



SCB-R9000-Series Ultegra™ Bench Scale



Amendment Record

SCB-R9000 Series Ultegra™ Bench scale 50522

Manufactured by Fairbanks Scales Inc.
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Kansas City, Missouri 64106

| | | |
|---------|-------|---|
| Created | 03/99 | |
| Issue 1 | 03/99 | New Product Release |
| Issue 2 | 04/99 | Addition of 5-digit part numbers. |
| Issue 3 | 02/01 | Addition of the USB option, software update and sloped display. |
| Issue 4 | 11/01 | Updated shipping software reference. |
| Issue 5 | 07/03 | |
| Issue 6 | 02/04 | |
| Issue 7 | 04/05 | Updated Data Output specifications |

Disclaimer

Every effort has been made to provide complete and accurate information in this manual. However, although this manual may include a specifically identified warranty notice for the product, Fairbanks Scales makes no representations or warranties with respect to the contents of this manual, and reserves the right to make changes to this manual without notice when and as improvements are made.

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Section 1: Introduction & Description

A. Introduction

The Ultegra™ Bench Scale is an AC powered unit with a capacity of 150 lbs, RS-232 output, and is constructed of ABS composite material. The scale may be placed on a desk, bench, or used with an 'Insert' adapter to countersink into a counter-top. Units may be ordered with a USB interface and/or ball roller-deck surface.

B. Description

There are six (6) versions available, identical in operation, some with features and/or exceptions as noted below:

Product 24300 w/o Ball Roller-Deck

- SCB-R9000-14 is the standard model equipped with a textured weighing platform. It has RS232 communications via an RJ (telephone type) receptacle, and an RJ receptacle for a remote display.

Product 24301 w/ Ball Roller-Deck

- SCB-R9000-14A is an original or newer model equipped with a ball roller-deck.

Product 24304 without Ball Roller-Deck

Product 24305 with Ball Roller-Deck

- SCB-R9000-14U is a newer model equipped with a USB interface (Windows 2000 or Windows XP).

Product 24302 without Ball Roller-Deck

Product 24303 with Ball Roller-Deck

- SCB-R9000-ADV is a newer model with an identifier (ADV) for UPS units only.

Note:

This product is shipped from the factory set for 100-240 VAC, 50-60 Hz operation. No voltage adjustments are needed. If necessary, change only the power cord plug for the proper type electrical outlet in your region.

Section 2: Setup

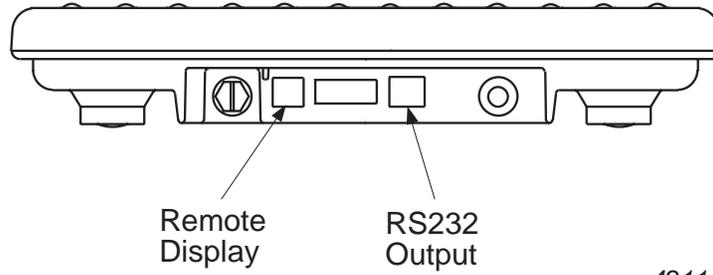
A. Installing

1. Remove the scale from the packing box and place on a flat surface where it will be used.
2. Using the level bubble, adjust one or two feet minimally to level platform. Do NOT adjust all 4 feet.
3. For counter installation, install Kit 21100 using the drawing. The suggested cut-out size is 15¼" x 15¼".

B. Connections

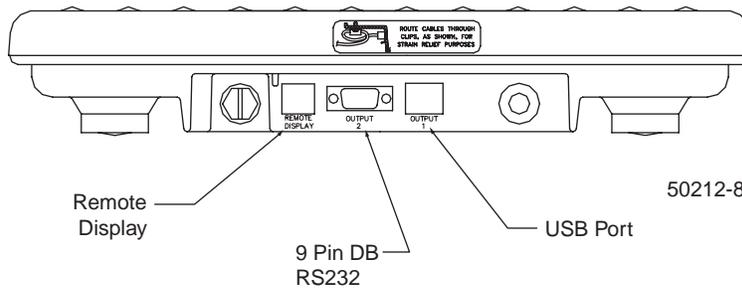
1. USB - To use the USB interface, plug the included six foot (6') USB cable into the scale base where marked. Connect the other end into a USB port on your computer or USB hub (See OUTPUT SETUP below).
2. RS-232 - To use the RS-232 signal, plug the included RS232 cable into the scale base where marked, then plug the other end into an available RS232 port on your computer or device (See OUTPUT SETUP page 9).
3. Remote Display - To use a remote display, plug the remote display phone type connector into the scale base where marked. Mount the remote using two (2) screws or use a velcro strip (not included), or use stand accessory, product number 20301.
4. Plug the power cord into a proper outlet.
5. Check with your freight provider for compatible computer software.

Original with single RS232 Output phone type receptacle.



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USB Option with a 9-Pin RS232 Output



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C. Computer Connections

1. USB Setup - The USB port will only function with a computer running Windows 2000, Windows XP, or higher operating system. When the scale-connected USB cable is interfaced to a computer's USB port or USB hub, the computer will prompt ***a device has been found*** and it will automatically install the driver.
2. RS232 Setup - Connect the RS232 serial cable to an unused serial port on your computer. Use the configuration procedure supplied with your freight providers computer software. If there appears to be a problem (usually a DEVICE or PORT conflict), right click on MY COMPUTER, select PROPERTIES, choose DEVICE MANAGER, select PORTS and then select COM and LPT. Look at the COM port you've chosen to see if there is a conflict reported. Use the HELP file to assist with the conflict resolution.

Section 3: Using the Scale

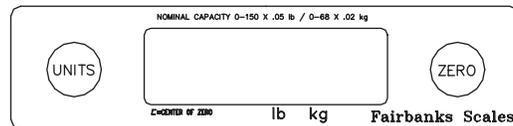
A. Power-on

Because the scale uses special low-power circuitry, no warm-up time is required. Weight readings will be accurate as soon as the unit is powered on and set to zero.

When the unit is powered, the display will perform a test by counting 1 to 9 then show either "0.00" or " _ _ _ _ _ ". Press ZERO to set the display to '0.00' and start weighing.

B. Keys

The keys for operating the scale are located on the main display and on remote displays.

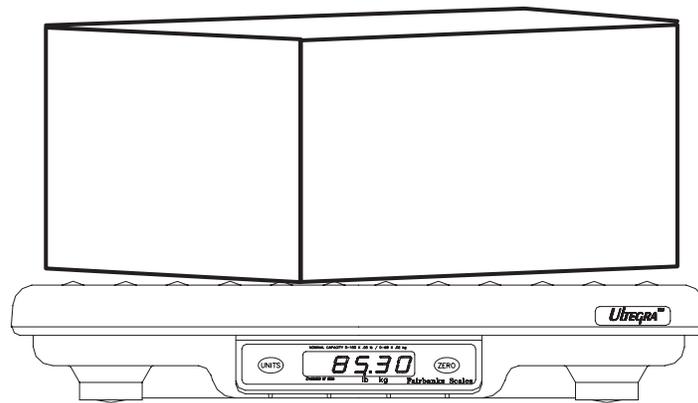


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1. Pressing the ZERO key resets the display to indicate zero (0); the center-of-zero (>0<) indication will be displayed.
 - The zero range is set at 2% or 3.00 lbs when set for Canadian use.
 - The zero range is set at 100 % or 150 lbs when set for USA use.
2. The ZERO key function will be inhibited if the instrument detects any of the following conditions:
 - a. Motion on the platform
 - b. An underload condition
 - c. An overload condition
 - d. Outside of programmed zero range
3. Pressing the UNITS key toggles the weighing units and the display enunciators from "lb" to "kg." Set to the units you will use by noting the arrow enunciators in the display.

C. Weighing

1. With the platform empty, press the ZERO key. The display will indicate zero (0.00) and the Center-of-Zero indicator will appear at the left of the display.
2. Check that the correct units are indicated. Press the UNITS key to change to "lb" or "kg."
3. Place the item to be weighed centered on the platform.
4. Read the Gross weight from the display.



Section 4: Customer Care

A. Cleaning

Clean by wiping the scale assembly with a damp cloth only. Do not use running water, harsh chemicals, or allow liquids to drip onto the scale/display.

B. Operator Instrument Prompts

| Prompt | Description |
|--------|-------------|
|--------|-------------|

| | |
|--------------|--|
| HiCAP | Load over 150 lbs/68 kg capacity or above maximum counts |
|--------------|--|

C. Troubleshooting

In the event the scale does not function properly, check the following:

| <u>Problem</u> | <u>Possible Source/Remedy</u> |
|------------------------------|--|
| No display | Power OFF, plug disconnected, power cord damage, faulty outlet. If you are using a remote display, check the main display first, if it's OK then check the cable and phone-type plug connection on the remote. Unplug then plug in the power cord to reset the program. |
| Incorrect weight | Check platform for binding or rubbing, reposition scale so all sides are clear. Ensure correct UNITS are displayed (lb or kg). For scales in counter inserts, make sure there is nothing jammed around edges. Remove load, press the ZERO key to set the scale to '0.00' then reweigh. |
| ZERO key will not reset zero | Motion on the platform, ensure that the platform is empty. Check platform for binding or rubbing, reposition scale so all sides are clear. For scales in counter inserts, make sure there is nothing jammed around edges. Unplug then plug in the power cord to reset the program. |
| Pushbuttons will not operate | First unplug, then plug in the power cord to reset the program. If you are using a remote display, check the main display first. If it's OK check the cable and phone-type plug connection on the remote. |
| Display "locked" | First unplug, then replug the power cord to reset the program. If you are using a remote display, check the main display first. If it's OK check the cable and phone-type plug connection on the remote. |
| Display indicates "HiCAP" | Weight on the platform exceeds 150 lbs. Remove load. |
| No RS-232 output | Check that both end connectors are securely fastened. Check the cable for damage. Test the computer port for conflicts. |
| No USB output | Check that both cable end connectors are securely fastened. Check the cable for damage. Check the hub or USB port for problems. |

Note: If the above remedies do not effect satisfactory operation, please call for service!

Section 5: Specifications

A. Technical Specifications

1. **Capacities:** 150 lb/68 kg factory set
2. **Resolution:** Selectable in Step 3 of Programming/Calibration
 - a. "rAngE" Multi-Interval
 - 0-60 x .02 lb / 60-150 x .05 lb
 - 0-30 x .01 kg / 30-68 x .02 kg
 - b. "3000d"
 - 150 x .05 lb
 - 68 x .02 kg
3. **Rounding:** Nearest division per NIST H-44
4. **Weight Display:** .27 inch LCD Display
5. **Power On Lockout:** Scale may display " _ _ _ _ _ " when power is turned on.

*(" _ _ _ _ _ ") indicates the scale is not exactly at center-of-zero.
Press ZERO to return to weighing.*
6. **Display update rate:** 0.4 seconds
7. **Overcapacity Warning:**
 - Displays "HiCAP" for overcapacity
8. **Exceeds Display Capacity:** " _ _ _ " Indicates the weight on the platform exceeds the capacity of the display.
9. **Motion Detection:** Satisfies H-44 requirements
10. **Power Failure Protection:** Zero reference, programming, and calibration are retained if the instrument loses AC power.
11. **Load Cell Excitation:** 5v Pulsed DC

12. RS232 Cable Length: 8 feet

13. USB Cable Length: 6 feet

14. Indicators:

- Center of Zero (~ = Motion, >0< = Center of zero)
- lb, kg

15. Dimensions: Platform, including feet 14" x 14" x 2.5"

16. Auto Zero Tracking: Compensates for gradual buildup of material on platform, factory set at 0.5 divisions

17. Power Requirements: 100 to 240 VAC, 50-60 HZ, Auto Selection of voltage level

B. Environment

All equipment should be protected from direct sunlight.

- Relative Humidity 0% to 90% non-condensing.
- NOT suitable for water washdown.

C. Accessories

1. Remote Display - 5"L x 2"W x ¾", 8' cable with connector and 2 function buttons.
2. Remote Display Stand - A 19" high stand for mounting the Remote Display, ideal for counter-top applications.
3. Counter Insert Kit - Allows the unit to be placed at slightly above a counter top for easier weighing. A remote display accessory will be needed for display purposes.

Appendix I: Data Output Specifications

RS232C Serial Data Output

A. Introduction

For most Ultegra models, an RS232C port is provided via an RJ-45 receptacle for an interface to a computer. For models with a USB port, a DB-9 connector is also provided for a standard RS232C interface connection in place of the RJ-45 receptacle. The Ultegra has two operator selectable RS232C protocols, Output 1 and Output 2.

Only one (1) protocol will be active at any given time, but the active protocol may be changed as desired by pressing and holding both the [UNITS] and [ZERO] keys simultaneously for approximately three (3) seconds. Following the display of the PROM number and revision, the display will indicate the active protocol by displaying either *OUT 1* or *OUT 2*. The [UNITS] key toggles between the choices. Press the [ZERO] key to enter or accept the displayed protocol option.

B. Specifications

RS232-C compatible Data Signal

US-ASCII Character Set

Mark = -3 to -15V

Space = +3 to +15V

Maximum distance of 50 cable-feet

DB-9F for connection to a serial port

1. Output 1 Protocol

9600 Baud (+ 0.1%)

7 Bits

Odd Parity

2 Stop Bits

2. Output 2 Protocol

1200 Baud (+ 0.1%)

8 Bits

No Parity

1 Stop Bits

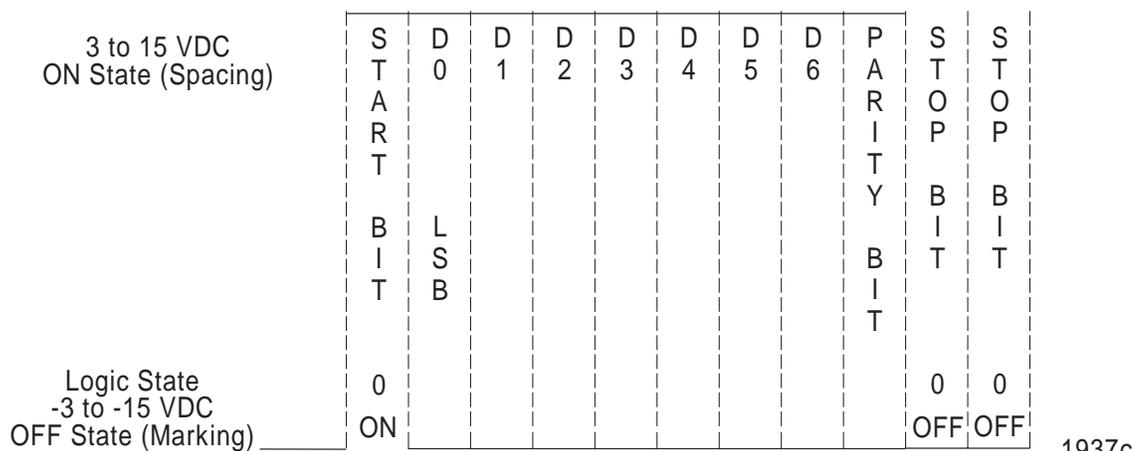
C. Character Frame

1. Output 1 Protocol

Characters are transmitted in an ASCII format at 9600 Baud (+ 0.1%). The receiver must be capable of a tolerance of 9600 (+/- 2.5%) Baud to allow for line losses and frequency skew. The character frame consists of one start bit, 7-bit character length, odd parity bit and two stop bits.

2. Output 2 Protocol

Characters are transmitted in an ASCII format at 1200 Baud (+ 0.1%). The receiver must be capable of a tolerance of 1200 (+/- 2.5%) Baud to allow for line losses and frequency skew. Character frame consists of one start bit, 8-bit character length, no parity bit and one stop bit.



NOTES:

Least Significant Bit (LSB), D0 transmitted first.

Space Character + HEX 20.

Voltage levels above +15 VDC are invalid.

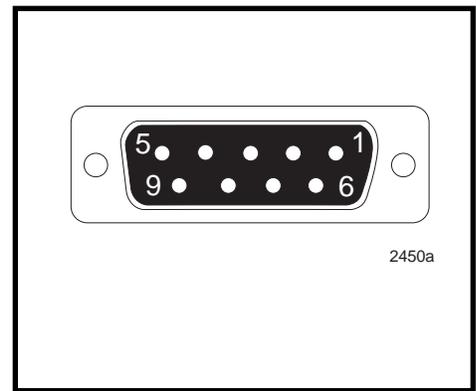
Voltage levels below - 15 VDC are invalid.

Voltage levels between -2 and +2 are invalid.

D. Interface Connections

1. Units which utilize a serial cable with a DB-9F connector for the computer port connection and an RJ (phone type connector) for the scale are defined below in the figures which identify the pin numbers and signals for the DB9 female cable connector.
2. USB models may also use a DB9 - DB9 serial cable. The figures below define the pin numbers and signals for the DB-9M cable scale port connector. The DB-9F pin numbers are the same as the DB-9M.

| <u>Pin Number</u> | <u>Signal</u> |
|-------------------|---------------|
| 1 | |
| 2 | Transmit (Tx) |
| 3 | Receive (Rx) |
| 4 | |
| 5 | Ground |
| 6 | |
| 7 | |
| 8 | |
| 9 | |



DB9 Male (Scale Port)

3 TX
2 RX
5 Sig Grd

E. Data Transmission

Data is transmitted on DEMAND from the host device. Data available for transmission consists of the GROSS weight. Transmission to the host will occur when the host transmits a carriage return (HEX 0D) to the scale.

F. Computer Output Format for Output 1

| Character Number | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|------------------|---|---|---|---|---|---|---|----|-----|-----|----|-----|-----|----|----|----|----|-----|
| String 1 | | | | | | | | | | | | | | | | | | |
| Gross Weight | X | X | X | X | . | X | X | SP | l/k | b/g | SP | G/g | R/r | SP | SP | CR | LF | EOT |

The instrument will transmit the following string of data.

NOTES:

1. Characters denoted by "X" are characters 0-9. Leading zeroes are replaced with spaces (SP). Character 5 is a decimal point (HEX 2E).
2. Lower case "l" and "b" for Avoirdupois Units or "k" and "g" for Metrics Units.
3. The first weight character will be a minus (-), HEX 2D, If weight is negative.
4. Characters separated with an / denoted one of the characters will be transmitted.
5. Lower case gr in characters 12 & 13 indicates scale motion. Upper case indicates stable weight.
6. EOT, HEX 04 is transmitted in "HiCAP" condition.
7. Transmission will occur when a CR (Hex 0D) carriage return is received.

G. Computer Output Format for Output 2

1. All computer commands and scale responses are ASCII character strings, where:
 - <CR> is an ASCII carriage return (hexadecimal 0D)
 - <LF> is an ASCII line feed (hexadecimal 0A)
 - <ETX> is an ASCII End-Of-Text (hexadecimal 03)
 - (STATUS) is a two ASCII number representation of the scale status (in hexadecimal 3x3x, where the bit pattern of the low nibbles, indicated by an "x" determine the actual status conditions).

| COMPUTER Response | SCALE Response | COMMAND Result |
|-------------------|-----------------------------------|--|
| W<CR> | <LF><SP>XXX.XXUU<CR>(STATUS)<ETX> | Returns the weight and scale status in two ASCII digits. |
| S<CR> | <LF>S(STATUS)<CR><ETX> | Returns the scale status in two ASCII digits (defined in next section) |
| Z<CR> | No response | Zeros the scale |
| All Else | <LF>?<CR> | Unrecognizable command |

Notes: In the scale response to "W<CR>"

1. XXX.XX = A five digit number with two digits to the right of the decimal point which is the displayed scale weight.
2. SP = An ASCII space (hexadecimal 20). In the event of a negative weight, an ASCII, "-" (hexadecimal 2D) is returned in this location.
3. UU = A two-character weight identifier. If the scale is configured to weigh kilograms, a "KG" (uppercase letters) will be returned. If configured for pounds, "LB" (uppercase letters) will be returned.
4. The decimal point is returned by the scale as part of the ASCII string.

2. Interpretation of scale status digits

The high order nibble of each status byte has a value of 3 (0011 B). The low order nibble of the first and second bytes are defined as follows:

1st Byte: Bit 0 - High = scale is in motion
Low = scale is stable

Bit 1 - High = scale at zero
Low = scale not at zero

Bit 2 - Low = not used

Bit 3 - Low = not used

2nd Byte: Bit 0 - High = scale is below zero
Low = scale is not below zero

Bit 1 - High = scale is over capacity
Low = scale is not over capacity

Bit 2 - High = scale ROM program failure
Low = scale ROM okay

Bit 3 - High = faulty calibration data*
Low = scale calibration okay

*This is the result of an incorrect checksum

An example of the scale response to an "S" command would be:
<LF>S20<CR><ETX>

The following status conditions are in effect for this response:

- scale at zero
- scale is not below zero
- scale is not over capacity
- scale ROM okay
- scale calibration okay

3. USB Data Output

The Ultegra™. uses the HID-10 USB protocol

Operation & Specifications

For Early Models

Section 1: Introduction & Description



Note: *This product is shipped from the factory set for 100-240 VAC, 50-60 Hz operation. No voltage adjustments are needed. If necessary, change only the power cord plug for the proper type electrical outlet in your region.*

A. Introduction

The Ultegra™ Bench Scale is an AC powered unit with a capacity of 150 lbs, RS-232 output, and is constructed of ABS composite material. The scale may be placed on a desk, bench, or used with an 'Insert' adapter to countersink into a counter-top. Units may be ordered with a USB interface and/or ball roller-deck surface.

B. Description

There are 6 versions available, identical in operation, some with features and/or exceptions as noted below:

Product without Ball Roller-Deck

SCB-R9000-14 is the standard model equipped with a textured weighing platform. It has RS232 communications via an RJ (telephone type) receptacle, and an RJ receptacle for a remote display. The Original model is identified via the flat display (a newer version offers a sloped, up-facing display.)

Product with Ball Roller-Deck

SCB-R9000-14A is an Original or Newer model equipped with a ball roller-deck.

Product without Ball Roller-Deck

Product with Ball Roller-Deck

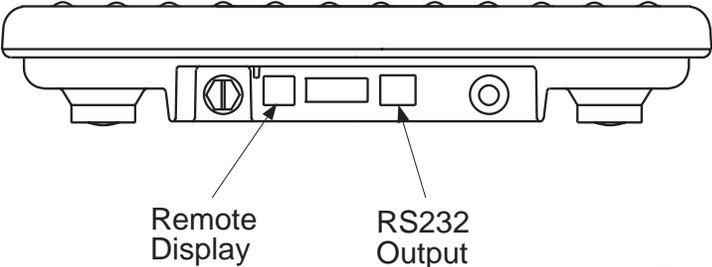
SCB-R9000-14U is a Newer model equipped with a USB interface (Windows 98 or 2000).

Product without Ball Roller-Deck

Product with Ball Roller-Deck

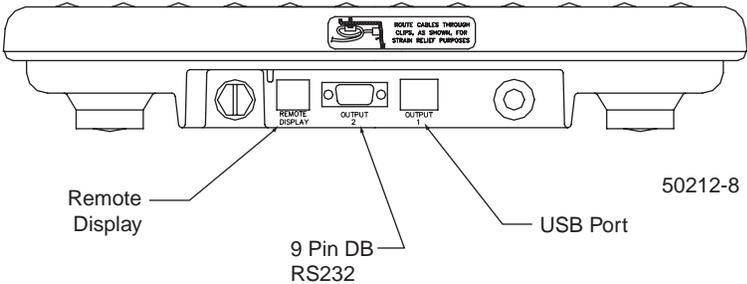
SCB-R9000-ADV is a Newer model with an identifier (ADV) for UPS units only.

Original with single RS232 Output phone type receptacle.



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USB Option with a 9 Pin RS232 Output



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Section 2: Customer Care

A. Cleaning:

Clean by wiping the scale assembly with a damp cloth only. Do not use running water, harsh chemicals, or allow liquids to drip onto the scale/display.

B. Operator Instrument Prompts:

| Prompt | Description |
|---------------|---|
| HiCAP | Load over 150 lbs/ 68 kg capacity or above maximum counts |
| LoLDX | Scale is underload, less than "0" counts |
| HiLDX | Corner overloaded, position weight to the center of the scale (X=corner #) |
| ("_____") | Indicates the scale is not exactly at center-of-zero. Press ZERO to go to weigh mode. |
| "_ _ _ _" | Indicates the weight on the platform exceeds the capacity of the display |

C. Troubleshooting - In the event the scale does not function properly, check the following:

Problem

Possible Source / Remedy

No Display

Power OFF, Plug disconnected, Power cord damage, Faulty outlet. If you are using a remote display, check the main display first, if it's OK then check the cable and phone-type plug connection on the remote. Unplug then plug in the power cord to reset the program.

Incorrect Weight

Check platform for binding or rubbing, reposition scale so all sides are clear. Ensure correct UNITS are displayed (lb or kg). For scales in counter inserts, make sure there is nothing jammed around edges. Remove load, press the ZERO key to set the scale to '0.00' then reweigh.

ZERO key will NOT reset zero

Motion on the platform, ensure that the platform is empty. Check platform for binding or rubbing, reposition scale so all sides are clear. For scales in counter inserts, make sure there is nothing jammed around edges. Unplug then plug in the power cord to reset the program.

Pushbuttons Will Not Operate

First unplug, then plug in the power cord to reset the program. If you are using a remote display, check the main display first, if it's OK then check the cable and phone-type plug connection on the remote.

Display locked

First unplug, then plug in the power cord to reset the program. If you are using a remote display, check the main display first, if it's OK then check the cable and phone-type plug connection on the remote.

Display indicates "HiCAP"

Weight on the platform exceeds 150 lbs. Remove load.

Display indicates "HiLdX"

Reposition load so the weight is in the center instead of over 1 corner.

Display indicates "LoLdX"

Check platform for binding or rubbing, reposition scale so all sides are clear. For scales in the counter inserts, make sure there is nothing jammed around edges.

No RS-232 output

Check that both end connectors are securely fastened. Check the cable for damage. Test the computer port for conflicts.

No USB output

Check that both cable end connectors are securely fastened. Check the cable for damage. Check the hub or USB port for problems.



Note: If the above remedies do NOT effect satisfactory operation, please call for service!