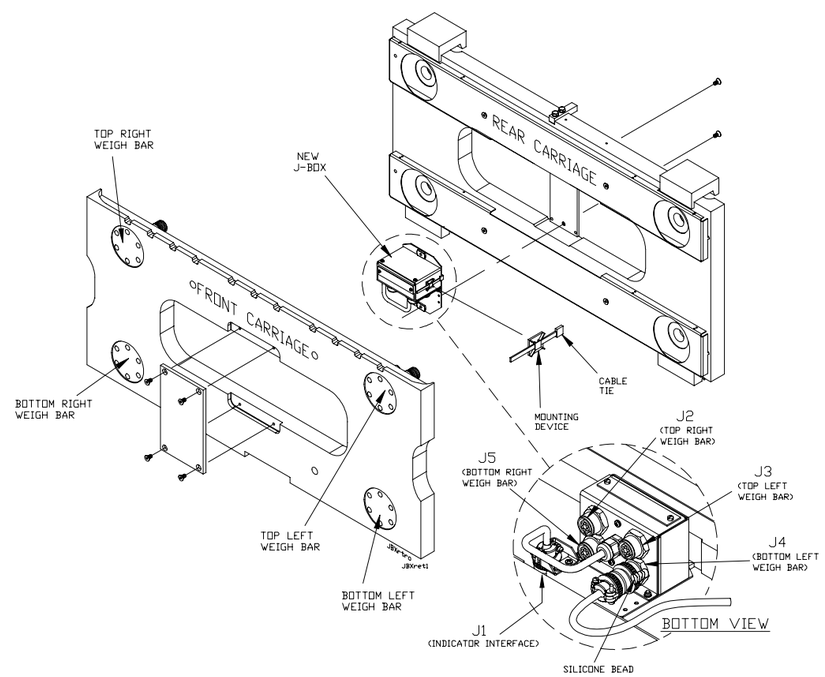
## J-Box Assembly P/N 52040-0011




## Lift Truck Weigh-Bar Cable Pin-Out




## Weigh-Bar Cable to J-Box Connector Diagram



## Installing the Quick-Tach Carriage

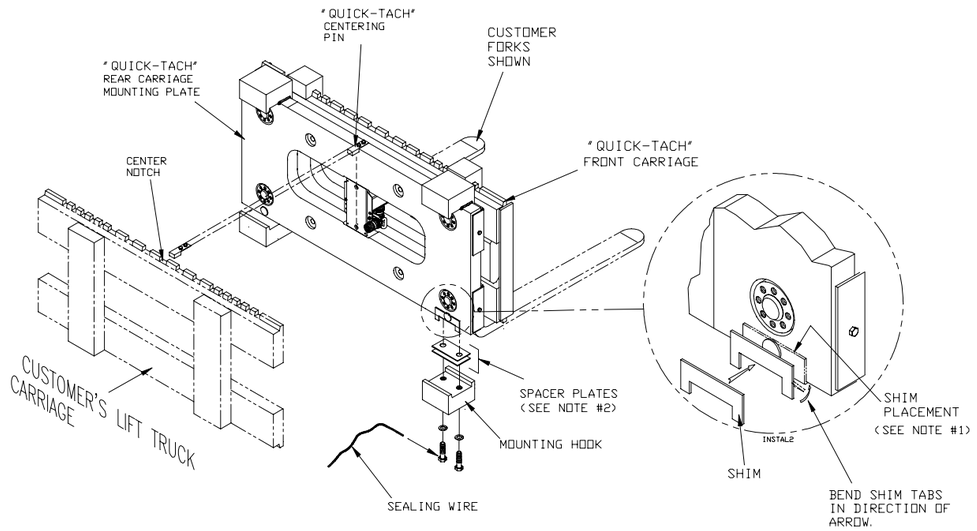



FIG. 1

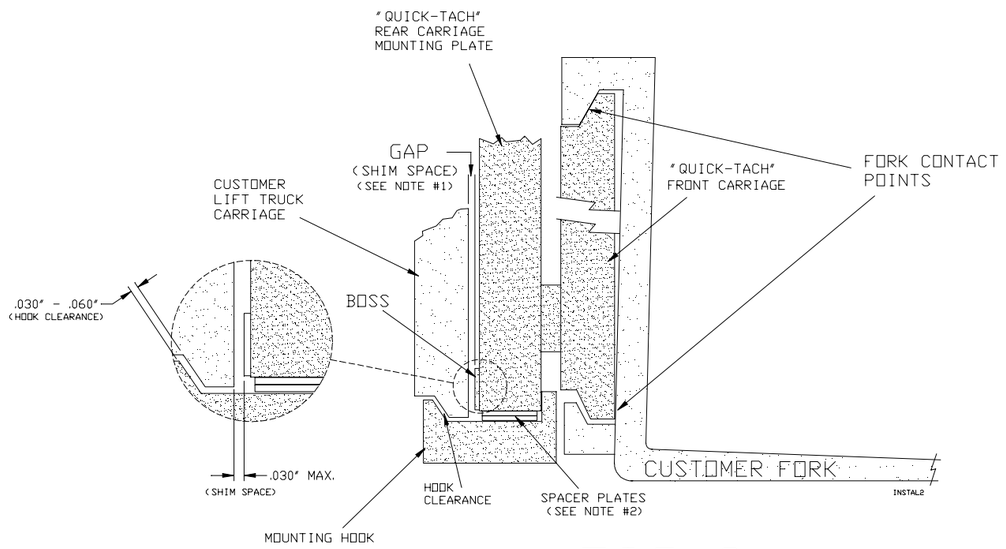



FIG. 2

# LIFT TRUCK QTLTSC
## SCALE CARRIAGE INSTALLATION INSTRUCTIONS

- Remove the customer's forks before you mount the Quik-Tach carriage Check the forks for wear or damage and make any necessary repairs.
- Clean and inspect the customer's lift truck carriage. Both the upper and lower sections of the carriage should be flat and not twisted or bent out of shape. It is especially important that the upper carriage notches are not excessively worn.
- Remove the two mounting hooks and washers bolted to the bottom of the Quik-Tach carriage ***(see Figure 1).*** The hooks secure the scale to the lift truck and will be reattached after the scale is properly positioned.
- Raise the Quik-Tach carriage to a vertical position on the pallet and drive the lift truck into position.
- Align the Quik-Tach carriage centering pin with the center notch in the customer's lift truck carriage. The rear face of the scale carriage must be against the customer's lift truck carriage and the top mounting blocks of the scale carriage must be over the top of the customer's lift truck carriage lip and seated firmly in place.
- Raise the carriage and back the lift truck away with the Quik-Tach scale in place.
- Raise the carriage to a convenient height for remounting the two mounting hooks. Make certain the customer's carriage is clean where the hooks will be positioned. Attach the mounting hooks and tighten the bolts. The torque specification for these bolts is 70 foot pounds (class II & III 5,000 lb.) ,125 foot pounds (class III 10,000 lb.) . Install sealing wire on both mounting hooks.

**NOTE #1:** ***(See Figure 2)*** Make sure the bosses on the Quik-Tach carriage make contact with the customer's lift truck when both forks are seated. If there is more than .030" gap between the Quik-Tach and the customer's lift truck carriage ***(see Figure 2)*** when the forks are seated, use the included shims as needed to close the gap on either end, then bend over the tabs to hold them in place as shown in ***Figure 1***. There are three shim thicknesses (.035",.048",.059"). If you have to stack more than two shims on either end, your carriage is bent and needs to be fixed or replaced.

**NOTE #2:** There must be 0.030" to 0.060" space between the customer's lift truck carriage and the mounting hooks of the Quik-Tach scale. See Hook Clearance in ***Figure 2***. These parts must not touch or the scale won't weigh correctly. Use the spacer plates as needed to be sure this space exists. Also be sure that the customer's lift truck forks contact the scale only at the positions shown in ***Figure 2***. Repair or replace the forks if they are bent or have protrusions which contact the face of the scale.

- Mount the forks on the Quik-Tach scale carriage in the same way they attach to the regular lift truck carriage and move the forks into the positions they will be used during normal operation. Make sure all carriage components are firmly and safely in place. Apply a drop of thread locking compound such as "Locktite" #242, (W-T p/n 15566-0061) to all threaded fasteners. ***Do not apply to cable connectors.***

## SWITCHING NEW J-BOX FOR OLD

**Equipment required for the J-Box transfer:**

- Ohm Meter
- Tweeker (little screwdriver)
- Existing Hardwire J-Box (old style)
- Quick-Disconnect J-Box (new style)

The following procedure will only approximate the corner and balance adjustment of a factory set J-Box. You still need to go through a complete corner and balancing procedure after you transfer the data from the old J-Box to the new J-box to get exact readings.

1. Document the readings from the working, old style J-Box with no cells connected

   Left Trim Readout _____Ohms TB1 pin 2 (GRN) to TB4 pin 5 (BLU)

   Right Trim Readout _____Ohms TB1 pin 2 (GRN) to TB5 pin 5 (BLU)

   Left Balance Readout _____ Ohms TB1 pin 2 (GRN) to TB4 pin 2 (GRN)

   Right Balance Readout_____Ohms TB1 pin 2 (GRN) to TB5 pin 2 (GRN)

   ***NOTE;*** *1 full turn of the pot will adjust about 10 lbs. Out of a fork when using real weight.*

2. With no cells connected to the new J-Box, transfer the readings to the correct pots. If your looking at the front of the J-Box (so you can read the part number) the 2 back connectors are for the bottom cells and the 2 front connectors are for the top cells (Reference ***figure 2*** for correct assignment).

3. Measure across J1B to J4E. Adjust the LTB to equal the Left Trim Readout.

4. Measure across J1B to J5E. Adjust the RTB to equal the Right Trim Readout.

1. Measure across J1B to J4B. Adjust the LB to equal the Left Balance Readout.

6. Measure across J1B to J5B. Adjust the RB to equal the Right Balance Readout.

7. Follow the corner and balance procedure in the WI-125 QTLTSC Service Manual to fine-tune the J-Box readings.

**Equipment required for the weighbar connector modification**

- Solder
- Soldering Iron
- Potting Compound Non-corrosive Non-conductive sealant
- (Silicon PN 1045-00149)
- Wire Strippers 22 AWG
- Complete Kit *(PN 52224-0019)* Incl. :
  - New J-box
  - Neoprene Tubing *6" total 1.5"/cable*
  - Heat Shrink *2" total .5"/shield wire*
  - Connectors *4 total 1/weighbar*
  - Mounting Device *2 (Hold downs for upper weighbar cables)*
  - Cable Tie *2 total*

## Modifying the Weighbar Connection

Refer to ***figure 1*** as you go through the following steps.

1. Cut off the existing leads of the weighbar cable so you can start with fresh, undamaged wires.
2. Strip off .75" of the jacket from the end of the weighbar cable. Then strip off .25" of the insulation from the ends of the cable wires and then tin the leads.
3. Disassemble connector and insert the cable through the Strain Relief Clamp, Insulator, and Locking Ring(you may need to loosen the strain relief screws). Trim, strip, position the heat shrink over the shield, and solder the wires to the Jack.

4 .Position the Locking Ring on the Jack and assemble the Insulator to the Jack. Then fill with the potting compound. Be sure the cable jacket is inside the potting compound. This will assure that moisture doesn't feed back up through the cable.

5. Screw Strain Relief Clamp into place and tighten the Relief Screws down to the neoprene tube and cable.

## Finishing Procedure

1. Attach new J-box to the front, center mounting plate.
2. Connect all weigh bar cables to the junction box. Where vibration may cause loosening of connectors, place a bead of silicone across the assembled J-box connection. See ***figure 2.***
3. Perform cornering and balance procedures for the J-Box.
4. Perform a complete system calibration.

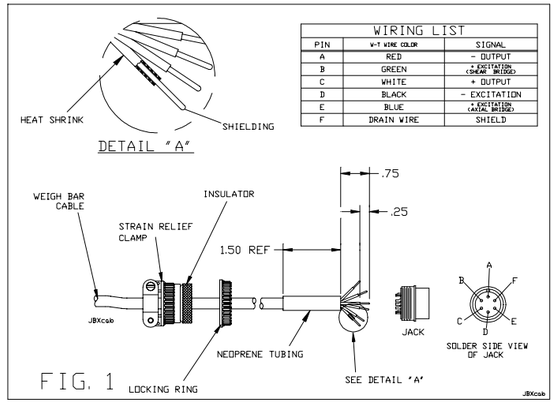


FIG. 1

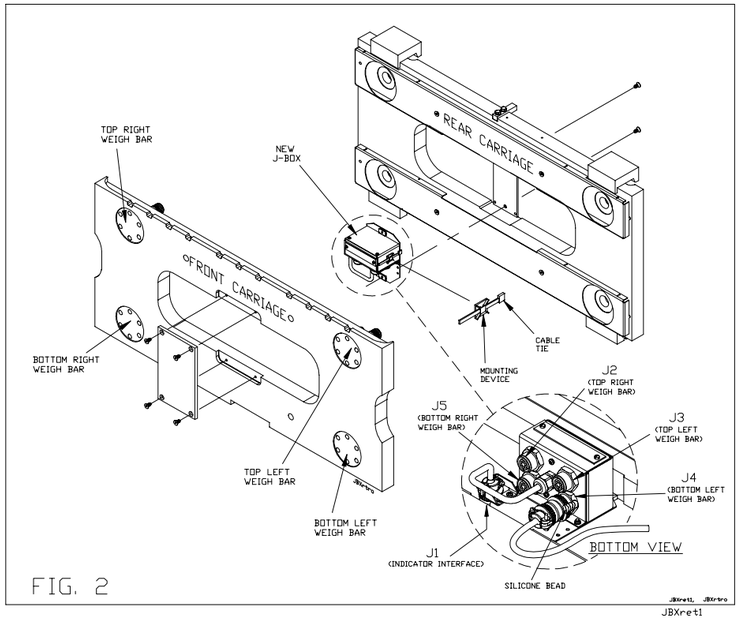


FIG. 2

JBXret1

## ENHANCING YOUR J-BOX'S DURABILITY

To enhance the durability of your lift truck J-Box, Weigh-Tronix has produced this kit for fighting the effects of extreme vibration. The kit consists of two approaches:

**1.** A cable support plate designed to fit beneath the J-box for holding the signal cable and connector secure

**2.** RTV compound which you place inside the J-box for mechanical support of the wires and other components

See ***Figure 1*** for an illustration of how to mount the J-box cable support plate, pigtail connector bracket, and pigtail connector.

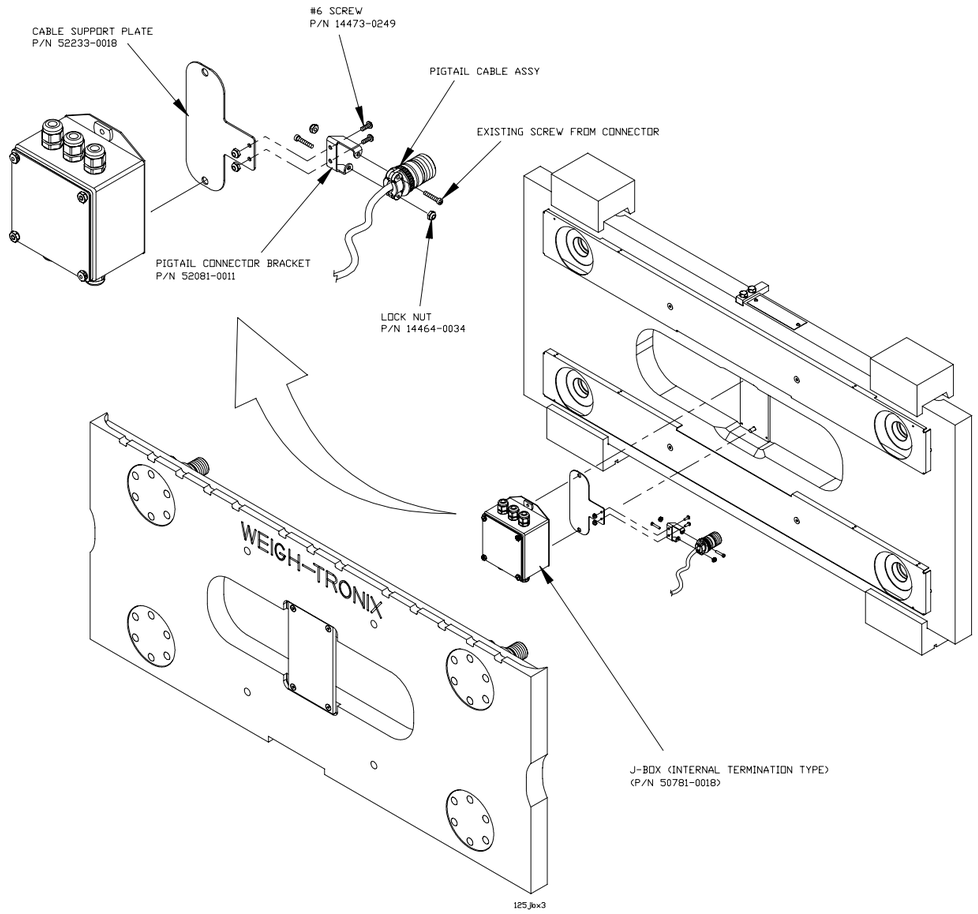



**FIGURE 1**
Mounting the pigtail cable support plate

The second step is the reinforcing of the components inside the J-box. ***Figure 2*** shows a diagram of RTV placement on a J-box PC board. Open the J-box and find the following components:

- six potentiometers
- wire leads from five cables
- 4-pin molex connector for the level sensors

***Follow these suggestions when applying the RTV:***

**1.** The idea is to immobolize the taller PC board components and wires so that vibration effects are minimized. Apply the RTV liberally.

**2.** Fill the areas between the potentiometers and cover the tops of the potentiometers except for the adjustment screws. ***DO NOT COVER THE ADJUSTMENT SCREWS OF THE POTENTIOMETERS.***

**3.** Be sure to apply RTV to the wires somewhere along their length where it can be bridged to the PC board, level sensor bracket, or side of the J-box.

**4.** Apply RTV to the wires and terminal bars so that it is deep enough that they support each other. Avoid covering the wire release.

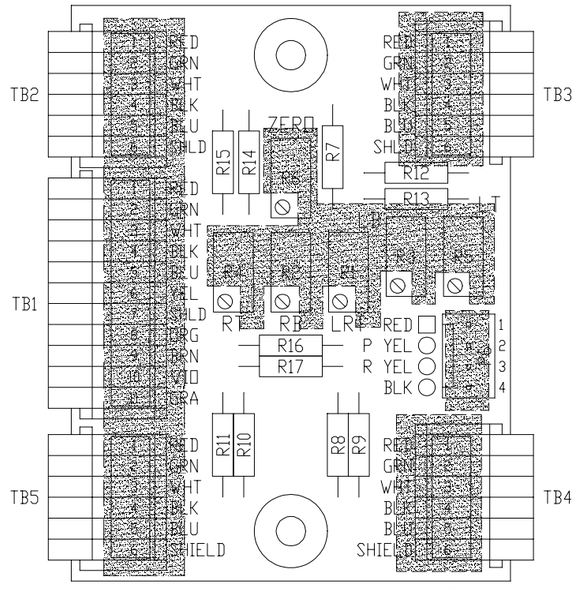



**FIGURE 2**
RTV treated j-box

# Daily Inspection Checklest For Lift Truck Scale Users

- ❑ Check scale carriage for loose, worn, bent, or broken components.
- ❑ Inspect forks for damage.
- ❑ Check locking pins on forks for proper function.
- ❑ Inspect cables from the junction box to Weigh Bars for wear.
- ❑ Inspect retractable cable for pinched, rubbed, stretched, or damaged areas.
- ❑ Inspect power cable for nicks or cuts.
- ❑ Make sure power cable is routed out of harms way. Fasten periodically to eliminate potential problems.
- ❑ Tighten cable connections at indicator and summing box if necessary.
- ❑ Inspect cable clamps and cable ties to be sure all cable attachments are secure.
- ❑ Inspect digital indicator mounting bracket, isolation mounts and hardware for loose or cracked parts.
- ❑ Check to make sure the junction box cover/shielf is fastened.
- ❑ Tighten bottom clamps on scale carriage if necessary. Raise carriage and visually inspect.
- ❑ Check and adjust the lift chain so the heel of the forks have ½" to 1" of clearance from the floor when the carriage is down and the mast is vertical.

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